

PCA Case No. 2023-01

**IN THE MATTER OF
THE INDUS WATERS WESTERN RIVERS ARBITRATION**

- before -

**THE COURT OF ARBITRATION CONSTITUTED
IN ACCORDANCE WITH THE INDUS WATERS TREATY 1960**

- between -

THE ISLAMIC REPUBLIC OF PAKISTAN

- and -

THE REPUBLIC OF INDIA

**AWARD ON ISSUES OF GENERAL INTERPRETATION
OF THE INDUS WATERS TREATY**

COURT OF ARBITRATION:

Professor Sean D. Murphy (Chairman)
Professor Wouter Buytaert
Professor Jeffrey P. Minear
Judge Awn Shawkat Al-Khasawneh
Dr. Donald Blackmore

SECRETARIAT:

The Permanent Court of Arbitration

8 August 2025

this page intentionally blank

REPRESENTATIVES OF THE PARTIES

ISLAMIC REPUBLIC OF PAKISTAN

AGENT

Mr. Mansoor Usman Awan
Attorney-General

DEPUTY AGENT

Mr. Raja Naeem Akbar
Secretary
Ministry of Law and Justice

REPUBLIC OF INDIA

No agents or representatives appointed

REPRESENTATIVES

Mr. Syed Ali Murtaza
Secretary to the Government of Pakistan
Ministry of Water Resources
Mr. Syed Muhammad MEHAR Ali Shah
Pakistan Commissioner for Indus Waters
Mr. Someir Siraj
Mr. Zohair Waheed
Ms. Fatima Anwar Malik
Office of the Attorney General for Pakistan
Mr. Shahroz Bakhtiyar
Ministry of Law and Justice
Mr. Khalid Mahmood
National Engineering Services Pakistan
(NESPAK)

COUNSEL AND ADVOCATES

Sir Daniel Bethlehem KC
Professor Philippa Webb
Twenty Essex Chambers
Professor Attila Tanzi
Dr. Cameron Miles
3 Verulam Buildings Chambers
Mr. Stephen Fietta KC
Ms. Laura Rees-Evans
Ms. Megan Rippin
Ms. Miglena Angelova
Ms. Jane Byrne
Ms. Charlotte Westbrook
Mr. Abdullah Tariq
Fietta LLP

**TECHNICAL ADVISORS AND
ADVOCATES**

Dr. Gregory L. Morris
Mr. Peter J. Rae

this page intentionally blank

TABLE OF CONTENTS

I.	INTRODUCTION.....	1
A.	THE INDUS SYSTEM OF RIVERS AND THE INDUS WATERS TREATY 1960.....	1
B.	THE PARTIES’ DISPUTES AND THE PRESENT PROCEEDINGS	3
C.	STRUCTURE OF THIS AWARD	5
II.	PROCEDURAL HISTORY	7
A.	INITIATION OF THE ARBITRATION.....	7
B.	PRELIMINARY PHASE ON THE COMPETENCE OF THE COURT	8
C.	DECISION ON FURTHER PROCEEDINGS: FIRST PHASE ON THE MERITS	9
D.	PAKISTAN’S AMENDED REQUEST FOR ARBITRATION	11
E.	PROPOSED SITE VISIT TO THE NEELUM JHELM HYDRO-ELECTRIC PLANT	12
F.	SUBMISSION OF PAKISTAN’S MEMORIAL	13
G.	SITE VISIT TO THE NJHEP	14
H.	PRE-HEARING PROCEDURES	19
I.	HEARING FOR THE FIRST PHASE ON THE MERITS	21
J.	POST-HEARING PROCEDURES	22
K.	FURTHER CONSIDERATION OF COMPETENCE	25
III.	RELEVANT FACTUAL BACKGROUND.....	27
A.	THE INDUS BASIN	27
1.	Geography and Hydrology of the Indus Basin	27
2.	Agriculture in the Indus Basin.....	32
B.	NEGOTIATION OF THE INDUS WATERS TREATY	34
C.	THE INDUS WATERS TREATY	42
D.	IMPLEMENTATION OF THE INDUS WATERS TREATY.....	49
1.	Transitional Arrangements	49
2.	Operation of the Permanent Indus Commission	55
3.	India’s Hydro-Electric Power Program on the Western Rivers.....	62
4.	Dispute Resolution Proceedings under the Treaty.....	71
E.	ORIGINS OF THE CURRENT DISPUTE	81
IV.	PRELIMINARY MATTERS.....	87
A.	OVERVIEW OF PARALLEL PROCEEDINGS BEFORE THE NEUTRAL EXPERT	87
B.	CONTINUING COMPETENCE OF THE COURT OF ARBITRATION	89
C.	LEGAL AND PRACTICAL CONSEQUENCES OF INDIA’S NON-PARTICIPATION.....	91
1.	Relevance of the Non-Appearance of a Party.....	91
2.	Steps Taken by the Court to Ensure Procedural Fairness to Both Parties	92
3.	Steps Taken by the Court to Satisfy Itself that It Has Jurisdiction and that the Claims Are Well Founded in Fact and Law.....	95
V.	ISSUES FOR DETERMINATION IN THIS PHASE OF THE PROCEEDINGS.....	99
VI.	LAW TO BE APPLIED BY A COURT OF ARBITRATION.....	105
A.	“EXCEPT AS THE PARTIES MAY OTHERWISE AGREE”.....	105
B.	“THE LAW TO BE APPLIED ... SHALL BE THIS TREATY”	105

C.	“WHENEVER NECESSARY ... INTERNATIONAL CONVENTIONS”	107
D.	“WHENEVER NECESSARY ... CUSTOMARY INTERNATIONAL LAW”	108
VII.	BINDING OR OTHERWISE CONTROLLING EFFECT OF DISPUTE SETTLEMENT DECISIONS UNDER THE TREATY	115
A.	THE PARTIES’ POSITIONS	115
1.	Pakistan’s Position.....	115
2.	India’s Position in the Permanent Indus Commission, the <i>Baglihar</i> Neutral Expert Proceedings, and the <i>Kishenganga</i> Arbitration	119
B.	THE COURT’S ANALYSIS.....	121
1.	Binding or Otherwise Controlling Effect of an Award by a Court of Arbitration.....	125
2.	Binding or Otherwise Controlling Effect of a Decision by a Neutral Expert.....	144
VIII.	OVERALL APPROACH WHEN INTERPRETING ARTICLE III AND ANNEXURE D, PART 3.....	157
A.	THE PARTIES’ POSITIONS	159
1.	Object and Purpose of the Treaty as it Relates to the Western Rivers	159
2.	Article III and Annexure D, Part 3	163
B.	THE COURT’S ANALYSIS.....	166
1.	Object and Purpose of the Treaty as it Relates to the Western Rivers	167
2.	Article III and Annexure D, Part 3	173
IX.	ENGINEERING CONCEPTS AND TERMINOLOGY RELEVANT TO RUN-OF-RIVER HYDRO-ELECTRIC PLANTS.....	183
A.	CATEGORIES OF HYDRO-ELECTRIC PLANTS.....	183
B.	USING THE FLOW OF THE RIVER FOR POWER DEMAND AT A RUN-OF-RIVER HYDRO-ELECTRIC PLANT.....	185
C.	COMPONENTS OF A RUN-OF-RIVER HYDRO-ELECTRIC PLANT	189
1.	Reservoir Storage Capacity	190
2.	Outlets	193
3.	Spillways	194
4.	Intakes for the Turbines.....	196
5.	Freeboard.....	199
D.	RESERVOIR SEDIMENTATION AND SEDIMENT CONTROL.....	199
E.	ENGINEERING CONCEPTS AND TERMINOLOGY RELEVANT TO RUN-OF-RIVER HYDRO-ELECTRIC PLANTS IN RELATION TO ANNEXURE D, PART 3 HEPS	203
X.	GENERAL INTERPRETATION OF ANNEXURE D, PARAGRAPHS 8(D), (E), AND (F) ON LOW-LEVEL OUTLETS, GATED SPILLWAYS, AND INTAKES FOR THE TURBINES	207
A.	THE PARTIES’ POSITIONS	208
1.	Pakistan’s Position.....	208
2.	India’s Position in the Permanent Indus Commission, the <i>Baglihar</i> Neutral Expert Proceedings, and the <i>Kishenganga</i> Arbitration	213
B.	THE COURT’S ANALYSIS.....	216
1.	General Considerations	216
2.	Low-level Outlets	227

3.	Gated Spillways.....	235
4.	Intakes for the Turbines.....	240
XI.	GENERAL INTERPRETATION OF ANNEXURE D, PARAGRAPH 8(C) ON MAXIMUM PONDAGE	247
A.	THE PARTIES' POSITIONS.....	248
1.	Pakistan's Position.....	248
2.	India's Position in the Permanent Indus Commission, the <i>Baglihar</i> Neutral Expert Proceedings, and the <i>Kishenganga</i> Arbitration	257
B.	THE COURT'S ANALYSIS.....	267
1.	Ordinary Meaning to Be Given to Annexure D, Paragraph 8(c).....	270
2.	Relevant Context: Annexure D, Paragraph 15 (Water Delivery Requirements)...	278
3.	Relevant Context: Paragraph 9 and Appendix II of Annexure D (Notification Requirements).....	281
4.	Relevant Context: Annexure E (Storage of Waters).....	283
5.	Object and Purpose of the Treaty	286
6.	Subsequent Practice of the Parties.....	288
7.	<i>Travaux Préparatoires</i>	298
8.	Overall Assessment of the Interpretation of Paragraph 8(c)	299
9.	Conclusion.....	302
XII.	GENERAL INTERPRETATION OF ANNEXURE D, PARAGRAPH 8(A) ON THE ARTIFICIAL RAISING OF THE WATER LEVEL ABOVE FULL PONDAGE LEVEL (INCLUDING THE USE OF FREEBOARD).....	305
A.	THE PARTIES' POSITIONS.....	305
1.	Pakistan's Position.....	305
2.	India's Position in the Permanent Indus Commission, the <i>Baglihar</i> Neutral Expert Proceedings, and the <i>Kishenganga</i> Arbitration	308
B.	THE COURT'S ANALYSIS.....	310
1.	Annexure D, Paragraph 8(a).....	311
2.	Conclusion.....	319
XIII.	COOPERATION AND INFORMATION SHARING UNDER THE TREATY	321
A.	THE PROVISIONS OF THE TREATY CONCERNING COOPERATION AND INFORMATION SHARING	322
B.	RELEVANCE OF THE TREATY PROVISIONS ON INFORMATION SHARING AND COOPERATION TO THE MATTERS BEFORE THE COURT	326
XIV.	DECISION.....	331

this page intentionally blank

TABLE OF MAPS

The maps in this Award are illustrative only. Their use by the Court is not intended to endorse any State's position with respect to matters of sovereignty or national boundaries.

Map 1:	The Indus River System.....	29
Map 2:	Location of the Kishenganga and Ratle Hydro-Electric Plants	83

TABLE OF FIGURES

Figure 1:	Proposed division of usable supplies of water dated 5 February 1954.....	37
Figure 2:	Average annual flows of the Eastern and Western Rivers	52
Figure 3:	Schematic diagram of Indus Basin irrigation system in Pakistan.....	53
Figure 4:	Summary of completed Run-of-River HEPs with Operating Pool Storage.....	67
Figure 5:	India's hydro-electric program on the Western Rivers	70
Figure 6:	Comparison of water storage volumes with the annual flow of the Western Rivers	71
Figure 7:	Weekly load curve showing power (MW) demand against time	187
Figure 8:	Weekly load curve including stream power.....	188
Figure 9:	Weekly load curve showing pondage accumulation and discharge	188
Figure 10:	Typical components of a hydro-electric plant.....	190
Figure 11:	Spillway configurations	195
Figure 12:	Potential power intake configurations	197
Figure 13:	Freeboard for free overflow spillway	199
Figure 14:	Different forms of storage in the reservoir of a Run-of-River Plant.....	205
Figure 15:	Calculation for Operating Pool of Kiru HEP	263
Figure 16:	Storage Capacity permitted under Annexure E to the Treaty.....	284

this page intentionally blank

TABLE OF DEFINED TERMS

Annexure D, Part 3 HEP	A new Run-of-River Plant under Part 3 of Annexure D to the Treaty, excluding Small Plants as defined in Paragraph 18 of Annexure D
Award on Competence	Award on the Competence of the Court dated 6 July 2023
<i>Baglihar</i> Determination	<i>Baglihar Hydro-electric Plant (Pakistan v. India)</i> , Neutral Expert Determination on the Baglihar Hydro-electric Plant dated 12 February 2007 (PLA-0002)
<i>Baglihar</i> Neutral Expert	Professor Raymond Lafitte, the Neutral Expert appointed on 12 May 2005 by the World Bank in the <i>Baglihar</i> Neutral Expert Proceedings
<i>Baglihar</i> Neutral Expert Proceedings	<i>Baglihar Hydro-electric Plant (Pakistan v. India)</i> , Neutral Expert proceedings
BCM	Billion cubic meters
Case Management Conference	Case Management Conference convened by the Court on 14 July 2023
CM	Cubic meters
Commission	The Permanent Indus Commission established by Article VIII of the Treaty, comprised of India's Commissioner and Pakistan's Commissioner
Commissioners	India's Commissioner and Pakistan's Commissioner
Court	The Court of Arbitration in these proceedings, constituted pursuant to Article IX(5) and Annexure G to the Treaty
Eastern Rivers	The Sutlej, the Beas, and the Ravi Rivers and their tributaries
First Phase on the Merits	The first phase on the merits of these proceedings concerning the overall interpretation or application of Article III of the Treaty, and Paragraph 8 of Annexure D thereto, in addition to a related question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty
Further Hearing Questions	The list of questions dated 13 July 2024 that the Court invited Pakistan to address in its oral submissions scheduled for 15 to 16 July 2024
Hearing for the First Phase on the Merits or Hearing	The oral hearing in the First Phase on the Merits, held from 8 to 12 and 15 to 16 July 2024 in the Peace Palace, The Hague, the Netherlands
Hearing on Competence	The oral hearing in the Preliminary Phase on Competence, held from 11 to 13 May 2023 in the Peace Palace, The Hague, the Netherlands
Hearing Questions	Questions to be Addressed at the Hearing for the First Phase on the Merits dated 20 June 2024
HEP	Hydro-Electric Plant

ICJ	International Court of Justice
ICOLD	International Commission on Large Dams
India	The Republic of India
India's Commissioner or ICIW	Commissioner for Indus Waters appointed by India pursuant to Article VIII(1) of the Treaty
India's Competence Objections	India's objections to the competence of the Court, arising from the 21 December 2022 Letter and the 21 December 2022 Explanatory Note
India's Site Visit Objections	Letter from India to the PCA dated 18 January 2024
KHEP or Kishenganga Plant	Kishenganga Hydro-Electric Plant
Kishenganga or Kishenganga Arbitration	<i>Indus Waters Kishenganga Arbitration (Pakistan v. India)</i> , PCA Case No. 2011-01
Kishenganga Court	The Court of Arbitration in the <i>Kishenganga</i> Arbitration
Kishenganga Final Award	Final Award in the <i>Kishenganga</i> Arbitration dated 20 December 2013 (PLA-0004)
Kishenganga Partial Award	Partial Award in the <i>Kishenganga</i> Arbitration dated 18 February 2013 (PLA-0003)
Kishenganga/Neelum River	The river called the "Kishenganga" by India and the "Neelum" by Pakistan
KW	Kilowatts
MAF	Million acre-feet
MCM	Million cubic meters
MMD	Minimum mean discharge, as defined in Annexure D, Paragraph 2(i) of the Treaty
MW	Megawatts
Neutral Expert	Mr. Michel Lino, the Neutral Expert appointed on 13 October 2022 by the World Bank further to India's Request to the World Bank for the Appointment of a Neutral Expert dated 4 October 2016 (P-0156)
Neutral Expert Competence Decision	Decision on Certain Issues Pertaining to the Competence of the Neutral Expert dated 7 January 2025 (corrected on 31 March 2025), PCA Case No. 2023-14 (P-0695)

Neutral Observer	Mr. Stephen Pomper, appointed by the Court on 12 April 2024 to accompany the Court on the Site Visit and to observe all of the Court's interactions with the Parties and site experts, pursuant to the Site Visit Protocol
NJHEP	Neelum Jhelum Hydro-Electric Plant
Pakistan	The Islamic Republic of Pakistan
Pakistan's Commissioner or PCIW	Commissioner for Indus Waters appointed by Pakistan pursuant to Article VIII(1) of the Treaty
Pakistan's Competence Submissions	Pakistan's Submissions on Recent Developments Pursuant to Procedural Order No. 15 dated 11 June 2025, as corrected on 12 June 2025
Pakistan's Final Comments	Pakistan's Final Comments on Particular Matters Addressed in Procedural Order No. 14 dated 25 February 2025
Pakistan's Final Submissions	Pakistan's Final Submissions (First Phase on the Merits) dated 16 July 2024
Pakistan's Memorial	Pakistan's Memorial dated 22 March 2024
Pakistan's Post-Hearing Submissions	Pakistan's Post-Hearing Submissions dated 1 November 2024
Pakistan's Preliminary Comments	Pakistan's Preliminary Comments on Particular Matters Addressed in Procedural Order No. 14 dated 25 January 2025
Pakistan's Supplementary Memorandum	Pakistan's Supplementary Memorandum, and accompanying Appendix dated 8 November 2024
Parties	The Parties to these proceedings, namely the Islamic Republic of Pakistan and the Republic of India
PCA	Permanent Court of Arbitration
PCIJ	Permanent Court of International Justice
Preliminary Phase on Competence	The preliminary phase of these proceedings on the competence of the Court and the operation of Article IX of the Treaty
Procedural Order No. 1	Procedural Order No. 1 (Preliminary Phase on Competence) dated 2 February 2023
Procedural Order No. 2	Procedural Order No. 2 (Procedural Timetable) dated 14 March 2023
Procedural Order No. 3	Procedural Order No. 3 (Organization of the Hearing on Competence) dated 2 May 2023
Procedural Order No. 6	Procedural Order No. 6 (Decision on Further Proceedings) dated 6 July 2023

Procedural Order No. 7	Procedural Order No. 7 (Leave to Apply to Amend the Request for Arbitration; Schedule for Written Submissions in the First Phase on The Merits) dated 22 July 2023
Procedural Order No. 8	Procedural Order No. 8 (Application to Amend the Request for Arbitration) dated 10 August 2023
Procedural Order No. 9	Procedural Order No. 9 (Decision on India's Objections to the Proposed Site Visit) dated 2 February 2024
Procedural Order No. 10 or Site Visit Protocol	Procedural Order No. 10 (Site Visit Protocol) dated 3 February 2024
Procedural Order No. 11	Procedural Order No. 11 (Production of Papers and Other Evidence) dated 27 May 2024
Procedural Order No. 12	Procedural Order No. 12 (Organization of the Hearing for the First Phase on the Merits) dated 29 June 2024
Procedural Order No. 13	Procedural Order No. 13 (Post-Hearing Procedure for the First Phase on the Merits) dated 13 August 2024
Procedural Order No. 14	Procedural Order No. 14 (Further Directions Regarding the Production of Papers and Other Evidence; Further Comments by the Parties on Particular Matters) dated 6 December 2024
Procedural Order No. 15	Procedural Order No. 15 (Recent Developments that May Bear on Matters Before the Court) dated 16 May 2025
Request for Arbitration	Pakistan's Request for Arbitration dated 19 August 2016
Required Documents	The papers and other evidence falling within specified categories that the Court requested to be produced by Pakistan pursuant to Paragraph 20 of Annexure G to the Treaty and Article 22(3) of the Supplemental Rules of Procedure
RHEP or Ratle Plant	Ratle Hydro-Electric Plant
Run-of-River Plant or Run-of-River HEP	As defined at Paragraph 2(g) of Annexure D to the Treaty, "a hydro-electric plant that develops without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage"
September 1959 Heads of Agreement	"Heads of Agreement for an International Water Treaty" issued by the World Bank on 15 September 1959 (P-0136)
Site Visit	The site visit from 23 to 29 April 2024 to the NJHEP located in the Jammu and Kashmir region administered by Pakistan and conducted pursuant to the Site Visit Protocol
Site Visit Technical Questions	Technical Questions for the Parties in Advance of the Site Visit dated 15 April 2024

Small Plant	As defined in Paragraph 18 of Annexure D to the Treaty, “a new Run-of-River Plant which is located on a Tributary and which conforms to the following criteria (hereinafter referred to as a Small Plant): (a) the aggregate designed maximum discharge through the turbines does not exceed 300 cusecs; (b) no storage is involved in connection with the Small Plant, except the Pondage and the storage incidental to the diversion structure; and (c) the crest of the diversion structure across the Tributary, or the top level of the gates, if any, shall not be higher than 20 feet above the mean bed of the Tributary at the site of the structure”
Storage Works	As defined in Paragraph 2(a) of Annexure E to the Treaty, “a work constructed for the purpose of impounding the waters of a stream; but excludes (i) a Small Tank, (ii) the works specified in Paragraphs 3 and 4 of Annexure D, and (iii) a new work constructed in accordance with the provisions of Annexure D”
Supplemental Award on Competence	Supplemental Award on the Competence of the Court dated 27 June 2025
Supplemental Rules of Procedure	Supplemental Rules of Procedure dated 31 March 2023
Treaty	<i>Indus Waters Treaty 1960 Between the Government of India, the Government of Pakistan and the International Bank for Reconstruction and Development</i> , signed at Karachi on 19 September 1960 (PLA-0001)
VCLT	<i>Vienna Convention on the Law of Treaties</i> , opened for signature at Vienna on 23 May 1969 (PLA-0005)
Western Rivers	The Indus, the Jhelum, and the Chenab Rivers and their tributaries
World Bank	International Bank for Reconstruction and Development
1954 Proposal	Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954 (P-0130)

this page intentionally blank

I. INTRODUCTION

A. THE INDUS SYSTEM OF RIVERS AND THE INDUS WATERS TREATY 1960

1. The Indus system of rivers stretches across the territory of the Islamic Republic of Pakistan (“**Pakistan**”) and the Republic of India (“**India**”) (together, the “**Parties**”). These rivers and their tributaries rise in the Himalayan, Hindu Kush, and Karakoram Mountains, and flow through Afghanistan, China, India, and Pakistan, before draining into the Arabian Sea. The river system is of great importance to both India and Pakistan in supplying water for agriculture, for domestic use, for the generation of hydro-electric power, and for non-consumptive uses such as navigation and fishing.
2. As a watercourse that flows across national boundaries, a large portion of the Indus system of rivers is the subject of the Indus Waters Treaty of 1960 (“**Treaty**”)¹ between India and Pakistan, which sets forth the respective rights and obligations of the two States concerning the use of the waters of these rivers.
3. In broad strokes, the Treaty addresses the shared use of the Indus system of rivers through the allocation to India and Pakistan of the waters of certain rivers within the system. Thus, the Treaty allocates to India the waters of the Sutlej, Beas, and Ravi Rivers and their tributaries, identified in the terminology of the Treaty as the “**Eastern Rivers**”.² The Treaty correspondingly allocates to Pakistan the waters of the Indus, Jhelum, and Chenab Rivers and their tributaries, identified as the “**Western Rivers**”.³
4. Though allocating particular rivers to one of the two States, the Treaty also permits certain uses by the other State of the waters of those rivers. As the Western Rivers flow through territory administered by India for a significant distance before entering territory administered by Pakistan, the Treaty contains detailed provisions regulating the use by India of the waters of these rivers. In this respect, the Treaty allows India to make use of the waters of the Western Rivers for what

¹ **PLA-0001**, *Indus Waters Treaty 1960 Between the Government of India, the Government of Pakistan and the International Bank for Reconstruction and Development*, signed at Karachi on 19 September 1960, 419 U.N.T.S. 126. The Treaty entered into force on 12 January 1961, with retroactive effect from 1 April 1960.

² **PLA-0001**, Treaty, Art. I(5) (“The term ‘Eastern Rivers’ means The Sutlej, The Beas and The Ravi taken together”).

³ **PLA-0001**, Treaty, Art. I(6) (“The term ‘Western Rivers’ means The Indus, The Jhelum and The Chenab taken together”).

the Treaty defines as “Domestic Use”,⁴ “Non-Consumptive Use”,⁵ and “Agricultural Use”,⁶ as well as for the generation of hydro-electric power. Subject to detailed regulations set out in annexures to the Treaty, hydro-electric power may be generated both by run-of-river hydro-electric plants (“**Run-of-River Plants**” or “**Run-of-River HEPs**”),⁷ which generate hydro-electric power largely using the natural flow of a river; and by storage works, which are constructed for the purpose of impounding the waters of a stream and may include a power plant (“**Storage Works**”).⁸ Among other things, these regulations address the design and operation of Run-of-River HEPs or Storage Works, including the size and location of outlets, spillways, and intakes, the amount of pondage, the amount of flood and surcharge storage, and other matters, with a particular attention to India’s ability to control the storage of waters on the Western Rivers. Such regulations also require India to notify Pakistan as to its intentions prior to constructing a Run-of-River HEP or Storage Work, thereby allowing Pakistan to react as to whether the proposed design is Treaty-compliant.

5. The allocation to India of the Eastern Rivers entailed substantial changes to the practice of irrigation in Pakistan, as agriculture in large areas of Pakistan had previously been dependent on the flow of those rivers. Accordingly, the Treaty included provisions for the financing and construction of substantial irrigation works within Pakistan to transfer water from the Western Rivers to areas of Pakistan previously irrigated from the Eastern Rivers. As envisaged in the

⁴ **PLA-0001**, Treaty, Art. I(10) (“The term ‘Domestic Use’ means the use of water for : (a) drinking, washing, bathing, recreation, sanitation (including the conveyance and dilution of sewage and of industrial and other wastes), stock and poultry, and other like purposes ; (b) household and municipal purposes (including use for household gardens and public recreational gardens) ; and (c) industrial purposes (including mining, milling and other like purposes) ; but the term does not include Agricultural Use or use for the generation of hydro-electric power”).

⁵ **PLA-0001**, Treaty, Art. I(11) (“The term ‘Non-Consumptive Use’ means any control or use of water for navigation, floating of timber or other property, flood protection or flood control, fishing or fish culture, wild life or other like beneficial purposes, provided that, exclusive of seepage and evaporation of water incidental to the control or use, the water (undiminished in volume within the practical range of measurement) remains in, or is returned to, the same river or its Tributaries ; but the term does not include Agricultural Use or use for the generation of hydro-electric power”).

⁶ **PLA-0001**, Treaty, Art. I(9) (“The term ‘Agricultural Use’ means the use of water for irrigation, except for irrigation of household gardens and public recreational gardens”).

⁷ The Court notes that the Treaty has a specific definition of “Run-of-River Plant”, which is “a hydro-electric plant that develops power without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage”: **PLA-0001**, Treaty, Annexure D, para. 2(g).

⁸ **PLA-0001**, Treaty, Annexure E, para. 2(a) (“‘Storage Work’ means a work constructed for the purpose of impounding the waters of a stream ; but excludes (i) a Small Tank, (ii) the works specified in Paragraphs 3 and 4 of Annexure D, 1 and (iii) a new work constructed in accordance with the provisions of Annexure D”).

Treaty, these works were completed over a ten-year transition period. Now largely consumed by India for agriculture, the flow of the Eastern Rivers into Pakistan has significantly decreased.

6. To monitor and manage its complex provisions, the Treaty establishes the Permanent Indus Commission (“**Commission**”) as an intergovernmental body, composed of a Commissioner for Indus Waters appointed by India (“**India’s Commissioner**” or “**ICIW**”) and a Commissioner for Indus Waters appointed by Pakistan (“**Pakistan’s Commissioner**” or “**PCIW**”) (together, the “**Commissioners**”), who meet regularly to discuss implementation of the Treaty, to undertake tours of inspection, to study any problems that may arise, and otherwise to promote cooperation between the Parties with respect to the Treaty.
7. Finally, the Treaty provides a mechanism for the settlement of all questions that may arise regarding the interpretation or application of the Treaty. Such matters are to be addressed in the first instance by the Commission. If settlement within the Commission is not achieved, the Treaty provides that certain technical questions can be placed before a highly-qualified engineer (called a neutral expert) and that any question can be placed before an arbitral panel consisting of highly-qualified lawyers and engineers (called a court of arbitration).

B. THE PARTIES’ DISPUTES AND THE PRESENT PROCEEDINGS

8. The present proceedings concern certain disputes that have arisen between Pakistan and India concerning the interpretation or application of those portions of the Treaty that permit India to develop hydro-electric power through Run-of-River Plants on the Western Rivers. Specifically, Pakistan contends that the design and operation of Indian Run-of-River HEPs is not in keeping with the provisions of the Treaty and has the effect of enabling India to exercise greater control over the waters of the Western Rivers than was envisaged or permitted by the Treaty. The disputes crystalized in the context of two specific Indian hydro-electric plants (“**HEPs**”)—the Kishenganga Hydro-Electric Plant (“**KHEP**” or “**Kishenganga Plant**”) on the Kishenganga/Neelum River (a tributary of the Jhelum River);⁹ and the Ratle Hydro-Electric Plant (“**RHEP**” or “**Ratle Plant**”) on the Chenab River—but are raised by Pakistan as broader legal

⁹ The Kishenganga Plant was the subject of previous arbitration proceedings between Pakistan and India, leading to a partial award in February 2013 and a final award in December 2013: See **PLA-0003**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Partial Award, 18 February 2013, XXXI UNRIAA 55 (“**Kishenganga Partial Award**”); **PLA-0004**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Final Award, 20 December 2013, XXXI UNRIAA 309 (“**Kishenganga Final Award**”).

disputes over the interpretation and application of the Treaty with implications not limited to those specific Run-of-River HEPs.

9. Pakistan initiated the present arbitration proceedings by way of a Request for Arbitration dated 19 August 2016 pursuant to Article IX and Paragraph 2(b) of Annexure G to the Treaty (“**Request for Arbitration**”).¹⁰ The Court of Arbitration (“**Court**”) was empaneled in October 2022. The delay in the constitution of the Court and the progression of these proceedings stems from: a disagreement between the Parties as to the appropriate form of dispute resolution, with Pakistan seeking to constitute a court of arbitration and India seeking the appointment of a neutral expert; a “pause” initiated by the International Bank for Reconstruction and Development (“**World Bank**”) in the dispute resolution process; and the World Bank’s eventual decision to empower both dispute resolution processes in parallel. These circumstances, and their implications for the present proceedings, were addressed in detail in the Award on the Competence of the Court dated 6 July 2023 (“**Award on Competence**”),¹¹ issued in the course of a preliminary phase of these proceedings (“**Preliminary Phase on Competence**”).¹²
10. Pakistan has participated in these proceedings, but to date India has elected not to do so. India has not appeared before the Court or appointed two arbitrators to the Court as it is permitted to do under the Treaty. Instead, in a letter sent on 21 December 2022 to the World Bank, India asserted that the Court was not competent to decide the questions placed before it for several reasons, which relate in part to the parallel appointment by the World Bank in October 2022 of Mr. Michel Lino as a neutral expert (“**Neutral Expert**”). In the light of that letter, the Court determined on 2 February 2023 to conduct the Preliminary Phase on Competence, consisting of written submissions and an oral hearing in The Hague from 11 to 13 May 2023.¹³ On 6 July 2023, the Court issued its Award on Competence, in which the Court determined and held that it is competent to address all aspects of the disputes placed before it by Pakistan in its Request for Arbitration. In particular, the Court held that it was properly constituted notwithstanding India’s

¹⁰ Pakistan’s Request for Arbitration dated 19 August 2016 (“**Request for Arbitration**”). In July 2023, the Court granted leave to Pakistan to amend its Request for Arbitration. See Procedural Order No. 7. Pakistan thereafter filed its Amended Request for Arbitration dated 28 July 2023.

¹¹ Award on the Competence of the Court dated 6 July 2023 (“**Award on Competence**”).

¹² See Procedural Order No. 1 (Preliminary Phase on Competence) dated 2 February 2023 (“**Procedural Order No. 1**”).

¹³ See Procedural Order No. 1.

request for the appointment of a neutral expert and that the World Bank’s appointment of the Neutral Expert did not alter or limit the competence of the Court.¹⁴

11. Having upheld its competence in the Award on Competence, the Court determined that it would conduct these proceedings in a phased manner and, in the first instance, would address certain questions arising from Pakistan’s Request for Arbitration concerning the overall interpretation and application of the Treaty (“**First Phase on the Merits**”). These general issues of interpretation concern, in particular, Article III of the Treaty, which sets out the Treaty’s provisions regarding the Western Rivers, and Paragraph 8 of Annexure D to the Treaty, which sets out design criteria for any new Run-of-River Plant to be constructed by India on the upper reaches of the Western Rivers (“**Annexure D, Part 3 HEP**”).¹⁵ Issues before the Court in the present phase of the proceedings also include a related question concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty.¹⁶
12. This Award on Issues of General Interpretation of the Indus Waters Treaty addresses the issues identified for decision in this First Phase on the Merits. As it does not address the application of the Treaty to the specifics of the KHEP or RHEP, the Court remains seized of other issues set out in Pakistan’s Request for Arbitration. This First Phase on the Merits will be followed by further procedural steps, to be determined after consultation with the Parties.

C. STRUCTURE OF THIS AWARD

13. The present Award on Issues of General Interpretation of the Indus Waters Treaty addresses certain preliminary matters and then the issues set out for consideration in this First Phase on the Merits.
14. **Part II** recounts the procedural history to this Award. **Part III** sets forth the relevant facts that serve as the foundation for resolving the issues that have been placed before the Court in this phase. **Part IV** addresses three preliminary matters relating to the parallel proceedings before the Neutral Expert and to the relevance of India’s non-appearance in these proceedings to date.

¹⁴ Subsequently, on 23 April 2025, following an attack by armed individuals in India-administered Jammu and Kashmir, India declared that it had placed the Treaty “in abeyance”. On 27 June 2025, the Court rendered its Supplemental Award on the Competence of the Court, finding that, however it may be characterized as a matter of international law, India’s position does not deprive the Court of competence.

¹⁵ For purposes of this Award, an “Annexure D, Part 3 HEP” is a new Run-of-River Plant under Part 3 of Annexure D to the Treaty, excluding Small Plants as defined in Paragraph 18 of Annexure D to the Treaty.

¹⁶ See Procedural Order No. 6.

15. **Part V** outlines the issues for determination in this phase of the proceedings. **Part VI** identifies the law applicable when addressing those issues. **Part VII** addresses the legally binding (or *res judicata*) effects of dispute resolution decisions under the Treaty. **Part VIII** assesses the overall approach to be taken when interpreting Article III and Annexure D, Part 3 of the Treaty, in light of the object and purpose of the Treaty as it relates to the Western Rivers. **Part IX** identifies basic elements of run-of-river HEP design and operation relevant for understanding the Parties' positions with respect to the interpretation of specific provisions of Part 3 of Annexure D to the Treaty.
16. Based on those considerations, this Award interprets the Treaty provisions governing those components of Run-of-River HEP design and operation at issue in this arbitration, starting with features located at the lowest level in the dam and then proceeding with those components found at progressively higher levels in the dam. **Part X** analyzes the meaning of Annexure D, Paragraphs 8(d), 8(e), and 8(f), addressing in turn: outlets located partially or entirely below the Dead Storage Level of the HEP's reservoir; gated spillways located at the crest of the dam structure; and intakes for the turbines located below the Dead Storage Level. **Part XI** then analyzes the meaning of Annexure D, Paragraph 8(c) on the maximum Pondage permitted above the Dead Storage Level. Finally, **Part 0** analyzes the meaning of Annexure D, Paragraph 8(a) on the artificial raising of the water level above the Full Pondage Level (including the use of freeboard). Further, **Part XIII** highlights the critical role of cooperation within the scheme of the Treaty.
17. In light of the above, **Part XIV** contains the Decision of the Court.

* * *

II. PROCEDURAL HISTORY

18. The Award on Competence issued on 6 July 2023 details the procedural history of this arbitration from its commencement up until the date on which the Award on Competence was issued. In this Award, after briefly recalling the initiation of these proceedings and the Preliminary Phase on Competence, the Court will focus on the key procedural developments that occurred subsequently to the issuance of its Award on Competence.

A. INITIATION OF THE ARBITRATION

19. By a Request for Arbitration dated 19 August 2016, Pakistan initiated the present arbitration proceedings against India pursuant to Article IX and Paragraph 2(b) of Annexure G to the Treaty. In its Request for Arbitration, Pakistan identified the following seven “Disputes”:

First, whether India’s design for maximum Pondage of 7.55 million cubic meters of water (**MCM or Mm³**) for the Kishenganga Hydroelectric Plant is based on a method of calculations that contravenes the Treaty, particularly Paragraph 8(c) of Annexure D; and, relatedly, whether India’s design for submerged power intakes at the Kishenganga Hydroelectric Plant contravenes the Treaty, particularly Paragraph 8(f) of Annexure D, because the intakes are not located at the highest level consistent with satisfactory and economical construction and operation of the Plant as a Run-of-River Plant and with customary and accepted practice of design?

Second, whether India’s proposed design for maximum Pondage of 23.86 Mm³ for the Ratle Hydroelectric Plant is based on a method of calculations that contravenes the Treaty, particularly Paragraph 8(c) of Annexure D; and, relatedly, whether India’s proposed design for submerged power intakes at the Ratle Hydroelectric Plant contravenes the Treaty, particularly Paragraph 8(f) of Annexure D, because the intakes are not located at the highest level consistent with satisfactory and economical construction and operation of the Plant as a Run-of-River Plant and with customary and accepted practice of design?

Third, whether India’s design for low-level sediment outlets at the Kishenganga Hydroelectric Plant, in the form of a deep orifice spillway with three large, gated openings below Dead Storage Level and close to the reservoir bottom, contravenes the Treaty, particularly Paragraph 8(d) of Annexure D?

Fourth, whether India’s proposed design for low-level sediment outlets at the Ratle Hydroelectric Plant, in the form of a deep orifice spillway with five large, gated openings far below the Dead Storage Level and deep in the reservoir, contravenes the Treaty, particularly Paragraph 8(d) of Annexure D?

Fifth, whether India’s design for gated spillways for flood control at the Kishenganga Hydroelectric Plant, with the bottom level of the gates in normal closed position located 14.5 meters below Dead Storage Level and close to the reservoir bottom, contravenes the Treaty, particularly Paragraph 8(e) of Annexure D?

Sixth, whether India’s proposed design for gated spillways for flood control at the Ratle [H]ydroelectric Plant, with the bottom level of the gates in normal closed position located approximately 31 meters below Dead Storage Level and deep in the reservoir, contravenes the Treaty, particularly Paragraph 8(e) [of] Annexure D?

Seventh, whether India’s proposed design for 2 meters of freeboard at the Ratle Hydroelectric Plant contravenes the Treaty, particularly Paragraph 8(a) of Annexure D?¹⁷

20. By its Request for Arbitration, Pakistan sought interim measures enjoining India from initiating or continuing the construction and operation of works that are the subject of a “Dispute” raised in its Request for Arbitration, as well as corresponding declaratory and injunctive relief in respect of each of the seven “Disputes”.¹⁸

B. PRELIMINARY PHASE ON THE COMPETENCE OF THE COURT

21. By 20 October 2022, the Court was established pursuant to Article IX(5) and Annexure G to the Treaty, comprising Professor Sean D. Murphy (Chairman), Professor Wouter Buytaert, Professor Jeffrey P. Minear, Judge Awn Shawkat Al-Khasawneh, and Dr. Donald Blackmore. India did not exercise its right to appoint two arbitrators pursuant to Paragraphs 4(a) and 6 of Annexure G to the Treaty. As confirmed in its Award on Competence, the Court is constituted and competent pursuant to the Treaty to conduct business as long as the three umpires and at least two arbitrators are present.¹⁹
22. On 21 December 2022, India sent a letter to the World Bank, enclosing an “explanatory note”, setting out its objections “to the creation and functioning of any court of arbitration” and stating that it “expressly decline[d] to accept or recognize the existence of the so-called Court of Arbitration” (“**India’s Competence Objections**”).²⁰ On the same date, the World Bank transmitted the letter and the explanatory note to the Chairman of the Court.²¹
23. Following India’s letter to the World Bank and the first meeting of the Court convened from 27 to 28 January 2023 pursuant to Paragraph 14 of Annexure G to the Treaty, the Court resolved that it would conduct a preliminary phase of the proceedings to consider, on an expedited basis, the competence of the Court and the operation of Article IX of the Treaty.
24. In accordance with the procedural timetable established by the Court, Pakistan submitted, *inter alia*, its Response on the Competence of the Court and the Operation of Article IX of the Indus Waters Treaty on 24 March 2023, and a hearing on competence took place at the Peace Palace in

¹⁷ Request for Arbitration, para. 9 (emphasis in original).

¹⁸ Request for Arbitration, paras. 90–97.

¹⁹ Award on Competence, para. 129.

²⁰ **P-0001**, Letter from India to the World Bank dated 21 December 2022, enclosing “Explanatory Note” marked as “Enclosure A”, paras. 2, 15 (“**India’s Competence Objections**”).

²¹ Letter from the World Bank to the Chairman of the Court of Arbitration dated 21 December 2022.

The Hague from 11 to 13 May 2023 (“**Hearing on Competence**”). Pakistan appeared at, and participated in, the Hearing on Competence. India did not.

25. On 6 July 2023, the Court issued its Award on Competence, in which the Court rejected India’s objections to the Court’s competence and determined and held that it is competent to address all aspects of the dispute placed before it by Pakistan’s Request for Arbitration.²²
26. On 10 July 2023, Pakistan wrote to the Court, pursuant to Article 29 of the Court’s Supplemental Rules of Procedure (“**Supplemental Rules of Procedure**”), requesting a correction to the Award on Competence to make clear that Judge Bruno Simma’s conclusion that he was no longer in a position to accept appointment to the Court was motivated by the volume of his other pending commitments.
27. On 1 September 2023, Pakistan wrote further to the Court, identifying certain typographical matters that could be corrected and elaborating on its original request for correction dated 10 July 2023.
28. On 18 September 2023, the Court issued its Corrections to the Award on the Competence of the Court of 6 July 2023, by which the Court determined that Pakistan’s request for corrections was justified in part, outlined the corrections made to the Award on Competence, and specified that those form part of the Award on Competence.

C. DECISION ON FURTHER PROCEEDINGS: FIRST PHASE ON THE MERITS

29. On 6 July 2023, the same date as the Award on Competence, the Court issued Procedural Order No. 6 (Decision on Further Proceedings) (“**Procedural Order No. 6**”), by which the Court determined that it would conduct these proceedings in a phased manner, bearing in mind the status of, and developments concerning, the proceedings taking place before the Neutral Expert.²³ The Court proceeded to set forth the issues to be addressed in the First Phase on the Merits:
 35. The next phase of these proceedings will address the following questions (b) through (g) that arise from Pakistan’s Request for Arbitration concerning the overall interpretation or application of Article III of the Treaty and paragraph 8 of Annexure D thereto, as well as a related general question (a) concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty upon the Parties and upon subsequent dispute resolution bodies:
 - (a) To what extent and on what basis are the decisions of past dispute resolution bodies established pursuant to Article IX of the Treaty concerning (i)

²² Award on Competence, para. 135. See also Parts II.K, IV.B, *infra*.

²³ Procedural Order No. 6 (as corrected on 19 May 2025), para. 34.

competence, (ii) matters of fact, (iii) the interpretation of the Treaty, or (iv) the application of the Treaty in particular factual circumstances, binding or otherwise controlling with respect to (a) the Parties, (b) the present proceedings before the Court, (c) the present proceedings before the Neutral Expert, and (d) future proceedings before a court of arbitration or a neutral expert? Insofar as such decisions are binding or otherwise controlling, what—if any—exceptions or limitations may limit their binding/controlling effect?

- (b) To what extent can non-Treaty-based design and operational practices be taken into account for purposes of interpreting the technical requirements set out in Annexure D, paragraph 8?
- (c) With respect to Annexure D, paragraph 8(a), what is to be taken into account for the purposes of designing the freeboard for a plant and what is to be excluded?
- (d) With respect to Annexure D, paragraph 8(c), what is to be taken into account for the purposes of calculating maximum pondage for a plant and what is to be excluded?
- (e) With respect to Annexure D, paragraph 8(d), what is to be taken into account for the purposes of designing low-level sediment outlets for a plant and what is to be excluded?
- (f) With respect to Annexure D, paragraph 8(e), what is to be taken into account for the purposes of designing gated spillways for flood control for a plant and what is to be excluded?
- (g) With respect to Annexure D, paragraph 8(f), what is to be taken into account for the purposes of designing submerged power intakes for a plant and what is to be excluded?

36. The Court may, after seeking the views of the Parties, add to or modify these questions or adjust the procedure envisaged in this Order as may be required by future developments.

...

39. Questions relating to further phases of these proceedings, including the exercise of this Court's competence in respect of the KHEP/RHEP Design and Operation Issues, will be determined as appropriate in due course.

30. In Procedural Order No. 6, the Court further determined to convene a case management conference by videoconference to determine the schedule for the First Phase on the Merits and other matters, and it indicated the deadline by which India could appoint two further Members to the Court in accordance with the provisions of Annexure G in the following terms:

Pursuant to Article 7 of the Supplemental Rules of Procedure, India may appoint two further Members to the Court of Arbitration in accordance with the provisions of Annexure G. However, "[t]hese appointments shall be made no later than 7 days following an (affirmative) decision of the Court on its competence", i.e., by **13 July 2023**.

31. India did not appoint any arbitrators as of that date.

D. PAKISTAN’S AMENDED REQUEST FOR ARBITRATION

32. On 7 July 2023, the Court invited the Parties to attend a case management conference by videoconference on 14 July 2023 (“**Case Management Conference**”). On 10 July 2023, Pakistan wrote to the Court, specifying potential items for inclusion on the agenda for the Case Management Conference. In its letter, Pakistan also requested leave of the Court to submit an application to amend or supplement its Request for Arbitration, and requested directions from the Court for doing so. On 13 July 2023, the Court provided the Parties with an agenda for the Case Management Conference regarding the schedule for the First Phase on the Merits and other matters, including proposed discussion of any application by Pakistan to amend or supplement its Request for Arbitration.
33. On 14 July 2023, the Court held the Case Management Conference by videoconference, in which Pakistan appeared and participated, but India did not. Following the conclusion of the Case Management Conference, the Court provided the Parties with copies of the transcript of the Case Management Conference.
34. On 22 July 2023, having sought the views of the Parties, the Court issued Procedural Order No. 7 (Leave to Apply to Amend the Request for Arbitration; Schedule for Written Submissions in the First Phase on The Merits) (“**Procedural Order No. 7**”), granting Pakistan leave to submit an application to the Court to amend or supplement its Request for Arbitration on or by 28 July 2023, and directing India to indicate on or before 4 August 2023 whether it intended to object to any such application filed by Pakistan. By that Order, the Court also fixed the schedule for written submissions and determined the provisional dates for an oral hearing in the First Phase on the Merits to be held in the Peace Palace, The Hague, the Netherlands from 8 to 12 July 2024, with 15 to 17 July 2024 held in reserve (“**Hearing for the First Phase on the Merits**” or “**Hearing**”).
35. On 28 July 2023, Pakistan submitted an application to amend its Request for Arbitration, together with a redlined version of the proposed amended Request for Arbitration. In its application, Pakistan stated:

Apart from a number of non-substantive, typographical amendments, the amendments proposed by Pakistan fall into four categories:

- (a) amendments to reflect factual developments since 19 August 2016 that are material to the proceedings going forward;
- (b) amendments to reflect procedural developments since the filing of the Request that are material to the proceedings going forward (including the Award on the Competence of the Court; “Award on Competence”);
- (c) amendments to situate the issues addressed in Paragraph 8 of Annexure D in their Treaty context, this being material to the fact of parallel proceedings between the

Court and the Neutral Expert and the questions over which each has, or may have, competence; and

- (d) amendments to address the issue of Pakistan's request for interim measures and it[s] associated request for relief.

The Amended Request tracks the Request precisely, maintaining unchanged the structure and the substantive content of the Request. None of the proposed amendments would enlarge or in any way change the scope of Pakistan's Memorial, whether in the interpretative phase of the proceedings directed by Procedural Order No. 6 or more generally. None of the proposed amendments would or could conceivably cause any prejudice to India. The object and purpose of the proposed amendments is simply to ensure that, as the Court moves forward to the next phase of the proceedings, it does so on the basis of a request for arbitration that reflects material developments since Pakistan instituted proceedings on 19 August 2016.

- 36. On 10 August 2023, having sought the views of the Parties, the Court issued Procedural Order No. 8 (Application to Amend the Request for Arbitration) ("**Procedural Order No. 8**"), granting Pakistan's application to amend its Request for Arbitration and directing Pakistan to file a clean version of its amended Request for Arbitration by 17 August 2023.
- 37. On 17 August 2023, further to paragraph 1.2 of Procedural Order No. 8, Pakistan transmitted a clean version of its Amended Request for Arbitration dated 28 July 2023.

E. PROPOSED SITE VISIT TO THE NEELUM JHELM HYDRO-ELECTRIC PLANT

- 38. By letter dated 10 July 2023 and at the Case Management Conference, Pakistan proposed that the Court consider the desirability of arranging a site visit by the Court in the First Phase on the Merits.
- 39. On 28 July 2023, the Court wrote to the Parties, indicating that a site visit would be of assistance as it sought to apprehend the issues before it in the First Phase on the Merits. The Court observed that it would particularly welcome the opportunity to visit Indian Run-of-River HEPs, including the KHEP and RHEP, and invited India's views by 29 September 2023. The Court also stated that it welcomed the opportunity to visit a Pakistani Run-of-River HEP, the Neelum Jhelum Hydro-Electric Plant ("**NJHEP**"), as Pakistan had proposed at the Case Management Conference, and invited Pakistan's agreement by 29 September 2023.
- 40. On 28 September 2023, Pakistan wrote to the Court indicating its agreement to a site visit to the NJHEP by the Court. No response to the Court's letter dated 28 July 2023 was received from India by 29 September 2023 or subsequently.
- 41. On 23 December 2023, the Court provided the Parties with a draft protocol for a site visit by the Court to the NJHEP, and invited the Parties' comments by 12 January 2024, and any reply comments by 19 January 2024.

42. On 12 January 2024, Pakistan provided its comments on the draft site visit protocol.
43. On 18 January 2024, India wrote to the Registrar of the Court, setting out its objections to the Court's proposed site visit to the NJHEP ("**India's Site Visit Objections**"). By its letter, India contended that the Court lacks competence in this matter and observed that the NJHEP is in territory claimed by India.
44. On 19 January 2024, the Court invited Pakistan to respond to India's Site Visit Objections by no later than 26 January 2024.
45. On 26 January 2024, Pakistan responded to India's objections maintaining that, among other things, the Court had already determined that it was competent in this matter and that the Treaty, and dispute resolution proceedings under it, are without prejudice to the territorial claims of either Party. As such, Pakistan requested that India's objections not be accepted.
46. On 2 February 2024, the Court issued Procedural Order No. 9 (Decision on India's Objections to the Proposed Site Visit) ("**Procedural Order No. 9**"). Having considered the submissions received from Pakistan concerning the desirability of the Court carrying out a site visit, India's Site Visit Objections, and Pakistan's response thereto, the Court determined that conducting a site visit to the NJHEP, solely for the purpose of familiarizing the Court with general aspects of the design and operation of run-of-river HEPs along the Indus system of rivers, would be appropriate. The Court recalled the determinations made in its Award on Competence and rejected India's Site Visit Objections, reiterating its interest in conducting a site visit to Indian Run-of-River HEPs. The Court reaffirmed its hope that India would participate in this proceeding, stating that the Court would greatly benefit from hearing India's views on all issues before the Court.

F. SUBMISSION OF PAKISTAN'S MEMORIAL

47. On 13 December 2023, Pakistan applied to the Court for an extension of time to file its Memorial for the First Phase on the Merits to 22 March 2024. On 21 December 2023, after inviting India to provide any comments in respect of Pakistan's request, the Court granted Pakistan's request for an extension of time.
48. On 22 March 2024, pursuant to paragraph 2.1 of Procedural Order No. 7, Pakistan submitted its Memorial for the First Phase on the Merits, and its accompanying documents ("**Pakistan's Memorial**").

G. SITE VISIT TO THE NJHEP

49. On 3 February 2024, having sought the views of the Parties, the Court issued Procedural Order No. 10 (Site Visit Protocol) (“**Procedural Order No. 10**” or “**Site Visit Protocol**”), deciding the itinerary of the proposed site visit, the size of the delegations, the appointment of a neutral observer (“**Neutral Observer**”), matters concerning the confidentiality of the site visit, and other logistical arrangements. The Site Visit Protocol relevantly provided:

1. Purpose of the Site Visit

- 1.1 Having considered the submissions received from Pakistan concerning the desirability of the Court carrying out a site visit, and India’s objections to the site visit, the Court determined in PO9 that conducting a site visit to the NJHEP, solely for the purpose of familiarizing the Court with general aspects of the design and operation of run-of-river hydro-electric plants along the Indus system of rivers, is appropriate.
- 1.2 The Court recalls that the questions before it in the First Phase on the Merits predominantly concern the overall interpretation and application of provisions of the Treaty that relate to the design of new *Indian* run-of-river hydro-electric plants on the Western Rivers. As such, the Court emphasizes that the purpose of the site visit to the NJHEP, a *Pakistani* run-of-river hydro-electric plant, is not to establish facts specific to any such Indian run-of-river hydro-electric plants.
- 1.3 The Court also emphasizes that the purpose of the site visit is not to receive any information that seeks to apply facts to the Treaty, or otherwise seeks to interpret or apply the Treaty. In particular, the Court recalls that it fixed the schedule for written and oral submissions in the First Phase on the Merits in its Procedural Order No. 7 of 22 July 2023 (and amended such schedule further to the letter on behalf of the Court dated 21 December 2023); the site visit to the NJHEP is not an opportunity for the Parties to make written or oral submissions outside of that schedule.
- 1.4 The Parties shall instruct the members of their delegations as to the purpose of the site visit and as to their conduct during the site visit, as indicated in this Order.

...

2. Site Visit Dates and Itinerary

...

- 2.2 Pakistan shall propose an initial detailed itinerary for the site visit by 8 February 2024. India shall provide any comments on Pakistan’s proposal by 19 February 2024. The Court shall provide guidance on Pakistan’s proposal, taking into account any comments by India, by 23 February 2024. Having regard to such guidance and comments, Pakistan shall propose a revised detailed (hour-by-hour) itinerary by 8 March 2024. The Court shall transmit a final itinerary to the Parties by 22 March 2024.

...

3. Orientations and Presentations during the Site Visit

- 3.1 General statements of welcome, introduction of persons associated with the visit, safety briefings and logistical information shall be given by officials of the government of Pakistan (“**Officials**”). Officials shall not address any aspect of the design and operation of run-of-river hydro-electric plants.

- 3.2 Presentations made to the Court during the site visit (while touring the sites or while stationary) shall be limited to objective, technical presentations given by experts in the design and operation of the NJHEP (“**Site Experts**”). Site Experts shall not be persons who are acting as a Party’s representative or counsel in these proceedings, or who will be giving expert evidence on behalf of a Party in these proceedings. Legal issues or arguments shall not be discussed at any point during the Site Experts’ presentations. Presentations shall be succinct and remain neutral in tone.

...

- 3.6 Any materials intended to be distributed during the presentations (including slides, maps, plans, technical illustrations, and similar documents) shall be provided to the Court and the other Party by 5 April 2024. If given leave by the Court to do so, a Party may make limited supplements or amendments to these materials during the site visit, providing them to both the Court and the other Party.

- 3.7 Without prejudice to paragraph 3.3 above, the Court may put questions to the Parties in writing in advance of the site visit that it wishes addressed during the site visit. Any such questions shall be transmitted to the Parties by 15 April 2024.

...

4. Size of Delegations

...

- 4.2 The Parties shall confirm their intention to participate in the site visit by 14 February 2024, and shall submit a list of the names and positions of the persons on their delegation to the Court by 1 March 2024.

...

5. Observer

- 5.1 The Court shall appoint a neutral Observer for the site visit, after seeking the views of the Parties on the identity of the Observer (the “**Observer**”).
- 5.2 The Observer shall accompany the Court on the site visit and observe all of the Court’s interactions with the Parties and Site Experts. The Observer shall not take photographs or video recordings during the site visit, but may take notes for use in fulfilling the Observer’s function. If the Observer regards any aspect of the site visit as deviating from the terms of this Order, the Observer shall immediately bring the matter to the attention of the Chairman of the Court, who shall decide how best to proceed.
- 5.3 The Observer shall issue a certification as to whether the conduct of the site visit conformed with this Order, within seven days of the conclusion of the site visit. The Observer’s certification shall be public and made available on the website of the Secretariat.
- 5.4 The Observer (who may be accompanied by one or more support staff, if necessary) shall be reimbursed for any expenses incurred in the performance of their mandate. The Observer (and any staff accompanying the Observer) may receive remuneration in accordance with their terms of reference. Such expenses and any remuneration shall be paid by the Treasurer from the case deposit, following receipt of invoices indicating the expenses and time spent.
- 5.5 There shall be no interactions between the Parties and the Observer (other than the exchange of cordial greetings).

6. Record of the Site Visit

...

6.5 The Secretariat shall make a copy of the video recording, draft transcript, and still photographs available to the Parties following the site visit.

6.6 The Parties shall submit any proposed corrections of the draft transcript to the Court within 21 days of receipt of the draft transcript, in the format prescribed by the Secretariat. The Court shall determine whether to adopt the proposed corrections, including in the event of a disagreement between the Parties. The Court shall then issue a final transcript to the Parties.

...

7. Logistical Arrangements

...

7.3 Pakistan shall ensure that the necessary visas are issued to those attending the site visit, including the Parties', the Court's, and the Observer's delegations. Pakistan shall provide information on the modalities of visa issuance by 1 March 2024.²⁴

50. On 8 February 2024, Pakistan provided the Court with an initial detailed itinerary for the site visit pursuant to paragraph 2.2 of the Site Visit Protocol.
51. On 9 February 2024, the Court informed the Parties that it proposed to appoint Mr. Stephen Pomper to fulfill the role of the Neutral Observer for the envisaged site visit, proposed his Terms of Reference, and invited the Parties to provide any comments they wished to make by 16 February 2024.
52. On 14 February 2024, Pakistan confirmed its intention to participate in the proposed site visit, and accepted both the proposed Terms of Reference of the Neutral Observer and the appointment of Mr. Pomper to fulfill this role, without further comment. No response was received from India.
53. On 23 February 2024, the Court wrote to the Parties, noting with regret that it had not received from India any indication of an intent to participate in the site visit pursuant to paragraph 4.2 of the Site Visit Protocol. Accordingly, the Court stated that it would proceed with preparations for the site visit with the expectation that India would not be participating, although the Court noted that it remained open for either Party to seek a variation of the procedure for the site visit pursuant to paragraph 4.2 of the Site Visit Protocol. By a letter of the same date, the Court provided the Parties with its comments on the initial detailed itinerary provided by Pakistan.
54. On 1 March 2024, Pakistan wrote to the Court, providing information on the modalities for issuance of visas and submitted a list of the names and positions of the persons on its delegation,

²⁴ Site Visit Protocol, paras. 1.1–1.4, 2.2, 3.1–3.2, 3.6, 3.7, 5.1–5.5, 4.2, 6.5, 6.6, 7.3 (emphasis in original).

in accordance with paragraphs 7.3 and 4.2 of the Site Visit Protocol. By letter of the same date, the Court provided a list of the names and positions of the persons on the Court's and the Observer's delegations.

55. On 8 March 2024, Pakistan provided the Court with a revised detailed itinerary for the site visit pursuant to paragraph 2.2 of the Site Visit Protocol.
56. On 22 March 2024, Pakistan provided the Court with a list of the names and positions of the Site Experts and the general topics of their presentations.
57. On 22 March 2024, the Court transmitted to the Parties a finalized detailed itinerary for the site visit pursuant to paragraph 2.2 of the Site Visit Protocol. By letter of the same date, the Court informed the Parties that Judge Awn Shawkat Al-Khasawneh was unable to participate in the site visit and indicated that, in these circumstances, and subject to the views of the Parties, the Court was inclined to proceed with the site visit as scheduled, although without the participation of Judge Al-Khasawneh. On 26 March 2024, Pakistan confirmed its agreement to proceeding with the scheduled site visit. (Upon completion of the site visit, Judge Al-Khasawneh received and reviewed the video recordings and written transcript of the site visit.)
58. On 3 April 2024, Pakistan wrote to the Court, applying to vary the finalized detailed itinerary to reflect certain changes with respect to the Site Experts. On 11 April 2024, after inviting India to provide any objections to the proposed changes, the Court approved Pakistan's application to amend the finalized site visit itinerary.
59. On 5 April 2024, Pakistan transmitted to the Court copies of the site visit presentations pursuant to paragraph 3.6 of the Site Visit Protocol.
60. On 12 April 2024, the Terms of Reference for the Neutral Observer were completed. On 15 April 2024, further to paragraph 3.7 of the Site Visit Protocol, the Court issued its Technical Questions for the Parties in Advance of the Site Visit ("**Site Visit Technical Questions**"), which the Court invited the Parties to address during the site visit.
61. On 17 April 2024, Pakistan sent a letter to the Court, by which it sought the Court's consent to revise the members of its delegation for the site visit, notified the Court of certain changes in Pakistan's representation, and sought leave to supplement the site visit presentational materials transmitted on 5 April 2024 in order to include responses to the Court's Site Visit Technical Questions. On 19 April 2024, Pakistan sought leave to submit certain portions of its site visit

presentations in PowerPoint format to enable video elements contained therein to be played. On 19 April 2024, the Court granted Pakistan's applications.

62. On 22 April 2024, Pakistan sent a letter to the Court, transmitting the supplemental site visit presentational materials, in addition to an errata sheet identifying typographical and non-material corrections made by the Site Experts to the presentational materials.
63. From 23 to 29 April 2024, a site visit to the NJHEP located in the Jammu and Kashmir region administered by Pakistan was conducted pursuant to the Site Visit Protocol ("**Site Visit**"). The Site Visit was attended by a delegation from the Court,²⁵ a delegation from Pakistan,²⁶ and the Neutral Observer. India did not participate in the Site Visit.
64. In accordance with the Site Visit Protocol, the purpose of the Site Visit was to familiarize the Court with general aspects of the design and operation of run-of-river HEPs along the Indus system of rivers; the purpose was not to receive any information that sought to apply the Treaty to particular facts, or that otherwise sought to interpret the Treaty. The Court's delegation arrived in Islamabad on 23 April 2024 and, together with a delegation from Pakistan and the Neutral Observer, traveled to Muzaffarabad on 24 April 2024. From 24 to 27 April 2024, the Court received technical presentations given by experts in the design and operation of the NJHEP, and inspected the NJHEP dam and reservoir as well as the NJHEP powerhouse. The Court's delegation then returned to Islamabad on 28 April 2024 and departed from Pakistan on 29 April 2024.
65. On 29 April 2024, following the Site Visit, the Neutral Observer issued a certification that the conduct of the Site Visit conformed with the Site Visit Protocol, pursuant to paragraph 5.3 of the Site Visit Protocol.

²⁵ The delegation of the Court included: the following members of the Court, the Chairman, Professor Sean D. Murphy, Professor Wouter Buytaert, Professor Jeffrey P. Minear, and Dr. Donald Blackmore; three members of the Secretariat, Mr. Garth Schofield, Mr. Bryce Williams, and Mr. Sebastian King; and the videographer, Mr. Daan Nieuwland. Judge Awn Shawkat Al-Khasawneh was unable to participate in the site visit, which was communicated to the Parties and the subject of agreement prior to the site visit. See para. 57, *supra*.

²⁶ Pakistan was represented during the site visit by Mr. Raja Naeem Akbar, Deputy Agent and Federal Secretary of the Ministry of Law and Justice; Mr. Syed Ali Murtaza, Federal Secretary of the Ministry of Water Resources; Mr. Syed Muhammad Mehar Ali Shah, Pakistan Commissioner for Indus Waters; Mr. Ilyas Nizami, Director-General South Asia, Ministry of Foreign Affairs; Mr. Someir Siraj, Head of International Disputes, Office of the Attorney General for Pakistan; Ms. Zainab Malik, Office of the Secretary of Law and Justice; Sir Daniel Bethlehem KC, Professor Philippa Webb, and Dr. Cameron Miles, as counsel; and Dr. Gregory L. Morris and Mr. Peter J. Rae as technical advisers.

66. On 7 May 2024, the Court transmitted a copy of the Neutral Observer's certification to the Parties, in addition to a draft press release concerning the Site Visit. On 8 May 2024, having received Pakistan's comments on the draft press release but no comments from India, the Permanent Court of Arbitration ("PCA") published a press release concerning the Site Visit, including photographs of the Court taken during the Site Visit, as well as a copy of the Neutral Observer's certification.
67. On 15 May 2024, Pakistan provided the Court with a copy of the finalized site visit itinerary, as implemented, in addition to the finalized site visit presentational materials.
68. On 5 July 2024, pursuant to paragraphs 6.5 and 6.6 of the Site Visit Protocol, the PCA transmitted to the Parties and the Members of the Court copies of the certified transcripts, in addition to the video and photographic recordings of the Site Visit.

H. PRE-HEARING PROCEDURES

69. On 15 May 2024, the Court indicated to the Parties that the Court would proceed with preparations for an oral hearing on the First Phase on the Merits. The Court therefore invited the Parties to confirm their appearance at and participation in the Hearing, in addition to their views on the duration and the schedule for the Hearing.
70. On 23 May 2024, Pakistan confirmed its intention to appear at and participate in the Hearing and provided its views as to the duration and schedule for the Hearing. India did not respond by the deadline set by the Court or subsequently.
71. On 27 May 2024, the Court issued Procedural Order No. 11 (Production of Papers and Other Evidence) ("**Procedural Order No. 11**"). By that Order, the Court directed Pakistan to produce, by 1 July 2024, papers and other evidence falling within certain specified categories ("**Required Documents**") in order to ensure that the Court had available to it a comprehensive record of the views and positions of the Parties on the matters at issue before the Court in the First Phase on the Merits.
72. On 6 June 2024, Pakistan wrote to the Court requesting, *inter alia*, to vary the document production schedule in Procedural Order No. 11, such that a final tranche of documents would be produced on or before 30 September 2024 under the cover of a post-hearing submission. By the same letter, Pakistan also applied for leave to call its own witness, Pakistan Commissioner for Indus Waters Mr. Syed Muhammad Mehar Ali Shah, to appear at the Hearing, pursuant to Article 24(4) of the Court's Supplemental Rules of Procedure, and requested that Mr. Shah be permitted to make an opening presentation at the Hearing as part of his evidence-in-chief.

73. On 11 June 2024, the Court granted Pakistan's application to call Mr. Shah to appear at the Hearing and its request to vary the document production schedule. The Court indicated that it would consider the necessity of any post-hearing submissions at the conclusion of, or following, the Hearing.
74. On 14 June 2024, Pakistan sought further guidance regarding the organization of the hearing, including the testimony of Mr. Syed Muhammad Mehar Ali Shah, and applied to the Court for leave to amend the proposed schedule for the Hearing.
75. On 20 June 2024, the Court granted Pakistan's request to amend the proposed schedule for the Hearing.
76. On 20 June 2024, the Court issued to the Parties its Questions to be Addressed at the Hearing for the First Phase on the Merits ("**Hearing Questions**"), which the Court invited Pakistan to address in its oral submissions at the Hearing.
77. On 29 June 2024, having sought the views of the Parties, the Court issued Procedural Order No. 12 (Organization of the Hearing for the First Phase on the Merits) ("**Procedural Order No. 12**"), whereby the Court ordered, *inter alia*, that no new documentary evidence may be presented at the Hearing except with leave of the Court, further to a reasoned application (or applications) identifying the specific materials Pakistan wished to admit (but without annexing the documents to the application).
78. On 1 July 2024, Pakistan submitted a first tranche of the Required Documents pursuant to Procedural Order No. 11, along with two indexes of the records produced. By letter of the same date, Pakistan notified the Court of the list of all participants attending the Hearing pursuant to paragraph 1.2 of Procedural Order No. 12 and requested adjustments to the scheme of submissions outlined in the annex to Procedural Order No. 12.
79. On 5 July 2024, Pakistan applied, pursuant to paragraph 3.4 of Procedural Order No. 12, for leave of the Court to admit certain new factual exhibits into the record of the proceedings to be relied upon at the Hearing.
80. On 6 July 2024, the Court granted Pakistan's application to admit certain new exhibits into the record and indicated that the Court would establish a post-hearing schedule providing India with an opportunity to comment in writing on the additional exhibits submitted by Pakistan.

I. HEARING FOR THE FIRST PHASE ON THE MERITS

81. The Hearing for the First Phase on the Merits took place at the Peace Palace in The Hague from 8 to 16 July 2024, in accordance with paragraph 1.1 of Procedural Order No. 12. The following persons were present:

The Court of Arbitration

Professor Sean D. Murphy (Chairman)
Professor Wouter Buytaert
Professor Jeffrey P. Minear
Judge Awn Shawkat Al-Khasawneh
Dr. Donald Blackmore

Pakistan

Mr. Raja Naeem Akbar, Deputy Agent
Mr. Syed Ali Murtaza, Federal Secretary of the Ministry of Water Resources
Mr. Syed Muhammad Mehar Ali Shah, Pakistan Commissioner for Indus Waters
Mr. Asad Khan Burki, Legal Adviser of the Ministry of Foreign Affairs
Mr. Zohair Waheed, Consultant, Office of the Attorney General for Pakistan
H.E. Mr. Suljuk Mustansar Tarar, Ambassador of Pakistan to The Netherlands
Ms. Fatima Hamdia Tanveer, First Secretary-I, Embassy of Pakistan to The Netherlands
Mr. Jamal Nasir, First Secretary-II, Embassy of Pakistan to The Netherlands
Sir Daniel Bethlehem KC, Counsel for Pakistan
Professor Philippa Webb, Counsel for Pakistan
Dr. Cameron Miles, Counsel for Pakistan
Professor Attila Tanzi, Counsel for Pakistan
Mr. Stephen Fietta KC, Counsel for Pakistan
Ms. Laura Rees-Evans, Counsel for Pakistan
Mr. Abdullah Tariq, Counsel for Pakistan
Ms. Megan Rippin, Counsel for Pakistan
Dr. Gregory L. Morris, Technical Adviser and Advocate
Mr. Peter J. Rae, Technical Adviser and Advocate

India

No Agent or representatives present

The Secretariat

Mr. Garth Schofield, Registrar and Deputy Secretary-General of the PCA
Mr. Bryce Williams, Treasurer and Legal Counsel
Mr. Sebastian King, Assistant Legal Counsel

Court Reporter

Mr. Trevor McGowan

82. The following persons presented oral arguments before the Court on behalf of Pakistan:

Mr. Raja Naeem Akbar, Deputy Agent
Mr. Syed Ali Murtaza, Federal Secretary of the Ministry of Water Resources
Sir Daniel Bethlehem KC, Counsel
Professor Philippa Webb, Counsel
Dr. Cameron Miles, Counsel
Professor Attila Tanzi, Counsel
Mr. Stephen Fietta KC, Counsel
Ms. Laura Rees-Evans, Counsel
Dr. Gregory L. Morris, Technical Adviser and Advocate
Mr. Peter J. Rae, Technical Adviser and Advocate

83. Pursuant to Article 24(6) of the Supplemental Rules of Procedure, and Pakistan's application dated 6 June 2024, Pakistan presented the following witness for examination:

Mr. Syed Muhammad Mehar Ali Shah, Pakistan Commissioner for Indus Waters

84. India did not appear at, or participate in, the Hearing.
85. During the Hearing, Pakistan applied, both orally and in writing, for leave of the Court to admit further factual exhibits pursuant to paragraph 3.4 of Procedural Order No. 12, which the Court granted.
86. On 13 July 2024, the Court issued its Further Questions to be Addressed at the Hearing for the First Phase on the Merits ("**Further Hearing Questions**"), which the Court invited Pakistan to address in its oral submissions scheduled for 15 to 16 July 2024.
87. On 16 July 2024, Mr. Syed Ali Murtaza, Federal Secretary of the Ministry of Water Resources, formally presented Pakistan's Final Submissions (First Phase on the Merits) ("**Pakistan's Final Submissions**").
88. Following the Hearing, the Court distributed to the Parties the verbatim transcript for the Hearing, signed by the Chairman of the Court, which constituted minutes for the purpose of Paragraph 19 of Annexure G to the Treaty.

J. POST-HEARING PROCEDURES

89. On 19 July 2024, Pakistan, further to observations made by the Chairman of the Court at the Hearing, proposed that certain issues relating to the calculation of Pondage that arose in the course of the Hearing could be addressed by way of post-hearing submissions, together with any other issues that would be of assistance to the Court.
90. On 25 July 2024, the Court indicated the scope of issues to be addressed by way of post-hearing submissions, and invited Pakistan to confirm, by 1 August 2024, its ability to address these issues by its proposed deadline. The Court invited Pakistan to provide, by the same date, any comments on the publication of materials relating to the Site Visit and relating to the Hearing.
91. On 1 August 2024, Pakistan responded to the enquiries in the Court's letter dated 25 July 2024 and raised various issues concerning its plans for document production.
92. On 13 August 2024, the Court issued Procedural Order No. 13 (Post-Hearing Procedure for the First Phase on the Merits) ("**Procedural Order No. 13**"), in which the Court: invited India to

provide its comments on the additional factual exhibits submitted by Pakistan in advance of, and during, the Hearing; provided further directions regarding the production of the Required Documents pursuant to Procedural Order No. 11; and ordered the publication of certain documents to the website of the Registry. The Court further ordered Pakistan to file a post-hearing submission as follows:

- 3.1 On or before **1 November 2024**, Pakistan shall file a post-hearing submission addressing the following issues:
 - 3.1.1 Questions relating to the calculation of Pondage, including the methodology for the calculation of Pondage advanced by Pakistan in the Baglihar neutral expert proceedings, the reason for the modification of that approach, and associated questions raised by Members of the Court during the Hearing;
 - 3.1.2 Pakistan's current method of calculating Pondage as modified to accommodate a seven-day period;
 - 3.1.3 The relevance of Annexure E when considering: (i) the object and purpose of the Indus Waters Treaty; (ii) the context when interpreting Article III and Annexure D, including the calculation of Pondage in Annexure E; and (iii) Pakistan's concern as to the "weaponization" of the Western Rivers through India's ability to store and release water;
 - 3.1.4 What role, if any, should the criterion of the prevention of harm/adverse effects play where there are existing Pakistani Agricultural Uses or hydro-electric uses of the Western Rivers (other than in relation to uses on the Tributaries of the Jhelum, for which the criterion is expressly applied per para. 15(iii) of Annexure D and para. 10 of Annexure E to the Treaty); and
 - 3.1.5 Whether the concept of abuse of rights in international law is of any relevance to the principle of good faith, as raised by Pakistan in its Memorial (e.g., paras. 8.33–8.36) and during the Hearing, when interpreting or applying the Treaty.
- 3.2 Pakistan may also address in its post-hearing submission, by way of brief observations, supplementary points of smaller detail that arose during the course of the Hearing.
- 3.3 By no later than 15 November 2024, India is invited to indicate to the Court whether it wishes to provide any comments in relation to Pakistan's post-hearing submission. In the event that India so indicates, the Court shall set a deadline for such comments.²⁷

93. On 30 August 2024, Pakistan submitted to the Court additional documents to supplement the records already filed pursuant to paragraphs 1.2 and 1.3 of Procedural Order No. 11.
94. On 30 September 2024, Pakistan produced to the Court the Required Documents, identified at paragraphs 1.4, 1.5 and 1.6 of Procedural Order No. 11, that had not already been admitted to the record of these proceedings. Pakistan further submitted, pursuant to paragraph 2.6 of Procedural Order No. 13, an explanatory memorandum addressing the document production exercise that it

²⁷ Procedural Order No. 13, paras. 3.1–3.3.

had undertaken, including the scope of the searches carried out and those categories of documents that had been excluded from production to the Court.

95. On 14 October 2024, Pakistan requested leave of the Court, pursuant to paragraph 2.7 of Procedural Order No. 13, to submit a short supplementary memorandum regarding the content of the Required Documents it had produced.
96. On 21 October 2024, the Court granted Pakistan leave to submit, by 8 November 2024, a supplementary memorandum regarding the content of the Required Documents, in accordance with Article 19 of the Court's Supplemental Rules of Procedure. The Court further invited India to provide any comments it wished to make in respect of Pakistan's supplementary memorandum by 22 November 2024.
97. On 1 November 2024, Pakistan submitted its Post-Hearing Submission pursuant to paragraphs 3.1 and 3.2 of Procedural Order No. 13 ("**Pakistan's Post-Hearing Submission**"), and indicated to the Court that it considered it would be appropriate for Pakistan's Post-Hearing Submission to be published on the website of the PCA.
98. On 8 November 2024, Pakistan submitted its Supplementary Memorandum and accompanying Appendix ("**Pakistan's Supplementary Memorandum**") and indicated to the Court that it considered it appropriate for Pakistan's Supplementary Memorandum to be published on the website of the PCA.
99. On 6 December 2024, the Court issued Procedural Order No. 14 (Further Directions Regarding the Production of Papers and other Evidence; Further Comments by the Parties on Particular Matters) ("**Procedural Order No. 14**"), in which the Court identified certain papers and other evidence that had been submitted by Pakistan, and requested Pakistan to review and, where necessary, submit any other Required Documents missing from the record, and resubmit any other Required Documents that were incomplete. The Court further invited the Parties to comment on, *inter alia*, the historic practice of the Parties when calculating maximum Pondage, as well as the relationship of Pondage to sedimentation and the possible "weaponization" of the Western Rivers.
100. On 18 December 2024, Pakistan sought further guidance regarding the papers and other evidence to be produced pursuant to Procedural Order No. 14 and applied for a variation of the schedule for the production of documents and the comments of the Parties. On 19 December 2024, the Court granted Pakistan's request for a variation of Procedural Order No. 14.

101. On 20 December 2024, Pakistan resubmitted and produced the papers and other evidence identified in paragraph 1.2 and Annexure A of Procedural Order No. 14.
102. On 25 January 2025, Pakistan submitted its Preliminary Comments on Particular Matters Addressed in Procedural Order No. 14 (“**Pakistan’s Preliminary Comments**”).
103. On 10 February 2025, Pakistan resubmitted and produced papers and other evidence further to Procedural Order No. 11 and the further directions of the Court in its letter dated 19 December 2024. Pakistan also requested leave to introduce into the record of these proceedings the Neutral Expert’s Decision on Certain Issues Pertaining to the Competence of the Neutral Expert, under Paragraph 7 of Annexure F of the Treaty dated 7 January 2025, which the Court granted on 28 February 2025.
104. On 25 February 2025, Pakistan submitted its Final Comments on Particular Matters Addressed in Procedural Order No. 14 (“**Pakistan’s Final Comments**”).

K. FURTHER CONSIDERATION OF COMPETENCE

105. On 23 April 2025, following an attack by armed individuals in India-administered Jammu and Kashmir, the Foreign Secretary of India issued a statement about a decision of the Cabinet Committee on Security, indicating, among other things, that “[t]he Indus Waters Treaty of 1960 will be held in abeyance with immediate effect, until Pakistan credibly and irrevocably abjures its support for cross-border terrorism”.²⁸ On 24 April 2025, India’s Secretary of the Ministry of Jal Shakti sent a letter to Pakistan’s Secretary of the Ministry of Water Resources communicating a decision that the Treaty “will be held in abeyance with immediate effect”.²⁹ On 8 May 2025, Pakistan’s Federal Secretary of the Ministry of Water Resources sent a letter to India’s Minister for the Ministry of Jal Shakti rejecting the “accusation of cross-border terrorism both in context and in its attempted linkage to the operation of a water sharing treaty” and stating that India’s policy of holding the Treaty in “abeyance” has no effect.³⁰

²⁸ **P-0697**, Compendium of Recent Statements, Ministry of External Affairs, Government of India, “Statement by Foreign Secretary on the decision of the Cabinet Committee on Security (CCS)” dated 23 April 2025, p. 6.

²⁹ **P-0700**, Note Verbale No. 80/01/2025, enclosing Letter No. Y-18012/1/2024-Indus from Secretary, Indian Ministry of Jal Shakti to Secretary, Pakistan Ministry of Water Resources dated 24 April 2025.

³⁰ **P-0706**, Note Verbale No. Ind(II)-11/01/2025, enclosing Letter No. 4(38)/2015-Water from Secretary, Pakistan Ministry of Water Resources to Secretary, Indian Ministry of Jal Shakti dated 8 May 2025.

106. On 16 May 2025, the Court issued Procedural Order No. 15 (Recent Developments that May Bear on Matters before the Court) (“**Procedural Order No. 15**”), inviting the Parties to address any effect of these recent developments on matters before the Court or the Neutral Expert, including their respective competence.
107. On 11 June 2025, Pakistan filed its Submissions on Recent Developments Pursuant to Procedural Order No. 15 (“**Pakistan’s Competence Submissions**”). On 12 June 2025, Pakistan applied to the Court for leave to submit a corrected version of its submissions, which the Court granted on 14 June 2025. No submissions were filed by India in response to Procedural Order No. 15 or in reply to Pakistan’s Submissions.
108. On 27 June 2025, the Court rendered its Supplemental Award on the Competence of the Court (“**Supplemental Award on Competence**”), by which the Court determined:

For the above reasons, the Court of Arbitration unanimously:

- A. FINDS that India’s position that it is holding the Treaty in “abeyance”, however that position may be characterized as a matter of international law, does not deprive the Court of Arbitration of competence.
- B. FINDS that the Court of Arbitration has a continuing responsibility to advance its proceedings in a timely, efficient, and fair manner without regard to India’s position on “abeyance”, and that a failure to do so would be inconsistent with its obligations under the Treaty.
- C. DETERMINES that the above findings apply, *mutatis mutandis*, with respect to any competence that the Neutral Expert otherwise possesses.
- D. RESERVES for further consideration and directions all issues not decided in this Award.³¹

* * *

³¹ Supplemental Award on the Competence of the Court dated 27 June 2025 (“**Supplemental Award on Competence**”).

III. RELEVANT FACTUAL BACKGROUND

109. This Part sets forth the factual background relevant to the Court’s determinations in this Award. This factual background is based on the documentary record before the Court in these proceedings and, unless otherwise stated, is understood by the Court to be uncontroversial and largely not in dispute as between the Parties.
110. This Part begins with the geography and other relevant facts of the Indus Basin that are generally useful for understanding why the Parties adopted the Treaty.³² Next, it addresses the negotiations that led to the adoption of the Treaty in 1960, followed by a description of the basic structure of the Treaty and its salient provisions. Thereafter, this Part turns to the implementation of the Treaty from 1960 up through the first third-party dispute resolution proceedings under the Treaty. Those proceedings are the *Baglihar Hydro-electric Plant (Pakistan v. India)* Neutral Expert proceedings that commenced in 2005 (“**Baglihar Neutral Expert Proceedings**”) and the *Indus Waters Kishenganga Arbitration (Pakistan v. India)* PCA Case No. 2011-01 that commenced in 2010 (“**Kishenganga Arbitration**”). Finally, this Part recounts the origins of the disputes currently before the Court.

A. THE INDUS BASIN

1. Geography and Hydrology of the Indus Basin

111. As noted in Part I.A, the Indus system of rivers and their tributaries rise principally in the Himalayan, Hindu Kush, and Karakoram Mountains, and flow through Afghanistan, China, India, and Pakistan. Relevant to the Treaty are six main rivers and their tributaries: the Indus, the Jhelum, and the Chenab (the Western Rivers); and the Sutlej, the Beas, and the Ravi (the Eastern Rivers).³³ These rivers, together with the Kabul River flowing from Afghanistan, merge into the Indus River,

³² The terminology and maps used in this Award to denote geographic locations are intended to be neutral and should not be construed as the adoption by the Court of any position with regard to any matters of territorial sovereignty. See Award on Competence, Pt. III; see also **PLA-0003**, *Kishenganga* Partial Award, paras. 126–139.

³³ Award on Competence, paras. 54–60.

which ultimately drains into the Arabian Sea, southeast of the port of Karachi in Pakistan.³⁴ The Indus system of rivers and its catchment area are depicted in the map on page 29 below.³⁵

112. The World Bank estimates that the total surface area of the Indus Basin is approximately 1.12 million square kilometers, distributed between Pakistan and Pakistan-administered territory (approximately 520,000 square kilometers; 47 percent) and India and India-administered territory (approximately 440,000 square kilometers; 39 percent), with the remainder in Afghanistan and China.³⁶ In 2005, India identified data estimating that 69 per cent of the entire flow at the rim stations of the Indus system of rivers is from catchments in India, while 19 per cent is from catchments in Pakistan, and 12 per cent from catchments in other countries.³⁷ The principal sources of water flows in the Indus Basin rivers are snow and glacier melt at higher elevations, together with seasonal rainfall (with monsoon rains typically occurring in the summer through September).³⁸ Water flows in the Indus Basin are therefore subject to substantial seasonal variations, with high flows from May to August and a longer, low flow season from October to March.³⁹

³⁴ **PLA-0003**, *Kishenganga* Partial Award, para. 128.

³⁵ The maps in this Award have been prepared using data from the Natural Earth and HydroSHEDS databases and are intended for illustrative purposes only. The Court notes that some differences with respect to the outer boundaries of the watershed of the Indus system of rivers are apparent as among the map prepared by Pakistan in its Memorial in the *Kishenganga* Proceedings, the maps prepared by Pakistan in its submissions in these proceedings, and the depiction of the basin in the Government of India's *River Basin Atlas of India*, which was introduced by Pakistan in these proceedings. See **P-0548 (KR-0002)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Pakistan's Memorial; **P-0251**, Ministry of Water Resources, Government of India, "River Basin Atlas of India" (2012), p. B.12; see also Pakistan's Memorial, Map 3.1. These differences, which relate principally to the treatment of areas of the Thar Desert and of the left bank of the lower reaches of the Indus River, are immaterial to the application of the Treaty and the matters at issue before the Court. Accordingly, the Court makes no findings in this respect.

³⁶ **P-0248**, L. Lytton et al., "Groundwater in Pakistan's Indus Basin: Present and Future Prospects", Water Global Practice, World Bank Group, Washington DC. It is noted that Pakistan has calculated that approximately 59% of the surface area of the Indus Basin is located in Pakistan-administered territory (including Pakistan-administered Kashmir), while approximately 21% of the surface area falls within India-administered territory (including India-administered Kashmir). Pakistan's Memorial, para. 3.12.

³⁷ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 25.

³⁸ **P-0263**, M. J. M. Cheema and M. U. Qamar, "Transboundary Indus River Basin: Potential Threats to Its Integrity" in S. I. Khan and T. E. Adams III (eds.) *Indus River Basin: Water Security and Sustainability* (Elsevier 2019), p. 184; **P-0265**, A. Giese et al., "Indus River Basin Glacier Melt at the Subbasin Scale" (2022) (10) *Frontiers in Earth Science* dated 27 June 2022; **P-0672**, B. Bookhagen and D. W. Burbank, "Toward a complete Himalayan hydrological budget: Spatiotemporal distribution of snowmelt and rainfall and their impact on river discharge" (2010) *Journal of Geophysical Research Earth Surface*, 115(F3), p. 22.

³⁹ **P-0683**, H. N. Hashmi, et al., "Optimization of Mangla Reservoir Capacity by Raising Dam Height" 33rd IAHR Congress Water Engineering for a Sustainable Environment (2009), pp. 6183–6184.



this page intentionally blank

113. The rivers of the Indus Basin are characterized by a high degree of sediment transported downstream from the Himalayan mountains, which has significant implications for hydro-electric power generation. The high sediment yield in the rivers of the Himalayas is primarily due to climatic, tectonic, and geological factors, including steep topography, deep narrow valleys, high levels of seismicity, erodible soils, glacial melt, and monsoon-driven rainfall.⁴⁰ Indeed, the Himalayan mountains have very high erosion rates resulting from natural processes (erosion due in part to glaciers, landslides, and other events driven by episodic seismic activity) and anthropogenic factors (such as deforestation, cultivation, and roadbuilding).⁴¹ These conditions result in high levels of eroded sediment being mobilized and transported downstream, primarily in high flow and flood periods caused by snowmelt, glaciers, and monsoon rains.⁴² Conversely, during the dry months, where river flows are low, the sediment yield within the rivers of the Indus Basin is lower, with more than 80 per cent of annual sediment inflow occurring during the high flow season.⁴³
114. Sediment in Himalayan rivers includes both suspended sediment transported within the flow (“suspended load”) and, to a lesser extent, sediment traveling along the bed of the river (“bed load”), depending on the size of the sediment particles and the depth and velocity of flow.⁴⁴ In many Himalayan rivers, these sediments mostly consist of silts and fine sands that can be highly

⁴⁰ **P-0690**, A. Lade, et al., “Feasibility of Sluicing Operations for Run-Of-River Schemes in Himalayan Region” (2015) IOSR Journal of Mechanical and Civil Engineering 13(1), p. 2; **P-0663**, S. V. N. Rao, et al., “A Study of Sedimentation in Chenab Basin in Western Himalayas” (1997) Nordic Hydrology 28(3) 201, pp. 201–202; **P-0548 (KR-0093)**, Sediment Management for Sustainability of Storage Projects in Himalayas - A case study of the Ulekhan Reservoir in Nepal-Durga Prasad Sangroula, International Conference on Small Hydropower - Hydro Sri Lanka, 22–24 October 2007. See also Site Visit Presentation 6 (Run-of-River Hydro-Electric Plant Basics (II)), slides 2–36.

⁴¹ **P-0548 (KR-0093)**, Sediment Management for Sustainability of Storage Projects in Himalayas - A case study of the Ulekhan Reservoir in Nepal-Durga Prasad Sangroula, International Conference on Small Hydropower - Hydro Sri Lanka, 22–24 October 2007.

⁴² See, e.g., **P-0663**, S. V. N. Rao, et al., “A Study of Sedimentation in Chenab Basin in Western Himalayas” (1997) Nordic Hydrology 28(3) 201, pp. 205–206; **PLA-0003**, *Kishenganga* Partial Award, para. 496; **P-0649.0669**, Letter No. 3(26)/72-I.T./450 dated 11 August 1989.

⁴³ **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), p. 30.

⁴⁴ **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), p. 30; **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 313.

angular and abrasive due to being freshly eroded with minimal wearing and rounding.⁴⁵ The process whereby sediments are eroded and transported by flowing water and deposited as layers of solid particles in water bodies, such as rivers and reservoirs, is referred to as sedimentation.⁴⁶

2. Agriculture in the Indus Basin

115. The Indus Basin is one of the largest areas of irrigated agriculture in the world, the waters of which have been used to sustain extensive agriculture for millennia.
116. Prior to independence, irrigation in the territory of what is now India and Pakistan was managed on an integrated basis by the states of British India. Following independence and partition in 1947, the two States proceeded to develop the water resources separately, seeking to take increased advantage of them for agricultural and other purposes. As explained in greater depth below, the Treaty operates on a principle of dividing the rivers of the Indus system, allocating the waters of the Eastern Rivers to India and of the Western Rivers to Pakistan, albeit with exceptions concerning what each State may do with the waters of the rivers allocated to the other. The large-scale reorientation of agriculture in Pakistan towards reliance on the waters of the Western Rivers introduced substantial complexity to an already expansive irrigation system.
117. Today, irrigated agriculture from the waters of the Indus system of rivers remains extraordinarily important for both India and Pakistan, with an estimated 93 percent of the extracted water resources of the Indus Basin ultimately being used for agriculture.⁴⁷ Pakistan estimates that, as of 2020, the population of the Indus Basin was at least 240 million people, with a significant majority living in Pakistan and areas under Pakistani administration.⁴⁸ Further, the Indus Basin is the primary renewable water resource in Pakistan, and accounts for 95% of the country's estimated

⁴⁵ See **P-0269**, Mott Macdonald and HR Wallingford, "Sediment Management Study of Tarbela Reservoir" dated 1 July 2013, p. 54; **P-0270**, T. Nozaki, "Estimation of Repair Cycle of Turbine Due to Abrasion Caused by Suspended Sand and Determination of Desilting Basin Capacity" (1990); **P-0688**, P. N. Darde, "Detrimental effects of tiny silt particles on large hydro power stations and some remedies" (2016) *Perspectives in Science* 8, 142–145, p. 143. See also Site Visit Presentation 6 (Run-of-River Hydro-Electric Plant Basics (II)), slide 6.

⁴⁶ See, e.g., **P-0671**, Central Water Commission, *Compendium on Sedimentation of Reservoirs in India*. New Delhi: Central Water Commission (2020), p. 1; **PLA-0003**, *Kishenganga* Partial Award, paras. 495–502.

⁴⁷ **P-0263**, M. J. M. Cheema and M. U. Qamar, "Transboundary Indus River Basin: Potential Threats to Its Integrity" in S. I. Khan and T. E. Adams III (eds.) *Indus River Basin: Water Security and Sustainability* (Elsevier 2019), p. 183.

⁴⁸ Pakistan's Memorial, para. 3.16.

229 billion cubic meters (“**BCM**”) of renewable water per year.⁴⁹ All told, irrigated agriculture is responsible for about 90% of the country’s agricultural production per annum, and it is estimated that about 70% of this irrigation is provided by Pakistan’s Indus Basin irrigation system, for which the Western Rivers provide most of the water.⁵⁰ According to Pakistan’s *Economic Survey*, for the 2022–2023 fiscal year the agriculture sector contributed 22.9% to Pakistan’s gross domestic product, while employing 37.4% of its labor force.⁵¹ As a consequence of these geographic and demographic realities, Pakistan is highly reliant on the waters of the Western Rivers.⁵²

118. At the same time, Pakistan’s system for irrigating agriculture has taken increasing advantage of groundwater that exists in saturated zones beneath the land’s surface. As Pakistan has expanded its irrigation system, substantial volumes of surface water seep into the groundwater system, raising the water table and establishing a relatively fresh layer of groundwater over the deeper and more saline layers that existed previously.⁵³ Combined with the increasingly widespread availability of electric pumps and boring capacity, “Pakistan statistics for 2017 show that of the total irrigated area of 18.21 million hectares (of which the majority is in the Indus Basin), 5.88 million hectares (32.2 percent) is irrigated by canal water, 4.02 million hectares (22.2 percent) is served exclusively by groundwater, and 7.85 million hectares (43.1 percent) is served by conjunctive use of canal and groundwater”.⁵⁴ In effect, surface water seepage provides Pakistan with hundreds of cubic kilometers of water storage within its groundwater system, such that extraction from those large reserves of groundwater has the potential to partially offset short-term disruptions in flow from the Western Rivers. While groundwater usage is complex and also introduces issues of water quality (potentially drawing more saline water to the surface and

⁴⁹ **P-0248**, L. Lytton et al., “Groundwater in Pakistan’s Indus Basin: Present and Future Prospects”, Water Global Practice, World Bank Group, Washington DC (2021), p. 2.

⁵⁰ See **P-0244**, A. Khan and M. H. Idrees, “The Impact of Climate Change on the Indus Basin: Challenges and Constraints” in M. Ahmad (ed.), *Water Policy in Pakistan* (Springer, 2023), p. 231.

⁵¹ See **P-0281**, Ministry of Finance, Government of Pakistan “Pakistan Economic Survey 2022-23 – Chapter 2: Agriculture”, p. 19.

⁵² **P-0248**, L. Lytton et al., “Groundwater in Pakistan’s Indus Basin: Present and Future Prospects”, Water Global Practice, World Bank Group, Washington DC (2021), p. 2.

⁵³ **P-0279**, L. Lytton and B. Saeed, “Managing Groundwater Resources in Pakistan’s Indus Basin” (*World Bank*, 25 March 2021); see also **P-0248**, L. Lytton et al., “Groundwater in Pakistan’s Indus Basin: Present and Future Prospects”, Water Global Practice, World Bank Group, Washington DC (2021).

⁵⁴ **P-0248**, L. Lytton et al., “Groundwater in Pakistan’s Indus Basin: Present and Future Prospects”, Water Global Practice, World Bank Group, Washington DC (2021), pp. 17–18.

contaminating cropland),⁵⁵ agriculture in Pakistan is significantly less dependent on surface flows and their timing than was the case in 1960.

B. NEGOTIATION OF THE INDUS WATERS TREATY

119. Following the end of British colonial rule in 1947, India was partitioned into the Dominion of Pakistan (now the Islamic Republic of Pakistan and the People's Republic of Bangladesh) and the Union of India (now the Republic of India).⁵⁶
120. Before partition, the relevant provinces and states of British India shared the use of the Indus waters and benefited from the development in the early 1900s of a widespread irrigation system, with any disputes about the allocation of water being resolved by the British Secretary of State for India and, later, the Government of India. After partition, parts or all of the upper reaches of the six main rivers of the Indus system were located in India or territory under Indian administration, with their downstream stretches flowing into Pakistan or Pakistan-administered territory. A temporary agreement between East Punjab (a state of India from 1947 to 1956) and West Punjab (a province of Pakistan from 1947 to 1955) addressed the use of waters in that area of the Eastern Rivers.⁵⁷
121. Following the expiration of that temporary agreement on 31 March 1948, a dispute arose whereby, on 1 April 1948, East Punjab discontinued the flow of waters to canals in West Punjab.⁵⁸ Within one month, India and Pakistan concluded the Inter-Dominion Agreement dated 4 May 1948 ("**Inter-Dominion Water Agreement**"),⁵⁹ and the flow of water in the canals concerned was restored, with it agreed that there would be further meetings between the two governments.⁶⁰ The Inter-Dominion Water Agreement recorded the different views of the local governments: the East Punjab Government's contention that "the proprietary rights in the waters of the rivers of the East

⁵⁵ See Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, pp. 27–32; **PHM-0019**, Hearing Presentation ("Addressing the Court's Questions by Gregory L. Morris, PE PhD") dated 16 July 2024, slide 14.

⁵⁶ **PLA-0003**, *Kishenganga* Partial Award, para. 130.

⁵⁷ **PLA-0003**, *Kishenganga* Partial Award, para. 131.

⁵⁸ **P-0350**, Government of Pakistan, "The Indus Basin Irrigation Water Dispute" dated 8 December 1952, para. 7.

⁵⁹ **PLA-0044**, Inter-Dominion Agreement between the Government of India and the Government of Pakistan on the Canal Water Dispute between East and West Punjab, 4 May 1948, 54 U.N.T.S. 45. The text of the Inter-Dominion Water Agreement also appears as the Annex to Annexure A of the Indus Waters Treaty 1960: **PLA-0001**, Treaty, Annexure A.

⁶⁰ **PLA-0044**, Inter-Dominion Water Agreement, Arts. 2, 6.

Punjab vest wholly in the East Punjab Government and that the West Punjab Government cannot claim any share of these waters as a right”; and the West Punjab Government’s contention “that in accordance with international law and equity, West Punjab has a right to the waters of the East Punjab Rivers”.⁶¹ The relevance of this incident is disputed between the Parties, and shall be addressed further below.⁶² In any event, this incident exposed the two States’ differing views at the time on their respective rights and obligations regarding the waters of the Indus system of rivers.⁶³

122. Between 1948 and 1951, Pakistan sought to reach a broad agreement with India on the sharing or joint development of the rivers of the Indus Basin, or alternatively to take the matter to the International Court of Justice (“ICJ”), but was unable to do so.⁶⁴ In February 1951, Mr. David Lilienthal, a former Chairman of the U.S. Tennessee Valley Authority and of the U.S. Atomic Energy Commission, visited India and Pakistan. On returning to the United States, Mr. Lilienthal published an article in August 1951, in which he described his trip and proposed that the World Bank use its good offices to help bring about an agreement between India and Pakistan for joint development of the system of rivers as a unit.⁶⁵ Among other things, Mr. Lilienthal expressed the concern felt by Pakistan:

Pakistan includes some of the most productive food-growing lands in the world in western Punjab ... and the Sind. But without water for irrigation this would be desert, 20,000,000 acres would dry up in a week, tens of millions would starve. No army, with bombs and shellfire, could devastate a land as thoroughly as Pakistan could be devastated by the simple expedient of India’s permanently shutting off the sources of water that keep the fields and the people of Pakistan alive. India has never threatened such a drastic step, and indeed denies any such intention – but the power is there nonetheless.⁶⁶

123. On 6 September 1951, in response to Mr. Lilienthal’s article, the President of the World Bank, Mr. Eugene R. Black, offered the assistance of the World Bank to India and Pakistan in developing a cooperative approach to the use of the Indus system of rivers, an offer that both States

⁶¹ **PLA-0001**, Treaty, Annexure A, Inter-Dominion Water Agreement.

⁶² See paras. 420–425, *infra*.

⁶³ **PLA-0003**, *Kishenganga* Partial Award, para. 132.

⁶⁴ **P-0350**, Government of Pakistan, “The Indus Basin Irrigation Water Dispute” dated 8 December 1952, para. 12.

⁶⁵ **P-0233**, D. E. Lilienthal, “Another ‘Korea’ in the Making?”, *Collier’s Magazine* dated 4 August 1951, pp. 9–10.

⁶⁶ **P-0233**, D. E. Lilienthal, “Another ‘Korea’ in the Making?”, *Collier’s Magazine* dated 4 August 1951, pp. 7–8.

accepted.⁶⁷ On 8 November 1951, Mr. Black proposed that the negotiations be based on the following three principles:

- (a) The Indus basin water resources are sufficient to continue all existing uses and to meet the further needs of both countries for water from that source.
- (b) The water resources of the Indus basin should be cooperatively developed and used in such manner as most effectively to promote the economic development of the Indus basin viewed as a unit.
- (c) The problem of development and use of the Indus basin water resources should be solved on a functional and not a political plane, without relation to past negotiation and past claims and independently of political issues.⁶⁸

124. Subject to certain modifications, both States agreed to this approach, such that these principles provided “the broad basis on which the engineers [were to] meet”, although they were “not intended as rigidly fixed terms of reference”.⁶⁹ A “Working Party”, consisting of engineers designated by India and Pakistan and their advisors, assisted by representatives of the World Bank and consultants, first met from 7 May to 18 June 1952 to prepare “a comprehensive long-range functional plan for the most effective utilization of the water resources of the Indus basin”.⁷⁰ During the course of the next two years, the Working Party met further, collecting data and examining existing irrigation canals and other works. However, despite efforts to prepare a comprehensive plan for the utilization of the waters of the Indus system as a unit, in accordance with the proposal made by Mr. Lilienthal in 1951, it became clear that it was not possible to achieve such an approach.⁷¹
125. On 6 October 1953, at the suggestion of the World Bank, India and Pakistan each proposed a comprehensive plan, based on engineering principles, for using the water resources of the Indus Basin in such a way as to maximize the development of the two countries.⁷² These comprehensive

⁶⁷ **P-0354**, Letter from Mr. Black to Prime Minister Khan dated 6 September 1951; **P-0355**, Letter from Mr. Black to Prime Minister Nehru dated 6 September 1951; see **P-0234**, A. A. Michel, *The Indus Rivers: A Study of the Effects of Partition* (Yale University Press, 1967), p. 225; see **PLA-0003**, *Kishenganga* Partial Award, para. 134.

⁶⁸ **P-0356**, Letter from Mr. Black to Prime Minister Nazimuddin dated 8 November 1951; **P-0357**, Letter from Mr. Black to Prime Minister Nehru dated 8 November 1951.

⁶⁹ **P-0360**, Letter from Mr. Black to Prime Minister Nazimuddin dated 13 March 1952.

⁷⁰ **P-0373**, Note from Neil Bass to Files, “Indus Basin Conference” dated 7 May 1952, p. 2.

⁷¹ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, paras. 1–16; see **PLA-0003**, *Kishenganga* Partial Award, para. 135.

⁷² **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, paras. 2–3.

plans, after subsequent negotiations, respectively provided for the following division of usable supplies of water:

	Usable supplies allocated to India	Usable supplies allocated to Pakistan
India's Comprehensive Plan	All of the Eastern Rivers and 7% of the Western Rivers (29 MAF)	None of the Eastern Rivers and 93% of the Western Rivers (90 MAF)
Pakistan's Comprehensive Plan	30% of the Eastern Rivers and none of the Western Rivers (15.5 MAF)	70% of the Eastern Rivers and all of the Western Rivers (102.5 MAF)

Figure 1: Proposed division of usable supplies of water dated 5 February 1954⁷³

126. Despite further negotiations, reconciliation of these proposals could not be reached, and so, on 5 February 1954, the World Bank put forward a proposal for the consideration of both sides (“**1954 Proposal**”).⁷⁴ The 1954 Proposal provided:

It is desirable, as far as practicable, to avoid control by India over waters on which Pakistan will be dependent, and to enable each country to control the works supplying the water allocated to it and determine in its own interests the apportionment of waters within its own territories.⁷⁵

127. To that end, the World Bank proposed a division of the waters of the Indus system of rivers between the two States, whereby “the waters of the Western rivers would be reserved to Pakistan and the waters of the Eastern rivers would, subject to a relatively short transition period, be reserved to India”.⁷⁶ Specifically, the 1954 Proposal provided:

- (a) The entire flow of the Western rivers (Indus, Jhelum and Chenab) would be available for the exclusive use and benefit of Pakistan, and for development by Pakistan, except for the insignificant volume of Jhelum flow presently used in Kashmir.
- (b) The entire flow of the Eastern rivers (Ravi, Beas and Sutlej) would be available for the exclusive use and benefit of India, and for development by India, except that for a specified transition period India would continue to supply from these rivers, in accordance with an agreed schedule, the historic withdrawals from these rivers in Pakistan.

⁷³ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, para. 2 (emphasis added).

⁷⁴ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954.

⁷⁵ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, para. 22.

⁷⁶ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, para. 24.

- (c) The transition period would be calculated on the basis of the time estimated to be required to complete the link canals needed in Pakistan to make transfers for the purpose of replacing supplies from India. A temporary cooperative administration would be needed to supervise the carrying out of the transitional arrangements.
- (d) Each country would construct the works located on its own territories which are planned for the development of the supplies. The costs of such works would be borne by the country to be benefited thereby. Although no works are planned for joint construction by the two countries, certain link canals in Pakistan will, as stated above, be needed to replace supplies from India. India would bear the costs of such works to the extent of the benefits to be received by her therefrom. An appropriate procedure would be established for adjudicating or arbitrating disputes concerning the allocation of costs under this principle.⁷⁷

128. After intensive negotiation and discussion, on 21 May 1956, the World Bank issued an Aide Memoire to the two States.⁷⁸ The Aide Memoire recorded that, while it had not been possible to reach agreement on certain issues:

The Bank continues to hold the view that the “division of the waters” contemplated by the Bank Proposal of February 1954 affords the best prospects for a settlement of the Indus Waters question; that out of the flow-cum-storage potential of the rivers allocated to them, India and Pakistan could each develop very substantial irrigation uses, additional to those that they now enjoy; and that no insuperable engineering difficulties are likely to arise in either country in constructing the physical works necessary to develop these additional supplies. The works would, however, be costly; and their financing would present a serious financial problem.⁷⁹

129. The Aide Memoire further recorded, *inter alia*, a claim of India “that some part of the flow of the Jhelum and Chenab should be reserved for future development in the State of Jammu and Kashmir”, with such development involving “relatively insignificant consumptive uses”.⁸⁰ This claim was “postponed until the point has been reached when the provisions of an international water treaty might be under consideration”.⁸¹

130. On 13 May 1957, the World Bank conveyed to India and Pakistan “some suggestions for ‘Heads of Agreement’ for a possible approach to an international water agreement based on the principles

⁷⁷ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, para. 24. See also **P-0385**, Letter from Mr. Black to Prime Minister Nehru (with enclosures) dated 13 August 1954; **P-0386**, Letter from Prime Minister Nehru to Mr. Black dated 19 August 1954; **P-0387**, Letter from Foreign Minister of Pakistan to Mr. Black dated 24 August 1954.

⁷⁸ **P-0131**, International Bank for Reconstruction and Development, Aide Memoire dated 21 May 1956.

⁷⁹ **P-0131**, International Bank for Reconstruction and Development, Aide Memoire dated 21 May 1956, para. 4 (emphasis in original).

⁸⁰ **P-0131**, International Bank for Reconstruction and Development, Aide Memoire dated 21 May 1956, para. 7(b).

⁸¹ **P-0131**, International Bank for Reconstruction and Development, Aide Memoire dated 21 May 1956, para. 7(b).

of the [World Bank' 1954] Proposal and of the Aide Memoire".⁸² The World Bank confirmed that the purpose of the Heads of Agreement was not to be a "draft of an international agreement", but a "basis for discussion".⁸³

131. On 24 June 1957, the World Bank wrote to representatives of India and Pakistan to confirm that "the best prospects of carrying forward the tripartite discussions to a successful conclusion" lay in attempting to obtain from the countries "acceptance of certain general Heads of Agreement, based on the [World Bank's] Proposal of February 5, 1954, and of the Aide Memoire dated May 21, 1956, as a firm starting point from which we might proceed to the formulation of the detailed text of an international water treaty".⁸⁴ Accordingly, the World Bank attached a "General Heads of Agreement suggested for Acceptance as Basis for Approach to an International Water Treaty",⁸⁵ which provided, relevantly, as follows:

1. The entire flow of the Western Rivers (Indus, Jhelum and Chenab) would be available for the exclusive use and benefit of Pakistan, except for the extent to which historic irrigation uses in the State of Jammu and Kashmir have been met from the flow of these rivers.
2. The entire flow of the Eastern Rivers (Ravi, Beas and Sutlej) would be available for the exclusive use and benefit of India and for development by India, except that for a specified transition period India would continue to supply from these rivers, in accordance with an agreed schedule, the historic withdrawals from these rivers in Pakistan.
- ...
7. A Commission, or some other suitable mechanism, of appropriate composition, would be established to determine disputed questions, to determine the allocation between India and Pakistan of the cost of the system of works, and to supervise the carrying out of the transitional arrangements. Each Government would undertake to accept as binding on itself the decisions and determinations of the Commission.⁸⁶

132. In early August 1959, negotiations on the heads of agreement for an international water treaty began in London.⁸⁷ The issues for discussion on the agenda were: (1) Indian uses of the Western

⁸² **P-0362**, Letter from Mr. Iliff to Mr. Mueenuddin (with enclosure) dated 13 May 1957; **P-0407**, Letter from Mr. Iliff to Mr. Gulhati (enclosure omitted) dated 13 May 1957.

⁸³ **P-0362**, Letter from Mr. Iliff to Mr. Mueenuddin (with enclosure) dated 13 May 1957, para. 4; **P-0407**, Letter from Mr. Iliff to Mr. Gulhati (enclosure omitted) dated 13 May 1957, para. 4.

⁸⁴ **P-0413**, Letter from Mr. Iliff to Mr. Mueenuddin dated 24 June 1957, para. 2; **P-0414**, Letter from Mr. Iliff to Mr. Gulhati dated 24 June 1957, para. 2.

⁸⁵ **P-0413**, Letter from Mr. Iliff to Mr. Mueenuddin dated 24 June 1957, Appendix; **P-0414**, Letter from Mr. Iliff to Mr. Gulhati dated 24 June 1957, Appendix.

⁸⁶ **P-0413**, Letter from Mr. Iliff to Mr. Mueenuddin dated 24 June 1957, Appendix; **P-0414**, Letter from Mr. Iliff to Mr. Gulhati dated 24 June 1957, Appendix.

⁸⁷ **P-0454**, World Bank, Minutes of Meeting dated 5 August 1959.

Rivers; (2) transitional arrangements; and (3) Heads of Agreement.⁸⁸ Relevantly, India's position was that its uses of the Western Rivers while in India and India-administered territory must include "non-consumptive uses" including "generation of hydro-electric power (provided it is developed from the run of the river without live storage)".⁸⁹ Pakistan's position on Indian uses of the Western Rivers was summarized in a memorandum of the World Bank dated 20 July 1959:

When Mr. Black and I were in Karachi, the Pakistanis initially took the strong position that they could not acquiesce in India having the right to build even 'run of the river' hydro-electric works on any of the Western Rivers. We replied that we could not support Pakistan's Indus position as it would mean freezing for all time the available hydel potential of these rivers in their upper reaches. We suggested that the matter should be left for detailed consideration during the London meeting and so it has been left, but I think we are going to have quite a tough passage on this point.⁹⁰

133. On 15 September 1959, the World Bank issued "Heads of Agreement for an International Water Treaty" ("**September 1959 Heads of Agreement**"),⁹¹ which later formed the basis of Articles I to XII of the Treaty. The World Bank stated that the Heads of Agreement represented "the extent to which agreement [had] been reached between the representatives of India and Pakistan, on an *ad referendum* basis, in the course of the discussions that [had] taken place in London during August and September, 1959".⁹² The World Bank clarified that they had not, however, "been drawn in legal form or language" and that, to "the extent that the Heads of Agreement may have to be elaborated into the text of a Treaty, the Heads of Agreement should be interpreted in the spirit, rather than in the letter".⁹³ The September 1959 Heads of Agreement provided that "India shall be entitled to generate hydro-electric power on the Western Rivers in accordance with the provisions of Annex 'B'" (which later formed the basis of Annexure D of the Treaty regarding the design and operation of Run-of-River HEPs by India on the Western Rivers).⁹⁴
134. In October 1959, the representatives of India, Pakistan, and the World Bank met in Washington, D.C., with a view to reaching agreement on the transitional arrangements and Indian consumptive

⁸⁸ **P-0454**, World Bank, Minutes of Meeting dated 5 August 1959.

⁸⁹ **P-0450**, Letter from Mr. Iliff to Mr. Mueenuddin (with enclosure) dated 26 June 1959.

⁹⁰ **P-0451**, World Bank Office Memorandum from Mr. Iliff to General Wheeler (without enclosure) dated 20 July 1959.

⁹¹ **P-0136**, Heads of Agreement dated 15 September 1959.

⁹² **P-0135**, Indus Waters, Heads of Agreement for an International Water Treaty: Memorandum by the Bank Representative dated 15 September 1959, para. 1.

⁹³ **P-0135**, Indus Waters, Heads of Agreement for an International Water Treaty: Memorandum by the Bank Representative dated 15 September 1959, para. 2.

⁹⁴ **P-0136**, Heads of Agreement dated 15 September 1959, Art. IV(2).

uses of the Western Rivers.⁹⁵ During these meetings, work commenced on the drafting of a treaty. On 9 December 1959, the World Bank transmitted a draft of the “Indus Waters Treaty 1960”,⁹⁶ which reflected “the measure of agreement so far reached by the Representatives of India and Pakistan during the current discussions in Washington”.⁹⁷ The World Bank explained that the provisions to be included in the eight Annexures remained, at that time, “for discussion and agreement”, and proposed that work continue in Washington on the drafting of those annexures.⁹⁸

135. On 20 April 1960, the World Bank distributed the second draft of the “Indus Waters Treaty 1960”,⁹⁹ in addition to four annexures on “the settlement of differences by a Neutral Expert”,¹⁰⁰ a “Court of Arbitration”,¹⁰¹ the “Generation of Hydro-Electric Power by India on the Western Rivers”,¹⁰² and the “Construction of Storage Works by India on the Western Rivers”.¹⁰³
136. On 8 June 1960, the World Bank distributed a further draft of the “Indus Waters Treaty 1960”.¹⁰⁴ On 6 September 1960, the final text of the Indus Waters Treaty was agreed and arrangements were put in place for its signature on 19 September 1960.¹⁰⁵

⁹⁵ **P-0121**, World Bank Group Archives, Indus Basin Negotiations Inventory List, Folder 1787263: Indus Basin Dispute - Chronology of Indus Waters Dispute, p. 11.

⁹⁶ **P-0139**, Indus Waters Treaty 1960 draft of 9 December 1959. The annexes to the Treaty covering detailed arrangements for the transitional period and Indian consumptive uses on the Western Rivers were left over for settlement later: see **P-0121**, World Bank Group Archives, Indus Basin Negotiations Inventory List, Folder 1787263: Indus Basin Dispute - Chronology of Indus Waters Dispute, p. 12.

⁹⁷ **P-0481**, Letter from Mr. Iliff to Mr. Mueenuddin dated 14 December 1959, enclosing Memorandum by Bank Representative dated 11 December 1959.

⁹⁸ **P-0481**, Letter from Mr. Iliff to Mr. Mueenuddin dated 14 December 1959, enclosing Memorandum by Bank Representative dated 11 December 1959.

⁹⁹ **P-0143**, Indus Waters Treaty 1960 draft of 20 April 1960; **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960; **P-0489**, Annexure E, Construction of Storage Works by India on the Western Rivers, draft of 23 April 1960.

¹⁰⁰ **P-0145**, Annexure G, Settlement of Differences by a Neutral Expert (Article IX(2)), Draft of 22 April 1960.

¹⁰¹ **P-0146**, Annexure H, Court of Arbitration (Article IX(5)), Draft of 22 April 1960.

¹⁰² **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960.

¹⁰³ **P-0489**, Annexure E, Construction of Storage Works by India on the Western Rivers, draft of 23 April 1960.

¹⁰⁴ **P-0151**, Indus Waters Treaty 1960, Draft of 8 June 1960; **P-0478**, Indus Waters Treaty 1960, Draft dated 6 June 1960, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers (Article III(2)(d)).

¹⁰⁵ **P-0153**, Indus Waters Treaty, President’s Report and Recommendations dated 6 September 1960; **P-0154**, World Bank Press Release no. 650 (confirming the signature of the Indus Waters Treaty 1960).

C. THE INDUS WATERS TREATY

137. On 19 September 1960, India and Pakistan signed the Indus Waters Treaty 1960. The Treaty provided that it would enter into force upon the exchange of documents of ratification, which occurred on 12 January 1961, with retroactive effect from 1 April 1960.¹⁰⁶ The World Bank also signed the Treaty for the purposes of specific provisions that require World Bank action.¹⁰⁷ Upon ratification of the Treaty, the Inter-Dominion Water Agreement dated 4 May 1948 ceased to apply.¹⁰⁸ A protocol to the Treaty to correct certain textual errors was signed by India on 27 November 1960 and by Pakistan on 2 December 1960.¹⁰⁹
138. The Treaty contains a Preamble, twelve Articles, and eight Annexures (Annexure A through to Annexure H). Annexure A contains two annexes; Annexure D has three appendices; Annexures E and G each have one appendix; and Annexure H includes four appendices.
139. The Preamble of the Treaty provides:
- The Government of India and the Government of Pakistan, being equally desirous of attaining the most complete and satisfactory utilisation of the waters of the Indus system of rivers and recognising the need, therefore, of fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each in relation to the other concerning the use of these waters and of making provision for the settlement, in a cooperative spirit, of all such questions as may hereafter arise in regard to the interpretation or application of the provisions agreed upon herein, have resolved to conclude a Treaty in furtherance of these objectives ...¹¹⁰
140. Article I (“Definitions”) sets out defined terms as used in the Treaty.¹¹¹ Of particular relevance, the Treaty defines the Eastern Rivers as comprising the Sutlej, the Beas, and the Ravi, together with their tributaries, and the Western Rivers as comprising the Indus, the Jhelum and the Chenab, together with their tributaries.¹¹² Definitions are also provided for “Agricultural Use”, “Domestic Use”, “Non-Consumptive Use”, and “interference with the waters”.¹¹³

¹⁰⁶ **PLA-0001**, Treaty, Arts. I(16), XII(2); see **PLA-0003**, *Kishenganga* Partial Award, para. 138.

¹⁰⁷ **PLA-0001**, Treaty, p. 156 (signature by a World Bank representative “for the purposes specified in Articles V and X and Annexures F, G and H”); see **PLA-0003**, *Kishenganga* Partial Award, para. 138.

¹⁰⁸ **PLA-0001**, Treaty, Annexure A (“Exchange of Notes between Government of India and Government of Pakistan”).

¹⁰⁹ **PLA-0001**, Treaty, Protocol to the Indus Waters Treaty 1960, signed on 27 November, 2 and 23 December 1960. The World Bank signed the Protocol on 23 December 1960.

¹¹⁰ **PLA-0001**, Treaty, Preamble.

¹¹¹ **PLA-0001**, Treaty, Art. I.

¹¹² **PLA-0001**, Treaty, Art. I(3)–(6).

¹¹³ **PLA-0001**, Treaty, Art. I(9)–(11), (15).

141. The principal substantive provisions of the Treaty concerning the Eastern Rivers are set out in Article II (“Provisions regarding Eastern Rivers”) and Annexure B (“Agricultural Use by Pakistan from Certain Tributaries of the Ravi”). Articles II(1) to (4) provide in relevant part:

- (1) All the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article.
- (2) Except for Domestic Use and Non-Consumptive Use, Pakistan shall be under an obligation to let flow, and shall not permit any interference with, the waters of the Sutlej Main and the Ravi Main in the reaches where these rivers flow in Pakistan and have not yet finally crossed into Pakistan. ...
- (3) Except for Domestic Use, Non-Consumptive Use and Agricultural Use (as specified in Annexure B), Pakistan shall be under an obligation to let flow, and shall not permit any interference with, the waters (while flowing in Pakistan) of any Tributary which in its natural course joins the Sutlej Main or the Ravi Main before these rivers have finally crossed into Pakistan.
- (4) All the waters, while flowing in Pakistan, of any Tributary which, in its natural course, joins the Sutlej Main or the Ravi Main after these rivers have finally crossed into Pakistan shall be available for the unrestricted use of Pakistan : Provided however that this provision shall not be construed as giving Pakistan any claim or right to any releases by India in any such Tributary.¹¹⁴

142. Articles II(5) to (9) of the Treaty provides there shall be a Transition Period,¹¹⁵ subject to Annexure H (“Transitional Arrangements”), during which India shall, with respect to the Eastern Rivers, limit its withdrawals for Agricultural Use, limit abstractions for storages, and make deliveries to Pakistan; and Pakistan shall receive for unrestricted use the waters of the Eastern Rivers which are to be released by India.¹¹⁶ After the end of the Transition Period, Article II(9) provides that Pakistan shall have no claim or right to releases by India of any of the waters of the Eastern Rivers.¹¹⁷

143. The principal substantive provisions concerning the Western Rivers are set out in Article III (“Provisions regarding Western Rivers”), Annexure C (“Agricultural Use by India from the Western Rivers”), Annexure D (“Generation of Hydro-Electric Power by India on the Western Rivers”), and Annexure E (“Storage of Waters by India on the Western Rivers”). Article III provides:

- (1) Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2).

¹¹⁴ PLA-0001, Treaty, Art. II(1)–(4).

¹¹⁵ PLA-0001, Treaty, Art. I(12): “The term ‘Transition Period’ means the period beginning and ending as provided in Article II (6)”.

¹¹⁶ PLA-0001, Treaty, Art. II(5)–(9).

¹¹⁷ PLA-0001, Treaty, Art. II(9).

- (2) India shall be under an obligation to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for the following uses, restricted (except as provided in item (c) (ii) of Paragraph 5 of Annexure C) in the case of each of the rivers, The Indus, The Jhelum and The Chenab, to the drainage basin thereof :
 - (a) Domestic Use ;
 - (b) Non-Consumptive Use ;
 - (c) Agricultural Use, as set out in Annexure C ; and
 - (d) Generation of hydro-electric power, as set out in Annexure D.
- (3) Pakistan shall have the unrestricted use of all waters originating from sources other than the Eastern Rivers which are delivered by Pakistan into The Ravi or The Sutlej, and India shall not make use of these waters. Each Party agrees to establish such discharge observation stations and make such observations as may be considered necessary by the Commission for the determination of the component of water available for the use of Pakistan on account of the aforesaid deliveries by Pakistan.
- (4) Except as provided in Annexures D and E, India shall not store any water of, or construct any storage works on, the Western Rivers.¹¹⁸

144. Annexure D, which is of particular relevance to the present disputes, concerns the generation of hydro-electric power by India on the Western Rivers. Paragraph 1 of Annexure D to the Treaty provides:

The provisions of this Annexure shall apply with respect to the use by India of the waters of the Western Rivers for the generation of hydro-electric power under the provisions of Article III (2)(d) and, subject to the provisions of this Annexure, such use shall be unrestricted : Provided that the design, construction and operation of new hydro-electric plants which are incorporated in a Storage Work (as defined in Annexure E) shall be governed by the relevant provisions of Annexure E.¹¹⁹

145. Part 1 of Annexure D sets forth various definitions, including for “Dead Storage”, “Live Storage”, “Pondage”, “Full Pondage Level”, “Operating Pool”, “Surcharge Storage”, “Run-of-River Plant”, and “Firm Power”.¹²⁰ Part 2 of Annexure D addresses HEPs on the Western Rivers that were in operation or under construction, as on the Effective Date of the Treaty,¹²¹ which remain unregulated by the Treaty, subject to any proposed alterations resulting in a material change.¹²² Part 3 of Annexure D, which is of particular relevance for this proceeding, addresses new Run-of-River Plants on the Western Rivers, defined in Paragraph 2(g) of Annexure D as “a hydro-

¹¹⁸ PLA-0001, Treaty, Art. III(1)–(4) (citations omitted).

¹¹⁹ PLA-0001, Treaty, Annexure D, para. 1.

¹²⁰ PLA-0001, Treaty, Annexure D, Pt. 1.

¹²¹ PLA-0001, Treaty, Annexure D, Art. I(16): “The term ‘Effective Date’ means the date on which this Treaty takes effect in accordance with the provisions of Article XII, that is, the first of April 1960”.

¹²² PLA-0001, Treaty, Annexure D, Pt. 2.

electric plant that develops power without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage”.¹²³ Part 3 of Annexure D regulates in considerable detail two types of Run-of-River Plants: regular Run-of-River Plants (“Annexure D, Part 3 HEPs”) and “Small Plants” (“**Small Plants**”). Annexure D, Part 3 HEPs are regulated by Paragraphs 8 to 17, which address, *inter alia*, outlets below Dead Storage Level (often referred to in this Award as “low-level outlets”), gated spillways, intakes for the turbines, maximum Pondage, and artificial raising of the water level of the Operating Pool.¹²⁴ Small Plants, which are not at issue in this proceeding, are regulated by Paragraphs 14 to 23.¹²⁵ Part 4 of Annexure D addresses new hydro-electric plants located on irrigation channels taking off the Western Rivers, which may be constructed and operated without restriction, subject to the requirements of Paragraph 24.¹²⁶

146. Annexure E concerns “the storage of water on the Western Rivers, and the construction and operation of Storage Works thereon, by India under the provisions of Article III (4)”.¹²⁷ A “Storage Work” is defined as “a work constructed for the purpose of impounding the water of a stream”, excluding: (i) a “Small Tank”;¹²⁸ (ii) the works specified in Paragraphs 3 and 4 of Annexure D; and (iii) a new work constructed in accordance with the provisions of Annexure D.¹²⁹ Annexure E addresses three categories of Storage Works: (a) existing Storage Works that were already in operation on the Effective Date,¹³⁰ the operation of which is subject to “no restriction” under the Treaty;¹³¹ (b) Small Tanks, on which there is “no restriction” on their construction or operation;¹³² and (c) new Storage Works, which will be permitted on the Western

¹²³ PLA-0001, Treaty, Annexure D, paras. 8–17.

¹²⁴ As discussed in Parts X, XI, and 0 *infra*.

¹²⁵ PLA-0001, Treaty, Annexure D, para. 18. Small Plants are those for which: “(a) the aggregate designed maximum discharge through the turbines does not exceed 300 cusecs; (b) no storage is involved in connection with the Small Plant, except the Pondage and the storage incidental to the diversion structure; and (c) the crest of the diversion structure across the Tributary, or the top level of the gates, if any, shall not be higher than 20 feet above the mean bed of the Tributary at the site of the structure”.

¹²⁶ PLA-0001, Treaty, Annexure D, Pt. 4.

¹²⁷ PLA-0001, Treaty, Annexure E, para. 1.

¹²⁸ PLA-0001, Treaty, Annexure E, para. 2(n): “‘Small Tank’ means a tank having a Live Storage of less than 700 acre-feet and fed only from a non-perennial small stream : Provided that the Dead Storage does not exceed 50 acre-feet”.

¹²⁹ PLA-0001, Treaty, Annexure E, para. 2(a).

¹³⁰ PLA-0001, Treaty, Art. I(16): (“The term ‘Effective Date’ means the date on which this Treaty takes effect in accordance with the provisions of Article XII, that is, the first of April 1960”).

¹³¹ PLA-0001, Treaty, Annexure E, para. 3.

¹³² PLA-0001, Treaty, Annexure E, para. 3.

Rivers provided that their aggregate storage capacity does not exceed the capacity limits defined by Paragraph 7 of Annexure E.¹³³

147. Annexure E Storage Works may be compared in certain ways with Annexure D Run-of-River HEPs. *First*, unlike Annexure D, Annexure E contains quantitative and geographic limitations on the controllable storage of water in Storage Works, allowing for a total controllable storage capacity on the Western Rivers of no more than 4,440 million cubic meters (“MCM”).¹³⁴ *Second*, like Annexure D but subject to certain limitations, Annexure E allows the Storage Works to be used to generate hydro-electric power. *Third*, the design constraints set forth in Paragraph 11 of Annexure E to some degree parallel the design constraints found in Annexure D, addressing *inter alia* outlets, intakes, and artificial raising of the water level; furthermore, if a HEP is incorporated into the Storage Work,¹³⁵ the operational constraints set forth in Paragraph 21 of Annexure E address “the maximum Pondage (as defined in Annexure D)” and the volume of water to be delivered into the river below the work during any period of seven consecutive days.
148. Article IV contains provisions relevant to both the Eastern and Western Rivers. In particular, Article IV(1) contains an obligation for Pakistan to construct a system of works to permit the diversion of waters from the Western Rivers to replace water supplies upon which Pakistan depended (at the time the Treaty was adopted) from the Eastern Rivers.¹³⁶ Article IV(2) provides in part: “Each Party agrees that Non-Consumptive Use made by it shall be so made as not to materially change, on account of such use, the flow in any channel to the prejudice of the uses on that channel by the other Party under the provisions of this Treaty”.¹³⁷ Article IV(14) states: “In the event that either Party should develop a use of the waters of the Rivers which is not in accordance with the provisions of this Treaty, that Party shall not acquire by reason of such use any right, by prescription or otherwise, to a continuance of that use”.¹³⁸

¹³³ PLA-0001, Treaty, Annexure E, para. 7.

¹³⁴ PLA-0001, Annexure E, para. 7, specifies the aggregate storage capacity of all Single-purpose and Multi-purpose Reservoirs for each the specified categories of storage capacity (General Storage Capacity; Power Storage Capacity; and Flood Storage Capacity) on the Indus River; the Jhelum River (excluding the Jhelum Main); the Jhelum Main; the Chenab River (excluding the Chenab Main); and the Chenab Main. The quantities specified in the table add up to a total of 3.6 MAF of storage capacity, which is equivalent to 4,440 MCM of storage capacity.

¹³⁵ PLA-0001, Treaty, Annexure E, para. 11(g).

¹³⁶ PLA-0001, Treaty, Art. IV(1).

¹³⁷ PLA-0001, Treaty, Art. IV(2).

¹³⁸ PLA-0001, Treaty, Art. IV(14).

149. Article V (“Financial Provisions”) provides for the funding of the system of works described in Article IV(1) to redirect water from the Western Rivers to replace water that Pakistan had historically received from the Eastern Rivers.¹³⁹ Among other things, Article V sets out India’s obligation to make a fixed contribution toward the cost of such works, to be paid annually in ten equal installments.¹⁴⁰
150. As discussed in greater depth in Part XIII.A, several provisions of the Treaty seek to promote transparency and cooperation between India and Pakistan in relation to the Treaty. Article VI (“Exchange of Data”) provides for the regular exchange of data by the Parties with respect to the flow in and utilization of the Eastern and Western Rivers.¹⁴¹ Other data-sharing obligations, including with respect to the hydrology of the Eastern and Western Rivers, are addressed at Article VI(2).¹⁴² Article VII (“Future co-operation”) addresses in Article VII(1) certain types of cooperation that will be pursued to the fullest extent possible, such as on the installation of hydrologic and meteorological observation stations along the Eastern and Western Rivers.¹⁴³
151. Article VIII establishes the “Permanent Indus Commission” consisting of a Commissioner for Indus Waters appointed by India and a Commissioner for Indus Waters appointed by Pakistan.¹⁴⁴ As noted in Part XIII.A, the Commission is to meet at least once a year, as well as upon the request of either Commissioner,¹⁴⁵ and is required to provide, before 1 June each year, an annual report to the Governments of India and Pakistan on its work for the year ending 31 March.¹⁴⁶ Article VIII(4) states the purpose and functions of the Commission as follows:
- (4) The purpose and functions of the Commission shall be to establish and maintain co-operative arrangements for the implementation of this Treaty, to promote co-operation between the Parties in the development of the waters of the Rivers and, in particular,
 - (a) to study and report to the two Governments on any problem relating to the development of the waters of the Rivers which may be jointly referred to the Commission by the two Governments: in the event that a reference is made by one Government alone, the Commissioner of the other Government shall obtain the authorization of his Government before he proceeds to act on the reference;

¹³⁹ PLA-0001, Treaty, Art. V.

¹⁴⁰ See para. 158, *infra*; PLA-0001, Treaty, Art. V(2).

¹⁴¹ PLA-0001, Treaty, Art. VI(1).

¹⁴² PLA-0001, Treaty, Art. VI(2).

¹⁴³ PLA-0001, Treaty, Art. VII.

¹⁴⁴ PLA-0001, Treaty, Art. VIII (“Permanent Indus Commission”).

¹⁴⁵ PLA-0001, Treaty, Art. VIII(5).

¹⁴⁶ PLA-0001, Treaty, Art. VIII(8).

- (b) to make every effort to settle promptly, in accordance with the provisions of Article IX (1), any question arising thereunder;
- (c) to undertake, once in every five years, a general tour of inspection of the Rivers for ascertaining the facts connected with various developments and works on the Rivers;
- (d) to undertake promptly, at the request of either Commissioner, a tour of inspection of such works or sites on the Rivers as may be considered necessary by him for ascertaining the facts connected with those works or sites; and
- (e) to take, during the Transition Period, such steps as may be necessary for the implementation of the provisions of Annexure H.¹⁴⁷

152. Article IX sets out a procedure for the settlement of “differences and disputes”.¹⁴⁸ In brief, Article IX envisages three principal means for resolving questions concerning the interpretation or application of the Treaty:

- (a) Under Article IX(1), the Parties may employ the Commission, created under Article VIII, to examine questions and resolve them by agreement. The Commission, which meets at least once a year, and has met some 118 times since 1960, has provided a cooperative venue for discussion and resolution of many questions since the Treaty’s inception.¹⁴⁹
- (b) Under Article IX(2), if the Commission does not reach agreement on a question, then a difference will be deemed to have arisen.¹⁵⁰ If the difference, in the opinion of either Commissioner, falls within the provisions of Part 1 of Annexure F to the Treaty, either Commissioner may request the appointment of a neutral expert to resolve the difference.¹⁵¹
- (c) Under Article IX(2)(b), if a difference does not come within the provisions of Article IX(2)(a) (including insofar as neither Commissioner has requested that it be dealt with by a neutral expert), or if the neutral expert appointed to resolve a difference determines that it should be treated as a “dispute”, then a dispute will be deemed to have arisen, and the dispute may be settled (among other means) through a court of arbitration.¹⁵²

¹⁴⁷ **PLA-0001**, Treaty, Art. VIII(4).

¹⁴⁸ **PLA-0001**, Treaty, Art. IX (“Settlement of differences and disputes”).

¹⁴⁹ **P-0345**, Record of the 118th Meeting of the Permanent Indus Commission, 30 to 31 May 2022.

¹⁵⁰ **PLA-0001**, Treaty, Art. IX(2).

¹⁵¹ **PLA-0001**, Treaty, Art. IX(2).

¹⁵² **PLA-0001**, Treaty, Art. IX(2). The application of this provision was the subject of analysis by the *Kishenganga* Court, see **PLA-0003**, *Kishenganga* Partial Award, paras. 476–482, and by this Court, see Award on the Competence of the Court, paras. 166–213.

153. Article IX preserves, both expressly and by implication, the retained powers of the Parties to settle any disagreements through other means of their mutual choice.¹⁵³
154. Article X (“Emergency Provision”) addresses the role the World Bank was to have in the event that, prior to 31 March 1973, “large-scale international hostilities” prevented Pakistan from the timely completion of the system of works for the replacement of water supplies from the Eastern Rivers with water from the Western Rivers under Article IV(1).¹⁵⁴
155. Article XI (“General Provisions”) contains provisions that limit the Treaty as a precedent beyond the scope of its provisions, while Article XII (“Final Provisions”) indicates the components of the Treaty, how the Treaty should be cited, and the process for its ratification and entry into force.¹⁵⁵ It also provides that the Treaty may be modified by agreement of the Parties, but shall continue in force until terminated by a duly ratified treaty concluded for that purpose.¹⁵⁶

D. IMPLEMENTATION OF THE INDUS WATERS TREATY

156. This section addresses, by way of a broad overview, the principal factual developments regarding the implementation of the Treaty from its inception and until the disputes at issue in these proceedings arose. The factual developments of particular relevance for this Award are those involving the generation of hydro-electric power by India on the Western Rivers.

1. Transitional Arrangements

157. The Transition Period under the Treaty was intended to provide a window of time, extending over a decade, for Pakistan to construct the substantial engineering works necessary to replace the flows it received from the Eastern Rivers with waters from the Western Rivers. The Transition Period began (retrospectively) on 1 April 1960 and ended as scheduled on 31 March 1970.¹⁵⁷ During the Transition Period, Pakistan continued to receive for unrestricted use the waters of the Eastern Rivers, which were to be released by India pursuant to Article II(5) to (9) and Annexure H to the Treaty.

¹⁵³ See **PLA-0001**, Treaty, Art. IX(2) (“any difference ... may be settled in any other way agreed upon by the Commission”).

¹⁵⁴ **PLA-0001**, Treaty, Art. X (“Emergency Provision”).

¹⁵⁵ **PLA-0001**, Treaty, Art. XI (“General Provisions”), Art. XII (“Final Provisions”).

¹⁵⁶ **PLA-0001**, Treaty, Arts. XII(3), (4).

¹⁵⁷ **PLA-0001**, Treaty, Arts. I(16), II(5)–(6), Annexure H.

158. Over the course of the Transition Period, Pakistan constructed a system of engineering works to “accomplish the replacement, from the Western Rivers and other sources, of water supplies for irrigation canals in Pakistan which, on 15th August 1947, were dependent on water supplies from the Eastern Rivers”, as contemplated by the Treaty.¹⁵⁸ The cost of the system was substantial; indeed, the World Bank in 1960 described the replacement irrigation works as “the largest program of its kind ever to be undertaken anywhere in the world”.¹⁵⁹ Accordingly, on the same day the Treaty was signed, an international financial agreement establishing the Indus Basin Development Fund was also executed to finance the construction of irrigation and other works in Pakistan related to the cost of the system, and for which grants or loans were made by several countries and the World Bank.¹⁶⁰ The United States contributed USD \$541 million, a consortium of countries (Australia, Canada, Federal Republic of Germany, New Zealand, and United Kingdom) contributed USD \$315 million, India (as required by Articles V(1) and (2) of the Treaty)¹⁶¹ contributed USD \$174 million, the World Bank loaned USD \$150 million, and Pakistan contributed £440,000 and £9,850,000.¹⁶²
159. As envisaged by the Treaty, Pakistan completed the necessary system of engineering works by March 1970.¹⁶³ The principal works consisted of the construction of the Mangla Dam situated on the Jhelum River, five barrages, one siphon, and eight inter-river link canals, as outlined in Annexure D of the Indus Basin Development Fund Agreement.¹⁶⁴ Although the Tarbela Dam was

¹⁵⁸ **PLA-0001**, Treaty, Art. IV(1).

¹⁵⁹ See **P-0277**, World Bank, “Indus Waters Settlement Plan” dated 18 April 1960, para. 7.

¹⁶⁰ **PLA-0043**, Indus Basin Development Fund Agreement between the Governments of the Commonwealth of Australia, Canada, The Federal Republic of Germany, New Zealand, Pakistan, the United Kingdom of Great Britain and Northern Ireland and the United States of America and the International Bank for Reconstruction and Development, (signed on 19 September 1960) 444 UNTS 259.

¹⁶¹ See **PLA-0001**, Treaty, Art. V.

¹⁶² **PLA-0043**, Indus Basin Development Fund Agreement between the Governments of the Commonwealth of Australia, Canada, The Federal Republic of Germany, New Zealand, Pakistan, the United Kingdom of Great Britain and Northern Ireland and the United States of America and the International Bank for Reconstruction and Development, (signed on 19 September 1960) 444 UNTS 259, Art. II; **P-0244**, A. Khan and M. H. Idrees, “The Impact of Climate Change on the Indus Basin: Challenges and Constraints” (Springer, 2023), p. 231. Additional supplemental contributions were agreed by way of the Indus Basin Development Fund (Supplemental) Agreement dated 31 March and 6 April 1964: **PLA-0048**, Indus Basin Development Fund (Supplemental) Agreement, 31 March and 6 April 1964, (entered into force on 6 April 1964) 503 UNTS 388.

¹⁶³ **PLA-0043**, Indus Basin Development Fund Agreement between the Governments of the Commonwealth of Australia, Canada, The Federal Republic of Germany, New Zealand, Pakistan, the United Kingdom of Great Britain and Northern Ireland and the United States of America and the International Bank for Reconstruction and Development, (signed on 19 September 1960) 444 UNTS 259, Annexure D.

¹⁶⁴ **P-0277**, World Bank, “Indus Waters Settlement Plan”, 18 April 1960, para. 7.

envisaged as part of the transition works, that dam did not commence operation until 1975.¹⁶⁵ A line diagram of the Indus Basin irrigation system that was initially built in the early 1900s and further developed from the 1960s to the present appears on page 53 below.¹⁶⁶

160. As can be seen in the diagram, Pakistan's Indus Basin irrigation system today comprises: (1) the Tarbela and Mangla Dams and their associated storage reservoirs; (2) the Chashma Barrage and reservoir; (3) twenty-three barrages/headworks/siphons; (4) twelve inter-river link canals; and (5) forty-five canal command areas (or geographic areas served by a specific canal network). This system allows for an irrigation network that extends for some 60,800 kilometers, and feeds into communal watercourses, farm channels, and field ditches that cover another 1.6 million kilometers.¹⁶⁷ All told, the Indus Basin irrigation system in Pakistan is the largest contiguous irrigation system in the world.¹⁶⁸ Given that India has now diverted most of the waters of the Eastern Rivers for its own irrigation needs, the Indus Basin waters that now supply Pakistan's irrigation system dominantly come from the Western Rivers.
161. Beyond replacing the flows from the Eastern Rivers with waters from the Western Rivers, the substantial system of engineering works constructed during the Transition Period significantly increased Pakistan's ability to control water flows in its irrigation system. Whereas prior to this system of works the timing of irrigation flows in Pakistan was dependent on the natural rise and fall of flows in the rivers themselves, the timing of irrigation flows in Pakistan is now predominantly controlled by the timing of releases from the large Pakistani storage reservoirs at Pakistan's Tarbela and Mangla Dams. The reregulating effect of these reservoirs enables Pakistan, at least for a period of weeks, to hold back waters during any period of high flows from upstream and to release waters during any period of low flows from upstream. The ability of such reservoirs to serve this purpose effectively, however, depends on the volume of water in the reservoir (which

¹⁶⁵ **P-0247**, K. Frenken (ed.) "Irrigation in Southern and Eastern Asia in Figures", AQUASTAT Survey – 2011, 37 *FAO Water Reports*, p. 386.

¹⁶⁶ **P-0278**, M. D. Ahmad et al, "Bringing transparency and consistency to Pakistan's seasonal water planning decisions: 1991 Inter-Provincial Water Apportionment Accord (WAA) Tool User Guide and Reference Manual, Second Edition" (2022), Commonwealth Scientific and Industrial Research Organisation, Canberra, p. 4.

¹⁶⁷ See **P-0244**, A. Khan and M. H. Idrees, "The Impact of Climate Change on the Indus Basin: Challenges and Constraints" in M. Ahmad (ed.), *Water Policy in Pakistan* (Springer, 2023), p. 231.

¹⁶⁸ See **P-0280**, Government of Pakistan, "Pakistan's First Biennial Update Report (BUR-1) to the United Nations Framework Convention on Climate Change (UNFCCC)" dated April 2022, p. 6.

is lower during drought years or after drawdowns at the beginning of the irrigation system) and on their continued operation in the face of sediment encroachment.¹⁶⁹

162. The following table provides the average annual flows of the Eastern and Western Rivers at gauging stations located in close proximity to the Line of Control, showing the change in such flows prior to the Treaty (1922–1961)¹⁷⁰ and subsequently (1962–1992 and 1993–2022).¹⁷¹

River		Gauging Station	Average Annual Flow (MCM)		
			1922–1961	1962–1992	1992–2022
Western Rivers	Indus	Tarbela	80,855 ¹⁷²	75,329	72,931
	Jhelum	Mangla	28,300	28,567	25,761
	Chenab	Marala	31,900	32,009	29,584
Eastern Rivers	Ravi	Below Madhopur	8,600	2,509	673
	Sutlej/Beas	Below Ferozepur	17,200	7,193	2,279

Figure 2: Average annual flows of the Eastern and Western Rivers

¹⁶⁹ See Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, pp. 26–27; **PHM-0019**, Hearing Presentation (“Addressing the Court’s Questions by Gregory L. Morris, PE PhD”) dated 16 July 2024, slide 12.

¹⁷⁰ **P-0263**, M. J. M. Cheema and M. U. Qamar, “Transboundary Indus River Basin: Potential Threats to Its Integrity” in S. I. Khan and T. E. Adams III (eds.) *Indus River Basin: Water Security and Sustainability* (Elsevier 2019), p. 190. Cheema and Qamar provide records of historical flow data for the Indus at Kalabagh downstream of Tarbela, while post-Treaty flows are measured at Tarbela. However, historical flow data at Tarbela was interpolated as part of the work on that project. See World Bank, “Study of the Water and Power Resources of West Pakistan: Volume III – Program for the Development of Surface Water Storage” (28 July 1967), Section II, Table 3; Annexure 1, pp. 4–5. See **P-0121**, World Bank Group Archives, Indus Basin Negotiations Inventory List, Folder 163961: Project Planning Report, Part II, Sections I–IX (January 1962) - Tarbela Dam Project - The West Pakistan, Water and Power Development Authority - Tippetts-Abbe-McCarthy-Stratton International Corporation, Exhibit I-5, Sheet 9; Section II, p. 1.

¹⁷¹ See Pakistan’s Memorial, Appendix D, Flow data of the Indus and its principal tributaries in Pakistan. In these data, the gauging stations for the Eastern Rivers are located immediately prior to the point at which those rivers cross into Pakistan; those for the Western Rivers are located downstream in Pakistan or Pakistan-administered territory. The decrease in the flow of the Eastern Rivers reflects in significant part the increased consumption of the flow of those rivers for agriculture in India following the conclusion of the Treaty.

¹⁷² This average covers the period of 1922 to 1963. See World Bank, “Study of the Water and Power Resources of West Pakistan: Volume III – Program for the Development of Surface Water Storage” (28 July 1967), p. 7; Section II, Table 3.

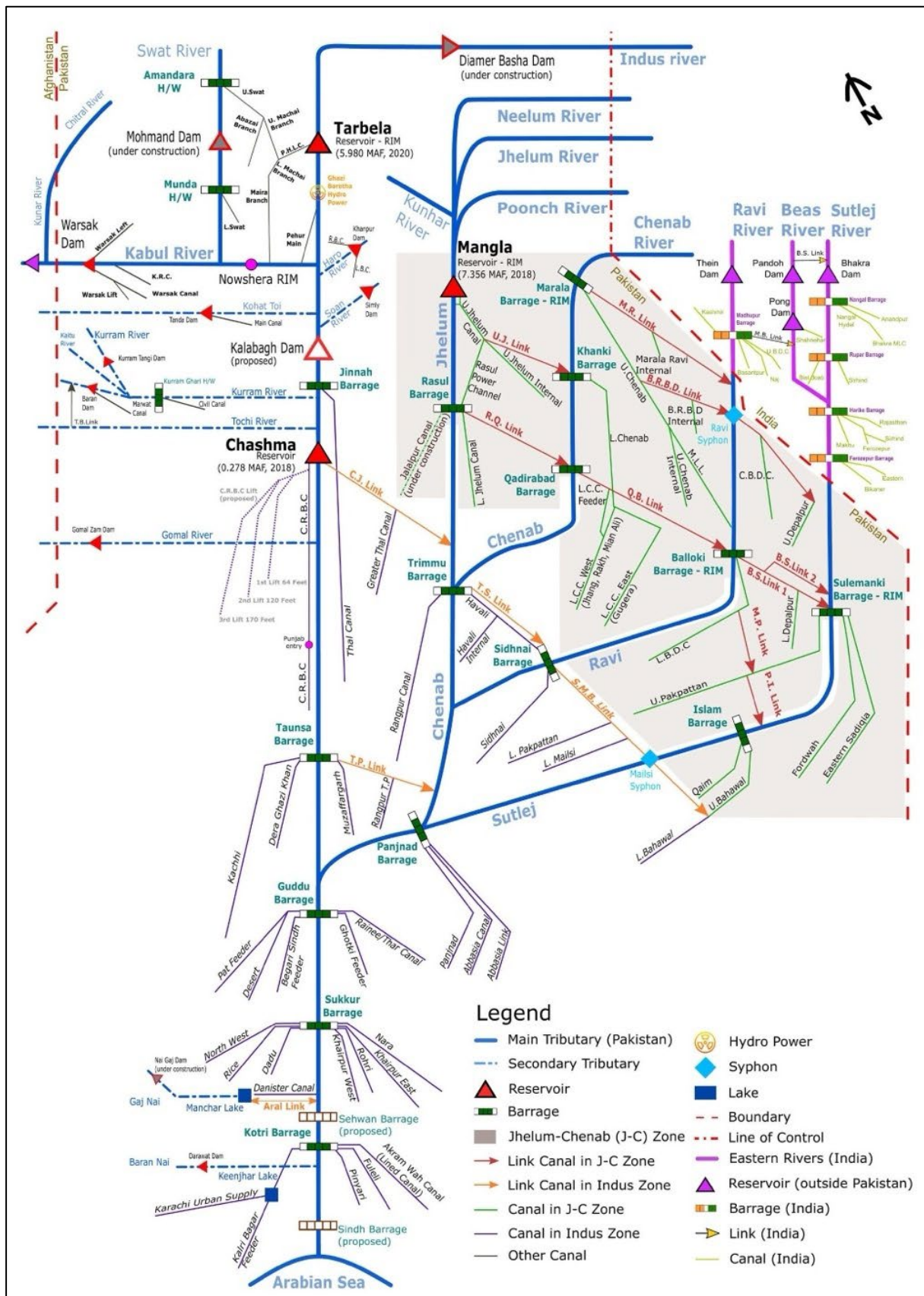


Figure 3: Schematic diagram of Indus Basin irrigation system in Pakistan

this page intentionally blank

2. Operation of the Permanent Indus Commission

(a) *Meetings of the Commission*

163. As previously noted, Article VIII(5) of the Treaty provides that the Commission shall “meet regularly at least once a year”. Since implementation of the Treaty in 1960 until recently, the Commission had been meeting regularly, usually at least twice a year.
164. The Commission met for the first time on 28 to 30 March 1961 and thereafter met between two and four times per year throughout the 1960s.¹⁷³ The early meetings of the Commission were concerned with developing its working procedures and the protocol for communications between the Commissioners, as well as related matters such as visas and privileges and immunities. The procedures for tours of inspection were discussed, as well as the exchange of daily gauge and discharge data required by the Treaty, the setting up of wireless stations for transmission for flood warnings, and other matters.
165. The first decade of the Commission’s work was also consumed in significant part by the supervision of the transitional arrangements under Annexure H, given that the Commission was responsible for the implementation of that Annexure pursuant to Article VIII(4)(e) of the Treaty.¹⁷⁴ The Commissioners discussed various aspects of the implementation during their meetings in the 1960s,¹⁷⁵ *inter alia* agreeing on various “amendments” to the transitional provisions of Annexure H.¹⁷⁶ In 1966, “questions” were presented for the first time by Pakistan for examination by the Commission under the dispute resolution procedures provided in Article IX(1).¹⁷⁷ Those questions concerned: the examination of questions by the Commission pursuant to Article IX(1) of the Treaty; the scope of the data to be supplied by India to Pakistan

¹⁷³ See **P-0647**, Records of meetings of the Permanent Indus Commission.

¹⁷⁴ **PLA-0001**, Treaty, Art. VIII(4)(e).

¹⁷⁵ See, e.g., **P-0647.14**, Record of the 14th Meeting of the Permanent Indus Commission, 25 to 31 May 1964, p. 6. See **P-0647.15**, Record of the 15th Meeting of the Permanent Indus Commission, 12 to 18 January 1965; **P-0647.16**, Record of the 16th Meeting of the Permanent Indus Commission, 16 to 22 February 1965; **P-0647.17**, Record of the 17th Meeting of the Permanent Indus Commission, 17 to 23 April 1965; **P-0647.18**, Record of the 18th Meeting of the Permanent Indus Commission, 28 May to 3 June 1965.

¹⁷⁶ See, e.g., **P-0647.17**, Record of the 17th Meeting of the Permanent Indus Commission, 17 to 23 April 1965, pp. 2–7; **P-0647.26**, Record of the 26th Meeting of the Permanent Indus Commission, 8 to 13 November 1967, p. 4; **P-0647.27**, Record of the 27th Meeting of the Permanent Indus Commission, 18 to 23 April 1968, pp. 3–4.

¹⁷⁷ **P-0647.21**, Record of the 21st Meeting of the Permanent Indus Commission, 28 September to 4 October 1966, p. 3.

under Article VI;¹⁷⁸ “[d]eliveries to Pakistan from the Eastern Rivers during the period September 1965 onwards (Annexure H)”;¹⁷⁹ and whether certain drains were completed before the Effective Date of the Treaty.¹⁸⁰ In 1967, the Commissioners agreed that four “questions” regarding Article IX(1) and one “question” as to the scope of the data to be supplied by India to Pakistan under Article VI constituted “disputes” to be resolved in accordance with Article IX(2) to (5).¹⁸¹ On 31 March 1967, the Commission submitted its report on the five “disputes” to the Governments of India and Pakistan.¹⁸² The Governments engaged in negotiation pursuant to Article IX(4) of the Treaty and, on 22 January 1976, signed an agreement resolving each of the disputes.¹⁸³

166. The 1960s saw the Commission address for the first time India’s plans to construct new Small Plants under Annexure D to the Treaty, including the Billing,¹⁸⁴ Shansha,¹⁸⁵ Sissu,¹⁸⁶ Khardung,¹⁸⁷ and Dras Small Plants.¹⁸⁸ The Commission also discussed the first Annexure D, Part 3 HEPs, those being the Stakna HEP on the Indus River¹⁸⁹ and the Sumbal HEP on the Jhelum River.¹⁹⁰
167. In the 1970s, with the completion of the transitional arrangements, the frequency of the Commission’s meetings decreased, with only a single meeting being held in many years. During

¹⁷⁸ **P-0647.21**, Record of the 21st Meeting of the Permanent Indus Commission, 28 September to 4 October 1966, p. 5; **P-0649.0034**, Letter No. WT(38/1)/(811-A)/PCIW dated 8 June 1963.

¹⁷⁹ **P-0647.21**, Record of the 21st Meeting of the Permanent Indus Commission, 28 September to 4 October 1966, p. 3.

¹⁸⁰ **P-0647.21**, Record of the 21st Meeting of the Permanent Indus Commission, 28 September to 4 October 1966, p. 6.

¹⁸¹ **P-0647.22**, Record of the 22nd Meeting of the Permanent Indus Commission, 17 to 24 January 1967, pp. 2–3.

¹⁸² **P-0616**, Agreement on the Resolution of the Disputes Concerning Article IX(1) of the IWT (India-Pakistan) dated 22 January 1976.

¹⁸³ **P-0616**, Agreement on the Resolution of the Disputes Concerning Article IX(1) of the IWT (India-Pakistan) dated 22 January 1976.

¹⁸⁴ **P-0649.0075**, Letter No. F.4(6)/65-IC/I dated 26 April 1965; **P-0647.12**, Record of the 12th Meeting of the Permanent Indus Commission, 5 to 11 September 1963, p. 4, para. 2(vi).

¹⁸⁵ **P-0649.0217**, Letter No. F.4(28)/61-IC(IT) dated 8 September 1971.

¹⁸⁶ **P-0649.0133**, Letter No. 4(10)/64-IC.VOL.II dated 13 September 1968.

¹⁸⁷ **P-0649.0076**, Letter No. F.4(6)/65-IC/II dated 26 April 1965.

¹⁸⁸ **P-0649.0074**, Letter No. F.4(6)/65-IC dated 26 April 1965. See **P-0647.27**, Record of the 27th Meeting of the Permanent Indus Commission, 18 to 23 April 1968; **P-0647.28**, Record of the 28th Meeting of the Permanent Indus Commission, 7 to 13 August 1968; **P-0647.29**, Record of the 29th Meeting of the Permanent Indus Commission, 25 to 30 December 1968.

¹⁸⁹ **P-0649.1730**, Letter No. F.4(1)/66-IC dated 9 September 1968.

¹⁹⁰ **P-0649.1731**, Letter No. 4(13)/65-IC dated 11 September 1968.

this decade, the Commission considered the data being supplied by India in relation to India's pre-Treaty plants on the Western Rivers that were "grandfathered in",¹⁹¹ such as India's Chinani (14 MW),¹⁹² Ganderbal (15 MW),¹⁹³ and Mahora (12 MW) HEPs.¹⁹⁴ This period also saw the discussion of additional Annexure D, Part 3 HEPs, including the Sumbal (22 MW),¹⁹⁵ Salal (690 MW),¹⁹⁶ and Lower Jhelum (105 MW) HEPs.¹⁹⁷ With respect to the Salal HEP, the records indicate considerable interactions,¹⁹⁸ including whereby Pakistan developed a series of questions as to whether the data supplied by India conformed with Annexure D, Paragraphs 8(d), (e), and

¹⁹¹ These include Run-of-River Plants on the Western Rivers that were in operation or under construction as on the Effective Date of the Treaty (under Paragraph 4 of Annexure D); and (2) Storage Works which were in operation as on the Effective Date (under Paragraph 4 of Annexure E).

¹⁹² See **P-0647.32**, Record of the 32nd Meeting of the Permanent Indus Commission, 2 to 8 January 1970, pp. 3–4; **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, pp. 3–4; **P-0647.40**, Record of the 40th Meeting of the Permanent Indus Commission, 19 to 23 December 1974, p. 4; **P-0647.45**, Record of the 45th Meeting of the Permanent Indus Commission, 24 to 29 September 1977, p. 2.

¹⁹³ See **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, p. 2.

¹⁹⁴ See **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, p. 2; **P-0647.44**, Record of the 44th Meeting of the Permanent Indus Commission, 25 to 30 May 1977, p. 2.

¹⁹⁵ See **P-0647.32**, Record of the 32nd Meeting of the Permanent Indus Commission, 2 to 8 January 1970, p. 3; **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, pp. 4–5; **P-0647.35**, Record of the 35th Meeting of the Permanent Indus Commission, 12 to 19 May 1971, p. 3; **P-0647.40**, Record of the 40th Meeting of the Permanent Indus Commission, 19 to 23 December 1974, p. 4; **P-0647.46**, Record of the 46th Meeting of the Permanent Indus Commission, 24 to 29 May 1978, pp. 2–3.

¹⁹⁶ See **P-0647.39**, Record of the 39th Meeting of the Permanent Indus Commission, 25 to 28 July 1974, p. 3; **P-0647.40**, Record of the 40th Meeting of the Permanent Indus Commission, 19 to 23 December 1974, pp. 1–4; **P-0647.42**, Record of the 42nd Meeting of the Permanent Indus Commission, 28 March to 2 April 1976, pp. 1–18; **P-0647.43**, Record of the 43rd Meeting of the Permanent Indus Commission, 26 to 30 April 1976, pp. 1–16.

¹⁹⁷ See **P-0647.44**, Record of the 44th Meeting of the Permanent Indus Commission, 25 to 30 May 1977, p. 3; **P-0647.45**, Record of the 45th Meeting of the Permanent Indus Commission, 24 to 29 September 1977, p. 2; **P-0647.46**, Record of the 46th Meeting of the Permanent Indus Commission, 24 to 29 May 1978, pp. 2–3; **P-0647.47**, Record of the 47th Meeting of the Permanent Indus Commission, 18 to 23 November 1978, p. 2; **P-0647.48**, Record of the 48th Meeting of the Permanent Indus Commission, 23 to 28 May 1979, p. 3.

¹⁹⁸ See in particular **P-0647.43**, Record of the 43rd Meeting of the Permanent Indus Commission, 26 to 30 April 1976, pp. 1–16.

(f) of the Treaty.¹⁹⁹ Those questions were ultimately settled through discussions between the governments of the Parties, which concluded in 1978.²⁰⁰

168. In the 1980s, the frequency of Commission meetings increased for a time. During this period, in addition to organizing tours of inspection and data sharing, the Commission continued its discussion of certain additional Annexure D, Part 3 HEPs on the Western Rivers, specifically the Lower Jhelum²⁰¹ and Salal HEPs.²⁰² The Commission also initiated discussions on issues that had arisen regarding the Dul Hasti HEP,²⁰³ which were ultimately resolved within the Commission.²⁰⁴ Further, a disagreement emerged as to whether the Wullar Barrage/Tulbul Navigation Project of India was covered by the Treaty, which the Parties considered to be a “question” to be taken up under Article IX of the Treaty.²⁰⁵ Those works, however, were suspended in 1987.²⁰⁶ Moreover, the Commission discussed and developed “questions” that had arisen with respect to the supplying

¹⁹⁹ See **P-0647.40**, Record of the 40th Meeting of the Permanent Indus Commission, 19 to 23 December 1974, pp. 2–3; **P-0647.42**, Record of the 42nd Meeting of the Permanent Indus Commission, 28 March to 2 April 1976, p. 2; **P-0647.43**, Record of the 43rd Meeting of the Permanent Indus Commission, 26 to 30 April 1976, p. 15. For India’s formulations, see **P-0647.42**, Record of the 42nd Meeting of the Permanent Indus Commission, 28 March to 2 April 1976, p. 3. Parallel formulations were later developed: **P-0647.43**, Record of the 43rd Meeting of the Permanent Indus Commission, 26 to 30 April 1976, pp. 3, 12–13.

²⁰⁰ Pakistan’s Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 72.

²⁰¹ See **P-0647.49**, Record of the 49th Meeting of the Permanent Indus Commission, 12 to 17 January 1980, p. 4; **P-0647.51**, Record of the 51st Meeting of the Permanent Indus Commission, 27 September to 2 October 1980, p. 3.

²⁰² See **P-0647.64**, Record of the 64th Meeting of the Permanent Indus Commission, 28 July to 2 August 1986, pp. 2–5; **P-0647.65**, Record of the 65th Meeting of the Permanent Indus Commission, 6 to 11 December 1986, pp. 4–5; **P-0647.66**, Record of the 66th Meeting of the Permanent Indus Commission, 22 to 27 January 1987, p. 2; **P-0647.67**, Record of the 67th Meeting of the Permanent Indus Commission, 14 to 19 February 1987, pp. 2–4; **P-0647.68**, Record of the 68th Meeting of the Permanent Indus Commission, 21 to 26 May 1987, p. 3.

²⁰³ See **P-0647.54**, Record of the 54th Meeting of the Permanent Indus Commission, 24 to 29 March 1982, p. 1; **P-0548 (KR-0090)**, Record of the 71st Meeting of the Permanent Indus Commission, 17 to 20 December 1988, p. 2.

²⁰⁴ Pakistan’s Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 72.

²⁰⁵ See **P-0647.64**, Record of the 64th Meeting of the Permanent Indus Commission, 28 July to 2 August 1986, pp. 5–6; **P-0647.65**, Record of the 65th Meeting of the Permanent Indus Commission, 6 to 11 December 1986, pp. 3–4; **P-0647.66**, Record of the 66th Meeting of the Permanent Indus Commission, 22 to 27 January 1987, pp. 1–2; **P-0647.67**, Record of the 67th Meeting of the Permanent Indus Commission, 14 to 19 February 1987, p. 2; **P-0647.69**, Record of the 69th Meeting of the Permanent Indus Commission, 18 to 23 July 1987, p. 2.

²⁰⁶ Pakistan’s Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 72.

of data under Article VI(2) of the Treaty,²⁰⁷ and questions relating to Article VII(2),²⁰⁸ for potential treatment under Article IX of the Treaty.

169. In the 1990s, the Commission returned to meeting, in most years, only once per year. During this time period, a particular focus of the meetings was on organization of tours and communication about flood flows, but from 1990 to 1991 the Commission also discussed Indian Run-of-River HEPs on the Western Rivers, resolving Pakistani objections with respect to the Dul Hasti HEP²⁰⁹ and addressing questions with respect to the Uri-I HEP.²¹⁰ In 1999, the Commission had a general discussion concerning Pakistan's views on India's Run-of-River HEPs and Storage Works on the Western Rivers, and Pakistan called for a meeting specifically to address the Baglihar HEP.²¹¹
170. In the 2000s, leading up to the initiation of the *Baglihar* Neutral Expert Proceedings in January 2005, the Commission met regularly. Other issues were raised, but the Baglihar HEP remained a repeated topic of discussion.²¹² This period also marked the first occasion in which Pakistan raised

²⁰⁷ See **P-0647.59**, Record of the 59th Meeting of the Permanent Indus Commission, 26 to 31 May 1984, pp. 3–5; **P-0647.60**, Record of the 60th Meeting of the Permanent Indus Commission, 9 to 14 January 1985, p. 2; **P-0647.61**, Record of the 61st Meeting of the Permanent Indus Commission, 11 to 16 May 1985, p. 2; **P-0647.62**, Record of the 62nd Meeting of the Permanent Indus Commission, 18 to 23 December 1985, p. 2; **P-0647.63**, Record of the 63rd Meeting of the Permanent Indus Commission, 24 to 29 May 1986, p. 2; **P-0647.64**, Record of the 64th Meeting of the Permanent Indus Commission, 28 July to 2 August 1986, p. 2; **P-0647.65**, Record of the 65th Meeting of the Permanent Indus Commission, 6 to 11 December 1986, pp. 2–3; **P-0647.66**, Record of the 66th Meeting of the Permanent Indus Commission, 22 to 27 January 1987, p. 2; **P-0647.67**, Record of the 67th Meeting of the Permanent Indus Commission, 14 to 19 February 1987, p. 2; **P-0647.68**, Record of the 68th Meeting of the Permanent Indus Commission, 21 to 26 May 1987, p. 2; **P-0647.69**, Record of the 69th Meeting of the Permanent Indus Commission, 18 to 23 July 1987, p. 3.

²⁰⁸ See **P-0647.65**, Record of the 65th Meeting of the Permanent Indus Commission, 6 to 11 December 1986, pp. 1–2; **P-0647.66**, Record of the 66th Meeting of the Permanent Indus Commission, 22 to 27 January 1987, p. 2; **P-0647.67**, Record of the 67th Meeting of the Permanent Indus Commission, 14 to 19 February 1987, p. 2; **P-0647.68**, Record of the 68th Meeting of the Permanent Indus Commission, 21 to 26 May 1987, p. 2; **P-0647.69**, Record of the 69th Meeting of the Permanent Indus Commission, 18 to 23 July 1987, pp. 2–3.

²⁰⁹ See **P-0647.71**, Record of the 73rd Meeting of the Permanent Indus Commission, 22 to 27 March 1990, p. 2; **P-0647.72**, Record of the 74th Meeting of the Permanent Indus Commission, 28 to 31 May 1990, p. 2; Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 72.

²¹⁰ See **P-0647.71**, Record of the 73rd Meeting of the Permanent Indus Commission, 22 to 27 March 1990, p. 2; **P-0647.72**, Record of the 74th Meeting of the Permanent Indus Commission, 28 to 31 May 1990, p. 2.

²¹¹ See **P-0647.81**, Record of the 83rd Meeting of the Permanent Indus Commission, 25 to 28 May 1999, p. 2.

²¹² See **P-0647.83**, Record of the 85th Meeting of the Permanent Indus Commission, 8 May to 1 June 2000, p. 2; **P-0647.84**, Record of the 86th Meeting of the Permanent Indus Commission, 29 May to 1 June 2001, p. 2; **P-0647.85**, Record of the 87th Meeting of the Permanent Indus Commission, 28 May to 1 June 2002, pp. 4–8; **P-0647.86**, Record of the 88th Meeting of the Permanent Indus Commission, 4 to 6 February 2003, pp. 2–6; **P-0647.87**, Record of the 89th Meeting of the Permanent Indus Commission, 28 to 30 May 2003, pp. 4–6; **P-0647.88**, Record of the 91st Meeting of the Permanent Indus Commission, 26 to 29 May 2004,

for discussion its concerns regarding India's plans for the KHEP.²¹³ Detailed discussion of the interactions within the Commission with respect to the KHEP and then the RHEP in the period after the completion of the Baglihar Neutral Expert Proceedings in 2007 and until the filing of these proceedings in August 2016 may be found in the Award on Competence.²¹⁴ Separately, in the immediate aftermath of the *Baglihar* Determination, the Commission succeeded in resolving questions that had arisen with respect to India's Nimoo Bazgo, Chutak, and Uri-II HEPs.²¹⁵

171. As for the functioning of the Commission in more recent years, Pakistan's Commissioner, Mr. Shah, testified before the Court that there has been a reduction in the nature and frequency of Commission meetings, with the Commission since 2018 meeting just once a year for not more than two days, including time for preparation and signing of the minutes.²¹⁶ Further, he maintains that in "recent years, India has been delaying or (most recently) withholding consent to hold the mandatory 'regular', or at least annual, meetings of the Commission, under Article VIII (5)".²¹⁷ Moreover, he testified that India is not sharing sufficiently detailed information on a timely basis regarding the construction of Annexure D, Part 3 HEPs,²¹⁸ saying that:

By the time India shares any information with Pakistan about the construction of a new Run-of-River hydropower plant on the Western Rivers, its design is already far advanced. The construction works, even other than the river works, have already started—and perhaps even been substantially completed. India thus presents Pakistan with a *fait accompli*, and appears to defend its design—and continue construction—even if Pakistan has convinced it that certain modifications to the design are necessary to bring it into line with the Treaty requirements.²¹⁹

pp. 6–7; **P-0544**, Record of the 90th Meeting of the Permanent Indus Commission, 15 to 19 January 2004, pp. 2–7.

²¹³ See paras. 203–205, *infra*; see also **P-0647.85**, Record of the 87th Meeting of the Permanent Indus Commission, 28 May to 1 June 2002, p. 9; **P-0647.87**, Record of the 89th Meeting of the Permanent Indus Commission, 28 to 30 May 2003, p. 6; **P-0647.88**, Record of the 91st Meeting of the Permanent Indus Commission, 26 to 29 May 2004, pp. 4–6; **P-0051**, Record of the 92nd Meeting of the Permanent Indus Commission, 27 to 29 November 2004, paras. 2–73.

²¹⁴ See Award on Competence, paras. 70–110; see also Part II.B, *supra*.

²¹⁵ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 72.

²¹⁶ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 71; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 137:5–8.

²¹⁷ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 71, and the sources cited therein; see also Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, pp. 137–139.

²¹⁸ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, paras. 78–84; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, pp. 143–146.

²¹⁹ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 78.

172. Mr. Shah also maintained that India has not been sharing complete and timely information with respect to hydrologic data²²⁰ and flood information²²¹ as required by the Treaty.

(b) *Tours of Inspection*

173. As discussed further in Part XIII.A, Articles VIII(4)(c) and (d) of the Treaty provide for general and special tours of inspection to be undertaken by the Commission, as part of their cooperative functions, for ascertaining the facts connected with various developments, works, or sites on the Rivers.²²² Indeed, tours of inspection have been a regular subject of discussion in the meetings of the Commission.
174. Tours of inspection of particular sites requested by India and Pakistan, pursuant to Article VIII(4)(d) of the Treaty, began in 1961.²²³ In 1962, the Commission decided upon a general tour of inspection (as envisaged in Article VIII(4)(c) of the Treaty, which is to occur every five years), but agreed that it could be done in only some areas, bearing in mind the difficulty of visiting the far reaches of the river system due to narrow and treacherous paths.²²⁴
175. In general, records of the tours of inspection available to the Court concern visits to various Annexure D, Part 3 HEPs on the Western Rivers, such as the Baglihar, Dul Hasti, Salal, and Uri-I HEPs, or to other works, such as the Rajal Lift Irrigation Station²²⁵ or Tulbul Navigation Project.²²⁶ In some instances, the tours were to a location where a Run-of-River HEP was

²²⁰ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, paras. 85–86; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, pp. 146–147.

²²¹ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 87; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, pp. 147–149.

²²² **PLA-0001**, Treaty, Article VIII(4).

²²³ See, e.g., **P-0649.0007**, Letter No. WT(9)/(191-A)/PCIW dated 15 December 1961; **P-0647.05**, Record the 5th Meeting of the Permanent Indus Commission dated 2 October 1961; **P-0647.06**, Record of the 6th Meeting of the Permanent Indus Commission, 29 January to 3 February 1962, p. 1.

²²⁴ **P-0647.06**, Record of the 6th Meeting of the Permanent Indus Commission, 29 January to 3 February 1962, pp. 1–2; **P-0647.09**, Record of the 9th Meeting of the Permanent Indus Commission, 24 to 30 August 1962, pp. 1–2; see also **P-0648.01**, Record of the Sixteenth Tour of Inspection by the Permanent Indus Commission undertaken from 15 to 25 July 1963; Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 73 (“the Commission adopted a procedure by which every year a tour of at least one river—sometimes two—would be undertaken, so that over five years each river had been visited. ... The agreed method was more convenient and practical”).

²²⁵ See, e.g., **P-0648.12**, Record of the 71st General Tour of Inspection by the Permanent Indus Commission, 18 to 23 September 1982.

²²⁶ See, e.g., **P-0648.13**, Record of the 78th General Tour of Inspection by the Permanent Indus Commission, 3 to 8 May 1986; **P-0648.16**, Record of the 82nd General Tour of Inspection by the Permanent Indus Commission, 1 to 4 December 1987.

proposed for construction²²⁷ and in other instances to a location where the work was already being constructed.²²⁸ Such tours of inspection continued past the issuance of the *Baglihar* Determination in February 2007, both to Annexure D, Part 3 HEPs, such as the Baglihar, Dah, Lower Jhelum, Lower Kalnai, Miyar, Mohra, Pakal Dul, Ratle, Salal, and Uri-II HEPs, or to India's sites of other works, such as the Tawi Barrage²²⁹ or the proposed Wullar Barrage.²³⁰

176. In more recent years, however, Pakistan's Commissioner, Mr. Shah, testified before the Court that "there have been no [tours of] inspections, general or special, since 2019", when a general inspection of the Chenab Basin occurred.²³¹ Further, he noted that since "2014, my predecessor, and now I, have been requesting our Indian counterpart promptly to arrange a tour of inspection of [KHEP] in order to inspect whether India has given effect to the orders of the [*Kishenganga*] Court of Arbitration concerning putting in place the adequate arrangements for the release of environmental flow past the KHEP's dam and into the Neelum River".²³²

3. India's Hydro-Electric Power Program on the Western Rivers

177. Due to India's non-participation in this proceeding, the Court has not received information directly from India as to its existing and planned program for HEPs on the Western Rivers. Even so, there exists considerable documentation with respect to existing India's HEPs on the Western Rivers, principally information communicated by India to Pakistan pursuant to Annexure D and

²²⁷ See, e.g., **P-0648.11**, Record of the 69th General Tour of Inspection by the Permanent Indus Commission, 17 to 22 April 1982 (proposed site for the Dul Hasti HEP); **P-0648.13**, Record of the 78th General Tour of Inspection by the Permanent Indus Commission, 3 to 8 May 1986 (proposed site for the Uri-I HEP); **P-0648.17**, Record of the 83rd General Tour of Inspection by the Permanent Indus Commission, 30 July to 4 August 1988 (proposed site for the Baglihar HEP).

²²⁸ See, e.g., **P-0648.06**, Record of the 49th General Tour of Inspection by the Permanent Indus Commission, 22 to 25 September 1974; **P-0648.08**, Record of the 57th General Tour of Inspection by the Permanent Indus Commission, 24 April to 1 May 1977; **P-0648.09**, Record of the 61st General Tour of Inspection by the Permanent Indus Commission, 24 to 31 March 1979; **P-0648.12**, Record of the 71st General Tour of Inspection by the Permanent Indus Commission, 18 to 23 September 1982; **P-0648.14**, Record of the 80th General Tour of Inspection by the Permanent Indus Commission, 18 to 24 October 1986 (construction of Salal HEP); **P-0648.23**, Record of the 106th General Tour of Inspection by the Permanent Indus Commission, 19 to 24 March 2007 (construction of Uri-II HEP).

²²⁹ See, e.g., **P-0648.26**, Record of the 112th General Tour of Inspection by the Permanent Indus Commission, 19 to 23 February 2011.

²³⁰ See, e.g., **P-0648.28**, Record of the 115th General Tour of Inspection by the Permanent Indus Commission, 29 May-1 June 2013.

²³¹ Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, paras. 76-77; see also Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, pp. 139:16-142:23.

²³² Pakistan's Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 77; see also Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 142:8-23.

Annexure E to the Treaty, and further some publicly available information upon which Pakistan has sought to estimate India's planned HEPs on the Western Rivers.

(a) *Pre-Treaty Hydro-Electric Plants*

178. The Treaty does not regulate India's HEPs on the Western Rivers that were in operation or under construction as on the Effective Date of the Treaty, subject to any proposed alterations resulting in a material change.²³³ On 31 March and 11 October 1961, India communicated to Pakistan the information specified in Appendix I to Annexure D to the Treaty, regarding: (1) HEPs on the Western Rivers that were in operation or under construction as on the Effective Date of the Treaty (under Annexure D);²³⁴ and (2) Storage Works that were in operation as on the Effective Date (under Annexure E).²³⁵ Relevantly, these included the following 14 HEPs:

- (a) in the Jhelum Basin, the Pahalgam (previously 186 KW, later modified to 4.5 MW);²³⁶ Mahora (12 MW);²³⁷ Bandipura (30 KW); Dachigam (40 KW); Kupwara (150 KW); Ganderbal (15 MW); and Poonch (160 KW) HEPs;²³⁸ and
- (b) in the Chenab Basin, the Kishtwar (350 KW);²³⁹ Chinani (14 MW);²⁴⁰ Nichalani Banihal (600 KW); Ranbir Canal (1.2 MW); Udampur (640 KW); Badarwah (previously 600 KW,

²³³ **PLA-0001**, Treaty, Annexure D, Pt. 2; Annexure E, para. 3.

²³⁴ **PLA-0001**, Treaty, Annexure D, para. 4; **P-0649.1743**, Letter No. 2(1)/61-IC dated 31 March 1961; **P-0649.1763**, Letter F.4(6)/61-IC dated 11 October 1961.

²³⁵ **PLA-0001**, Treaty, Annexure E, para. 4; **P-0649.1742**, Letter No. 2(1)/61-IC dated 31 March 1961; **P-0649.1762**, Letter No. F.4(5)/61-IC dated 11 October 1961.

²³⁶ **P-0649.0636**, Letter No. 3(1)/85-I.T./404 dated 30 November 1988.

²³⁷ Pakistan indicates that this HEP has since been destroyed due to flooding: Pakistan's Memorial, para. 5.7; **P-0649.0177**, Letter No. F.4/6/61-IC dated 30 September 1970.

²³⁸ Pakistan submits that the Pahalgam HEP has since been modified by India and, thus, is regulated by Annexure D, Part 3 to the Treaty. See Pakistan's Memorial, para. 5.7.

²³⁹ Pakistan indicates that this HEP has since been destroyed due to flooding: Pakistan's Memorial, para. 5.7.

²⁴⁰ **P-0647.45**, Record of the 45th Meeting of the Permanent Indus Commission, 24 to 29 September 1977; **P-0649.0403**, Letter No. F.4(7)/64-IC(IT) dated 14 March 1978:

Whereas the Pakistan Commissioner considered it to be a new plant, the Indian Commissioner held the view that it was an existing plant in terms of Paragraph 4 of Annexure 'D' to the Indus Waters Treaty. Without prejudice to the views held by either side on the subject and with a view to put an end to the controversy, it was agreed that the Indian Commissioner would supply the information as agreed to at the 32nd meeting of the Commission and the matter would be discussed further.

later modified to 1.5 MW);²⁴¹ and Rajouri (previously 650 KW, later modified to 3 MW) HEPs.²⁴²

179. From 1968 forward, the adequacy of the information supplied by India to Pakistan concerning proposed alterations in the design of such HEPs was the subject of extensive correspondence and discussion in the Commission, including with respect to the Chinani (14 MW),²⁴³ Ganderbal (15 MW),²⁴⁴ and Mahora (12 MW) HEPs.²⁴⁵

(b) *Post-Treaty Hydro-Electric Plants*

180. India has undertaken construction of HEPs on each of the three Western Rivers since the adoption of the Treaty. Specifically, beyond the pre-Treaty HEPs identified above, India has communicated to Pakistan information regarding the proposed construction of at least 86 HEPs on the Western Rivers, consisting of 32 Annexure D, Part 3 HEPs, 53 Small Plants under Annexure D, and one Storage Work under Annexure E.²⁴⁶
181. The first new Run-of-River HEPs proposed to be built by India on the Western Rivers were several ungated weir Small Plants pursuant to Paragraph 18 of Annexure D to the Treaty. Between 1962 and 1965, India communicated to Pakistan the information specified in Appendix III, further to Paragraphs 18 and 19 of Annexure D to the Treaty,²⁴⁷ regarding the Billing,²⁴⁸ Shansha,²⁴⁹

²⁴¹ **P-0649.0679**, Letter No. WT(130)/(5090-A)/PCIW dated 31 October 1989. Pakistan submits that the Badarwah HEP has since been modified by India and, thus, is regulated by Annexure D, Part 3 to the Treaty: Pakistan's Memorial, para. 5.7.

²⁴² **P-0649.1738**, Pakistan submits that the Rajouri HEP has since been modified by India and, thus, is regulated by Annexure D, Part 3 to the Treaty: Pakistan's Memorial, para. 5.7.

²⁴³ **P-0649.0130**, Letter No. 4(7)/64-I.C. dated 24 June 1968; **P-0647.32**, Record of the 32nd Meeting of the Permanent Indus Commission, 2 to 8 January 1970, pp. 3–4; **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, pp. 3–4; **P-0647.40**, Record of the 40th Meeting of the Permanent Indus Commission, 19 to 23 December 1974, p. 4; **P-0647.45**, Record of the 45th Meeting of the Permanent Indus Commission, 24 to 29 September 1977, p. 2.

²⁴⁴ **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, p. 2.

²⁴⁵ **P-0647.34**, Record of the 34th Meeting of the Permanent Indus Commission, 24 to 29 October 1970, p. 2; **P-0647.44**, Record of the 44th Meeting of the Permanent Indus Commission, 25 to 30 May 1977, p. 2.

²⁴⁶ These include the pre-Treaty Pahalgam and Rajouri HEPs, which Pakistan submits have since been modified by India and, thus, are regulated by Annexure D, Part 3 to the Treaty, but exclude the Badarwah HEP, with respect to which the Parties are in dispute as to its proper classification under Annexure D to the Treaty. See fn. 238, 241, 242, *supra*; Pakistan's Memorial, para. 5.7. Pakistan's Memorial, Appendix C; Pakistan's Post-Hearing Submissions, para. 2.81, Appendix.

²⁴⁷ **PLA-0001**, Treaty, Annexure D, para. 19.

²⁴⁸ **P-0649.0075**, Letter No. F.4(6)/65-IC/I dated 26 April 1965.

²⁴⁹ **P-0649.0217**, Letter No. F.4(28)/61-IC(IT) dated 8 September 1971.

Sissu,²⁵⁰ Khardung,²⁵¹ and Dras Small Plants.²⁵² Pakistan objected to the adequacy of the information supplied by India to Pakistan in relation to these Small Plants, and it became the subject of further correspondence and discussion within the Commission.²⁵³

182. Between September 1968 and January 1990, India communicated to Pakistan information regarding seven HEPs with operating storage (that is, an Operating Pool with storage capacity of more than zero) proposed to be constructed on the Western Rivers under Part 3 of Annexure D to the Treaty.²⁵⁴ Notably, the information contained the calculations for maximum Pondage in the Operating Pool and the associated particulars of design under Appendix II to Annexure D.
183. In May 1992, India notified Pakistan as to the proposed construction of the Baglihar HEP, to which Pakistan's Commissioner raised several objections including, relevantly, with respect to India's calculations for maximum Pondage in the Operating Pool.²⁵⁵ These objections were the subject of further correspondence and discussion in the Commission,²⁵⁶ and were ultimately referred to a neutral expert in the *Baglihar* Neutral Expert Proceedings for resolution.²⁵⁷ Between the initial notification of the Baglihar HEP and the present, India has notified Pakistan of twelve

²⁵⁰ **P-0649.0133**, Letter No. 4(10)/64-IC.VOL.II dated 13 September 1968.

²⁵¹ **P-0649.0076**, Letter No. F.4(6)/65-IC/II dated 26 April 1965.

²⁵² **P-0649.0074**, Letter No. F.4(6)/65-IC dated 26 April 1965.

²⁵³ See **P-0647.30**, Record of the 30th Meeting of the Permanent Indus Commission, 25 April to 1 May 1969; **P-0647.31**, Record of the 31st Meeting of the Permanent Indus Commission, 23 to 28 August 1969.

²⁵⁴ **P-0649.1730**, Letter No. F.4(1)/66-IC from the ICIW to the PCIW dated 9 September 1968; **P-0649.1731**, Letter No. 4(13)/65-IC dated 11 September 1968; **P-0649.0268**, Letter No. F.4(1)/62-IC(IT) dated 21 November 1974; **P-0649.0408**, Letter No. F.16(4)/62-IT dated 3 July 1978; **P-0649.0500**, Letter No. F.11(2)/82-I.T./135 dated 18 May 1984; **P-0649.0534**, Letter No. F.3(5)/83-I.T./227 dated 30 January 1986; **P-0649.0695**, Letter No. 4(1)/86-I.T./485 dated 15 January 1990. Although the information regarding the Salal HEP was also conveyed by India to Pakistan pursuant to Paragraph 9 of Annexure D to the Treaty, the Salal HEP was designed with no Live Storage, and was ultimately subject to a separate agreement between the Parties. See **PLA-0053**, Agreement Between the Government of India and the Government of the Islamic Republic of Pakistan Regarding the Salal Hydro-Electric Plant, 14 April 1978. The Agreement is reproduced in *India Bilateral Treaties and Agreements (IBTA)*, Volume 10, Doc. No. 657.

²⁵⁵ **P-0649.2047**, Letter No. WT(127)/(5293-A)/PCIW dated 12 August 1992, para. 5.

²⁵⁶ See, e.g., **P-0586**, Letter No. WT(127)/(5283-A)/PCIW from PCIW to ICIW dated 12 August 1992; **P-0649.0786**, Letter No. 3(1)/84-I.T./646 dated 7 May 1993; **P-0587**, Letter No. WT(172)/(6333-A)/PCIW from PCIW to ICIW dated 13 July 2002; **P-0649.0945**, Letter No. 9/2/2002-IT/1057 dated 7 November 2002.

²⁵⁷ **P-0230**, Request for the Appointment of Neutral Expert dated 15 January 2005, para. 4.

Run-of-River HEPs with operational storage proposed to be constructed on the Western Rivers under Part 3 of Annexure D to the Treaty.²⁵⁸

184. Thus, in total, India has notified Pakistan of 32 Annexure D, Part 3 HEPs, 20 of which have operational storage, as summarized in the table at page 67 below.²⁵⁹

(c) *River-by-River Summary of India's Completed or Planned Hydro-Electric Program on the Western Rivers*

185. India's completed or planned hydro-electric program on the Western Rivers may be summarized river-by-river as follows.

186. With respect to the Indus River, Pakistan maintains that India has completed 16 new HEPs. Most of these plants have tended to be relatively small (installed capacity of less than 1 MW), given the remote and mountainous area through which the river runs.²⁶⁰ However, larger plants are either now under construction, such as Magdum Sangra (19 MW) and Nimu Chilling (24 MW) HEPs, or are planned for the future, such as Achinathang-Sanjak (220 MW), Drass Shingo (107 MW), and Sunit (295 MW) HEPs.²⁶¹ All told, Pakistan estimates that India intends to build up to 63 new HEPs on the Indus River: 16 completed projects; 27 under construction; and 20 planned.²⁶²

²⁵⁸ **P-0055**, Letter No. 3/7/82-IT/1228 (with enclosures) dated 19 June 2006; **P-0649.1065**, Letter No. 3/1/2003-IT/1349 dated 27 December 2006; **P-0649.1209**, Letter No. 3/9/2006-IT/1793 dated 31 May 2010; **P-0649.1337**, Letter No. 3/2/2011-IT/1930 dated 27 April 2012; **P-0649.1340**, Letter No. 3/4/2009-IT/1939 dated 22 June 2012; **P-0077**, Letter No. 3/5/2007-IT/1947 (with enclosures) dated 16 August 2012; **P-0649.1372**, Letter No. 3/1/1990-IT/1984 dated 26 February 2013; **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021; **P-0649.1587**, Letter No. Y-19011/5/2019-IT/2374 dated 7 July 2021; **P-0649.1603**, Letter No. Y-19011/2/2018/2378 dated 10 August 2021; **P-0649.1634**, Letter No. Y-19011/10/2019-IT/2382 dated 9 October 2021; **P-0649.1718**, Letter No. 3/7/2007-IT/ dated 20 June 2023.

²⁵⁹ This table sets out the installed capacity and operating pool storage volumes as originally notified to Pakistan by India. See notes 254 and 258 above. In the case of the Baglihar HEP, the maximum pondage for the operating pool was reduced from 37,500,000 CM to 32,560,000 CM by the *Baglihar* Neutral Expert. India also has notified Pakistan of several other Annexure D, Part 3 HEPs that have little or no Live Storage. In addition, India notified Pakistan as to the construction of the Salal HEP, an Annexure D, Part 3 HEP, designed to operate with no Live Storage.

²⁶⁰ Pakistan's Memorial, para. 5.10.

²⁶¹ Pakistan's Memorial, paras. 5.11–5.12.

²⁶² Pakistan's Memorial, para. 5.13.

Project	Western River (Main)	Installed Capacity (MW)	Operating Pool Storage (CM)	Daily or Weekly Load Calculations	Status	Date of Notification
Stakna	Indus	4	7,954	Daily	Completed	9 September 1968
Sumbal	Jhelum	22	200,046	Daily	Completed	11 September 1968
Lower Jhelum	Jhelum	105	961,498	Daily	Completed	21 November 1974
Dul Hasti	Chenab	780	8,000,000	Weekly	Completed	3 July 1978
Upper Sind	Jhelum	105	404,290	Daily	Completed	18 May 1984
Kargil	Indus	3.75	11,425	Daily	Completed	30 January 1986
Parnai	Jhelum	37.5	67,680	Daily	Under Construction	15 January 1990
Baglihar	Chenab	900	37,500,000	Weekly	Completed	20 May 1992
Kishenganga	Jhelum	330	7,552,609	Weekly	Completed	2 June 1994
Nimoo Bazgo	Indus	45	9,720,000	Weekly	Completed	27 December 2006
Ranja-Ala Dunadi	Chenab	15	2,065	N/A	Completed	31 May 2010
Miyar	Chenab	120	900,000	Weekly	Under Construction	27 April 2012
Lower Kalnai	Chenab	48	760,000	Weekly	Under Construction	22 June 2012
Rattle	Chenab	850	23,860,000	Weekly	Under Construction	16 August 2012
New Ganderbal	Jhelum	93	100,000	Weekly	Under Construction	26 February 2013
Kiru	Chenab	624	10,500,000	Weekly	Under Construction	1 June 2021
Kargil Hunderman	Indus	25	40,689	N/A	Under Construction	7 July 2021
Mandi	Jhelum	15	2,202	N/A	Under Construction	10 August 2021
Ans II	Chenab	23	22,600	N/A	Under Construction	9 October 2021
Kwar	Chenab	540	9,160,000	Weekly	Under Construction	21 June 2023

Figure 4: Summary of completed Run-of-River HEPs with Operating Pool Storage

this page intentionally blank

187. With respect to the Jhelum River, Pakistan maintains that India has completed 19 new HEPs, with these being larger in scale than those constructed on the Indus River. Among the larger completed HEPs are: Kishenganga (330 MW); Lower Jhelum (105 MW); Uri-I (480 MW); and Uri-II (240 MW) HEPs.²⁶³ Pakistan is aware of nine projects currently under construction on the Jhelum River, including the New Ganderabal (93 MW) HEP.²⁶⁴ Further, India is said to be planning to construct 36 HEPs in the future, though these plants are relatively small, with the largest being: Lidder-I (50 MW); Lidder-II (45 MW); and Shutkari Kullam (84 MW) HEPs.²⁶⁵ All told, Pakistan estimates that India intends to build up to 64 new HEPs on the Jhelum River: 19 completed projects; nine under construction; and 36 planned.²⁶⁶
188. With respect to the Chenab River, Pakistan maintains that India has completed 17 Run-of-River HEPs, but these are of a much larger scale than those of the Indus River or Jhelum River. Among these HEPs are Baglihar (900 MW); Dul Hasti (780 MW); and Salal (690 MW) HEPs.²⁶⁷ Pakistan is also aware of 8 HEPs that are under construction, including: Lower Kalnai (48 MW); Miyar (120 MW); Kiru (624 MW); Kwar (540 MW); and Ratle (850 MW) HEPs.²⁶⁸ As for planned projects, Pakistan believes that 49 HEPs are planned, many of which are large, including: Dugar (380 MW); Dugli (360 MW); Kirthai (1,320 MW); Kirthai-Naunatu (1,190 MW); Naunat (400 MW), and Sawalkot (1,856 MW) HEPs.²⁶⁹ According to Pakistan, India is also constructing or planning Storage Works in the Chenab Basin regulated under Annexure E of the Treaty; specifically, India has begun construction of the Pakal Dul (1,500 MW) Storage Work. Pakistan believes that India also has Storage Works with HEPs planned for Bursar (1,230 MW) and Gypsa (240 MW).²⁷⁰ All told, Pakistan estimates that, along with the Storage Works, India intends to build up to 74 Run-of-River HEPs on the Chenab River: 17 completed projects; eight under construction; and 49 planned.²⁷¹

²⁶³ Pakistan's Memorial, para. 5.14.

²⁶⁴ Pakistan's Memorial, para. 5.15.

²⁶⁵ Pakistan's Memorial, para. 5.16.

²⁶⁶ Pakistan's Memorial, para. 5.17.

²⁶⁷ Pakistan's Memorial, para. 5.18.

²⁶⁸ Pakistan's Memorial, para. 5.19.

²⁶⁹ Pakistan's Memorial, para. 5.20.

²⁷⁰ Pakistan's Memorial, paras. 5.3, 5.21.

²⁷¹ Pakistan's Memorial, para. 5.21.

189. The following table provides the information compiled by Pakistan on these existing, under construction, or planned HEPs on the Western Rivers, including the storage capacity, both of Dead Storage and Operating Pool storage:

Description	No. of Projects	Installed Capacity (MW)	Storage Capacity (MCM)		
			Dead Storage	Live Storage ²⁷²	Gross Storage
India's HEPs on the Indus					
Completed	16	120.5	43.69	9.74	53.43
Under Construction	27	136.8	2.89	0.04	2.93
Planned	20	1,240.0	NA	NA	NA
Total (A)	63	1,497.3	> 46.58	> 9.78	> 56.36
India's HEPs on the Jhelum					
Completed	19	1,333.2	17.85	9.13	26.99
Under Construction	9	212.1	0.07	0.17	0.24
Planned	36	678.0	NA	NA	NA
Total (B)	64	2,223.3	> 17.92	> 9.30	> 27.23
India's HEPs and Storage Works on the Chenab					
Completed	17	2,420.6	643.97	45.54	689.39
Under Construction	8	3,707.0	122.83	153.62	276.45
Planned	49	10,491.2	NA	> 2,021.50	> 2,671.70
Total (C)	74	16,618.8	> 766.80	> 2,220.66	> 3,637.54
Total [(A) + (B) + (C)]	201	20,339.4	> 831.31	> 2,239.74	> 3,721.14

Figure 5: India's hydro-electric program on the Western Rivers²⁷³

²⁷² These figures for Live Storage exclude "Surcharge Storage" as defined in Paragraph 2(e) Annexure D and Paragraph 2(f) of Annexure E of the Treaty.

²⁷³ Pakistan's Memorial, para. 5.22 (modified by the Court to depict storage capacity converted to million cubic meters (MCM)). The Court notes that "construction projects" refers to projects that have been notified to Pakistan under the relevant provision of Annexures D or E to the Treaty, but in respect of which India has not confirmed their entry into operation, officially or otherwise. See Pakistan's Memorial, Appendix C, para. 1(b).

190. Thus, while recognizing that the storage for some of the planned HEPs is unknown, India’s new works on the Western Rivers under Annexures D and E at present may be estimated to reach an aggregate amount of storage of more than 3,721.14 MCM. Thus, as points of reference, it may be noted that:

Aggregate estimated Indian water storage for HEPs under Annexures D and E	> 3,721.14 MCM
Aggregate permitted Indian water storage under Annexure E	4,440 MCM ²⁷⁴
Average annual combined flow of the Western Rivers (1992–2022)	128,270 MCM ²⁷⁵

Figure 6: Comparison of water storage volumes with the annual flow of the Western Rivers

4. Dispute Resolution Proceedings under the Treaty

191. As previously noted, Article IX(1) provides that any question concerning the interpretation or application of the Treaty, or the existence of any fact which, if established, might constitute a breach of the Treaty, must first be examined by the Commission, which will endeavor to resolve the question by agreement.²⁷⁶ As referred to above, several differences that have arisen between the Parties have been examined by the Commission under Article IX(1), including in relation to the Salal, Dul Hasti, Nimoo Bazgo, Chutak, and Uri-II HEPs, as well as the Wullar Barrage/Tulbul Navigation Project.²⁷⁷
192. Under Article IX(2), if the Commission does not reach agreement on a question, then a difference will be deemed to have arisen.²⁷⁸ If the difference, in the opinion of either Commissioner, falls within the provisions of Part 1 of Annexure F to the Treaty, either Commissioner under Article IX(2)(b) may request the appointment of a neutral expert to resolve the difference in accordance with the provisions of Part 2 of Annexure F (“Neutral Expert”).²⁷⁹ If a difference does not come within the provisions of Article IX(2)(a) (including insofar as neither Commissioner has

²⁷⁴ See n. 134, *supra*.

²⁷⁵ See Pakistan’s Memorial, Appendix D, Flow data of the Indus and its principal tributaries in Pakistan, para. 2, which provides that the thirty-year average flows of Indus and its principal tributaries amounts to 103.99 MAF, or 128,270 MCM.

²⁷⁶ PLA-0001, Treaty, Art. IX(1).

²⁷⁷ The work is said to have been suspended since 1987. See Pakistan’s Memorial, Appendix B, Statement of Syed Muhammad Mehar Ali Shah, para. 72.

²⁷⁸ PLA-0001, Treaty, Art. IX(2).

²⁷⁹ PLA-0001, Treaty, Art. IX(2)(a).

requested that it be dealt with by a neutral expert),²⁸⁰ or if the neutral expert appointed to resolve a difference determines that it should be treated as a “dispute”, then under Article IX(2)(b), a dispute will be deemed to have arisen, and the dispute may be settled through a court of arbitration in accordance with Articles IX(3), (4), and (5), and Annexure G (“Court of Arbitration”), or in any other way agreed upon by the Commission under Article IX(2)(b).²⁸¹

193. The present proceedings represent the third occasion on which the Parties have resorted to third-party dispute settlement mechanisms under Article IX(2) of the Treaty. The first such proceedings were the *Baglihar* Neutral Expert Proceedings, commenced on 15 January 2005 when Pakistan requested the appointment of a neutral expert to resolve differences concerning India’s design of its Baglihar HEP on the Chenab River; and the second were the *Kishenganga* Arbitration proceedings, commenced on 17 May 2010 when Pakistan requested the appointment of a court of arbitration to resolve disputes concerning India’s construction of the KHEP on a tributary of the Jhelum River. This section provides a brief overview of those proceedings.

(a) *Baglihar Neutral Expert Proceedings*

194. On 15 January 2005, Pakistan requested the World Bank to appoint a neutral expert pursuant to Paragraph 5(c) of Annexure F to the Treaty to resolve the following differences that had arisen in the Commission concerning India’s design of its Baglihar HEP on the Chenab River:
- (i) Pakistan is of the considered view that the design of the Baglihar Hydroelectric Plant on Chenab Main does not conform to criteria (e) and (a) specified in Paragraph 8 of Annexure D to the Indus Waters Treaty 1960 and that the Plant Design is not based on correct, rational and realistic estimates of maximum flood discharge at the site. The Indian side does not agree to Pakistan’s position.
 - (ii) Pakistan is of the considered view that the pondage of 37.722 MCM exceeds twice the pondage required for Firm Power in contravention of Paragraph 8(c) of Annexure D to the Treaty. The Indian side does not agree to Pakistan’s position.
 - (iii) Pakistan is of the considered view that the intake for the turbine for the plant is not located at the highest level consistent with satisfactory and economical construction and operation of the plant as a Run-of-River Plant and is in contravention of Paragraph 8(f) of Annexure D to the Treaty. The Indian side does not agree to Pakistan’s position.²⁸²

²⁸⁰ As previously noted (see footnote 152), the application of this provision was the subject of analysis by the *Kishenganga* Court, see **PLA-0003**, *Kishenganga* Partial Award, paras. 476–482, and by this Court, see Award on the Competence of the Court, paras. 166–213.

²⁸¹ **PLA-0001**, Treaty, Art. IX(2)(b).

²⁸² **P-0230**, Request for the Appointment of Neutral Expert dated 15 January 2005, Statement of Points of Difference.

195. On 12 May 2005, following consultation with the Parties, the World Bank appointed Mr. Raymond Lafitte as the neutral expert under Annexure F to the Treaty (“**Baglihar Neutral Expert**”).²⁸³ On 12 February 2007, the *Baglihar* Neutral Expert issued his Expert Determination addressing the differences between the Parties with respect to the Baglihar HEP (“**Baglihar Determination**”).²⁸⁴ The *Baglihar* Determination made six determinations addressing the differences that had arisen in respect of Paragraphs 8(a), (c), (e), and (f) of Annexure D of the Treaty, which related to: (i) the maximum design flood; (ii) the issue of a gated or ungated spillway; (iii) the level of the spillway gates; (iv) the artificial raising of the water level; (v) the maximum Pondage; and (vi) the level of the power intake.

196. In summarizing the approach taken to interpreting the Treaty, the *Baglihar* Neutral Expert stated:

In [i]nterpreting the Treaty, the NE has relied on the rules of the Vienna Convention on the Law of Treaties which reflect customary international law with regard to ordinary methods of treaty interpretation. The Treaty was negotiated and concluded during a period of tension between India and Pakistan. However, in the view of the NE, because of this tension, those who drafted the Treaty aimed for predictability and legal certainty in its drafting, so as to ensure sound implementation. The Treaty contains clear language and wording on how and to which extent India and Pakistan may be allowed to utilize the waters of the Indus system of rivers. The Treaty also gives a clear indication of the rights and obligations of both Pakistan and India. These rights and obligations should be read in the light of new technical norms and new standards as provided for by the Treaty.

Furthermore, and taking account of the ordinary methods of interpretation, the NE is of the opinion that interpretation of the Treaty must be guided by the principle of integration and the principle of effectiveness. These two principles provide for the Treaty to find effect in its whole and to ensure that each of the object(s) and purpose(s) of the Treaty is given fullest weight and effect when interpreting the rights and obligations under the Treaty. According to the Preamble of the Treaty, the object(s) and the purpose(s) of this Treaty are to attain the most complete and satisfactory utilisation of the waters of the Indus systems rivers, to fix and delimit the rights and obligations of each party in relation to the other concerning the use of these waters, and to provide for the settlement of questions arising from the application or the interpretation of the Treaty. The objectives set out in the Preamble cannot be read in isolation from each other. They are all complementary in light of the principles of integration and effectiveness and no hierarchy can be deduced from the wording of the Preamble. The rights and obligations contained in Part 3 of Annexure D must be interpreted so as to allow for the fulfilling of the object(s) and purpose(s) of the Treaty in “a spirit of goodwill and

²⁸³ The procedural history of the *Baglihar* Neutral Expert Proceedings is set out in **PLA-0002**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Expert Determination on points of difference referred by the Government of Pakistan under the provisions of the Indus Waters Treaty dated 12 February 2007 (“**Baglihar Determination**”), pp. 3–5.

²⁸⁴ The *Baglihar* Determination consists of seven parts: (1) Introduction; (2) Points of Difference Referred by Pakistan and India’s Position; (3) Provisions of the Treaty Directly Related to the Points of Difference; (4) Technical Data Concerning the Baglihar Project; (5) General Considerations as the Foundation for the Expert Determination; (6) Expert Determination; and (7) Apportionment between the Parties of Costs of Remuneration and Expenses of the Neutral Expert: **PLA-0002**, *Baglihar* Determination.

friendship” and in “a co-operative spirit”, taking into account the best and latest practices in the field of construction and operation of hydro-electric plants.²⁸⁵

197. With respect to the first determination relating to the maximum design flood, the *Baglihar* Neutral Expert determined to “retain the value of 16,500 m³/s for the peak discharge of the design flood” as proposed by India, stating that “[c]limate change, with the possible associated increase in floods, also encourages a prudent approach”.²⁸⁶

198. With regard to the second issue of a gated or ungated spillway under Paragraph 8(e) of Annexure D to the Treaty, the *Baglihar* Neutral Expert determined:

The NE considers, in conformity with the state of the art, that the conditions at the site of the Baglihar plant require a gated spillway. An analysis done by the NE on 13,000 existing spillways in the world shows that 89% of these structures, having a design discharge higher than 14,000 m³/s, are gated.

This decision is consistent with the provisions of the Treaty, requiring a sound and economical design, and satisfactory construction and operation of the works. It is also in accordance with the Preamble of the Treaty which provides that “[t]he Government of India and the Government of Pakistan, being equally desirous of attaining the most complete and satisfactory utilization of the waters of the Indus system of rivers (...)”.²⁸⁷

199. With regard to the third issue concerning the level of the spillway gates further to Paragraphs 8(d) and (e) of Annexure D to the Treaty, the *Baglihar* Neutral Expert determined:

The NE considers that the gated chute spillway on the left wing, planned in India’s design, which has its sill located at [elevation (el.)] 821 [meters above sea level (m asl)], is at the highest level consistent with sound and economical design and satisfactory construction and operation of the works.

...

The NE considers that the sluice spillway, planned in India’s design and composed of five outlets, has two functions: sediment control of the reservoir and evacuation of a large part of the design flood. In conformity with international practice and the state of the art, he considers also that the proposed outlets (five gates of 105 m²) should be of the minimum size and located at the highest level (808 m asl), consistent with a sound and economical design and satisfactory construction and operation of the works. But to ensure protection against flooding of Pul Doda, the outlets should preferably be located 8 m lower, at about el. 800 m asl.

Sound operation of the outlets will necessitate carrying out maintenance of the reservoir with drawdown sluicing each year during the monsoon season. The reservoir level should be drawn down to a level of about 818 m asl, that is to say 17 m below that of the Dead Storage Level. For this level, the free flow discharge is the annual flood of the order of 2500 m³/s. This is in conformity with *Annexure D, Part I, 2(a)* of the Treaty, which provides that the “‘Dead Storage’ means that portion of the storage which is not used for *operational purpose*”.

²⁸⁵ **P-0547 (BR-0006)**, *Baglihar* Determination, Executive Summary, p. 5. See also **PLA-0002**, *Baglihar* Determination, pp. 13–19 (full discussion).

²⁸⁶ **PLA-0002**, *Baglihar* Determination, p. 89.

²⁸⁷ **PLA-0002**, *Baglihar* Determination, p. 91.

Operational purpose means power generation (and this is impossible for the Dead Storage because of the high level of the power intake). The reservoir drawdown below the Dead Storage Level will be done for *maintenance purposes*. It is commonly agreed in practice that maintenance is an absolute necessity, with its ultimate objective of ensuring the *sustainability of the scheme*.²⁸⁸

200. With regard to the fourth issue concerning the artificial raising of the water level further to Paragraph 8(a) of Annexure D to the Treaty, the *Baglihar* Neutral Expert determined:

In application of the provisions of the Treaty, the NE considers that the dam crest elevation should be set at the lowest elevation compatible with a sound and safe design based on the state of the art.

The dam crest elevation of the Baglihar dam, fixed in the design submitted by India at el. 844.5 m asl, resulting from a freeboard above the Full Pondage Level of 4.50 m, is not at the lowest elevation.

The Determination of the NE is that the freeboard should be 3 m above the Full Pondage Level leading to a dam crest elevation at 843.0 m asl. This is possible if the design of the chute spillway is optimised by minor shape adjustments in order to increase its capacity.²⁸⁹

201. With respect to the fifth issue concerning the calculation of the maximum Pondage further to Paragraph 8(d) of Annexure D to the Treaty, the *Baglihar* Neutral Expert determined:

Applying the provisions of the Treaty and based on the state of the art, the NE considers that the first objective of pondage is to regulate the flow of the river to meet consumer demand.

He considers also that the values for maximum pondage stipulated by India as well as by Pakistan are not in conformity with the criteria laid down in the Treaty.

The Determination of the NE is that the maximum Pondage should be fixed at 32.56 M.m3, and the corresponding Dead Storage Level at el. 836 m asl, one meter higher than the level of the Indian design.²⁹⁰

202. With respect to the sixth issue concerning the level of the power intake further to Paragraph 8(f) of Annexure D to the Treaty, the *Baglihar* Neutral Expert determined:

The NE considers that the elevation of the intake stipulated by India is not at the highest level, as required by the criteria laid down in the Treaty.

The determination of the NE is that the intake level should be raised by 3 m and fixed at el. 821.0 m asl.

The required minimum submergence depth depends on the discharge and the inflow approach conditions. The location of the intake structure proposed by India leads to asymmetrical approach conditions. A different arrangement, with more symmetrical approach conditions could reduce the required minimum submergence depth.

The NE believes that at the design stage the normal practice is to avoid the development of vortices by an appropriate arrangement of the intake structure and sufficient submergence or operating restrictions at the minimum water level. In particular cases where these measures

²⁸⁸ PLA-0002, *Baglihar* Determination, p. 100 (emphasis in original).

²⁸⁹ PLA-0002, *Baglihar* Determination, p. 102.

²⁹⁰ PLA-0002, *Baglihar* Determination, p. 105.

cannot be implemented for technical or economic reasons, then recourse to anti-vortex devices would be the best alternative.

He recommends that all possible structural measures should be taken to limit the circulation of flow within the intake structure and in its vicinity, especially avoiding sharp bends inside the intake structure and in its vicinity.²⁹¹

(b) *Kishenganga Arbitration*

203. The origins of the disputes between the Parties concerning the KHEP date back to 1988, when it first came to the Pakistani Commissioner's attention that "work on a scheme envisaging diversion of the waters of the Kishenganga River into Wullar Lake had been taken in hand".²⁹² The history of the disputes regarding the KHEP, their developments within the Commission, and the procedural history of the *Kishenganga Arbitration*, are summarized in the Court's Award on Competence.²⁹³
204. It suffices to note that the KHEP was first conceived as a Storage Work within the meaning of Annexure E to the Treaty, having a reservoir with a gross storage capacity of 220 MCM. In 2006, however, the KHEP was re-designed as a new Run-of-River Plant falling under Annexure D of the Treaty, with a gross storage capacity of 18.35 MCM.²⁹⁴ Pakistan's Commissioner subsequently raised specific objections to the re-configured KHEP, which were discussed in the meetings of the Commission; however, no agreement was reached.²⁹⁵
205. On 4 February 2008, Pakistan's Commissioner identified specific matters that had arisen out of the discussions of the Commission and, in his view, required resolution.²⁹⁶ By way of summary, those matters concerned the following six questions: (1) whether India's proposed diversion of the Kishenganga (Neelum) river into another tributary as part of the design of the KHEP breached India's legal obligations owed to Pakistan under the Treaty; (2) whether the design of the KHEP freeboard conformed with Paragraph 8(a) of Annexure D to the Treaty; (3) whether the pondage calculation used by India in the KHEP design and the associated placement of the power intakes conformed with Paragraph 8(c) and Paragraph 8(f) of Annexure D to the Treaty; (4) whether the

²⁹¹ **PLA-0002**, *Baglihar* Determination, p. 107.

²⁹² **P-0649.0639**, Letter No. WT(128)/(5023-A)/PCIW dated 14 December 1988.

²⁹³ Award on Competence, paras. 70–84. See also **PLA-0003**, *Kishenganga* Partial Award, Pts. I, II.C; **PLA-0004**, *Kishenganga* Final Award, Pt. I.

²⁹⁴ **PLA-0003**, *Kishenganga* Partial Award, paras. 148, 154–155. See also **P-0055**, Letter No. 3/7/82-IT/1228 (with enclosures) dated 19 June 2006.

²⁹⁵ **P-0241**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, Pakistan's Request for Arbitration dated 17 May 2010, para. 150.

²⁹⁶ **P-0059**, Letter No. WT(132)/(6839-A)/PCIW dated 4 February 2008.

placement and design of outlets in the KHEP conformed with Paragraph 8(d) of Annexure D to the Treaty; and (5) whether the placement of spillways and the use of spillway gating in the KHEP design conformed with Paragraph 8(e) of Annexure D to the Treaty; and (6) whether, under the Treaty, India may deplete or bring the reservoir level of a Run-of-River Plant below Dead Storage Level in any circumstances except in the case of an unforeseen emergency.²⁹⁷ These six questions were the subject of further discussions over the course of the subsequent meetings of the Commission; however, India and Pakistan were unable to reach a consensus for resolving them.²⁹⁸

206. On 11 March 2009, Pakistan’s Commissioner wrote to India’s Commissioner regarding the six “questions” with respect to the KHEP.²⁹⁹ After outlining the history of their past exchanges, Pakistan’s Commissioner stated that Questions 1 and 6 qualified as “disputes” under Article IX(2)(b), and were to be resolved within the ambit of Articles IX(2)(a) and (b) of the Treaty.³⁰⁰ Of the remaining four questions, Pakistan stated that Question 2 was no longer pressed, subject to India confirming the revised design of the KHEP in the manner indicated at the 101st meeting of the Commission,³⁰¹ and Questions 3 to 5 were of a “technical nature” that “fall within the jurisdiction of a Neutral Expert”, and provided notice under Paragraph 5(a) of Annexure F to the Treaty that Pakistan intended to seek the appointment of a neutral expert in respect of those “differences”.³⁰²
207. On 17 May 2010, Pakistan initiated arbitration proceedings against India by way of a Request for Arbitration pursuant to Article IX and Annexure G to the Treaty.³⁰³ In its Request for Arbitration, Pakistan stated that the Parties had failed to resolve the “Dispute” by agreement, and identified (in simplified terms below) two questions for determination:
- (a) whether India’s proposed diversion of the Kishenganga/Neelum River breached the Treaty (“First Dispute”); and

²⁹⁷ **P-0063**, Letter No. WT(132)/(6981-A)/PCIW (with enclosures) dated 11 March 2009, para. 4.

²⁹⁸ **P-0060**, Record of the 100th Meeting of the Permanent Indus Commission, 31 May to 4 June 2008; **P-0061**, Record of the 101st Meeting of the Permanent Indus Commission, 25 to 28 July 2008.

²⁹⁹ **P-0063**, Letter No. WT(132)/(6981-A)/PCIW (with enclosures) dated 11 March 2009, para. 4.

³⁰⁰ **P-0062**, Letter No. WT(132)/(412/413)/PCIW (with enclosure) dated 11 March 2009, para. 2.

³⁰¹ **P-0063**, Letter No. WT(132)/(6981-A)/PCIW (with enclosures) dated 11 March 2009, paras. 6, 8.

³⁰² **P-0063**, Letter No. WT(132)/(6981-A)/PCIW (with enclosures) dated 11 March 2009, para. 8.

³⁰³ **P-0241**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, Pakistan’s Request for Arbitration dated 17 May 2010; **PLA-0003**, *Kishenganga* Partial Award, paras. 4–6.

- (b) whether India was allowed to deplete the KHEP's reservoir below Dead Storage Level in any circumstances except in the case of an unforeseen emergency ("Second Dispute").³⁰⁴

A court of arbitration was thereafter established pursuant to Article IX(5) and Annexure G of the Treaty, consisting of seven members ("**Kishenganga Court**").

208. On 23 September 2011, the *Kishenganga Court* issued its Order on the Interim Measures Application of Pakistan dated 6 June 2011, by which the *Kishenganga Court* ordered:

Having found that it is necessary to lay down certain interim measures in order to "avoid prejudice to the final solution ... of the dispute" as provided under Paragraph 28 of Annexure G to the Indus Waters Treaty, the Court unanimously rules that:

- (1) For the duration of these proceedings up until the rendering of the Award,
 - (a) It is open to India to continue with all works relating to the Kishenganga Hydro-Electric Project, except for the works specified in (c) below;
 - (b) India may utilize the temporary diversion tunnel it is said to have completed at the Gurez site, and may construct and complete temporary cofferdams to permit the operation of the temporary diversion tunnel, such tunnel being provisionally determined to constitute a "temporary by-pass" within the meaning of Article I(15)(b) as it relates to Article III(2) of the Treaty;
 - (c) Except for the sub-surface foundations of the dam stated in paragraph 151(iv) above, India shall not proceed with the construction of any permanent works on or above the Kishenganga/Neelum riverbed at the Gurez site that may inhibit the restoration of the full flow of that river to its natural channel; and
- (2) Pakistan and India shall arrange for periodic joint inspections of the dam site at Gurez in order to monitor the implementation of sub-paragraph 1(c) above. The Parties shall also submit, by no later than December 19, 2011, a joint report setting forth the areas of agreement and any points of disagreement that may arise between the Parties concerning the implementation of this Order.³⁰⁵

209. On 18 February 2013, the *Kishenganga Court* issued its Partial Award ("**Kishenganga Partial Award**"), in which the Court relevantly decided:

- A. In relation to the First Dispute,
- (1) The Kishenganga Hydro-Electric Project, as described to the Court by India, constitutes a Run-of-River Plant for the purpose of Paragraph 15 of Annexure D to the Indus Waters Treaty, and in particular sub-paragraph (iii) thereof.

³⁰⁴ **P-0241**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, Pakistan's Request for Arbitration dated 17 May 2010; **PLA-0003**, *Kishenganga Partial Award*, paras. 4–6.

³⁰⁵ **PLA-0042**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, Order on the Interim Measures Application of Pakistan dated 6 June 2011 (2013) XXXI UNRIAA 6 ("**Kishenganga Interim Measures Order**"), para. 152.

- (2) India may accordingly divert water from the Kishenganga/Neelum River for power generation by the Kishenganga Hydro-Electric Plant and may deliver the water released below the power station into the Bonar Nallah.
- (3) India is however under an obligation to construct and operate the Kishenganga Hydro-Electric Plant in such a way as to maintain a minimum flow of water in the Kishenganga/Neelum River, at a rate to be determined by the Court in a Final Award.

B. In relation to the Second Dispute,

- (1) Except in the case of an unforeseen emergency, the Treaty does not permit reduction below Dead Storage Level of the water level in the reservoirs of Run-of-River Plants on the Western Rivers.
- (2) The accumulation of sediment in the reservoir of a Run-of-River Plant on the Western Rivers does not constitute an unforeseen emergency that would permit the depletion of the reservoir below Dead Storage Level for drawdown flushing purposes.
- (3) Accordingly, India may not employ drawdown flushing at the reservoir of the Kishenganga Hydro-Electric Plant to an extent that would entail depletion of the reservoir below Dead Storage Level.
- (4) Paragraphs B(1) and B(2) above do not apply to Run-of-River Plants that are in operation on the date of issuance of this Partial Award. Likewise, Paragraphs B(1) and B(2) do not apply to Run-of-River Plants already under construction on the date of issuance of this Partial Award, the design of which, having been duly communicated by India under the provisions of Annexure D, had not been objected to by Pakistan as provided for in Annexure D.

C. This Partial Award imposes no further restrictions on the construction and operation of the Kishenganga Hydro-Electric Plant, which remain subject to the provisions of the Treaty as interpreted in this Partial Award.

D. To enable the Court to determine the minimum flow of water in the Kishenganga/Neelum River referred to in paragraph A(3) above, the Parties are required to submit to the Court the information specified in paragraphs 458 to 462 within the time periods set out in paragraph 463 of this Partial Award.

E. The interim measures indicated by the Court in its 23 September 2011 Order on the Interim Measures Application of Pakistan dated June 6, 2011 are hereby lifted.³⁰⁶

210. On 20 May 2013, India filed a Request for Clarification or Interpretation pursuant to Paragraph 27 of Annexure G to the Treaty, in which India requested that:

the Court clarify that paragraph B.1 of the Decision in the Partial Award means that the permissibility of depletion or reduction below Dead Storage Level of the water level in the reservoirs of future Indian Run-of-River plants on the Western Rivers depends on a site-specific analysis of the feasibility of methods of effective sediment control other than drawdown flushing.³⁰⁷

³⁰⁶ PLA-0003, *Kishenganga* Partial Award, Pt. V.

³⁰⁷ P-0548 (KR-0011), *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Request for Clarification or Interpretation dated 18 May 2013, p. 14.

211. On 20 December 2013, the *Kishenganga* Court issued its Decision on India's Request for Clarification or Interpretation,³⁰⁸ in which the *Kishenganga* Court decided:

- A. India's Request for Clarification or Interpretation of the Court's Partial Award of 18 February 2013 is timely and admissible.
- B. Subject to Paragraph B(4) of the "Decision" section (Part V) in the Partial Award of 18 February 2013, the prohibition on the reduction below Dead Storage Level of the water in the reservoirs of Run-of-River Plants on the Western Rivers, except in the case of unforeseen emergency, is of general application.³⁰⁹

212. As outlined above, in its Partial Award, the *Kishenganga* Court deferred to a Final Award its determination of the appropriate "minimum flow of water" that India would be required to maintain in the Kishenganga/Neelum River notwithstanding its construction and operation of the KHEP.³¹⁰ On 20 December 2013, the *Kishenganga* Court delivered its Final Award ("***Kishenganga* Final Award**"), in which it decided:

- A. In the operation of the KHEP:
 - (1) Subject to paragraph (2) below, India shall release a minimum flow of 9 cumecs into the Kishenganga/Neelum River below the KHEP at all times at which the daily average flow in the Kishenganga/Neelum River immediately upstream of the KHEP meets or exceeds 9 cumecs.
 - (2) At any time at which the daily average flow in the Kishenganga/Neelum River immediately upstream of the KHEP is less than 9 cumecs, India shall release 100 percent of the daily average flow immediately upstream of the KHEP into the Kishenganga/Neelum River below the KHEP.
- B. Beginning 7 years after the diversion of water from the Kishenganga/Neelum River for power generation by the KHEP, either Party may seek reconsideration of the minimum flow in paragraph (A) above through the Permanent Indus Commission and the mechanisms of the Treaty.
- C. This Final Award imposes no further restrictions on the operation of the KHEP, which remains subject to the provisions of the Treaty as interpreted in this Final Award and in the Court's *Partial Award*.
- D. Each Party shall bear its own costs. The costs of the Court will be shared equally by the Parties.³¹¹

³⁰⁸ PLA-0021, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, Decision on India's Request for Clarification or Interpretation (2013) XXXI UNRIAA 295 ("***Kishenganga* Decision on India's Request for Clarification or Interpretation**").

³⁰⁹ PLA-0021, *Kishenganga* Decision on India's Request for Clarification or Interpretation, Pt. V.

³¹⁰ PLA-0003, *Kishenganga* Partial Award, Pt. V.A(3).

³¹¹ PLA-0004, *Kishenganga* Final Award, Pt. V (emphasis in original).

E. ORIGINS OF THE CURRENT DISPUTE

213. Following the *Kishenganga* Partial Award being issued, Pakistan's Commissioner proposed resuming discussions to resolve the four further questions that Pakistan had previously raised with India regarding the KHEP (relating to freeboard; pondage calculation and placement of power intakes; outlet design and placement; and the type and placement of the spillways).³¹² The Parties discussed those matters through further correspondence and at the 108th meeting of the Commission, held from 24 to 25 March 2013, yet were unable to resolve them.³¹³
214. While the *Kishenganga* Arbitration was ongoing, questions arose in the Commission concerning India's proposed RHEP, which resembled, to a considerable degree, the questions regarding the KHEP.³¹⁴ These questions remained unresolved at the time the *Kishenganga* Court issued its Final Award on 20 December 2013.³¹⁵
215. Although the technical aspects of the design and construction of KHEP and RHEP are not at issue for this phase in the proceedings, the Court notes that the Kishenganga/Neelum River, on which the KHEP is located, is a tributary of the Jhelum River. The Kishenganga/Neelum River originates in India-administered Jammu and Kashmir and merges with the Jhelum River at the city of Muzaffarabad in Pakistan-administered Jammu and Kashmir.³¹⁶ The RHEP is located on the Chenab River, near the town of Drabshala in India-administered Jammu and Kashmir.³¹⁷ The approximate locations of the KHEP and RHEP on these rivers are indicated on Map 2 on page 83 below.
216. Further exchanges between India and Pakistan unfolded in the years following 2013, as more fully recounted in the Court's Award on Competence.³¹⁸ In due course, on 19 August 2016,

³¹² **P-0069**, Letter No. WT(132)/(7330-A)/PCIW dated 6 March 2013.

³¹³ **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013; **P-0071**, Letter No. 3/7/82-IT/1999 dated 15 April 2013; **P-0072**, Letter No. WT(150)/(7335-A)/PCIW dated 20 March 2013.

³¹⁴ See, e.g., **P-0078**, Letter No. WT(150)/(7314-A)/PCIW (with enclosure) dated 26 November 2012, para. 2. See also **P-0077**, Letter No. 3/5/2007-IT/1947 (with enclosures) dated 16 August 2012.

³¹⁵ See **P-0080**, Letter No. 9/3/2013-IT/1994 dated 22 March 2013; **P-0081**, Letter No. WT(51)/(7337-A)/PCIW (with enclosures) dated 25 March 2013; **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013; **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013; **P-0084**, Letter No. WT(51)/(7388-A)/PCIW dated 5 December 2013.

³¹⁶ **PLA-0003**, *Kishenganga* Partial Award, para. 129.

³¹⁷ Request for Arbitration, para. 29.

³¹⁸ Award on Competence, paras. 85–106.

Pakistan served India with a Request for Arbitration by means of a Note Verbale.³¹⁹ That Note recounted the attempts at negotiation, presented its Request for Arbitration and the names of two Pakistan-appointed arbitrators, and invited India to undertake steps for appointing additional arbitrators in accordance with Annexure G.³²⁰

217. On 30 August 2016, India responded to Pakistan’s Request for Arbitration, by means of a Note Verbale.³²¹ That Note stated that pursuit of the matter before a Court of Arbitration, rather than within the Commission or with a Neutral Expert, was against the letter and spirit of the Treaty.³²² India had, without prejudice to its position on inadmissibility, participated in negotiations, made a concession on pondage, and invited further negotiations, but “Pakistan had made up its mind to approach the [Court] without taking recourse to other remedial measures which must be exhausted as per the provisions of the Indus Waters Treaty, before approaching [the Court]”.³²³ The Note continued that, “[i]n the above circumstances, the only option left is to let the technical differences be resolved by the Neutral Expert”.³²⁴ On 6 September 2016, India’s Commissioner wrote to the Governments of India and Pakistan, seeking the appointment of a neutral expert.³²⁵ On 4 October 2016, India transmitted its request to the World Bank for the appointment of a neutral expert.³²⁶
218. On 18 October 2016, the World Bank wrote to both India and Pakistan, observing that it was in the “unprecedented” situation under the Treaty of being seized of two requests, being: (1) a request from Pakistan to facilitate the appointment of umpires for the Court of Arbitration in accordance with Annexure G; and (2) a request from India to appoint a neutral expert in accordance with Annexure F.³²⁷ On 12 December 2016, the President of the World Bank notified the Parties that the World Bank had decided “to pause the process of appointing the Chairman of the Court of Arbitration and the Neutral Expert” in order to “provide a window to further explore

³¹⁹ **P-0034**, Note Verbale No. KA(II)-2/11/2016 (without enclosures) dated 19 August 2016.

³²⁰ **P-0034**, Note Verbale No. KA(II)-2/11/2016 (without enclosures) dated 19 August 2016, pp. 1–2.

³²¹ **P-0036**, Note Verbale No. ISL/112/1/2016 dated 30 August 2016.

³²² **P-0036**, Note Verbale No. ISL/112/1/2016 dated 30 August 2016, para. i.

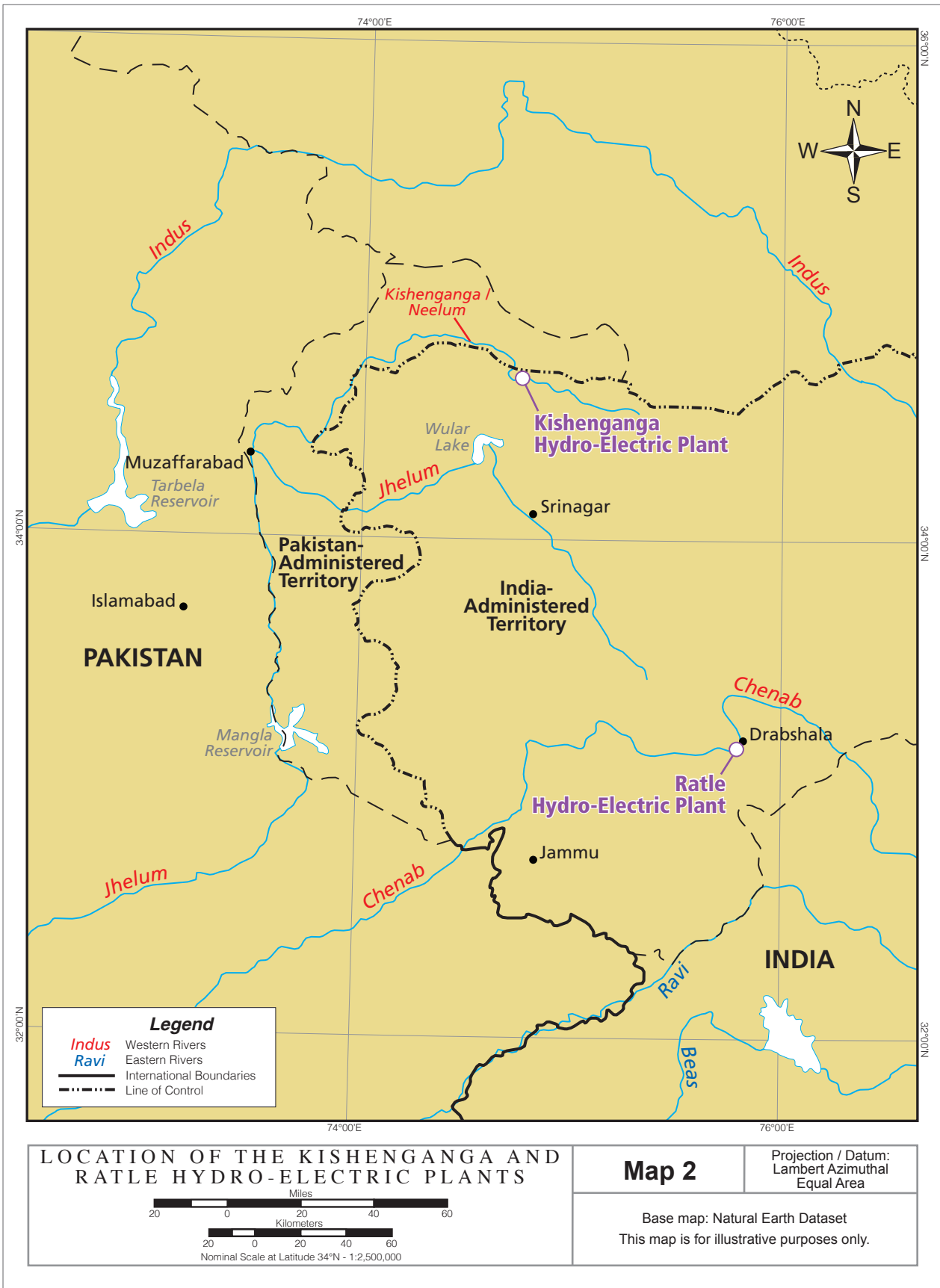
³²³ **P-0036**, Note Verbale No. ISL/112/1/2016 dated 30 August 2016, paras. iii–iv.

³²⁴ **P-0036**, Note Verbale No. ISL/112/1/2016 dated 30 August 2016, para. iv.

³²⁵ **P-0105**, Letter Y-11017/2/2015-IT/2209 (with enclosure) dated 6 September 2016.

³²⁶ **P-0156**, India’s Request for the Appointment of a Neutral Expert dated 4 October 2016.

³²⁷ **P-0038**, Letter from the World Bank to the Parties dated 18 October 2016, paras. 4–5.



this page intentionally blank

whether Pakistan and India can agree on a way forward for resolving the matter relating to the two hydroelectric power plants, in a manner that is satisfactory to both countries”.³²⁸ This pause stayed in place until 31 March 2022, when the World Bank notified India and Pakistan that it was lifting the pause and would proceed with “the concurrent appointment of the Neutral Expert and the Chair of the Court of Arbitration”.³²⁹

219. On 19 September 2022, the World Bank stated that it “will appoint Mr. Michel Lino to the role of Neutral Expert” and that it “has decided on the appointment of ... the Chair for the Court of Arbitration”.³³⁰ On the morning of 21 November 2022, representatives of India and Pakistan attended a “hand-over” meeting with the Neutral Expert at the World Bank in Washington, D.C. That afternoon, representatives of Pakistan attended a “hand-over” meeting with the Chair of the Court, also at the World Bank. Such meetings marked the completion of the World Bank’s involvement in the proceedings.³³¹

* * *

³²⁸ **P-0008**, Letter from the World Bank to Pakistan dated 12 December 2016.

³²⁹ **P-0120**, Letter from the World Bank to the Parties dated 31 March 2022, p. 1.

³³⁰ **P-0009**, Letter from the World Bank to the Parties dated 19 September 2022.

³³¹ Award on Competence, para. 119.

this page intentionally blank

IV. PRELIMINARY MATTERS

A. OVERVIEW OF PARALLEL PROCEEDINGS BEFORE THE NEUTRAL EXPERT

220. The Court recalls the procedural history regarding the initiation of these proceedings, and those of the parallel Neutral Expert proceedings, recounted above and addressed in detail in the Award on Competence.³³² A brief overview of the significant procedural steps following the initiation of these parallel proceedings between the Court of Arbitration and the Neutral Expert is outlined below, in so far as relevant to the disputes before the Court.
221. As noted above, on 19 September 2022, the World Bank stated that it would “appoint Mr. Michel Lino to the role of Neutral Expert” and that it had “decided on the appointment of ... the Chair for the Court of Arbitration”,³³³ following which, respective hand-over meetings took place on 21 November 2022.³³⁴
222. After the initiation of these parallel proceedings, Pakistan stated that “cooperation and coordination between the Neutral Expert and the Court will be essential if the delicate balance and integrity of the Indus Waters Treaty is to be maintained”.³³⁵
223. On 8 February 2023, following the constitution of the Court, the Chairman of the Court sent a letter to the Neutral Expert indicating the Court’s openness to a coordinated process with the Neutral Expert, without prejudice to any decisions to be reached as to the competence of either body.³³⁶ On 11 and 21 February 2023, however, India sent letters to the Neutral Expert, rejecting any proposed coordination with the Court of Arbitration, and reiterating its objections to the competence and constitution of the Court.³³⁷ On 23 February 2023, at the request of the Court,

³³² Award on Competence, paras. 106–111. See also **P-0695**, Decision on Certain Issues Pertaining to the Competence of the Neutral Expert dated 7 January 2025 (corrected on 31 March 2025), PCA Case No. 2023-14 (“**Neutral Expert Competence Decision**”), paras. 11–231.

³³³ **P-0009**, Letter from the World Bank to the Parties dated 19 September 2022.

³³⁴ Award on Competence, para. 119.

³³⁵ See, e.g., Letter from Pakistan to the Court of Arbitration and the Neutral Expert dated 1 December 2022; Letter from Pakistan to the Court of Arbitration and the Neutral Expert dated 1 December 2022. See also **P-0695**, Neutral Expert Competence Decision, para. 41.

³³⁶ Award on Competence, para. 36; **P-0695**, Neutral Expert Competence Decision, para. 53.

³³⁷ **P-0002**, Letter from India to the Neutral Expert dated 11 February 2023; **P-0003**, Letter from India to the Neutral Expert dated 21 February 2023. The Court notes that this correspondence was not addressed to the Court, and was entered into the record of these proceedings by Pakistan, as exhibits to Pakistan’s Response on the Competence of the Court and the Operation of Article IX of the Indus Waters Treaty dated 24 March 2023. The letters in this regard are also recounted in **P-0695**, Neutral Expert Competence Decision, paras. 56, 62.

Pakistan submitted its statement on “Coordination between the Court of Arbitration and the Neutral Expert—A Workable Division of Competence”.³³⁸

224. On 3 May 2023, the Neutral Expert responded to the Chairman of the Court’s letter dated 8 February 2023, stating that, having considered the views of the Parties, the Neutral Expert had “arrived at the conclusion that at this time it would not be desirable to establish ‘a coordinated process between the Court and the Neutral Expert’”.³³⁹

225. On 30 May 2023, Pakistan provided the Neutral Expert with an update on developments before the Court. With regard to the validity of the Neutral Expert’s appointment, Pakistan stated:

As you will recall from your First Meeting with the Parties, Pakistan takes the view that the Court is competent to address not only its own competence but, in the circumstances in issue, also that of the Neutral Expert. Following your First meeting, however, Pakistan expressly refrained from challenging the validity of your appointment before the Court.³⁴⁰

226. On 1 December 2023, Pakistan submitted a statement to the Neutral Expert on his competence.³⁴¹ In the course of its submissions, Pakistan asserted that any decision of the Neutral Expert, “including under Paragraph 7 of Annexure F”, that goes beyond the competence of the Neutral Expert under Part I of Annexure F, “would be amenable to challenge by Pakistan before the [Court] in the parallel proceedings”.³⁴² By contrast, India submitted “that, in the event that the Neutral Expert determines that either the whole or part of the Points of Difference should be treated as disputes, contrary to Pakistan’s position, those disputes will not be referred to the [Court], but the decision will trigger the application of Articles IX(3), (4) and (5) of the Treaty”.³⁴³

227. On 7 January 2025, the Neutral Expert issued his Decision on Certain Issues Pertaining to the Competence of the Neutral Expert (“**Neutral Expert Competence Decision**”).³⁴⁴ In that decision, the Neutral Expert found as follows:

For all of the reasons set out above, the Neutral Expert finds that (i) the Points of Difference notified by India to the World Bank in a letter dated 4 October 2016 pertain to “whether or not the design of a Plant conforms to the criteria set out in Paragraph 8” of Annexure D to the Treaty and fall within Part 1 of Annexure F to the Treaty; and that (ii) no separate

³³⁸ Pakistan’s Statement on Coordination and Division of Competence dated 23 February 2023.

³³⁹ See **P-0695**, Neutral Expert Competence Decision, para. 85.

³⁴⁰ **P-0695**, Neutral Expert Competence Decision, para. 89.

³⁴¹ **P-0695**, Neutral Expert Competence Decision, para. 142.

³⁴² **P-0695**, Neutral Expert Competence Decision, para. 362.

³⁴³ **P-0695**, Neutral Expert Competence Decision, para. 460.

³⁴⁴ **P-0695**, Neutral Expert Competence Decision.

differences are being referred to the Neutral Expert with respect to India's compliance with Paragraphs 2(c) and 15 of Annexure D to the Treaty.

The Neutral Expert will accordingly proceed to render a decision on the merits of the Points of Difference, after hearing the Parties further on those merits in accordance with the Work Programme (as it may be amended from time to time in consultation with the Parties).³⁴⁵

228. The Neutral Expert further noted that the questions currently under deliberation by the Court “are put at a higher level than the Points of Difference” before the Neutral Expert and “would not go all the way in answering the Points of Difference in respect of the KHEP and the RHEP”.³⁴⁶ After assessing the apparent timelines in the two parallel proceedings, the Neutral Expert observed that “it is therefore likely that the [Court] will issue its next award before the completion of any phase on the merits in these Proceedings”.³⁴⁷

B. CONTINUING COMPETENCE OF THE COURT OF ARBITRATION

229. On 6 July 2023, the Court issued its Award on Competence, in which the Court determined and held that it is competent to address all aspects of the disputes placed before it by Pakistan's Request for Arbitration. In particular, the Court held that it was properly constituted notwithstanding India's request for the appointment of a neutral expert and that the World Bank's appointment of the Neutral Expert did not alter or limit the competence of this Court.
230. Part I of the Award on Competence set out an introduction. Part II recounted the procedural history to the Award. Part III set forth the relevant facts that served as the foundation for deciding the issues that had been placed before the Court in the Preliminary Phase on Competence. Part IV addressed two preliminary considerations relating to the applicable law and the relevance of India's non-appearance in these proceedings as of the date of the Award on Competence. Part V addressed the Parties' arguments with respect to what the Court deemed to be India's six objections to the competence of the Court and provided the Court's legal analysis concerning each of those six objections.³⁴⁸

³⁴⁵ **P-0695**, Neutral Expert Competence Decision, paras. 569–570.

³⁴⁶ **P-0695**, Neutral Expert Competence Decision, para. 563(e).

³⁴⁷ **P-0695**, Neutral Expert Competence Decision, para. 563(h).

³⁴⁸ In its Award on Competence, the Court stated that, although not expressly advanced in this way, India's Objections to the competence of the Court comprise six distinct, albeit interrelated, objections: (a) *first*, the Court is not competent to address its competence; (b) *second*, the Court is not competent because a “dispute” has not arisen within the meaning Article IX(2) of the Treaty; (c) *third*, the Court is not competent because the requirements of Articles IX(3), (4), and (5) were not met; (d) *fourth*, the Court is not competent because it was not properly constituted under Annexure G, Paragraphs 4 to 11; (e) *fifth*, the Court is not competent because a neutral expert is dealing with the situation (Article IX(6)); (f) *sixth*, the Court is not

231. Part VI concluded with the decision of the Court, which rejected India's objections to the Court's competence. Relevantly, the decision of the Court records as follows:

135. For the above reasons, the Court of Arbitration unanimously:

- A. FINDS that India's non-appearance in these proceedings does not deprive the Court of Arbitration of competence.
- B. FINDS that the Court of Arbitration has competence, in accordance with Paragraph 16 of Annexure G to the Indus Waters Treaty 1960, to decide all questions relating to its competence.
- C. FINDS that the matters referred to arbitration in Pakistan's Request for Arbitration concern a dispute or disputes within the meaning of Article IX(2) of the Indus Waters Treaty 1960.
- D. FINDS that the initiation of the present proceedings was in accordance with Article IX(3), (4), and (5) of the Indus Waters Treaty 1960.
- E. FINDS that the Court of Arbitration was properly constituted in accordance with Paragraphs 4 to 11 of Annexure G to the Indus Waters Treaty 1960.
- F. FINDS that India's request for, and the World Bank's appointment of, a Neutral Expert does not, pursuant to Article IX(6) of the Indus Waters Treaty 1960, deprive the Court of Arbitration of competence or limit its competence.
- G. FINDS that Paragraph 1 of Annexure G to the Indus Waters Treaty 1960 does not create an independent test for the necessity of the constitution of a Court of Arbitration beyond the requirements of Article IX of the Treaty.
- H. DECLARES that the Court of Arbitration is competent to consider and determine the disputes set forth in Pakistan's Request for Arbitration.
- I. RESERVES for further consideration and directions all issues not decided in this Award.³⁴⁹

232. On 6 July 2023, the same date as it issued its Award on Competence, the Court issued Procedural Order No. 6, by which the Court determined that it would conduct its proceedings in a phased manner, bearing in mind the status of, and developments concerning, the proceedings taking place before the Neutral Expert.³⁵⁰

233. The Court is cognizant that India has not, to date, accepted the determinations in the Court's Award on Competence.³⁵¹ Indeed, India has continued to reiterate before the Neutral Expert,³⁵² and publicly, its objections to the jurisdiction of the Court on the same bases advanced in India's

competent because there is no "necessity" for the Court of Arbitration under Annexure G, Paragraph 1: See Award on Competence, para. 137.

³⁴⁹ Award on Competence, para. 135.

³⁵⁰ Procedural Order No. 6, para. 34.

³⁵¹ Letter from India to the PCA dated 18 January 2024.

³⁵² **P-0695**, Neutral Expert Competence Decision, paras. 494, 496.

Competence Objections, stating that: (1) the “Neutral Expert proceedings are the only Treaty-consistent proceedings at this juncture”; (2) a “Neutral Expert is already seized of the differences pertaining to the Kishenganga and Ratle projects”; (3) the “Treaty does not provide for parallel proceedings on the same set of issues”; and (4) “India cannot be compelled to recognize or participate in illegal and parallel proceedings not envisaged by the Treaty”.³⁵³

234. The Court considers that each of these objections has been fully addressed and decided in the Court’s Award on Competence (and further addressed by the Court in Procedural Order No. 9).
235. Moreover, as addressed in Part II.K, in its Supplemental Award on Competence issued on 27 June 2025, the Court considered the effect on the Court’s competence of the position taken by India on 23 and 24 April 2025 that the Treaty “will be held in abeyance with immediate effect”. By that Award, the Court found that India’s position on “abeyance” of the Treaty does not limit the competence of the Court over Pakistan’s Request for Arbitration, which the Court previously affirmed in its Award on Competence. The Court found that its competence cannot be affected by the unilateral decision of a Party taken after the initiation of the arbitral proceedings, regardless of whether India’s position on “abeyance” is characterized under international law as a suspension of the Treaty or otherwise. The Court further found that it has a continuing responsibility to advance these proceedings in a timely, efficient, and fair manner, notwithstanding India’s position on “abeyance”. The Court further determined that these findings apply similarly with respect to any competence that the Neutral Expert may otherwise possess.
236. Consequently, nothing in the developments between the Parties or in either of the parallel proceedings since the Court issued its Award on Competence has changed matters with respect to the competence of the Court. Therefore, the Court reaffirms its prior holdings that the Court is competent to consider and determine the disputes set forth in Pakistan’s Request for Arbitration.

C. LEGAL AND PRACTICAL CONSEQUENCES OF INDIA’S NON-PARTICIPATION

1. Relevance of the Non-Appearence of a Party

237. As is evident from the procedural history outlined in Part II, India has adopted a position of non-acceptance and non-participation in these proceedings. India has not accepted Pakistan’s recourse to arbitration and has elected not to communicate directly with or appear before the Court. India

³⁵³ See, e.g., Government of India Ministry of External Affairs, Press Release, “Matters pertaining to the Indus Waters Treaty” dated 6 July 2023; Government of India Ministry of External Affairs, Press Release, “Matters pertaining to the illegally-constituted so-called Court of Arbitration” dated 27 June 2025.

did not participate in the constitution of the Court,³⁵⁴ it did not appear at any of the meetings of the Court,³⁵⁵ it did not submit a counter-memorial in response to Pakistan's Memorial, it did not appear or participate in the Hearing on Competence, the Site Visit, or the Hearing for the First Phase on the Merits, and it has not advanced any of the funds requested by the Court toward the costs of the arbitration.

238. India's stance of non-participation in the proceedings, however, does not prevent such proceedings from moving forward or otherwise diminish the legal effect of the Court's decisions. As the Court observed in its Award on Competence,³⁵⁶ fewer propositions in international law can be more confidently advanced than that the non-appearance of a party does not deprive a properly constituted court or tribunal of its competence.³⁵⁷ In the present case, the governing instrument (the Treaty) does not envisage non-appearance as depriving a court of arbitration of its competence. To the contrary, the Treaty clearly anticipated non-participation by one Party as having no effect on the establishment and functioning of such a court, *inter alia*, by expressly providing that the Court is competent to transact business with five arbitrators (thus, without arbitrators appointed by a non-appearing Party)³⁵⁸ and may issue an award signed by four arbitrators.³⁵⁹ As such, India's non-appearance has no effect on the competence of the Court or on the legal effect of its decisions, including this Award.

2. Steps Taken by the Court to Ensure Procedural Fairness to Both Parties

239. Despite its non-participation, India is a Party to these proceedings and has given standing consent in the Treaty to be bound by its terms, including its dispute resolution provisions, and therefore any awards rendered by the Court. The Court has proceeded on an assumption that the possibility

³⁵⁴ Award on Competence, paras. 13–15.

³⁵⁵ Award on Competence, para. 27.

³⁵⁶ See Award on Competence, paras. 124–135.

³⁵⁷ See, e.g., **PLA-0056**, *Arbitral Award of 3 October 1899 (Guyana v. Venezuela)*, Jurisdiction of the Court, Judgment, [2020] ICJ Rep 455, paras. 26–27 (regarding the non-appearance of Venezuela, the Court “emphasizes that the non-participation of a party in the proceedings at any stage cannot, in any circumstances, affect the validity of its judgment” and further stated that “the party which declines to appear cannot be permitted to profit from its absence”); see also **PLA-0018**, *Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, Merits Judgment, [1986] ICJ Rep 14; *South China Sea (Republic of the Philippines v. the People's Republic of China)*, PCA Case No. 2013-19, Award on Jurisdiction and Admissibility, 29 October 2015; *Arctic Sunrise (Kingdom of the Netherlands v. Russian Federation)*, PCA Case No. 2014-02, Award on Jurisdiction, 26 November 2014.

³⁵⁸ **PLA-0001**, Treaty, Annexure G, para. 11.

³⁵⁹ **PLA-0001**, Treaty, Annexure G, para. 23; see also Supplemental Rules of Procedure, Art. 25 (“If one Party to the dispute does not appear before the Court, or fails to defend its case, the appearing Party may request the Court to continue the proceedings and render its Award”).

should be preserved of India's participation in these proceedings in due course, while also bearing in mind the need to ensure due process in these proceedings.

240. Articles 10(1) and (2) of the Court's Supplemental Rules of Procedure relevantly provide:

1. Subject to the Treaty (including its Annexure G), and these Rules of Procedure, the Court may conduct the arbitration in such manner as it considers appropriate, provided that the Parties are treated with equality and that at each stage of the proceedings each Party is given a full opportunity to be heard and to present its case.
2. The Court, in exercising its discretion, shall endeavor to conduct the proceedings in a way that avoids unnecessary delay and expense, and that provides a fair and efficient process for resolving the Parties' dispute.

241. On this basis, the Court has taken measures to preserve the procedural rights of India, including:

- (a) ensuring that all communications and materials in the arbitration have been promptly delivered, both electronically and physically, to representatives of India, and made accessible to India through an online repository;³⁶⁰
- (b) ensuring that two or more certified copies of every document produced before the Court by one Party has been communicated by the Court to the other Party;³⁶¹
- (c) ensuring that an electronic repository for the storage of documents related to the proceedings has been maintained and made accessible to the Parties;³⁶²
- (d) providing India adequate and equal opportunities to submit written submissions in response to the submissions made by Pakistan;³⁶³
- (e) inviting India (as with Pakistan) to provide comments on draft procedural orders, applications made by Pakistan, and steps proposed to be taken throughout the proceedings;
- (f) providing India (as with Pakistan) timely notifications regarding all procedural meetings and hearings, and multiple opportunities to express its views on the scheduling and conduct of the Hearing on Competence, the Case Management Conference, the Site Visit, and the Hearing for the First Phase on the Merits;

³⁶⁰ PLA-0001, Treaty, Annexure G, para. 18; Supplemental Rules of Procedure, Art. 5.4.

³⁶¹ PLA-0001, Treaty, Annexure G, para. 18.

³⁶² Supplemental Rules of Procedure, Art. 5.4.

³⁶³ Procedural Order No. 1, para. 3; Procedural Order No. 2 (Procedural Timetable) dated 14 March 2023 ("Procedural Order No. 2"), para. 1.1; Procedural Order No. 7, para. 2.2; Procedural Order No. 13, para. 3.3.

- (g) providing India (as with Pakistan) draft and certified transcripts of the proceedings from the Hearing on Competence, the Case Management Conference, the Site Visit, and the Hearing for the First Phase on the Merits;³⁶⁴
- (h) appointing a Neutral Observer to observe all of the Court's interactions with Pakistan and the Site Experts during the Site Visit, and to ensure compliance with the Site Visit Protocol;³⁶⁵
- (i) arranging for a video and photographic record of the Site Visit to be made available to India, including video recordings of the interactions between the Court, Pakistan, and the Site Experts during the Site Visit;³⁶⁶
- (j) inviting India to comment on the presentation materials submitted by Pakistan during the Hearing on Competence, the Site Visit, and the Hearing for the First Phase on the Merits;
- (k) extending the deadline for India to exercise its right to appoint two arbitrators to the Court in accordance with the Court's Supplemental Rules of Procedure;³⁶⁷ and
- (l) reiterating that it remains open to India to participate in these proceedings.

242. While seeking to ensure that the possibility of India's participation in these proceedings is preserved, the Court has further sought to ensure a fair and efficient process for resolving the Parties' disputes, without compromising the efficiency of the proceedings.³⁶⁸ In this respect, the Court has acted on the presumption "that the proceedings will continue in the absence of a Party or failure of a Party to defend its case, unless the appearing Party makes an application for the proceedings to be suspended or terminated".³⁶⁹

243. On this basis, the Court has further sought to adopt procedural measures to ensure that both Parties have had the opportunity to address specific issues relevant to the Court's decision-making, and to test the legal and factual foundations of the claims made by Pakistan. *First*, the Court directed

³⁶⁴ Supplemental Rules of Procedure, Art. 24.7(a); Procedural Order No. 3 (Organization of the Hearing on Competence) dated 2 May 2023 ("**Procedural Order No. 3**"), paras. 4.1–4.2; Procedural Order No. 12, paras. 6.1–6.2.

³⁶⁵ Procedural Order No. 10, paras. 5.1–5.5.

³⁶⁶ Procedural Order No. 10, para. 6.1.

³⁶⁷ Supplemental Rules of Procedure, Art. 7.1; Procedural Order No. 6, para. 13.

³⁶⁸ Supplemental Rules of Procedure, Art. 10.2.

³⁶⁹ Supplemental Rules of Procedure, Art. 25.1.

the Parties to address two lists of questions in their oral submissions at the Hearing on Competence, which probed Pakistan's position beyond the basis of the objections in India's 21 December 2022 Letter.³⁷⁰ *Second*, the Court directed the Parties to address a list of technical questions during the Site Visit.³⁷¹ *Third*, the Court directed the Parties to address two rounds of questions from the Court in their oral submissions at the Hearing for the First Phase on the Merits.³⁷² *Fourth*, the Court further invited the Parties to comment on particular matters that had come to the attention of the Court following the Hearing.³⁷³

3. Steps Taken by the Court to Satisfy Itself that It Has Jurisdiction and that the Claims Are Well Founded in Fact and Law

244. Further to Paragraph 16 of Annexure G to the Treaty, the Court is required to decide all questions relating to its competence and shall determine its procedure, including the time within which each Party must present and conclude its arguments.³⁷⁴ The Court has remained acutely aware that it is under a standing duty to verify that it is competent and has jurisdiction over the disputes before it.³⁷⁵ As set out above, the Court conducted a separate phase for that very purpose, following objections raised by India to the Court's competence, and provided its written reasons rejecting each of the objections in its Award on Competence. Moreover, as noted above, on 16 May 2025, the Court issued Procedural Order No. 15, in which it invited each Party to file submissions addressing the effect of recent developments, if any, on matters before the Court or the Neutral Expert, including their respective competence. Based on the information received, the Court issued its Supplemental Award on Competence, confirming its continuing competence.
245. The Court has also remained cognizant of the need to satisfy itself that Pakistan's claims are well founded in fact and law.³⁷⁶ The Court's Supplemental Rules of Procedure provide that "[e]ach Party shall have the burden of proving the facts relied on to support its claim or defense". The Rules also empower the Court to take "all appropriate measures in order to establish the facts".³⁷⁷ On this basis, the Court has taken a number of steps to probe the factual basis of Pakistan's

³⁷⁰ Questions of the Court dated 26 April 2023; Further Questions of the Court dated 12 May 2023.

³⁷¹ Site Visit Technical Questions dated 15 April 2024.

³⁷² Hearing Questions dated 20 June 2024; Further Hearing Questions dated 13 July 2024.

³⁷³ Procedural Order No. 14, paras. 2.1–2.9; Procedural Order No. 15, paras. 1.12–1.13.

³⁷⁴ **PLA-0001**, Treaty, Annexure G, para. 16. See also Supplemental Rules of Procedure, Art. 25(2).

³⁷⁵ **PLA-0001**, Treaty, Annexure G, para. 16; Supplemental Rules of Procedure, Art. 25(2).

³⁷⁶ Supplemental Rules of Procedure, Art. 25(2).

³⁷⁷ Supplemental Rules of Procedure, Arts. 22(1)–(2).

submissions and to ensure a comprehensive record of the facts, views, and positions advanced by the Parties on the matters at issue before the Court in the First Phase on the Merits.

246. *First*, for this phase of the proceedings, the Court has endeavored to ascertain, understand, and consider India's views with respect to each of the issues in dispute to the extent they are known or can be gleaned from the records of the Commission, the *Baglihar* Neutral Expert Proceedings, the *Kishenganga* Arbitration, or otherwise.
247. *Second*, to that end, and in order to ensure that the Court has available to it as comprehensive record as possible of the views and positions of the Parties on the matters at issue, the Court directed Pakistan to produce specified categories of papers and other evidence, pursuant to Paragraph 20 of Annexure G to the Treaty.³⁷⁸ Those categories included papers and other evidence in its possession in which India may have set out its views and positions on the matters at issue before the Court in the First Phase on the Merits.³⁷⁹ Pakistan readily cooperated with the requests by the Court for production of these further documents. In this respect, the Court also notes that it has not limited itself strictly to considering only those materials submitted into the record by Pakistan, but has had cause to consider further publicly available materials, including cases and treatises, to satisfy itself that Pakistan's claims are well founded in fact and law.³⁸⁰
248. *Third*, having considered the submissions received from Pakistan concerning the desirability of the Court carrying out a site visit, and India's objections to the Site Visit, the Court determined in Procedural Order No. 9 to conduct the Site Visit to the NJHEP for the purpose of familiarizing the Court with general aspects of the design and operation of Run-of-River HEPs along the Indus system of rivers. In light of India's non-participation, the Court determined that the presentations made to the Court during the Site Visit would be limited to objective, technical presentations given by experts in the design and operation of the NJHEP.³⁸¹ As stated in Part II.G, the Neutral Observer certified that the Site Visit proceeded on that basis.³⁸²

³⁷⁸ Procedural Order No. 11, para. 1.7; Procedural Order No. 13, paras. 2.1–2.8; Procedural Order No. 14, paras. 1.5–1.6.

³⁷⁹ Procedural Order No. 11, para. 1.7.

³⁸⁰ Such references in this Award to treatises and cases not on the record are made in accordance with the well-established rule or principle of *iura nova curia*.

³⁸¹ Site Visit Protocol, para. 3.2.

³⁸² See para. 65, *supra*.

249. *Fourth*, the Court directed Pakistan to address a series of written and oral questions during the Hearing for the First Phase on the Merits that probed Pakistan’s factual and legal positions.³⁸³ In Procedural Order No. 13, the Court directed Pakistan to submit a post-hearing submission addressing specific issues and questions that the Court considered had not been fully addressed during the Hearing.³⁸⁴ In Procedural Order No. 14, the Court further invited the Parties to comment on particular matters that had come to the attention of the Court following the Hearing.³⁸⁵

* * *

³⁸³ Hearing Questions dated 20 June 2024; Further Hearing Questions dated 13 July 2024.

³⁸⁴ Procedural Order No. 13, paras. 3.1–3.3.

³⁸⁵ Procedural Order No. 14, paras. 2.1–2.9.

this page intentionally blank

V. ISSUES FOR DETERMINATION IN THIS PHASE OF THE PROCEEDINGS

250. As stated above,³⁸⁶ the Court determined that the First Phase on the Merits would address the following questions that arise from Pakistan's Request for Arbitration:

35. The next phase of these proceedings will address the following questions (b) through (g) that arise from Pakistan's Request for Arbitration concerning the overall interpretation or application of Article III of the Treaty and paragraph 8 of Annexure D thereto, as well as a related general question (a) concerning the legal effect of past decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty upon the Parties and upon subsequent dispute resolution bodies:
- (a) To what extent and on what basis are the decisions of past dispute resolution bodies established pursuant to Article IX of the Treaty concerning (i) competence, (ii) matters of fact, (iii) the interpretation of the Treaty, or (iv) the application of the Treaty in particular factual circumstances, binding or otherwise controlling with respect to (a) the Parties, (b) the present proceedings before the Court, (c) the present proceedings before the Neutral Expert, and (d) future proceedings before a court of arbitration or a neutral expert? Insofar as such decisions are binding or otherwise controlling, what—if any—exceptions or limitations may limit their binding/controlling effect?
 - (b) To what extent can non-Treaty-based design and operational practices be taken into account for purposes of interpreting the technical requirements set out in Annexure D, paragraph 8?
 - (c) With respect to Annexure D, paragraph 8(a), what is to be taken into account for the purposes of designing the freeboard for a plant and what is to be excluded?
 - (d) With respect to Annexure D, paragraph 8(c), what is to be taken into account for the purposes of calculating maximum pondage for a plant and what is to be excluded?
 - (e) With respect to Annexure D, paragraph 8(d), what is to be taken into account for the purposes of designing low-level sediment outlets for a plant and what is to be excluded?
 - (f) With respect to Annexure D, paragraph 8(e), what is to be taken into account for the purposes of designing gated spillways for flood control for a plant and what is to be excluded?
 - (g) With respect to Annexure D, paragraph 8(f), what is to be taken into account for the purposes of designing submerged power intakes for a plant and what is to be excluded?³⁸⁷

251. The Court confirms that, in circumstances where no application was made by either Party seeking to modify the scope of the questions posed in Procedural Order No. 6,³⁸⁸ these questions concerning the interpretation or application of the Treaty broadly constitute the range of issues

³⁸⁶ See para. 29, *supra*.

³⁸⁷ Procedural Order No. 6 (as corrected on 19 May 2025), para. 35.

³⁸⁸ See, e.g., Procedural Order No. 6, paras. 36, 40.

that the Court will determine in this Award. In this regard, the Court considers it necessary to address two inter-related points.

252. *First*, the Court reiterates that issues concerning the design, construction, and operation of the KHEP and the RHEP, while aspects of the disputes submitted by Pakistan and found to be within the Court's competence, are not a matter for decision *in this phase* of the proceedings.³⁸⁹ As outlined in Procedural Order No. 6, the Court, being mindful of the general duty of mutual respect and comity owed between dispute resolution bodies, considered it appropriate to address in the first instance certain issues presented to it by Pakistan that are not specific to the issues regarding the design and operation of the KHEP and the RHEP, which are also currently before the Neutral Expert.³⁹⁰ The Court reaffirms that any such questions relating to further phases of these proceedings, including the exercise of this Court's competence in respect of the KHEP and the RHEP design, construction, and operation issues, shall be determined as necessary in due course, after seeking the views of the Parties.³⁹¹
253. *Second*, the Court observes that the issues that arise for determination in this phase of the proceedings are not strictly limited to, nor defined by, the verbatim text of the questions posed in Procedural Order No. 6. Rather, the metes and bounds of the Court's mandate and jurisdiction are defined by the scope of the disputes of which it is seized, as defined in Pakistan's Request for Arbitration. Therefore, in accordance with the dispute resolution architecture of the Treaty,³⁹² the Court is constrained to address only those issues that arise from the actual disputes between the Parties, as reflected in the discussions in the Commission and the terms of Pakistan's Request for Arbitration. Further, the task of the Court is not to deliver an advisory opinion addressing hypothetical or future disputes, but rather to address the live issues presently in dispute between the Parties.³⁹³ Finally, notwithstanding the above, the Court is not strictly limited to considering in a vacuum those Treaty provisions that are expressly identified in Pakistan's Request for Arbitration. Interpretation of the provisions in respect of which the Court is directly engaged will inevitably require an examination of the Treaty as a whole, taking into account all of the elements

³⁸⁹ Procedural Order No. 6, paras. 32, 34.

³⁹⁰ Procedural Order No. 6, paras. 5, 32.

³⁹¹ Procedural Order No. 6, paras. 32, 34.

³⁹² **PLA-0001**, Treaty, Art. IX, Annexures F, G.

³⁹³ See, e.g., *Fisheries Jurisdiction (United Kingdom v. Iceland)*, Merits, Judgment, [1974] ICJ Rep 3, para. 40; Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, pp. 180:9–181:1.

relevant to the interpretation of treaties under the 1969 Vienna Convention on the Law of Treaties (“VCLT”).³⁹⁴

254. At the close of the Hearing on the First Phase on the Merits, Mr. Syed Ali Murtaza, Federal Secretary of the Ministry of Water Resources presented Pakistan’s Final Submissions, formulated as follows:

- (1) Having regard to the submissions advanced and evidence adduced in the Memorial, and to the submissions advanced and evidence adduced during the Hearing, and to any submissions that may be advanced and evidence adduced in any post-Hearing submissions that may be directed by the Court, Pakistan respectfully requests the Court, in one or more partial awards:
 - A. To set out its findings on the issues engaged by this First Phase on the Merits of the proceedings in a narrative *dispositif* that elaborates in detail and in prescriptive terms the overall interpretation and application of Article III and Paragraph 8 of the Treaty, and in particular what is required for purposes of compliance with the design criteria of Paragraph 8 of Annexure D and other relevant and related provisions of the Treaty;
 - B. Having regard to the facts, evidence and law adduced in the Memorial, its associated Appendices, and accompanying exhibits and annexes, in the Hearing, and its accompanying exhibits and annexes, and in any post-Hearing submissions that may be directed by the Court, to adjudge and declare:
 - (i) the nature and character of the Treaty, and the bargains reflected in the Treaty in terms addressed in **Chapter 7** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
 - (ii) the binding or otherwise controlling effect of the decisions of past dispute resolution bodies in terms addressed in **Chapter 8** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court, with respect to:
 - (a) the Parties;
 - (b) the present proceedings before the Court;
 - (c) the present proceedings before the Neutral Expert; and
 - (d) future proceedings before a court of arbitration or a neutral expert;
 - (iii) the relationship, for interpretative purposes, between (a) the headline obligations contained in Article III(1), the *chapeau* to Article III(2) and Article III(4) of the Treaty, and (b) the exception thereto contained in Article III(2)(d) and Part 3 of Annexure D, in terms addressed in **Chapters 8 and 9** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
 - (iv) that engineering “best practices” can and must be used for purposes of complying with the design criteria and operational constraints in Part 3

³⁹⁴ **PLA-0005**, *Vienna Convention on the Law of Treaties*, 23 May 1969, 1155 U.N.T.S. 331 (“VCLT”), Arts. 31–32.

of Annexure D of the Treaty, but that “best practices” cannot be relied upon to circumvent the requirements of the Treaty, in terms addressed in **Chapter 9** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;

- (v) with respect to the interpretation and application of Paragraph 8(d) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing low-level sediment and other outlets for an [Annexure D, Part 3] HEP in terms addressed in **Chapter 10** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
- (vi) with respect to the interpretation and application of Paragraph 8(e) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing gated spillways for an [Annexure D, Part 3] HEP in terms addressed in **Chapter 10** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
- (vii) with respect to the interpretation and application of Paragraph 8(f) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing power intakes for an [Annexure D, Part 3] HEP in terms addressed in **Chapter 10** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
- (viii) with respect to the interpretation and application of Paragraph 8(c) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of calculating maximum Pondage for an [Annexure D, Part 3] HEP in terms addressed in **Chapter 11** of, and elsewhere in, the Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
- (ix) with respect to the interpretation and application of Paragraph 8(a) of Annexure D of the Treaty, what is to be taken into account, and what is to be excluded, for purposes of designing the freeboard for an Annexure D.4 HEP in terms addressed in **Chapter 12** of, and elsewhere in, this Memorial, in the Hearing, and in any post-Hearing submissions that may be directed by the Court;
- (x) any other findings as the Court may consider to be necessary or warranted for purposes of providing controlling guidance on the interpretation and application of, and relationship between:
 - (a) Article III of the Treaty;
 - (b) Paragraph 8(a) of Annexure D of the Treaty;
 - (c) Paragraph 8(c) of Annexure D of the Treaty;
 - (d) Paragraph 8(d) of Annexure D of the Treaty;
 - (e) Paragraph 8(e) of Annexure D of the Treaty;
 - (f) Paragraph 8(f) of Annexure D of the Treaty; and
- (xi) such other findings as the Court may consider to be necessary or warranted.

- (2) Pakistan further requests the Court:

- A. To convene a case management conference of the Parties for purposes of considering:
 - (i) the status of the parallel proceedings before the Neutral Expert;
 - (ii) what engagement, if any, the Court should undertake with the respect to the Neutral Expert and his proceedings, having regard in particular to the general duty of mutual respect and comity applicable to both the proceedings before the Court and the proceedings before the Neutral Expert;
 - (iii) the need for directions for the conduct of further phases of these proceedings;
- B. To give such directions as may be necessary and warranted for the scheduling and conduct of further phases of the proceedings before the Court;
- C. To reserve any issue of costs in respect of the present phase of the proceedings for decision by the Court in due course;
- D. To remain seised of the dispute.

255. While India does not accept and is not participating in this arbitration, in assessing the merits of the positions of the Parties, the Court has sought to take into account India's positions to the extent they are discernible from the statements and conduct of India available to the Court. As described in Part IV.C, India previously has stated its positions in relation to the issues before the Court in this phase of the proceedings including, *inter alia*, within the Commission and during both the *Baglihar* Neutral Expert Proceedings and the *Kishenganga* Arbitration. In the Parts that follow below, the Court draws upon those statements to comprehend India's likely positions were it to appear before this Court, while recognizing that India's positions may have evolved in some respects over time.

* * *

this page intentionally blank

VI. LAW TO BE APPLIED BY A COURT OF ARBITRATION

256. In addressing the issues for determination in this phase of the proceedings, a starting point is an appreciation of the law to be applied by any court of arbitration under the Treaty, including this Court. Paragraph 29 of Annexure G to the Treaty identifies the law to be applied by a court of arbitration and reads as follows:

Except as the Parties may otherwise agree, the law to be applied by the Court shall be this Treaty and, whenever necessary for its interpretation or application, but only to the extent necessary for that purpose, the following in the order in which they are listed:

- (a) International conventions establishing rules which are expressly recognized by the Parties.
- (b) Customary international law.

257. The various components of Paragraph 29 of Annexure G to the Treaty are considered in greater detail below.

A. “EXCEPT AS THE PARTIES MAY OTHERWISE AGREE”

258. The *chapeau* of Paragraph 29 preserves a degree of autonomy for the Parties in directing a court of arbitration as to the law to be applied. The Parties are free to agree on, and instruct a court of arbitration to apply, alternative sources of law in relation to a dispute, including specific rules of international or national law, or to apply non-legally binding instruments. It would even be open to the Parties to direct a court of arbitration to decide a matter *ex aequo et bono*, that is, based on what is fair and good (or just) rather than by strict application of the law. Equally, Paragraph 29 suggests that it is open to the Parties to agree that a court of arbitration should *not* apply certain provisions of the Treaty, for instance, based on an agreed view that they are not relevant to the dispute.

259. In all instances, any such directions must be express and clear as to the Parties’ intention to depart from what would normally be the applicable law under Paragraph 29 of Annexure D. On the matters at issue before the Court, no such agreement presently exists between the Parties.

B. “THE LAW TO BE APPLIED ... SHALL BE THIS TREATY”

260. The central aspect of Paragraph 29 is its indication that the law to be applied by a court of arbitration is the Treaty itself, which is comprised of the Preamble, Articles I to XII, and Annexures A to H (and their annexes and appendices).³⁹⁵ The Protocol to the Treaty, signed by

³⁹⁵ See Part III.C, *supra*.

the Parties in late 1960, is not part of the Treaty itself, but corrects various provisions of the Treaty, which are to be interpreted and applied as corrected pursuant to Paragraph 29.

261. Unlike many treaties, the Indus Waters Treaty “expressly limits the extent to which the Court may have recourse to, and apply, sources of law beyond the Treaty itself”.³⁹⁶ In this regard, Paragraph 29 of Annexure G to the Treaty establishes a hierarchy of applicable legal sources to be applied by a court of arbitration, which prioritizes the Treaty while permitting, in order of hierarchy, recourse to international conventions and customary international law, as indicated by Paragraph 29. Thus, the primary source of law to be applied by this Court is the Treaty. While a court of arbitration may look beyond the terms of the Treaty to other sources, it may do so only when this is “necessary” for the interpretation or application of the Treaty, and then “only to the extent necessary for that purpose”.³⁹⁷
262. A court of arbitration, therefore, is not empowered generally to apply other sources of law, whether found in other treaties or customary international law. As such, the other sources mentioned in Paragraph 29 should not be resorted to as stand-alone sources of law. Rather, such sources may be referred to by a court of arbitration only for the purpose of interpreting or applying the Treaty.
263. Pakistan emphasized this point in the course of the *Kishenganga* Arbitration, where the *Kishenganga* Court recorded in its Interim Measures Order:
- Pakistan accepts that “Paragraph 29 of Annexure G permits the Court to apply other treaties and customary international law,” but emphasizes that this provision is a general applicable law clause not specifically tied to interim measures and restricts recourse to such supplementary sources to instances “necessary” for the interpretation and application of the Treaty. This provision constitutes, in Pakistan’s view, a “very deliberately formulated hurdle” to the application of law beyond the text of the Treaty, and Pakistan maintains that “India has made out no case for recourse to Paragraph 29. It has offered no explanation as to why it is necessary to go beyond the perfectly clear text of Paragraph 28 and have recourse to these other sources.”³⁹⁸
264. By contrast, India favored resort to other sources pursuant to Paragraph 29, specifically to interpretations by the ICJ of its Statute in relation to provisional measures³⁹⁹ and a “[f]undamental principle of international law” in the form of “[e]qual treatment of the Parties”.⁴⁰⁰ In that instance,

³⁹⁶ PLA-0004, *Kishenganga* Final Award, para. 111.

³⁹⁷ PLA-0001, Treaty, Annexure G, para. 29.

³⁹⁸ PLA-0042, *Kishenganga* Interim Measures Order, para. 76.

³⁹⁹ PLA-0042, *Kishenganga* Interim Measures Order, para. 80.

⁴⁰⁰ PLA-0042, *Kishenganga* Interim Measures Order, para. 82.

the *Kishenganga* Court did not find it appropriate, however, to engraft the ICJ's provisional measures requirements onto the Treaty, given the difference in the respective wording of the ICJ Statute and the Treaty.⁴⁰¹

C. “WHENEVER NECESSARY ... INTERNATIONAL CONVENTIONS”

265. As indicated above, the principal source of law for a court of arbitration to interpret and apply is the Treaty itself. Even so, Paragraph 29(a) provides that whenever necessary for the Treaty's interpretation or application, a court of arbitration also may apply “[i]nternational conventions establishing rules which are expressly recognized by the Parties”. Such conventions are not restricted in type (global, regional, or bilateral) nor in terms of subject matter, but they must establish rules expressly recognized by the Parties, which would mean conventions that both Parties have ratified or acceded to. Yet, recourse to such conventions may only be made “to the extent necessary” for the interpretation or application of the Treaty. In this respect, the Court finds no need to go beyond the ordinary definition of “necessary” adopted by the *Kishenganga* Court, specifically that such recourse be “required, needed or essential for a particular purpose”.⁴⁰²

266. India and Pakistan are both Parties to conventions that, in principle, may be relevant to interpreting or applying the Treaty pursuant to Paragraph 29. Such conventions include several agreements concluded within the framework of the Treaty itself, in the course of the dispute resolution processes envisaged in Article IX. One such agreement is the Agreement Between the Government of India and the Government of the Islamic Republic of Pakistan Regarding the Salal Hydro-Electric Plant, concluded on 14 April 1978.⁴⁰³ The Preamble of that agreement refers to certain differences that had arisen between the governments regarding the design of the Salal HEP, and states that the agreement has been reached “[w]ithout prejudice” to the Treaty “or to the rights and obligations of the Parties thereunder”. Article I sets forth salient features to which the Salal HEP shall conform, such as the height of the spillways and the plugging of under-sluices. Article III provides that:

Any question which arises between the Parties concerning the interpretation or application of this Agreement or the existence of any fact which, if established, might constitute a breach of this Agreement shall be dealt with under the provisions of Article IX of the Treaty.

⁴⁰¹ **PLA-0042**, *Kishenganga* Interim Measures Order, para. 130.

⁴⁰² **PLA-0003**, *Kishenganga* Partial Award, para. 397.

⁴⁰³ **PLA-0053**, Agreement Between the Government of India and the Government of the Islamic Republic of Pakistan Regarding the Salal Hydro-Electric Plant, 14 April 1978. The Agreement is reproduced in India Bilateral Treaties and Agreements (IBTA), Volume 10, Doc. No. 657.

Thus, a future court of arbitration might be seized of jurisdiction if a dispute arises in relation to this agreement.

267. Other “agreements” were reached within the Commission in the decades since its establishment, including several referred to in the Commission as “amendments” to the Treaty.⁴⁰⁴ Furthermore, in March 1967, the Commission, acting under Article IX(3), submitted to the two governments a report identifying the five disputes that had arisen concerning the interpretation and application of Article IX(1) of the Treaty. The Parties thereafter each appointed negotiators pursuant to Article IX(4), who reached agreement on all five disputes, which was memorialized in a signed memorandum from the negotiators to the governments.⁴⁰⁵ The Court notes that, in 1989, the Commission also concluded an instrument entitled “Arrangements for the Communication of Information About Flood Flows During the Period 1st July to 10th October 1989”,⁴⁰⁶ which was renewed annually for twenty years.⁴⁰⁷ However, these arrangements do not, of themselves, indicate whether they are interpreting or applying the Treaty.

268. The agreements or arrangements identified above are exemplary. The Court has reviewed such agreements and has found them not to be pertinent for the interpretation of the Treaty provisions that are currently at issue before the Court.

D. “WHENEVER NECESSARY ... CUSTOMARY INTERNATIONAL LAW”

269. Paragraph 29(b) provides that, whenever necessary for the Treaty’s interpretation or application, and after applying any relevant international conventions, a court of arbitration also may apply “[c]ustomary international law”. Unlike Paragraph 29(a), Paragraph 29(b) does not include the

⁴⁰⁴ See, e.g., various “agreements to amend” Annexure H on transitional provisions memorialized at **P-0647.17**, Record of the 17th Meeting of the Permanent Indus Commission, 17 to 23 April 1965; **P-0647.26**, Record of the 26th Meeting of the Permanent Indus Commission, 8 to 13 November 1967; **P-0647.27**, Record of the 27th Meeting of the Permanent Indus Commission, 18 to 23 April 1968; **P-0647.28**, Record of the 28th Meeting of the Permanent Indus Commission, 7 to 13 August 1968; **P-0647.29**, Record of the 29th Meeting of the Permanent Indus Commission, 25 to 30 December 1968; **P-0647.31**, Record of the 31st Meeting of the Permanent Indus Commission, 23 to 28 August 1969.

⁴⁰⁵ **P-0616**, Resolution of the Disputes Concerning Article IX(1) of the Indus Waters Treaty dated 22 January 1976. See para. 165, *supra*.

⁴⁰⁶ **P-0331**, Record of the 72nd Meeting of the Permanent Indus Commission, 19 to 22 May 1989.

⁴⁰⁷ See Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 148:6–11; Hearing for the First Phase on the Merits Tr., (Day 2), 9 July 2024, p. 103.

language “establishing rules which are expressly recognized by the Parties”, presumably due to an understanding that customary international law normally binds all States.⁴⁰⁸

270. One especially pertinent source of customary international law are rules on the method for treaty interpretation, which the Treaty itself does not provide. Such rules are reflected in the VCLT. While neither India nor Pakistan is a party to the VCLT, Article 31 (“General rule of interpretation”) and Article 32 (“Supplementary means of interpretation”)⁴⁰⁹ are generally considered by international courts,⁴¹⁰ expert bodies,⁴¹¹ and publicists⁴¹² to reflect rules of customary international law, and have been acknowledged as such by the Parties. In the *Kishenganga* Arbitration, India acknowledged that the rules of the VCLT are part of customary international law,⁴¹³ while in these proceedings Pakistan has stated that the customary international law rules of treaty interpretation are as set out in the VCLT.⁴¹⁴
271. Consequently, a court of arbitration can be expected to rely on such customary rules in the course of interpreting the Treaty.⁴¹⁵ Articles 31 and 32 of the VCLT provide, relevantly:

⁴⁰⁸ In limited circumstances, such law may operate among only some States or may not bind a persistent objector. **PLA-0052**, ILC, “Report of the Commission to the General Assembly on the work of its seventieth session” (2018) Vol. II(2), Yearbook of the International Law Commission, pp. 110–113.

⁴⁰⁹ Article 33 of the VCLT on interpretation of treaties authenticated in two more languages is not relevant for interpretation of the Treaty, which is authentic only in the English language.

⁴¹⁰ See, e.g., *Arbitral Award of 3 October 1899 (Guyana v. Venezuela)*, Preliminary Objection, Judgment, [2023] ICJ Rep 262, para. 87 (“Although that Convention is not in force between the Parties and is not, in any event, applicable to instruments concluded before it entered into force, ... it is well established that [VCLT Articles 31 to 33] reflect rules of customary international law”). Indeed, the ICJ has concluded as much in the context of a case between India and Pakistan. See *Jadhav (India v. Pakistan)*, Judgment, [2019] ICJ Rep 418, para. 71.

⁴¹¹ See, e.g., **PLA-0052**, ILC, “Report of the Commission to the General Assembly on the work of its seventieth session” (2018) Vol. II(2), Yearbook of the International Law Commission, p. 27, para. (4); International Law Association, Study Group on the Content and Evolution of the Rules of Interpretation, Final Report (2020) (surveying the interpretative practice of various international tribunals and treaty bodies).

⁴¹² See, e.g., Richard Gardiner, *Treaty Interpretation* (Oxford, 2d ed. 2017); Sotirios-Ioannis Lekkas et al., “The Interpretive Practice of the International Court of Justice”, in *Max Planck Yearbook of United Nations Law Online* (2023).

⁴¹³ **PLA-0003**, *Kishenganga* Partial Award, para. 174, n. 101; see also **PLA-0021**, *Kishenganga* Decision on India’s Request for Clarification or Interpretation, para. 29, n. 34.

⁴¹⁴ Hearing on Competence Tr., (Day 1), 11 May 2023, pp. 193:21–194:2; see also Pakistan’s Response on the Competence of the Court and the Operation of Article IX of the Indus Waters Treaty dated 24 March 2023, para. 129, n. 97.

⁴¹⁵ The *Kishenganga* Court proceeded on this basis, as did this Court in its Award on Competence: see, e.g., **PLA-0003**, *Kishenganga* Partial Award, paras. 385, 401, 406, 447, nn. 586, 654; Award on Competence, paras. 120–123.

Article 31

General rule of interpretation

1. A treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the treaty in their context and in the light of its object and purpose.
2. The context for the purpose of the interpretation of a treaty shall comprise, in addition to the text, including its preamble and annexes:
 - (a) any agreement relating to the treaty which was made between all the parties in connection with the conclusion of the treaty;
 - (b) any instrument which was made by one or more parties in connection with the conclusion of the treaty and accepted by the other parties as an instrument related to the treaty.
3. There shall be taken into account, together with the context:
 - (a) any subsequent agreement between the parties regarding the interpretation of the treaty or the application of its provisions;
 - (b) any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation;
 - (c) any relevant rules of international law applicable in the relations between the parties.
4. A special meaning shall be given to a term if it is established that the parties so intended.

Article 32

Supplementary means of interpretation

Recourse may be had to supplementary means of interpretation, including the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31, or to determine the meaning when the interpretation according to article 31:

- (a) leaves the meaning ambiguous or obscure; or
- (b) leads to a result which is manifestly absurd or unreasonable.⁴¹⁶

272. Thus, according to the general rule of interpretation set forth in Article 31 of the VCLT, the treaty shall be interpreted “in good faith” in accordance with the “ordinary meaning” to be given to the terms of the treaty in their “context” and in the light of the treaty’s “object and purpose”. Any “subsequent agreement” of the Parties, reached directly or through “subsequent practice”, shall be taken into account, as well as any “relevant rules of international law” applicable to the parties, with a “special meaning” given to a term if it is established that the parties so intended. Pursuant to Article 32 of the VCLT, resort may be had to “supplementary means of interpretation”, including the “preparatory work” (often referred to as the *travaux préparatoires*) of the treaty, to

⁴¹⁶ PLA-0005, VCLT, Arts. 31–32.

confirm the meaning, or to determine the meaning when application of the other elements of interpretation leaves the meaning ambiguous, obscure, or manifestly absurd or unreasonable. These various elements or means of treaty interpretation are to be deployed as part of a “single combined operation”;⁴¹⁷ for any given treaty interpretation, “the precise relevance of different means of interpretation must first be identified” and then “thrown into the crucible” in order to arrive at a proper interpretation, all the while giving them appropriate weight in relation to each other.⁴¹⁸ At times, international courts and tribunals perceive certain canons of interpretation reflected in these customary rules, such as a principle of effectiveness of interpretation, also referred to as a principle of “*effet utile ut res magis valeat quam pereat*”.⁴¹⁹

273. Beyond rules on the method for treaty interpretation, a court of arbitration may apply other rules of customary international law, where and to the extent necessary for the interpretation or application of the Treaty. Before the *Kishenganga* Court, the Parties disputed whether customary international environmental law should be used when interpreting Article IV(6) of the Treaty (addressing the avoidance of obstructions in the flow of the Eastern and Western Rivers),⁴²⁰ as well as when interpreting the words “if necessary” under Paragraph 15(iii) of Annexure D (limiting the circumstances under which diversion of water is permitted).⁴²¹ While acknowledging India’s right under the Treaty to divert the waters of the Kishenganga/Neelum River to operate the KHEP, the *Kishenganga* Court recognized that India was also subject to “the relevant principles of customary international law to be applied by the Court pursuant to Paragraph 29 of

⁴¹⁷ **PLA-0052**, ILC, “Report of the Commission to the General Assembly on the work of its seventieth session” (2018) Vol. II(2), Yearbook of the International Law Commission, p. 24 (Conclusion 2, para. 5, of the draft conclusions on subsequent agreements and subsequent practice in relation to the interpretation of treaties).

⁴¹⁸ **PLA-0052**, ILC, “Report of the Commission to the General Assembly on the work of its seventieth session” (2018) Vol. II(2), Yearbook of the International Law Commission, p. 29, para. 13 (commentary to Conclusion 2, para. 5), citing **PLA-0055**, UNGA, Yearbook of the International Law Commission (Vol. II. 1966), pp. 219–220. **PLA-0056**, *Arbitral Award of 3 October 1899 (Guyana v. Venezuela)*, Jurisdiction of the Court, Judgment, [2020] ICJ Rep 455, para. 71; **PLA-0057**, *Maritime Delimitation in the Indian Ocean (Somalia v. Kenya)*, Preliminary Objections, Judgment, [2017] ICJ Rep 3, para. 64.

⁴¹⁹ Literally, “to give effect to the matter rather than having it fail”. See, e.g., *Application of the International Convention on the Elimination of All Forms of Racial Discrimination (Georgia v. Russian Federation)*, Preliminary Objections, Judgment, [2011] ICJ Rep 70, paras. 133–34 (finding that the introduction of certain words “would otherwise be meaningless and no legal consequences would be drawn from them contrary to the principle that words should be given appropriate effect whenever possible”); **PLA-0072**, *Corfu Channel (United Kingdom v. Albania)*, Merits, Judgments, [1949] ICJ Rep 4, p. 24 (“It would indeed be incompatible with the generally accepted rules of interpretation to admit that a provision of this sort occurring in a special agreement should be devoid of purport or effect”).

⁴²⁰ **PLA-0003**, *Kishenganga* Partial Award, paras. 258, 262.

⁴²¹ **PLA-0003**, *Kishenganga* Partial Award, paras. 221–222, 227.

Annexure G when interpreting the Treaty”.⁴²² Such principles, the *Kishenganga* Court stated, include those that post-dated the entry into force of the Treaty:

It is established that principles of international environmental law must be taken into account even when (unlike the present case) interpreting treaties concluded before the development of that body of law. The *Iron Rhine* Tribunal applied concepts of customary international environmental law to treaties dating back to the mid-nineteenth century, when principles of environmental protection were rarely if ever considered in international agreements and did not form any part of customary international law. Similarly, the International Court of Justice in *Gabčíkovo-Nagymaros* ruled that, whenever necessary for the application of a treaty, “new norms have to be taken into consideration, and ... new standards given proper weight.” It is therefore incumbent upon this Court to interpret and apply this 1960 Treaty in light of the customary international principles for the protection of the environment in force today.⁴²³

274. To that end, when interpreting the rights of the Parties under the Treaty, the *Kishenganga* Court cited customary international environmental law as enunciated in the *Trail Smelter* case and affirmed in a series of international conventions, declarations, and judicial and arbitral decisions.⁴²⁴ In doing so, the *Kishenganga* Court maintained that “States have a ‘duty to prevent, or at least mitigate’ significant harm to the environment when pursuing large-scale construction activities”.⁴²⁵ Even so, in its Final Award, the *Kishenganga* Court indicated the limits in such resort to customary international environmental law, among other things by declining to adopt a precautionary approach when considering the necessary environmental flow into the Kishenganga/Neelum River below the KHEP. The *Kishenganga* Court stated:

[T]he Court has no difficulty concluding that the requirement of an environmental flow (without prejudice to the level of such flow) is necessary in the application of the Treaty. At the same time, the Court does not consider it appropriate, and certainly not “necessary,” for it to adopt a precautionary approach and assume the role of policymaker in determining the balance between acceptable environmental change and other priorities, or to permit environmental considerations to override the balance of other rights and obligations expressly identified in the Treaty—in particular the entitlement of India to divert the waters of a tributary of the Jhelum. The Court’s authority is more limited and extends only to mitigating significant harm. Beyond that point, prescription by the Court is not only unnecessary, it is prohibited by the Treaty. If customary international law were applied not to circumscribe, but

⁴²² **PLA-0003**, *Kishenganga* Partial Award, para. 445. The court noted that such law also is applicable through application of the customary international law on treaty interpretation: **PLA-0003**, *Kishenganga* Partial Award, para. 447 n. 654. Specifically, the *Kishenganga* Court said:

In addition to Paragraph 29 of Annexure G to the Treaty, customary rules on treaty interpretation (codified in the VCLT) require that the Court take account of relevant customary international law—including international environmental law—when interpreting the Treaty. See VCLT, Art. 31(3)(c) (“There shall be taken into account, together with the context: ... (c) any relevant rules of international law applicable in the relations between the parties”).

⁴²³ **PLA-0003**, *Kishenganga* Partial Award, para. 452.

⁴²⁴ **PLA-0003**, *Kishenganga* Partial Award, paras. 448–449, and the cases cited therein.

⁴²⁵ **PLA-0003**, *Kishenganga* Partial Award, para. 451.

to negate rights expressly granted in the Treaty, this would no longer be “*interpretation or application*” of the Treaty but the substitution of customary law *in place of* the Treaty.⁴²⁶

275. A court of arbitration also may refer to international jurisprudence not arising from the Treaty to explain the reasoning of the court when interpreting or applying the Treaty. For example, while the *Kishenganga* Court refrained in its Interim Measures Order from engrafting concepts developed by the ICJ in its case law on provisional measures, the *Kishenganga* Court nevertheless referred to jurisprudence of the ICJ to elucidate the *reason* that a court of arbitration might issue provisional measures of protection.⁴²⁷

* * *

⁴²⁶ **PLA-0004**, *Kishenganga* Final Award, para. 112 (emphasis in original).

⁴²⁷ **PLA-0042**, *Kishenganga* Interim Measures Order, paras. 134–135.

this page intentionally blank

VII. BINDING OR OTHERWISE CONTROLLING EFFECT OF DISPUTE SETTLEMENT DECISIONS UNDER THE TREATY

276. As stated in the Court's Procedural Order No. 6, the first question of the Court is as follows:

To what extent and on what basis are the decisions of past dispute resolution bodies established pursuant to Article IX of the Treaty concerning (i) competence, (ii) matters of fact, (iii) the interpretation of the Treaty, or (iv) the application of the Treaty in particular factual circumstances, binding or otherwise controlling with respect to (a) the Parties, (b) the present proceedings before the Court, (c) the present proceedings before the Neutral Expert, and (d) future proceedings before a court of arbitration or a neutral expert? Insofar as such decisions are binding or otherwise controlling, what—if any—exceptions or limitations may limit their binding/controlling effect?

277. The first question therefore generally concerns the binding or otherwise controlling effect of decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty upon the Parties and upon subsequent dispute resolution bodies; specifically, the binding or otherwise controlling effect of: (1) an award of a court of arbitration established under the provisions of Article IX(5) and Annexure G to the Treaty; and (2) a decision of a neutral expert appointed in accordance with the provisions of Article IX(2) and Annexure F to the Treaty.

278. Paragraph 23 of Annexure G to the Treaty provides:

The Court shall render its Award, in writing, on the issues in dispute and on such relief, including financial compensation, as may have been claimed. The Award shall be accompanied by a statement of reasons. An Award signed by four or more members of the Court shall constitute the Award of the Court. A signed counterpart of the Award shall be delivered by the Court to each Party. Any such Award rendered in accordance with the provisions of this Annexure in regard to a particular dispute shall be final and binding upon the Parties with respect to that dispute.⁴²⁸

279. Relevantly, Paragraph 11 of Annexure F to the Treaty provides:

The decision of the Neutral Expert on all matters within his competence shall be final and binding, in respect of the particular matter on which the decision is made, upon the Parties and upon any Court of Arbitration established under the provisions of Article IX (5).⁴²⁹

A. THE PARTIES' POSITIONS

1. Pakistan's Position

(a) *Binding Effect of a Decision of a Court of Arbitration*

280. Pakistan observes that a court of arbitration is empowered to make a range of decisions, including decisions relating to its competence, interim measures decisions, and decisions on the substantive

⁴²⁸ PLA-0001, Treaty, Annexure G, para. 23.

⁴²⁹ PLA-0001, Treaty, Annexure F, para. 11.

issues in dispute.⁴³⁰ These decisions may involve matters of fact, the interpretation of the Treaty, and the application of the Treaty in particular factual circumstances (elements (i) to (iv) of the Court’s question).⁴³¹

281. Paragraph 23 of Annexure G sets out “general and basic” requirements for such decisions to qualify as an “Award” under the Treaty—namely that the decision is (1) in writing, on the issues in dispute, and on such relief as has been claimed; (2) accompanied by reasons; (3) signed by four or more members of the court of arbitration; and (4) delivered to each Party (in signed counterpart).⁴³² As such, “Awards” under the Treaty include substantive decisions, as well as decisions on competence (including this Court’s Award on Competence).⁴³³
282. Pakistan submits that “Awards” of a court of arbitration are final and binding *on the Parties* in respect of the dispute addressed in the award.⁴³⁴ According to Pakistan, this follows directly from the plain words of Paragraph 23 of Annexure G, and was recognized by both the *Kishenganga* Court, and by this Court in its Award on Competence.⁴³⁵ In Pakistan’s view, the binding effect intended by Paragraph 23 is not limited to the *dispositif* by the clause that says “[t]he Award shall be accompanied by a statement of reasons”. For Pakistan, “it would be overly artificial to indicate or to expect that an award under paragraph 23, that the award proper would be limited to the two paragraphs that might appear in the *dispositif*, and that the rest is simply a statement of reasons which has no legal impact and no binding effect between the parties”.⁴³⁶ Pakistan also considers that any such limitation would be inconsistent with the jurisprudence on *res judicata* and risk putting the final and binding effect of the decision in jeopardy.⁴³⁷
283. According to Pakistan, an “Award” of a court of arbitration is also binding on “other mechanisms with which the Parties may be engaged” addressing the dispute (or aspects of the dispute) decided

⁴³⁰ Pakistan’s Memorial, para. 8.62.

⁴³¹ Pakistan’s Memorial, para. 8.65.

⁴³² Pakistan’s Memorial, para. 8.63; Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 141:11–15.

⁴³³ Pakistan’s Memorial, para. 8.64; Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 141:18–25.

⁴³⁴ Pakistan’s Memorial, para. 8.66; Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 144:8–10.

⁴³⁵ Pakistan’s Memorial, paras. 8.66–8.67, *citing* **PLA-0003**, *Kishenganga* Partial Award, para. 470; Award on Competence, para. 123; Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 141:18–25.

⁴³⁶ Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 145:11–16.

⁴³⁷ Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 145:17–22.

in the award (including, for example, the present proceedings before the Neutral Expert).⁴³⁸ This also follows from a plain reading of Paragraph 23,⁴³⁹ as well as from the doctrine of *res judicata*, a “general principle inherent to the adjudicative function”, which necessarily applies to the decisions of a court of arbitration.⁴⁴⁰ Pakistan submits that the *res judicata* effect of a court’s decision extends to both the operative part of the award (the *dispositif*), as well as the reasoning informing the operative part which necessarily forms part of the decision.⁴⁴¹ In Pakistan’s view, a court of arbitration’s legal conclusions and factual findings are dispositive in the present proceedings before the Court, the present proceedings before the Neutral Expert, and future proceedings before a court of arbitration or a neutral expert, subject to new developments.⁴⁴²

(b) *Binding Effect of a Decision by a Neutral Expert*

284. Pakistan submits that a decision of a neutral expert on matters within his or her competence will be final and binding in respect of the particular matter on which the decision is made, provided that, and only to the extent that, such decisions are in fact “within [the neutral expert’s] competence”.⁴⁴³ This follows directly from Paragraphs 11 and 13 of Annexure F to the Treaty.⁴⁴⁴ According to Pakistan, a court of arbitration retains “dispositive settlement competence”, including to determine whether any decisions made by a neutral expert were *ultra vires*.⁴⁴⁵
285. Pakistan observes that, pursuant to Article IX and Annexure F, a neutral expert is empowered to make three types of “decision”: (i) decisions under Paragraph 6 of Annexure F (i.e., procedural decisions); (ii) decisions under Paragraph 7 of Annexure F as to whether “any particular difference falls within Part 1 of ... Annexure [F]” (i.e., competence decisions); and (iii) decisions “on the question or questions referred to him” (i.e., substantive decisions).⁴⁴⁶
286. Pakistan contends that *procedural* decisions made by a neutral expert within his or her competence are “final and binding” upon the Parties and any court of arbitration with regard to

⁴³⁸ Pakistan’s Memorial, para. 8.69.

⁴³⁹ Pakistan’s Memorial, para. 8.69.

⁴⁴⁰ Pakistan’s Memorial, paras. 8.70–8.72.

⁴⁴¹ Pakistan’s Memorial, para. 8.69.

⁴⁴² Pakistan’s Memorial, para. 8.75.

⁴⁴³ Pakistan’s Memorial, para. 8.90.

⁴⁴⁴ Pakistan’s Memorial, para. 8.80.

⁴⁴⁵ Pakistan’s Memorial, para. 8.81.

⁴⁴⁶ Pakistan’s Memorial, para. 8.77.

the proceeding in which they are made, but are not otherwise controlling outside of that context (for example, upon a future neutral expert or court of arbitration).⁴⁴⁷

287. According to Pakistan, a neutral expert's *competence* decision would also be final and binding upon the Parties and any court of arbitration, as regards the particular matter (or HEP) on which the decision is made, to the extent such decision is within the neutral expert's competence.⁴⁴⁸ A past competence decision of a neutral expert that has not been subject to a contrary decision by a court of arbitration would also be binding or otherwise controlling for a future neutral expert, as a matter of "good faith interpretation of Article IX and Annexure F".⁴⁴⁹
288. Finally, Pakistan submits that a neutral expert's *substantive* decisions are final and binding upon the Parties, any court of arbitration, and any future neutral expert, only in respect of the particular HEP or matter on which the decision is made, and only to the extent that the decision is within the neutral expert's competence.⁴⁵⁰
289. In that regard, Pakistan submits that, pursuant to Article IX(2)(a) of the Treaty, the substantive "competence" of a neutral expert extends only to a "difference" falling within the provisions of Part 1 of Annexure F (regarding a specific HEP).⁴⁵¹ Interpretation of the Treaty more generally is not within the competence of a neutral expert, and so any decision in that regard is "in no respect 'binding' or 'controlling'".⁴⁵² Pakistan recalls the *Kishenganga* Court's observation that "[t]he effect of a neutral expert's determination is restricted to the elements of the design and operation of the specific hydro-electric plant considered by that Expert" but does not "have a general precedential value beyond the scope of the particular matter before him".⁴⁵³

⁴⁴⁷ Pakistan's Memorial, paras. 8.79–8.82.

⁴⁴⁸ Pakistan's Memorial, paras. 8.83, 8.85.

⁴⁴⁹ Pakistan's Memorial, para. 8.86.

⁴⁵⁰ Pakistan's Memorial, para. 8.87.

⁴⁵¹ Pakistan's Memorial, para. 8.88.

⁴⁵² Pakistan's Memorial, para. 8.90.

⁴⁵³ Pakistan's Memorial, para. 8.88; Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, pp. 175:24–176:15.

2. India's Position in the Permanent Indus Commission, the *Baglihar* Neutral Expert Proceedings, and the *Kishenganga* Arbitration

(a) *Binding Effect of a Decision by a Court of Arbitration*

290. With respect to decisions of a past court of arbitration, India has affirmed that an award rendered by a court of arbitration shall have binding effect on the Parties.⁴⁵⁴ India emphasizes that an award of a court of arbitration is “final and binding only with respect to the particular dispute(s) decided by the Court”.⁴⁵⁵ India contends that only those “operational” aspects of an award of a court of arbitration will binding on the Parties.⁴⁵⁶ In this regard, India distinguishes between “observations” and “directions” of a court of arbitration, only the latter of which will be binding.⁴⁵⁷ According to India, the binding effect of any such award would be only that which is within the jurisdiction of a court of arbitration, which “is limited to disputes over the interpretation and application of the Treaty”.⁴⁵⁸ Accordingly, it would not extend to whether either Party had “breached general international law or any other legal instrument”.⁴⁵⁹
291. India further observes that there is “no provision in the Treaty which declares that an Award by a Court of Arbitration shall bind a Neutral Expert”.⁴⁶⁰ This lacuna arises by reason of the fact that, in India's view, the relationship between the two resolution mechanisms is founded on their being sequential, whereby issues are first resolved by a neutral expert, after which any unresolved issues are then resolved by a court of arbitration.⁴⁶¹

⁴⁵⁴ **P-0027**, Letter No. Y-11017/2/2015-IT/2181 dated 14 March 2016, para. 11; **P-0548 (KR-0005)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Response to Pakistan's Application for Provisional Measures, Volume 1 dated 22 July 2011, para. 43; **P-0548 (KR-0011)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Request for Clarification or Interpretation dated 18 May 2013, para. 12; **P-0548 (KR-0020)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Reply on the Request for Clarification or Interpretation dated 2 September 2013, para. 43.

⁴⁵⁵ **P-0227**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 1.8, citing **PLA-0001**, Treaty, Annexure G, para. 23.

⁴⁵⁶ **P-0027**, Letter No. Y-11017/2/2015-IT/2181 dated 14 March 2016, para. 11.

⁴⁵⁷ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 20.

⁴⁵⁸ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 1.12.

⁴⁵⁹ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 1.12.

⁴⁶⁰ **P-0002**, Letter No. Y-18012/1/2020-Indus dated 11 February 2023, para. 8.

⁴⁶¹ **P-0002**, Letter No. Y-18012/1/2020-Indus dated 11 February 2023, para. 8.

(b) Binding Effect of a Decision by a Neutral Expert

292. With respect to decisions of a neutral expert, India acknowledges that such decisions will be “final and binding in respect of the particular matter on which the decision is made”.⁴⁶² Specifically, a decision of a neutral expert will be *res judicata* with respect to the issues that were decided by the neutral expert relating to a particular project and, to that extent, binding on any court of arbitration.⁴⁶³ In this regard, Paragraph 11 of Annexure F to the Treaty does not permit any appeal of a decision of a neutral expert, including any challenges to the competence of a neutral expert or the correctness of his or her decision.⁴⁶⁴ Beyond this, India recognizes that a decision of a neutral expert will not be binding on the Parties or a court of arbitration.⁴⁶⁵
293. However, India considers that such decisions may nevertheless be a valuable and authoritative precedent and ought be followed by future decisions dealing with issues within the same scope.⁴⁶⁶ This includes any authoritative interpretation within the decision of a neutral expert.⁴⁶⁷ Accordingly, even when a decision of a neutral expert is not binding, India considers that it should nevertheless be respected by the Parties as serving as a template to achieve quicker and amicable resolutions in the Commission in a way that would eliminate repetitive examination of the same issue.⁴⁶⁸

⁴⁶² **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.44.

⁴⁶³ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.44, citing **PLA-0001**, Treaty, Annexure F, para. 11.

⁴⁶⁴ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.46; **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 7.17, 7.27.

⁴⁶⁵ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.110; **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 9.

⁴⁶⁶ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.44; **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, paras. 11, 40; **P-0066**, Record of the 103rd Meeting of the Permanent Indus Commission, 31 May to 5 June 2009, p. 15.

⁴⁶⁷ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.44; **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 8.

⁴⁶⁸ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.44; **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 9; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, paras. 70, 83.

B. THE COURT’S ANALYSIS

294. The question at issue in this Part concerns the extent to which decisions issued by dispute resolution bodies established pursuant to Article IX of the Treaty are binding or otherwise controlling on the Parties and subsequent dispute resolution bodies under the Treaty.
295. The phrase “final and binding” appears in the Treaty in the context of an award of a court of arbitration, where Paragraph 23 of Annexure G to the Treaty says the award is “final and binding upon the Parties”. The same phrase appears in the Treaty in context of a decision of a neutral expert where, under Paragraph 11 of Annexure F, the decision “on all matters within his competence shall be final and binding upon the Parties and upon any Court of Arbitration”. Neither provision, however, speaks to the otherwise controlling effects of the award or decision with respect to other actors. Accordingly, before turning to consider the specific implications of a decision being “final and binding” under each of those provisions, it is necessary to examine briefly the meaning and effect of this phrase in the context of the Treaty as a whole.
296. Generally, a decision that is “final and binding” entails two types of effects. The decision may be said to have a “binding” effect on the parties; they must comply with the decision and are precluded from regarding the issue(s) resolved in the decision as remaining unresolved, including in the context of subsequent dispute resolution proceedings that a party might pursue. Due to this inability to relitigate the same issues before subsequent dispute settlement bodies, the decision may be said to have an “otherwise controlling effect” on those subsequent dispute settlement bodies; they are obliged to apply the international law in force as between the parties, which includes the decision that is final and binding upon them.⁴⁶⁹ Thus, a decision that is final and binding has both a binding effect on the parties and an otherwise controlling effect with respect to subsequent dispute settlement proceedings involving those parties.
297. Further, it is noted that doctrine on the binding or otherwise controlling effect of decisions is, to a degree, synonymous with the rule or general principle of *res judicata*. That rule is typically viewed as addressing whether a later adjudicatory body should regard as settled an issue decided by an earlier adjudicatory body. The question at issue here is slightly broader, as it seeks to address the legal effects of prior decisions on not just adjudicatory bodies, but on the Parties themselves. Even so, the two concepts are closely related, in that the reason a dispute settlement body should

⁴⁶⁹ *Company General of the Orinoco Case (France v. Venezuela)*, Award dated 31 July 1905, X UNRIAA 184, p. 276 (“[A] right, question or fact distinctly put in issue and directly determined by a court of competent jurisdiction as a ground of recovery, cannot be disputed”).

regard a previously-decided issue as *res judicata* is precisely because the prior decision is binding upon each of the parties now appearing before it.

298. As such, the discussion below at times refers to *res judicata* as an aspect of the binding or otherwise controlling effect of a decision rendered by a dispute settlement body. Indeed, the Court recalls the seminal statement in the *Trail Smelter* award: “That the sanctity of *res judicata* attaches to a final decision of an international tribunal is an essential and settled rule of international law”.⁴⁷⁰ More contemporary arbitral tribunals have acknowledged the same, whether it be inter-State arbitration⁴⁷¹ or investor-State arbitration.⁴⁷² The ICJ has found that the rule of *res judicata* “signifies that the decisions of the Court are not only binding on the parties, but are final, in the sense that they cannot be reopened by the parties as regards the issues that have been determined”.⁴⁷³
299. As a practical matter, if a party to a dispute were not bound by the judgment or award rendered against it, and if it did not control subsequent adjudicatory bodies, then the judgment or award would be of limited value and unable to achieve its intended purpose. The ICJ has acknowledged that “[d]epriving a litigant of the benefit of a judgment it has already obtained must in general be seen as a breach of the principles governing the legal settlement of disputes”, explaining that “the stability of legal relations requires that litigation come to an end” and that “it is in the interest of each party that an issue which has already been adjudicated in favour of that party be not argued

⁴⁷⁰ **PLA-0110**, *Trail Smelter (USA v. Canada)*, Award of 11 March 1941, III UNRIAA 1905, p. 1950. The Court notes that some of the jurisprudence and scholarly writings cited in this section, such as the *Trail Smelter* case, pre-date the adoption of the Treaty in 1960, while others do not. Such later references, however, build upon and explain the conventional understanding under international law that would have existed in 1960 as to the binding or otherwise controlling effects of the decisions of adjudicatory bodies.

⁴⁷¹ *Iran v. United States*, Partial Award, No. 601-A3/A8/A9/A14/B61-FT, 17 July 2009, para. 114, referring to the “doctrine of *res judicata*” as “a well-established and settled rule of international law”.

⁴⁷² See, e.g., **PLA-0112**, *Waste Management v. United Mexican States (II)*, ICSID Case No. ARB(AF)/00/3, Decision of the Tribunal on Mexico’s Preliminary Objection concerning the Previous Proceedings, 26 June 2002, para. 39; **PLA-0113**, *Landesbank Baden-Württemberg, HSH Nordbank AG, Landesbank Hessen-Thüringen Girozentrale and Norddeutsche Landesbank-Girozentrale v. Kingdom of Spain*, ICSID Case No. ARB/15/45, Decision on the Respondent’s Application for Reconsideration of the Tribunal’s Decision of 25 February 2019 Regarding the “Intra-EU” Jurisdictional Objection, 11 November 2021, paras. 26–37; **PLA-0103**, *Jan de Nul N.V. and Dredging International N.V. v. Arab Republic of Egypt*, ICSID Case No. ARB/04/13, Award, 6 November 2008, paras. 129–130; **PLA-0107**, *Sistem Mühendislik İnşaat Sanayi ve Ticaret A.Ş. v. Kyrgyz Republic*, ICSID Case No. ARB(AF)/06/1, Decision on Jurisdiction, 13 September 2007, para. 132; **PLA-0106**, *RREEF Infrastructure (G.P.) Limited and RREEF Pan-European Infrastructure Two Lux S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/30, Decision on Responsibility and on the Principles of Quantum, 30 November 2018, para. 209.

⁴⁷³ **PLA-0109**, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment [2007] ICJ Rep 43, para. 115.

again”.⁴⁷⁴ The importance of such stability in the context of the rights of the Parties under the Treaty was emphasized by the *Kishenganga* Court, when it stated that “stability and predictability in the availability of the waters of the Kishenganga/Neelum River for each Party’s use are vitally important for the effective utilization of rights accorded to each Party by the Treaty (including its incorporation of customary international environmental law)”.⁴⁷⁵

300. Moreover, doctrine on the binding or otherwise controlling effect of a prior decision in a proceeding between two parties is not unique to the international legal system; it operates worldwide in national legal systems, including civil law and common law systems. Civil law systems have been animated by certain Roman law maxims, such as *nemo debet bis vexari pro una et eadem causa* (“no one should be proceeded against for the same claim”) and *interest reipublicae ut sit finis litium* (“it is in the public interest that there should be an end to litigation”).⁴⁷⁶ In common law systems, the principle or rule of *res judicata* is sometimes reserved to describe *claim preclusion*, meaning that a party who unsuccessfully asserted (or defended against) a claim is precluded from attempting again to assert (or defend against) the claim. When so reserved, such systems may classify separately the concept of *issue preclusion* (often referred to as a form of estoppel), meaning that a party is prevented from relitigating against the same opposing party an issue of fact or law that was previously contested and decided. Yet many common law systems use the term *res judicata* to broadly encompass both claim and issue preclusion and, in any event, by whatever nomenclature, the end result is the same.⁴⁷⁷ Among many others, the national legal systems of India and Pakistan both rely upon the doctrine of *res judicata*.⁴⁷⁸ This prevalence of the concept of *res judicata* (as broadly understood) is such an “ubiquitous feature of the laws on civil procedure in national legal systems” that it “has been applied by a vast number of international courts and tribunals either as a rule of customary international law or as a general principle of law”.⁴⁷⁹ Indeed, the ICJ has referred to *res judicata*

⁴⁷⁴ **PLA-0109**, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment [2007] ICJ Rep 43, para. 116.

⁴⁷⁵ **PLA-0003**, *Kishenganga* Partial Award, para. 457.

⁴⁷⁶ Gary B. Born, *International Commercial Arbitration* (Kluwer Law International, 3rd ed. 2021), Ch. 27.01.

⁴⁷⁷ Gary B. Born, *International Commercial Arbitration* (Kluwer Law International, 3rd ed. 2021), Ch. 27.01.

⁴⁷⁸ Gary B. Born, *International Commercial Arbitration* (Kluwer Law International, 3rd ed. 2021), Ch. 27.01[A], n. 12, citing *Hope Plantation Ltd v. Taluk Land Bd*, (1999) 5 SCC 590 (Indian S.Ct.) (“Section 11 of the Code of Civil Procedure contains provisions of *res judicata* but these are not exhaustive of the general doctrine of *res judicata*”). See also Code of Civil Procedure 1908 (Pakistan), s 11.

⁴⁷⁹ *Ahron G. Frenkel v. Republic of Croatia*, ICSID Case No. ARB/20/49, Award, 29 January 2025, para. 126, citing Yuval Shany, *The Competing Jurisdictions of International Courts and Tribunals* (Oxford University Press, 2003), pp. 245–246.

as “a general principle of law” that protects both “the judicial function of a court or tribunal and the parties to a case”⁴⁸⁰ and establishes the finality of the decision adopted in a particular case.⁴⁸¹

301. As a general matter, the rule applies to judicial and arbitral decisions where there is identity of the parties, identity of the cause (i.e., legal ground for the claim), and identity of the object (i.e., relief sought).⁴⁸² Thus, for the rule to operate, a claim or issue has to have been previously litigated between two parties on a particular legal ground, and must have been resolved by a final judgment or award of that litigation. When that has occurred, either party is precluded from raising the claim or issue again on the same legal ground.
302. At the same time, for the rule to apply, the putative question at issue must have been definitively settled by an earlier decision. “If a matter has not in fact been determined, expressly or by necessary implication, then no force of *res judicata* attaches to it”.⁴⁸³ Thus, claims that were not litigated, or issues that were not raised or were not decisive to the earlier judgment or award, are not subject to the doctrine. Likewise, statements of the prior court or tribunal that were merely *obiter dicta*, do not have a binding or otherwise controlling effect. As the ICJ has concluded, “for *res judicata* to apply in a given case, the Court ‘must determine whether and to what extent the first claim has already been definitively settled’ ... for ‘[i]f a matter has not in fact been determined, expressly or by necessary implication, then no force of *res judicata* attaches to it’”.⁴⁸⁴

⁴⁸⁰ *Maritime Delimitation in the Caribbean Sea and the Pacific Ocean (Costa Rica v. Nicaragua)* and *Land Boundary in the Northern Part of Isla Portillos (Costa Rica v. Nicaragua)*, Judgment [2018] ICJ Rep 139, para. 68, and the cases cited therein.

⁴⁸¹ **PLA-0056**, *Arbitral Award of 3 October 1899 (Guyana v. Venezuela)*, Jurisdiction of the Court, Judgment, [2020] ICJ Rep 455, para. 86; **PLA-0072**, *Corfu Channel (United Kingdom v. Albania)*, Merits, Judgments, [1949] ICJ Rep 4, pp. 244, 248; **PLA-0111**, *Request for Interpretation of the Judgment of 11 June 1998 in the Case concerning the Land and Maritime Boundary between Cameroon and Nigeria (Cameroon v. Nigeria)*, Preliminary Objections (Nigeria v. Cameroon), Judgment [1999] ICJ Rep 31, para. 12.

⁴⁸² **PLA-0108**, *Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 Nautical Miles from the Nicaraguan Coast (Nicaragua v. Colombia)*, Preliminary Objections, Judgment, [2016] ICJ Rep 100, para. 59. See also *Interpretation of Judgments Nos. 7 and 8 (Factory at Chorzów)*, Judgment, [1927] PCIJ Rep Series A, No. 13, para. 1 (Dissenting Opinion of Judge Anzilotti); *China Navigation Co., Ltd. (Great Britain) v. United States (Newchwang case)*, Decision of 9 December 1921, VI UNRIAA 64, p. 65; **PLA-0110**, *Trail Smelter (USA v. Canada)*, Award of 11 March 1941, III UNRIAA 1905, p. 1952.

⁴⁸³ **PLA-0109**, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment [2007] ICJ Rep 43, para. 126.

⁴⁸⁴ *Maritime Delimitation in the Caribbean Sea and the Pacific Ocean (Costa Rica v. Nicaragua)* and *Land Boundary in the Northern Part of Isla Portillos (Costa Rica v. Nicaragua)*, Judgment [2018] ICJ Rep 139, para. 68, quoting **PLA-0109**, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment [2007] ICJ Rep 43, para. 126.

303. The following sections assess, in turn, the binding or otherwise controlling effect of a decision of the two dispute resolution bodies envisaged under Article IX of the Treaty: an award by a court of arbitration; and a decision by a neutral expert.

1. Binding or Otherwise Controlling Effect of an Award by a Court of Arbitration

304. Against the backdrop of the doctrine on the binding or otherwise controlling effect of a decision by an adjudicatory body, this section considers the binding or otherwise controlling effect of an award of a court of arbitration. Importantly for present purposes, Paragraph 23 of Annexure G provides that “[a]ny such Award rendered in accordance with the provisions of this Annexure in regard to a particular dispute shall be final and binding upon the Parties with respect to that dispute”.⁴⁸⁵
305. Of course, a court of arbitration that issues an award must have been established in a manner consistent with the terms of the Treaty. To the extent that a question arises as to whether a court of arbitration has been so established, Paragraph 16 of Annexure G to the Treaty accords to the court of arbitration the power to decide all questions relating to its competence; such a court broadly enjoys *compétence de la compétence*. Any award on its competence, per Paragraph 23 of Annexure G, is “final and binding upon the Parties”. Annexure G provides no process for a Party to challenge a court of arbitration’s awards in some other forum, including an award on competence, and therefore the binding or controlling effect of the court’s awards, including an award on competence, are not subject to further review. Neither Party challenged the establishment of the *Kishenganga* Court. India challenged, indirectly, the establishment of the present Court based on various grounds, which were addressed *seriatim* in the Award on Competence.⁴⁸⁶
306. As discussed below, once a court of arbitration has been established in accordance with the Treaty, various issues may arise with respect to the binding or otherwise controlling effect of its awards, including in the context of such effect on particular actors, such as the Parties or a subsequent neutral expert or court of arbitration.

⁴⁸⁵ PLA-0001, Treaty, Annexure G, para. 23.

⁴⁸⁶ See Part II.B, *supra*.

(a) *Award need not be preceded by a neutral expert decision*

307. The Treaty provides that, if “questions” as to the interpretation or application of the Treaty (including an alleged breach) cannot be resolved within the Commission, then the “difference” that has arisen may be placed before a court of arbitration as a “dispute”.⁴⁸⁷ As explained in the Award on Competence, and contrary to the position taken by India, there is no requirement under Article IX of the Treaty that a “difference” between the Parties be addressed first by a neutral expert before being addressed as a “dispute” by a court of arbitration.⁴⁸⁸
308. India argued its position as well before the *Kishenganga* Court, which also rejected the argument, saying that “Article IX(2)(a) ensures the appointment of a neutral expert where a Party actually requests the appointment of the same”, but “does not serve to impose—for its own sake—an additional procedural hurdle to access a court of arbitration”.⁴⁸⁹ Indeed, the disputes before the *Kishenganga* Court were not first addressed by a neutral expert. Moreover, once a Party initiates a proceeding before a court of arbitration, a subsequent request by the other Party for the appointment of a neutral expert on the same difference does not have the effect of stripping the court of its competence or of requiring the court to place a moratorium on its proceedings.⁴⁹⁰
309. As such, an award may be rendered by a court of arbitration even in circumstances where the difference at issue has not been addressed first by a neutral expert or where a neutral expert has been appointed on the same difference after the appointment of the court. In accordance with the Treaty, such an award is final and binding.

(b) *Award must be rendered in the manner prescribed by the Treaty*

310. Annexure G of the Treaty provides that a court of arbitration shall conduct its proceedings, during which the Parties may present arguments and the court may both require the production of evidence and put questions to the Parties.⁴⁹¹ As discussed in Part IV, the non-participation of a Party in the proceedings does not prevent such proceedings from moving forward or otherwise

⁴⁸⁷ **PLA-0001**, Treaty, Articles IX(1), (2)(b), (5), Annexure G. On the procedures for establishing a court of arbitration, see Award on Competence, Pt. V.

⁴⁸⁸ Award on Competence, paras. 189–199.

⁴⁸⁹ **PLA-0003**, *Kishenganga* Partial Award, para. 481.

⁴⁹⁰ Award on Competence, paras. 277–293.

⁴⁹¹ **PLA-0001**, Treaty, Annexure G, paras. 16–21.

diminish the legal effect of the court's decisions.⁴⁹² After receiving evidence and argumentation, the court proceeds to its deliberations.⁴⁹³

311. Ultimately, an "Award" is rendered, which must be: (1) in writing, on the issues in dispute, and on such relief, including financial compensation, as may have been claimed; (2) accompanied by a statement of reasons; (3) signed by four or more members of the court; and (4) with signed copies delivered to each Party.⁴⁹⁴ When an award is issued in that prescribed manner, it is final and binding.

(c) *Various types of awards are binding or otherwise controlling*

312. The binding or otherwise controlling effect of the award of a court of arbitration arises regardless of the type of award that is issued. Whether it be an award on competence, a partial award, or a final award, Paragraph 23 of Annexure G draws no distinction in that regard so long as the four elements set forth in the prior subsection are present. Just as the ICJ acknowledges *res judicata* effects of its "judgments", whether they be judgments on jurisdiction, on the merits, or on reparation,⁴⁹⁵ the same principle operates with respect to the various types of awards that might be rendered by a court of arbitration.
313. These different types of awards may reach decisions on different aspects of the dispute at issue, such as decisions on facts, decisions on how to interpret the law, or decisions on the application of the law to the facts. The Treaty draws no distinction as between these different aspects when establishing that an award is final and binding. As such, the binding or otherwise controlling effect attaches to an award of a court of arbitration concerning: (1) competence; (2) matters of fact; (3) the interpretation of the Treaty; or (4) the application of the Treaty in particular factual circumstances.

(d) *Binding or otherwise controlling effect extends beyond the award's dispositif*

314. An important issue concerns whether the binding or otherwise controlling effect associated with a court of arbitration's award only relates to the ultimate decision reached in that award (in other words, the final part of the award, often referred to as the *dispositif*), or whether it also relates to

⁴⁹² See Part IV.C, *supra*; see also Award on Competence, paras. 124–135.

⁴⁹³ PLA-0001, Treaty, Annexure G, para. 22.

⁴⁹⁴ PLA-0001, Treaty, Annexure G, para. 23.

⁴⁹⁵ See PLA-0109, *Application of the Convention on the Prevention and Punishment of the Crime of Genocide (Bosnia and Herzegovina v. Serbia and Montenegro)*, Judgment [2007] ICJ Rep 43, para. 117.

the reasoning that underlies that decision. This issue appears to be the consideration raised by India in drawing a distinction between a court's "observations" (which have no binding effect) and its "directions" (which do have binding effect).⁴⁹⁶ In this respect, it is noted that Paragraph 23 of Annexure G provides the "Award shall be accompanied by a statement of reasons", which may indicate that "Award" is intended as a reference to the substantive decisions set forth in the *dispositif*⁴⁹⁷ and not to the reasons for those decisions. A similar understanding as to what aspect of an award or judgment is final and binding might be drawn from the analogous provision of the Statute of the ICJ.⁴⁹⁸

315. Even so, the Court concludes that the binding or otherwise controlling effect of an award of a court of arbitration established under Article XI of the Treaty is not limited solely to the final decision reached in that award. The reasoning underlying the final decision is an integral component of the judicial function, the protection of which requires that the effect extend to the reasoning that supports the final decision. Pakistan has agreed with this conclusion of the *res judicata* effect of an award of a court of arbitration.⁴⁹⁹ India also appeared to accept this conclusion when seeking an interpretation or clarification of the *Kishenganga* Court's Partial Award. In that proceeding, India repeatedly referred to the *Kishenganga* Court's reasoning in the Partial Award as pertinent for understanding the *res judicata* effect of its decision on drawdown flushing in that Award.⁵⁰⁰
316. This conclusion finds support in jurisprudence of international courts and tribunals extending back a century and continuing through to today. For example, the Permanent Court of International Justice ("PCIJ") determined that "all the parts of a judgment concerning the points

⁴⁹⁶ See para. 290, *supra*.

⁴⁹⁷ Pakistan's Memorial, para. 13.14.

⁴⁹⁸ Article 59 of the ICJ Statute refers to the "decision" of the ICJ as having "no binding force except between the parties and in respect of that particular case", not to the "judgment" of the ICJ as used in other parts of the Statute: See **PLA-0108**, *Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 Nautical Miles from the Nicaraguan Coast (Nicaragua v. Colombia)*, Preliminary Objections, Judgment, [2016] ICJ Rep 100, para. 61 ("The decision of the Court is contained in the operative clause of the judgment").

⁴⁹⁹ See, e.g., Pakistan's Memorial, para. 8.69.

⁵⁰⁰ **P-0548 (KR-0005)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Response to Pakistan's Application for Provisional Measures, Volume 1 dated 22 July 2011, para. 43; **P-0548 (KR-0011)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Request for Clarification or Interpretation dated 18 May 2013, para. 12; **P-0548 (KR-0012)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Pakistan's Data and Information Submitted in Accordance with the Partial Award dated 21 June 2013, paras. 22, 43; **P-0548 (KR-0020)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India's Reply on the Request for Clarification or Interpretation dated 2 September 2013, para. 43.

in dispute explain and complete each other and are to be taken into account in order to determine the precise meaning and scope of the operative portion”.⁵⁰¹ PCIJ Judge Anzilotti maintained that “the binding effect” of a judgment “attaches only to the operative part of that judgment and not to the statement of reasons”.⁵⁰² Even so, he accepted that judicial reasoning is of considerable significance in understanding the operative part of a judicial decision. In this regard, he considered that “it is almost always necessary to refer to the statement of reasons to understand clearly the operative part and above all to ascertain the *causa petendi*”.⁵⁰³

317. The ICJ has adopted a similar approach, finding that—while its final and binding “decision” is the operative clause of the judgment—“in order to ascertain what is covered by *res judicata*, it may be necessary to determine the meaning of the operative clause by reference to the reasoning set out in the judgment in question”.⁵⁰⁴ Further, “[i]n determining the meaning and scope of the operative clause of the original Judgment, the Court, in accordance with its practice, will have regard to the reasoning of that Judgment to the extent that it sheds light on the proper interpretation of the operative clause”.⁵⁰⁵ For example, the ICJ recently assessed the “force of *res judicata*” of its judgment on jurisdiction in a case by analyzing not just the operative part of that judgment, but “the reasoning underlying it”, ultimately leading to the conclusion that a certain issue was not yet decided in the case.⁵⁰⁶ Indeed, when parties disagree as to what is meant by an operative clause in an earlier judgment, the ICJ inevitably must resort to the reasoning behind the clause:

[W]here there is a “difference of opinion [between the parties] as to whether a particular point has or has not been decided with binding force ... the Court cannot avoid the duty incumbent

⁵⁰¹ *Polish Postal Service in Danzig*, Advisory Opinion, [1925] PCIJ Rep Series B, No. 11, p. 30.

⁵⁰² *Interpretation of Judgments Nos. 7 and 8 (Factory at Chorzów)*, Judgment, [1927] PCIJ Rep Series A, No. 13, para. 2 (Dissenting Opinion of Judge Anzilotti).

⁵⁰³ *Interpretation of Judgments Nos. 7 and 8 (Factory at Chorzów)*, Judgment, [1927] PCIJ Rep Series A, No. 13, para. 2 (Dissenting Opinion of Judge Anzilotti). Judge Anzilotti argued that it is the operative part of the Court’s judgment that “contains the Court’s binding decision and which, consequently, may form the subject of a request for an interpretation”.

⁵⁰⁴ **PLA-0108**, *Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 Nautical Miles from the Nicaraguan Coast (Nicaragua v. Colombia)*, Preliminary Objections, Judgment, [2016] ICJ Rep 100, para. 61. See also *Maritime Delimitation in the Caribbean Sea and the Pacific Ocean (Costa Rica v. Nicaragua)* and *Land Boundary in the Northern Part of Isla Portillos (Costa Rica v. Nicaragua)*, Judgment [2018] ICJ Rep 139, para. 68.

⁵⁰⁵ **PLA-0108**, *Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 Nautical Miles from the Nicaraguan Coast (Nicaragua v. Colombia)*, Preliminary Objections, Judgment, [2016] ICJ Rep 100, para. 75, quoting *Request for Interpretation of the Judgment of 15 June 1962 in the Case concerning the Temple of Preah Vihear (Cambodia v. Thailand)*, Judgment [2013] ICJ Rep 281, para. 68.

⁵⁰⁶ *Arbitral Award of 3 October 1899 (Guyana v. Venezuela)*, Preliminary Objection, Judgment, [2023] ICJ Rep 262, paras. 266–269.

upon it of interpreting the judgment in so far as necessary, in order to adjudicate upon such a difference of opinion”.⁵⁰⁷

318. The same approach of applying a binding or otherwise controlling effect to the reasoning underlying the final decision may be discerned in inter-State arbitration. For example, the arbitral tribunal in *The Pious Fund of the Californias (USA v. Mexico)* considered “that all the parts of the judgment or the decree concerning the points debated in the litigation enlighten and mutually supplement each other, and that they all serve to render precise the meaning and the bearing of the *dispositif* (the decisory part of the judgment), to determine the points upon which there is *res judicata* and which thereafter cannot be put in question”.⁵⁰⁸ The arbitral tribunal that delimited the continental shelf between France and the United Kingdom regarded the “binding force” of an arbitral award to be limited to the *dispositif*, but even so acknowledged “the close links that exist between the reasoning of a decision and the provisions of its *dispositif*”, and therefore “recourse may in principle be had to the reasoning in order to elucidate the meaning and scope of the *dispositif*”.⁵⁰⁹ Indeed, it found that “if findings in the reasoning constitute a condition essential to the decision given in the *dispositif*, these findings are to be considered as included among the points settled with binding force in the decision”.⁵¹⁰ Other tribunals have characterized both the final decision and the reasoning as “binding”. For example, the arbitral tribunal that resolved a boundary dispute between Argentina and Chile maintained:

The force of *res judicata* of an international award applies, primarily, to its operative part, i.e., the part in which the Court rules on the dispute and states the rights and obligations of the parties. The legal precedents have also established that the provisions of the preambular part, which are the logically necessary antecedents of the operative provisions, are equally binding ...⁵¹¹

319. As the Iran-United States Claims Tribunal stated:

In addition to the operative part (*dispositif*) of a decision, the reasons (*motifs*) provided in a decision also have *res judicata* effect to the extent that those reasons are relevant to the actual decision on the question at issue.⁵¹²

⁵⁰⁷ **PLA-0108**, *Question of the Delimitation of the Continental Shelf between Nicaragua and Colombia beyond 200 Nautical Miles from the Nicaraguan Coast (Nicaragua v. Colombia)*, Preliminary Objections, Judgment, [2016] ICJ Rep 100, para. 73, and the cases cited therein.

⁵⁰⁸ *The Pious Fund of the Californias (USA v. Mexico)*, Award of the Tribunal, 14 October 1902, p. 2.

⁵⁰⁹ *Delimitation of the Continental Shelf (Great Britain/France)*, Decision on Application Concerning the Meaning and the Scope of the Decision of 30 June 1977 (14 March 1978), XVIII UNRIAA 295, para. 28.

⁵¹⁰ *Delimitation of the Continental Shelf (Great Britain/France)*, Decision on Application Concerning the Meaning and the Scope of the Decision of 30 June 1977 (14 March 1978), XVIII UNRIAA 295, para. 28.

⁵¹¹ **PLA-0067**, *Boundary dispute between Argentina and Chile concerning the frontier line between boundary post 62 and Mount Fitzroy (Argentina/Chile)*, Decision of 21 October 1994, XXII UNRIAA 3, para. 70.

⁵¹² *Iran v. United States*, Partial Award, No. 601-A3/A8/A9/A14/B61-FT, 17 July 2009, para. 115.

320. Investor-State arbitral tribunals have taken the same view. For example, the *RREEF Infrastructure v. Spain* tribunal found that although certain findings did “not appear in the operative part of the Decision on Jurisdiction, they constitute the necessary support for it and are therefore *res judicata*”.⁵¹³ Thus, whether one finds the final decision alone as binding or not, tribunals give a binding or otherwise controlling effect to the reasoning, to the extent that such reasoning is what led to the final decision.

321. Although perhaps not wholly consistent in this regard, international commercial arbitration takes the same approach. After reviewing contemporary practice, the International Law Association Committee on International Commercial Arbitration, in its Final Report on *Res Judicata* and Arbitration, endorsed a:

more extensive notion of *res judicata*, which is also followed in public international law, under which *res judicata* not only is to be read from the dispositive part of an award but also from its underlying reasoning. More restrictive notions of the scope of *res judicata*, limiting conclusive and preclusive effects to the dispositive part of awards, have not been followed in the Recommendations, because the Committee considered the latter notion to be overly formalistic and literal. If it is clear from an arbitral tribunal’s reasoning that the dispositive part is to be interpreted in a way to bar further or subsequent arbitration proceedings, claim preclusion ought to follow for the sake of arbitral efficiency and finality. Claims estopped on the basis of the same cause of action by virtue of the *res judicata* effects of both the dispositive part of the award as well as its underlying reasoning prevent some evidence or legal argument regarding that cause of action being reargued.⁵¹⁴

322. Based on the ILA Committee’s recommendation, the ILA recommended that:

4. An arbitral award has conclusive and preclusive effects in the further arbitral proceedings as to:
 - 4.1 determinations and relief contained in its dispositive part as well as in all reasoning necessary thereto;
 - 4.2 issues of fact or law which have actually been arbitrated and determined by it, provided any such determination was essential or fundamental to the dispositive part of the arbitral award.⁵¹⁵

323. Against this backdrop, the text of Paragraph 23 of the Treaty may be understood. The “Award” envisaged in Annexure G is not characterized as just the “*dispositif*” or as any other specific element of the court’s decision, such as the “directions” of the court of arbitration. Indeed, if only

⁵¹³ **PLA-0106**, *RREEF Infrastructure (G.P.) Limited and RREEF Pan-European Infrastructure Two Lux S.à r.l. v. Kingdom of Spain*, ICSID Case No. ARB/13/30, Decision on Responsibility and on the Principles of Quantum, 30 November 2018, para. 209.

⁵¹⁴ International Law Association Committee on International Commercial Arbitration, Final Report on *Res Judicata* and Arbitration, Seventy-second Session, Toronto, Canada, (2006), para. 52.

⁵¹⁵ International Law Association, Resolution No. 1/2006, Annex 2: Recommendations on *res judicata* and Arbitration, para. 4.

the *dispositif* were the “Award”, then only that would be required to be in writing and to be signed. Rather, Paragraph 23 calls for the “Award” to be “in writing” and to address the “issues in dispute” and any “relief” that has been claimed, and to “be accompanied by a statement of reasons”. The “Award”, therefore, is the totality of the written decision issued by the Court. Indeed, as may be seen in the *Kishenganga* awards and in the award on competence by the present Court, an “Award” typically contains various sections, including introductory and procedural sections, and sections addressing facts, the positions of the Parties, and the Court’s reasoning, all ultimately followed by a *dispositif*. The question then becomes what aspects of the award have binding or otherwise controlling effect. The *dispositif* is certainly central to, and the starting point for, understanding the ultimate legal disposition by the court of the questions before it, but that does not mean that it is the stopping point, or that the reasoning underlying the *dispositif* has no legal effect. To the contrary, Paragraph 23 provides that “[a]ny such Award”—meaning a decision rendered in writing on the issues and relief in dispute and accompanied by the statement of reasons—is “final and binding upon the Parties”. As is true of international courts and tribunals generally, including the ICJ, when determining the meaning, scope, and thus legal effects of the *dispositif* of a court of arbitration, the Parties should have regard to the reasoning that underlies the *dispositif* to the extent that it sheds light on its proper interpretation.

324. In light of the above, the “final and binding” or otherwise controlling effect of an award of a court of arbitration pursuant to Paragraph 23 of Annexure G relates not only to the *dispositif*, but extends to the reasoning that underlies that award, which *inter alia* helps make clear the meaning and scope of the final decision.

(e) *Awards may be systemic in nature*

325. A further important issue concerns whether a court of arbitration is capable of issuing binding or otherwise controlling decisions that are “systemic” or “generic” in nature—in other words, decisions relating generally to how a Treaty provision is to be interpreted—or is limited to issuing decisions that only govern the particular plant or plants that are the subject of a dispute between the Parties. If a court of arbitration is capable of issuing decisions that are systemic in nature and is requested to do so, then the binding or otherwise controlling effect of those decisions will apply not just with respect to any individual plant(s) at issue in the particular dispute before it, but generally with respect to all HEPs to which the relevant Treaty provision applies.
326. The Treaty contains no restriction upon the competence of a court of arbitration that precludes issuance of decisions that relate generally to how a Treaty provision is to be interpreted. To the contrary, Article IX of the Treaty commences the sequence of possibilities for dispute settlement

by allowing the Commission to examine “[a]ny question which arises between the Parties concerning the interpretation or application of this Treaty or the existence of any fact which, if established, might constitute a breach of the Treaty”.⁵¹⁶ The questions that may be examined within the Commission are not limited to questions concerning a specific HEP on the Western Rivers; rather, they may concern any aspect of: (a) the interpretation of the Treaty; (b) the application of the Treaty; or (c) facts that might constitute a breach of the Treaty. Thus, if a question arises regarding how a particular provision of the Treaty is to be interpreted, that question can be examined by the Commission, the resolution of which will affect how the Treaty is to be interpreted across the board by the Parties.

327. Yet, if the Commission cannot reach agreement on such a question, then a “difference” is deemed to have arisen.⁵¹⁷ Again, such differences are not limited to questions concerning a specific HEP on the Western Rivers. At the same time, only certain types of differences may be placed before a neutral expert, given that a neutral expert’s competence is much more circumscribed under Annexure F than is that of a court of arbitration. Part 1 of Annexure F identifies a series of 23 types of questions that can be referred to a neutral expert,⁵¹⁸ all of which call for the technical application of the Treaty in a particular (non-systemic) context, such as determining the boundary of the drainage basin of the Indus River,⁵¹⁹ determining the schedule for releases of water from Conservation Storage under Paragraph 8 of Annexure C,⁵²⁰ or determining whether the design or operation of “a Plant” or “any plant” is consistent with the relevant criteria in Annexure D.⁵²¹ Given the limited, non-systemic, and technical nature of the neutral expert’s work, a single person is selected for this role who is a highly-qualified engineer with expertise in hydrology, dam operation, and dam design.⁵²²
328. By contrast, the court of arbitration is assigned no such limits in either Article IX or Annexure G; any question that cannot be resolved by the Commission results in a difference that can also qualify as a dispute and may be placed before a court of arbitration. Thus, the competence of a

⁵¹⁶ PLA-0001, Treaty, Art. IX(1) (emphasis added).

⁵¹⁷ PLA-0001, Treaty, Art. IX(2).

⁵¹⁸ PLA-0001, Treaty, Annexure F, paras. 1(1)–(23).

⁵¹⁹ PLA-0001, Treaty, Annexure F, para. 1(2).

⁵²⁰ PLA-0001, Treaty, Annexure F, para. 1(9).

⁵²¹ PLA-0001, Treaty, Annexure F, para. 1(11), *referring to* questions under Annexure D, para. 11, which concerns the design of “a Plant”; PLA-0001, Treaty, Annexure F, para. 1(12), *referring to* the operation of “any plant”.

⁵²² PLA-0001, Treaty, Annexure F, para. 4; Award on Competence, para. 190.

court of arbitration extends to *any* question referred to it that has arisen under Article IX(1) and that cannot be resolved either within the Commission or by the two Parties. Moreover, the Treaty recognizes that, if certain differences fall outside the scope of the neutral expert's competence, then they may be referred instead to a court of arbitration,⁵²³ which reinforces the greater breadth of the court's ambit. For this reason, a court of arbitration is not a single person experienced solely in engineering; it is designed to be a court consisting of as many as seven arbitrators, who have a mixture of experience in both engineering and law. Those diverse qualifications allow a court of arbitration to consider and address not just plant-specific questions, but questions of Treaty interpretation that are more systemic in nature.

329. The *Kishenganga* Court issued some decisions that were specific to the KHEP; for example, that the plant constituted a run-of-river plant for the purpose of Annexure D, Paragraph 15, and that it could divert water from the Kishenganga/Neelum River into the Bonar Nallah for power generation to the plant, subject to a minimum flow of water in the Kishenganga/Neelum River below the plant.⁵²⁴ Yet the *Kishenganga* Court also issued decisions that were systemic in nature; they were not limited to the Kishenganga Plant. Indeed, the *Kishenganga* Court perceived one of the questions before it as “whether the Treaty prohibits drawdown flushing by India at the KHEP and at other, future Run-of-River Plants on the Western Rivers”.⁵²⁵ The *Kishenganga* Court noted:

While the Parties' disagreement has taken shape in the context of the KHEP's design and India's intention to use drawdown flushing for that reservoir, the Second Dispute, as framed by Pakistan and argued by both Parties, is not limited to the KHEP alone: it concerns India's right to use drawdown flushing at any Run-of-River Plant that India may construct on the Western Rivers in the future. Accordingly, the Court's decision on the Second Dispute will apply to other Run-of-River Plants to be built, as well as to the KHEP.⁵²⁶

330. After carefully considering the respective positions of the Parties as to the proper interpretation of the Treaty, the *Kishenganga* Court found that drawdown flushing was absolutely prohibited,⁵²⁷ and further said: “The Court's view that India's right to generate hydro-electric power on the Western Rivers can meaningfully be exercised without drawdown flushing *extends beyond the specifics of the KHEP to other, future Run-of-River Plants*”.⁵²⁸ The Court stated at Part V(B) of the *dispositif*:

⁵²³ PLA-0001, Treaty, Art. IX(2)(b); Annexure F, para. 7.

⁵²⁴ PLA-0003, *Kishenganga* Partial Award, Pt. V(A).

⁵²⁵ PLA-0003, *Kishenganga* Partial Award, para. 466 (emphasis added).

⁵²⁶ PLA-0003, *Kishenganga* Partial Award, para. 468 (emphasis added).

⁵²⁷ PLA-0003, *Kishenganga* Partial Award, para. 513.

⁵²⁸ PLA-0003, *Kishenganga* Partial Award, para. 521 (emphasis added).

- (1) Except in the case of an unforeseen emergency, the Treaty does not permit reduction below Dead Storage Level of the water level in the reservoirs of Run-of-River Plants on the Western Rivers.
- (2) The accumulation of sediment in the reservoir of a Run-of-River Plant on the Western Rivers does not constitute an unforeseen emergency that would permit the depletion of the reservoir below Dead Storage Level for drawdown flushing purposes.⁵²⁹

331. The *Kishenganga* Court later referred to this prohibition on drawdown flushing as a “regulatory consideration”, that “the Indus Waters Treaty has foreclosed the depletion of Dead Storage for drawdown flushing”, and that this prohibition “is not dependent on the particulars of a given site or project; that is, to use India’s term, the prohibition is not ‘site-specific’ but general”.⁵³⁰ As such, the *Kishenganga* Court clearly viewed itself as capable of issuing a decision of systemic application, one that would have binding effect across all Annexure D, Part 3 HEPs on the Western Rivers.

332. Pakistan agrees that a court of arbitration is capable of issuing decisions having *res judicata* effect across all HEPs on the Western Rivers falling within the scope of Part 3 of Annexure D.⁵³¹ While India has made certain statements that might be viewed as contesting this understanding, its approach in seeking an interpretation or clarification of the *Kishenganga* Partial Award indicates an acceptance of the *Kishenganga* Court’s ability to render a decision that is systemic in nature. India’s request for an interpretation or clarification did not challenge the *Kishenganga* Court’s power to issue an award on the general permissibility of drawdown flushing; rather, it questioned whether such power in fact had been exercised in the Partial Award.⁵³² Moreover, in the context of the current parallel proceedings before the Neutral Expert, which concern both the KHEP and RHEP, the Neutral Expert understands “the Parties to be *ad idem* on the binding nature of the decisions of the *Kishenganga* Court and does not expect India to contest that binding nature going forward in these proceedings”.⁵³³ To the extent that India may continue to harbor doubts regarding the ability of the *Kishenganga* Court, or of the present Court, to issue binding decisions on the interpretation of the Treaty that are systemic in nature, the Court confirms the *Kishenganga* Court’s finding that doing so is squarely within the authority of a court of arbitration under the Treaty.

⁵²⁹ PLA-0003, *Kishenganga* Partial Award, Pt. V(B)(1)–(2).

⁵³⁰ PLA-0021, *Kishenganga* Decision on India’s Request for Clarification or Interpretation, para. 34.

⁵³¹ See, e.g., Pakistan’s Memorial, para. 8.71.

⁵³² PLA-0021, *Kishenganga* Decision on India’s Request for Clarification or Interpretation, para. 3; P-0548 (KR-0011), *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, India’s Request for Clarification or Interpretation dated 18 May 2013.

⁵³³ See P-0695, Neutral Expert Competence Decision, para. 550.

333. In light of the Treaty’s provisions, the Court concludes that a court of arbitration established under Article IX of the Treaty is capable of issuing decisions having a binding or otherwise controlling effect that either: (1) are specific to a particular context, such as a particular HEP on the Western Rivers; or (2) interpret the Treaty in a manner that has systemic application, such as across all HEPs on the Western Rivers falling within the scope of Annexure D, Part 3. Indeed, there may often be a connection between these two types of decisions. As a general matter, a court of arbitration is empowered to resolve any question that arises between the Parties concerning the interpretation or application of the Treaty or the existence of any fact which, if established, might constitute a breach of the Treaty. Such questions may well call for a decision that, while perhaps arising in the context of a particular HEP, inevitably speaks to the interpretation of a provision of the Treaty that has more systemic consequences for all new Indian HEPs on the Western Rivers. For example, if a court of arbitration, when addressing a specific HEP, were to decide that a particular type of data must be provided by India pursuant to Paragraph 9 and Appendix II of Annexure D, that decision necessarily speaks to whether such data must be provided in the context of other HEPs.
334. To the extent that there is any question as to whether a court of arbitration has competence to issue systemic decisions, the Treaty expressly accords to a court of arbitration “all questions relating to its competence”,⁵³⁴ which includes whether it can decide questions on the interpretation or application of the Treaty that have consequences extending beyond the design and construction of a particular plant. The *Kishenganga* Court exercised such competence in the course of issuing its awards and this Court is doing so in the present Award.
335. There are two qualifications to the binding or otherwise controlling effect of a systemic decision of a court of arbitration concerning the conformity of a HEP with the requirements of Article III and Annexure D, Part 3. The first qualification is that any such decision does not have any effect on those Indian HEPs on the Western Rivers that were already in operation or already under construction as on the Effective Date of the Treaty. By force of Part 2 of Annexure D, those Indian HEPs are not subject to the requirements of Part 3 of Annexure D.
336. The second qualification concerns Indian HEPs that were already in operation or construction on the Western Rivers, without protest by Pakistan, as of the date of the issuance of the award by the court of arbitration containing the systemic decision. The *Kishenganga* Court explained:

It would not be in accordance with the governing principles enunciated in this Partial Award for the interpretation of the Treaty, and its application, to cast doubt retrospectively on any

⁵³⁴ PLA-0001, Treaty, Annexure G, para. 16.

Run-of-River Plants already in operation on the Western Rivers. For the same reasons, the Court wishes to make plain that this Partial Award may not be so interpreted as to affect retrospectively any such Plant already under construction (although not yet in operation) the design of which, having been duly communicated by India under the provisions of Annexure D, had not been objected to by Pakistan as provided for in Annexure D.⁵³⁵

337. The *Kishenganga* Court then expressly stated this position in the *dispositif* of its Partial Award:

(4) Paragraphs B(1) and B(2) above do not apply to Run-of-River Plants that are in operation on the date of issuance of this Partial Award. Likewise, Paragraphs B(1) and B(2) do not apply to Run-of-River Plants already under construction on the date of issuance of this Partial Award, the design of which, having been duly communicated by India under the provisions of Annexure D, had not been objected to by Pakistan as provided for in Annexure D.⁵³⁶

338. Before this Court, counsel for Pakistan, in reflecting on the *res judicata* effect of systemic decisions reached by the *Kishenganga* Court in the Partial Award, accepted this approach:

The only exception to the precedential effect of the *Kishenganga* awards, which was noted by the Court itself in *Kishenganga*, is those Indian HEPs that were already in operation or already under construction, with no objection by Pakistan, as at 18 February 2013; in other words, those Indian HEPs that were already in operation or construction on the Western Rivers, without protest by Pakistan, as at the date of the *Kishenganga* partial award.⁵³⁷

339. The Court confirms that the governing principles of the Treaty relating to stability and predictability in the use of the Western Rivers for the generation by India of hydro-electric power require that a court of arbitration's systematic decisions do not apply retrospectively to a Run-of-River Plant for which construction has already begun on the date of issuance of the court's award, the design of which was duly communicated by India and was not objected to by Pakistan, as provided for in Annexure D.

(f) *Binding or otherwise controlling effect on the Parties*

340. The binding effect of an award by a court of arbitration upon the Parties is expressly made clear by the Treaty. As previously noted, the Treaty provides that “[a]ny such Award rendered in accordance with the provisions of this Annexure in regard to a particular dispute shall be final and binding *upon the Parties* with respect to that dispute”.⁵³⁸ The Court recognized this effect in its Award on Competence, when it found that “an interpretation or application of the Treaty by the *Kishenganga* Court is final and binding upon both India and Pakistan”.⁵³⁹

⁵³⁵ PLA-0003, *Kishenganga* Partial Award, para. 523 (emphasis added).

⁵³⁶ PLA-0003, *Kishenganga* Partial Award, Pt. V(B)(4).

⁵³⁷ Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, pp. 123:15–23.

⁵³⁸ PLA-0001, Treaty, Annexure G, para. 23 (emphasis added).

⁵³⁹ Award on Competence, para. 123; see also PLA-0001, Treaty, Annexure G, para. 189.

341. Thus, the *Kishenganga* Court’s decisions in its *dispositifs*, along with the underlying reasoning, are binding upon India and Pakistan, whether they are specific to the KHEP or more systemic in nature. For example, with respect to the latter, the *Kishenganga* Court found in its Partial Award *dispositif*:

- (1) Except in the case of an unforeseen emergency, the Treaty does not permit reduction below Dead Storage Level of the water level in the reservoirs of Run-of-River Plants on the Western Rivers.
- (2) The accumulation of sediment in the reservoir of a Run-of-River Plant on the Western Rivers does not constitute an unforeseen emergency that would permit the depletion of the reservoir below Dead Storage Level for drawdown flushing purposes.⁵⁴⁰

342. The underlying reasoning for these paragraphs of the *dispositif* may be found in various paragraphs of the *Kishenganga* Court’s Partial Award.⁵⁴¹ Further, in its Decision on India’s Request for Clarification or Interpretation, the Court clarified that the prohibition expressed in (1) above “on the reduction below Dead Storage Level of the water in the reservoirs of Run-of-River Plants on the Western Rivers, except in the case of unforeseen emergency, is of general application”.⁵⁴² These systemic decisions, and along with their underlying reasoning have a binding effect on the Parties that extends to all Indian HEPs on the Western Rivers.⁵⁴³

343. At the same time, a court of arbitration can incorporate into its award the possibility of the Parties revisiting a particular aspect of its award. If so, then that aspect of the court’s award may be revisited and is not precluded by the effect of *res judicata*. For example, the *Kishenganga* Court in its Final Award identified the minimum flow that India was obligated to release into the Kishenganga/Neelum River below the KHEP. At the same time, the *Kishenganga* Court said:

118. ... [T]he Court considers it important not to permit the doctrine of *res judicata* to extend the life of this Award into circumstances in which its reasoning no longer accords with reality along the Kishenganga/Neelum. The minimum flow will therefore be open to reconsideration as laid down in the following paragraph.
119. The KHEP should be completed in such a fashion as to accommodate possible future variations in the minimum flow requirement. If, beginning seven years after the diversion of the Kishenganga/Neelum through the KHEP, either Party considers that reconsideration of the Court’s determination of the minimum flow is necessary, it will be entitled to seek such reconsideration through the Permanent Indus Commission and the mechanisms of the Treaty.⁵⁴⁴

⁵⁴⁰ PLA-0003, *Kishenganga* Partial Award, Pt. V(B)(1)–(2).

⁵⁴¹ See, e.g., PLA-0003, *Kishenganga* Partial Award, paras. 410, 448–452, 464–468, 469–470, 509, 517, 521–522.

⁵⁴² PLA-0021, *Kishenganga* Decision on India’s Request for Clarification or Interpretation, Pt. V(B).

⁵⁴³ See Award on Competence, para. 189.

⁵⁴⁴ PLA-0004, *Kishenganga* Final Award, paras. 118–119.

344. The *dispositif* of the Final Award then stated:

Beginning 7 years after the diversion of water from the Kishenganga/Neelum River for power generation by the KHEP, either Party may seek reconsideration of the minimum flow in paragraph (A) above through the Permanent Indus Commission and the mechanisms of the Treaty.⁵⁴⁵

345. Thus, the *Kishenganga* Court, within the terms of the Final Award itself, allowed for a revisiting of an issue by the Parties to address the possibility that its award might “no longer accord[] with reality”,⁵⁴⁶ but only after a set period of years.

346. In sum, the Court concludes that the awards of a court of arbitration have a binding or otherwise controlling effect upon the Parties.

(g) *Binding or otherwise controlling effect on a neutral expert*

347. The binding or otherwise controlling effect of an award by a court of arbitration on a neutral expert follows from a combination of the Court’s broad competence to resolve disputes under Article IX and Paragraph 23 of Annexure G and the *res judicata* effect of its decisions as a matter of customary international law. As discussed above, a court of arbitration is empowered to decide *any* question referred to it that has arisen under Article IX(1) and that cannot be resolved either within the Commission or by the two Parties, and which has not been referred to a neutral expert at the time it is referred to the court. To the extent that such a court’s award decides the meaning of a particular provision of the Treaty that is pertinent to a question placed before a neutral expert, the neutral expert is bound to follow that decision, which is final and binding upon the Parties. Indeed, a final and binding award of a court of arbitration is intended under the Treaty “to resolve the dispute”,⁵⁴⁷ and as such it must be viewed as having a binding or otherwise controlling effect on other dispute resolution bodies that may be seized of differences under the same Treaty, whether in parallel or in the future. Otherwise, the final and binding nature of the award of a court of arbitration would be critically undermined, opening the door to one or the other Party to circumvent an award simply by engaging in a fresh dispute resolution procedure under Article IX. If that were to occur, the stability and predictability of the Parties’ relations in respect of the Treaty would be critically undermined, defeating its object and purpose.⁵⁴⁸

⁵⁴⁵ PLA-0004, *Kishenganga* Final Award, Pt. V(B).

⁵⁴⁶ PLA-0004, *Kishenganga* Final Award, para. 118.

⁵⁴⁷ PLA-0001, Treaty, Art. IX(5).

⁵⁴⁸ See, e.g., Award on Competence, paras. 316, 153–154.

348. The same follows not just from the Treaty, but from customary international law. It is uncontroversial under customary international law that the finality of decisions by courts and arbitral tribunals merit respect by other adjudicative bodies. Indeed, *res judicata* attaches as between the parties to the adjudicated dispute, regardless of the judicial forum in which the question of *res judicata* subsequently arises. For example, in a 1960 judgment, the ICJ applied the principle or rule with regard to an arbitral award that had been made in 1906.⁵⁴⁹ More recently, the ICJ accepted, without any hesitation, the authoritativeness of a prior arbitral finding, noting that “the navigation of Costa Rican vessels for the purposes of public order activities and public services with no object of financial gain, in particular police vessels, lies outside the scope of Article VI of the 1858 Treaty, *with the exception of revenue service vessels, the question of which was settled by the 1888 arbitration*”.⁵⁵⁰ In the absence of such respect for another adjudicator’s resolution of a dispute, international dispute resolution simply would not be effective. As the *Trail Smelter* noted: “If it is true that international relations based on law and justice require arbitral or judicial adjudication of international disputes, it is equally true that such adjudication must, in principle, remain unchallenged, if it is to be effective to that end”.⁵⁵¹
349. To this may be added the principle of good faith that operates as a matter of customary international law, binding upon States and international adjudicators alike.⁵⁵² It is difficult to see how a neutral expert would be operating in good faith if he or she were to disregard the decisions reached in a court of arbitration’s award, to the extent that some aspect of the difference before the neutral expert had already been addressed in that award, which is final and binding upon the Parties. That principle gives rise to an overriding and general duty, imposed on any international dispute resolution body, “to exercise its competence in such a manner as to facilitate the actual resolution of the Parties’ dispute and to avoid the risks of duplicative proceedings or conflicting decisions”.⁵⁵³
350. As such, the binding or controlling effect of the *Kishenganga* Court’s awards and of this Court’s awards is not open to question by a neutral expert appointed in accordance with Article IX of the

⁵⁴⁹ *Arbitral Award made by the King of Spain on 23 December 1906 (Honduras v. Nicaragua)*, Judgment of 18 November 1960 [1960] ICJ Rep 192.

⁵⁵⁰ *Dispute regarding Navigational and Related Rights (Costa Rica v. Nicaragua)*, Judgment [2009] ICJ Rep 213, para. 83 (emphasis added).

⁵⁵¹ **PLA-0110**, *Trail Smelter (USA v. Canada)*, Award of 11 March 1941, III UNRIAA 1905, pp. 1950–1951.

⁵⁵² See, e.g., **PLA-0025**, *Nuclear Tests (Australia v. France)*, Judgment [1974] ICJ Rep 253, para. 46 (recognizing good faith as “[o]ne of the basic principles governing the ... performance of legal obligations, whatever their source”).

⁵⁵³ Procedural Order No. 6, para. 30.

Treaty. Further, to the extent that a court of arbitration and a neutral expert are both operating at the same time on related matters, it is incumbent on both to pay attention to any decisions rendered by the other that have a binding or otherwise controlling effect. Therefore, the binding or controlling effect of this Court's awards is not open to question by the present Neutral Expert.

351. In sum, the Court concludes that the awards of a court of arbitration have a binding or otherwise controlling effect upon a neutral expert, including the present Neutral Expert.

(h) *Binding or otherwise controlling effect on the same court of arbitration*

352. In addition to the effects of an award by a court of arbitration on the Parties and upon a neutral expert, the award also has effects in relation to the court of arbitration that issued the award. Generally speaking, a court of arbitration shall give *res judicata* effect to its prior awards; allowing one of the Parties to relitigate a claim or issue that has already been decided in the proceedings is inefficient and detrimental to the stability and predictability of legal relations.⁵⁵⁴
353. By way of example, the present Court has decided a number of issues in its Award on Competence, both with respect to how the Treaty is to be interpreted and how the Treaty is to be applied in a particular instance. Thus, the Court found that Paragraph 1 of Annexure G does not create an independent test for the necessity of the constitution of a court of arbitration beyond the requirements that exist in Article IX of the Treaty.⁵⁵⁵ This decision is now *res judicata*; it is not for this Court (or the Parties or a neutral expert) to revisit the interpretation of that part of the Treaty on that issue. Likewise, the Court reached certain decisions regarding the application of the Treaty in context, such as that the matters referred to arbitration in Pakistan's Request for Arbitration concern disputes within the meaning of Article IX(2) of the Treaty. This decision is *res judicata* as well; it is not for this Court to revisit the application of the Treaty to that issue.
354. Two further notes are pertinent in this regard. *First*, a court of arbitration is empowered to order interim measures as "necessary to safeguard [a Party's] interests under the Treaty with respect to the matter in dispute, or to avoid prejudice to the final solution or aggravation or extension of the dispute".⁵⁵⁶ While such an order is binding upon the Parties, it does not attract the same *res*

⁵⁵⁴ The same may be said of the International Court of Justice. For example, the analysis of *res judicata* undertaken in its 2016 judgment in the case *Question of the Delimitation of the Continental Shelf beyond 200 Nautical Miles (Colombia v. Nicaragua)* was in relation to its own 2012 judgment in the same case. This approach is often referred to in common law systems as the "law of the case" doctrine.

⁵⁵⁵ Award on Competence, para. 318(G).

⁵⁵⁶ PLA-0001, Treaty, Annexure G, para. 28.

judicata effect as an award; such an order is expected to be overtaken, in due course, by an award of the court. Paragraph 28 of Annexure G says that a court of arbitration, when requested by a Party, may “lay down, *pending its Award*, such interim measures”.⁵⁵⁷ The court, after hearing the Parties, may issue a binding order to that effect, but “only for such period as, in its opinion, will be necessary to render the Award”,⁵⁵⁸ and in doing so, “the specification of such interim measures shall not be construed as an indication of any view of the Court on the merits of the dispute”.⁵⁵⁹ Thus, by its nature, any such order remains binding upon the Parties only on an interim basis; there is no long-term effect of the kind that exists with respect to an award. Moreover, the underlying basis for issuance of the order has no consequential binding or otherwise controlling effect with respect to the award on the merits.

355. Such was the case with respect to the *Kishenganga* Court’s order on interim measures, which was operative “for the duration of these proceedings up until the rendering of the Award”.⁵⁶⁰ Further, the order stated that it may be revised during the course of the proceedings.⁵⁶¹ Thereafter, in its Partial Award that addressed most of the questions before it, the *Kishenganga* Court did not regard the interim measures order as relevant to its decision on the merits and, when issuing that award, the *Kishenganga* Court lifted the interim measures it had prescribed.⁵⁶²
356. *Second*, it is noted that the binding or otherwise controlling effect of a court of arbitration’s award does not preclude that court from *interpreting* its decision when requested to do so. Such is confirmed by Paragraph 27 of Annexure G to the Treaty, which provides:

At the request of either Party, made within three months of the date of the Award, the Court shall re-assemble to clarify or interpret its Award. Pending such clarification or interpretation the Court may, at the request of either Party and if in the opinion of the Court circumstances so require, grant a stay of execution of its Award. After furnishing this clarification or interpretation, or if no request for such clarification or interpretation is made within three months of the date of the Award, the Court shall be deemed to have been dissolved.⁵⁶³

357. After the *Kishenganga* Court issued its Partial Award that, *inter alia*, prohibited drawdown flushing except in the case of unforeseen emergency, India requested clarification or interpretation of the *Kishenganga* Partial Award. India maintained the *Kishenganga* Partial Award could be read

⁵⁵⁷ PLA-0001, Treaty, Annexure G, para. 28 (emphasis added).

⁵⁵⁸ PLA-0001, Treaty, Annexure G, para. 28(a).

⁵⁵⁹ PLA-0001, Treaty, Annexure G, para. 28(b).

⁵⁶⁰ PLA-0042, *Kishenganga* Interim Measures Order, para. 152(1).

⁵⁶¹ PLA-0042, *Kishenganga* Interim Measures Order, para. 153.

⁵⁶² PLA-0003, *Kishenganga* Partial Award, Pt. V(E).

⁵⁶³ PLA-0001, Treaty, Annexure G, para. 27.

as categorically prohibiting India from reducing the water level below Dead Storage Level during drawdown flushing for sediment control on all future run-of-river plants, when (in India's view) the *Kishenganga* Partial Award should be understood as saying that such drawdown flushing depends on a site-specific analysis of the feasibility of methods of sediment control other than drawdown flushing.⁵⁶⁴

358. The *Kishenganga* Court considered the positions of the Parties, reiterated that the issue of drawdown flushing had been before it in the Partial Award “as a general issue”,⁵⁶⁵ and maintained (as previously noted) that “the prohibition in question is not dependent on the particulars of a given site or project; that is, to use India's term, the prohibition is not ‘site-specific’ but general”.⁵⁶⁶ Among other things, the *Kishenganga* Court noted that the express limitation indicated in its Partial Award with respect to HEPs that were already under construction (discussed above) “makes clear that—except where so limited—the Court's decision applies to Run-of-River Plants generally”.⁵⁶⁷ As such, the *Kishenganga* Court rejected India's interpretation.
359. In sum, the Court concludes that the awards of a court of arbitration have a binding or otherwise controlling effect upon that court.

(i) *Binding or otherwise controlling effect on a subsequent court of arbitration*

360. The finality of a court of arbitration's award is also not open to question by a subsequent court of arbitration appointed in accordance with Article IX of the Treaty, including the present Court. Indeed, respect for the finality of the decisions reached by prior courts in their awards is especially important for the long-term stability and predictability of the rights and obligations of the Parties concerning their use of the waters of the Indus system of rivers.
361. The present Court previously has recognized the binding or otherwise controlling effect of decisions of the *Kishenganga* Court. The Award on Competence stated:

The Court notes that some of India's objections raise issues of interpretation or application of the Treaty that were also raised before and decided in the *Kishenganga* Partial Award. Annexure G, Paragraph 23 provides that “[a]ny such Award rendered in accordance with the

⁵⁶⁴ PLA-0021, *Kishenganga* Decision on India's Request for Clarification or Interpretation, para. 14. See also PLA-0021, *Kishenganga* Decision on India's Request for Clarification or Interpretation, para. 27 (“the Court's answer ... was general as well and not limited to the KHEP ... [T]he Court's Decision applied to Run-of-River Plants generally”).

⁵⁶⁵ PLA-0021, *Kishenganga* Decision on India's Request for Clarification or Interpretation, para. 25.

⁵⁶⁶ PLA-0021, *Kishenganga* Decision on India's Request for Clarification or Interpretation, para. 34.

⁵⁶⁷ PLA-0021, *Kishenganga* Decision on India's Request for Clarification or Interpretation, para. 27. See paras. 335–339, *supra*.

provisions of this Annexure in regard to a particular dispute shall be final and binding upon the Parties with respect to that dispute”. As such, an interpretation or application of the Treaty by the *Kishenganga* Court is final and binding upon both India and Pakistan.⁵⁶⁸

362. In sum, the Court concludes that the awards of a court of arbitration have a binding or otherwise controlling effect upon subsequent courts of arbitration.

2. Binding or Otherwise Controlling Effect of a Decision by a Neutral Expert

363. The rule or principle of *res judicata*, as indicated above,⁵⁶⁹ is typically addressed in the context of international “courts” and “tribunals”, given their role as adjudicatory bodies. A neutral expert established pursuant to Article XI of the Treaty also plays an adjudicative role under international law within the scope of his or her competence.⁵⁷⁰

364. Annexure F to the Treaty provides that the neutral expert shall determine the procedures of his or her proceeding,⁵⁷¹ and “shall, after hearing both Parties, decide whether” a particular difference falls within the scope of his or her competence.⁵⁷² Further, “[s]hould he decide that the difference so falls, he shall proceed to render a decision on the merits”.⁵⁷³ In doing so, the “Neutral Expert shall, as soon as possible, render a decision on the question or questions referred to him, giving his reasons”, with a signed copy of that decision sent to the Parties and the World Bank.⁵⁷⁴ Importantly, Paragraph 11 of Annexure F provides:

The decision of the Neutral Expert on all matters within his competence shall be final and binding, in respect of the particular matter on which the decision is made, upon the Parties and upon any Court of Arbitration established under the provisions of Article IX (5).⁵⁷⁵

⁵⁶⁸ Award on Competence, para. 123.

⁵⁶⁹ See paras. 296–302, *supra*.

⁵⁷⁰ It may well be that decisions of non-adjudicative bodies are also subject to *res judicata*. See *Question of Jaworzina*, Advisory Opinion, [1923] PCIJ Rep Series B, No. 8, pp. 29–30; *Monastery of Saint-Naoum*, Advisory Opinion, [1924] PCIJ Rep Series B, No. 9, pp. 14–21; *Polish Postal Service in Danzig*, Advisory Opinion, [1925] PCIJ Rep Series B, No. 11, pp. 22, 30. Judge Bernárdez maintained that: “*Res judicata* is precisely a notion of procedural law intrinsically linked to the form adopted by the procedure and decision concerned and the jurisdictional character of the organ adopting it ... [i]ndependently of the name given to it (arbitration, adjudication, enquiry, etc.)”; *Maritime Delimitation and Territorial Questions between Qatar and Bahrain*, Merits, Judgment, [2001] ICJ Rep 257, para. 303 (Dissenting Opinion of Judge Torres Bernárdez).

⁵⁷¹ PLA-0001, Treaty, Annexure F, para. 6.

⁵⁷² PLA-0001, Treaty, Annexure F, para. 7.

⁵⁷³ PLA-0001, Treaty, Annexure F, para. 7.

⁵⁷⁴ PLA-0001, Treaty, Annexure F, para. 9.

⁵⁷⁵ PLA-0001, Treaty, Annexure F, para. 11. That “decision” may be contrasted with the ability of a neutral expert also to “suggest” certain matters to the Parties. See Annexure F, para. 12 (“The Neutral Expert may,

365. As explained below, for a neutral expert's decision to have a binding or otherwise controlling effect, the neutral expert has to be properly appointed. Further, a neutral expert's decision concerning the conformity of a HEP with Annexure D, Part 3 can have a binding or otherwise controlling effect only with respect to the specific questions that may be referred to a neutral expert and with respect to the specific HEP and specific difference placed before the neutral expert. By contrast, no such effect can attach where the neutral expert's decision strays outside those parameters, and no Party may invoke such an effect. For example, there is no binding or otherwise controlling effect of an interpretation of the Treaty advanced by a neutral expert that purports to have, or is invoked as having, systemic application. Moreover, a neutral expert's application of the Treaty in a specific context also has no inchoate effect as guidance, precedent, or authoritative interpretation that extends beyond those parameters. The neutral expert's remit is only to apply the Treaty to the difference referred to him or her concerning a particular plant, and even then only for questions identified in Annexure F. The following sections assess, in turn, the binding or otherwise controlling effect of the decision of a neutral expert in the context of various issues that may arise, including such effect on particular actors.

(a) *Decision must be of a neutral expert appointed consistent with the Treaty*

366. For his or her decision to have a binding or otherwise controlling effect, the neutral expert must have been appointed in a manner consistent with the terms of the Treaty. Neither Party challenged as invalid the appointment of the neutral expert in the *Baglihar* Neutral Expert Proceedings. With respect to the Neutral Expert appointed in the proceeding parallel to this one, Pakistan has taken the position that, while in its view India's request for the appointment of the Neutral Expert was "improper and invalid", Pakistan's decision to participate in the Neutral Expert process has "cured" that invalidity.⁵⁷⁶

367. As neither Party has challenged the appointment of a neutral expert, the process for doing so has not been briefed to any court of arbitration, including this Court, and therefore that issue is not further addressed in this Award.

at the request of the Commission, suggest for the consideration of the Parties such measures as are, in his opinion, appropriate to compose a difference or to implement his decision"). Such "suggestions" have no binding or otherwise controlling effect.

⁵⁷⁶ See Procedural Order No. 6, para. 26.

(b) *Decision must be on matters within the neutral expert's competence*

368. Paragraph 11 of Annexure F states that the decision of a neutral expert is final and binding only when taken “within his competence” and only “in respect of the particular matter on which the decision is made”.⁵⁷⁷ Such language brings to the fore the particular matters that fall within a neutral expert's competence. As discussed below, the competence of a neutral expert can be considered across three dimensions; such competence is question-specific, plant-specific, and difference-specific.
369. Before doing so, it is noted that, unlike with respect to a court of arbitration under Annexure G,⁵⁷⁸ Annexure F contains no analogous provision stating that a neutral expert “shall decide all questions relating to its competence”. As such, a neutral expert does not broadly enjoy *compétence de la compétence*, such as whether he or she was appointed in a manner consistent with the Treaty. Rather, Annexure F only accords to a neutral expert the ability to decide whether a particular difference falls within the scope of Part 1 of Annexure F.⁵⁷⁹

(i) *Neutral expert's competence is question-specific*

370. The competence of a neutral expert is *question-specific*. Part 1 of Annexure F sets forth a list of specific questions that may be referred to a neutral expert.⁵⁸⁰ Two of the questions on that Annexure F list concern the design and operation of an Annexure D, Part 3 HEP. Pursuant to Paragraph 1(11) of Annexure F, which refers in part to Paragraph 11 of Annexure D, a neutral expert is competent to decide whether the design of such a HEP is in conformity with Paragraph 8 of Annexure D.⁵⁸¹ Pursuant to Paragraph 1(12) of Annexure F, a neutral expert is competent to decide whether the operation of such a HEP conforms with Paragraphs 15, 16, and 17 of Annexure D.⁵⁸²
371. In short, the matters falling within the competence of a neutral expert are limited to the list of “technical questions identified in Annexure F”.⁵⁸³ A neutral expert cannot resolve any question that falls outside the Annexure F list of questions. By contrast, while a neutral expert is competent

⁵⁷⁷ PLA-0001, Treaty, Annexure F, para. 11.

⁵⁷⁸ PLA-0001, Treaty, Annexure G, para. 16.

⁵⁷⁹ PLA-0001, Treaty, Annexure F, para. 7.

⁵⁸⁰ PLA-0001, Treaty, Annexure F, paras. 1(1)–(23).

⁵⁸¹ PLA-0001, Treaty, Annexure F, para. 1(11), Annexure D, paras. 11, 21.

⁵⁸² PLA-0001, Treaty, Annexure F, para. 1(12), Annexure D paras. 15, 16, 17.

⁵⁸³ PLA-0003, *Kishenganga* Partial Award, para. 487.

to address questions concerning the conformity of the design or operation of a HEP with Annexure D, Part 3, he or she is not competent to address questions not included in Annexure F's list that might arise in relation to such HEPs, such as whether interim measures of protection are warranted, whether there has been a breach of the Treaty, or whether there should be reparation for such breach. Those questions fall to a court of arbitration and, concomitantly, fall outside the neutral expert's competence.

(ii) Neutral expert's competence is plant-specific

372. Further, the competence of a neutral expert is *plant-specific*. Any decision reached by a neutral expert is only of relevance to the HEP (or possibly HEPs) that are the subject of the differences placed before the neutral expert. Since the neutral expert has no competence to issue a decision that extends beyond the scope of the specific HEP placed before him or her, the neutral expert has no competence to render an interpretation of the Treaty that has systemic application. As such, the binding or otherwise controlling effect of the decision of a neutral expert is necessarily confined to the HEP that is the subject of the neutral expert's proceeding; that effect does not extend to the design or operation of any other plants or facilities on the Western Rivers.

373. For example, the *Baglihar* Determination has no binding or otherwise controlling effect for other Indian HEPs on the Western Rivers; it binds only in relation to the Baglihar HEP and nothing more. Obviously, determinations by the *Baglihar* Neutral Expert relating to the facts of that plant are limited to that particular plant. Equally, however, the neutral expert's application of the provisions of the Treaty to that plant are unique to that plant. Thus, to the extent that the *Baglihar* Neutral Expert found it necessary to interpret the Treaty on a matter disputed by the Parties when applying the Treaty to the Baglihar HEP, that interpretation stands with respect to that plant, but only with respect to that plant; it has no binding, controlling, or "quasi-precedential" effect beyond the Baglihar HEP itself.

(iii) Neutral expert's competence is difference-specific

374. Moreover, the competence of the expert is also *difference-specific* meaning that, for a given HEP, the neutral expert is only competent to address the particular matter placed before him or her as a "difference" pursuant to the Article IX procedures. Thus, it is one or both of the Parties who identify what difference (or differences) relating to a HEP is to "be dealt with" by the neutral expert in accordance with Annexure F, Part 2.⁵⁸⁴ Annexure F, in turn, indicates the procedures

⁵⁸⁴ PLA-0001, Treaty, Art. IX(2)(a).

within the Commission by which the points in that difference are to be identified and a formal request for a neutral expert to be made,⁵⁸⁵ not unlike a request for arbitration before an arbitral tribunal or an application before an international court. The neutral expert is then limited to deciding his or her competence with respect to that “particular difference” and, if competence exists, to render a decision on the merits of that “particular difference”.⁵⁸⁶ Absent express agreement of the Parties, the neutral expert has no competence to render decisions on a matter that is not within the scope of the particular difference that has been referred; such a matter falls outside his or her competence.

375. Consequently, the *Baglihar* Neutral Expert was competent, under Annexure F, to resolve the differences placed before him by Pakistan concerning the compliance of the Baglihar HEP with Paragraph 8(a) of Annexure D, relating to freeboard; with Paragraph 8(c) relating to pondage; with Paragraph 8(e) relating to gated spillways; and with Paragraph 8(f) relating to turbine intakes.⁵⁸⁷ Determinations made in that regard—and only in that regard—have a binding or otherwise controlling effect with respect to the Baglihar HEP. Any other positions, statements, or even determinations that were reached by the *Baglihar* Neutral Expert have no such effect.

(iv) The Kishenganga Court’s review of the Baglihar Neutral Expert’s competence

376. When addressing the precedential value of the *Baglihar* Determination, the *Kishenganga* Court confirmed the limited extent to which a neutral expert’s decisions—taken in respect of questions concerning the conformity of the design or operation of a particular HEP with Annexure D, Part 3—can be binding in subsequent proceedings. In no unclear terms, it stated:

The effect of a neutral expert’s determination is restricted to the elements of the design and operation of the *specific hydro-electric plant considered by that Expert*. Although India has urged the Court to consider the Second Dispute to have been effectively resolved by *Baglihar*, the Court does not see in Annexure F any indication that the Parties intended a neutral expert’s determination to have a general precedential value beyond the scope of *the particular matter before him*. *Baglihar* is binding for the Parties in relation to the Baglihar project; the present decision, by contrast, is binding in respect of the general question presented in these proceedings.⁵⁸⁸

377. Thus, any broader determinations or points discussed by a neutral expert in reaching a decision concerning the design or operation of a specific HEP are neither final nor binding upon the Parties;

⁵⁸⁵ PLA-0001, Treaty, Annexure F, para. 5.

⁵⁸⁶ PLA-0001, Treaty, Annexure F, para. 7.

⁵⁸⁷ See PLA-0002, *Baglihar* Determination, p. 6 (Points of Difference Referred by Pakistan and India’s Position).

⁵⁸⁸ PLA-0003, *Kishenganga* Partial Award, para. 470 (emphasis added).

they have no binding or otherwise controlling effect in relation to other Indian HEPs on the Western Rivers.

378. The *Kishenganga* Court further recognized this when it declined to apply to the KHEP the finding in the *Baglihar* Determination that drawdown flushing was permissible at the Baglihar HEP. To the contrary, the *Kishenganga* Court decided that drawdown flushing was permissible only in the case of an unforeseen emergency, which did not include drawdown flushing for sediment control.⁵⁸⁹

(c) *A neutral expert's decision is not a guideline or precedent for other HEPs*

379. The Parties appear to understand that a neutral expert's decision with respect to the conformity with the Treaty of the design or operation of an Annexure D, Part 3 HEP cannot be final and binding except with respect to the specific HEP and specific difference placed before the neutral expert. Indeed, it appears that neither Party has asserted that the *Baglihar* Determination has a binding or otherwise controlling effect beyond the Baglihar HEP itself, whether on the Parties, on a court of arbitration, or on a neutral expert.
380. The Neutral Expert in the present parallel proceedings has also noted a distinction in the precedential effect of a neutral expert's decision as compared with a court of arbitration, when he states:

There is a difference in expertise between a neutral expert and a court of arbitration. There is also a difference between the legal effect of decisions of a neutral expert and a court of arbitration, such that their decisions will have different consequences with respect to the future interpretation and application of the Treaty.⁵⁹⁰

381. At the same time, there has been a difference of view between the Parties as to whether a neutral expert's decision may serve as a "guideline" or as "precedential value" (or even "authoritative precedent" or "authoritative interpretation") when considering other HEPs on the Western Rivers, with Pakistan maintaining that a neutral expert's decision serves no such function, while India maintains that it does.⁵⁹¹ For the reasons indicated above with respect to the binding or otherwise

⁵⁸⁹ PLA-0003, *Kishenganga* Partial Award, Pt. V(B).

⁵⁹⁰ See P-0695, Neutral Expert Competence Decision, para. 562.

⁵⁹¹ PLA-0003, *Kishenganga* Partial Award, paras. 277, 348; see also PLA-0003, *Kishenganga* Partial Award, n. 682:

As characterized by India, the *Baglihar* determination is not legally binding on this Court—in India's words, "reliance is not sought as binding precedent"—but an "authoritative

controlling effect of a neutral expert's decision, the Court concludes that such a decision also cannot serve as a guideline, precedent, or authoritative interpretation to be applied with respect to other HEPs on the Western Rivers. While it may be natural for a neutral expert to read decisions by prior neutral experts to understand better the general role of a neutral expert, and to comprehend the way that a neutral expert generally might proceed in analyzing questions arising before him or her, the role of the neutral expert is to decide the questions before him or her *in the context of a specific HEP*, which has its own unique hydrologic and geological features, and is being designed for its own unique purpose. A neutral expert's decision is not intended under the Treaty to serve as a guideline, precedent, or authoritative interpretation for subsequent neutral experts addressing other HEPs, and while application of the Treaty by a neutral expert invariably involves some interpretation of it, that interpretation, by an engineer, is not intended to have a wider effect beyond the HEP at issue. The Treaty, including Article IX and Annexure F, simply is not designed to accord to a neutral expert's decision any such guiding, precedential, or authoritative value beyond the specific HEP before that neutral expert.

(d) *Binding or otherwise controlling effect on the Parties*

382. Annexure F expressly states that the “decision of the Neutral Expert on all matters within his competence shall be final and binding, in respect of the particular matter on which the decision is made, *upon the Parties*”.⁵⁹² Thus, as a general matter, the decision of a neutral expert that resolves the difference referred to him or her regarding a particular HEP, concerning questions identified in Annexure F, is final and binding upon the Parties.
383. At the same time, a Party might wish to raise a challenge as to whether a matter or question is within the neutral expert's competence. With respect to the Neutral Expert appointed in the proceeding parallel to this one, Pakistan has maintained “a residual reservation of position as regards the possibility of challenges to the competence of the Neutral Expert on the basis that Paragraph 13 of Annexure F provides that if any question which is not within the competence of the Neutral Expert should arise out of his decision, that question would fall to be resolved through

interpretation” of the question presented here that “should be respected by the Parties in a way that would eliminate repetitive examination of the same issue”.

See **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.44; **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 9; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, paras. 70, 83. See also Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, pp. 176–177.

⁵⁹² **PLA-0001**, Treaty, Annexure F, para. 11 (emphasis added).

the procedures of Articles IX(3), (4), and (5), of which the Court is the backstop”.⁵⁹³ The Court reaches several conclusions in this context regarding the final and binding effect upon the Parties of a neutral expert’s decision concerning the conformity of a HEP with Annexure D, Part 3.

384. *First*, to the extent that a neutral expert issues a decision that purports to address matters that extend beyond the specific HEP placed before him or her, there is no obligation upon a Party to challenge such a decision. A neutral expert’s decision that purports to extend beyond the specific HEP at issue in the proceeding *ipso facto* is outside of the neutral expert’s competence, and should be regarded as such by the Parties and subsequent dispute settlement bodies.
385. *Second*, within the context of a specific plant, one of the Parties may maintain that the neutral expert is considering a matter that was not referred to him or her, or that falls outside the list of questions in Annexure F. If so, then that Party, if accorded the opportunity to do so, should present its arguments to the neutral expert in that regard;⁵⁹⁴ a failure to do so when given such opportunity may be deemed as acquiescence that the matter is within the neutral expert’s competence. In that case, the neutral expert’s decision thereafter would have a final and binding effect on the Parties.
386. *Third*, if a Party is accorded the opportunity to raise a challenge before the neutral expert, the neutral expert may agree that a matter was not referred to him or her, or that one or more questions fall outside those identified in Annexure F. If so, then that matter or question cannot be resolved by the neutral expert. Alternatively, the neutral expert may decide that the matter or question is within his or her competence and therefore proceed to issue a decision on the merits in that regard. If so, then the Party who raised the challenge (or would have raised the challenge if given the opportunity to do so) nevertheless may still regard the matter or question as falling outside the neutral expert’s competence.
387. In either instance, the Treaty provides for the possibility of further proceedings. It provides that any difference that does not fall within the scope of a neutral expert’s competence shall be deemed to be a dispute to be settled in accordance with Articles IX(3), (4), and (5).⁵⁹⁵ Additionally, Annexure F provides that any question “which is not within the competence of the neutral expert”,

⁵⁹³ See Procedural Order No. 6, para. 26.

⁵⁹⁴ It is noted that Pakistan has argued in the parallel proceeding that the Neutral Expert is not competent in respect of any of the points of difference advanced by India, because they fall outside the scope of Annexure F, Pt. 1. See **P-0695**, Neutral Expert Competence Decision, para. 344. The Neutral Expert, however, decided that such differences fall within the scope of Annexure F, Pt. 1: **P-0695**, Neutral Expert Competence Decision, para. 569.

⁵⁹⁵ **PLA-0001**, Treaty, Article IX(2)(b).

if it cannot be resolved by agreement, shall be settled through the procedures of Articles IX(3), (4), and (5), which may lead to the dispute on the issue being placed before a court of arbitration.⁵⁹⁶ Thus, a Party's view that a matter or question is not within the competence of a neutral expert may lead to a dispute that the Party seeks to resolve through the provisions of Article IX.⁵⁹⁷ If pursued in that manner, a court of arbitration, or possibly the Parties themselves by agreement, may conclude that the neutral expert's decision on competence over a matter or question relating to a specific plant was incorrect, in which case that aspect of the neutral expert's decision on the merits would not be final and binding. Even so, the neutral expert's decision remains final and binding until such time as his or her competence is resolved, and it remains so thereafter absent a contrary decision by the court of arbitration or agreement of the Parties.

388. Importantly, if the Party views the neutral expert as having decided on the merits a matter or question falling outside his or her competence, but fails within a reasonable time to challenge that decision through the procedures available to it under the Treaty, then the neutral expert's decision must be regarded as final and binding. If this were not the case, the neutral expert's decision would indefinitely lack finality, thereby undermining the stability and predictability that the Treaty seeks to achieve. Thus, it is not open to a Party at a much later time after the issuance of a neutral expert's decision to assert that the decision was based on a matter not referred to the neutral expert or on a question falling outside his or her competence, and then to decline to abide by that aspect of the decision.⁵⁹⁸

⁵⁹⁶ **PLA-0001**, Treaty, Annexure F, para. 13. The Court does not address at this time how such procedures operate in the context of parallel proceedings where a neutral expert and a court of arbitration are simultaneously seized with the same difference(s). At the same time, it notes the position that has been expressed by Pakistan in this proceeding: "[I]n the unusual circumstances of this case, in which the Court has affirmed its competence over the entirety of the dispute addressed in Pakistan's Request for Arbitration, if a question arises that is beyond the competence of the current Neutral Expert, it is presumptively within the competence of this Court". Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 216. Further, "we consider that a challenge could probably be raised with you in the form of a request concerning the application of the decision of the Neutral Expert, and that this would inevitably require you to address both the issue of the Neutral Expert's competence and the substance of his decision": Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 217.

⁵⁹⁷ See Award on Competence, para. 316.

⁵⁹⁸ For Pakistan's position, see Pakistan's Memorial, paras. 8.81, 8.83, 8.85; see also Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 180:6–8 ("if there is no challenge and no contrary decision of the Courts of Arbitration, then there is no dilution of the res judicata effect" of the neutral expert's decision); Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, p. 180:19–24:

So it would need to be raised. There would be a dispute or a difference that would be raised about whether or not the decision was within the competence of the Neutral Expert. That would need to go through the procedures at Article IX that ultimately end up with the Court of Arbitration.

389. It is noted that, before the *Kishenganga* Court, Pakistan maintained that the *Baglihar* Neutral Expert exceeded his competence when his final decision determined that drawdown flushing was permitted under the Treaty. Pakistan asserted that such competence was lacking because the Parties did not refer to the neutral expert any difference concerning drawdown flushing and that, in any event, Pakistan did not have any opportunity to address the issue during the course of the proceedings.⁵⁹⁹ As such, Pakistan maintained before the *Kishenganga* Court that the *Baglihar* Determination regarding drawdown flushing could not be properly regarded as “final and binding”, nor given any weight.⁶⁰⁰ However, Pakistan also made clear that it did “not purport to appeal the *Baglihar* [D]etermination”.⁶⁰¹ The *Kishenganga* Court thereafter concluded that the *Baglihar* Determination was final and binding for the Parties in relation to the Baglihar HEP, even if that decision had no binding effect with respect to any other run-of-river plant on the Western Rivers.⁶⁰² Before this Court, Pakistan has accepted that the *Baglihar* Determination (including its determination regarding drawdown flushing) is final and binding with respect to the Baglihar HEP.⁶⁰³

390. In sum, if a neutral expert has been validly appointed, the Court concludes that his or her decision concerning the conformity of a HEP with Annexure D, Part 3 can only have a binding or otherwise controlling effect with respect to that specific HEP. Further, if a Party regards the neutral expert as not competent over a matter or question relating to that specific HEP, the Party must challenge that competence before the neutral expert and, if necessary, through the procedures set forth in Articles IX(3), (4), and (5) of the Treaty. Absent a successful challenge, the neutral expert’s decision in that regard is final and binding upon the Parties.

Before this Court, Pakistan accepted that “if, after the passage of a reasonable period, a party has or may reasonably be deemed to have a claimed basis for challenge, and that party does not pursue it, that will stand against the dilatory party”: Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 217. Pakistan confirmed, in this regard, that “the fact that Pakistan did not challenge the competence of Neutral Expert under paragraph 13, following the Baglihar case, stands against Pakistan. It cannot now reopen the Baglihar case through a competence challenge under paragraph 13”: Pakistan’s Memorial, para. 218.

⁵⁹⁹ See, e.g., **PLA-0003**, *Kishenganga* Partial Award, para. 343.

⁶⁰⁰ **PLA-0003**, *Kishenganga* Partial Award, para. 345.

⁶⁰¹ **PLA-0003**, *Kishenganga* Partial Award, para. 469. See also **PLA-0003**, *Kishenganga* Partial Award, n. 679 (“Pakistan also acknowledges that the Baglihar Neutral Expert’s competence ‘is not a matter for this Court to decide.’ Pakistan’s Memorial, para. 6.28”).

⁶⁰² **PLA-0003**, *Kishenganga* Partial Award, para. 470 (“*Baglihar* is binding for the Parties in relation to the Baglihar project”).

⁶⁰³ See, e.g., Pakistan’s Memorial, paras. 8.78–8.82; Hearing for the First Phase on the Merits Tr., (Day 3), 10 July 2024, pp. 123:25–124.22, 129:7–16.

(e) *Binding or otherwise controlling effect on a subsequent neutral expert*

391. Annexure F does not expressly state that the decision of a neutral expert on all matters within his or her competence shall be final and binding upon a subsequent neutral expert addressing the same difference.⁶⁰⁴ This *lacunae* may be due to a belief that once a neutral expert is called into service by one or the other Party to resolve a difference that has arisen with regard to whether the design or operation of a particular plant is compliant with the Treaty, it is unlikely that, at some later time, a different neutral expert would be called into service to address the compliance of that same plant.
392. Unlikely as that scenario may be, were it to come to pass, the subsequent neutral expert would be required to acknowledge the binding effect of the prior decision upon the Parties, and to regard as controlling that prior decision when resolving any new matters that have arisen.
393. In sum, the Court concludes that the decision of a neutral expert has a binding or otherwise controlling effect upon subsequent neutral experts, but that effect is necessarily limited to questions identified in Annexure F, limited to the plant at issue before the neutral expert, and limited to the difference placed before that neutral expert.

(f) *Binding or otherwise controlling effect on a subsequent court of arbitration*

394. Annexure F also expressly states that the “decision of the Neutral Expert on all matters within his competence shall be final and binding, in respect of the particular matter on which the decision is made, ... upon *any Court of Arbitration* established under the provisions of Article IX(5)”.⁶⁰⁵
395. The *Kishenganga* Court recognized that its decision on drawdown flushing should not overturn a decision reached earlier by a neutral expert in respect of a particular HEP, specifically the *Baglihar* Determination. The *Kishenganga* Court stated:

468. [T]he Court’s decision on the Second Dispute will apply to other Run-of- River Plants to be built, as well as to the KHEP.

469. Although it is the Court’s duty to decide, as a matter of law, upon the permissibility of drawdown flushing generally under the Treaty, the Court must emphasize that its decision will have no effect on the Parties’ rights and obligations in respect of the Baglihar hydro-electric project, as determined by the Neutral Expert in *Baglihar*. In the time since that determination, India has finalized the design of the project and completed construction in reliance upon the Neutral Expert’s determination, which it was fully entitled to do. The Neutral Expert’s determination has thus quite literally been realized in concrete at Baglihar, and it is not for this Court to revisit fundamental

⁶⁰⁴ PLA-0001, Treaty, Annexure F, para. 11.

⁶⁰⁵ PLA-0001, Treaty, Annexure F, para. 11 (emphasis added).

aspects of the design and operation of that Plant. Nor could Pakistan so ask: Annexure F expressly provides that the decision of a neutral expert shall be final and binding “in respect of the particular matter on which the decision is made.”⁶⁰⁶

396. The Court concludes that—so long as the neutral expert is acting within his or her competence—the decision of a neutral expert, including the present Neutral Expert, has a binding or otherwise controlling effect upon a court of arbitration, including the present Court, but that effect is necessarily limited to the questions identified in Annexure F, the plant at issue before the neutral expert, and the difference placed before that neutral expert.

* * *

⁶⁰⁶ **PLA-0003**, *Kishenganga* Partial Award, paras. 468–469.

this page intentionally blank

VIII. OVERALL APPROACH WHEN INTERPRETING ARTICLE III AND ANNEXURE D, PART 3

397. The third to seventh questions of the Court outlined in Procedural Order No. 6 concern the interpretation of a number of sub-paragraphs of Paragraph 8 of Annexure D to the Treaty. Before turning to the specific issues raised by each question in the following Parts, the Court considers it necessary to address the overall approach to be taken when interpreting Article III and Annexure D, Part 3,⁶⁰⁷ in light of the object and purpose of the Treaty as it relates to the Western Rivers, given the impact of such approach on the Court's analysis in relation to each of these questions.

398. Further, the answer to the Court's second question also has a bearing on each of the Court's subsequent questions. The second question of the Court is outlined in Procedural Order No. 6 as follows:

To what extent can non-Treaty-based design and operational practices be taken into account for purposes of interpreting the technical requirements set out in Annexure D, paragraph 8?

399. At the outset of addressing aspects of the broader interpretive approach, it is convenient to recall the text of Article III and Paragraph 8 of Annexure D, Part 3. Article III of the Treaty provides:

Article III

PROVISIONS REGARDING WESTERN RIVERS

- (1) Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2).
- (2) India shall be under an obligation to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for the following uses, restricted (except as provided in item (c) (ii) of Paragraph 5 of Annexure C) in the case of each of the rivers, The Indus, The Jhelum and The Chenab, to the drainage basin thereof :
 - (a) Domestic Use ;
 - (b) Non-Consumptive Use ;
 - (c) Agricultural Use, as set out in Annexure C ; and
 - (d) Generation of hydro-electric power, as set out in Annexure D.
- (3) Pakistan shall have the unrestricted use of all waters originating from sources other than the Eastern Rivers which are delivered by Pakistan into The Ravi or The Sutlej, and India shall not make use of these waters. Each Party agrees to establish such discharge observation stations and make such observations as may be considered necessary by the Commission for the determination of the component of water available for the use of Pakistan on account of the aforesaid deliveries by Pakistan.

⁶⁰⁷ The questions placed before this Court do not concern Small Plants within the meaning of Annexure D, Paragraphs 18 to 23, and consequently the interpretation of those provisions are not herein at issue.

400. Further, Paragraph 8 of Annexure D to the Treaty provides:

PART 3—NEW RUN-OF-RIVER PLANTS

8. Except as provided in Paragraph 18, the design of any new Run-of-River Plant (hereinafter in this Part referred to as a Plant) shall conform to the following criteria:
- (a) The works themselves shall not be capable of raising artificially the water level in the Operating Pool above the Full Pondage Level specified in the design.
 - (b) The design of the works shall take due account of the requirements of Surcharge Storage and of Secondary Power.
 - (c) The maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power.
 - (d) There shall be no outlets below the Dead Storage Level, unless necessary for sediment control or any other technical purpose; any such outlet shall be of the minimum size, and located at the highest level, consistent with sound and economical design and with satisfactory operation of the works.
 - (e) If the conditions at the site of a Plant make a gated spillway necessary, the bottom level of the gates in normal closed position shall be located at the highest level consistent with sound and economical design and satisfactory construction and operation of the works.
 - (f) The intakes for the turbines shall be located at the highest level consistent with satisfactory and economical construction and operation of the Plant as a Run-of-River Plant and with customary and accepted practice of design for the designated range of the Plant's operation.
 - (g) If any Plant is constructed on the Chenab Main at a site below Kotru (Longitude 74 - 59' East and Latitude 33 - 09' North), a Regulating Basin shall be incorporated.⁶⁰⁸

401. Part VI.D of this Award indicated that the applicable law includes the rules of customary international law on interpretation of treaties reflected in the VCLT.⁶⁰⁹ One important element of such interpretation is analysis of the ordinary meaning of a term “in the light of [the treaty's] object and purpose”.⁶¹⁰ At the outset, the Court regards it as useful to address the object and purpose of the Treaty in relation to the Western Rivers, before proceeding with a general assessment of Article III and Annexure D, Part 3 of the Treaty.⁶¹¹

⁶⁰⁸ The reference to paragraph 18 of Annexure D as an exception concerns Small Plants.

⁶⁰⁹ See, e.g., paras. 270–272, *supra*.

⁶¹⁰ **PLA-0005**, VCLT, Art. 31(1).

⁶¹¹ **PLA-0005**, VCLT, Art. 31(1).

A. THE PARTIES' POSITIONS

1. Object and Purpose of the Treaty as it Relates to the Western Rivers

(a) Pakistan's Position

402. According to Pakistan, at the core of the Treaty is the vulnerability of Pakistan as the downstream riparian and the commensurate need to limit India's ability to control and manipulate the flow of waters of the Western Rivers.⁶¹² These "governing principles" are embodied in what Pakistan characterizes as the three bargains struck between the Parties: the Peace Bargain, Treaty Bargain, and Western Rivers Run-of-River Hydro Bargain.⁶¹³ The Treaty is the outcome of these three Bargains, "expressed in finely balanced provisions on the division, allocation and use of the six principal rivers that are crucial to both Parties".⁶¹⁴
403. *First*, the *Peace Bargain* embodies "the settlement between the Parties that addressed the unresolved transboundary issues concerning the use of water across a partitioned territory".⁶¹⁵ In Pakistan's view, the Treaty is "a direct outflow" of the April 1948 dispute,⁶¹⁶ which Pakistan characterizes as "India [cutting] off the flow of water in every irrigation canal which crossed the India-Pakistan boundary".⁶¹⁷ India's "weaponization" of its physical control of the waters irrigating Pakistani Punjab—and the threat of repetition in the future—necessitated the conclusion of a normative treaty framework to fix and delimit the two countries' rights and obligations in respect of their shared water resources.⁶¹⁸ The Treaty is, therefore, premised on, and is to be interpreted through the prism of what Pakistan says is its enduring and reasonable apprehension that India may seek to weaponize its physical control of water flowing into Pakistan.⁶¹⁹ In this

⁶¹² Request for Arbitration, para. 3.

⁶¹³ Pakistan's Memorial, paras. 7.1, 8.18; Pakistan's Post-Hearing Submissions, para. 3.8.

⁶¹⁴ Pakistan's Post-Hearing Submissions, para. 5.21.

⁶¹⁵ Pakistan's Memorial, para. 1.10.

⁶¹⁶ Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 65:18–19.

⁶¹⁷ Pakistan's Memorial, para. 7.12, citing **P-0350**, Government of Pakistan, "The Indus Basin Irrigation Water Dispute" dated 8 December 1952, para. 7.

⁶¹⁸ Pakistan's Memorial, paras. 3.46, 7.23.

⁶¹⁹ Pakistan's Memorial, paras. 3.46, 7.22–7.23, 10.4, 11.10; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 88:7–20; Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, pp. 72:5–88:19. See also Pakistan's Competence Submissions, para. 5.6:

"Weaponisation" in this context is an omnibus term for three concerns regarding India's control over the waters of the Western Rivers: (a) the interruption of water supply used for downstream irrigation through the filling of sizeable pondage pools and other reservoirs; (b) the opening of dam gates to release stored water in excessive volumes in a manner that causes

regard, Pakistan submits that India’s “aggressive dam-building programme on the Western Rivers” and “attempts to shoe-horn enlarged Article III and Annexure D rights from the Treaty, could strangle Pakistan’s life-blood”.⁶²⁰

404. *Second*, the *Treaty Bargain* is what Pakistan describes as the division and allocation between the Parties of the six main watercourses of the Indus system of rivers.⁶²¹ This, Pakistan says, is “the *quid pro quo* between the Parties” whereby the Eastern Rivers (Ravi, Beas, and Sutlej) were allocated for India’s unrestricted use pursuant to Article II, and the Western Rivers (Indus, Jhelum, and Chenab) were allocated to Pakistan, subject to limited exceptions, pursuant to Article III.⁶²² This “*quid pro quo*” is a defining characteristic of the Treaty, reflected principally in Articles II and III, but informing the terms of the Treaty throughout.⁶²³ In its view, Pakistan’s central negotiating objective was that Indian control over the waters upon which Pakistan relied was to be avoided “as far as practicable”.⁶²⁴ In this respect, Pakistan emphasizes the World Bank’s 1954 Proposal, which, it says, effectively divided the rivers of the Indus Basin between Pakistan and India, as ultimately embodied in the Treaty, to avoid a repeat of the April 1948 dispute.⁶²⁵
405. *Third*, the *Hydro Bargain* is reflected in the principles of “let flow”, “non-interference”, and “no storage” reflected in Article III of the Treaty, together with the “tightly constrained exceptions” contained in Article III and Annexures C, D, and E to the Treaty.⁶²⁶ In Pakistan’s view, the careful balance struck in the Hydro Bargain is confirmed through the design and operational restrictions in Annexure D, as well as the Treaty’s cooperation and reporting requirements, which enable Pakistan to monitor and supervise the construction and operation of HEPs by India on the Western Rivers, such that any issues can be identified early and resolved in accordance with the processes set out in Article IX.⁶²⁷

flooding downstream; and (c) the rapid, mass release of sediment impacting rivers, land, infrastructure and people living downstream.

⁶²⁰ Pakistan’s Submission on Recent Developments, paras. 5.3, 5.6. See also Pakistan’s Post-Hearing Submission, paras. 3.36–3.49.

⁶²¹ Pakistan’s Memorial, para. 1.10; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 98:1–13.

⁶²² Pakistan’s Memorial, paras. 1.10, 7.3, Ch. 7C.

⁶²³ Pakistan’s Memorial, para. 7.3.

⁶²⁴ Pakistan’s Memorial, para. 7.33.

⁶²⁵ Pakistan’s Memorial, para. 3.47.

⁶²⁶ Pakistan’s Memorial, para. 7.88; Pakistan’s Memorial, para. 1.10; Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 98:14–21.

⁶²⁷ Pakistan’s Memorial, para. 7.90.

406. Pakistan submits that, in the light of the origin of the Treaty and its purpose as reflected in the Peace Bargain, the status of the Treaty is akin to and has the same function as a treaty of peace or a boundary treaty between States.⁶²⁸ One of the primary objects of a boundary treaty is to “achieve stability and finality”.⁶²⁹ According to Pakistan, the Treaty is intended to settle a profound and potentially deadly disagreement between Pakistan and India *in perpetuity*, and must be interpreted through this prism.⁶³⁰ In this regard, the three bargains at the heart of the Treaty represent a “true compromise” which Pakistan says cannot be undone by historical revisionism or evolutionary readings of the text.⁶³¹ If this compromise were open to a “continuously available process” that called into question the balance struck, it would render the three Bargains, and therefore the operation of the Treaty, “completely precarious”.⁶³²
407. In sum, Pakistan views these three bargains as critical to understanding the object and purpose of the Treaty, and in turn, act as a “litmus test” when interpreting the Treaty as a whole as well as its individual provisions.⁶³³

(b) *India’s Position in the Permanent Indus Commission, the Baglihar Neutral Expert Proceedings, and the Kishenganga Arbitration*

408. India’s position is that the object and purpose of the Treaty, as recorded in its Preamble, is to “[attain] the most complete and satisfactory utilisation of the waters of the Indus system of rivers ..., fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each [country] in the use of these waters”.⁶³⁴ In India’s view, the Treaty “sets forth a carefully calibrated, balanced and inter-related set of rights and obligations governing use of the waters of the six main rivers in the Indus Basin” whereby each country gave up significant claims in order

⁶²⁸ Pakistan’s Memorial, para. 1.6, Ch. III.3.

⁶²⁹ Pakistan’s Memorial, paras. 8.47–8.49, citing **PLA-0101**, *Temple of Preah Vihear (Cambodia v. Thailand)*, Merits, Judgment of 15 June 1962, [1962] ICJ Rep 6, p. 34; **PLA-0102**, *The Bay of Bengal Maritime Boundary Arbitration between the People’s Republic of Bangladesh and the Republic of India*, Award of 7 July 2014, XXXII UNRIAA 1, para. 216; **PLA-0023**, *Interpretation of Peace Treaties with Bulgaria, Hungary and Romania (Second Phase)*, Advisory Opinion [1950] ICJ Rep 221, p. 229.

⁶³⁰ Pakistan’s Memorial, paras. III.3, 7.2.

⁶³¹ Pakistan’s Memorial, para. 7.94.

⁶³² Pakistan’s Memorial, para. 8.49, citing **PLA-0101**, *Temple of Preah Vihear (Cambodia v. Thailand)*, Merits, Judgment of 15 June 1962, [1962] ICJ Rep 6, p. 34.

⁶³³ Pakistan’s Memorial, paras. 7.1, 8.18; Pakistan’s Post-Hearing Submissions, paras. 3.8, 4.19.

⁶³⁴ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 2.17; **P-0548 (KR-0009)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 2.21.

to be able to reach agreement.⁶³⁵ Specifically, India emphasizes that the two fundamental principles informing the Treaty are: (i) the most complete and satisfactory utilization of the waters of the Indus system; and (ii) the optimum development of the Eastern and Western Rivers.⁶³⁶ In this context, India has advanced the following points in the Commission, the *Baglihar* Neutral Expert Proceedings, and the *Kishenganga* Arbitration.

409. *First*, India submits that Pakistan’s fear that India may cut off water flowing from India “as a weapon” is unfounded.⁶³⁷ Specifically, India characterizes the April 1948 dispute as “a provincial, not a national, dispute” that occurred in a “unique context” and was “limited” in nature.⁶³⁸ In this regard, India emphasizes that the dispute occurred more than 60 years ago (in the first year after partition), and that since then, despite periods of great tension between the Parties, the flow of water to Pakistan has remained uninterrupted.⁶³⁹ Accordingly, India contends that there is no basis for Pakistan’s fear of India using its Run-of-River Plants on the Western Rivers to interfere with the flow of the rivers to the prejudice of downstream interests for strategic purposes.⁶⁴⁰
410. *Second*, India argues that the language and detailed provisions of the Treaty, the *travaux préparatoires*, and the context in which the Treaty was drafted, confirm that it is not the object and purpose of the Treaty to ensure that India does not diminish the flow of water to Pakistan.⁶⁴¹ India highlights that the obligations of “control/let flow of water” are subject to specific conditions on both Parties and cannot be understood as absolute principles for interpreting the Treaty.⁶⁴² Rather, the generation of hydro-electric power by India was a central aspect of the

⁶³⁵ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 2.18.

⁶³⁶ **P-0548 (KR-0009)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, paras. 1.22, 1.43.

⁶³⁷ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 2.29; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 59.

⁶³⁸ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 2.31.

⁶³⁹ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 2.33, 4.51.

⁶⁴⁰ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 59.

⁶⁴¹ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 2.71–2.72.

⁶⁴² **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 2.71.

negotiations, which in turn formed an essential element of the Treaty.⁶⁴³ Indeed, from the very outset, the Parties' rights to use the Indus Basin waters for both irrigation and generation of hydro-electric power were central to the ultimate agreement.⁶⁴⁴ Ultimately, India considers that "Pakistan conceded the importance of the principle of effective utilization of natural resources and accepted India's right to build lifting dams on the Western Rivers, with no limit on the quantum of Dead Storage, and also to have a specified amount of live storage for various purposes, including generation of hydro-electric power".⁶⁴⁵

2. Article III and Annexure D, Part 3

(a) *Pakistan's Position*

411. Pakistan's position is that the headline rule reflected in Article III of the Treaty guarantees Pakistan's exclusive use of the waters of the Western Rivers, which is subject to very limited exceptions. While the Treaty permits India to construct new Run-of-River Plants on the Western Rivers, it requires such Plants to adhere to "carefully calibrated" and "tightly constrained" design and operational requirements. In accordance with well-established principles of treaty interpretation, these exceptions to the headline rule must be construed narrowly. This approach is also necessary in order to give content to India's "let flow", "non-interference", and "no storage" obligations in Article III.⁶⁴⁶
412. *First*, Pakistan highlights that Article III establishes a headline rule that Pakistan "shall receive for unrestricted use all [the waters of the Western Rivers]", India must "let flow" these waters, and that India "shall not permit any interference with these waters", subject to limited exceptions.⁶⁴⁷ This "let flow" obligation is not framed in terms of an obligation of non-appropriation or a prohibition, but rather a positive obligation that applies to all the relevant waters, without any limit in terms of volume.⁶⁴⁸

⁶⁴³ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 2.87.

⁶⁴⁴ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 2.19, 4.13.

⁶⁴⁵ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 45 (emphasis omitted).

⁶⁴⁶ Pakistan's Memorial, paras. 9.10, 9.94.

⁶⁴⁷ Pakistan's Memorial, paras. 9.12–9.21, *referring to PLA-0001*, Treaty, Art. I(15); Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 98:1–13.

⁶⁴⁸ Pakistan's Memorial, para. 9.13.

413. *Second*, Pakistan argues that it is a well-established principle of treaty interpretation that where a rule is established by a treaty, but subject to exceptions, such exceptions must be interpreted narrowly. Applying this principle in the present case, Pakistan maintains that the correct approach is to treat Article III as the “rule” and to restrictively interpret the exceptions in Article III(2) and Annexures D and E.⁶⁴⁹
414. *Third*, Pakistan contends that the object and purpose of the Treaty support and indeed compel such a restrictive interpretation of the exceptions to the Article III obligations, including those contained in Annexures D and E.⁶⁵⁰ In Pakistan’s view, each of the Peace, Treaty, and Hydro Bargains underpinning the Treaty are reflected in the relationship between the “let flow”, “non-interference”, and “no storage” obligations under Article III, and the limited exceptions in Annexure D.⁶⁵¹ Pakistan further submits that non-Treaty-based design and operational practices can be taken into account only to the extent that such practices are consistent with the framework of obligations and tight constraints established by Article III and Annexure D.⁶⁵²
415. Pakistan emphasizes that the “let flow”, “non-interference”, and “no storage” obligations in Article III of the Treaty do not prohibit reliance on non-Treaty-based design and operational practices, including innovative best practice approaches, when interpreting the technical requirements set out in Paragraph 8 of Annexure D.⁶⁵³ To the contrary, Pakistan submits that best practice approaches *must* be taken into account by India when it comes to designing, constructing, and operating Treaty-compliant Annexure D, Part 3 HEPs on the Western Rivers.⁶⁵⁴ However, any “invariably specious” appeals to what India terms as “best practice” cannot be relied upon by India to “enable it to escape its obligations under the Treaty”.⁶⁵⁵ In Pakistan’s view, this was confirmed by the *Kishenganga* Court, which it says rejected the “best practices” interpretation of the Treaty that led to the *Baglihar* Determination on Pondage and other issues in the *Baglihar* Neutral Expert Proceedings.⁶⁵⁶

⁶⁴⁹ Pakistan’s Memorial, paras. 9.69, 9.91.

⁶⁵⁰ Pakistan’s Memorial, para. 9.98.

⁶⁵¹ Pakistan’s Memorial, para. IV.1.

⁶⁵² Pakistan’s Memorial, para. 9.91.

⁶⁵³ Pakistan’s Memorial, para. 9.99.

⁶⁵⁴ Pakistan’s Memorial, para. 9.99.

⁶⁵⁵ Pakistan’s Memorial, paras. 9.99–9.100.

⁶⁵⁶ Pakistan’s Memorial, para. 9.93, *citing* **P-0023**, Letter No. WT(132)/(7531-A)/PCIW (with enclosure) from the PCIW to the ICIW dated 25 February 2016, para. 5; **PLA-0003**, *Kishenganga* Partial Award, para. 522.

(b) *India's Position in the Permanent Indus Commission, the Baglihar Neutral Expert Proceedings, and the Kishenganga Arbitration*

416. India's position is that there is no absolute principle in the Treaty of non-interference and of letting flow all the waters; rather, the obligation to "let flow" the waters under Article III of the Treaty is subject to specific exceptions.⁶⁵⁷ India submits that Pakistan has a right under Article III(1) to receive for its unrestricted use in Pakistan "all those waters of the Western Rivers which India is under an obligation to let flow ... but only those waters, and Pakistan has a right to their unrestricted use only after she has actually received them".⁶⁵⁸ Specifically, Article III(2)(d) explicitly designates that use of the waters of the Western Rivers by India to generate hydro-electric power, as set out in Annexure D, as an exception to any "let flow" obligation.⁶⁵⁹ Contrary to Pakistan's position that this exception is "very limited", India contends that Annexure D contains an "enabling set of provisions which grants to India the explicit right to construct Run-of-River Plants" which "shall be unrestricted", subject to the provisions of Annexure D.⁶⁶⁰
417. India argues that, in interpreting the Treaty, "account must be taken of developments in the fields of technology and the design of water works since its conclusion".⁶⁶¹ Given the object and purpose of the Treaty to ensure "the most complete and satisfactory utilisation of the waters of the Indus system of rivers", India contends that the drafters of the Treaty enshrined a "state of the art" principle in the Treaty, so that the Parties could take full advantage of advances in technical knowledge and ensure that "the design criteria [would not] be chained to the technology of 1960".⁶⁶² India submits that it "is a reasonable assumption that the framers of the Treaty were

⁶⁵⁷ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 1.5, 4.26.

⁶⁵⁸ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 4.26; see also **PLA-0003**, *Kishenganga Partial Award*, para. 172.

⁶⁵⁹ **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 1.25; **P-0057**, Letter No. 3/7/82-IT/1369 (with enclosure) dated 25 May 2007, p. 1.

⁶⁶⁰ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 1.7, 4.96; **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 1.25.

⁶⁶¹ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 49.

⁶⁶² **P-0227**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.95; **P-0545**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 56.

mindful of the rapid evolution of the technology and therefore enshrined the ‘state of the art’ concept in the Treaty”.⁶⁶³

418. Specifically, Paragraph 8 of Annexure D “explicitly provides for designs consistent with sound and economical practices and with satisfactory operation of works”.⁶⁶⁴ India recognizes that its designs are not solely restricted to sound and economical practices, but must also take into account the Treaty-imposed restrictions.⁶⁶⁵ However, while “the provisions of Treaty safeguard the interests of Pakistan by stipulating various criteria for designing the project by India”, the Treaty “does not impose any restriction on freedom of design alternatives within those criteria consistent with sound and economical engineering practice”.⁶⁶⁶ In this regard, India cites the following observations of the *Kishenganga* Court in its Partial Award:

[A]ny exercise of design involves consideration of a variety of factors—not all of them technical. Hydrologic, geologic, social, economic, environmental and regulatory considerations are all directly relevant and the Court considers the Treaty restraints on the construction and operation by India of reservoirs to be such a regulatory factor. For the Court, the optimal design and operation of a hydro-electric plant is that which can practically be achieved within the constraints imposed by the Treaty.⁶⁶⁷

B. THE COURT’S ANALYSIS

419. As noted at the outset, the Court considers it necessary in this Part to address certain threshold issues, prior to turning to the interpretation of specific provisions found in Annexure D, Paragraph 8 of the Treaty. Along these lines, Pakistan has requested that the Court declare “the nature and character of the Treaty” and “the bargains reflected” within it.⁶⁶⁸ The Court regards an assessment of the overall approach to be taken when interpreting Article III and Annexure D, Part 3 in light of the object and purpose of the Treaty as it relates to the Western Rivers, as the most appropriate means of doing so.

⁶⁶³ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 7.56, 4.14.

⁶⁶⁴ **P-0027**, Letter No. Y-11017/2/2015-IT/2181 dated 14 March 2016, para. 10; **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 21; **P-0548 (KR-0010)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Rejoinder of the Government of India dated 21 May 2012, para. 4.95; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 34.

⁶⁶⁵ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 26.

⁶⁶⁶ **P-0027**, Letter No. Y-11017/2/2015-IT/2181 dated 14 March 2016, para. 12.

⁶⁶⁷ **P-0027**, Letter No. Y-11017/2/2015-IT/2181 dated 14 March 2016, para. 10, citing **PLA-0003**, *Kishenganga* Partial Award, para. 522.

⁶⁶⁸ Pakistan’s Memorial, para. 13.29(B)(i).

1. Object and Purpose of the Treaty as it Relates to the Western Rivers

420. The object and purpose of the Treaty, including with respect to the Western Rivers, may be discerned from the circumstances that led to its adoption, its Preamble, and the broad substantive elements of its twelve articles and multiple annexures. In brief, due to the vulnerability of Pakistan as the downstream riparian of a critical but shared natural resource, and the potential for serious conflict between India and Pakistan in this regard, the Treaty seeks to attain the most complete and satisfactory utilization of the waters of the Indus system of rivers and, to that end, to delimit the two States' respective rights and obligations, in conjunction with effective dispute resolution procedures for whenever questions of interpretation or application of such rights and obligations arise.
421. The circumstances that led to the negotiation and adoption of the Treaty are grounded in the April 1948 dispute in which, on 1 April 1948, East Punjab discontinued the flow of water to canals in West Punjab. The scope and relevance of this incident is disputed between the Parties.
422. From Pakistan's perspective, this action resulted in a very serious crisis, denying water to almost 8% of Pakistan's cultivable agricultural land, just as certain crops (*kharif* crops) were about to be planted.⁶⁶⁹ Chaudhry Muhammad Ali, serving at the time as Federal Secretary of Pakistan (and later as Prime Minister), said:

There was acute distress which, with every day that passed, became more and more intolerable. In large areas where the subsoil is brackish there was no drinking water. Millions of people faced the ruin of their crops, the loss of their herds, and eventual starvation due to lack of water.⁶⁷⁰

Pakistan maintains that the April 1948 dispute revealed a serious threat that India might, at any time, cut off the flow of the waters from India into Pakistan.⁶⁷¹

423. From India's perspective, however, the April 1948 dispute was an aberration, one in which local leaders acted without authorization from the central government which, once informed of the

⁶⁶⁹ **P-0234**, A. A. Michel, *The Indus Rivers: A Study of the Effects of Partition* (Yale University Press, 1967), p. 196; see also **P-0350**, Government of Pakistan, "The Indus Basin Irrigation Water Dispute" dated 8 December 1952, para. 7.

⁶⁷⁰ **P-0274**, C. M. Ali, *The Emergence of Pakistan* (Columbia University Press 1967), p. 272. See also **P-0233**, D. E. Lilienthal, "Another 'Korea' in the Making?", *Collier's Magazine* dated 4 August 1951, p. 8 ("In the spring of 1948, during international negotiations as to the allocation of water for irrigation, India cut off most of the supply of water to Pakistan for a month, causing distress, loss of crops and general disruption. This rankles and makes Pakistan fearful of the future").

⁶⁷¹ See para. 403, *supra*.

matter, took action to resolve it. Moreover, India maintained that it possessed proprietary rights in the waters, which cannot be claimed as a right by West Punjab.⁶⁷²

424. The Court considers that, while the Parties perceive this crisis in divergent ways, it is undisputed that the April 1948 water dispute caused Pakistan, as the downstream riparian, to view itself as highly vulnerable to Indian manipulation of the Indus system of rivers, prompting it to pursue a permanent agreement with India on sharing or joint development of the Indus system of rivers' water resources.⁶⁷³ Others also saw Pakistan as highly vulnerable, notably Mr. David Lilienthal, who proposed that the World Bank use its good offices to assist India and Pakistan in elaborating a cooperative regional approach to the development of the Indus system of rivers' water resources. The World Bank proceeded to do so in 1951, leading to the lengthy negotiations that culminated in the Treaty.
425. As such, an element of the object and purpose of the Treaty, as seen in the impetus to the negotiations, was to address the vulnerability of Pakistan as the downstream riparian of a critical but shared natural resource, as a means of promoting long-term cooperation and concomitantly of preventing serious conflict between the two States. In this sense, the Treaty reflects an important means for maintaining peace and cooperation as between India and Pakistan, an objective that Pakistan has styled as the "Peace Bargain".
426. The Preamble of the Treaty reveals a further element of the object and purpose of the Treaty. The Preamble essentially consists of a single, substantive provision, which records the Parties' fundamental goals:

The Government of India and the Government of Pakistan, being equally desirous of attaining the most complete and satisfactory utilisation of the waters of the Indus system of rivers and recognising the need, therefore, of fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each in relation to the other concerning the use of these waters and of making provision for the settlement, in a cooperative spirit, of all such questions as may hereafter arise in regard to the interpretation or application of the provisions

⁶⁷² See **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, p. 9, para. 14; **P-0234**, A. A. Michel, *The Indus Rivers: A Study of the Effects of Partition* (Yale University Press, 1967), pp. 196–197 ("the canal closures of April 1948 were an assertion of India's claim to all the water in all the rivers that flowed through her territory").

⁶⁷³ Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 91:5–9 (The April 1948 dispute "is, if you like, the fons et origo, that is the provenance of this Treaty, because what it showed was that there was a water dispute between the two states that had been left undelimited by the partition of the land"); **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 1.21: ("This one incident appeared to have given rise to Pakistan's concerns about similar interruptions in the future, which in turn led to the negotiations that ended in the signing of the Treaty on 19 September 1960 by Prime Minister Nehru and Pakistan's President Ayub Khan").

agreed upon herein, have resolved to conclude a Treaty in furtherance of these objectives ...⁶⁷⁴

427. The phrase “complete and satisfactory utilisation of the Indus system of rivers” identifies an element of the object and purpose of the Treaty, which is to allow both India and Pakistan to utilize the complete resources of the rivers in a particular geographic region, but to do so in a way that is satisfactory to both the upstream riparian (dominantly India) and downstream riparian (dominantly Pakistan).⁶⁷⁵ Achieving that *raison d'être* of the Treaty requires “fixing and delimiting, in a spirit of goodwill and friendship, the rights and obligations of each in relation to the other concerning the use of these waters”. Thus, a complete and satisfactory utilization of the waters of the Indus system of rivers is only possible by establishing a stable and well-defined set of rights and obligations of both riparians.
428. There is some value here in noting what is *not* the object and purpose of the Treaty. The Treaty does not provide for the maximum development of the resources of the Indus system of rivers by one Party or the other. To the contrary, the Preamble expresses an intent for both “complete” and “satisfactory” utilization, which is to be achieved through delimiting “in a spirit of goodwill and friendship” the rights and obligations of the two Parties. Thus, neither Party secures through the Treaty unilateral or exclusive rights to use or develop the Indus system of rivers. Indeed, Article VII(1) provides: “The two Parties recognize that they have a common interest in the optimum development of the Rivers, and, to that end, they declare their intention to co-operate, by mutual agreement, to the fullest possible extent”.⁶⁷⁶ With respect to the Western Rivers, as discussed in more detail below,⁶⁷⁷ the object and purpose of the Treaty was not to accord either Party absolute rights, but to delimit rights and obligations within a framework of cooperation, so that the interests of both Parties would be secured.
429. Yet fixing and delimiting such rights and obligations alone was not sufficient; the Preamble further recognizes that “questions ... may hereinafter arise” as to the interpretation or application of those rights and obligations, and that there needs to be “provision for the settlement” of such questions. Thus, the object and purpose of the Treaty includes providing for effective dispute

⁶⁷⁴ PLA-0001, Treaty, Preamble.

⁶⁷⁵ The Court recognizes that at the time the Treaty was concluded, Pakistan was the upstream riparian for some of the tributaries of the Eastern Rivers, specifically in relation to certain waters of the Sutlej Main and the Ravi Main. As a general matter, however, Pakistan was the downstream riparian for the Indus system of rivers at the time the Treaty was concluded.

⁶⁷⁶ PLA-0001, Treaty, Art. VII(1).

⁶⁷⁷ See paras. 439–458, *infra*.

settlement to clarify and resolve any uncertainties that might arise as between the Parties. All told, the Preamble signals a desire for clarity, certainty, and finality as to the rights and obligations of the two riparians in their utilization of the Indus system of rivers.

430. Pursuing the effective delimitation of rights and obligations along a border is hardly surprising. As the ICJ has acknowledged, stability and finality along a frontier cannot be attained if there is a continuous ability to call into question the rights of two States in that regard.⁶⁷⁸ While the Treaty is not a boundary treaty, it addresses a critical relationship between the two Parties along their frontier concerning a shared resource, and does so by an instrument that allows for termination only “by a duly ratified treaty concluded for that purpose between the two Governments”.⁶⁷⁹ As suggested by Pakistan, from Preamble to final provisions, the Treaty possesses an objective that is akin, in significance and permanence, to a boundary treaty.
431. The broad substantive elements of the Treaty’s articles and annexures both confirm and deepen this understanding of the Treaty’s object and purpose, focusing as they do on careful delineation of rights and obligations, with a clear objective of ensuring Pakistan’s access to this shared resource. After the definitions contained in Article I, Article II(1) provides that “[a]ll of the waters of the Eastern Rivers shall be available for the unrestricted use of India, except as otherwise expressly provided in this Article”.⁶⁸⁰ The following paragraphs in Article II then set out certain exceptions, including with respect to the Transition Period.⁶⁸¹ In tandem, Article III(1) provides that “Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2)”.⁶⁸² Here, too, certain exceptions apply: Article III(2) states that “India shall be under an obligation to let flow all the waters of the Western Rivers, and shall not permit any interference with these waters, except for” Domestic Use, Non-Consumptive Use, Agricultural Use, and “[g]eneration of hydro-electric power, as set out in Annexure D”.⁶⁸³ Thus, the objective of “the most complete and satisfactory utilisation of the waters of the Indus system of rivers” by both Parties was to be achieved through the fundamental bargain of allocating the Eastern Rivers to India and allocating the Western

⁶⁷⁸ **PLA-0101**, *Temple of Preah Vihear (Cambodia v. Thailand)*, Merits, Judgment of 15 June 1962, [1962] ICJ Rep 6, p. 34.

⁶⁷⁹ **PLA-0001**, Treaty, Art. XII, para. 4.

⁶⁸⁰ **PLA-0001**, Treaty, Art. II, para. 1.

⁶⁸¹ **PLA-0001**, Treaty, Art. II, paras. 2–9.

⁶⁸² **PLA-0001**, Treaty, Art. III, para. 1.

⁶⁸³ **PLA-0001**, Treaty, Art. III, para. 2.

Rivers to Pakistan, in both instances subject to certain exceptions,⁶⁸⁴ referred to by Pakistan as the “Treaty Bargain”.

432. These “exceptions” were of a different nature and scale as between the Eastern and Western Rivers. As the dominantly upstream riparian, India largely did not need to secure significant obligations of Pakistan to ensure India’s ability to use the Eastern Rivers, such that just a few, straight-forward obligations appear in three provisions of Article II.⁶⁸⁵ The remaining five provisions of Article II,⁶⁸⁶ along with Annexure H, principally address *India’s* obligations (and Pakistan’s rights) during the Transition Period that came to an end in 1970, during which Pakistan would build canals to replenish the waters from the Eastern Rivers that it had historically received, given that India would no longer be required after the Transition Period to let flow such waters into Pakistan.⁶⁸⁷
433. By contrast, as the upstream riparian in relation to the Western Rivers, any use by India of those waters had to be highly regulated; otherwise, Pakistan’s right to “unrestricted use” of the waters would be ephemeral and its fears as to manipulation of the waters might be realized. Such regulations were so extensive that they had to be expressed in three detailed annexures: Annexure C (on India’s Agricultural Use from the Western Rivers); Annexure D (on hydro-electric power generation by India on the Western Rivers); and Annexure E (on storage of waters by India on the Western Rivers). A hallmark of these Annexures are the limitations on India’s ability to control the storage of waters on the Western Rivers, with various provisions addressing: the design of outlets, power intakes, and Pondage for Run-of-River HEPs and Storage Works; the size and location of Storage Works; and operational releases downstream tied to the actual flow of the river at a given HEP’s or Storage Work’s location. As noted by the *Kishenganga* Court:

[O]ne of the primary objectives of the Treaty is to limit the storage of water by India on the Western Rivers (and, correspondingly, to prohibit entirely the storage of water by Pakistan on the upper reaches of the Eastern Rivers). Annexure E to the Treaty strictly limits the volume of General Storage, Power Storage, and Flood Storage that India may develop on each of the Western Rivers. For new Run-of-River Plants, Annexure D likewise restricts the permissible volume of pondage, and pegs this limit to power generation at the *minimum* mean

⁶⁸⁴ **PLA-0003**, *Kishenganga* Partial Award, para. 410: In considering the object and purpose of the Treaty, the *Kishenganga* Court rightly observed (“The deliberate division and allocation of the six main watercourses of the Indus system of rivers between the Parties is a defining characteristic of the Treaty. The inevitable conclusion is that Pakistan is given priority in the use of the waters of the Western Rivers, just as India has priority in the use of the waters of the Eastern Rivers”).

⁶⁸⁵ **PLA-0001**, Treaty, Art. II paras. 2–4.

⁶⁸⁶ **PLA-0001**, Treaty, Art. II, paras. 5–9.

⁶⁸⁷ **PLA-0001**, Treaty, Art. II para. 9 (“After the end of the Transition Period, Pakistan shall have no claim or right to releases by India of any of the waters on the Eastern Rivers”).

discharge calculated at the site. These are not generous limits—the volume of storage permitted to India on the Jhelum Main, for instance, is zero—and even the limited available record of the Treaty’s negotiating history suggests that these amounts of storage were a key point of contention between the Parties. The outcome was significant in that it achieved a careful balance between the Parties’ respective negotiating positions, allowing India hydro-electric use of the waters of the Western Rivers while protecting Pakistan against the possibility of water storage on the upstream reaches of those Rivers having an unduly disruptive effect on the flow of water to Pakistan.⁶⁸⁸

434. Thus, the object and purpose of the Treaty must be seen as not just allocating the Eastern Rivers to India and the Western Rivers to Pakistan so as to bring about its “complete and satisfactory utilisation” of the Indus system of rivers, but as delimiting in considerable detail the obligations of the upstream riparian (India) with respect to the Western Rivers so as to ensure safe and continual access by Pakistan to those waters, an outcome that Pakistan frames as the “Hydro Bargain”.
435. The next segment of the Treaty delimits other rights and obligations calculated to further the allocation of the Eastern Rivers to India and the Western Rivers to Pakistan: certain common rights and obligations across all rivers (Article IV); funding for the transition (Article V); and cooperation between the Parties (Articles VI, VII and VIII). The final segment of the Treaty (other than certain no prejudice and final provisions) elaborates a robust method of dispute settlement involving potential dispute resolution processes (the Commission, the governments, a neutral expert, and a court of arbitration), regulated both through Article IX and the detailed provisions of Annexures F and G. The object and purpose of the Treaty, signaled in the Preamble, of “making provision for the settlement of ... questions as may hereafter arise in regard to the interpretation or application” of the Treaty is manifested through these provisions.
436. Further, an element of the object and purpose of the Treaty is to promote cooperation between the Parties with respect to their use of the Indus system of rivers. The Treaty does not simply lay out, “in a spirit of goodwill and friendship”, specific rights and obligations with respect to use of the Indus system of rivers; it also confirms the Parties’ intention to cooperate in identifying, clarifying, and fulfilling those rights and obligations. As previously noted,⁶⁸⁹ and discussed in detail in Part XIII, the Parties’ obligation to cooperate is stated expressly in Article VII, entitled “Future co-operation”, which provides:

The two Parties recognize that they have a common interest in the optimum development of the Rivers, and, to that end, they declare their intention to co-operate, by mutual agreement, to the fullest extent possible.

⁶⁸⁸ **PLA-0003**, *Kishenganga* Partial Award, para. 504 (emphasis in original).

⁶⁸⁹ See para. 150, *supra*.

437. That obligation finds further expression throughout the Treaty, beginning in the Preamble, and continuing through its provisions governing information sharing, monitoring, notification, regular meetings of the Commission, and third-party dispute resolution.⁶⁹⁰
438. As a final note, the Court recalls that the object and purpose of the Treaty is not to address “the question of sovereignty over the territory of Jammu and Kashmir through which some of” the Indus system of rivers transit.⁶⁹¹ Rather, pursuant to Articles IV(15) and XI(1),⁶⁹² the Treaty “focuses on the right of each Party to the *use* of some of the waters of” that system.⁶⁹³ At the same time, the language of the Preamble makes clear “the Treaty’s intent to apply to the aggregate of the Indus river system and not only to those waters flowing through uncontested territory”.⁶⁹⁴ As such, “the rights and obligations of the Parties under the Treaty extend to their use of those waters of the Indus system that flow through Pakistan and India, including those waters flowing through either Pakistan-administered or India-administered Jammu and Kashmir”.⁶⁹⁵

2. Article III and Annexure D, Part 3

439. In allocating the Eastern Rivers to India and the Western Rivers to Pakistan, subject to certain exceptions, the Treaty extensively regulates any uses of the waters of the Western Rivers by India, the upstream riparian, to protect Pakistan’s access to them. That regulation is predominantly found in Article III and in three detailed annexures: Annexure C (on Agricultural Use by India from the Western Rivers); Annexure D (on generation of hydro-electric power by India on the Western Rivers); and Annexure E (on storage of waters by India on the Western Rivers).
440. There is a tension between, on one hand, the provisions of Article III that express India’s obligation “to let flow” the waters of the Western Rivers and Pakistan’s right to receive those waters “for unrestricted use”, and on the other hand, the provisions contained in Article III and in Annexures C, D, and E that allow India to use such waters for certain purposes. Such tension may only be resolved by assessing closely the text and structure of Article III and the Annexures, particularly (in this context) Annexure D. As will be seen, the text and structure of the relevant

⁶⁹⁰ See paras. 150–155, *supra*.

⁶⁹¹ **PLA-0003**, *Kishenganga* Partial Award, para. 360.

⁶⁹² **PLA-0001**, Treaty, Art. IV(15) (“nothing in this Treaty shall be construed as affecting existing territorial rights”), Art. XI(1)(a) (the Treaty governs “the rights and obligations of each Party in relation to the other with respect only to the use of the waters of the Rivers and matters considered incidental thereto”).

⁶⁹³ **PLA-0003**, *Kishenganga* Partial Award, para. 360.

⁶⁹⁴ **PLA-0003**, *Kishenganga* Partial Award, para. 365.

⁶⁹⁵ **PLA-0003**, *Kishenganga* Partial Award, para. 366.

provisions leads to a conclusion that there is a general rule of “let flow/unrestricted use”, with certain specified and limited exceptions, the latter of which are to be strictly construed.

441. Under Article III(1) of the Treaty, “Pakistan shall receive for unrestricted use all those waters of the Western Rivers which India is under obligation to let flow under the provisions of Paragraph (2)”.⁶⁹⁶ Read on its own, Article III(1) establishes Pakistan’s right to receive for unrestricted use the waters of the Western Rivers. However, as stated by the *Kishenganga* Court, Pakistan’s right to the waters of the Western Rivers relates only to those waters of the Western Rivers “which India is under an obligation to let flow under the provisions of [Article III(2) of the Treaty]”.⁶⁹⁷ Accordingly, Pakistan’s right to receive for unrestricted use the waters of the Western Rivers is defined in relation to India’s obligation to let flow the waters of the Western Rivers. Article III(2), in turn, provides a general obligation that India shall “let flow” the waters of the Western Rivers for Pakistan’s “unrestricted use”, and “shall not permit any interference with these waters”, subject to certain specified exceptions. Accordingly, when read together, Articles III(1) and (2) establish Pakistan’s right to receive for unrestricted use all the waters of the Western Rivers, except for the specific uses contained in Article III(2). Article III(4) reinforces this conclusion that “[e]xcept as provided in Annexures D and E, India shall not store any water of, or construct any storage works on, the Western Rivers”.⁶⁹⁸
442. Annexure D, in Part 2, addresses existing Indian HEPs on the Western Rivers (as on the Effective Date of the Treaty) and, in Part 3, sets forth very detailed requirements regarding: (1) the design of new Indian “Run-of-River” HEPs on the Western Rivers, notably provisions on outlets, spillways, intakes, Pondage, and artificial raising of the water in the Operating Pool;⁶⁹⁹ (2) the operation of such HEPs;⁷⁰⁰ (3) the notification and sharing of information on such HEPs;⁷⁰¹ (4) the first stages of dispute settlement in that regard;⁷⁰² and (5) special rules for new Small Plants.⁷⁰³ Annexure D, Part 4, provides further rules for new plants on irrigation channels.⁷⁰⁴

⁶⁹⁶ PLA-0001, Treaty, Art. III, para. 1.

⁶⁹⁷ PLA-0003, *Kishenganga* Partial Award, para. 411.

⁶⁹⁸ PLA-0001, Treaty, Art. III(4).

⁶⁹⁹ PLA-0001, Treaty, Annexure D, para. 8. See Parts X, XI, and 0, *infra*.

⁷⁰⁰ PLA-0001, Treaty, Annexure D, paras. 13–17.

⁷⁰¹ PLA-0001, Treaty, Annexure D, paras. 9, 12.

⁷⁰² PLA-0001, Treaty, Annexure D, paras. 10–11.

⁷⁰³ PLA-0001, Treaty, Annexure D, paras. 18–23.

⁷⁰⁴ PLA-0001, Treaty, Annexure D, para. 24.

443. Paragraph 1 of Annexure D provides:

The provisions of this Annexure shall apply with respect to the use by India of the waters of the Western Rivers for the generation of hydro-electric power under the provisions of Article III(2)(d) and, *subject to the provisions of this Annexure*, such use shall be *unrestricted*:
...

⁷⁰⁵

444. The indication that India's use of the Western Rivers for generating hydro-electric power under Paragraph 1 of Annexure D "shall be unrestricted" merits scrutiny. *First*, this provision serves as a *chapeau* for *all* of Annexure D, which includes in Part 2 Indian HEPs in operation or under construction as on the Effective Date of the Treaty, and which were not exposed to the detailed restrictions for Annexure D, Part 3 HEPs. *Second*, and more importantly, Paragraph 1 expressly provides that such "unrestricted" use is "subject to the provisions of this Annexure". Thus, Paragraph 1 clearly indicates that use by India of the waters of the Western Rivers for the generation of hydro-electric power under the provisions of Article III(2)(d) is, in fact, restricted. Seen within the overall context of these provisions, there remains a general "let flow" rule in favor of Pakistan expressed in Articles III(1) to (2), in conjunction with limited exceptions expressed in Article III(2) and Annexure D.⁷⁰⁶

445. This general "let flow" rule in favor of Pakistan for the Western Rivers, with only certain specified and highly regulated exceptions in favor of India, is confirmed by examining the *travaux préparatoires*. Prior to 1954, Pakistan's approach favored the continuance of both Parties' existing uses of the waters from existing sources, while India's approach would preserve existing uses, but without linking them to existing sources (i.e., permitting the waters in the Eastern Rivers used by Pakistan to be released for use by India and replaced by waters from the Western Rivers).⁷⁰⁷ Under either approach, Pakistan would continue to enjoy fully use of the Western Rivers. Starting in 1954, a general rule favoring Pakistan's "exclusive use" of the Western Rivers emerged as a central feature for possible allocation of the Indus system of rivers, with exceptions in favor of India only introduced relatively late in the process. As noted in Part III, the World Bank's 1954 Proposal allocated to Pakistan the "exclusive use and benefit" of the "entire flow of the Western Rivers (Indus, Jhelum and Chenab)" and to India "the exclusive use and benefit" of the "entire

⁷⁰⁵ PLA-0001, Treaty, Annexure D, para. 1 (emphasis added).

⁷⁰⁶ The Court is not called upon to interpret Annexure E (on India's storage of waters of the Western River) and its relationship to Article III, but notes that an analogous textual structure appears to operate in that context.

⁷⁰⁷ See P-0130, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, para. 15.

flow of the Eastern Rivers (Ravi, Beas and Sutlej)”.⁷⁰⁸ The only exception in favor of India envisaged at the outset concerned India’s ability to continue to use “the insignificant volume of Jhelum flow presently used in Kashmir”.⁷⁰⁹ Gradually, however, the idea of future uses by India of the Western Rivers was introduced into the discussion, such that by the late 1950s, various proposals were advanced whereby India would be allowed such uses, including for the generation of hydro-electric power.⁷¹⁰ Only in 1959 did Pakistan accept “the general principle that India should be entitled to reserve on the Western Rivers ... Hydel Uses not involving consumptive use of water”,⁷¹¹ whereupon detailed provisions were negotiated that led, ultimately, to the adoption of the obligation to “let flow” the Western Rivers “except for” certain uses, including generation by India of hydro-electric power, subject to the constraints imposed by Annexure D.

446. Pakistan maintains that the change in terminology from 1959 (which expressed India as having an “entitlement” to generate hydro-electric power on the Western Rivers)⁷¹² to that used in the Treaty (which expresses in Article III “an obligation to let flow” the Western Rivers “except for” certain uses, including generation by India of hydro-electric power), points to “the primacy of the pivotal ‘let flow’ obligation upon India and, by implication, the limiting character of the exception”.⁷¹³ The minutes of meetings during the negotiations in this period,⁷¹⁴ however, provide little insight into the thinking of the negotiators in this regard.
447. Thus, the terms of Article III, as confirmed by the negotiating history, set forth a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use, subject to certain specified exceptions to the general rule that allow India to use such waters. However, those uses are not absolute. As the *Kishenganga* Court stated in its Partial Award:

Article III and Annexure D of the Treaty speak of the right of Pakistan to the “unrestricted” use of the waters of the Jhelum and its tributaries and of India’s corresponding obligation to

⁷⁰⁸ See Part III.B, *supra*; see also **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, paras. 24(a)–(b); **PLA-0003**, *Kishenganga* Partial Award, para. 136.

⁷⁰⁹ **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, para. 24(a). The Bank noted that: “These rivers are now used within Pakistan, except for the insignificant volume of the Jhelum that is used in Kashmir”; **P-0130**, Proposal by the International Bank Representative for a Plan for the Development and Use of the Indus Basin Waters dated 5 February 1954, p. 8, para. 26.

⁷¹⁰ See para. 128, *supra*.

⁷¹¹ **P-0452**, Letter from Mr. Iliff to Mr. Gulhati dated 16 June 1959, para. 8.

⁷¹² See para. 133, *supra*; **P-0136**, Heads of Agreement dated 15 September 1959, Art. III(1).

⁷¹³ Pakistan’s Memorial, Vol. II, Appendix A, paras. 42, 151.

⁷¹⁴ See, e.g., World Bank Minutes of Meetings from 5 August to 8 September 1959 at **P-0454** through **P-0474**, and from 23 November to 29 December 1959 at **P-0497** through **P-0500**.

“let flow” the waters of the Jhelum. The Treaty allocates the use of the waters of the Western Rivers (including the Jhelum and its tributaries) to Pakistan, curtailing, *sometimes quite severely*, India’s freedom to utilize the waters of the Western Rivers for the generation of hydro-electric power and limiting, for the most part, the use of those waters to certain agricultural uses, and to domestic and non-consumptive uses.⁷¹⁵

448. Against the background of the general rule, the exception set forth in Article III relating to the generation of hydro-electric power must be strictly construed. The text of Article III and Annexure D supports a restrictive understanding of India’s permissible uses of the Western Rivers. The intent of the Parties to give Pakistan far-reaching rights regarding the Western Rivers is clear from the general rule, while the limited rights of India are clear from the highly detailed provisions that regulate its uses of the Western Rivers.

449. To this may be added the broader Treaty context within which Article III and Annexure D are situated. As the ICJ stated in *Constitution of the Maritime Safety Committee of the Inter-Governmental Maritime Consultative Organization*:

The word obtains its meaning from the context in which it is used. If the context requires a meaning which connotes a wide choice, it must be construed accordingly, just as it must be given a restrictive meaning if the context in which it is used so requires.⁷¹⁶

In this instance, the Parties were clearly interested in avoiding “interference with the waters”, which is defined in Article I(15) broadly, covering “any act of withdrawal”, as well as “[a]ny man-made obstruction to their flow which causes a change in the volume (within the practical range of measurement) of the daily flow of the waters [except for] an obstruction which involves only an insignificant and incidental change in the volume of the daily flow, for example, fluctuations due to afflux caused by bridge piers or a temporary by-pass, etc”. Construction of *any* engineering work (not just a HEP) that would cause such interference and affect the other Party materially must be notified to the other Party.⁷¹⁷ To give due effect to the general prohibition on India’s interference with the waters of the Western Rivers, the exceptions concerning the permissible use of those waters by India must be construed strictly.

450. One aspect of that non-interference are the limitations placed on India with respect to storage of the waters of the Western Rivers. Article III(4) provides that “[e]xcept as provided in Annexures D and E, India shall not store any water of, or construct any storage works on, the

⁷¹⁵ **PLA-0003**, *Kishenganga* Partial Award, para. 418 (emphasis added).

⁷¹⁶ *Constitution of the Maritime Safety Committee of the Inter-Governmental Maritime Consultative Organization*, Advisory Opinion of 8 June 1960, [1960] ICJ Rep 150, p. 158.

⁷¹⁷ See, e.g., **PLA-0001**, Treaty, Art. VII(2).

Western Rivers”.⁷¹⁸ Annexure D approaches the issue of storage by allowing only HEPs that are Run-of-River HEPs and by restricting the volume of Pondage to the power generation at the minimum mean discharge (“**MMD**”) calculated at the site of the HEP.⁷¹⁹ Similarly, Annexure E approaches the issue by limiting the volume of General Storage, Power Storage, and Flood Storage that India may develop on each of the Western Rivers. As previously noted, the *Kishenganga* Court confirmed that these “are not generous limits”.⁷²⁰ The detailed attention to water storage to clarify India’s permissible use of the Western Rivers is important context that demonstrates the Parties’ intention to strictly define and circumscribe such permissible use. This context is made even clearer by the utilization in these annexures of prescriptive language (“shall conform”) to regulate India’s permissible design of its works.⁷²¹

451. The necessity to strictly construe the hydro-electric power exception set forth in Article III and Annexure D follows not just from the text and context of the Treaty provisions, but also from the general interpretative approach taken in international law when confronted with a general rule and exception to that rule. As the PCIJ held, “in case of doubt as to the scope of [an] exception, its terms must ... be strictly construed”.⁷²² An exception, by definition, is a deviation from or limitation on a general rule. As such, and to give due effect to the general rule to which a provision operates as an exception, it is appropriate that an exception is construed strictly in case of any doubt as to its scope.
452. The principal implication of strictly construing the exception set forth in Article III relating to hydro-electric power is that the Treaty does not permit India to construct new HEPs based on what might be the ideal or best practices approach for engineering a run-of-river HEP. Rather, it only permits the design and operation of new Run-of-River HEPs that hew strictly to the

⁷¹⁸ **PLA-0001**, Treaty, Art. III(4).

⁷¹⁹ **PLA-0001**, Treaty, Annexure D, para. 2(i). The minimum mean discharge is to be calculated as follows:

The average discharge for each 10-day period (1st to 10th, 11th to 20th and 21st to the end of the month) will be worked out for each year for which discharge data, whether observed or estimated, are proposed to be studied for purposes of design. The mean of the yearly values for each 10-day period will then be worked out. The lowest of the mean values thus obtained will be taken as the minimum mean discharge. The studies will be based on data for as long a period as available but may be limited to the latest 5 years in the case of Small Plants (as defined in Paragraph 18) and to the latest 25 years in the case of other Plants (as defined in Paragraph 8).

⁷²⁰ See para. 433, *supra*.

⁷²¹ See, e.g., **PLA-0001**, Treaty, Annexure D, para. 8 (“shall conform to the following criteria”); **PLA-0001**, Treaty, Annexure E, para. 11.

⁷²² *Certain German Interests in Polish Upper Silesia*, Merits, [1926] PCIJ Rep Series A, No. 7, p. 48.

requirements set forth in Article III and Annexure D, Part 3. In this regard, the Court recalls that, in Procedural Order No. 6, it decided that, in this first phase of the proceedings on the merits, the following question would be addressed:

To what extent can non-Treaty-based design and operational practices be taken into account for purposes of interpreting the technical requirements set out in Annexure D, paragraph 8?⁷²³

453. A detailed assessment of the relevant provisions found in Paragraph 8 of Annexure D, such as “sound and economical design”, “satisfactory operation”, “satisfactory construction and operation” of the works, or “customary and accepted practice of design”, will be left to Parts X, XI, and 0 of this Award, where those particular provisions are interpreted. For present purposes, the Court observes that the proper approach to interpreting and applying Article III and Annexure D does *not* call for generally reading the Parties’ rights and obligations “in the light of new technical norms and new standards as provided for by the Treaty”,⁷²⁴ nor to accord to India an ability to construct and operate HEPs on the Western Rivers in a manner that maximizes the generation of hydro-electric power. Any dispute resolution body called upon to interpret or apply the Treaty in the context of Annexure D, Part 3 HEPs is confined to the specific and detailed provisions set forth in Annexure D; nothing more and nothing less. As previously noted, the *Kishenganga* Court recognized:

It is not for the Court to apply “best practices” in resolving this dispute ... For the Court, the optimal design and operation of a hydro-electric plant is that which can practically be achieved within the constraints imposed by the Treaty.⁷²⁵

454. Thus, contemporary design and operational practices have a role with respect to the design of Indian HEPs on the Western Rivers, but *only within* the constraints set forth in Annexure D, which are to be strictly interpreted and applied. For example, the *Kishenganga* Court determined that drawdown flushing for sediment control was prohibited by the Treaty; it mattered not that, in the absence of the Treaty, an engineer following contemporary “best practices” might design a HEP on the Western Rivers to use drawdown flushing as a means of sediment control. Once the constraints imposed by the Treaty are strictly respected, however, contemporary best practices may inform the choices made with respect to design and operation. Thus, in interpreting India’s obligation to ensure, when diverting water from one tributary to another, that Pakistan’s uses “would not be adversely affected”,⁷²⁶ the *Kishenganga* Court had recourse to contemporary

⁷²³ Procedural Order No. 6, para. 35(b).

⁷²⁴ **P-0547 (BR-0006)**, *Baglihar* Determination, Executive Summary, p. 5.

⁷²⁵ **PLA-0003**, *Kishenganga* Partial Award, para. 522; see para. 418, *supra*.

⁷²⁶ **PLA-0001**, Treaty, Annexure D, para. 15(iii).

customary international environmental law on sustainable development, viewing that as pertinent for upholding (not contravening) a Treaty provision.⁷²⁷

455. Equally, Article III and Annexure D cannot be approached as generally “evolutive” in nature. To the contrary, as previously discussed, a key object and purpose of the Treaty was to establish stability and predictability in the generation of hydro-electric power by India on the Western Rivers, and this could be achieved only through an instrument that delimited the Parties’ rights and obligations with finality. While certain terms, such as “customary and accepted practice of design” or references to “telegram” and “telegraph”, may invite an evolutive interpretation of that particular term, the Treaty as a whole (including Article III and Annexure D as a whole) is not of that nature.
456. A further element when considering the approach to interpreting Article III and Annexure D, Part 3 is that such provisions cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers built in conformity with Treaty. While there is a general “let flow” rule in favor of Pakistan, there are—as previously discussed—also important exceptions to that rule in favor of uses by India, such that Pakistan’s rights cannot be interpreted in a manner that precludes such exceptions from operating. Even with respect to storage of waters on the Western Rivers, India was accorded a right to construct an unlimited number of Annexure D, Part 3 HEPs, the Pondage of which (at whatever volume of a given HEP) might collectively result in significant storage of water. Reflecting on India’s consent to the Treaty in this regard, the *Kishenganga* Court noted:

Given the significant rights enjoyed by India as the upstream riparian under customary international law, as well as the natural advantages enjoyed by the upstream riparian, the Court recognizes, in view of the acute need both of India and Pakistan for hydro-electric power, that India might not have entered into the Treaty at all had it not been accorded significant rights to the use of those waters to develop hydro-electric power on the Western Rivers.⁷²⁸

457. Thus, as much as Pakistan resisted the incorporation of exceptions that allowed India to use the Western Rivers for certain purposes, such exceptions were included and were likely necessary to bring about a successful conclusion to the Treaty negotiations. As a result, Pakistan’s rights to the waters of the Western Rivers are not absolute; they are subject to the rights of India as spelled out

⁷²⁷ PLA-0003, *Kishenganga* Partial Award, paras. 445–454.

⁷²⁸ PLA-0003, *Kishenganga* Partial Award, para. 420.

in the exceptions, limited as those exceptions may be.⁷²⁹ Hence, while such exceptions must be strictly construed—hewing closely to their terms—they cannot be so strictly construed as to deny to India the capacity to generate hydro-electric power from HEPs on the Western Rivers built in conformity with Treaty.⁷³⁰ The *Kishenganga* Court assessed this balance as follows:

Thus, on the one hand, the Treaty establishes that Pakistan enjoys unrestricted use of those waters of the Western Rivers which it is entitled to receive. On the other hand, *the Treaty's specifications in respect of India's hydro-electric uses on the Western Rivers are inconsistent with denying to India the capacity to generate electricity from power plants built in conformity with the Treaty*. Any interpretation of Paragraph 15 [of Annexure D] the logical result of which would be to allow Pakistan unilaterally to curtail the ability of such Indian Plants to operate would subvert an important element of the object and purpose of the Treaty.⁷³¹

458. Maintaining this balance requires cooperation between the Parties. As previously noted, construction of any Indian engineering work on the Western Rivers that would interfere with the waters and would materially affect Pakistan shall be notified by India to Pakistan.⁷³² Moreover, specific to the design of Indian HEPs on the Western Rivers, Paragraphs 9 through 11 of Annexure D require India to notify Pakistan—six months in advance of construction—of specific information regarding the proposed HEP's design, after which Pakistan, if it regards the design as not conforming to Paragraph 8, may communicate an objection to India. Thereafter, any unresolved questions are to be addressed through the procedures set forth in Article IX, including by the Parties working collaboratively within the Commission. Those procedures can function effectively only if both Parties fulfill their obligation to cooperate in the prompt notification of technical design information, prompt response thereto, and prompt efforts to resolve any issues that may arise.

459. In sum, the overall approach to be taken when interpreting Article III and Annexure D, Part 3, in light of the object and purpose of the Treaty as it relates to the Western Rivers, is to acknowledge: (1) a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan's unrestricted use; (2) there are certain specified exceptions to the general rule, one of which allows

⁷²⁹ **PLA-0003**, *Kishenganga* Partial Award, para. 411 (“Pakistan's right to the Western Rivers is not absolute since it relates only to those waters of the Western Rivers ‘which India is under an obligation to let flow under the provisions of [Article III(2) of the Treaty].’ The right is subject to expressly enumerated Indian uses on the Western Rivers, including the generation of hydro-electric power to the extent permitted by the Treaty”).

⁷³⁰ See **PLA-0003**, *Kishenganga* Partial Award, para. 424 (“No sound reading of the Treaty's framework for Indian hydro-electric uses on the Western Rivers can foreclose entirely India's ability to generate electricity from a power plant built in accordance with Annexure D”).

⁷³¹ **PLA-0003**, *Kishenganga* Partial Award, para. 413 (emphasis added).

⁷³² See, e.g., **PLA-0001**, Treaty, Art. VII(2).

India to use the Western Rivers to generate hydro-electric power; (3) that exception is to be strictly construed, in the sense that it does not permit India to generate hydro-electric power on the Western Rivers based on what might be the ideal or best practices approach for engineering a run-of-river HEP but, rather, only allows the design and operation of Run-of-River HEPs that hew strictly to the requirements set forth in Article III and Annexure D, Part 3; (4) yet those requirements cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with Treaty; and (5) in furtherance of the Treaty's objective and obligations of mutual cooperation, any questions concerning the balance of these rights and obligations are to be identified through the Treaty's procedures for notification and objection, and addressed through the Treaty's procedures for resolving such questions.

* * *

IX. ENGINEERING CONCEPTS AND TERMINOLOGY RELEVANT TO RUN-OF-RIVER HYDRO-ELECTRIC PLANTS

460. The questions before the Court regarding Paragraph 8 of Annexure D to the Treaty require an understanding of certain engineering concepts and terminology concerning the design and operation of run-of-river HEPs. Accordingly, before turning to consider the relevant Treaty provisions in Paragraph 8 of Part 3, Annexure D, this Part outlines, in general terms, such concepts and terminology, as they are understood outside of the context of the Treaty. The following discussion is drawn from leading engineering texts and industry standards, which the Court understands to be common ground between the Parties.

A. CATEGORIES OF HYDRO-ELECTRIC PLANTS

461. HEPs can be grouped into certain broad categories. *Single-purpose* HEPs are designed solely for power generation while *multi-purpose* HEPs are designed for power generation in conjunction with other uses, such as irrigation, flood control, navigation, and water supply.⁷³³ HEPs can also be classified with respect to the type of demand for electricity (“load”) served by the plant.⁷³⁴ *Base load* HEPs generate hydro-electric power to meet the constant or “base load” demand for electricity, while *peak load* HEPs generate hydro-electric power to supplement base load generation during periods of maximum or “peak load” demand.⁷³⁵

462. HEPs can also be classified by the amount of water storage available for the regulation of power generation, with the two major types being *run-of-river* plants and *storage* plants. A *run-of-river* HEP has little or no usable water storage, and thus relies on the natural flow of the river to generate power.⁷³⁶ In pure run-of-river HEPs, the plants have no controllable storage, and “must use the water just as it comes to them without being able to pond it or store it to apply on the peak of the load”.⁷³⁷ Accordingly, a pure run-of-river HEP “releases water at the same rate as the natural flow

⁷³³ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 1.10.

⁷³⁴ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-8.

⁷³⁵ Davis Calvin Victor, *Handbook of Applied Hydraulics* (McGraw-Hill Book Company Inc., 2nd ed, 1952), p. 495; **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 191; United States Army Corps of Engineers, “Engineer Manual 1110-2-1420”, Engineering and Design dated 31 October 1997, p. 11-6.

⁷³⁶ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 1.10.

⁷³⁷ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 191.

of the river (outflow equals inflow)” such that the power output is limited to the natural flow of the river at any given moment.⁷³⁸ In these circumstances, a run-of-river HEP can be considered to be a base load plant in terms of use in meeting loads.⁷³⁹

463. Alternatively, run-of-river HEPs may be designed with limited storage capacity, referred to as “pondage”, which is “sufficient storage at the plant to take care of hour-to-hour fluctuations in load on the plant throughout the period of a week”⁷⁴⁰ or otherwise to “equalize daily or weekly fluctuations in river flow”.⁷⁴¹ Such run-of-river HEPs, therefore, are designed to have pondage that meets the need for discharges at “intermediate” and “peak” times when power is needed for the electrical grid that the HEP services.⁷⁴² However, run-of-river HEPs cannot re-regulate seasonal variations in water flows (that is, they cannot store water during high-flow periods for use in drier seasons).
464. In contrast, a *storage* HEP is defined as a plant in which “an extensive impoundment at the power plant, or at the reservoir upstream of the power plant, allows for regulation of the flow downstream through storage”.⁷⁴³ The large reservoir of storage HEPs can be used to equalize monthly, seasonal, or yearly fluctuations in river flow,⁷⁴⁴ whereby water is stored during high-flow periods and released to augment the flow during low-flow periods.⁷⁴⁵ Their capacity allows storage HEPs to sustain relatively stable power production throughout the year despite seasonal fluctuations in river flow. Often, storage HEPs are multi-purpose facilities intended for power

⁷³⁸ **P-0308**, ASCE Committee on Hydropower Intakes, *Guidelines for Design of Intakes for Hydroelectric Plants* (1995), p. 441; **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 0-5.

⁷³⁹ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 2-21.

⁷⁴⁰ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 191.

⁷⁴¹ Fluctuations in river flow may be natural, due to rainfall or snow melting, or artificial, due to pondage of water at other plants upstream: H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 490. **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 162 (“A hydro plant is said to have ample pondage if the capacity of the pond above the intake is sufficient to take care of the hour-to-hour fluctuations of the load on the plant throughout the period of 1 week”).

⁷⁴² **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 2-21.

⁷⁴³ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 1.10.

⁷⁴⁴ H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 490.

⁷⁴⁵ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 2-22 (“The term ‘storage’ generally refers to projects which have seasonal regulation capability”); **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 1.10.

production in conjunction with other functions, such as irrigation, flood control, navigation, and water supply.⁷⁴⁶

B. USING THE FLOW OF THE RIVER FOR POWER DEMAND AT A RUN-OF-RIVER HYDRO-ELECTRIC PLANT

465. The design of a run-of-river HEP takes into account both hydrologic data (such as the stream flow⁷⁴⁷ data of the river at the site of the HEP)⁷⁴⁸ and operational data (such as the power demands of the electric grid that the HEP is designed to meet).⁷⁴⁹

466. The hydrologic data required for hydro-electric power development typically includes: (1) the daily, weekly, or monthly stream flow over a period of years; (2) the minimum stream flow; and (3) the flood, or maximum, stream flow.⁷⁵⁰ *First*, the daily, weekly, or monthly stream flow data is used to construct the flow-duration curve, which provides the percentage of time a certain stream flow is equaled or exceeded,⁷⁵¹ and is taken as a basis for the determination of plant capacity and power supply at all times.⁷⁵² *Second*, the minimum stream flow is essential to the determination of “firm power”,⁷⁵³ which refers to the power “which must be always available and

⁷⁴⁶ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 1.10; **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 2-22.

⁷⁴⁷ “Stream flow” is the volume of water passing a specific point in a river during a given time, often measured in cubic meters per second (or cumecs).

⁷⁴⁸ United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 4-1 (“The most important type of hydrologic data required for a hydropower feasibility study is the long term streamflow record that represents the flow available for power production. Other important hydrologic data includes tailwater rating curves, reservoir storage elevation tables, evaporation losses and other types of losses, sedimentation and water quality data, downstream flow requirements, streamflow routing criteria, and downstream channel constraints”).

⁷⁴⁹ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 41. A comprehensive feasibility study will include consideration of various factors, such as hydraulic, hydrologic, geographic, geologic, meteorologic, and seismologic conditions: see, e.g., **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), pp. 1.16–1.17; **P-0305**, United States Army Corps of Engineers, “Engineer Manual 1110-2-2200”, Gravity Dam Design dated 30 June 1995, pp. 2-2, 2-4, 3-1–3-2.

⁷⁵⁰ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 41.

⁷⁵¹ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), pp. 41, 44; United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 5-42.

⁷⁵² J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), pp. 11, 41.

⁷⁵³ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 41.

dependable for carrying load or that corresponding to the minimum stream flow, with due consideration of the effects of pondage and load factor”.⁷⁵⁴ Firm power is determined by the minimum stream flow and the amount of regulating storage available (such as pondage) that can be drawn upon during low-flow periods.⁷⁵⁵ Any additional power generated beyond this dependable baseline is referred to as “secondary” or “surplus” power, which is typically available only during periods of higher-than-minimum stream flow and is therefore less reliable in nature.⁷⁵⁶ Firm power is calculated over a “critical [time] period”, which period may vary between HEPs.⁷⁵⁷ *Third*, the maximum stream flow must be determined for the adequate design of safety provisions for the passing of flood waters.⁷⁵⁸

467. The relevant operational data for HEP development includes the power demands of the electric grid that the HEP is designed to meet. The total power that can be produced by a plant is limited by the “total amount of water furnished by the stream during a short period of time, such as a day or a week”.⁷⁵⁹ However, the demand for electric power or “load” varies throughout the day, with some additional day-to-day variability.⁷⁶⁰ These variations can be reflected graphically as a “load curve”. The below figure is an example of a load curve illustrating the possible fluctuation in electricity demand over the course of a week, showing higher demand during the day than the night.

⁷⁵⁴ H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 167 (“Primary or firm capacity may also be defined as the portion of total installed capacity which can perform the same function on that part of the load curve to which it is assigned as could be performed by an alternative steam plant”); **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-12 (“Continuous Power. Hydroelectric power available from a plant on a continuous basis under the most adverse hydraulic conditions contemplated. Same as prime power. ... Firm Power. Power intended to have assured availability to the customer to meet all or any agreed upon portion in his load requirements”).

⁷⁵⁵ See, e.g., J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 48.

⁷⁵⁶ H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 167.

⁷⁵⁷ See Fang-Fang Li, Jun Qiu, *Multi-Objective Reservoir Optimization Balancing Energy Generation and Firm Power* (2015) 8(7) *Energy* 6962, p. 6964 (“firm power is the mean power output in a certain critical period. The critical periods are distinct for different kinds of hydropower plants, for instance, run-of-river or daily regulated plants take a day as the critical period, and annually regulated plants take the dry season as the critical period”).

⁷⁵⁸ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 41.

⁷⁵⁹ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 48.

⁷⁶⁰ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), pp. 50–51.

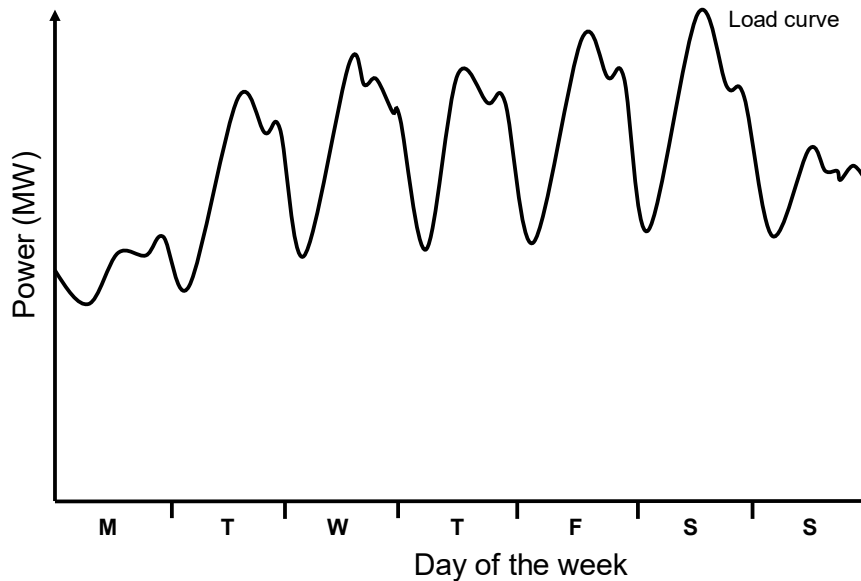


Figure 7: Weekly load curve showing power (MW) demand against time

468. As previously noted, hydro-power engineers generally understand “firm power” to refer to the power that a HEP can dependably supply to meet the power demand placed on the plant by the electricity grid that it serves.⁷⁶¹ In the case of a pure run-of-river plant, the firm power will be dictated by the minimum stream flow of the river supplying the plant. The figure below shows, for a pure run-of-river plant, the same load curve from above along with the power contained in a stream with constant flow. Among other things, the figure illustrates that not all stream flow during the week can be converted into useful power. Rather, the power supplied by the stream flow may exceed demand during periods of low demand, while a power deficit will occur during periods of high demand.

⁷⁶¹ See para. 461, *supra*. For example, the American Society of Civil Engineers describes firm power as: “Power intended to have assured availability to the customer to meet all or any agreed upon portion of his load requirements”: **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. S-12. See also Fang-Fang Li, Jun Qiu, *Multi-Objective Reservoir Optimization Balancing Energy Generation and Firm Power* (2015) 8(7) *Energy* 6962, 6964 (“firm power is the mean power output in a certain critical period. The critical periods are distinct for different kinds of hydropower plants, for instance, run-of-river or daily regulated plants take a day as the critical period, and annually regulated plants take the dry season as the critical period”). **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 261 (“The firm capacity of a hydro-electric plant can be defined as that portion of its total installed capacity which can perform the same function on that portion of the load curve assigned to it as alternative steam capacity could perform”).

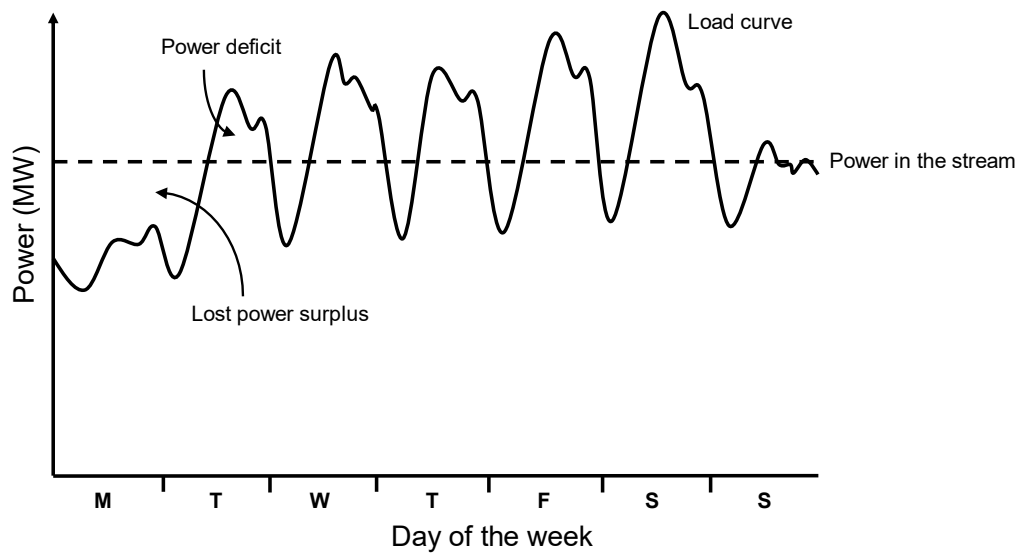


Figure 8: Weekly load curve including stream power

469. A run-of-river plant, however, can utilize pondage to store water during a period of low demand for release later during a period of high demand, and thereby increase the plant's ability to produce firm power (i.e., the level of power with assured availability over a certain critical period). The figure below shows the same load curve, but this time for a run-of-river plant with pondage, where during certain periods pondage is being filled while during other periods water is released to meet power demand.⁷⁶²

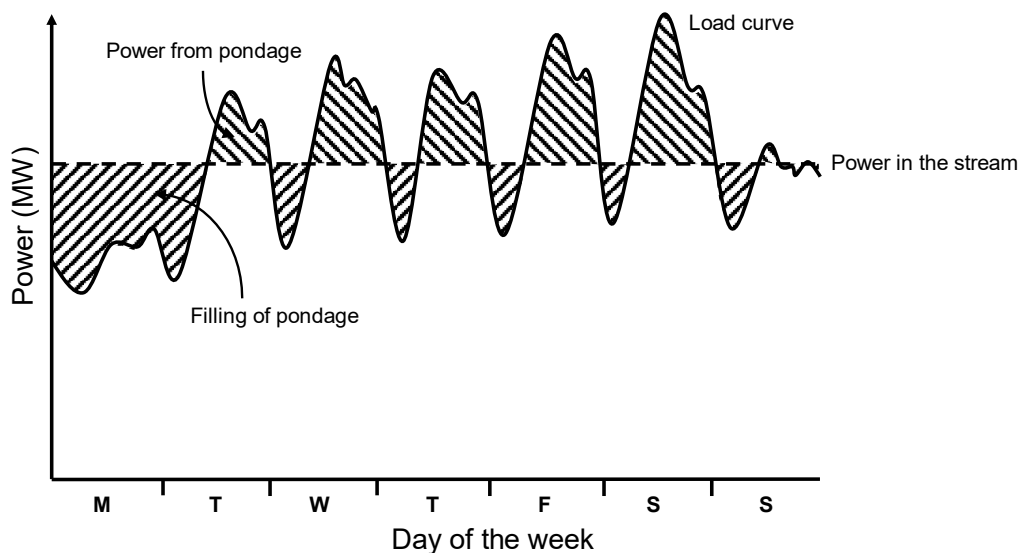


Figure 9: Weekly load curve showing pondage accumulation and discharge

⁷⁶² **P-0302**, United States Army Corps of Engineers, "Engineer Manual 1110-2-1701", Hydropower dated 31 December 1985, Ch. 5, p. 5-73.

470. Thus, pondage effectively increases the amount of water that can be passed through the run-of-river plant's turbines during high demand periods and can correspondingly increase firm power. All told, the "load curve" for a run-of-river HEP with pondage reflects the fluctuations in the demand for electric power in relation to the stream flow over a period of time. As previously noted, references may be made to the "base load" and the "peak load" of the HEP. The "base load" denotes the minimum load that is continuously present, while the "peak load" refers to the maximum load over the relevant period.⁷⁶³ A run-of-river HEP with pondage may be operated to level out variations in stream flow and supply power during maximum demand peaks, in which case it is referred to as a "peak load plant" (or "peaking plant"). Alternatively, a run-of-river HEP with pondage may be operated to carry base load and deliver energy continuously with limited fluctuation, in which case it is referred to as a "base load plant".⁷⁶⁴

C. COMPONENTS OF A RUN-OF-RIVER HYDRO-ELECTRIC PLANT

471. The design and operation of a HEP depends on a number of components that can be arranged in a variety of configurations to ensure that an economically optimized, properly integrated, and properly functioning plant is built and maintained.⁷⁶⁵ In general, to generate hydro-electric power, three basic elements are necessary: a means of creating head (a difference in elevation between two water surfaces), a conduit to convey water, and a power plant.⁷⁶⁶ In a conventional HEP, a dam reservoir diverts water from the river's natural flow into an "intake" and through a "headrace" tunnel ("conduit" or "canal") that carries the diverted water into a highly pressurized tunnel ("penstock"), after which pressurized water is delivered to a powerhouse possessing turbines, generators, and associated equipment to generate power. The water is then delivered from the turbines through a "tailrace" back into the river. The power from the generator passes

⁷⁶³ **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-9; **P-0302**, United States Army Corps of Engineers, "Engineer Manual 1110-2-1701", Hydropower dated 31 December 1985, pp. S-8–S-9; **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), pp. 50–52.

⁷⁶⁴ J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press Company, 1954), p. 52; **P-0302**, United States Army Corps of Engineers, "Engineer Manual 1110-2-1701", Hydropower dated 31 December 1985, p. S-11.

⁷⁶⁵ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 1.14. See also **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 436.

⁷⁶⁶ **P-0302**, United States Army Corps of Engineers, "Engineer Manual 1110-2-1701", Hydropower dated 31 December 1985, p. 2-27.

through step-up transformers that convert the low-voltage output into a high voltage current for efficient transmission.⁷⁶⁷ The following figure shows the typical components of a HEP.

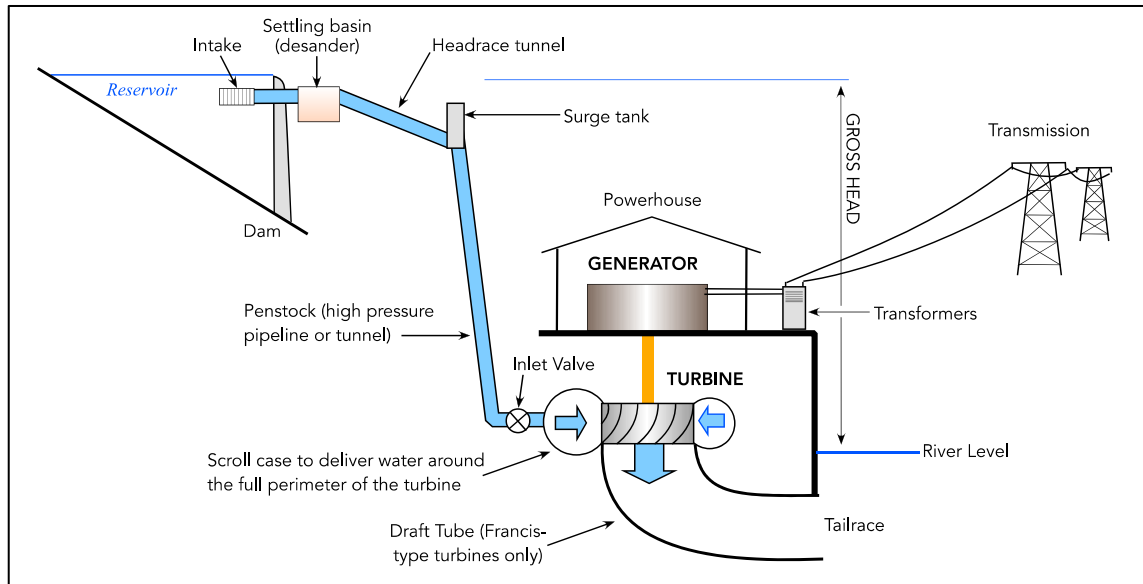


Figure 10: Typical components of a hydro-electric plant⁷⁶⁸

1. Reservoir Storage Capacity

472. A reservoir consists of the water impoundment behind a dam.⁷⁶⁹ The total storage capacity in a reservoir consists of dead storage, live storage, and surcharge storage.⁷⁷⁰

⁷⁶⁷ A typical HEP consists of the following components: (1) the powerhouse structure and its foundation; (2) hydraulic conveyance facilities, which include the head race, headworks, penstock, gates and valves, and tailrace; (3) the turbine-generator unit, including guide vanes or wicket gates, turbine, draft tube, speed increaser, generator, and speed-regulating governor; (4) station electrical equipment, which includes transformer, switch gear, automatic controls, conduit, and grounding and lightning systems; (5) ventilation, fire protection, communication, and bearing cooling water equipment; and (6) transmission lines. See **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), pp. 1.12–1.13. See also Davis Calvin Victor, *Handbook of Applied Hydraulics* (McGraw-Hill Book Company Inc., 2nd ed, 1952), p. 495.

⁷⁶⁸ Pakistan's Memorial, Figure 4.5.

⁷⁶⁹ **P-0302**, United States Army Corps of Engineers, "Engineer Manual 1110-2-1701", Hydropower dated 31 December 1985, p. 2-27; ICOLD, "Bulletin 31a", A Glossary of Words and Phrases related to Dams (1982), p. 31.

⁷⁷⁰ **P-0302**, United States Army Corps of Engineers, "Engineer Manual 1110-2-1701", Hydropower dated 31 December 1985, p. S-15; ICOLD, "Bulletin 31a", A Glossary of Words and Phrases related to Dams (1982), p. 32; **P-0307**, ASCE Hydropower Committee, *Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments*, Vol. 2 (1989), p. G-14.

473. *Dead storage* denotes the lower portion of a reservoir that is below the invert (or lowest point) of the lowest outlet.⁷⁷¹ This volume of water cannot be evacuated from the reservoir by gravity and is therefore unavailable for controllable use.⁷⁷² The top of this level is referred to as the “dead storage level”.
474. *Surcharge storage* refers to the uncontrollable volume or space in the upper portion of a reservoir between the normal reservoir surface level (“full supply level”)⁷⁷³ and the “maximum water level” that the dam has been designed to withstand.⁷⁷⁴ Flood surcharge cannot be retained in the reservoir indefinitely, but surcharge storage allows for temporary storage of floodwaters during the time it takes to drain them away over the spillway, until the full supply level is restored.⁷⁷⁵ The dam design process includes identifying the reservoir capacity for safely passing the “design flood” (such as the largest flood that can be expected over an appropriately long time period).⁷⁷⁶ The highest level that the dam has been designed to withstand (including surcharge storage) is referred to as the maximum water level.⁷⁷⁷

⁷⁷¹ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15; ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32 (“The storage volume of a reservoir measured below the invert level of the lowest outlet”); **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 430; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-14.

⁷⁷² **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15; **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 430; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-14; ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32.

⁷⁷³ **P-0538**, United States Bureau of Reclamation, “Design Standard No. 13: Embankment Dams” (2012), p. 6-6: “The elevation on the dam considered to be the ‘normal’ reservoir water surface is the highest within the typical range of annual operations (not including flood operations)”.

⁷⁷⁴ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32. (Maximum water level: “The maximum water level, including flood surcharge, which the dam has been designed to withstand”).

⁷⁷⁵ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32; **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. K-4.

⁷⁷⁶ Criteria for the selection of design floods are set out in **P-0317**, ICOLD, “Bulletin 59”, Dam Safety Guidelines (1987). More specific guidelines have been developed at the national level and are summarized in ICOLD Bulletin 167: See **P-0318**, ICOLD, “Bulletin 167”, Regulation of Dam Safety: An Overview of Current Practice World Wide (2023). The “Probable Maximum Flood” refers to the “largest flood that may reasonably be expected to occur at a given maximum runoff condition resulting from the most severe combination of meteorological and hydrologic conditions that are considered reasonably possible for the drainage basin under study”: **P-0490**, United States Bureau of Reclamation, “Design Standards No. 14: Appurtenant Structures for Dams (Spillway and Outlet Works) Design Standards” (2011), p. 1-2.

⁷⁷⁷ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32.

475. *Live storage* is the volume of water in a reservoir other than dead storage and surcharge storage capacity; it can further be divided into active storage and inactive storage.⁷⁷⁸ Active storage (or “conservation storage”) refers to the portion of a reservoir’s live storage that is stored or withdrawn for beneficial purposes, whereas inactive storage refers to “the portion of the live storage capacity from which water normally will not be withdrawn, in compliance with operating agreements or restrictions”.⁷⁷⁹ The lowest level to which the reservoir is drawn down under normal operating conditions (being the lower limit of active storage) is referred to as the “minimum operating level”.⁷⁸⁰
476. One type of storage within active storage is “pondage”, which denotes the holding back and releasing later of water at the dam of a HEP: (1) to equalize daily or weekly fluctuations in river flow;⁷⁸¹ or (2) to permit discharges of water through the turbines to accord with hour-to-hour fluctuations in load demand.⁷⁸² Pondage is to be distinguished from “storage” or “seasonal storage”, which refers more generally to the use of relatively large reservoirs to equalize monthly, seasonal, or yearly fluctuations in river flow.⁷⁸³ Seasonal storage often serves other functions in

⁷⁷⁸ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32: (“Where there is no inactive storage, e.g. in some irrigation reservoirs, live storage and active storage describe the same storage which is generally termed « live storage »”). **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-14.

⁷⁷⁹ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-14.

⁷⁸⁰ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32.

⁷⁸¹ Fluctuations in river flow may be natural, due to rainfall or snow melting, or artificial, due to pondage of water at other plants upstream: H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 490.

⁷⁸² H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 490: “There is some confusion in the use of the terms pondage and storage. The latter refers more properly to the use of relatively large reservoirs, often distinct from power developments, to equalize monthly, seasonal, or yearly fluctuations in river flow. From the point of view of capacity alone, evidently an amount which on a large river might suffice only for pondage would on a small stream be sufficient for storage purposes”. See also **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 191; **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 2-27.

⁷⁸³ H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955), p. 490. **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw-Hill Book Co 1991), p. 1.10: “The word ‘storage’ is used for long-term impounding of water to meet the seasonal fluctuation of water availability, whereas the word ‘pondage’ refers to short-term storage of water, usually on a daily basis, to meet the diurnal variations in power demand”. United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15 (Seasonal Storage: “Reservoir storage capacity of sufficient magnitude to permit carryover from the high flow season to the low flow season, and thus to develop a firm flow substantially greater than the minimum natural flow”).

addition to hydro-electric power generation. Active storage in relatively large reservoirs may also include flood storage used for flood control.⁷⁸⁴

2. Outlets

477. Outlets are “opening[s] through which water can be freely discharged from a reservoir to the river for a particular purpose”.⁷⁸⁵ Outlet structures regulate or release water impounded by a dam and can be classified according to their purpose, physical and structural arrangement, or their hydraulic operation.⁷⁸⁶ Ultimately, the “layout, size, and shape of the outlet works are based on hydraulic and hydrology requirements, regulation plans, economics, site conditions, operation and maintenance needs, and interrelationship to the construction plan and other appurtenant structures”.⁷⁸⁷
478. Low-level outlets can serve various purposes. They can help maintain downstream flows for all levels of the reservoir above the level of the outlet, and they may also allow the reservoir to be emptied to permit inspection, to make needed repairs, or to maintain the upstream face of the dam or other structures normally inundated by the reservoir.⁷⁸⁸ A low-level outlet may also be used to pass sediment-laden water through a dam so that the sediment does not accumulate in the reservoir, a process often referred to as “sediment sluicing”.⁷⁸⁹ Further, if sediment has accumulated in the reservoir, a low-level outlet might also be used to drawn down the reservoir

⁷⁸⁴ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32: (“The part of the active storage used specifically for flood control. « Flood storage » should not be confused with « flood surcharge »” (i.e., the surcharge storage), which refers to the “volume or space in a reservoir between the retention water level and the maximum water level. Flood surcharge cannot be retained in the reservoir but will flow over the spillway until retention water level is reached”).

⁷⁸⁵ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 49. See also **P-0490**, United States Bureau of Reclamation, “Design Standards No. 14: Appurtenant Structures for Dams (Spillway and Outlet Works) Design Standards” (2011); **P-0304**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1602”, Hydraulic Design of Reservoir Outlet Works dated 15 October 1980, pp. 1-4-1-9; **P-0528**, W. E. Hager et al., Hydraulic Engineering of Dams (CRC Press 2021).

⁷⁸⁶ United States Army Corps of Engineers, “Engineer Manual 1110-2-1420”, Engineering and Design dated 31 October 1997, p. 14-1; United States Bureau of Reclamation, “Design of Small Dams” (1960), p. 345.

⁷⁸⁷ **P-0305**, United States Army Corps of Engineers, “Engineer Manual 1110-2-2200”, Gravity Dam Design dated 30 June 1995, p. 7-3.

⁷⁸⁸ United States Army Corps of Engineers, “Engineer Manual 1110-2-1420”, Engineering and Design dated 31 October 1997, p. 14-1 (“An opening at a low level in the reservoir generally used for emptying or for scouring sediment and sometimes, in addition, for irrigation releases”). ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 49 (Bottom outlet: “An opening at a low level in the reservoir generally used for emptying or for scouring sediment and sometimes, in addition, for irrigation releases”).

⁷⁸⁹ See paras. 490, 496, *infra*.

to a low level so that the flow of the river can flush the sediment, a process often referred to as “drawdown flushing”.⁷⁹⁰

3. Spillways

479. Spillways are a type of large-capacity opening from a reservoir or section of a dam designed to discharge surplus water from the reservoir into the river below a dam.⁷⁹¹ Spillways provide a means of passing operational and flood flows from the reservoir downstream to prevent overtopping and protect the structural integrity of the dam.⁷⁹² A spillway can serve as a flood-control structure either independently or in combination with other outlet works.⁷⁹³ Spillways may be classified by their elevation with respect to the full supply level in the reservoir as either “surface spillways” or submerged “orifice spillways”.⁷⁹⁴
480. A *surface spillway* denotes a spillway located at the full supply level of the reservoir, either in the wall of the dam or an adjacent abutment,⁷⁹⁵ and may be gated (controlled) or ungated (uncontrolled).⁷⁹⁶
- (a) An ungated “*free overflow spillway*” provides no control with respect to either holding back or releasing waters; rather, the discharge through the surface spillway is purely a function of the height of the reservoir in relation to the spillway crest.

⁷⁹⁰ See para. 492, *infra*; **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 47.

⁷⁹¹ **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), Ch. 2; **P-0303**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1603”, Hydraulic Design of Spillways dated 31 August 1992, p. 1-3; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-16. See also ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 47 (“A structure over or through which flood flows are discharged”).

⁷⁹² **P-0303**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1603”, Hydraulic Design of Spillways dated 31 August 1992, p. 1-3; **P-0305**, United States Army Corps of Engineers, “Engineer Manual 1110-2-2200”, Gravity Dam Design dated 30 June 1995, p. 7-4.

⁷⁹³ **P-0303**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1603”, Hydraulic Design of Spillways dated 31 August 1992, p. 1-3.

⁷⁹⁴ **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 2-1. See also **P-0303**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1603”, Hydraulic Design of Spillways dated 31 August 1992, p. 1-3.

⁷⁹⁵ **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 13.

⁷⁹⁶ **P-0303**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1603”, Hydraulic Design of Spillways dated 31 August 1992, p. 1-3. **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 25: “A combination spillway has an ungated sill at a relatively high level and gates set at a lower level”.

- (b) A “*crest-gated surface spillway*”⁷⁹⁷ includes gates that allow the spillway crest to be placed below the full supply level to release reservoir water and control the flow when the gates are opened, if necessary.⁷⁹⁸

Generally, an “ungated spillway is preferable when local conditions such as high seismic activity, lack of confidence in maintenance and/or operating skills, short peaking time of the inflow hydrograph, remoteness of the site and difficulty of access mean that there are doubts as to the dependability of the gates and the way they will be operated”.⁷⁹⁹

481. A submerged *orifice spillway* refers generally to gated spillways set well below the full supply level of a reservoir.⁸⁰⁰ Orifice spillways may be differently arranged to suit discharge capacity, head, dam type, frequency of operation, downstream conditions, and the available technology.⁸⁰¹ An orifice spillway is designed to discharge surplus water from a reservoir and can broadly be distinguished in purpose from large low-level outlets designed to remove sediment after the reservoir has been drawn down to a low level or emptied.⁸⁰²

482. The figure below illustrates these three particular spillway designs.

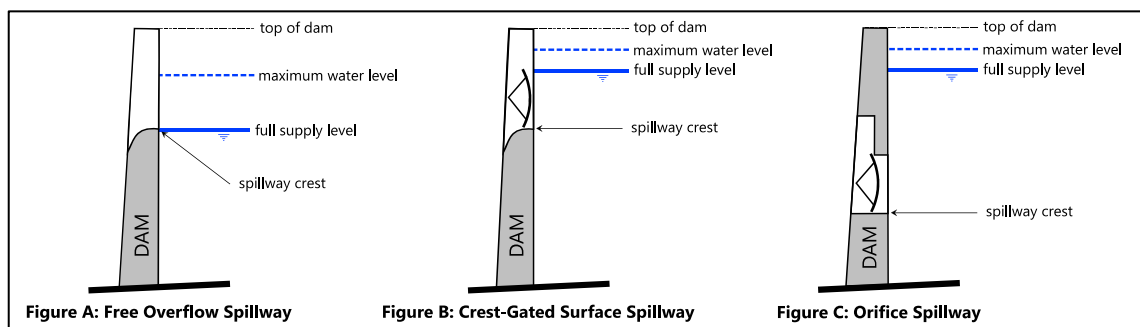


Figure 11: Spillway configurations

⁷⁹⁷ The “crest of the dam” refers to the “upper part of an uncontrolled spillway”, in contrast to the “top of the dam” which refers to “[t]he elevation of the uppermost surface of a dam, usually a road, or walkway excluding any parapet wall, railings, etc”: ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 38.

⁷⁹⁸ **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 25.

⁷⁹⁹ **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 23.

⁸⁰⁰ While it is possible for an orifice spillway to be located high in the dam but not at the crest, such orifice spillways are not common. **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 95: “[A]lthough there is no well-defined criterion for demarcation, the term orifice spillways is taken here to mean high-head outlets set at the bottom of the dam or at some substantial fraction of the dam height below water level, and whose discharge capacity represents all or a substantial proportion of the total discharge capacity of the dam”.

⁸⁰¹ **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 95.

⁸⁰² **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 13.

483. Safety against overtopping can be improved by incorporating an auxiliary (“emergency”) spillway designed to operate only during exceptionally large floods.⁸⁰³ One form of an auxiliary spillway is the “fusegate spillway”, which is a spillway that is designed to open automatically and release floodwaters during a large flood.⁸⁰⁴ Alternatively, the crest of a spillway can be modified using “flashboards”, being lengths of timber, concrete, or steel to raise the level for retaining water, but which may be quickly removed at time of flood either by a tripping device or by deliberate failure of the flashboards or their supports.⁸⁰⁵

4. Intakes for the Turbines

484. Intakes for power generation are structural components positioned within dams designed to divert water into the pressure conduit leading to the turbines as efficiently as possible, with no or minimal vorticity.⁸⁰⁶ Intakes for the turbines may be situated inside the reservoir dam (such as a deep intake), adjacent to the reservoir dam (such as a shallow intake on the abutment of a dam), or remote from the reservoir dam (such as a tower intake set in the reservoir).⁸⁰⁷ Intakes must be positioned high enough to minimize ingress of sediment, but below the full supply level to prevent entrance of ice and floating debris, and to avoid the formation of vortices and drawdowns which

⁸⁰³ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 48; **P-0314**, ICOLD, “Bulletin 58”, Spillways for Dams (1987), p. 23.

⁸⁰⁴ United States Bureau of Reclamation, “Design Standards No. 14: Appurtenant Structures for Dams (Spillway and Outlet Works) Design Standards” (2022), p. 3-46.

⁸⁰⁵ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 49.

⁸⁰⁶ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 4.27; **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. 2-27; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. 1-1; **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 436; ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 49 (“Any structure in a reservoir or dam or river, through which water can be drawn in to an aqueduct”).

⁸⁰⁷ **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 7. See also **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. 1-1.

might break the siphon action.⁸⁰⁸ To prevent ingestion of debris into the turbine, “trash racks”⁸⁰⁹ and other structures are commonly included in the design of a power intake.⁸¹⁰ Equally, to limit sedimentation at the power intakes, it is important to design any outlets for sediment sluicing in conjunction with the intakes.⁸¹¹ Two common configurations for power intakes are deep (high-pressure) intakes and shallow (low-pressure) intakes, which are illustrated in the below figure.

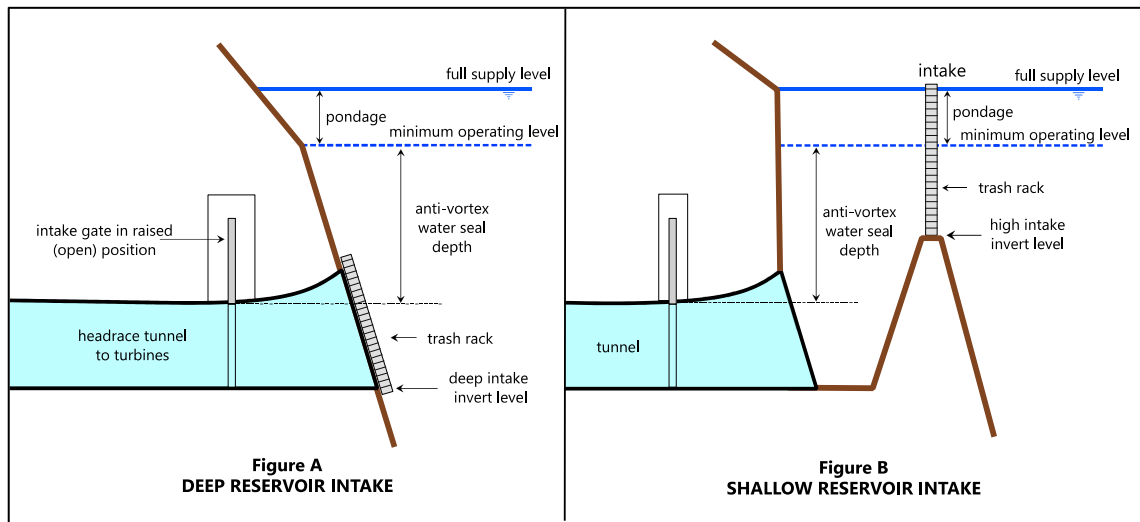


Figure 12: Potential power intake configurations

485. A deep or high-pressure intake (also referred to as a “submerged” intake)⁸¹² has an invert level located deep in the dam, allowing the intake to benefit from the extraction of water even if the

⁸⁰⁸ **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), pp. 1-1, 1-6 (“Air-entraining vortices decrease turbine efficiency, pull floating debris into the turbine (or onto the trashrack), and cause rough turbine operation”); United States Bureau of Reclamation, “Design of Small Dams” (1960), p. 235; **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 315 (“Sediment build-up can cause partial blockage of the entrance, reduction in flow and subsequent loss of power generation. The diverted sediment can be detrimental to the fish screens, conveyance facilities, or mechanical system, accelerating the erosion of its various components and increasing maintenance”).

⁸⁰⁹ ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 49 (“A screen comprising metal or reinforced concrete bars located in the waterway at an intake so as to prevent the ingress of floating or submerged debris”).

⁸¹⁰ **P-0477**, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 4.27.

⁸¹¹ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 31. This is particularly relevant for HEPs on Himalayan rivers, which carry highly angular sediments that are highly abrasive to hydropower turbines and other hydro-mechanical equipment: See **P-0269**, Mott Macdonald and HR Wallingford, “Sediment Management Study of Tarbela Reservoir” dated 1 July 2013, p. 54; **P-0270**, T. Nozaki, “Estimation of Repair Cycle of Turbine Due to Abrasion Caused by Suspended Sand and Determination of Desilting Basin Capacity” (1990); **P-0688**, P. N. Darde, “Detrimental effects of tiny silt particles on large hydro power stations and some remedies” (2016) *Perspectives in Science* 8, 142–145, p. 143.

⁸¹² See Figure 12(A), *supra*.

reservoir is at a low level. Thus, a deep intake in a reservoir allows for hydro-electric power to be generated over a large range of reservoir levels; all of the waters above the invert (the lowest point of the intake) become controllable storage. A deep intake is less susceptible to floating debris, but it is more susceptible to sediment ingestion given that sediment concentration is greater near the bottom of the water column as compared to higher levels. The need to address sediment near a deep intake may lead to a desire for “drawdown flushing”, which, as noted above, is a reservoir management technique whereby the water level in a reservoir is intentionally lowered to remove sediment deposits. Moreover, a deep intake is typically harder to clean and maintain, given that it has to operate at high pressure and with robust gates.⁸¹³

486. A *shallow or low-pressure intake*⁸¹⁴ has an invert level located closer to the surface of the reservoir, though its invert must still be located below the minimum operating level, so as to take full advantage of the live storage for generating hydro-electric power. Such an intake does not enjoy the ability to extract water over a large range of reservoir levels; it is only able to extract water down to its invert level. A shallow intake, however, has the benefit of helping to avoid ingestion of coarse sediment, though steps normally are still taken to reduce sediment ingestion, such as through the use of a desander or a skimming wall. For run-of-river plants, the typical practice to avoid entrainment of coarse sediment that harms the turbines is to set the intake at a relatively high level,⁸¹⁵ possibly in conjunction with a desander. A shallow intake, however, is also susceptible to the formation of vortices in the water, which may entrain air and thereby reduce the efficiency of the turbine. For this reason, while a shallow intake is at a high level, the entrance to the headrace (for delivery of the water to the turbines) can be placed at a lower depth to minimize vortexing, along with other design elements such as a broad and shallow opening to the headrace.⁸¹⁶

⁸¹³ **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), pp. 1–13; **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants, 1995, Ch. 9.3.2.4.

⁸¹⁴ See Figure 12(B), *supra*.

⁸¹⁵ See para. 495, *infra*; Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 69:6–8:

Storage plants typically have a deep intake; run-of-river plants will typically have a high intake. Due to the settling velocity of coarse sediment, ... your concentration of sediment at the top of the water column is less than at the bottom. So, therefore, where you have a run-of-river plant and you want to exclude sediment from the turbines—the coarse sediment in particular, because it’s much more abrasive than the fine sediment—the accepted practice is to put your intake at the highest level possible to minimize the entrainment of sediment.

⁸¹⁶ See **P-0312**, J. L. Gordon, “Vortices at Intakes” (1970) 4 *Water Power* 137, p. 137.

5. Freeboard

487. Freeboard is the vertical distance of the dam wall between the full supply level and the top of the dam not designed for overflow.⁸¹⁷ Freeboard seeks to accommodate surcharge (i.e., surcharge storage) and also to prevent overtopping. Overtopping of the dam, which can compromise its structural integrity (thereby damaging it or even causing it to fail),⁸¹⁸ arises from wave action generated by wind, landslides, seismic motion, and other uncertainties, such as the malfunction of spillways.⁸¹⁹ The “normal freeboard” denotes the vertical distance between the full supply level and the top of the dam, whereas the vertical distance between the maximum water level and the top of the dam may be termed the “minimum freeboard”.⁸²⁰ These concepts are illustrated in the below figure.

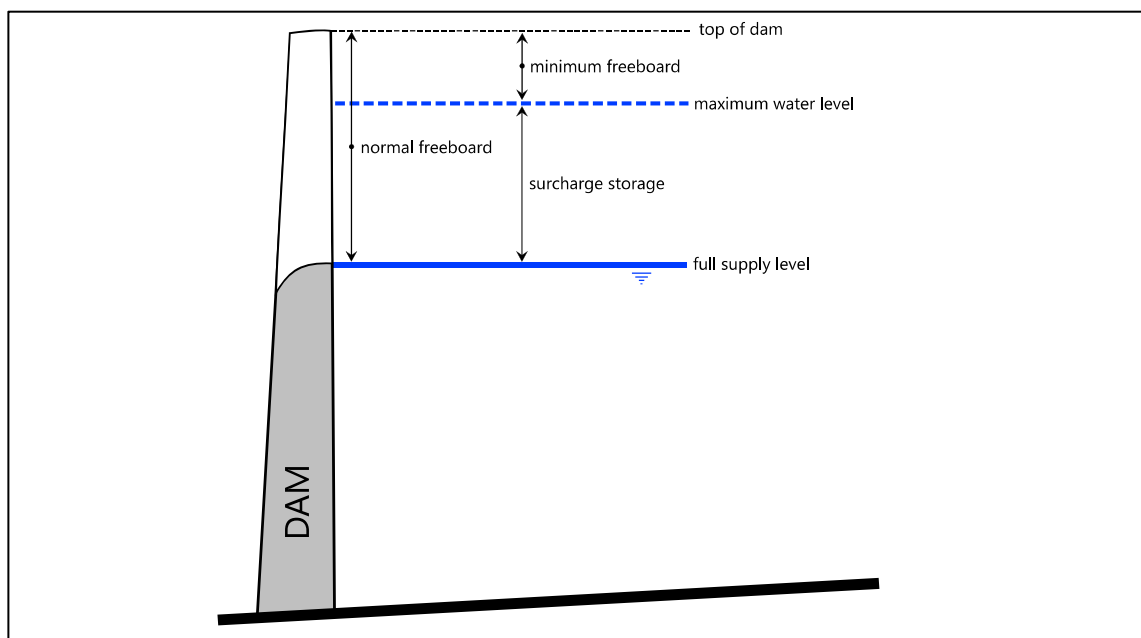


Figure 13: Freeboard for free overflow spillway

D. RESERVOIR SEDIMENTATION AND SEDIMENT CONTROL

488. Sedimentation poses significant challenges to the long-term viability and sustainable operation of both run-of-river and storage HEPs. Relevantly, sedimentation can significantly impair the

⁸¹⁷ Davis Calvin Victor, *Handbook of Applied Hydraulics* (McGraw-Hill Book Company Inc., 2nd ed, 1952), p. 186.

⁸¹⁸ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), pp. 410–411.

⁸¹⁹ **P-0535**, United States Bureau of Reclamation, “Freeboard Criteria and Guidelines for Computing Freeboard Allowances for Storage Dams” (1981), pp. 8–12.

⁸²⁰ **P-0538**, United States Bureau of Reclamation, “Design Standard No. 13: Embankment Dams” (2012), pp. 6-4–6-5.

function of a HEP by reducing the storage capacity of a reservoir and causing damage to the turbines. Many large storage reservoirs are designed with enough dead storage capacity to store sediment for the life of the structure. However, run-of-river HEPs have little or no capacity available for sediment storage and the available storage can quickly become filled with sediments.⁸²¹ Accordingly, one of the main objectives in the design and operation of run-of-river HEPs is to incorporate effective sediment management strategies to minimize the impacts of sedimentation and ensure a long lifespan for a reservoir.⁸²² In broad terms, the methods for controlling sediment accumulation in a reservoir can be categorized as follows:⁸²³

- (a) *Sediment yield reduction*: Reducing the volume of sediment entering the reservoir, including through the implementation of soil and conservation programs, upstream trapping of sediment (e.g., debris dams or vegetation screens), bypassing high sediment loads, and off-channel storage.
- (b) *Deposition control*: Reducing deposition of sediment in a reservoir by employing techniques such as sediment sluicing and density current venting.
- (c) *Sediment removal*: Removing accumulated sediment deposits, such as through drawdown flushing during the rainy season or through excavation by means of dredging or other mechanical equipment.
- (d) *Sedimentation compensation*: Compensating for loss of long-term storage capacity, such as by raising the dam or by abandoning/decommissioning the silted reservoir and constructing a new reservoir.

Each approach has advantages and limitations, and may be either more or less effective in the context of particular watersheds and reservoir sites. Therefore, a combination of approaches is often the most effective method of managing sediment. Sediment management techniques of particular relevance to run-of-river HEPs are addressed in further detail below.

⁸²¹ **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants, 1995, pp. 330–331.

⁸²² **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 13.

⁸²³ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), pp. 13–15. See also S. A. Rehman, et al., “Application of a 1-D numerical model for sediment management in Dasu Hydropower Project” (2015) Proceedings of the 14th International Conference on Environmental Science and Technology; **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), pp. 31–32. For a further discussion of these principles, see **PLA-0003**, *Kishenganga* Partial Award, paras. 495–502.

489. *First*, sediment yield reduction can be undertaken through sediment bypassing, which involves the storing of sediment-free water (usually low flows), while high sediment loads are bypassed around the reservoir through a channel or tunnel (if the reservoir is on the river), or by having an off-river storage reservoir fed under gravity from the main river or by pumped flow.⁸²⁴ Sediment bypass structures do not interfere with regular reservoir operations, but require a particular topography in the area surrounding the planned reservoir and may only be feasible at certain sites.⁸²⁵
490. *Second*, with respect to deposition control, sluicing is an operational technique for reducing sediment deposition in a reservoir by allowing sediment-laden water in high-flow seasons to pass through a dam before the sediment can settle. During sediment sluicing, the reservoir is typically maintained at lower levels (near minimum drawdown level), which decreases the effective capacity of the reservoir, but reduces the amount of sediment being deposited or trapped in the reservoir as the water passes through the HEP (the trap efficiency of the reservoir).⁸²⁶ Because sluicing delivers sediment downstream at a similar time and concentration to what would naturally occur, its environmental impact can be limited.
491. *Third*, deposition control is also possible through a sediment management technique called density current venting. In certain reservoirs and under exceptional conditions, a highly concentrated flow of sediment into the reservoir may form what is known as a density or turbidity current, in which the flow of sediment-laden water maintains its concentration and velocity while traveling along the bottom of the reservoir.⁸²⁷ Provided that the density current reaches the dam without significant dilution and that appropriate outlets are available, the sediment in a density current may be vented or sluiced downstream without any need for drawdown.
492. *Fourth*, with respect to sediment removal, drawdown flushing is a technique whereby the flow velocities in a reservoir are increased to such an extent that deposited sediments are remobilized

⁸²⁴ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 25.

⁸²⁵ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 25; **P-0690**, A. Lade, et al., “Feasibility of Sluicing Operations for Run-Of-River Schemes in Himalayan Region” (2015) IOSR Journal of Mechanical and Civil Engineering 13(1), p. 4.

⁸²⁶ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 29; **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), p. 31; **P-0662**, B. Joshi et al., “Sediment Management Practices in NHPC’s Power Stations” (2021) ICOLD 2021 Sedimentation Management in Reservoirs for Sustainable Development, p. 3.

⁸²⁷ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), pp. 35–45; **P-0690**, A. Lade, et al., “Feasibility of Sluicing Operations for Run-Of-River Schemes in Himalayan Region” (2015) IOSR Journal of Mechanical and Civil Engineering 13(1), p. 4.

and transported out of the reservoir (scouring), typically by using low-level outlets to draw the water level in the reservoir down to a level at (or near) the reservoir bottom.⁸²⁸ When drawn down to such an extent, the river is largely restored to its natural flow velocity, which maximizes the capacity of the water to erode and transport deposited sediment. Considering the heavy concentrations of sediment released in flushing, however, it may have significant environmental impacts on water quality and other aspects of the downstream reaches of the river, particularly in the area immediately below the dam.⁸²⁹

493. *Fifth*, dredging is another technique of sediment removal, entailing the mechanical removal of the deposited sediments from the reservoir using dredging equipment, pumps, or hydraulic suction.⁸³⁰ Dredging operations involve excavation, transportation, and disposal of the sediment, and are generally an expensive means of restoring storage capacity.⁸³¹
494. Separately from the techniques that may be used to limit the accumulation of sediment in the reservoir as a whole, the designers of a HEP may take a number of steps to limit the entry of sediment into the power intakes and the corresponding damage to the power generating infrastructure, including the turbines.
495. *First*, the intakes may be located to draw water from a portion of the reservoir with a comparatively lower concentration of sediment. Most often this would entail locating the intake so that it draws water from a higher level of the reservoir where there is a comparatively lower concentration of coarse sediment.
496. *Second*, and independently of the role of such features in regulating sedimentation in the reservoir as a whole, outlets in the proximate vicinity of the intakes may be used to sluice or flush sediment from the immediate area of the intakes, reducing the accumulation of sediment that could block the intakes or contribute to the entrainment of sediment into the turbines.

⁸²⁸ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 47; **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), p. 31; **P-0668**, B. Greimann. and J. V. Huang, User’s Manual for SRH-1D V4.0: Sedimentation and River Hydraulics – One Dimension, (Version 4.0: Denver, CO: United States Bureau of Reclamation 2018), p. 1; **P-0680**, E. Atkinson, “The Feasibility of Flushing Sediment from Reservoirs” (1996) Report to British Overseas Development Admin. London, p. 1.

⁸²⁹ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 29; see also **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), p. 31.

⁸³⁰ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 59; **P-0667**, B. Joshi, et al., “Sediment Management Practices at NHPC’s Power Stations” (2020) Hydropower Dams 27(2), p. 32.

⁸³¹ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), p. 59.

497. *Third*, a desander (or stilling basin) may be constructed between the entrance to the headrace tunnel and the main body of the reservoir. Such a structure temporarily holds water drawn from the reservoir, permitting accumulated sediment to settle out of suspension before the water is passed into the headrace tunnel and to the turbines. Sediment accumulated in the desander can then be removed through dredging or flushing during periods of non-operation without altering the level of water in the reservoir as a whole.

E. ENGINEERING CONCEPTS AND TERMINOLOGY RELEVANT TO RUN-OF-RIVER HYDRO-ELECTRIC PLANTS IN RELATION TO ANNEXURE D, PART 3 HEPs

498. The foregoing addresses engineering concepts and terminology regarding the design and operation of run-of-river HEPs as they exist outside of the specific context of the Treaty. By elucidating these concepts and terminology drawn broadly from authoritative hydro-engineering reports and texts, including those available to the Treaty drafters,⁸³² this Part provides necessary background for interpreting Annexure D, Part 3, given that it regulates the design and construction of run-of-river HEPs. Thus, to the extent that Annexure D, Part 3 leaves unstated certain fundamental concepts pertinent to the operation of any run-of-river HEP, or uses undefined terms (such as “hydro-electric power”, “storage”, “loads”, “uncontrollable”, “discharge of the turbines”, “outlet”, “gated spillway”, “bottom level of the gates”, or “intakes”), the ordinary understanding of such concepts and meaning of such terms must be considered as they are typically used for the design and operation of run-of-river HEPs, and especially as they were used at the time the Treaty was adopted.

499. At the same time, although there may be considerable alignment between the concepts and terminology of the Treaty with conventional hydro-electric engineering concepts and terminology, the Treaty also features certain defined terms that, at times, depart from conventional usage, and did so even at the time of the Treaty’s adoption. As such, caution is warranted in applying conventional usage to the Treaty, calling instead for close scrutiny as to whether the drafters made adjustments unique to the Treaty.

500. The relevant terms are defined in Paragraph 2 of Annexure D to the Treaty as follows:

As used in this Annexure :

- (a) “Dead Storage” means that portion of the storage which is not used for operational purposes and “Dead Storage Level” means the level corresponding to Dead Storage.

⁸³² Notably **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950); **P-0654**, J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press, 1954); H. K. Barrows, *Water Power Engineering* (McGraw-Hill, 1955).

- (b) “Live Storage” means all storage above Dead Storage.
- (c) “Pondage” means Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant.
- (d) “Full Pondage Level” means the level corresponding to the maximum Pondage provided in the design in accordance with Paragraph 8(c).
- (e) “Surcharge Storage” means uncontrollable storage occupying space above the Full Pondage Level.
- (f) “Operating Pool” means the storage capacity between Dead Storage level and Full Pondage Level.
- (g) “Run-of-River Plant” means a hydro-electric plant that develops power without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage.

501. The Court notes that, while the Treaty incorporates engineering terminology commonly used to describe storage of water in a reservoir, it also sometimes expressly departs from conventional use of that terminology. One example of this difference in terminology arises with respect to the storage levels of an Annexure D, Part 3 HEP.

502. *Dead Storage* in the Treaty is defined as “that portion of the storage which is not used for operational purposes” and the “Dead Storage Level” means the level corresponding to Dead Storage.⁸³³ Dead Storage cannot be “depleted except in an unforeseen emergency”, pursuant to Paragraph 19 of Annexure E, extended to Annexure D through Paragraph 14 of Annexure D.⁸³⁴ Under conventional terminology, dead storage refers to the uncontrollable lower portion of a reservoir that is below the invert of the lowest outlet.⁸³⁵ However, the Treaty defines Dead Storage to extend from the riverbed to the lower limit of the Operating Pool, which is conventionally known as the minimum operating level or minimum drawdown level. Accordingly, the Treaty’s definition of Dead Storage is broader than its conventional meaning and includes both uncontrollable “dead storage” and controllable “inactive storage”, being the portion of live storage from which water normally will not be withdrawn.⁸³⁶

⁸³³ **PLA-0001**, Treaty, Annexure D, para. 2(a).

⁸³⁴ **PLA-0001**, Treaty, Annexure D, para. 14, Annexure E, para. 19.

⁸³⁵ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15; ICOLD, “Bulletin 31a”, A Glossary of Words and Phrases related to Dams (1982), p. 32 (“The storage volume of a reservoir measured below the invert level of the lowest outlet”); **P-0308**, ASCE Committee on Hydropower Intakes, Guidelines for Design of Intakes for Hydroelectric Plants (1995), p. 430; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-14.

⁸³⁶ **P-0302**, United States Army Corps of Engineers, “Engineer Manual 1110-2-1701”, Hydropower dated 31 December 1985, p. S-15; **P-0307**, ASCE Hydropower Committee, Civil Engineering Guidelines for Planning and Designing Hydroelectric Developments, Vol. 2 (1989), p. G-14.

503. *Live Storage* in the Treaty is defined as “all storage above Dead Storage”,⁸³⁷ which includes the “Operating Pool” and the “Surcharge Storage”. Under conventional terminology, “live storage” refers to the portion of the reservoir excluding “dead storage” and “surcharge storage”. However, the Treaty defines “Live Storage” as including “Surcharge Storage”. Taking the Treaty terms in turn, the “Operating Pool” means the storage capacity between Dead Storage Level and Full Pondage Level, and the “Surcharge Storage” means uncontrollable storage occupying space above the Full Pondage Level.⁸³⁸ The “Full Pondage Level” means the level corresponding to the maximum Pondage provided in the design in accordance with Paragraph 8(c) of Annexure D.⁸³⁹ Paragraph 8(c) of Annexure D provides, in turn, that “[t]he maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power”, where “Pondage” means “Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant”. In practice, therefore, “Pondage” will be the portion of Live Storage (equivalent to the “Operating Pool”) designated to be used for generating electric energy.⁸⁴⁰

504. The figure below highlights the differences between the reservoir storage terms as conventionally understood and those terms as defined in the Treaty.

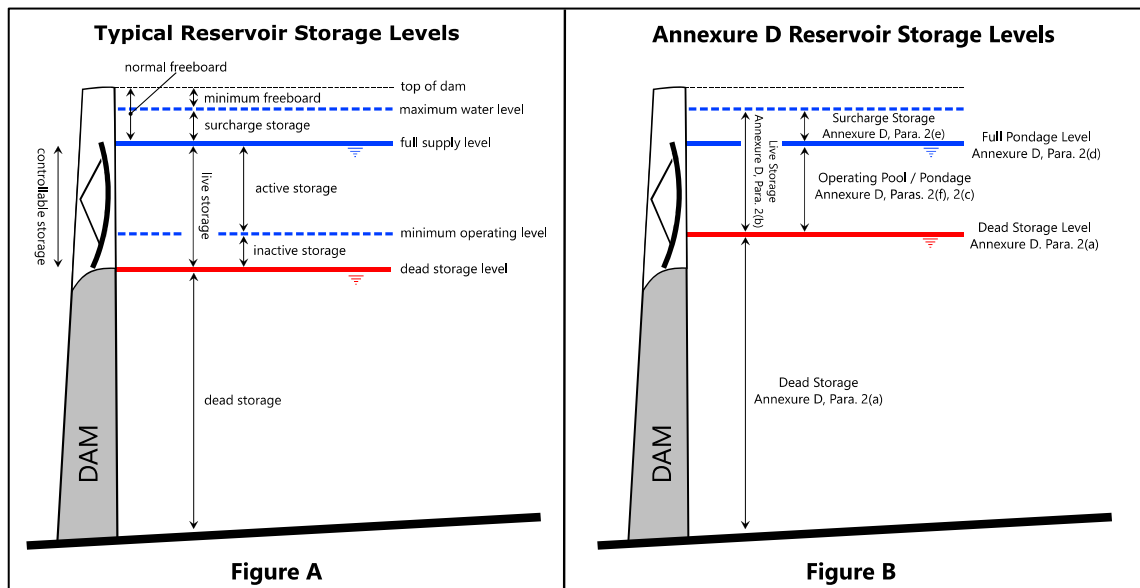


Figure 14: Different forms of storage in the reservoir of a Run-of-River Plant

⁸³⁷ PLA-0001, Treaty, Annexure D, para. 2(b).

⁸³⁸ PLA-0001, Treaty, Annexure D, paras. 2(e)–(f).

⁸³⁹ PLA-0001, Treaty, Annexure D, para. 2(d).

⁸⁴⁰ PLA-0001, Treaty, Annexure D, paras. 2(b), (c), (f).

505. Against the backdrop of the engineering concepts and terminology generally relevant to run-of-river HEPs, while recognizing that there are certain usages unique to the Treaty, the Court now turns to the specific questions before it relating to Paragraphs 8(a), (c), (d), (e), and (f) of the Treaty.

* * *

X. GENERAL INTERPRETATION OF ANNEXURE D, PARAGRAPHS 8(D), (E), AND (F) ON LOW-LEVEL OUTLETS, GATED SPILLWAYS, AND INTAKES FOR THE TURBINES

506. Certain questions before the Court in these proceedings concern what is to be taken into account, and what is to be excluded, for the purposes of designing: outlets below Dead Storage Level (referred to below as “low-level outlets”), gated spillways, and intakes for the turbines of an Annexure D, Part 3 HEP. These questions are inter-related and thus are dealt with together in this Part.⁸⁴¹

507. The questions of the Court outlined in Procedural Order No. 6 in relation to outlets, spillways, and intakes are as follows:

- (e) With respect to Annexure D, paragraph 8(d) of Annexure D, what is to be taken into account for the purposes of designing low-level sediment outlets for a plant and what is to be excluded?
- (f) With respect to Annexure D, paragraph 8(e) of Annexure D, what is to be taken into account for the purposes of designing gated spillways for flood control for a plant and what is to be excluded?
- (g) With respect to Annexure D, paragraph 8(f), what is to be taken into account for the purposes of designing submerged power intakes for a plant and what is to be excluded?⁸⁴²

508. Paragraphs 8(d), (e), and (f) of Annexure D to the Treaty provide the following criteria for the design of any new Run-of-River Plant:

- (d) There shall be no outlets below Dead Storage Level, unless necessary for sediment control or any other technical purpose; any such outlet will be of the minimum size, and located at the highest level, consistent with sound and economical design and with satisfactory operation of the works.
- (e) If the conditions at the site of a Plant make a gated spillway necessary, the bottom level of the gates in normal closed position shall be located at the highest level consistent with sound and economical design and satisfactory construction and operation of the works.
- (f) The intakes for the turbines shall be located at the highest level consistent with satisfactory and economical construction and operation of the Plant as a Run-of-River Plant and with customary and accepted practice of design for the designated range of the Plant’s operation.

⁸⁴¹ See paras. 533–560, *infra*.

⁸⁴² Procedural Order No. 6, paras. 35(e)–(f).

A. THE PARTIES' POSITIONS

1. Pakistan's Position

509. Pakistan submits that Paragraphs 8(d), (e), and (f) of Annexure D to the Treaty impose strict restrictions on the positioning of outlets, spillways, and intakes in an Annexure D, Part 3 HEP, in accordance with India's "let flow", "non-interference", and "no storage" obligations in Article III. As a consequence, Pakistan argues, the "deeper India wishes to place outlets (including spillways and intakes) ... the more factors it has to demonstrate before the Treaty allows that placement".⁸⁴³

(a) *Methodological framework applicable to Paragraphs 8(d), (e), and (f)*

510. Pakistan makes the following four broad observations regarding the interpretation and application of each of Paragraphs 8(d), (e), and (f) of Annexure D.

511. *First*, Paragraphs 8(d), (e), and (f) impose tight constraints on the design of Annexure D, Part 3 HEPs, which plants operate as exceptions to India's "let flow", "non-interference", and "no storage" obligations in Article III. According to Pakistan, to the extent that India relies on any of these provisions in the course of designing its Annexure D, Part 3 HEPs, it is India that bears the burden of demonstrating compliance with respect to each provision.⁸⁴⁴ Further, Pakistan contends that India's compliance with these provisions, including their "necessary" requirements, must be objectively assessed—India's subjective appreciation is irrelevant.⁸⁴⁵

512. *Second*, Pakistan advances the following general approach for assessing India's compliance with each of the design criteria specified in Paragraphs 8(d), (e), and (f).⁸⁴⁶

(a) *Step 1*: if the provision entails a "default design criterion",⁸⁴⁷ India must establish that the default design criterion has been met, or a departure from the default is otherwise "necessary"; that is, "required, needed or essential for a particular purpose".⁸⁴⁸

⁸⁴³ Pakistan's Memorial, para. 10.18.

⁸⁴⁴ Pakistan's Memorial, para. 10.105(a).

⁸⁴⁵ Pakistan's Memorial, paras. 10.105(b), 10.106.

⁸⁴⁶ Pakistan's Memorial, para. 10.107.

⁸⁴⁷ Pakistan's Memorial, para. 10.107(a) ("e.g., the prohibition on outlets below Dead Storage Level in Paragraph 8(d), or the need for an uncontrolled spillway in Paragraph 8(e)").

⁸⁴⁸ Pakistan's Memorial, para. 10.107(a), citing **PLA-0003**, *Kishenganga* Partial Award, para. 397.

- (b) *Step 2*: India must identify the appropriate design options that comply with the constraints of the relevant provision (e.g., “of the minimum size, and located at the highest level, consistent with sound and economical design and with satisfactory operation of the works”).⁸⁴⁹
- (c) *Step 3*: once these options are identified, India must select, and present to Pakistan in the Commission, the design option that best protects Pakistan’s interests on the Western Rivers.⁸⁵⁰ Specifically, the protection of Pakistan’s interests requires the option that will be most consistent (by even a marginal amount) with India’s “let flow”, “non-interference”, and “no storage” obligations under Article III(1), (2), and (4) of the Treaty.⁸⁵¹

513. *Third*, in Pakistan’s view, the nature of the feature in question and its proposed location in the dam structure will determine whether Paragraphs 8(d), (e), and/or (f) apply.⁸⁵² In this regard, Pakistan submits that the strict requirements in Paragraph 8(d) regulate all outlets located in their entirety below Dead Storage Level—including spillways and intakes,⁸⁵³ whereas, by contrast, Paragraphs 8(e) and (f) apply only to spillways and intakes located entirely or partially above the Dead Storage Level.⁸⁵⁴ Thus, in Pakistan’s view, orifice spillways and deeply submerged intakes, when located below Dead Storage Level, fall under the stricter requirements of Paragraph 8(d). During the hearing, Pakistan indicated an openness to an alternative reading, pursuant to which Paragraph 8(d) would apply to outlets entirely *or partially* below Dead Storage Level. In that case, however, Pakistan considers that the Paragraph 8(d) would need to be applied cumulatively to gated spillways and intakes, such that those components would need to satisfy the requirements of more than one paragraph.⁸⁵⁵

514. *Fourth*, Pakistan emphasizes that the Treaty prohibits the depletion of Dead Storage, including for sediment management or other purposes. This principle is reflected in Paragraph 14 of Annexure D and Paragraph 19 of Annexure E, and was explicitly recognized by the *Kishenganga* Court.⁸⁵⁶ In addition, the Treaty restricts India’s ability “to construct works that would enable such

⁸⁴⁹ Pakistan’s Memorial, para. 10.107(b).

⁸⁵⁰ Pakistan’s Memorial, para. 10.107(c).

⁸⁵¹ Pakistan’s Memorial, para. 10.107(c).

⁸⁵² Pakistan’s Memorial, para. 10.108.

⁸⁵³ Pakistan’s Memorial, para. 10.108(a).

⁸⁵⁴ Pakistan’s Memorial, para. 10.108(b).

⁸⁵⁵ See Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 135:14–24.

⁸⁵⁶ Pakistan’s Memorial, para. 10.109, *citing* **PLA-0003**, *Kishenganga* Partial Award, paras. 513–515.

actions to be taken”.⁸⁵⁷ Accordingly, if an Annexure D, Part 3 HEP cannot be designed to function without the prohibited depletion of Dead Storage, then it must be relocated.⁸⁵⁸

(b) *Annexure D, Paragraph 8(d): Outlets*

515. Pakistan observes that Paragraph 8(d) is framed as an outright prohibition: “[t]here shall be no outlets below the Dead Storage Level”.⁸⁵⁹ This prohibition reflects the clear expectation of the Treaty drafters that India would have no capacity to control the Dead Storage in its reservoirs via the use of low-level outlets.⁸⁶⁰ According to Pakistan, the only exception to this default prohibition on low-level outlets under Paragraph 8(d) is where such outlets are shown to be “necessary for sediment control or any other technical purpose”.⁸⁶¹ The threshold for justifying a departure from this strict prohibition is a high one: that is, it must be objectively “necessary”, and not merely “preferable” on the basis of a cost-benefit analysis or some other similar exercise.⁸⁶² Accordingly, any other ancillary, non-technical benefit (including any social, economic, or environmental benefit) is not to be taken into account in determining whether an outlet is necessary under Paragraph 8(d).⁸⁶³
516. Pakistan argues that, if the necessity of a low-level outlet is established, Paragraph 8(d) limits the size and location of such outlets in order to limit India’s control over stored water.⁸⁶⁴ Specifically, outlets below Dead Storage Level are required to be as small as possible, and as high as possible in the Annexure D, Part 3 HEP’s structure, while consistent with sound and economical design and with the satisfactory operation of the works.⁸⁶⁵ The permissible height and size of the outlet are to be assessed against what is required to meet the relevant objective—that is, sediment control

⁸⁵⁷ Pakistan’s Memorial, para. 10.109, citing **PLA-0003**, *Kishenganga* Partial Award, para. 506.

⁸⁵⁸ Pakistan’s Memorial, para. 10.109.

⁸⁵⁹ Pakistan’s Memorial, para. 10.41; Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 104:13–20.

⁸⁶⁰ Pakistan’s Memorial, para. 10.42, citing **PLA-0003**, *Kishenganga* Partial Award, para. 505.

⁸⁶¹ Pakistan’s Memorial, paras. 10.43, 10.46(b). In this context, Pakistan submits that “sediment control” means “sediment management for the purpose both of preserving a HEP’s Live Storage and minimising sediment entry into the turbines”: see Pakistan’s Memorial, para. 10.44.

⁸⁶² Pakistan’s Memorial, paras. 10.46(b), 10.112, citing **PLA-0003**, *Kishenganga* Partial Award, paras. 513–515.

⁸⁶³ Pakistan’s Memorial, para. 10.112.

⁸⁶⁴ Pakistan’s Memorial, para. 10.52; Request for Arbitration, para. 74.

⁸⁶⁵ Pakistan’s Memorial, para. 10.52.

or some other technical (HEP-specific) purpose.⁸⁶⁶ Pakistan emphasizes that, unlike Paragraphs 8(e) and (f), Paragraph 8(d) makes no mention of “construction” concerns as playing a role in determining the permissible height and the size of the outlet.⁸⁶⁷

517. Finally, once the design possibilities for the necessary low-level outlet have been identified, India is obliged to pick the design option that best protects Pakistan’s interests on the Western Rivers; that is, the option that allows for the smallest and highest low-level outlet.⁸⁶⁸ The objective of this exercise is to identify a design and operational profile for the Annexure D, Part 3 HEP that enables India to have the best dam possible within the constraints of the Treaty on the basis of site-specific evidence and expert opinion, and then determine the smallest and highest outlet that India can construct within those parameters.⁸⁶⁹

(c) *Annexure D, Paragraph 8(e): Spillways*

518. Pakistan submits that, similarly to Paragraph 8(d), the starting position under Paragraph 8(e) is that a gated spillway is permitted in an Annexure D, Part 3 HEP only where it is objectively “necessary”; that is, “required, needed or essential for a particular purpose” (such as flood management or sediment control).⁸⁷⁰ As such, India is required to establish that relevant site-specific conditions, such as flood risks, hydrology, sediment yield, topography, geology, and seismicity, objectively require the inclusion of a gated spillway.⁸⁷¹ However, “any factor not directly present at the site”, such as the plant itself or the impact of the plant on a village upstream, must not be taken into account in this analysis.⁸⁷² Equally, while cost implications may result from site conditions, costs are “not a site condition in and of itself”.⁸⁷³
519. Where India demonstrates that a gated spillway is objectively necessary, Pakistan submits that Paragraph 8(e) requires the bottom level of the spillway’s gates to be as high as possible in the reservoir, consistent with sound and economical design and satisfactory construction and

⁸⁶⁶ Pakistan’s Memorial, paras. 10.115–10.116.

⁸⁶⁷ Pakistan’s Memorial, para. 10.117.

⁸⁶⁸ Pakistan’s Memorial, para. 10.57(c).

⁸⁶⁹ Pakistan’s Memorial, para. 10.114.

⁸⁷⁰ Pakistan’s Memorial, paras. 10.70, 10.71, *citing* PLA-0003, *Kishenganga* Partial Award, para. 397.

⁸⁷¹ Pakistan’s Memorial, paras. 10.72, 10.136.

⁸⁷² Pakistan’s Memorial, para. 10.121 (emphasis in original).

⁸⁷³ Pakistan’s Memorial, paras. 10.71–10.75, *referring to* P-0529, ICOLD, “Bulletin 178”, *Operation of Hydraulic Structures of Dams*, 2021, p. 3.

operation of the works.⁸⁷⁴ In Pakistan’s view, “sound and economical design” entails a HEP design that is fit for purpose and not unfeasibly expensive.⁸⁷⁵ Even a marginal change in the elevation of spillway gates is sufficient for one design to be preferred over another for the purposes of Paragraph 8(e) of Annexure D.⁸⁷⁶

520. Pakistan’s position is that India is entitled to the best dam possible within the constraints of the Treaty.⁸⁷⁷ Where India can demonstrate that a gated spillway is necessary pursuant to Paragraph 8(e), India would be entitled to a spillway that is above the Dead Storage Level in whole or in part.⁸⁷⁸ Where the spillway is entirely below the Dead Storage Level, such as an orifice spillway, it is then regulated by the more stringent requirements of Paragraph 8(d).⁸⁷⁹ India is not entitled to rely on “any perceived construction or operational advantage derived from an orifice spillway” to justify a spillway deeper in the reservoir under Paragraph 8(e).⁸⁸⁰

(d) *Annexure D, Paragraph 8(f): Intakes for the Turbines*

521. Pakistan argues that, under Paragraph 8(f) of Annexure D, intakes must be placed at the highest level reasonably available to India.⁸⁸¹ Pakistan recognizes that, unlike Paragraphs 8(d) and (e), Paragraph 8(f) does not commence with a default prohibition on intakes which, of necessity, will need to be below the Dead Storage Level.⁸⁸² Nevertheless, Paragraph 8(f) makes clear that the height of the intake in general, and any infringement on Dead Storage in particular, need to be justified by India.⁸⁸³
522. Pakistan observes that, unlike Paragraphs 8(d) and (e), Paragraph 8(f) specifies that the relevant “operation” its drafters had in mind is “the operation of the Plant as a Run-of-River Plant”.⁸⁸⁴ This, Pakistan says, requires India to design the intakes of its Annexure D, Part 3 HEPs to address

⁸⁷⁴ Pakistan’s Memorial, para. 10.76.

⁸⁷⁵ Pakistan’s Memorial, para. 10.77.

⁸⁷⁶ Pakistan’s Memorial, para. 10.78.

⁸⁷⁷ Pakistan’s Memorial, para. 10.79.

⁸⁷⁸ Pakistan’s Memorial, para. 10.79.

⁸⁷⁹ Pakistan’s Memorial, para. 10.80.

⁸⁸⁰ Pakistan’s Memorial, para. 10.79.

⁸⁸¹ Pakistan’s Memorial, para. 10.93.

⁸⁸² Pakistan’s Memorial, para. 10.93.

⁸⁸³ Pakistan’s Memorial, para. 10.93.

⁸⁸⁴ Pakistan’s Memorial, para. 10.94.

the issues with which Run-of-River HEPs must grapple, such as sediment ingress into the turbines.⁸⁸⁵ By requiring intakes to be located “at the highest level consistent with satisfactory and economical construction and operation”, Pakistan considers that the drafters of Paragraph 8(f) expressed a clear preference for a surface level intake situated high in the reservoir of an Annexure D, Part 3 HEP, as opposed to a submerged intake.⁸⁸⁶

523. Pakistan contends that Paragraph 8(f) strictly controls the height at which India may place the intake, which can be no lower than is permitted by the “customary and accepted practice of design for the designated range of the Plant’s operation”.⁸⁸⁷ Intakes must be able to draw on the entirety of an Annexure D, Part 3 HEP’s Operating Pool to generate power, a reality that necessitates placement of the bottom of the intake below the Dead Storage Level.⁸⁸⁸ However, in Pakistan’s view, the only factor to be taken into account is how far below the Dead Storage Level the intake’s invert must be to draw upon all of the Annexure D, Part 3 HEP’s Pondage; any other factor is irrelevant and must not be taken into account.⁸⁸⁹

2. India’s Position in the Permanent Indus Commission, the *Baglihar* Neutral Expert Proceedings, and the *Kishenganga* Arbitration

524. India’s position at the outset, as stated in the Commission, is that to the extent that Pakistan objects to a design on the basis of Paragraphs 8(d), (e), or (f) of Annexure D to the Treaty, India is under no obligation under the Treaty to substantiate its design to Pakistan.⁸⁹⁰ Rather, India considers that Pakistan bears the onus of substantiating any such objections to India’s designs “through calculations/numerical modelling”.⁸⁹¹

⁸⁸⁵ Pakistan’s Memorial, para. 10.95.

⁸⁸⁶ Pakistan’s Memorial, para. 10.96.

⁸⁸⁷ Pakistan’s Memorial, para. 10.100.

⁸⁸⁸ Pakistan’s Memorial, para. 10.131.

⁸⁸⁹ Pakistan’s Memorial, para. 10.131.

⁸⁹⁰ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 37, citing **PLA-0001**, Treaty, Annexure D, para. 10. See also **P-0548 (KR-0079)**, Dr. Michael JB Green, ‘Review of DHI’s Report, ‘Environmental Studies for Assessment of Impacts of Minimum Flow Releases’ dated 1 June 2013, para. 7; **P-0012**, Letter No. Y-20014/1/2015-16/2152 dated 16 July 2015, p. 2.

⁸⁹¹ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 37, citing **PLA-0001**, Treaty, Annexure D, para. 10. See also **P-0548 (KR-0079)**, Dr. Michael JB Green, ‘Review of DHI’s Report, ‘Environmental Studies for Assessment of Impacts of Minimum Flow Releases’ dated 1 June 2013, para. 7; **P-0012**, Letter No. Y-20014/1/2015-16/2152 dated 16 July 2015, p. 2.

(a) Annexure D, Paragraphs 8(d) and (e): Outlets and Spillways

525. India's contends that the requirements of "sound and economical design", "satisfactory operation" or "satisfactory construction and operation" are to have "over-riding consideration" in the design of outlet structures.⁸⁹² Accordingly, the design criteria outlined in Paragraphs 8(d) and (e) of Annexure D will be satisfied where the HEP comports "with sound and economical design and with satisfactory construction and operation of the works".⁸⁹³
526. In India's view, sound and economical design may require combining the functions of a spillway (under Paragraph 8(e)) and an outlet for the purpose of sediment management (under Paragraph 8(d)) into a submerged orifice spillway.⁸⁹⁴ Accordingly, Paragraphs 8(d) and (e) of Annexure D permit placement of orifice spillway-cum-sediment removal outlets below Dead Storage Level in so far as this is necessary for sediment control (including "keeping the intake relatively silt-free for conservation of live storage") and "any other technical purpose" (for example, passing design floods).⁸⁹⁵ India argues that it has the right to manage sediment within the means available, including through the use of an orifice spillway,⁸⁹⁶ and neither the Treaty nor the Awards of the *Kishenganga* Court prohibit dual-purpose orifice spillways or impose any restriction on the placement of orifices.⁸⁹⁷
527. India considers that "state-of-art" practice provides "that bottom outlets may be used for under-sluicing of floods, emptying of the reservoir, sluicing of sediments and preventing sediment from

⁸⁹² **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 59.

⁸⁹³ **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 32; **P-0057**, Letter No. 3/7/82-IT/1369 (with enclosure) dated 25 May 2007, pp. 6–7; **P-0079**, Letter No. 3/5/2007-IT/1974 (with enclosure) dated 11 January 2013, para. 5.

⁸⁹⁴ **P-0330**, Record of the 104th Meeting of the Permanent Indus Commission, 27 to 31 March 2010, p. 8.

⁸⁹⁵ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, paras. 7.52, 7.59; **P-0079**, Letter No. 3/5/2007-IT/1974 (with enclosure) dated 11 January 2013, para. 5; **P-0057**, Letter No. 3/7/82-IT/1369 (with enclosure) dated 25 May 2007, pp. 6–7; **P-0079**, Letter No. 3/5/2007-IT/1974 (with enclosure) dated 11 January 2013, para. 5; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 43. See also **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1 to 3 March 2022, para. 43.

⁸⁹⁶ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 33; **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 37.

⁸⁹⁷ **P-0079**, Letter No. 3/5/2007-IT/1974 (with enclosure) dated 11 January 2013, para. 5; **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 7.52; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 43. See also **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1 to 3 March 2022, para. 43.

entering intakes”.⁸⁹⁸ According to India, there is no literature to support Pakistan’s view that an orifice spillway can be used only for drawdown flushing and not for sluicing.⁸⁹⁹ Furthermore, India considers that, “since drawdown flushing is prohibited by the [*Kishenganga Court*], India cannot be restrained to exercise whatever options that remain available to her for sediment management”. India notes that, after the *Kishenganga* decision, sluicing remains the only feasible option for sediment management.⁹⁰⁰

528. In this respect, India observes that the *Kishenganga Court* has not prescribed any guidelines for fixing the elevation of low-level outlets.⁹⁰¹ Rather, the design of sediment outlets will depend on various parameters, including geology, layout, river morphology, and velocity generated.⁹⁰² India in particular relies on Clause 7.3 of the International Commission on Large Dams (“**ICOLD**”) Bulletin 115, which provides that the “ideal elevation of bottom outlets is at the original river-bed level, preferably not higher than the relative water depth 0.15 to 0.2 from the bed”.⁹⁰³ As such, India considers that where the height of the outlet is in accordance with Clause 7.3 of ICOLD Bulletin 115, or above that level, the outlet is in compliance with the provisions of the Treaty.⁹⁰⁴

(b) Annexure D, Paragraph 8(f): Intakes for the Turbines

529. With regard to Paragraph 8(f) of Annexure D, India’s position at the Commission is that the type and location of the power intake of a project is determined by hydraulics, topography, geology,

⁸⁹⁸ **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 7.52.

⁸⁹⁹ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 33; **P-0180**, Record of the 114th Meeting of the Permanent Indus Commission, 29 to 30 March 2018, para. 52.

⁹⁰⁰ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 27.

⁹⁰¹ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 37.

⁹⁰² **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 35.

⁹⁰³ **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 7, citing **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, (1999), Ch. 7.3(i); **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 32. See also **P-0548 (KR-0008)**, *Indus Waters Kishenganga Arbitration (Pakistan v. India)*, PCA Case No. 2011-01, Counter-Memorial of the Government of India dated 23 November 2011, para. 7.97; **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1 to 3 March 2022, para. 44.

⁹⁰⁴ **P-0082**, Letter No. 3/5/1007-IT/2043 (with enclosures) dated 11 September 2013, para. 7; **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 32; **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1 to 3 March 2022, para. 44.

techno-economics, and other factors that must be taken into consideration.⁹⁰⁵ In India's view, more often site conditions do not allow a shallow intake as a techno-economically feasible option.

530. For instance, India has stated at the Commission that, in accordance with the necessity of Pondage to meet load fluctuations, the power intake level will be fixed in accordance with the requirement of a minimum water seal below Dead Storage Level to ensure uninterrupted flow without formation of vortices and ingress of air into the tunnel.⁹⁰⁶ Calculating the minimum water seal between intakes and the Dead Storage Level must be in accordance with customarily accepted international practices/formulae.⁹⁰⁷

B. THE COURT'S ANALYSIS

531. The questions before the Court concern what is to be taken into account, and what is to be excluded, for the purposes of designing low-level outlets, gated spillways, and intakes for the turbines of an Annexure D, Part 3 HEP.⁹⁰⁸ These questions are inter-related and thus are dealt with together in this Part. Before turning to the individual Treaty provisions, several general points warrant consideration at the outset.

1. General Considerations

(a) *Relationship between Controllable Storage and Annexure D's Restrictions on Outlets, Spillways, and Intakes*

532. The Court notes at the outset that all three of these dam components—low-level outlets, gated spillways, and intakes for the turbines—are means by which water is passed from the reservoir over, through, or around the dam. As such, all three components are means by which a dam operator can potentially control water stored in the reservoir.⁹⁰⁹

⁹⁰⁵ **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 23.

⁹⁰⁶ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 40; **P-0051**, Record of the 92nd Meeting of the Permanent Indus Commission, 27 to 29 November 2004, para. 7; **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 23.

⁹⁰⁷ **P-0051**, Record of the 92nd Meeting of the Permanent Indus Commission, 27 to 29 November 2004, para. 7; **P-0057**, Letter No. 3/7/82-IT/1369 (with enclosure) dated 25 May 2007, p. 6.

⁹⁰⁸ Procedural Order No. 6, paras. 35(e)–(f).

⁹⁰⁹ See, e.g., **P-0490**, United States Bureau of Reclamation, "Design Standards No. 14: Appurtenant Structures for Dams (Spillway and Outlet Works) Design Standards" (2011), Ch. 1.5.2.

533. Given Pakistan’s deep concerns during the course of the Treaty negotiations as to the need to “let flow” the waters of the Western Rivers, it is understandable that the drafters gave considerable attention to the extent of India’s control over the waters contained in the reservoir behind a HEP dam. The Treaty contains no restriction as to the size of an Annexure D, Part 3 HEP on the Western Rivers;⁹¹⁰ it imposes no numeric limits on the overall height of the dam or on the overall amount of water that might be held behind it. India retains discretion in that regard. Yet, the drafters placed important restrictions upon the low-level outlets, gated spillways, and power intakes that would allow the dam operator to control water stored in the reservoir. Indeed, while Pakistan and India negotiated provisions on the existence and location of outlets in the dam that do not limit the total volume of storage, such provisions do minimize the volume of *controllable* storage. Pakistan and India agreed to do so in furtherance of a key element of the object and purpose of the Treaty,⁹¹¹ which was to address the vulnerability of Pakistan as the downstream riparian of a critical but shared natural resource.
534. The Annexure D, Paragraph 8 limitations on the maximum Pondage⁹¹² and on the building of works above Full Pondage Level that could artificially raise the water level,⁹¹³ which will be addressed in later Parts, are certainly important in restricting the controllable storage in the upper levels of the reservoir. Yet the volume of that controllable storage can pale in comparison to the volume of water contained in Dead Storage, and it is the limitations in this Part (on low-level outlets, gated spillways, and intakes for the turbines) that speak to India’s ability to control Dead Storage. By way of example, the Baglihar HEP has a gross storage capacity of nearly 400 MCM of water, much of which is controllable by way of the low-level outlets allowed by the *Baglihar* Neutral Expert.⁹¹⁴ As such, whether the Pondage at the Baglihar HEP is 32.5 MCM (as the *Baglihar* Neutral Expert concluded in the *Baglihar* Neutral Expert Proceedings) or is less than that (as Pakistan proposed), the threat to Pakistan arising from such Pondage is dwarfed by the threat arising from India’s ability to control most of the gross storage capacity at the dam, no matter how the Pondage is calculated. Indeed, when Pakistan’s expert was asked whether his “weaponization” scenarios based on the Baglihar HEP were driven mostly by Pondage or by the low-level orifices, he said that they were “driven by the low-level orifices and the volume of

⁹¹⁰ Special rules do apply with respect to Small Plants, which are not a subject of the disputes in these proceedings. See **PLA-0001**, Treaty, Annexure D, paras. 18–23.

⁹¹¹ See Part VIII.B, *supra*.

⁹¹² See Part XI.B, *infra*.

⁹¹³ See Part XII.B, *infra*.

⁹¹⁴ **PLA-0002**, *Baglihar* Determination, p. 10.

storage which is above that”.⁹¹⁵ Moreover, asked whether elimination of the Baglihar HEP low-level outlets but retention of the Pondage allowed by the *Baglihar* Neutral Expert would “radically alter the scenarios”, Pakistan’s expert confirmed that it would,⁹¹⁶ and further that “the pondage volumes ... are really insufficient to have a huge impact on weaponisation”.⁹¹⁷

535. Thus, the limitations on low-level outlets, gated spillways, and power intakes as contained in Annexure D, Paragraph 8, were of central significance in addressing Pakistan’s concerns during the Treaty negotiations as to India’s ability to impede the flow of the Western Rivers. Pakistan’s continued concerns today as to possible “weaponization” of the Western Rivers also directly relate to the limitations on these dam components, for they are central to India’s potential ability to release all the water contained in the reservoir above the lowest outlet along with sediment (and concomitantly, once released, to hold back a large volume of water when refilling the reservoir). Hence, while the Treaty limits the design of Annexure D, Part 3 HEPs with respect to the volume of Pondage, and also limits the retention of water above the Full Pondage Level, the most critical aspect in this regard concerns India’s potential ability to control the release of virtually all of the water from the reservoir, including the water *below* the Pondage.

(b) *Meaning of the Terms “Outlets”, “Spillways”, and “Intakes” in Annexure D, Paragraph 8, of the Treaty and their Interrelationship*

536. A threshold issue when interpreting Paragraph 8(d), (e), and (f) of Annexure D concerns what is meant by the terms “outlet”, “spillway”, and “intake” and the relationship among these features under the Treaty. None of these terms are defined in the Treaty. Nor does the Treaty expressly indicate that these paragraphs regulate components either in a mutually exclusive way or in a manner that is overlapping with respect to the same component.
537. Pakistan urges the Court to view “outlet” as a general term and to consider spillways and intakes as specific types of outlets. At the same time, Pakistan avoids any conflict among Paragraphs 8(d), (e), and (f) by positing that Paragraph 8(d)’s prohibition on outlets below Dead Storage Level “unless necessary” applies only to outlets located *entirely* below Dead Storage Level. Thus, on Pakistan’s reading of the Treaty, Paragraph 8(e) applies to crest-gated spillways located at or partially below Dead Storage Level, Paragraph 8(f) applies to power intakes extending partially below Dead Storage Level, and Paragraph 8(d) applies to all outlets (including spillways or

⁹¹⁵ Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 81:13–14.

⁹¹⁶ Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 81:19.

⁹¹⁷ Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 82:13–15.

intakes) located entirely below Dead Storage Level. In the alternative, Pakistan has indicated that it could agree with reading Paragraph 8(d) to apply to outlets entirely *or partially* below Dead Storage Level; but in that case, Pakistan considers that the Paragraph 8(d) would need to be applied cumulatively to gated spillways and intakes such that those components would need to satisfy the requirements of more than one paragraph.⁹¹⁸

538. To determine what is meant by the terms “outlet”, “spillway”, and “intake” and the relationship among these features under the Treaty, the Court begins, naturally, with the text of the Treaty. As a threshold matter, given that “outlet”, “spillway”, or “intake” are not defined terms, the Court presumes that these terms were intended to have their ordinary meaning as used in hydro-electric engineering at the time the Treaty was drafted. From its review of the engineering literature of that time, the Court observes that, occasionally, “outlet” was used very generically to refer to ways that water might pass over, through, or around the dam.
539. Yet, much more commonly, when explaining what is meant by a “spillway” or an “intake”, and the functions that they serve, such literature does not refer to them as “outlets” or as a type of “outlet”. The ordinary meaning in hydro-power engineering appears to have regarded “spillways” and “intakes” as terms used to describe discrete components of the dam that had unique aspects and functions, and that required particularized design, construction, and operation. For example, the term “intake” was used exclusively to refer to an intake for the turbines, not as a conduit for some other purpose. That understanding of a separateness is reinforced in the Treaty by the fact that the three components at issue are described in particular ways—“outlets below Dead Storage Level”, “gated spillways”, and “intakes for the turbines”—and are addressed in three separate sub-paragraphs of Paragraph 8 of Annexure D, which contain separate standards regulating their location in the dam and sometimes their size.
540. Other provisions of the Treaty, as context, reinforce the separateness of these components. In particular, Paragraphs 4(d), (e), and (g) of Appendix II to Annexure D, concerning the information to be provided by India in relation to the design of an Annexure D, Part 3 HEP, require separate details in respect of the “spillway”, “intake”, and “outlet works”, including in each instance with respect to their “size” and their “sill” or “crest” level in the dam, indicating that the Treaty drafters envisaged a structural distinction among these components.
541. Pakistan’s primary position is consistent with this threshold understanding that the three sub-paragraphs regulate three different types of components. Nevertheless, there is a difficulty with

⁹¹⁸ See Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 135:14–24.

Pakistan’s primary position, which interprets Paragraph 8(d) as applying only to outlets located entirely below Dead Storage Level. No such limitation is found in the text of Paragraph 8(d), which simply says that “[t]here shall be no outlets below Dead Storage Level, unless necessary for sediment control or any other technical purpose”. The ordinary meaning of this text embraces a prohibition on all elements of the outlet and therefore is best interpreted as prohibiting an outlet any part of which is located below Dead Storage Level. Further, given that the objective in Article III and Annexure D, as elaborated in Part VIII.B, was to “let flow” the waters of the Western Rivers—allowing India control of the Operating Pool but not of Dead Storage of a Run-of-River HEP—that objective is best served by interpreting Paragraph 8(d) as prohibiting outlets located even partially below the Dead Storage Level, as such outlets allow for control of Dead Storage.

542. There are also difficulties with Pakistan’s secondary position, which is to interpret the Treaty to have an overlapping of the sub-paragraphs. On this secondary position, the Treaty is interpreted so that Paragraph 8(d) regulates “spillways” and “intakes” as sub-types of “outlets”, in addition to the regulation of those components by Paragraphs 8(e) and (f) respectively. This secondary position is in tension with the interpretation of the text and context indicated above,⁹¹⁹ as it blurs the separateness of the three sub-paragraphs and the components regulated. In explaining why this secondary position is not persuasive, the Court finds it convenient to focus, *first*, on whether the Treaty favors an overlap of regulation between Paragraphs 8(d) and (f), and *second*, on whether it favors an overlap of regulation between Paragraphs 8(d) and (e).
543. *First*, Pakistan’s interpretation would require interpreting both Paragraphs 8(d) and (f) as simultaneously regulating a power intake. By its terms, Paragraph 8(d) imposes a very strict prohibition on outlets below Dead Storage Level, subject only to the exception “unless necessary for sediment control or any other technical purpose”. Yet every HEP will necessarily have a power intake; indeed, the power intake is a central feature of any HEP, being the conduit that enables the generation of any power at all. Moreover, every power intake will necessarily be located at least partially below Dead Storage Level, otherwise it could not take full advantage of the pondage. Accordingly, on Pakistan’s interpretation, every HEP would have an “outlet” (in the form of the power intake) located at least partially below Dead Storage Level and subject to Paragraph 8(d). The Court considers it very unlikely that the drafters of the Treaty would have envisaged the ubiquitous component of a power intake as subject to the *prohibition* on outlets below Dead

⁹¹⁹ See paras. 536–538540, *supra*.

Storage Level in Paragraph 8(d), made justifiable only on the basis of an exception as “any other technical purpose”.

544. Further, the standards set forth in Paragraphs 8(d) and (f) are different, while concomitantly expressing a certain amount of repetition with respect to the issues being addressed. Both refer to the component being “located at the highest level”, both refer to “sound and economical design”, and both refer to “satisfactory” operation of the works. Such repetition is suggestive of two different standards being applied (one to power intakes and one to other low-level outlets), rather than of an initial standard and a supplementary standard applicable to the same feature. Indeed, it is difficult to see what additional restriction Paragraph 8(f) (requiring intakes to be located at the highest level) would add to the restriction already applicable in Paragraph 8(d) (requiring outlets to be of minimum size and located at the highest level) if the two provisions were intended to apply simultaneously. The principle of *effet utile* (“useful effect”) in treaty interpretation dictates that a treaty should be read to give meaning and effect to each of its provisions.⁹²⁰ Application of this principle leads the Court away from an interpretation that would subject a power intake to both Paragraphs 8(d) and (f), while rendering the latter effectively redundant.
545. Finally, while the negotiating history of the Treaty provides no definitive guidance, it is noted that the progenitor of Paragraph 8(f) made its first appearance as Paragraph 3(c) of Annexure B of the September 1959 Heads of Agreement (albeit without the ending phrase “and with customary and accepted practice of design for the designated range of the Plant’s operation”).⁹²¹ In that Heads of Agreement, there was no progenitor of Paragraph 8(d); indeed, at that point in the negotiations, Pakistan appears to have opposed any outlets other than power intakes and ungated spillways.⁹²² Thus, at a point before the text of Paragraph 8(d) was developed, the progenitor of Paragraph 8(f) was addressing the location of the power intake *anywhere* in the dam. Paragraph 8(d) appears for the first time in the 23 April 1960 draft, with no change to Paragraph 8(f).⁹²³ A reasonable understanding of this sequence of events is that Paragraph 8(f)’s regulation of power intakes remained as it had been before—regulating power intakes located anywhere in the dam—while the new Paragraph 8(d) opened the door to other outlets below Dead Storage Level in strictly

⁹²⁰ See para. 272, *supra*.

⁹²¹ See **P-0136**, Heads of Agreement dated 15 September 1959, Annex B, para. 3(c).

⁹²² See **P-0365**, Letter from Mr. Mueenuddin to Mr. W. A. Sheikh (with enclosures) dated 17 August 1959, p. 7. At the same time, the Heads of Agreement produced by the World Bank in September 1959 contemplated that India would share design information “spillway gates”: See **P-0136**, Heads of Agreement dated 15 September 1959, Annex B, Appendix I, para. 4(d).

⁹²³ See **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960.

constrained circumstances. Further, at a later stage, Paragraph 8(f)'s ending phrase was added ("and with customary and accepted practice of design for the designated range of the Plant's operation"), to some degree mimicking a standard that had been developed for Paragraph 8(d) and now seen as pertinent for Paragraph 8(f) as well.

546. All told, such history suggests that Pakistan always recognized that a HEP must have power intakes, but it wanted them placed as high as possible in the dam, pursuant to language now captured in Paragraph 8(f). Pakistan initially opposed any other outlets except ungated spillways, but it ultimately relented on condition that those other outlets would be allowed only when "necessary". This outcome resulted in separate standards for "outlets" located partially or entirely below Dead Storage Level (Paragraph 8(d)) and for power intakes wherever located (Paragraph 8(f)).
547. *Second*, it might appear logical to adopt the same conclusion just reached to determine that Paragraphs 8(d) and (e) of Annexure D do not both regulate "spillways". In other words, if "outlets" and "intakes" should be understood as distinct concepts and regulated separately by Paragraphs 8(d) and (f), then consistency might suggest that "outlets" and "spillways" should likewise be understood as distinct concepts. There is nothing in the text of the Treaty that would suggest a different approach.
548. In the Court's view, however, a difficulty immediately arises when such an approach is considered in the context of the deep orifice spillways that feature prominently in the current disagreements between the Parties in the Commission. If any gated spillway, regardless of where in the dam it is located, is regulated only by Paragraph 8(e) of Annexure D, then a deep orifice spillway, located potentially far below Dead Storage Level, would be subject only to the requirement that the bottom of its gates be located "at the highest level", and not to Paragraph 8(d)'s prohibition on such openings "unless necessary". And any outlet could arguably be excused from the strict conditions of Paragraph 8(d) simply by ascribing to it, at least in part, the name of a "spillway". As set out above, the Court considers the restriction on openings entirely or partially below Dead Storage Level to be a foundational element of the Treaty and an essential part of Pakistan's agreement to a Treaty that would permit hydro-electric development by India on the Western Rivers. It makes little sense to interpret the Treaty to have a strict prohibition on outlets below Dead Storage Level "unless necessary", while simultaneously making that prohibition inapplicable to the large orifice spillways that would give India the greatest capacity to control waters below Dead Storage Level.

549. The resolution of this paradox is to be found in greater consideration of what is meant by the word “spillway” in the Treaty and, in particular, the state of the art at the time the Treaty was concluded. Having considered the engineering literature, the Court notes that—in 1960—a spillway was generally understood as a surface structure, located at the crest of the dam. The 1950 edition of W. P. Creager and J. D. Justin’s *Hydro-Electric Handbook*, for instance, catalogs the different types of spillways (side-channel spillways, saddle spillways, chute spillways, shaft spillways, and so on), which were located as surface structures at the crest of the dam, open to the air, with water rising and “spilling” over the crest as the flow of the river increased.⁹²⁴ By contrast, Creager and Justin make no mention of orifice spillways. They do recognize the possibility of gated sluices located at a low level in the dam, but they note that these will normally be of a “relatively small measure” and, importantly, they do not categorize them as a form of spillway.⁹²⁵ This understanding of “spillways” being located only at the crest of the dam is hardly surprising given that advancements in gate technology that would permit the creation of large orifice spillways emerged only after the adoption of the Treaty.⁹²⁶ This historical consideration suggests that the drafters of Paragraph 8(e) likely considered a “spillway” for the purposes of Paragraph 8(e) as limited to a *crest*-gated spillway, being the only type of gated spillway in common usage at the time. It is likely for this reason that the “spillway” information India is required to share with Pakistan under Annexure D, Appendix II, calls for sharing the “crest level” of the spillway, as well as the “top level of spillway gates”.⁹²⁷
550. Support for this interpretation can be found elsewhere in the context of the Treaty. Annexure E regulates the construction by India of Storage Works on the Western Rivers. It includes at Paragraphs 11(e), (f), and (g) restrictions that parallel, albeit in different terms, the restrictions in Paragraphs 8(d), (e), and (f) of Annexure D. Here, however, the particular character of a Storage Work is relevant. Filling of an Annexure E Storage Work is limited to a defined period in the high flow season (unless otherwise agreed), and the Storage Work must otherwise pass downstream the same flow received upstream, except for Flood Storage (where a Storage Work includes a powerplant, this requirement is implemented on a seven-day basis).⁹²⁸ Given that an Annexure E Storage Work must be able to comply with this requirement at any reservoir level (including when

⁹²⁴ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), pp. 494–530.

⁹²⁵ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 504.

⁹²⁶ **P-0314**, ICOLD, “Bulletin 58”, *Spillways for Dams* (1987), p. 95.

⁹²⁷ **PLA-0001**, Treaty, Annexure D, Appendix II, para. 4(d).

⁹²⁸ **PLA-0001**, Treaty, Annexure E, para. 22(b).

depleted to Dead Storage Level), the openings necessary to pass this flow must necessarily be located at a low level (at Dead Storage Level). In other words, Annexure E requires that provision be made to pass the incoming flow through low-level openings of the type that, in modern parlance, would likely be referred to as “orifice spillways”. But Annexure E does not use such language. Rather, Paragraph 11(e) refers to such features—which are expressly intended “to deliver into the river downstream the flow of the river received upstream of the Storage Work”—as “outlets”.⁹²⁹

551. In light of this text and context, the Court concludes that Paragraph 8(d) of Annexure D applies to openings (other than crest-gated spillways and intakes) located entirely or partially below Dead Storage Level, while Paragraph 8(e) of Annexure D applies to crest-gated spillways.⁹³⁰ An orifice spillway located entirely or partially below Dead Storage Level (more commonly used today in dam engineering) is, in Treaty parlance, an “outlet”, irrespective of the post-1960 evolution in technology (and terminology) and irrespective of its purpose in the passing of a flood. Such an orifice spillway is subject to Paragraph 8(d) and is prohibited “unless necessary for sediment control or any other technical purpose”.

552. Accordingly, the Court concludes that in Annexure D of the Treaty:

- (a) Paragraph 8(d) on low-level “outlets” refers to openings that are located partially or entirely below Dead Storage Level, including outlets that might be colloquially referred to today as orifice spillways; it does not refer to crest-gated spillways or intakes for the turbines;
 - (b) Paragraph 8(e) on “a gated spillway” refers to crest-gated spillways, (i.e., spillways located at the crest of the dam structure); and
 - (c) Paragraph 8(f) on “intakes for the turbines” refers to such intakes wherever located.
- (c) ***Relationship between HEP Engineering Best Practices and Annexure D’s Limitations on Outlets, Spillways, and Intakes***

553. Paragraphs 8(d), (e), and (f) each place significant limitations on the use and placement of low-level outlets, gated spillways, and power intakes. These limitations must be read against the

⁹²⁹ PLA-0001, Treaty, Annexure E, para. 11(e).

⁹³⁰ Though not common as a matter of HEP engineering, the Court notes that the restrictions of Paragraph 8(e) would apply as well to an orifice-type spillway designed to be entirely above Dead Storage Level, even if the top level of its gates are below Full Pondage Level.

backdrop of the object and purpose of the Treaty as it relates to the Western Rivers⁹³¹ and of the overall approach to be taken when interpreting Article III and Annexure D, Part 3. That approach is to acknowledge: (1) a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use; (2) there are certain specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power; (3) that exception is to be strictly construed, in the sense that it does not permit India to generate hydro-electric power on the Western Rivers based on what might be the ideal or best practices approach for engineering a run-of-river HEP but, rather, only allows the design and operation of Run-of-River HEPs that hew strictly to the requirements set forth in Article III and Annexure D, Part 3; (4) yet those requirements cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with Treaty; and (5) in furtherance of the Treaty’s objective and obligations of mutual cooperation, any questions concerning the balance in these rights and obligations are to be identified through the Treaty’s procedures for notification and objection, and addressed through the Treaty’s procedures for resolving such questions.⁹³²

554. Of particular note, Paragraphs 8(d), 8(e), and 8(f) do *not* refer to the use or placement of their respective dam components by reference to engineering best practices, such as seeking maximum efficiency or power output for the HEP. Rather, they depart from prevailing HEP engineering principles and practices, so as to contain specific directions as to the existence, size, and/or location of low-level outlets, gated spillways, and power intakes. These limitations generally either prohibit the component or seek to place it at the “highest level” in the dam, consistent with “sound and economical design” or “satisfactory operation” or “satisfactory construction” of the HEP. Such limitations, again, must be seen in light of the object and purpose of the Treaty to address Pakistan’s vulnerability, as placing of the components at the “highest level” reduces the volume of water in the reservoir that India may control.
555. As such, when designing an Annexure D, Part 3 HEP, it is necessary, first, to focus on the limitations expressed in these provisions and, only second, *within those limitations*, to consider prevailing HEP engineering principles and practices for the design of a run-of-river HEP. As the *Kishenganga* Court indicated, “the optimal design and operation of a hydro-electric plant is that which can be practically achieved within the constraints imposed by the Treaty”.⁹³³ References to

⁹³¹ See Part VIII.B.1, *supra*.

⁹³² See Part VIII.B.2, *supra*.

⁹³³ **PLA-0003**, *Kishenganga* Partial Award, para. 522.

“sound design”, “satisfactory operation”, or “satisfactory construction” are not escape clauses to avoid compliance with the primary restrictions contained in these paragraphs.

556. Moreover, when considering as a second step “sound design”, “satisfactory operation”, or “satisfactory construction”, reference cannot be limited to the HEP engineering practices developed solely by one or the other Party. These provisions of Paragraph 8 are not limited in that way; rather, they are to be interpreted as requiring reference to prevailing HEP engineering principles and practices followed by States generally, most notably those published by ICOLD. Those principles and practices, however, must only be considered and applied in light of the limitations imposed by the Treaty.
557. While the discussion below addresses each of the types of openings at issue in Paragraphs 8(d), (e), and (f), consideration of the limitations established in those paragraphs must necessarily play a role in India’s decision as to where to locate a HEP on the Western Rivers. Site location and design are affected by a wide variety of factors, including the hydrology of the river at a possible site, the width of the valley, the location of human settlements, effects on the environment, and so on. Yet, under the force of the Treaty, one of the factors for site location must be whether a dam at a possible site can be designed, constructed, and operated in a manner consistent with the Treaty. Thus, selection of a site that requires a design feature—such as drawdown flushing—that is not permitted under the Treaty, is not permissible.⁹³⁴ Equally, a site or design (such as a high dam with a large reservoir that will entail difficulties in controlling sediment) should not be selected if that requires a feature—such as a low-level outlet—that is disfavored under the Treaty, when there exists a comparable site or alternative design that does not require such a feature. In short, India cannot select a site or design that artificially results in conditions that require features for the HEP that are either prohibited or disfavored under the Treaty and then invoke those circumstances as grounds to avoid the restrictions set out in the Treaty.

(d) *Relationship between the Standards Expressed in Annexure D’s Restrictions on Outlets, Spillways, and Intakes*

558. Finally, as just noted, Paragraphs 8(d), (e), and (f) each contain separate standards that impose limitations on low-level outlets, gated spillways, and power intakes. While these standards are separate, they sometimes use terms in common and sometimes with variations. Thus, when

⁹³⁴ See **PLA-0003**, *Kishenganga* Partial Award, para. 33 (indicating that the *Kishenganga* Court’s conclusion that the Treaty prohibits drawdown flushing not only addresses the Kishenganga Plant, but also “goes to the question of whether a particular site will be available as a practical matter to India for hydro-electric development”).

expressing the limitations: all three paragraphs refer to “highest level”; Paragraphs 8(d) and (e) both refer to “sound and economical design”, while 8(f) refers to “customary and accepted practice of design”; and Paragraph 8(d) refers to “satisfactory operation of the works”, while Paragraph 8(e) refers to “satisfactory construction and operation of the works” and Paragraph 8(f) refers to “satisfactory and economical construction and operation of the Plant”.

559. The Court regards use of the exact same terms or phrases across these paragraphs as intended by the Treaty drafters to convey the same meaning, while variations or the absence of terms or phrases are intended to convey different meanings. As such, in the analysis below, the use in all three paragraphs of limitations with similarities and differences warrants interpreting each paragraph with an eye to the terms used, not used, and varied in the other two paragraphs.

2. Low-level Outlets

560. This Section concerns what is to be taken into account, and what is to be excluded, for the purposes of including a low-level outlet in the design of an Annexure D, Part 3 HEP. The *chapeau* of Paragraph 8 of Annexure D provides that “the design of any new Run-of-River Plant ... shall conform to the following criteria”. Then, Paragraph 8(d) of Annexure D provides:

There shall be no outlets below the Dead Storage Level, unless necessary for sediment control or any other technical purpose; any such outlet shall be of the minimum size, and located at the highest level, consistent with sound and economical design and with satisfactory operation of the works.⁹³⁵

561. Thus, the *chapeau* makes clear that the sub-paragraphs to follow are addressing the “design” of Run-of-River Plants, the ordinary meaning of which entails the conceptual planning of the HEP features on paper (i.e., rendering it as part of a technical drawing), with the intent and expectation that the HEP will be constructed and operated in accordance with that plan. Paragraph 8(d) focuses on one particular aspect of that design.
562. As concluded in the general considerations above, Paragraph 8(d) regulates outlets located partially or entirely below Dead Storage Level. Further, Paragraph 8(d) imposes a significant threshold prohibition on such outlets, by commencing with the phrase: “There shall be no outlets below the Dead Storage Level”. As noted below, this provision goes on to identify an exception, but the provision at the outset sets a default position, or starting point, when considering whether to include outlets in the dam, which is that any outlets below Dead Storage Level are prohibited, and thus, should only be located above Dead Storage Level. The reason for this prohibition is to

⁹³⁵ PLA-0001, Treaty, Annexure D, para. 8(d).

prevent the dam operator from being able to control the waters held in Dead Storage, the only category of storage in either Annexure D or E that is unrestricted in volume.⁹³⁶ In short, the lower that a low-level outlet is located in the dam, the greater control India possesses over releasing water from the dam (and concomitantly in holding water back when filling up the dam).

563. As noted earlier, the prohibition expressed in Paragraph 8(d) must be read against the backdrop of the overall approach to be taken when interpreting Article III and Annexure D, Part 3.⁹³⁷ India's ability to store and control waters on the Western Rivers was a critical issue that the Treaty addresses in considerable depth, so as to allow for complete and satisfactory utilization of the waters of the Indus system of rivers, but also to ensure that India would "let flow" the waters of the Western Rivers for Pakistan's "unrestricted use" except for certain specified Indian uses. In particular, it is recalled that Article III(4) provides: "Except as provided for in Annexures D and E, India shall not store any water of, or construct storage works on, the Western Rivers".⁹³⁸ The objective in these provisions is to oblige India to "let flow" the waters of the Western Rivers, and only to store and control waters of the Western Rivers within the specific limitations set forth in Annexure D. In this instance, Paragraph 8(d) generally prohibits outlets below Dead Storage Level subject to an exception, but that exception is to be strictly construed.⁹³⁹
564. The exception to the prohibition set forth in Paragraph 8(d) permits an outlet below Dead Storage Level if "necessary" for one of two purposes: (1) "sediment control" or (2) "any other technical purpose". The *Kishenganga* Court, quite properly, interpreted the term "necessary" as used generally in the Treaty as describing an action that is *required*, *needed*, or *essential* for a particular purpose.⁹⁴⁰ That interpretation, the *Kishenganga* Court found, did not "reduce necessity to a mere test of what is desirable, nor does it become a self-judging matter for India alone to evaluate".⁹⁴¹ Rather, it entails both Parties' consideration of what is objectively required, needed, or essential in context.

⁹³⁶ It is recalled that "Dead Storage Level" is defined in the Treaty as "that portion of the storage which is not used for operational purposes". **PLA-0001**, Treaty, Annexure D, para. 2(a); see **PLA-0003**, *Kishenganga* Partial Award, para. 505 ("Dead Storage is ... qualitatively different and was understood to be truly 'dead'—an area to be filled once, and not thereafter subject to manipulation").

⁹³⁷ See Part VIII.B.2, *supra*.

⁹³⁸ **PLA-0001**, Treaty, Art. III(4) (citations omitted).

⁹³⁹ See Part VIII.B.2, *supra*.

⁹⁴⁰ **PLA-0003**, *Kishenganga* Partial Award, para. 397. In this context, the *Kishenganga* Court interpreted the term "necessary" as it appears in Annexure D, Paragraph 15(iii), which addresses diversion of water from one tributary, "if necessary", into another tributary.

⁹⁴¹ **PLA-0003**, *Kishenganga* Partial Award, para. 398.

565. With respect to sediment control,⁹⁴² low-level outlets are capable of serving four potential purposes:
566. *First*, a low-level outlet could—in the absence of the Treaty—be used to draw down the reservoir in an effort to flush sediment from the reservoir.⁹⁴³ The *Kishenganga* Court, however, found that such drawdown flushing was impermissible for sediment control at the KHEP and at future Run-of-River HEPs on the Western Rivers because, under the force of Paragraph 14 of Annexure D,⁹⁴⁴ “[e]xcept in the case of an unforeseen emergency, the Treaty does not permit reduction below Dead Storage Level of the water level in the reservoirs of Run-of-River Plants on the Western Rivers”.⁹⁴⁵ While the *Kishenganga* Court’s conclusion was operational in nature (i.e., that the Treaty does not permit the reduction of waters below Dead Storage Level through drawdown flushing), there are collateral consequences of that operational prohibition for the design of an Annexure D, Part 3 HEP. Paragraph 8(d) only allows low-level outlets that are necessary for *permissible* sediment control; given that a low-level outlet cannot be used for drawdown flushing, the dam cannot be designed to have an outlet for such a purpose.⁹⁴⁶
567. *Second*, a low-level outlet could be considered for the purpose of addressing—without drawdown—sediment deposits, which in the long-term can affect the functionality of the power

⁹⁴² For a discussion of sediment as an element of any watercourse and its effects on a HEP, see **PLA-0003**, *Kishenganga* Partial Award, paras. 496–99.

⁹⁴³ Drawdown flushing is a process by which the river flow itself is used to remove accumulated sediment. See **PLA-0003**, *Kishenganga* Partial Award, para. 502:

In a flushing operation, sediment deposits are eroded and expelled by the flow of water through the reservoir, typically by drawing the water level in the reservoir down to a level at (or near) the reservoir bottom. ... The effects of flushing without any drawdown of the reservoir are generally limited to a narrow cone in the immediate vicinity of the outlet and such an approach is typically used only to clear the area surrounding the intake of a hydro-electric plant.

⁹⁴⁴ **PLA-0001**, Treaty, Annexure D, para. 14, by cross-reference to Annexure E, para. 19, provides that “Dead Storage shall not be depleted except in an unforeseen emergency”.

⁹⁴⁵ **PLA-0003**, *Kishenganga* Partial Award, Pt. V (Decision), B(1). The *Baglihar* Neutral Expert reached a contrary conclusion, finding that depletion of the reservoir below Dead Storage Level was permitted under the Treaty. The *Kishenganga* Court rejected that conclusion. In so doing, the *Kishenganga* Court concluded that such a prohibition did not render Indian Run-of-River HEPs impractical or exposed them to an uneconomically short project life, given the other methods available for sediment control, such as sediment sluicing. **PLA-0003**, *Kishenganga* Partial Award, paras. 517–522.

⁹⁴⁶ The *Kishenganga* Court acknowledged this connection between operational and design requirements, when it said that “in many instances the Treaty does not simply restrict the Parties from taking certain actions, but also constrains their entitlement to *construct works* that would enable such actions to be taken”: **PLA-0003**, *Kishenganga* Partial Award, para. 506 (emphasis added). The Court further said it was “cognizant that changes to the *design* of the [KHEP] project may be required to optimize the management of sediment in light of this Partial Award”: **PLA-0003**, *Kishenganga* Partial Award, para. 522, n. 739 (emphasis added).

intakes and encroach on the volume of the Operating Pool. Thus, even without engaging in drawdown flushing, a low-level outlet could be used for “pressure flushing”, which seeks to flush sediment from the reservoir while maintaining the water volumes in the reservoir. Pressure flushing, however, will normally only scour sediment from the immediate vicinity of the outlet, creating a “scour cone”, and has limited ability to preserve reservoir capacity further upstream.

568. *Third*, given its localized effects, pressure flushing with a low-level outlet could be used solely for the purpose of keeping sediment out of the power intake, such as by placing the outlet immediately below the power intake. Doing so reduces the passing of sediment through the turbines, and minimizes damage to the turbines from abrasion.⁹⁴⁷
569. *Fourth*, a low-level outlet could be used for the sluicing of sediments, whereby sediment-laden flows are passed through the reservoir without the sediment having a chance to settle out of suspension. A low-level outlet, however, is not always essential for sediment sluicing, which can often be accomplished instead with a crest-gated spillway.⁹⁴⁸
570. Drawdown flushing is prohibited by the Treaty, so a low-level outlet for that purpose is impermissible. In principle, a low-level outlet for one of the other three purposes might be permissible. Yet, considering other available methods of sediment control, it will often not be “necessary” to have a low-level outlet for one of these other purposes. As set out in Part IX.D above, there are several ways of preventing or managing sediment accumulation in the reservoir of an Annexure D, Part 3 HEP without using a low-level outlet, including:⁹⁴⁹
- (a) sediment sluicing by means of a crest-gated spillway, which is fully opened during the high flow season to pass sediment before it settles in the reservoir;
 - (b) a desander, whereby a structure is constructed between the intake and the headrace to the turbines, enabling sediment to settle from the water before it enters the tunnel to the turbines;

⁹⁴⁷ See **P-0523**, D. Felix et al., “Hydro-abrasive erosion of hydraulic turbines caused by sediment - a century of research and development” (2016) 49(12) IOP Conference Series: Earth and Environmental Science, Ch. 2.

⁹⁴⁸ In certain reservoir configurations, a low-level outlet could also be used for venting density currents of sediment through the reservoir. Whether this could be a feasible option, however, is highly dependent on the specifics of the site and reservoir.

⁹⁴⁹ For a discussion of controlling sediment in relation to a HEP, see Part IX.D, *supra*; **PLA-0003**, *Kishenganga Partial Award*, paras. 500–502; **P-0530**, ICOLD, “Bulletin 115”, *Dealing with Reservoir Sedimentation*, 1999.

- (c) bypass tunnels (or channels), whereby a tunnel or channel is installed upstream of the dam to divert sediment-laden flows around the dam;
- (d) off-river storage of sediment-free water, whereby such water is diverted from the river into a storage area, and then enters the power intake; or
- (e) periodic sediment removal from the reservoir by dredging.⁹⁵⁰

571. For example, if sediment sluicing through the use of a crest-gated spillway is sufficient for sediment management,⁹⁵¹ then a low-level outlet is not necessary for sediment control. Where those other methods are available to address sediment and are equally effective (or where use of a low-level outlet is only marginally⁹⁵² more effective), then an outlet for such purpose is not “necessary”.
572. The exception identified in Paragraph 8(d) is not limited to sediment control; it is also applicable to outlets for “any other technical purpose”, which means a purpose relating to the operation of the HEP. By contrast, a “technical purpose” for an outlet below the Dead Storage Level does not include an outlet for purposes unrelated to the operation of the HEP, such as diverting water for Domestic Use or irrigating fields adjacent to the HEP.
573. An example of a technical purpose for an outlet located below Dead Storage Level might be to assist in the passing of the design flood. To that end, an orifice spillway could be permitted where conditions at the site make it impossible to pass the design flood using only ungated or crest-gated spillways. An orifice spillway, however, would be permitted only to the extent that it was necessary to supplement spillways located at the crest of the dam. To pass a design flood, openings higher in the dam, such as ungated spillways or crest-gated spillways, are normally required and may be sufficient, in which case an orifice spillway would not be necessary.
574. The Court notes that, in discussions within the Commission, India has frequently argued for the use of deep orifice spillways to serve the dual purpose of sluicing sediments and passing the design flood, which India considers to be a “state-of-art” practice.⁹⁵³ While any HEP would need

⁹⁵⁰ See, e.g., **PHM-0005**, Hearing Presentation, Dr. Gregory Morris, (Himalayan Run-of-River Design and Operation - An Engineering Perspective), 11 July 2024, slides 34–52.

⁹⁵¹ **P-0530**, ICOLD, “Bulletin 115”, Dealing with Reservoir Sedimentation, 1999, Ch. 3.1.

⁹⁵² See **PLA-0003**, *Kishenganga* Partial Award, para. 398 (“The Court can imagine situations in which the benefits of including the diversion of water within the scheme of a Run-of-River Plant would be so marginal that such a diversion could not fairly be termed ‘necessary.’”).

⁹⁵³ See paras. 526–527, *supra*.

to be evaluated individually, the Court notes that this argument, by itself, would not appear to satisfy the “necessary” requirement of Paragraph 8(d), nor would combining functions within a single outlet avoid the need to consider the necessity of each proposed function. To justify a low-level outlet for both sediment control and passing the design flood, India would need to establish both that sediment could not adequately be addressed without a low-level outlet and that the design flood could not be passed using ungated or crest-gated spillways. Any potential cost savings from combining functions within a single outlet would not form part of the evaluation of whether such an outlet is necessary.

575. Assuming that it is “necessary” to have a low-level outlet for sediment control or any other technical purpose, then Paragraph 8(d) goes on to provide that “any such outlets shall be of the minimum size, and located at the highest level, consistent with sound and economical design and with the satisfactory operation of the works”. The purpose of limiting the outlet to being of a “minimum size” is to reduce the amount of water that India can discharge quickly through the dam. Limiting the depth of the outlet reduces India’s ability to control the water in Dead Storage. Both limitations on a low-level outlet, if one is found necessary, are consistent with the “let flow” element of the object and purpose of the Treaty. Consistent with the general approach to interpreting Annexure D, Part 3, they are exceptions that should be strictly construed.⁹⁵⁴ Thus, if an outlet is necessary, the starting point for considering its characteristics is that it “shall be” of a “minimum size” and located “at the highest level”.⁹⁵⁵ The starting point is not to apply HEP engineering principles and practices that, absent the Treaty, might lead to a large outlet or lead to an outlet deep in the dam.
576. At the same time, the size and location of the low-level outlet is to be “consistent with sound and economical design and with satisfactory operation of the works”. Each of those limitations bears

⁹⁵⁴ See Part VIII.B, *supra*.

⁹⁵⁵ The Court notes that Annexure E on Storage of Waters by India on the Western Rivers contains two analogous provisions for Storage Works, which favor locating all outlets “at the highest level consistent with sound and economical design and with satisfactory operation” of the work, as well as restricting outlets below Dead Storage Level to be of “the minimum size” and “located at the highest level” consistent with such conditions. See **PLA-0001**, Treaty, Annexure E, paras. 11(e)–(f):

- (e) Outlets or other works of sufficient capacity shall be provided to deliver into the river downstream of the flow of the river received upstream of the Storage Work, except during freshets or floods. These outlets shall be located at the highest level consistent with sound and economical design and with satisfactory operation of the storage work.
- (f) Any outlets below the Dead Storage Level necessary for sediment control or any other technical purpose shall be of the minimum size, and located at the highest level consistent with sound and economical design and with satisfactory operation of the Storage Work.

some analysis, as they are not meant to undo the overall prohibition on low-level outlets or diminish the requirement of minimum size and highest level. The ordinary meaning of “design”, as previously indicated with respect to the *chapeau* of Paragraph 8, entails the conceptual planning of the low-level outlet on paper, with the intent and expectation that the outlet will be constructed and operated in accordance with that plan.

577. The ordinary meaning of “sound” design is that, when designing the minimum size and highest level of the low-level outlet, the design should avoid a low-level outlet that is defective or flawed, thereby preventing the outlet from functioning as it should. Further, the reference to “sound” design implies an application of customary and accepted practices, or “best practices”. At the same time, Paragraph 8(d) is not licensing India to follow whatever best practices for designing HEPs may exist in the absence of the Treaty, whether they be global best practices or practices that India has developed domestically. The default position and limitations on the exception found in Paragraph 8(d) must first be applied. That said, *if* a low-level outlet is necessary, then any judgment in determining the size and location of a low-level outlet must apply the standards of Paragraph 8(d), and in doing so take account of prevailing HEP engineering practices and principles. Nevertheless, those principles and practices must be applied in the context of designing for a minimum size and highest level of the outlet as required by Paragraph 8(d).
578. The ordinary meaning of “economical” design is that, when designing the minimum size and highest level of the low-level outlet, the design should be for an outlet that is efficient in achieving its function. In other words, the size and location should maximize the low-level outlet’s productivity in sediment control, taking into account technological developments, while still observing the primary directive of Paragraph 8(d) that any such outlet should be of the minimum size and located at the highest level. It is noted that “economical design” in Paragraph 8(d) is not addressing the cost of constructing or operating the low-level outlet. Paragraph 8(f) does speak to “economical construction and operation”, but that formula is absent in Paragraph 8(d). Thus, when designing a low-level outlet so as to be of the minimum size and at the highest level, factors such as the cost of constructing or operating the low-level outlet are not to be taken into account.
579. The very last clause of Paragraph 8(d), however, does turn to the issue of “operation”, saying that the size and location of the low-level outlet shall be consistent with the “satisfactory operation of the works”. In this context, the ordinary meaning of “satisfactory operation” entails that the design for the minimum size and highest level of the low-level outlet must cohere with the suitable and workable operation of the HEP as a whole once it has been constructed.

580. The application of these standards of “sound and economical design” and “satisfactory operation of the works” in the context of a low-level outlet at a specific HEP invites highly technical design questions, the answers to which may not be self-evident and likely will require the careful judgment of highly-experienced engineers. As such, in accordance with Paragraphs 9 through 11 of Annexure D and the Treaty’s overarching obligation of mutual cooperation,⁹⁵⁶ India must not only assess the available options when considering the necessity of low-level outlets, but must explain its rationale in choosing among the available options so that Pakistan can raise timely and informed objections.
581. The practice of the Parties in the application of the Treaty evinces no agreement that Paragraph 8(d) is to be interpreted any differently than as set out above.⁹⁵⁷ Likewise, other than as indicated above, a review of the *travaux préparatoires* reveals no evidence in support of a different interpretation.⁹⁵⁸
582. In sum, when designing an Annexure D, Part 3 HEP, India is obliged to pursue the following steps to ensure compliance with Paragraph 8(d):
- (a) As a starting point, India shall endeavor to design the HEP so that it does not have any outlets partially or entirely below Dead Storage Level;
 - (b) India shall only include an outlet partially or entirely below Dead Storage Level if it: (i) is compliant with Treaty provisions other than Paragraph 8(d); and (ii) is necessary for sediment control or some other technical purpose, meaning that there is no other method (or methods) available to address sediment (or the other technical purpose) that is equally effective or only marginally less effective;
 - (c) If an outlet partially or entirely below Dead Storage Level is necessary, India shall identify reasonable options based on the standards set forth in Paragraph 8(d), whereby the outlet is designed to be of the minimum size and at the highest level possible, consistent with: (i)

⁹⁵⁶ See Part XIII, *infra*.

⁹⁵⁷ See, e.g., **P-0649.0083**, Letter No. WT(15)/(1617-A)/PCIW dated 19 February 1966, **P-0649.0130**, Letter No. 4(7)/64-I.C. dated 24 June 1968, **P-0649.0137**, Letter No. WT(16)/(2201-A)/PCIW dated 5 November 1968, **P-0649.0172**, Letter No. WT(86)/(2495-A)/PCIW dated 17 July 1970, **P-0649.0183**, Letter No. WT(86)/(2544-A)/PCIW dated 24 December 1970.

⁹⁵⁸ The design criteria set out in Paragraph 8(d) of Annexure D first appeared the April 1960 draft of Annexure D, with the words “and economical” being introduced into the phrase “sound and economical” in the final version of the Treaty: see **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960; **PLA-0001**, Treaty, Annexure D, para. 8(d).

the outlet being able to perform effectively and efficiently the function that it serves; (ii) customary and accepted HEP engineering principles and practices followed within States generally; and (iii) the suitable and workable operation of the HEP as a whole once it has been constructed. The cost of constructing and operating the low-level outlet, however, is not to be taken into account in determining the minimum size and the highest level possible for the low-level outlet.

- (d) Among those options, India shall select the outlet that is of the minimum size and at the highest level in the dam.

583. Consistent with the notification requirements set forth in Appendix II of Annexure D, India is under an obligation to convey the “particulars of design” to Pakistan at an early stage, including the dimensional plan⁹⁵⁹ and a description of the outlet works.⁹⁶⁰ To fulfill its Treaty obligations, India must include an explanation of why an outlet partially or entirely below Dead Storage Level is necessary and, if so, why among the options available as to the size and location of the outlet, the design meets the requirement of minimum size and highest level set forth in Paragraph 8(d).⁹⁶¹ India’s notification must give Pakistan sufficient time to respond with its views as to whether the design is compliant with the Treaty. In this respect, the deadline of *at least* six months before construction in Paragraph 9 of Annexure D should be seen as a minimum, and notification provided earlier (indeed, potentially much earlier) as necessary to enable India still to modify its design in the face of valid concerns. If Pakistan raises timely objections, India must give them careful consideration and both Parties must proceed in a spirit of cooperation and good faith. Ultimately, if a difference emerges between the Parties in this regard, it is for India, as the proponent of the design and construction of the HEP, to establish that the outlet satisfies the requirements of Paragraph 8(d), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.

3. Gated Spillways

584. This Section concerns what is to be taken into account, and what is to be excluded, for the purposes of including a gated spillway in the design of an Annexure D, Part 3 HEP. As previously noted, the *chapeau* of Paragraph 8 of Annexure D provides that “the design of any new Run-of-

⁹⁵⁹ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(a).

⁹⁶⁰ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(g).

⁹⁶¹ See paras. 575–581, *supra*.

River Plant ... shall conform to the following criteria”. Then, Paragraph 8(e) of Annexure D provides:

If the conditions at the site of a Plant make a gated spillway necessary, the bottom level of the gates in normal closed position shall be located at the highest level consistent with sound and economical design and satisfactory construction and operation of the works.⁹⁶²

585. As concluded in the general considerations above,⁹⁶³ Paragraph 8(e) addresses crest-gated spillways, meaning those located at the upper part of the dam. That interpretation coheres with the previous interpretation of Paragraph 8(d). Whereas Paragraph 8(d) prohibits, with strict exceptions, outlets partially or entirely below Dead Storage Level, Paragraph 8(e) regulates crest-gated spillways as a distinct component of the dam. Further, the limitation expressed in Paragraph 8(e) must be read against the backdrop of the overall approach to be taken when interpreting Article III and Annexure D, Part 3.⁹⁶⁴
586. Paragraph 8(e) begins by stating that if “the conditions at the site of a Plant make a gated spillway necessary”. This text indicates a starting point (or a default position) when designing an Annexure D, Part 3 HEP, which is that an ungated spillway should be considered and used unless a crest-gated spillway is “necessary” due to the conditions at the site, such as the width of the valley or anticipated sediment loads that would require sluicing through a gated spillway. The lower that the spillway gates extend below Dead Storage Level, the greater control India possesses in releasing water from the dam (and concomitantly then in holding water back when filling up the dam). As with respect to the prohibition and limitations expressed for a low-level outlet, this Paragraph 8(e) limitation is also consistent with the “let flow” element of the object and purpose of the Treaty, and with the general approach of interpreting Annexure D, Part 3 as providing an exception that is to be strictly construed.⁹⁶⁵
587. As previously noted, the term “necessary” in the Treaty describes an action that is *required*, *needed*, or *essential* for a particular purpose. While Paragraph 8(e)—unlike Paragraph 8(d)—does not expressly indicate the purposes that would make a crest-gated spillway necessary, prevailing HEP engineering principles and practices indicate that the two purposes for such a spillway are to pass flood waters and to manage sediment.⁹⁶⁶ Importantly, the phrase “conditions at the site”

⁹⁶² PLA-0001, Treaty, Annexure D, para. 8(e).

⁹⁶³ See paras. 536–552, *supra*.

⁹⁶⁴ See Part VIII.B, *supra*.

⁹⁶⁵ See Part VIII.B, *supra*.

⁹⁶⁶ See paras. 479–482, *supra*.

in Paragraph 8(e) indicates that it is only the *site conditions* that can make “necessary” a crest-gated spillway; other factors, such as a higher cost of constructing an ungated spillway as compared to a gated spillway, do not make the latter “necessary” within the meaning of Paragraph 8(e). The Court notes that, in the Commission, India has advocated for the use of gated spillways (often also at a low-level) for the combined purpose of sediment management and passing the design flood.⁹⁶⁷ Combining functions within a single spillway, however, does not address the question of whether and to what extent a crest-gated spillway is necessary, as required by Paragraph 8(e). If an ungated surface spillway can be used at an Annexure D, Part 3 HEP to pass flood waters and to manage sediment, then such a spillway should be used, regardless of whether—absent the Treaty—India might make a different choice.

588. Assuming that a crest-gated spillway is necessary, Paragraph 8(e) continues by saying that “the bottom level of the gates in normal closed position shall be located at the highest level”. The purpose of requiring the spillway to have the bottom level of its gates at this position is, once again, to limit India’s control over the water in the reservoir; the lower a gated spillway is located in the dam, the greater control India possesses over releasing water from the dam (and concomitantly holding it back when filling up the dam). As such, normally a wide crest-gated spillway is to be favored over a narrow crest-gated spillway with deeper gates, as the former provides less control over releasing/withholding water from the reservoir.
589. By contrast, if a crest-gated spillway is necessary, the starting point is not to apply prevailing HEP engineering principles and practices that, absent the Treaty, might lead to a gated spillway located lower in the dam.⁹⁶⁸ Rather, the starting point for considering its characteristics is that the bottom level of its gates in normal closed position “shall” be located “at the highest level” in the dam.
590. At the same time, the bottom level of the spillway gates is to be at the highest level “consistent with sound and economical design and satisfactory construction and operation of the works”. The meaning of “sound and economical design” was explained in the prior subsection on

⁹⁶⁷ See paras. 525–528, *supra*.

⁹⁶⁸ The *Kishenganga* Court was not called upon to consider the issue of spillways under Paragraph 8(e). The *Baglihar* Neutral Expert, however, was called upon to do so. After reviewing the hydrology and other conditions at the Baglihar HEP site, he judged that it was necessary to have a gated spillway at that site. **PLA-0002**, *Baglihar* Determination, Chs. 5.2.2, 5.2.3. Thereafter, the *Baglihar* Neutral Expert emphasized certain factors that are not in accordance with Paragraph 8(e), such as the need for orifice spillways to maximize the production of energy; in support, he pointed to the use of orifice spillways at dams located in other parts of the world, which are not subject to the Treaty’s constraints. **PLA-0002**, *Baglihar* Determination, pp. 20–22. While the *Baglihar* Determination is *res judicata* with respect to the Baglihar HEP, the reasoning in that determination is not consistent with Paragraph 8(e) and has no bearing on other Annexure D, Part 3 Run-of-River HEPs.

Paragraph 8(d) and applies, *mutatis mutandis*, in this context. Here—in contrast to Paragraph 8(d)—the word “construction” is present in the final clause of Paragraph 8(e), which calls for the bottom level of the gates to be located at the highest level consistent with “satisfactory construction and operation of the works”. In this context, the ordinary meaning of “satisfactory construction and operation” entails that the design for the highest level of the bottom of the gates must cohere with the suitable and workable construction and operation of the HEP as a whole.

591. As with respect to low-level outlets, any judgment under Paragraph 8(e) relating to “sound” design for the location of a crest-gated spillway must take account of prevailing international HEP engineering principles and practices followed within States generally. Employment of such principles and practices, however, is in the context of aiming for the highest level for the gated spillway in the dam consistent with the standards set forth in Paragraph 8(e). Further, the application of these standards of “sound and economical design” and “satisfactory construction and operation of the works” in the context of a crest-gated spillway at a specific HEP invites highly technical design questions, the answers to which may not be self-evident and likely will require the careful judgment of highly-experienced engineers. As such, in accordance with Paragraphs 9 through 11 of Annexure D and the Treaty’s overarching obligation of mutual cooperation,⁹⁶⁹ India must not only assess the available options when considering the necessity of a crest-gated spillway, but must explain its rationale in choosing among the available options so that Pakistan can raise timely and informed objections.
592. The practice of the Parties in the application of the Treaty evinces no agreement that Paragraph 8(e) is to be interpreted any differently than as set out above.⁹⁷⁰ Likewise, a review of the *travaux préparatoires* reveals no evidence in support of a different interpretation.⁹⁷¹
593. In sum, when designing an Annexure D, Part 3 HEP, India is obliged to pursue the following steps to ensure compliance with Paragraph 8(e):

⁹⁶⁹ See Part XIII, *infra*.

⁹⁷⁰ See, e.g., **P-0649.0052**, Letter No. F.4(28)/61-I.C. dated 23 December 1963; **P-0649.0073**, Letter No. WT(38/2)/(1417-A)/PCIW dated 30 January 1965; **P-0649.0075**, Letter No. F.4(6)/65-IC/I dated 26 April 1965; **P-0649.0076**, Letter No. F.4(6)/65-IC/II dated 26 April 1965; **P-0649.0130**, Letter No. 4(7)/64-I.C. dated 24 June 1968.

⁹⁷¹ The design criteria set out in Paragraph 8(e) of Annexure D first appeared the April 1960 draft of Annexure D, with no material changes made as between the April 1960 draft of Annexure D and the final version: see **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft of 23 April 1960.

- (a) As a starting point, India shall endeavor to design the HEP so that it does not have any gated spillways;
 - (b) India shall only include a crest-gated spillway if it: (i) is compliant with Treaty provisions other than Paragraph 8(e); and (ii) is necessary for flood control or sediment management, meaning that there is no other method (or methods) for addressing floods or sediment that is equally effective or only marginally less effective.
 - (c) If such a spillway is necessary, India shall identify reasonable options based on the standards set forth in Paragraph 8(e), whereby the bottom level of the gates of the spillway in normal closed position are located at the highest level possible, consistent with: (i) the spillway being able to perform effectively and efficiently the function that it serves; (ii) customary and accepted HEP engineering principles and practices followed within States generally; and (iii) the suitable and workable construction and operation of the HEP as a whole. The cost of constructing and operating the spillway, however, is not to be taken into account in determining the highest possible level for the bottom of the gates.
 - (d) Among those options, India shall select the gated spillway for which the bottom level of the gates in normal closed position is located at the highest level in the dam.
594. Consistent with the notification requirements set forth in Appendix II of Annexure D, India is under an obligation to convey the “particulars of design” to Pakistan at an early stage, including the dimensional plan⁹⁷² and a description of the spillways.⁹⁷³ To fulfill its Treaty obligations, India must include an explanation of why a gated spillway is necessary and, if so, why among the options available as to the location of the gated spillway, the design meets the requirement of highest level set forth in Paragraph 8(e). India’s notification must give Pakistan sufficient time to respond with its views as to whether the design is compliant with the Treaty. In this respect, the deadline of *at least* six months before construction in Paragraph 9 of Annexure D should be seen as a minimum, and notification provided earlier (indeed, potentially much earlier) as necessary to enable India still to modify its design in the face of valid concerns. If Pakistan raises timely objections, India must give them careful consideration and both Parties must proceed in a spirit of cooperation and good faith. Ultimately, if a difference emerges between the Parties in this regard, it is for India, as the proponent of the design and construction of the HEP, to establish that

⁹⁷² PLA-0001, Treaty, Annexure D, Appendix II, para. 4(a).

⁹⁷³ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(d).

the gated spillway satisfies the requirements of Paragraph 8(e), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.

4. Intakes for the Turbines

595. This Section concerns what is to be taken into account, and what is to be excluded, for the purposes of designing intakes for the turbines of an Annexure D, Part 3 HEP. As previously noted, the *chapeau* of Paragraph 8 of Annexure D provides that “the design of any new Run-of-River Plant ... shall conform to the following criteria”. Then, Paragraph 8(f) of Annexure D provides:

The intakes for the turbines shall be located at the highest level consistent with satisfactory and economic construction and operation of the Plant as a Run-of-River Plant, and with customary and accepted practice of design for the designated range of the Plant’s operation.⁹⁷⁴

596. As was noted in Part IX.C, for any power intake—whether a deep intake or a shallow intake—the invert of the intake must be below the minimum operating level (defined as the Dead Storage Level in Treaty terms) to take full advantage of the active storage for generating hydro-electric power. For both types of intakes, the headrace is pressurized with a complete water seal. In the context of the Treaty, Pakistan has accepted that, “owing to the need for those [power] intakes to have use of the full range of a HEP’s Operating Pool (i.e., Pondage), the invert of any power intake will, of necessity and given the current state of the technology, need to be below the Dead Storage Level”.⁹⁷⁵ Thus, as a starting point, there is no dispute that an intake for the turbines will extend at least partially below Dead Storage Level.

597. As noted earlier, the limitation expressed in Paragraph 8(f) must be read against the backdrop of the overall approach to be taken when interpreting Article III and Annexure D, Part 3.⁹⁷⁶ An initial question of interpretation concerns what exactly constitutes the “intake” for the purpose of Paragraph 8(f). For example, Pakistan advocates that a headrace tunnel located at sufficient depth to control vortices can be made Treaty-compliant by the construction of an adjacent skimming wall, drawing water from the reservoir above and immediately below Dead Storage Level, but such a configuration leaves unclear where, exactly, the “intake” is located. In the Court’s view, the “intake” for the purposes of Paragraph 8(f) is to be measured at the point of control separating

⁹⁷⁴ PLA-0001, Treaty, Annexure D, para. 8(f).

⁹⁷⁵ Pakistan’s Memorial, para. 10.93; see also Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 51:12–14 (“if you’re not below dead storage, you can’t, of course, divert water into the intake”); Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 157:7–15 (“So the bottom level of the intake must be placed below the minimum operating level and below the dead storage level in an [Annexure D, Part 3] HEP”).

⁹⁷⁶ See Part VIII.B, *supra*.

the flow into the headrace tunnel from the main body of the reservoir. Thus, if the headrace tunnel connects directly into the main body of the reservoir (as appears to be the case in many of India's proposed designs), the "intake" would be measured from the bottom of the opening to the headrace tunnel itself. If, however, water from the reservoir first passes over a skimming wall or through a desander, the level of the "intake" would be measured from that point of control, irrespective of the ultimate elevation of the opening to the headrace tunnel itself. Such an interpretation is in keeping with the Treaty's objective of structurally limiting India's ability to control reservoir volumes below Dead Storage Level. To the extent that the headrace tunnel is separated from the main body of the reservoir by a skimming wall or desander found at a higher elevation, it is the height of that higher point of control that restricts India's ability, through the intake, to alter the level of the reservoir itself. The lower height of the headrace tunnel or other works after such a point of control has no bearing on the control of water stored in the reservoir.

598. Paragraph 8(f) begins by stating that "intakes for the turbines shall be located at the highest level". Unlike Paragraphs 8(d) and (e), there is no starting point (or default position) that disfavors the existence of a power intake; indeed, every HEP must have an intake for the turbines. Instead, the limitation in Paragraph 8(f) moves directly to the requirement that the intake(s) be at the "highest level" in the dam. The reason for this is the same as the analogous requirement under Paragraphs 8(d) and (e) whenever it is found "necessary" to have a low-level outlet or a crest-gated spillway, which is to limit India's control over the water in the reservoir. The lower that the power intake is located in the dam, the greater the control India possesses over releasing water from the dam (and concomitantly then in holding water back when filling up the dam). Here, too, the limitations expressed in Paragraph 8(f) are consistent with the "let flow" element of the object and purpose of the Treaty, and with the general approach of interpreting Annexure D, Part 3 as providing an exception that is to be strictly construed.⁹⁷⁷
599. The starting point for considering the design location for the power intake is that it "shall" be located "at the highest level" in the dam. The starting point is not to apply traditional engineering considerations that, absent the Treaty, might lead to a power intake located lower in the dam. To the extent that the height of the intake (as measured from the relevant point of control) can be raised by incorporating features such as a skimming wall—so as to elevate the level of the intake above the level of the headrace tunnel—Paragraph 8(f) favors the inclusion of such features.

⁹⁷⁷ See Part VIII.B, *supra*.

600. From that starting point, Paragraph 8(f) states that the power intake “shall be located at the highest level consistent with satisfactory and economical construction and operation of the Plant as a Run-of-River Plant and with customary and accepted practice of design for the designated range of the Plant’s operation”. This “consistent with” language is quite different from the “consistent with” language found in Paragraphs 8(d) and (e), which are almost identical (the only difference being the addition of “construction and” in Paragraph 8(e)). In Paragraph 8(f), while the words “satisfactory”, “economical”, “construction”, and “operation” are again employed, the positioning and emphasis of those terms is different, and therefore must be understood differently. In particular, there is an emphasis on “satisfactory and economical construction and operation of the Plant as a Run-of-River Plant” and, further, emphasis on “*customary and accepted practice of design for the designated range of the Plant’s operation*”—with none of those italicized words appearing in Paragraphs 8(d) and (e).⁹⁷⁸ It must be assumed that the Treaty drafters intended particular meanings to be associated with such additional language in Paragraph 8(f).
601. As an element of context for understanding these particular meanings, it is recalled that Paragraph 8(d) prescribes a default prohibition on outlets located partially or entirely below Dead Storage Level. In the case of power intakes, however, it is a “customary and accepted practice of design” for the power intake to be located partially or entirely below the Dead Storage Level. Thus, Paragraph 8(f) is not only refraining from prohibiting intakes below Dead Storage Level, it is implicitly acknowledging, by its express reference to “customary and accepted practice of design”, that the invert of the intakes for the turbines will always be located at or below that level.⁹⁷⁹ Further, the expression “customary and accepted practice of design” should be interpreted as referring to contemporary HEP engineering principles and practices, given that other provisions of the Treaty that refer to “customary” expressly limit the term to what was “customary on the Effective Date” of the Treaty⁹⁸⁰ or to what is “customary practice in similar situations on the Rivers”.⁹⁸¹
602. Power intakes must nevertheless conform to the design, construction, and operation constraints set out in Paragraph 8(f). Paragraph 8(f) makes clear that the power intakes must be used

⁹⁷⁸ The phrase “Designated range of operation” also appears at **PLA-0001**, Treaty, Annexure D, Appendix II, para. 3(f) (emphasis added).

⁹⁷⁹ Of course, the reference to “customary and accepted practice of design” also confirms that the power intake is to be fit for the purpose for which it is designed.

⁹⁸⁰ See, e.g., **PLA-0001**, Treaty, Arts. IV(12)(a)–(b).

⁹⁸¹ See, e.g., **PLA-0001**, Treaty, Art. IV(10).

consistently with the understanding of a “Run-of-River Plant”,⁹⁸² which “develops power without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage”.⁹⁸³ In other words, the power intake cannot be used to control Dead Storage. Indeed, the power intake must be designed to operate within “the designated range of the Plant’s operation” which, again, ensures that it generates hydro-electric power from the Operating Pool—consisting of Pondage and Surcharge Storage—and is not used to control water within Dead Storage. As Pakistan has pointed out, using a shallow intake with an invert located at or just below Dead Storage Level is consonant with customary and accepted hydro-electric engineering practice for run-of-river HEPs.⁹⁸⁴

603. Paragraph 8(f) stops short of requiring that the power intake be at a specific level of the reservoir; rather, it refers to the power intake being at the highest level “consistent with satisfactory and economical construction and operation”. Such considerations include the problem of sediment ingress into the turbines and the problem of vortexing.⁹⁸⁵ Moreover, unlike Paragraphs 8(d) and (e), the presence of “economical construction and operation” indicates that such considerations may include the financial cost of constructing and operating the power intake. Even so, the text of Paragraph 8(f) implicitly requires that a shallow intake be used, with minimal intrusion below the Dead Storage Level, unless discrete considerations specifically require a power intake at a lower level, such as a deep intake. Further, a shallow intake may be preferable if the use of a deep intake would lead collaterally to a desire for even lower outlets for sediment control (or even for drawdown flushing, a practice that is prohibited under the Treaty). Indeed, given the difficulty of

⁹⁸² Annexure E on Storage of Waters by India on the Western Rivers contains a similar provision respecting turbine intakes, except that provision says simply “plant” rather than “Plant as a Run-of-River Plant”. See **PLA-0001**, Treaty, Annexure E, para. 11(g) (“If a power plant is incorporated in the Storage Work, the intakes for the turbines shall be located at the highest level consistent with satisfactory and economical design and with satisfactory operation of plant and with customary and accepted practice of design for the designated range of the plant’s operation”).

⁹⁸³ **PLA-0001**, Treaty, Annexure D, para. 2(g) (definition of a “Run-of-River Plant”).

⁹⁸⁴ See Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 69:18–22 (“[T]he Treaty requirement that the intake be at the highest level possible presents nothing out of the ordinary with respect to design of run-of-river intakes, in fact, it’s accepted and recommended practice”).

⁹⁸⁵ The *Kishenganga* Court was not called upon to consider the issue of power intakes under Paragraph 8(f) of Annexure D, but the *Baglihar* Neutral Expert was. After reviewing the hydrology and other conditions at the Baglihar HEP site, he judged that the elevation of the power intake proposed by India was not at the highest level as required by Paragraph 8(f), and therefore required that it be raised by three meters. **PLA-0002**, *Baglihar* Determination, pp. 106–107. Pakistan has criticized the Neutral Expert’s determination for not raising the power intake even higher, asserting that the Neutral Expert gave undue weight to one technical consideration (preventing vortexing), see **PLA-0002**, *Baglihar* Determination, p. 88, at the expense of another technical reason (the need to prevent sediment ingress into the turbines). Pakistan’s Memorial, paras. 10.155–10.159; Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, pp. 174–175.

managing sediment due to the geology and hydrology of the Western Rivers, a shallow intake usually would likely be the most satisfactory and economical design, as well as consistent with customary and accepted practice of hydro-electric engineering for run-of-river HEPs.

604. Given these considerations, when designing the power intake (i.e., rendering it as part of a technical drawing), India should give preference to a shallow intake, unless it would be unsuitable or wasteful of resources for the HEP's construction and operation, and provided it is consistent with contemporary HEP engineering principles and practices. In any event, any judgment under Paragraph 8(f) relating to the exact location of the intake for the turbines should take account of contemporary, global best practices for hydro-power engineering (such as the use of anti-vortex devices), but employment of such best practices is in the context of aiming for the highest level for the power intake in the dam, consistent with the factors set forth in Paragraph 8(f).
605. Of course, designing an intake consistent with Paragraph 8(f) in the context of a specific HEP invites highly technical design questions, the answers to which may not be self-evident and likely will require the careful judgment of highly-experienced engineers. As such, in accordance with Paragraphs 9 through 11 of Annexure D and the Treaty's overarching obligation of mutual cooperation,⁹⁸⁶ India must not only assess the available options when considering the level for an intake, but must explain its rationale in choosing among the available options so that Pakistan can raise timely and informed objections.
606. The practice of the Parties in the application of the Treaty evinces no agreement that Paragraph 8(f) is to be interpreted any differently than as set out above.⁹⁸⁷ Likewise, a review of the *travaux préparatoires* reveals no evidence in support of a different interpretation.⁹⁸⁸
607. In sum, when designing an Annexure D, Part 3 HEP, the "intake" for the purposes of Paragraph 8(f) is to be measured at the point of control separating the flow into the headrace

⁹⁸⁶ See Part XIII, *infra*.

⁹⁸⁷ See, e.g., **P-0649.0013**, Letter No. F4(28)/61-IC dated 6 March 1962; **P-0649.0052**, Letter No. F.4(28)/61-I.C. dated 23 December 1963; **P-0649.0075**, Letter No. F.4(6)/65-IC/I dated 26 April 1965; **P-0649.0090**, Letter No. WT(14)/(1677-A)/PCIW dated 27 April 1966; **P-0649.0130**, Letter No. 4(7)/64-I.C. dated 24 June 1968.

⁹⁸⁸ The design criteria set out in Paragraph 8(f) of Annexure D originated as draft paragraph 3(c) in the September 1959 Heads of Agreement, referred to the concept of "satisfactory construction and operation" of the Plant: **P-0136**, Heads of Agreement dated 15 September 1959, Annexure B. para. 3(b). That expression was then amended after the June 1960 draft of Annexure D, however, no reasons appear in the negotiating records on the reason for the change: see **P-0380**, Indus Waters Treaty 1960, Draft dated 6 June 1960, Annexure D, Amendments proposed by Pakistan.

tunnel from the main body of the reservoir. Further, India is obliged to pursue the following steps to ensure compliance with Paragraph 8(f):

- (a) As a starting point, India shall endeavor to design the HEP so that the intake for the turbines is located at the highest possible level in the dam, meaning that the invert of the intake shall be just below the Dead Storage Level.
- (b) If the customary and accepted practice of design for HEPs calls, in the context of a particular HEP, for the invert of the intake to be located lower in the dam than just below the Dead Storage Level, India shall identify reasonable options based on the standards set forth in Paragraph 8(f), whereby the intake is at the highest level possible that is suitable and not wasteful of resources for the HEP's construction and operation, and is consistent with contemporary HEP engineering principles and practices.
- (c) Among those options, India shall select the intake that is at the highest level in the dam.

608. Consistent with the notification requirements set forth in Appendix II of Annexure D, India is under an obligation to convey the “particulars of design” to Pakistan at an early stage, including the dimensional plan⁹⁸⁹ and a description of the intakes.⁹⁹⁰ To fulfill its Treaty obligations, India must include an explanation of why the location of the intake for the turbines in the design meets the requirement of the “highest level” set forth in Paragraph 8(f). India's notification must give Pakistan sufficient time to respond with its views as to whether the design is compliant with the Treaty. In this respect, the deadline of *at least* six months before construction in Paragraph 9 of Annexure D should be seen as a minimum, and notification provided earlier (indeed, potentially much earlier) as necessary to enable India still to modify its design in the face of valid concerns. If Pakistan raises timely objections, India must give them careful consideration and both Parties must proceed in a spirit of cooperation and good faith. Ultimately, if a difference emerges in this regard between the Parties, it is for India, as the proponent of the design and construction of the HEP, to establish that the intake satisfies the requirements of Paragraph 8(f), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.

* * *

⁹⁸⁹ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(a).

⁹⁹⁰ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(e).

this page intentionally blank

XI. GENERAL INTERPRETATION OF ANNEXURE D, PARAGRAPH 8(C) ON MAXIMUM PONDAGE

609. The fourth question of the Court outlined in Procedural Order No. 6 is as follows:

With respect to Annexure D, paragraph 8(c), what is to be taken into account for the purposes of calculating maximum pondage for a plant and what is to be excluded?

610. Paragraph 8(c) of Annexure D to the Treaty provides:

The maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power.

611. The relevant terms are defined in Paragraph 2 of Annexure D to the Treaty as follows:

(c) “Pondage” means Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant.

...

(f) “Operating Pool” means the storage capacity between Dead Storage level and Full Pondage Level.

(g) “Run-of-River Plant” means a hydro-electric plant that develops power without Live Storage as an integral part of the plant, except for Pondage and Surcharge Storage.

...

(i) “Firm Power” means the hydro-electric power corresponding to the minimum mean discharge at the site of a plant, the minimum mean discharge being calculated as follows :

The average discharge for each 10-day period (1st to 10th, 11th to 20th and 21st to the end of the month) will be worked out for each year for which discharge data, whether observed or estimated, are proposed to be studied for purposes of design. The mean of the yearly values for each 10-day period will then be worked out. The lowest of the mean values thus obtained will be taken as the minimum mean discharge. The studies will be based on data for as long a period as available but may be limited to the latest 5 years in the case of Small Plants (as defined in Paragraph 18) and to the latest 25 years in the case of other Plants (as defined in Paragraph 8).

(j) “Secondary Power” means the power, other than Firm Power, available only during certain periods of the year.

612. Relevantly, Paragraph 15 of Annexure D provides:

Subject to the provisions of Paragraph 17, the works connected with a Plant shall be so operated that (a) the volume of water received in the river upstream of the Plant, during any period of seven consecutive days, shall be delivered into the river below the Plant during the same seven-day period, and (b) in any one period of 24 hours within that seven-day period, the volume delivered into the river below the Plant shall be not less than 30%, and not more than 130%, of the volume received in the river above the Plant during the same 24-hour period: Provided however that:

(i) where a Plant is located at a site on the Chenab Main below Ramban, the volume of water received in the river upstream of the Plant in any one period of 24 hours shall be delivered into the river below the Plant within the same period of 24 hours;

- (ii) where a Plant is located at a site on the Chenab Main above Ramban, the volume of water delivered into the river below the Plant in any one period of 24 hours shall not be less than 50% and not more than 130%, of the volume received above the Plant during the same 24-hour period; and
- (iii) where a Plant is located on a Tributary of The Jhelum on which Pakistan has any Agricultural Use or hydro-electric use, the water released below the Plant may be delivered, if necessary, into another Tributary but only to the extent that the then existing Agricultural Use or hydro-electric use by Pakistan on the former Tributary would not be adversely affected.

A. THE PARTIES' POSITIONS

1. Pakistan's Position

613. Pakistan contends that the provisions within Annexure D to the Treaty governing the calculation of “maximum Pondage” reflect the fundamental “let flow”, “non-interference”, and “no storage” principles enshrined within the Treaty.⁹⁹¹ These provisions, particularly the “tightly constrained exceptions” contained in Article III and Annexure D, are indicative of a deliberate attempt to regulate India’s discretion in the design and operation of HEPs on the Western Rivers including, relevantly, limits on the permissible volume of Pondage.⁹⁹² In this regard, Pakistan argues that the issue of Pondage is closely connected with the other elements of Paragraph 8 of Annexure D, given that the greater the Pondage allocated for a particular HEP, the deeper in the reservoir the Dead Storage Level is set, which is, in turn, “the axis around which many of the critical features of an [Annexure D, Part 3] Run-of-River HEP are situated”.⁹⁹³
614. In Pakistan’s view, the Treaty expressly differentiates the design criterion of Annexure D, Part 3 HEPs (addressed in Paragraph 8 of Annexure D) from the operational requirements (in Paragraph 15 of Annexure D), with the effect that the calculation of the maximum allowable Pondage is “self-standing and distinct from operational constraints”.⁹⁹⁴ On this construction, the Treaty allows India a limited ability to supplement the natural flow at Annexure D, Part 3 HEPs with Pondage to meet fluctuations in the daily and weekly loads of a given plant, provided that it does so in accordance with the operational restrictions in, *inter alia*, Paragraph 15 of Annexure D to the Treaty.⁹⁹⁵ However, Paragraph 8(c) of Annexure D, read together with the definition of Firm

⁹⁹¹ Pakistan’s Memorial, paras. 11.9, 11.58.

⁹⁹² Pakistan’s Memorial, paras. 11.38–11.42.

⁹⁹³ Pakistan’s Memorial, para. 11.9.

⁹⁹⁴ Pakistan’s Memorial, paras. 11.32–11.37.

⁹⁹⁵ Request for Arbitration, para. 48.

Power in Paragraph 2(i), strictly curtails the maximum Pondage to power generation at the MMD calculated at the site.⁹⁹⁶

(a) Definition of Pondage

615. Pakistan submits that Paragraph 2(c) of Annexure D defines the concept of “Pondage” by reference to its function at a Run-of-River HEP as a limited volume of stored water (“Live Storage of only sufficient magnitude”) that is constrained by reference to a narrow and specified purpose (“to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant”).⁹⁹⁷ This definition of Pondage under Paragraph 2(c) acts as a limitation, making it clear that Live Storage that exceeds what is necessary (i.e., has a magnitude greater than is necessary) to meet fluctuations in the discharge of the turbines arising in the daily and the weekly loads of the plant will not comply with the definition of “Pondage” under the Treaty and will therefore be *per se* impermissible.⁹⁹⁸ This definition thereby distinguishes Pondage at a Run-of-River HEP from the kind of storage seen in a conventional storage HEP,⁹⁹⁹ thus confirming the classification of Annexure D, Part 3 HEPs as true run-of-river HEPs with minimal storage.¹⁰⁰⁰
616. On Pakistan’s interpretation, Paragraph 2(c) itself does not define the method to be used for calculating the amount of permissible Pondage at a given site.¹⁰⁰¹ Rather, the definition of the *purpose* of Pondage, as provided in Paragraph 2(c), must be distinguished from the *calculation* of the maximum allowable Pondage for an Annexure D, Part 3 HEP, which is primarily addressed in Paragraphs 8(c) and 2(i) of Annexure D.¹⁰⁰² The definition of “Pondage” in Paragraph 2(c) of Annexure D is a definition of general application and not a provision that, whether by intent, formulation, or placement, establishes a further design criterion in respect of such Annexure D,

⁹⁹⁶ Request for Arbitration, para. 52; Pakistan’s Memorial, paras. 11.37, 11.39.

⁹⁹⁷ Pakistan’s Memorial, para. 11.20; Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 223:19–23.

⁹⁹⁸ Pakistan’s Post-Hearing Submission, paras. 2.119–2.121; Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, p. 121:3–16.

⁹⁹⁹ See para. 464, *supra*.

¹⁰⁰⁰ Pakistan’s Memorial, para. 11.100.

¹⁰⁰¹ Pakistan’s Memorial, para. 11.31; Pakistan’s Post-Hearing Submission, paras. 2.117–2.128; Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, pp. 60:20–63:9.

¹⁰⁰² Pakistan’s Memorial, paras. 11.31, 11.99–11.105. Pakistan submits that the Neutral Expert in the *Baglihar* Neutral Expert Proceedings erred by conflating the definition of Pondage in Paragraph 2(c) and the mechanism for its calculation in Paragraph 8(c): See Pakistan’s Memorial, para. 11.98(a), *citing PLA-0002, Baglihar* Determination, pp.76–78.

Part 3 HEPs that is additional to those in Paragraph 8 of Annexure D.¹⁰⁰³ In highlighting the limitations of the definition of Pondage with respect to calculating the maximum allowable Pondage, Pakistan argues that Paragraph 2(c) does not address the size of the permitted storage, the period during which the storage would be intended to provide a supplementary power source, the volumetric capacity of the storage to hold water for subsequent use in the production of electrical power, or the demand on the plant arising from its connection to the electricity grid.¹⁰⁰⁴

(b) *Pondage required for Firm Power*

617. Pakistan submits that the Treaty imposes a limit on the peaking ability of a HEP by restricting the Pondage available to “twice the Pondage required for Firm Power”.¹⁰⁰⁵ Consequently, the calculation of Pondage under Paragraph 8(c) is directly tied to the concept of Firm Power.¹⁰⁰⁶ Firm Power, as defined in Paragraph 2(i) of Annexure D,¹⁰⁰⁷ is the amount of power that can be generated if a flow of water equal to the MMD is passed through a plant’s turbines during the applicable period.¹⁰⁰⁸ According to Pakistan, by defining “maximum Pondage” under Paragraph 8(c) by reference to the hydro-electric power that can be produced at the MMD flow rate, Annexure D requires India to design its Annexure D, Part 3 HEPs with Pondage restricted to the volume necessary for operation at that flow rate.¹⁰⁰⁹ Pakistan reasons that no Pondage is “required for Firm Power” when the stream flow at the plant exceeds the MMD because there is sufficient stream flow to operate turbines at the MMD.¹⁰¹⁰ Under Pakistan’s construction of the Treaty, Pondage is “required for Firm Power” only when the stream flow falls below the MMD, and therefore the focus should be on Pondage in that situation.¹⁰¹¹
618. Pakistan notes that the period for which an Annexure D, Part 3 HEP must be capable of operating at Firm Power is not articulated in the Treaty,¹⁰¹² and must therefore be derived or deduced from

¹⁰⁰³ Pakistan’s Post-Hearing Submission, para. 2.126.

¹⁰⁰⁴ Pakistan’s Memorial, para. 11.29.

¹⁰⁰⁵ **PLA-0001**, Treaty, Annexure D, para. 8(c).

¹⁰⁰⁶ Pakistan’s Memorial, para. 9.41(d); Pakistan’s Post-Hearing Submission, para. 2.61.

¹⁰⁰⁷ See Pakistan’s Post-Hearing Submission, para. 3.34 (“The lower-case ‘firm power’ [in Annexure E, Paragraph 21(a)] refers to the firm power defined in conventional hydropower design practices”).

¹⁰⁰⁸ Request for Arbitration, para. 52.

¹⁰⁰⁹ Pakistan’s Memorial, para. 9.41(d); Hearing for the First Phase on the Merits Tr., (Day 2), 9 July 2024, pp. 79:24–80:4.

¹⁰¹⁰ See, e.g., Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, pp. 37:2–7, 79:11–80:14.

¹⁰¹¹ Pakistan’s Memorial, para. 11.58.

¹⁰¹² Pakistan’s Memorial, paras. 11.55–11.59.

an objective construction of the Treaty as a whole, including the object and purpose.¹⁰¹³ Paragraph 2(c) makes clear that Pondage is to be calculated on the basis of daily or weekly use only, and not for any longer period.¹⁰¹⁴ In Pakistan’s view, a 24-hour (daily) period is to be preferred as the basis for the calculation over a weekly period.¹⁰¹⁵ In support of this conclusion, Pakistan cites the frequent references in the Treaty to daily operational cycles,¹⁰¹⁶ the “relative ease” of calculation that a 24-hour operating cycle would facilitate,¹⁰¹⁷ and the fact that a 24-hour operating cycle reflects the reality of HEP operations, which typically run on daily load cycles, rather than on a weekly or longer-term basis.¹⁰¹⁸

619. By contrast, the references in the Treaty to “weekly” periods are fewer in number, a weekly period does not transpose readily to a maximum allowable Pondage calculation, and Paragraph 8(c) would then result in storage capacity for two weeks, which goes well beyond the maximum time period contemplated at any point within the Treaty.¹⁰¹⁹ Accordingly, in Pakistan’s view, adopting a 24-hour operating cycle would accord with the object and purpose of the Treaty, including the “let flow”, “non-interference”, and “no storage” requirements, and ought therefore to be preferred.¹⁰²⁰ Nevertheless, Pakistan considers that its approach to the calculation of maximum Pondage under the Treaty can be conceptualized as both a daily and a weekly approach to the calculation of Pondage.¹⁰²¹
620. In Pakistan’s view, the Treaty expressly differentiates the design criterion of Run-of-River Plants (addressed in Paragraph 8 of Annexure D) from the operational requirements (in Paragraph 15 of Annexure D), with the effect that the calculation of the maximum allowable Pondage is “self-standing and distinct from operational constraints”.¹⁰²² Specifically, the Treaty allows India to supplement the natural flow at Run-of-River Plants with Pondage, by storing and later discharging

¹⁰¹³ Pakistan’s Memorial, paras. 11.55–11.59.

¹⁰¹⁴ Pakistan’s Memorial, paras. 11.23, 11.64(d). In Pakistan’s view, this limitation is necessary to ensure that a form of seasonal storage could not otherwise be claimed by India, thereby allowing India to construct a Storage Work, rather than a new Run-of-River HEP under Part 3 of Annexure D.

¹⁰¹⁵ Pakistan’s Memorial, paras. 11.55–11.69.

¹⁰¹⁶ Pakistan’s Memorial, paras. 11.64(a)–(c), (d), *citing* **PLA-0001**, Treaty, Art. I(15), Annexure D, paras. 15–16.

¹⁰¹⁷ Pakistan’s Memorial, para. 11.64(e).

¹⁰¹⁸ Pakistan’s Memorial, para. 11.64(c).

¹⁰¹⁹ Pakistan’s Memorial, paras. 11.65, 11.66.

¹⁰²⁰ Pakistan’s Memorial, para. 11.68.

¹⁰²¹ Pakistan’s Post-Hearing Submission, paras. 2.75, 2.95.

¹⁰²² Pakistan’s Memorial, paras. 11.32–11.37.

water through the plant's turbines, provided that it does so in accordance with the operational restrictions in, *inter alia*, Paragraph 15 of Annexure D to the Treaty.¹⁰²³ The purpose and effect of Paragraph 15, Pakistan submits, are to prescribe obligatory operational constraints pursuant to Article III of the Treaty, and the hydro-electric exception thereto, to ensure that a consistent flow of water is available to Pakistan on a daily and seven-day basis.¹⁰²⁴ Accordingly, while Paragraph 15 of Annexure D addresses the operation of a plant, it does not have any application to the design of an Annexure D, Part 3 HEP, including the calculation of maximum Pondage.¹⁰²⁵

(c) *Calculating Maximum Pondage*

621. At the outset, Pakistan considers that the methodology for the calculation of maximum Pondage should be consistent with “core propositions drawn from the Treaty” that ensure an objective delimitation of rights consistent with the understandings of the Parties.¹⁰²⁶ Specifically, the methodology must: (1) be capable of coming up with a unique and fixed volume of maximum Pondage; (2) be capable of generating a maximum Pondage figure using tools that would have been available at the time the Treaty was drafted; (3) not require or warrant constant correction, or be rendered unfit for purpose by future developments; (4) be insulated from outliers, data errors, or discrepancies that would significantly affect the outcome, opening the door to further disagreements; (5) be capable of resting on data expressly addressed in the Treaty and, in particular, it should not rely on information that India is not required to provide to Pakistan in the course of notifying Pakistan of an Annexure D, Part 3 HEP; and (6) not be such that one Party would be capable of manipulating the results.¹⁰²⁷ Pakistan urges that these “sufficiency” criteria ensure that the calculation methodology produces a definitive value of maximum Pondage, free from bias, and consistent with the object and purpose of the Treaty.¹⁰²⁸
622. In the light of the above principles, Pakistan's position is that the purpose of the Pondage of an Annexure D, Part 3 HEP is to enable India to operate at “Firm Power” for a limited period

¹⁰²³ Request for Arbitration, para. 48.

¹⁰²⁴ Pakistan's Memorial, para. 11.33.

¹⁰²⁵ Pakistan's Memorial, paras. 11.36, 11.154.

¹⁰²⁶ Pakistan's Memorial, para. 11.43; Pakistan's Post-Hearing Submission, para. 2.62, *citing* **PLA-0005**, VCLT, Art. 31(1); Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, pp. 71:12–78:9.

¹⁰²⁷ Pakistan's Memorial, paras. 11.43, 11.89; Pakistan's Post-Hearing Submission, paras. 2.63–2.65, *citing* **P-0082**, Letter 3/5//2007-IT/2043 from the ICIW to the PCIW dated 11 September 2013, para. 10; **P-0545**, Record of the 113rd Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 28.

¹⁰²⁸ Pakistan's Memorial, para. 11.89; Pakistan's Post-Hearing Submission, paras. 2.62–2.69.

throughout the day, in circumstances in which the flow of the river falls below the MMD.¹⁰²⁹ While the “purpose of Pondage is to assist a HEP to meet intermediate and peaking loads on a daily and weekly basis”,¹⁰³⁰ the requirement under Annexure D that “maximum Pondage” shall not exceed “twice the Pondage required for Firm Power” mandates a specific volume of Pondage to be derived solely from the hydrologic conditions at the site of the HEP.¹⁰³¹ Specifically, Pakistan submits that Pondage “required for Firm Power” means the volume of storage required to ensure that all inflow received in a HEP’s reservoir in each 24-hour period can be discharged through the turbines at the MMD within the same 24-hour period.¹⁰³² As previously noted, Pakistan reasons that no Pondage is “required for ‘Firm Power’” when the stream flow at the plant exceeds the MMD because there is sufficient stream flow to operate turbines at the MMD.¹⁰³³ Accordingly, the need for Pondage shall only exist when the stream flow falls below the MMD and therefore the focus should be on Pondage in that situation.¹⁰³⁴ On the basis of these principles, and the interpretation outlined above, Pakistan advances the following four-step methodology for the calculation of maximum allowable Pondage.¹⁰³⁵

623. *First*, Pakistan submits that the MMD for a given HEP must be calculated based on the formula provided in Paragraph 2(i), which relies on observed and estimated stream flow data that India must provide under Paragraph 9 of Annexure D and Paragraph 2(b) of Appendix II of Annexure D.¹⁰³⁶ India must provide stream flow data based on the average discharge during 10-day periods over the most recent 25-year span for Annexure D, Part 3 HEPs.¹⁰³⁷ Pakistan notes that the Parties do not dispute the method for calculating the MMD.¹⁰³⁸

¹⁰²⁹ Pakistan’s Memorial, paras. 11.3, 11.83, *referring to P-0066*, Record of the 103rd Meeting of the Permanent Indus Commission, 31 May to 5 June 2009, pp. 14–16. See also Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, p. 77:2–4.

¹⁰³⁰ Pakistan’s Memorial, para. 11.83.

¹⁰³¹ Pakistan’s Memorial, para. 11.49; Pakistan’s Preliminary Comments, paras. 5, 7.

¹⁰³² **PHM-0015**, Hearing Presentation (“Pondage by Dr. Cameron Miles”) dated 12 July 2024, slide 40.

¹⁰³³ Pakistan’s Memorial, para. 11.58.

¹⁰³⁴ Pakistan’s Memorial, para. 11.58.

¹⁰³⁵ See Pakistan’s Memorial, Appendix E2 (“Calculation of Maximum Pondage Under Annexure D, Paragraph 8(C)”).

¹⁰³⁶ Pakistan’s Memorial, paras. 11.45–11.49. Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, pp. 59:18–62:8.

¹⁰³⁷ **PLA-0001**, Treaty, Annexure D, para. 2(i). India need only supply stream flow data over the most recent five-year period for “Small Plants”.

¹⁰³⁸ Pakistan’s Memorial, para. 11.46.

624. *Second*, using the MMD, Pakistan calculates Firm Power as the instantaneous power, measured in megawatts, that the HEP can generate while discharging the MMD through its turbines.¹⁰³⁹ In this regard, Pakistan distinguishes “Firm Power” (the instantaneous rate of power production) from “Firm Energy” (the cumulative amount of energy which the HEP will generate over a specified period of time).¹⁰⁴⁰ The “Firm Power” calculation, in accordance with established engineering practice, involves multiplying the HEP’s net generating head by the discharge rate (the MMD), the efficiency of the turbine-generating units, the force of gravity, and the density of water.¹⁰⁴¹
625. *Third*, Pakistan defines the Pondage “required for Firm Power” as the volume of storage required to ensure that all inflow received in a HEP’s reservoir in each 24-hour period can be discharged through the turbines at the MMD within the same 24-hour period.¹⁰⁴² This approach accords with Pakistan’s conception that the purpose of the Pondage is to enable the HEP to operate at “Firm Power” for as many hours as possible in a 24-hour period, in circumstances where the flow of the river falls below the MMD.¹⁰⁴³ For calculating that volume of storage, Pakistan advances the following approach:
- (a) Pakistan starts from the premise that, on any day when the river flow is less than the MMD, the HEP will be operated so that the turbines are turned completely off for x hours to store water, and then turned on for y hours to generate “Firm Power” at the MMD rate. The

¹⁰³⁹ Pakistan’s Memorial, paras. 11.50–11.83.

¹⁰⁴⁰ Pakistan’s Memorial, para. 11.50; Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, pp. 52:4–56:20; Pakistan’s Post-Hearing Submission, para. 2.61(b).

¹⁰⁴¹ Pakistan’s Memorial, para. 11.51, *citing* P-0477, J. S. Gulliver and R. E. A. Arndt (eds.), *Hydropower Engineering Handbook* (McGraw Hill 1991), p. 4.7. The resulting formula is expressed as:

$$P = \eta \rho g Q H$$

where

P is the instantaneous power output (W)	g is the gravitational constant (9.81 m/s ²)
η is the turbine efficiency	Q is the discharge rate in cubic meters per second (m ³ /s)
ρ is the density of water (approximately 1000 kg/m ³ for freshwater)	H is the net generating head in meters (m)

¹⁰⁴² PHM-0015, Hearing Presentation (“Pondage by Dr. Cameron Miles”) dated 12 July 2024, slide 40.

¹⁰⁴³ Pakistan’s Memorial, paras. 11.3, 11.83, *referring to* P-0066, Record of the 103rd Meeting of the Permanent Indus Commission, 31 May to 5 June 2009, pp. 14–16.

number of hours the turbines are turned off or on will vary depending on the daily river flow, but on any day, x plus y must equal 24 hours.¹⁰⁴⁴

- (b) Based on that premise, Pakistan examines the possible range of x and y values to determine which x/y combination produces the greatest amount of usable Pondage when the stream flow falls below the MMD.¹⁰⁴⁵ Pakistan makes that determination through a simple application of differential calculus, as set out in Pakistan's Memorial at Appendix E2.
- (c) In short, the greatest amount of required Pondage arises when the stream flow rate is one-half of the MMD. When the stream flow rate is higher (e.g., 90% of the MMD), a relatively small amount of Pondage is needed to make up for the slight drop in MMD. At the same time, when the stream flow rate is very low (e.g., 10% of the MMD), the amount of Pondage that can possibly be accrued is also low. A stream flow rate of 50% of MMD produces the greatest amount of Pondage that is both needed and can be accrued for any HEP.¹⁰⁴⁶
- (d) Further, when the stream flow is one-half of the MMD, the greatest amount of usable Pondage is achieved at a point in which x and y are equal—viz., the turbines are shut off for 12 hours of the day to allow Pondage to accrue, and then the turbines are turned on for 12 hours of the day to drawdown that Pondage at the MMD rate to produce Firm Power.¹⁰⁴⁷
- (e) In sum, under Pakistan's view, the "Pondage required for Firm Power" is the volume that can be stored over a period of 12 hours when the stream flow is 50% of the MMD, which can also be expressed as a Pondage volume of 6 hours of the MMD. If the MMD at a particular location is calculated in m^3/second , then the $\text{MMD} \times 60 \text{ seconds} \times 60 \text{ minutes} \times 6 \text{ hours} = \text{Pondage required for Firm Power}$.¹⁰⁴⁸

626. *Fourth*, in accordance with Paragraph 8(c),¹⁰⁴⁹ this quantum of Pondage required for "Firm Power" is then doubled to determine the "maximum Pondage" allowed for the HEP.¹⁰⁵⁰ In

¹⁰⁴⁴ Pakistan's Memorial, paras. 11.74–11.76.

¹⁰⁴⁵ Pakistan's Memorial, para. 11.76.

¹⁰⁴⁶ Pakistan's Memorial, para. 11.76.

¹⁰⁴⁷ Pakistan's Memorial, para. 11.77.

¹⁰⁴⁸ Pakistan's Memorial, para. 11.78.

¹⁰⁴⁹ **PLA-0001**, Treaty, Annexure D, para. 8(c).

¹⁰⁵⁰ Pakistan's Memorial, para. 11.84.

Pakistan’s view, doubling the “Pondage required for Firm Power” provides the HEP with significant flexibility and operating headroom, allowing for regulation during the week.¹⁰⁵¹

627. Pakistan maintains that its formula for calculating maximum Pondage does not dictate how the plant actually will be run; it is a design constraint intended to limit the maximum amount of water storage at a Run-of-River Plant based solely on the hydrology at the site. The design criterion requires that “maximum Pondage” be determined based on a formula that assumes turbine power production at a rate “corresponding to” the MMD, regardless of the actual stream flow on any given day. But India may utilize the resulting volume of “maximum Pondage” any way it pleases, operating its turbines at whatever stream flow rate India chooses, whenever it wants, so long as it does not store more water than the “maximum Pondage” calculation provides.¹⁰⁵²
628. Pakistan explains its methodology and critiques India’s approach in considerable additional detail.¹⁰⁵³ Specifically, Pakistan submits that India’s approach seeks to redefine Paragraphs 2(i) and 8(c) of Annexure D by reference to an extra-Treaty methodology based on a unilaterally-determined load curve, from which the Treaty drafters sought to depart.¹⁰⁵⁴ In this regard, Pakistan alleges that India’s methodology is “computationally dense”, reliant on extra-Treaty information, and fails to take proper account of Article III of the Treaty, being the rule from which Annexure D is an exception.¹⁰⁵⁵ But ultimately its core submission, in answer to the Court’s question of what is to be included and excluded in calculating “maximum Pondage”, is that “maximum Pondage” is to be calculated exclusively based on the MMD of the river at the HEP site, independent of the plant’s installed capacity and its anticipated load, or the operational constraints of Paragraph 15.

(d) *Subsequent Practice of the Parties*

629. Pakistan submits that, contrary to India’s allegations, there has been no established or consistent approach to the calculation of maximum Pondage under Paragraph 8(c) of Annexure D to the Treaty.¹⁰⁵⁶ Rather, a review of the full documentary record confirms that the Parties have had a significant and sustained disagreement on the approach to Pondage calculation since an early

¹⁰⁵¹ Pakistan’s Memorial, paras. 11.86–11.87.

¹⁰⁵² Pakistan’s Memorial, para. 11.88.

¹⁰⁵³ Pakistan’s Memorial, paras. 11.90–11.148.

¹⁰⁵⁴ Pakistan’s Memorial, para. 11.120.

¹⁰⁵⁵ Pakistan’s Memorial, para. 11.120.

¹⁰⁵⁶ Pakistan’s Final Comments, paras. 2.1–2.70.

point in their exchanges.¹⁰⁵⁷ Pakistan recognizes that Pakistan's Commissioner, Mr. Mian Khalil-Ur-Rahman, initially did not expressly object to India's *methodology* regarding the early Run-of-River HEPs (namely the Stakna and Sumbal HEPs), but says this was due to the negligible Live Storage calculated on the basis of daily loading.¹⁰⁵⁸ From 1971, however, Pakistan maintains that its successive Commissioners consistently, and with growing emphasis, challenged India's approach to calculating maximum Pondage based on plant loading and installed capacity, rather than on the objective Firm Power formula mandated by the Treaty.¹⁰⁵⁹ Pakistan submits that these concerns crystallized sharply with regard to the Baglihar HEP, due to its significant proposed Operating Pool, its reliance on weekly loading, and India's intention to fully utilize its claimed maximum Pondage, contrary to past practice.¹⁰⁶⁰ This significant departure from India's historic practice on HEP design and Pondage prompted Pakistan to resort to third-party dispute resolution under Article IX of the Treaty, underscoring the fundamental nature of the disagreement.¹⁰⁶¹

630. Accordingly, Pakistan submits that India's reliance on selective and decontextualized correspondence is misleading and cannot establish the existence of a consistent or accepted practice.¹⁰⁶² In any event, Pakistan considers that India's use of the waters was not in accordance with a correct interpretation of the Treaty and that, pursuant to Article IV(14) of the Treaty, India cannot have acquired, by reason of Pakistan's conduct, any right to a continuance of such use.¹⁰⁶³

2. India's Position in the Permanent Indus Commission, the *Baglihar* Neutral Expert Proceedings, and the *Kishenganga* Arbitration

631. India's position is that Pondage is defined to be Live Storage of only sufficient magnitude to satisfy variations in the daily or weekly loads of the plant and consequently the variations in the turbine discharge necessary to produce this variable demand of power.¹⁰⁶⁴ This conclusion, in

¹⁰⁵⁷ Pakistan's Final Comments, para. 2.63.

¹⁰⁵⁸ Pakistan's Final Comments, paras. 2.31(a), 2.32–2.39; Pakistan's Post-Hearing Submission, paras. 2.10–2.11; Pakistan's Preliminary Comments, para. 9.

¹⁰⁵⁹ Pakistan's Final Comments, paras. 2.31(b)–(c), 2.48–2.49, 2.69; Pakistan's Post-Hearing Submission, paras. 2.7–2.21; Pakistan's Preliminary Comments, para. 12.

¹⁰⁶⁰ Pakistan's Final Comments, para. 2.51; Pakistan's Post-Hearing Submission, paras. 2.16–2.29.

¹⁰⁶¹ Pakistan's Final Comments, paras. 2.51–2.52, 2.69(c).

¹⁰⁶² Pakistan's Final Comments, paras. 2.54–2.68.

¹⁰⁶³ Pakistan's Final Comments, para. 2.70; Pakistan's Post-Hearing Submission, paras. 2.11–2.13.

¹⁰⁶⁴ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 32; **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, para. 45; **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 41.

India's view, is reflected in, *inter alia*, Paragraph 8(c) of Annexure D to the Treaty, read in conjunction with Paragraphs 2(c) and 15 of Annexure D, and as affirmed in the *Baglihar* Determination.¹⁰⁶⁵ This approach enables India to best utilize the plant's design capacity to meet actual load demands. In the Commission, India has adopted, and relied upon, the approach taken by the *Baglihar* Neutral Expert in the *Baglihar* Determination as setting out the appropriate methodology regarding the calculation of maximum Pondage.¹⁰⁶⁶

632. In sum, India's methodology for the calculation of maximum Pondage involves: (1) establishing the MMD at a given site; (2) using the MMD to establish the operational constraints on the downstream flow releases set out in Paragraph 15 of Annexure D; (3) preparing a table calculating the Pondage necessary to meet the planned loads of a plant within the operational constraints of the Treaty; and (4) doubling that amount of Pondage.

(a) Definition of Pondage

633. India states that the objective of Paragraph 8(c) of Annexure D to the Treaty "is to prescribe a limit in relation to maximum Pondage in Run-of-River Hydroelectric Plants on the Western Rivers", which is "at twice the Pondage required for generation of Firm Power".¹⁰⁶⁷ India emphasizes that there are no restrictions in Paragraph 2(c) of Annexure D on the timing or fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant.¹⁰⁶⁸ Rather, the turbine discharge may be varied in accordance with Indian power system requirements, so long as India acts consistent with the operational restrictions imposed by Paragraph 15 of Annexure D.¹⁰⁶⁹

¹⁰⁶⁵ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 28, referring to **PLA-0002**, *Baglihar* Determination; **P-0330**, Record of the 104th Meeting of the Permanent Indus Commission, 27 to 31 March 2010, pp. 5–6; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.7.

¹⁰⁶⁶ **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 9; **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021, Appendix VII.

¹⁰⁶⁷ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.1.

¹⁰⁶⁸ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.13.

¹⁰⁶⁹ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

634. India maintains that Pakistan’s approach effectively treats Pondage as storage to meet fluctuations in the inflow of the river.¹⁰⁷⁰ Yet, this approach would provide for “nil or trivial Pondage inadequate to meet daily and weekly load variations” in circumstances where there are “no or little fluctuations over a period of seven days in natural river flow”.¹⁰⁷¹ In this regard, India submits that HEPs of this size, which are “relatively small compared to the total system capacity”, are “used to cater to part(s) of the system demand which could vary from time to time and over the life of the Plant”.¹⁰⁷² India submits that this operational flexibility is inherent in Paragraph 2(c) of the Treaty.¹⁰⁷³

(b) *Pondage required for Firm Power*

635. The term ‘Firm Power’ is defined under Paragraph 2(i) of Annexure D as the hydro-electric power corresponding to the MMD at the site of a plant, which India argues represents the minimum quantum of energy that would be available to meet the energy component of power demand on all the days throughout the year.¹⁰⁷⁴ India argues that this firm energy is utilized for meeting peak demands of the system by varying the turbine discharges (hourly loads of the plant) within the restrictions on the volume of releases (energy) over a daily or weekly cycle.¹⁰⁷⁵

636. India maintains that the specification in Paragraph 8(c) that “maximum Pondage” is limited to that “required for Firm Power” constrains Pondage on run-of-river plants, but it does so based on a computation that enables India to best utilize the plant’s design capacity to meet actual load demands.¹⁰⁷⁶ India’s methodology for calculating Pondage is based on a conceptual operation of the HEP at a constant river inflow corresponding to the MMD, while meeting load demands

¹⁰⁷⁰ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 32; **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 32; **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, para. 45; **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 20.

¹⁰⁷¹ **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 41.

¹⁰⁷² **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.6.

¹⁰⁷³ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.6.

¹⁰⁷⁴ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.1; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

¹⁰⁷⁵ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

¹⁰⁷⁶ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.5.2.

through variations in turbine operation.¹⁰⁷⁷ India's computation treats the HEP as receiving a constant stream flow at the MMD rate over the course of the week, with the dam operator accumulating Pondage and then releasing it through the turbines at the HEP's design capacity at specified hours based on the power grid's demand for peak power.¹⁰⁷⁸

637. Contrary to Pakistan's position, India argues that there is not a single provision of the Treaty that requires constant turbine discharge for generation of Firm Power *vis-à-vis* assumed daily inflow discharge variations.¹⁰⁷⁹ India contends that such an approach is subjective and yields Pondage ranging from very trivial amounts to amounts more than that which is contended for by India.¹⁰⁸⁰ Rather, India submits that, for Run-of-River HEPs located below Ramban, the required volume of water for Firm Power would be the volume of water contained in the "MMD over the day", whereas for Run-of-River HEPs located above Ramban, the required volume of water contained in the MMD over a period of seven days.¹⁰⁸¹
638. India maintains that Paragraph 15 sets restrictions on the volume of water released *vis-à-vis* inflow volume.¹⁰⁸² For the Baglihar HEP, Paragraph 15 requires that the volume of water received in the river upstream of the plant in a week should be released back into the river below the plant in the same week, and that the volume of water delivered into the river in a day (subject to limited exceptions) shall not be less than 50 per cent or more than 130 per cent of the volume received above the plant during the same 24-hour period.¹⁰⁸³ Accordingly, India submits that the Treaty permits India to vary turbine discharges pursuant to Paragraph 2(c) of Annexure D as per its needs

¹⁰⁷⁷ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.5.2.

¹⁰⁷⁸ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.5.2.

¹⁰⁷⁹ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 28; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.1.

¹⁰⁸⁰ **P-0103**, Record of the 113th Meeting of the Permanent Indus Commission, 20 to 21 March 2017, para. 28; **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, para. 45.

¹⁰⁸¹ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.4.

¹⁰⁸² **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

¹⁰⁸³ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.13.

within the constraints of mandated limits on volume of releases into the river below the plant as set out in Paragraph 15 of Annexure D.¹⁰⁸⁴

639. In India's view, Pakistan's approach would render Paragraph 15 of Annexure D redundant, as the limited Pondage Pakistan allows could under no circumstances allow operation of the plant in a manner that exceeds the discharge limits set forth in Paragraph 15.¹⁰⁸⁵ In this regard, India argues that the provisions of Paragraphs 8 and 15 of Annexure D are complementary, such that the design criteria contained in Paragraph 8 are not premised on India's capability of violating the operational criteria of Paragraph 15.¹⁰⁸⁶

(c) *Calculating Maximum Pondage*

640. India's proposed methodology for the calculation of maximum Pondage is premised on a constant MMD with variations in turbine discharge corresponding to electricity consumption, including with respect to the peak load hours.¹⁰⁸⁷ Specifically, India argues that it is entitled to a Pondage of a size that: (1) can be accumulated and discharged over a day or a week (typically a week) based on a constant stream flow at the MMD; (2) is used to satisfy India's choice of turbine size and its loading requirements, which will vary from plant to plant; (3) fits the downstream flow release operating constraints set out in Paragraph 15 of Annexure D; and (4) is then doubled. These four steps may be illustrated through India's calculations of maximum Pondage for its Kiru HEP.¹⁰⁸⁸ Those calculations appear on the operating pool calculations table on page 263 below.¹⁰⁸⁹
641. *First*, India's approach requires the determination of the MMD for a given HEP in accordance with the formula provided in Paragraph 2(i) of Annexure D to the Treaty, calculated from the

¹⁰⁸⁴ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, para. 5.3.7.

¹⁰⁸⁵ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 32; **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 20.

¹⁰⁸⁶ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.6.

¹⁰⁸⁷ See, e.g., **PLA-0002**, *Baglihar Determination*, pp. 78–80.

¹⁰⁸⁸ See **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021, Annexure VII, p. 51. Such calculation is part of the information India is obliged to provide to Pakistan prior to construction of the HEP. See **PLA-0001**, Treaty, Annexure D, para. 9.

¹⁰⁸⁹ For similar methods of calculation in relation to the *Baglihar* HEP, see **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.2; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.13.

stream flow data at the site of the HEP.¹⁰⁹⁰ The methodology for calculating the MMD is undisputed between the Parties.¹⁰⁹¹ For the Kiru HEP table above, India set out the MMD calculated from the stream flow data at the site, which it said was 65.0 cubic meters per second ($\text{m}^3/\text{sec.}$, although India uses the notation “cumec”). The MMD is also used by India to set out the daily inflow into the reservoir, which it calculated by multiplying the MMD times 24 hours, providing a value of 1560 cumec-hrs. (A cumec-hr is a measure of volume, equal to 1 cubic meter per second flow over one hour, or 3600 cubic meters).

642. *Second*, India sets out the turbine discharge rate chosen for the HEP. India selects a plant’s turbine capacity based on factors apart from the Treaty, such as projected power demand and the economics of building an efficient plant. At the Kiru HEP, India elected to use four turbines with a combined power capacity of 624 megawatts and a discharge rate of 586 cumecs.
643. *Third*, India establishes the daily and weekly constraints on the volume of water released from a HEP *vis-à-vis* inflow volume in accordance with Paragraph 15 of Annexure D.¹⁰⁹² In the case of the Kiru HEP, Paragraph 15 provides that the volume of water delivered into the river in a day shall not be less than 50% or more than 130% of the volume received above the plant during the same 24-hour period.¹⁰⁹³ Applying these operational constraints to its Pondage calculation for the Kiru HEP, India calculated that the minimum daily downstream flow volume was 780 cumec-hrs ($0.5 \times 1,560$ cumec-hrs) and the maximum daily downstream flow volume was 2,028 cumec-hrs ($1.3 \times 1,560$ cumec-hrs). To ensure that it stayed within the operating constraint, India identified what it refers to as a “minimum environmental flow” of 16.33 cumecs.

¹⁰⁹⁰ P-0547 (BR-0008), *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1.

¹⁰⁹¹ Pakistan’s Memorial, paras. 11.45–11.49.

¹⁰⁹² P-0547 (BR-0008), *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.5.1; P-0547 (BR-0012), *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 5.4.13.

¹⁰⁹³ PLA-0001, Treaty, Annexure D, para. 15(ii).

KIRU H. E. PROJECT								
Calculation for Operating Pool (as per IWT 1960)								
Minimum Mean Discharge (MMD)			=	65.00		cumec		
Turbine (all 4 units) discharge			=	586		cumec		
Min env flow			=	16.33		cumec		
Daily inflow = 24 hr X MMD			=	1560.00		cumec-hr		
Minimum outflow to be released in a day=50% daily inflow			=	780.00		cumec-hr		
Maximum outflow to be released in a day=130% daily inflow			=	2028.00		cumec-hr		
Maximum pondage shall not exceed twice the pondage req. for firm power as per IWT								
Day	Time	Inflow	*Peaking & Releases	Storage	Cumulative Storage	Power Generation		
	Period	No. of hrs.	(cumec- hr)	(cumec-hr)	(cumec-hr)	No. of hrs.	Power MW	
Opening balance =					596			
Sat-Sun	0800-1700	9.00	585.00	146.97	438	1034	0.00	624
	1700-1800	1.00	65.00	574.89	-510	524	0.95	624
	1800-2400	6.00	390.00	97.98	292	816	0.00	624
	2400-0530	5.50	357.50	89.82	268	1084	0.00	624
	0530-0800	2.50	162.50	40.83	122	1206	0.00	624
Sun-Mon	0800-1700	9.00	585.00	146.97	438	1644	0.00	624
	1700-1800	1.00	65.00	602.33	-537	1106	1.00	624
	1800-2400	6.00	390.00	97.98	292	1398	0.00	624
	2400-0530	5.50	357.50	89.82	268	1666	0.00	624
	0530-0800	2.50	162.50	40.83	122	1788	0.00	624
Mon-Tue	0800-1700	9.00	585.00	146.97	438	2226	0.00	624
	1700-1800	1.00	65.00	602.33	-537	1688	1.00	624
	1800-2400	6.00	390.00	97.98	292	1980	0.00	624
	2400-0530	5.50	357.50	89.82	268	2248	0.00	624
	0530-0800	2.50	162.50	40.83	122	2370	0.00	624
Tue-Wed	0800-1700	9.00	585.00	146.97	438	2808	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	1330	2.75	624
	1945-2400	4.25	276.25	69.40	207	1537	0.00	624
	2400-0530	5.50	357.50	89.82	268	1805	0.00	624
	0530-0800	2.50	162.50	40.83	122	1926	0.00	624
Wed-Thu	0800-1700	9.00	585.00	146.97	438	2364	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	887	2.75	624
	1945-2400	4.25	276.25	69.40	207	1093	0.00	624
	2400-0530	5.50	357.50	89.82	268	1361	0.00	624
	0530-0800	2.50	162.50	40.83	122	1483	0.00	624
Thu-Fri	0800-1700	9.00	585.00	146.97	438	1921	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	443	2.75	624
	1945-2400	4.25	276.25	69.40	207	650	0.00	624
	2400-0530	5.50	357.50	89.82	268	918	0.00	624
	0530-0800	2.50	162.50	40.83	122	1039	0.00	624
Fri-Sat	0800-1700	9.00	585.00	146.97	438	1477	0.00	624
	1700-1945	2.75	178.75	1656.41	-1478	0	2.75	624
	1945-2400	4.25	276.25	69.40	207	207	0.00	624
	2400-0530	5.50	357.50	89.82	268	474	0.00	624
	0530-0800	2.50	162.50	40.83	122	596	0.00	624
Total =		10920.00	10920.00	13.953				
Pondage required =					2808	cumec-hr		
or					10.11	Mcum		
Pondage allowed as per Indus Water Treaty = 2 x Reqd. Pondage =					20.22	Mcum		
* Includes Discharge for environmental flow.								

Figure 15: Calculation for Operating Pool of Kiru HEP

this page intentionally blank

644. Using these three factors, India then calculates the amount of live storage necessary to meet the mismatch between the inflow into the reservoir based on the MMD and the varying turbine discharge out of the reservoir according to planned load requirements of the plant over a selected period (a daily or seven-day period).¹⁰⁹⁴ The calculations prepared by India thus identify the cumulative storage necessary to meet the power demand of a plant, but within the downstream flow operating constraints set out in Paragraph 15 of Annexure D. From the resulting operating pool calculations table, the required Live Storage will be the volume of the Operating Pool necessary to support India's planned operation of the HEP, represented by the maximum cumulative difference between inflow and outflow volumes observed over the relevant period (typically a seven-day period).¹⁰⁹⁵
645. To develop its Pondage computation for the Kiru HEP, India applied these parameters to an operating pool calculations table, which includes a simplified load curve in table form. India did not reveal the source of its load calculations; such calculations are apparently based on an internal prediction of installed capacity and anticipated power demand for the plant. The resulting table lists the hours that the turbines are either idle or in operation, and it lists the changes in inflow, releases, and accumulated storage over a seven-day period.
- (a) For example, on Saturday from 8am to 5pm, the plant receives 585 cumec-hrs of inflow (65 cumecs times 9 hours). It releases 146.97 cumec-hrs for environmental flows (16.33 cumecs times 9 hours). The resulting net storage is 438 cumec-hrs (585 cumec-hrs minus 146.97 cumec-hrs). The reservoir has an "opening balance" of 596 cumec-hrs (listed at the top of the chart). The cumulative storage as of 5 pm on Saturday is the "opening balance" plus the net storage for the nine-hour period (596 cumec-hrs plus 438 cumec-hrs), which equals 1034 cumec-hrs.
 - (b) Each line of the chart is filled out accordingly, taking into account whether the turbines are operating or not. For example, on Saturday from 5pm to 6pm, the turbines operate for 0.95 hours. The releases for that hour therefore include both the turbine discharge (586 cumec-

¹⁰⁹⁴ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Chs. 2.5.1, 2.5.2.

¹⁰⁹⁵ See, e.g., **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021, Annexure VII, p. 51; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Annexure 2.5.

hrs multiplied by 0.95) and the environmental release (16.33 cumec multiplied by 1 hour) for a total of 573.03 cumec-hrs.¹⁰⁹⁶

- (c) The table shows that, if India selects turbines rated to discharge at 586 cumecs and operates them according to the peaking schedule, a constant inflow at the MMD rate of 65 cumecs would produce a required Pondage of 2,808 cumec-hrs (occurring on Tuesday morning). The table also shows that India would time its releases to ensure that it stays within the downstream flow release operating constraint; that is, on any given day, water released would be within the 50%/130% daily constraints set by Paragraph 15 of Annexure D and, for the week, the total water released would equal to the total input, as also required by Paragraph 15. India used its “minimum environmental flow” of 16.33 cumecs to achieve that result.

646. *Fourth*, India then doubles the required Pondage to reach the “maximum Pondage” permitted by Paragraph 8(c) of Annexure D. With respect to the Kiru HEP, as noted above, India viewed the required Pondage to be 2,808 cumec-hrs, which is equal to 10.11 MCM as the “Pondage required for Firm Power” under the Treaty. It therefore doubled that number to obtain the “maximum Pondage” of 20.22 MCM.
647. In sum, India’s “maximum Pondage” calculation is based on an assumption that the MMD is constant for the seven-day period and that India is entitled to a Pondage of a size that: (1) is needed to satisfy India’s choice of turbine size and its loading requirements, which will vary from plant to plant; (2) fits the downstream flow release operating constraint set out in Paragraph 15 of Annexure D; and (3) is then doubled.

(d) *Subsequent Practice of the Parties*

648. India argues that its methodology for the calculation of the maximum allowable Pondage has been uniformly applied and adopted in respect of all the HEPs on the Western Rivers covered by the provisions of Annexure D to the Treaty prior to Pakistan’s objection in relation to the Baglihar HEP.¹⁰⁹⁷ This practice includes, relevantly, the Stakna, Lower Jhelum, Dul Hasti, Upper Sindh,

¹⁰⁹⁶ For reasons that are unclear—perhaps a simple arithmetic error—India calculates the value as 574.89 cumec-hrs. Those releases reduce the cumulative storage to 524 cumec-hrs (1034 cumec-hrs plus 65 cumec-hrs of inflow minus 574.89 cumec-hrs of releases).

¹⁰⁹⁷ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.6; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 20 March 2006, Ch. 5.4.4.

Kargil, and Parnai HEPs.¹⁰⁹⁸ In this regard, India contends that Pakistan’s Commissioner has previously “suggested in explicit terms” the concept behind India’s methodology for the calculation of Pondage in regards to the Stakna HEP.¹⁰⁹⁹ Accordingly, India concludes that this methodology amounts to an accepted interpretation of the provisions of the Treaty evidenced by “subsequent practice” which has been consistently followed between September 1968 and January 1990.¹¹⁰⁰

B. THE COURT’S ANALYSIS

649. This Part addresses what is to be taken into account, and what is to be excluded, for the purposes of calculating maximum Pondage for an Annexure D, Part 3 HEP.¹¹⁰¹ Paragraph 8(c) of Annexure D provides:

The maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power.

650. The limitation expressed in Paragraph 8(c) must be read against the backdrop of the overall approach to be taken when interpreting Article III and Annexure D, Part 3.¹¹⁰² That approach is to acknowledge: (1) a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use; (2) that there are certain specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power; (3) that exception is to be strictly construed, in the sense that it does not permit India to generate hydro-electric power on the Western Rivers based on what might be the ideal or best practices approach for engineering a run-of-river HEP but, rather, only allows the design and operation of Run-of-River HEPs that hew strictly to the requirements set forth in Article III and Annexure D, Part 3; (4) yet that those requirements cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with Treaty; and (5) that, in furtherance of the Treaty’s objective and obligations of mutual cooperation, any questions concerning the balance in these rights and obligations are to be identified through

¹⁰⁹⁸ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.6, Annexure 2.6.

¹⁰⁹⁹ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.6, referring to **P-0649.0136**, Letter No. WT(16)/(2202-A)/PCIW dated 5 November 1968, p. 3.

¹¹⁰⁰ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, Ch. 2.6.

¹¹⁰¹ Procedural Order No. 6, para. 35(d).

¹¹⁰² See Part VIII.B, *supra*.

the Treaty's procedures for notification and objection, and addressed through the Treaty's procedures for resolving such questions.¹¹⁰³

651. The Parties' positions regarding the interpretation of Paragraph 8(c) have been set out in detail above. Distilled to their essence, the approaches to calculation of maximum Pondage advanced by the Parties differ as follows. Pakistan contends that the requirement under Paragraph 8(c) that "maximum Pondage" shall not exceed "twice the Pondage required for Firm Power" identifies a specific volume of Pondage that depends solely on the hydrology of the river at the plant site. Although Pakistan does not state the matter in these terms, reducing Pakistan's mathematical equations to their simplest form reveals that Pakistan is proposing that the value of maximum Pondage for every Annexure D, Part 3 HEP be calculated as follows:

$$\text{maximum Pondage (MCM)} = \text{MMD (m}^3/\text{sec)} \times 0.0432$$

where maximum Pondage is a volume expressed in million cubic meters (MCM) and the MMD is a flow rate expressed in cubic meters per second (m³/sec).¹¹⁰⁴

652. By contrast, India asserts that the determination of "maximum Pondage" under Paragraph 8(c) must also take account of the HEP's installed capacity and the hydro-electric load demands placed on the plant. Thus, while India restricts maximum Pondage based on the MMD at the site of its HEP (as well as the operational delivery requirements of Annexure D, Paragraph 15), the installed capacity and anticipated load requirements for that particular HEP are additional variables in India's methodology.

¹¹⁰³ See Part VIII.B.2, *supra*.

¹¹⁰⁴ Pakistan maintains that the maximum need for usable pondage arises when the stream flow rate is equal to half of the MMD. At that stream flow, the most usable pondage is achieved at a point when the turbines are shut off for 12 hours of the day so as to allow pondage to accrue, and then turned on for 12 hours of the day so as to drawdown that pondage. The volume of pondage that can be accrued at half of the MMD over 12 hours is equivalent to six hours of MMD. Assuming the MMD at a particular location is calculated in m³/second, then the volume of pondage produced from six hours of MMD (m³/sec) would equal MMD multiplied by 60 seconds, then multiplied by 60 minutes, and finally multiplied by 6 hours. Thus, Pakistan would calculate Firm Power as follows:

$$\text{Firm Power} = \text{MMD (m}^3/\text{sec)} \times 60 \text{ seconds} \times 60 \text{ minutes} \times 6 \text{ hours} = \text{MMD (m}^3/\text{sec)} \times 21,600$$

This value is then doubled in accordance with Paragraph 8(c) of Annexure D to establish maximum Pondage in cubic meters:

$$\text{Maximum Pondage (m}^3\text{)} = \text{MMD (m}^3/\text{sec)} \times 21,600 \times 2 = \text{MMD (m}^3/\text{sec)} \times 43,200$$

To convert maximum Pondage to million cubic meters (MCM), this figure is divided by 1 million:

$$\text{Maximum Pondage (MCM)} = \text{MMD (m}^3/\text{sec)} \times 0.0432$$

653. Both Pakistan’s and India’s methodologies contain restrictions on Pondage; this is not a situation of Pakistan advocating for restrictions and India opposing any restriction. Rather, the question is *which* restrictions follow from the Treaty. Both methodologies recognize that using the MMD at the HEP’s site significantly restricts the amount of potential energy that can be stored at the HEP through Pondage. Thus, maximum Pondage is to be calculated based on a very unfavorable stream flow rate—using a formula that reflects historically low flows over a 25-year period.¹¹⁰⁵ Only rarely does the flow in a river ever fall below that rate, and then only for short periods. In other words, for either methodology, maximum Pondage will be determined using only the amount of water that might be accumulated during a historically low period of stream flow at the site of the HEP. Moreover, while the Treaty is silent on the issue of the period of time over which India is entitled to use Pondage to produce Firm Power,¹¹⁰⁶ both methodologies reject a duration that extends beyond one week; Pakistan’s methodology focuses on a daily operating period, while India focuses on a period that may extend up to a week.
654. The critical difference between the Parties’ methodologies is, within the limitation imposed by the MMD at the site of the proposed HEP, how much of that energy may be stored in the form of Pondage to address fluctuations in power demand. As a general matter, Pakistan’s methodology allows India to have a smaller volume of maximum Pondage to address fluctuations in power demand than does India’s methodology. For example, Pakistan’s methodology, when applied to India’s Kiru HEP on the Chenab River, results in a maximum Pondage of 2.82 MCM,¹¹⁰⁷ while India’s methodology results in a maximum Pondage of 20.22 MCM,¹¹⁰⁸ though in that instance India only proposed an actual Pondage of 10.5 MCM.¹¹⁰⁹
655. In resolving this dispute, the Court applies, in the analysis that follows, the rules on treaty interpretation explained in Part VI.D. To that end, the interpretation of Paragraph 8(c) is necessarily informed by the ordinary meaning to be given to its text.¹¹¹⁰ That text, in turn, is

¹¹⁰⁵ **PLA-0001**, Treaty, Annexure D, para. 2(i).

¹¹⁰⁶ Pakistan’s Memorial, para. 11.55 (“The concept of Firm Power in the Treaty does not proceed on the basis of the HEP in question achieving Firm Power for any defined period of time, such as a minute, an hour, or a number of hours in a day, etc”).

¹¹⁰⁷ Pakistan’s Memorial, paras. 11.76–11.82, 11.85. As previously noted, India communicated engineering details of this plant, including the MMD at the plant site, when it notified Pakistan of its plan to construct the plant pursuant to Paragraph 6 of Annexure D. See **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021.

¹¹⁰⁸ See para. 646, *supra*.

¹¹⁰⁹ See **P-0546**, Letter No. 3/6/2007-IT/2371 (with enclosure) dated 1 June 2021, Annexure VII, p. 3.

¹¹¹⁰ **PLA-0005**, VCLT, Art. 31(1).

informed by the Treaty’s definitions for three of its terms (“Pondage”, “Operating Pool”, and “Firm Power”), which themselves contain text referring to yet further definitions (“Live Storage”, “Dead Storage Level”, “Full Pondage Level”). When interpreting such text and definitions, consideration must be given as to whether the Parties intended to give a “special meaning” to these terms that differs from their ordinary meaning.¹¹¹¹ Further, the ordinary meaning of Paragraph 8(c) is informed contextually by other provisions of Annexure D (notably Paragraphs 9 and 15 and Appendix II) and other parts of the Treaty (notably Annexure E).¹¹¹² Moreover, the ordinary meaning of Paragraph 8(c) is to be interpreted in light of the object and purpose of the Treaty.¹¹¹³ This interpretive process also benefits from consideration of the practice of the Parties since the adoption of the Treaty, which might either establish an agreement of the Parties as to interpretation of Paragraph 8(c)¹¹¹⁴ or at least confirm a meaning resulting from the initial elements of interpretation.¹¹¹⁵ The Court has also consulted the negotiating history of the Treaty, which provides limited but useful supplementary means for confirming the interpretation of Paragraph 8(c).¹¹¹⁶

1. Ordinary Meaning to Be Given to Annexure D, Paragraph 8(c)

656. The VCLT provides, in part, that a “treaty shall be interpreted in good faith in accordance with the ordinary meaning to be given to the terms of the Treaty”.¹¹¹⁷ Paragraph 8(c) of Annexure D provides: “The maximum Pondage in the Operating Pool shall not exceed twice the Pondage required for Firm Power”. Within this text appear three terms—“Pondage”, “Operating Pool”, and “Firm Power”—that are defined in Part 1, Paragraph 2 of Annexure D (“Definitions”).
657. “Pondage” is defined in Paragraph 2(c) as “Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant”.¹¹¹⁸ “Operating Pool” is defined in Paragraph 2(f) as “the storage capacity between Dead Storage Level and Full Pondage Level”. This definition identifies the storage capacity in

¹¹¹¹ **PLA-0005**, VCLT, Art. 31(4).

¹¹¹² **PLA-0005**, VCLT, Art. 31(2).

¹¹¹³ **PLA-0005**, VCLT, Art. 31(1).

¹¹¹⁴ **PLA-0005**, VCLT, Art. 31(3)(b).

¹¹¹⁵ **PLA-0005**, VCLT, Art. 32.

¹¹¹⁶ **PLA-0005**, VCLT, Art. 32.

¹¹¹⁷ **PLA-0005**, VCLT, Art. 31(1).

¹¹¹⁸ **PLA-0001**, Treaty, Annexure D, para. 2(c). “Live Storage” is defined as “all storage above Dead Storage”, which in turn is defined as “that portion of the storage which is not used for operational purposes”: **PLA-0001**, Treaty, Annexure D, paras. 2(a)–(b).

the reservoir that may be used for generating hydro-electric power.¹¹¹⁹ “Firm Power” is defined in Paragraph 2(i) as “the hydro-electric power corresponding to the minimum mean discharge at the site of the plant ...”.¹¹²⁰

658. The determination of maximum Pondage therefore requires the determination of three elements: (1) the minimum mean discharge at the site of the HEP; (2) the corresponding “Firm Power”; and (3) the “Pondage required for Firm Power”. Each of these elements may be considered separately.
659. *First*, the Parties do not dispute the methodology for calculating the minimum mean discharge in accordance with the formula provided in Paragraph 2(i) of Annexure D to the Treaty based on the stream flow data at the site of the HEP.¹¹²¹ This MMD for a given river, and at a given HEP site, is derived from flow data that India is required to provide under Paragraph 9 of Annexure D and Paragraph 2(b) of Appendix II of Annexure D. On the basis of that flow data, and in accordance with the formula provided in Paragraph 2(i) of Annexure D, the MMD reflects historically low flows over a 25-year period.¹¹²² The MMD at the site of the HEP, however, is not an absolute minimum value, but rather the minimum average discharge, a flow that will be available in most instances, but not at all times.
660. *Second*, “Firm Power” means the hydro-electric power corresponding to the MMD at the site of a plant, calculated in accordance with Paragraph 2(i) of Annexure D. In contrast, “Secondary Power” means “the power, other than Firm Power, available only during certain periods of the year”. It follows by implication that “Firm Power” is to be available during all periods of the year. There is no dispute that hydro-electric power is computed by multiplying the flow rate (in m³/s) by the net generating head (H, in m) by the efficiency of the power-generating units (η), by the density of water (ρ , in kg/m³), and the acceleration of gravity (g, 9.81 m/s²).¹¹²³ Accordingly, “Firm Power” (in W) represents the electricity that can be produced year round on the basis of the minimum average discharge at the site, to be calculated as $P(W) = \text{MMD} \times H \times \eta \times \rho \times g$.

¹¹¹⁹ **PLA-0003**, *Kishenganga* Partial Award, n. 332: (“Dead Storage is defined by the Treaty as ‘that portion of the storage which is not used for operational purposes’; Dead Storage Level ‘means the level corresponding to Dead Storage.’ In practice the Dead Storage Level is calculated by reference to the surface of the reservoir at its maximum ordinary capacity (its ‘Full Pondage Level’). The storage between Full Pondage Level and the Dead Storage Level is termed the ‘Operating Pool,’ and its volume is regulated by Annexure D. The Dead Storage extends from the riverbed to the lower limit of the Operating Pool, once the latter’s capacity is determined under the Treaty”).

¹¹²⁰ **PLA-0001**, Treaty, Annexure D, para. 2(i).

¹¹²¹ Pakistan’s Memorial, paras. 11.45–11.49.

¹¹²² **PLA-0001**, Treaty, Annexure D, para. 2(i).

¹¹²³ See, e.g., Pakistan’s Memorial, Appendix E2, paras. 1–9.

661. *Third*, “Pondage required for Firm Power” draws together two crucial defined terms: “Pondage” and “Firm Power”. “Pondage” is defined in Paragraph 2(c) as “Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant”.¹¹²⁴ This definition identifies, at the least, the purpose of “Pondage”, which is to provide only sufficient storage to allow a HEP’s turbines to operate in response to hydro-electric load variations that may occur on a daily and weekly basis. When read in conjunction with its defined terms, “Pondage required for Firm Power” is equivalent to “Live Storage of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant” required for “the hydro-electric power corresponding to the minimum mean discharge at the site of a plant”.¹¹²⁵
662. On an initial reading, however, the text of Paragraph 8(c) does not clearly indicate what is meant by “Pondage required for Firm Power”. The ambiguity concerns whether “Pondage required for Firm Power” is oriented to the flow of the river, as advanced by Pakistan, or is oriented to the power demand of the HEP, as advanced by India. The definition in Paragraph 2(i) of “Firm Power” as “corresponding” to the “minimum mean discharge” could accommodate Pakistan’s interpretation, which views the volume of Pondage as that required to operate a run-of-river plant at “Firm Power” during any day in which the stream flow falls below the MMD of the river. However, the definition in Paragraph 2(c) of “Pondage” (noted in the prior paragraph) could just as easily accommodate India’s interpretation, which views the volume of Pondage as that “required” to operate a run-of-river plant, with a prescribed installed capacity, to meet that plant’s anticipated load over the course of a day or seven-day period when the river is flowing at the MMD.¹¹²⁶
663. Yet Paragraph 8(c) becomes clearer when considering the ordinary meaning of such terms and the concept of pondage in hydro-electric power engineering; indeed, those terms and that concept are familiar to hydro-electric engineers and cannot sensibly be read apart from their engineering origins. The drafters of the Treaty, who were both lawyers and engineers, used terminology familiar to hydro-engineers at the time the Treaty was adopted to guide them and future engineers

¹¹²⁴ **PLA-0001**, Treaty, Annexure D, para. 2(c). “Live Storage” is defined as “all storage above Dead Storage”, which in turn is defined as “that portion of the storage which is not used for operational purposes”: **PLA-0001**, Treaty, Annexure D, paras. 2(a)–(b).

¹¹²⁵ **PLA-0001**, Treaty, Annexure D, para. 2(i).

¹¹²⁶ Paragraph 8(c) could have been written in similarly terse terms without ambiguity. For example, it could have been reduced to a simple formula—such as the formula that Pakistan’s approach ultimately produces (e.g., “The maximum Pondage in the Operating Pool shall be 0.0432 times the Minimum Mean Discharge”)—but it was not.

who would make decisions on the design and operation of HEPs on the Western Rivers. While the drafters left some terms undefined, defined some terms to ensure clarity, and defined some terms to provide bespoke details,¹¹²⁷ as a general matter the drafters quite naturally would have intended HEP engineers, when encountering the Treaty text, to understand as a backdrop the general concept of pondage and associated terminology as used in dam engineering at the time of the Treaty's adoption.

664. Dam engineering practices at the time of the adoption of the Treaty are described in the leading treatises of that era.¹¹²⁸ Dam engineers in the 1950s determined pondage for HEPs, including run-of-river HEPs, based on the proposed HEP's installed capacity and anticipated load—indeed, the point in having such pondage was to help in meeting such installed capacity and anticipated load requirements.¹¹²⁹ For example, the 1954 text *Hydro Power Engineering: A Textbook for Civil Engineers*, by J. J. Doland, explicitly recognizes the need to determine pondage based on power demand, stating: “In order to regulate the variable power demand, pondage is required so that excess water in the stream can be ponded to meet the deficiency of the supply”.¹¹³⁰ It then provides an example for calculating pondage based on a given plant capacity, stream flow rate, and load curve.¹¹³¹ Similarly, the widely-used 1950 hydro-power treatise by Creager and Justin, *Hydro-Electric Handbook*, observes:

A hydro plant is said to have ample pondage if the capacity of the pond above the intake is sufficient to take care of the hour-to-hour fluctuations of the load on the plant throughout the period of 1 week ... Some ponds, though large enough to take care of some load fluctuation, cannot do so throughout a period of a week during time of minimum stream flow. The plant is then said to have deficient pondage.¹¹³²

¹¹²⁷ For example, the drafters of the Treaty defined “Firm Power” with specific reference to minimum mean discharge over a certain critical period, when that term, if left undefined, might otherwise be calculated on a different basis. See para. 466, *supra*.

¹¹²⁸ See, e.g., **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950); **P-0654**, J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press, 1954); H. K. Barrows, *Water Power Engineering* (McGraw-Hill Book Company, Inc, 2nd. ed. 1943). Those practices have developed somewhat over time, but in most respects remain the same. See Part IX, *supra*.

¹¹²⁹ The concept of calculating pondage in this manner dates back to at least the beginning of the 20th century: See David W. Mead, *Water Power Engineering* (1915), pp. 168–185.

¹¹³⁰ **P-0654**, J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press, 1954), p. 53.

¹¹³¹ **P-0654**, J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press, 1954), p. 53.

¹¹³² **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), p. 162. Chapter 10 of the treatise addresses pondage and storage, while Chapter 11(4) discusses run-of-river HEPs with pondage. For the first edition of this treatise, see W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 1st ed. 1927).

665. That treatise then describes how the calculation of adequate pondage depends on the plant's capacity, stream flow rate, and load curve.¹¹³³ The treatise illustrates how pondage is calculated on an hourly, daily, or weekly basis taking into account anticipated stream flows and power demand. Those calculations identify the critical period when it is most challenging to match water supply and power demand and hence to produce firm power.¹¹³⁴
666. In short, such treatises provide considerable information about how to calculate pondage, including through equations and tables, and in doing so stress that the calculation of pondage requires identification of what is necessary to meet the peak load of the plant.¹¹³⁵ Significantly, neither of these leading treatises of the 1950s refer to the calculation of pondage solely based on the low stream flow of a river.
667. This understanding of the use of such terms in hydro-engineering—that the pondage for a HEP normally depends on the plant's capacity, stream flow rate, and load curve—provides coherence to the ordinary meaning of Paragraph 8(c) and its defined terms. Under the customary engineering practice that existed in the 1950s (and that remains today), a HEP maintains pondage to supply water to meet the HEP's power demand during a critical period at times when the flow in the river is insufficient for the HEP to run at full capacity. Paragraph 8(c) reflects that understanding and prescribes a specific measure of water supply—it says that the “maximum Pondage” is limited to twice “the Pondage required for Firm Power”. The definition of “Pondage” identifies the critical period for determining power demand consistent with familiar engineering practice; “Pondage” is defined as Live Storage needed “to meet fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant”. This definition answers the question of the duration of the operating period for calculating maximum Pondage; it is to be done on a daily or weekly basis.
668. The definition of “Firm Power” prescribes the measure of power that will be available for this purpose, using a measure—low river flow—that conforms to the common engineering usage of the term. “Firm Power” is defined as the “hydro-electric power corresponding to the minimum mean discharge at the site of the plant”. Paragraph 8(c) and its defined terms accordingly instruct

¹¹³³ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), pp. 162–166.

¹¹³⁴ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), pp. 162–166.

¹¹³⁵ See, e.g., **P-0654**, J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press, 1954), pp. 53–57; **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), pp. 162–166.

the dam design engineer to calculate “maximum Pondage” based on the MMD—a specific flow rate ascertainable from hydrologic records—as the limiting factor for producing power in response to the “variations in the daily and weekly loads of the plant”. As India has asserted, these constraints can be factored into a familiar engineering methodology for calculating pondage based on the proposed HEP’s installed capacity and anticipated load.

669. Pakistan has marshaled certain contrary textual arguments to advance a method of calculating of maximum Pondage for Paragraph 8(c) that removes any consideration of the plant’s installed capacity and anticipated load. Indeed, Pakistan refers to some of the key terms as “bespoke definitions”¹¹³⁶ and invokes Article 31(4) of the VCLT to give Paragraph 8(c) a special meaning¹¹³⁷ rather than its ordinary meaning.¹¹³⁸ The Court now proceeds to examine those arguments.
670. Pakistan contends that the Paragraph 2(c) definition of “Pondage” does not play any substantive role in calculating maximum Pondage. On its view, the definition simply constrains the use of the Operating Pool to a particular purpose (“to meet fluctuations in the discharge of the turbines arising from variations in the daily and the weekly loads of the plant”), thereby confirming that it is not available for other purposes, such as supplying irrigation for crops.¹¹³⁹ For Pakistan, calculation of Pondage is the exclusive province of Paragraph 8(c), which when calculating Pondage, is to be read in conjunction with a different definition, that of “Firm Power”.
671. In the Court’s view, the definition of “Pondage” is indeed descriptive as to the purpose of the Pondage, but there is no *a priori* reason why the definition should play no substantive role as to the calculation of Pondage, especially when another defined term, “Firm Power”, plays such a role. This is especially so given that Pakistan appears to give the Paragraph 2(c) definition of “Pondage” a role in the calculation of maximum Pondage in other ways. Pakistan argues that Paragraph 2(c) provides the basis, in part, for concluding that Pondage is to be calculated on the basis of daily or weekly use only, and not for any longer period.¹¹⁴⁰ Further, Pakistan

¹¹³⁶ Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, p. 104:17–25.

¹¹³⁷ **PLA-0005**, VCLT, Art. 31(4).

¹¹³⁸ See, e.g., Pakistan’s Memorial, paras. 8.12, 11.19, 11.111, 8.12; Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, p. 124:14–20.

¹¹³⁹ Pakistan’s Memorial, para. 11.20; Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 223:19–23.

¹¹⁴⁰ Pakistan’s Memorial, paras. 11.23, 11.64(d). In Pakistan’s view, this limitation is necessary to ensure that a form of seasonal storage could not otherwise be claimed by India, thereby allowing India to construct a Storage Work, rather than a new Run-of-River HEP under Part 3 of Annexure D.

acknowledges that the language of Paragraph 2(c) limiting Pondage to “only sufficient magnitude” to meet daily and weekly load variations ensures that India does not store more Pondage than it actually needs to meet load variations, whenever the calculation methodology under Paragraph 8(c) leads to more Pondage than India intends to use.¹¹⁴¹

672. Moreover, Pakistan acknowledges that Paragraph 2(c) plays a substantive role in calculating “Pondage” for “Small Plants”, which are the focus of Paragraphs 18 to 22 of Annexure D, Part 3. The calculation of Pondage for Small Plants is not governed by Paragraph 8.¹¹⁴² Paragraph 18(b) simply provides that “no storage is involved in connection with the Small Plant, except the Pondage and the storage incidental to the diversion structure”. As there is no other provision addressing how the Pondage is to be calculated for Small Plants, it is left to be calculated based solely on the definition set forth in Paragraph 2(c), that is, “of only sufficient magnitude to meet fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant”. Pakistan itself has acknowledged, when speaking of the negotiating history of the Treaty, that the “the load-based concept of Pondage” found in the definition of “Pondage” became “the only relevant limitation on the calculation of Pondage” for what became Paragraph 18(b) on the Pondage for Small Plants.¹¹⁴³ Accordingly, there is no textual basis for concluding that Paragraph 2(c) establishes the method for calculating Pondage for some HEPs regulated by Annexure D, Part 3, but cannot and does not also serve as a basis for calculating Pondage for other HEPs regulated by Annexure D, Part 3.

673. Pakistan also argues that, if the Treaty drafters had envisioned Pondage being determined by taking into account the proposed HEP’s installed capacity and anticipated load, they would not have needed to provide a special definition of “Firm Power”, and they would have explicitly included capacity and load in Paragraph 8(c).¹¹⁴⁴ Certainly, the Treaty drafters could have provided more explicit guidance in the text of Paragraph 8(c), either in support of the position now taken by Pakistan or that taken by India. The Treaty drafters equally could have defined “Pondage” simply to mean “Live Storage used to operate the turbines of the plant” if the objective was solely to cordon off other uses of the pondage. Alternatively, they could have defined

¹¹⁴¹ See Pakistan’s Post-Hearing Submissions, paras. 2.119–2.128. There is no obvious reason to limit Section 2(c)’s reach to that narrow substantive purpose.

¹¹⁴² See Annexure D, para. 18 (“The provisions of Paragraphs 8 ... shall not apply to ... a Small Plant”).

¹¹⁴³ Pakistan’s Final Comments, para. 2.20.

¹¹⁴⁴ See, e.g., Pakistan’s Memorial, paras. 11.110, 11.120(c).

“Pondage” to mean “Live Storage to meet the fluctuations of the inflow of the river” if the objective was solely to address varying hydrologic conditions.

674. But the Treaty drafters were drafting a Treaty involving engineering issues against the background of well-established engineering practice. Viewed in that light, the definition of “Firm Power” was not meant to upend established engineering practice, but rather to clarify a specific point. When assessing the design limits on power production at a typical run-of-river plant, the “firm power” available from the river could be identified based on several different criteria.¹¹⁴⁵ But the definition of “Firm Power” in Annexure D makes clear that Firm Power for Annexure D, Part 3 HEPs must be based on a very specific criterion of the MMD measured according to a very detailed formula.¹¹⁴⁶ The definition of “Firm Power”, therefore, limits the freedom of engineers designing Annexure D, Part 3 HEPs by tying them to the very low-flow conditions of the MMD when determining “Firm Power”. It thus provides Pakistan with substantial protection from the possibility of India calculating firm power under higher flow conditions that could result in much larger “maximum Pondage”.
675. Ultimately, Pakistan’s alternative interpretation of the ordinary meaning of Paragraph 8(c) (and of Paragraph 2(c)) is problematic insofar as it suggests that the Treaty drafters, who wrote so many detailed provisions of the Treaty with meticulous care, left a core element of the calculation of “maximum Pondage” under Paragraph 8(c)—the time element—to be inferred from provisions other than Paragraph 8(c) and its definitions. Yet, if a very short time element were inferred, it would lead to very little pondage, while if a lengthy time element were inferred, it would lead to an enormous volume of pondage. Given the concern with storage of water on the Western Rivers, it is unlikely that the Treaty drafters ignored the time element in Paragraph 8(c) on an assumption that it would simply be inferred from provisions other than Paragraph 8(c) and the definitions of its terms. Rather, it appears the drafters understood Paragraph 2(c)—which invokes a commonly-used engineering approach of calculating pondage based on “the daily and the weekly” loads of the plant—to fix the basic parameters of the time element for calculating maximum Pondage.
676. In sum, the ordinary meaning of Paragraph 8(c), read in conjunction with its defined terms and against the background of how such terms are understood in the context of hydro-electric dam

¹¹⁴⁵ See, e.g., **P-0654**, J. J. Doland, *Hydro Power Engineering: A Textbook for Civil Engineers* (Ronald Press, 1954), p. 48 (“Firm power, or primary power, is theoretically the power which a hydroelectric plant may be depended upon to produce at all times. However, on reservoir-regulated streams it has become the practice to consider firm power as that which may be depended upon 95 per cent of the time. ... For run-of-river plants, the flow available 97 per cent of the time is a safer criterion than 95 percent”).

¹¹⁴⁶ **PLA-0001**, Treaty, Annexure D, para. 2(i). See para. 611, *supra* (providing method).

engineering, suggests that the Treaty’s method for calculating maximum Pondage in Paragraph 8(c) includes, as elements, the HEP’s installed capacity and anticipated load. Had the Treaty drafters intended to depart from the familiar engineering practice of the time, they likely would not have left the Treaty silent on that intention; they were well versed in that existing practice and would have discerned a need to highlight any such departure. Even so, this initial interpretation of the ordinary meaning of Paragraph 8(c) must be considered further in light of other elements of treaty interpretation, as discussed below.

2. Relevant Context: Annexure D, Paragraph 15 (Water Delivery Requirements)

677. The VCLT also provides that the interpretation of the ordinary meaning of the terms of a treaty be done “in their context”,¹¹⁴⁷ with the context including the other provisions of the treaty.¹¹⁴⁸ When engaging in its interpretation of the Treaty, the *Kishenganga* Court noted the importance of considering context, saying:

In the Court’s view, the various paragraphs contained in Part 3 of Annexure D must be interpreted in a mutually reinforcing manner to avoid forbidding with one provision what is permitted by others. It would make little sense, and cannot have been the Parties’ intention, to read the Treaty as permitting new Run-of-River Plants to be designed and built in a certain manner, but then prohibiting the operation of such a Plant in the very manner for which it was designed. Such an interpretation of the various paragraphs of Part 3 in isolation from one another would render ineffective those provisions that specifically permit the development of hydro-electric power in accordance with the design constraints of Annexure D.¹¹⁴⁹

678. Thus, the ordinary meaning of Paragraph 8(c) must be interpreted in its context, to include other relevant provisions of Annexure D and of the Treaty as a whole. One important element of context is Paragraph 15 of Annexure D, which plays a crucial role in ensuring that India meets its obligation under Article III to “let flow” the waters of the Western Rivers, subject to the exceptions noted therein.¹¹⁵⁰ Paragraph 15 generally requires that: (a) the same volume of water received in the river upstream of the plant in a week must be released back into the river below the plant in the same week; and (b) the volume of water delivered into the river in any given day generally shall not be less than 30 per cent or more than 130 per cent of the volume received above the plant during the same 24-hour period.¹¹⁵¹ These basic operational constraints, albeit

¹¹⁴⁷ **PLA-0005**, VCLT, Art. 31(1).

¹¹⁴⁸ **PLA-0005**, VCLT, Art. 31(2).

¹¹⁴⁹ **P-0003**, *Kishenganga* Partial Award, para. 409.

¹¹⁵⁰ **PLA-0001**, Treaty, Arts. III(1), (2).

¹¹⁵¹ See **PLA-0001**, Treaty, Annexure D, para. 15; see also **PLA-0001**, Treaty, Annexure D, para. 17 (“In applying the provisions of Paragraph 15 ... a tolerance of 10% in volume shall be permissible”). Paragraph 15 contains some variations in this regard if the HEP is located on the Chenab Main below or

with progressive refinements, were in Pakistan’s proposal of August 1959,¹¹⁵² in the World Bank’s September 1959 Heads of Agreement,¹¹⁵³ and in the April 1960 draft¹¹⁵⁴ and June 1960 draft¹¹⁵⁵ of what became Annexure D.

679. Given that Paragraph 8(c) makes no reference to Paragraph 15, Pakistan argues that it has no bearing on the “maximum Pondage” calculation. In Pakistan’s view, Paragraph 8(c) sets out a stand-alone *design* criterion for the HEP that must be calculated based on hydrology alone, while Paragraph 15 sets out water delivery constraints that are thereafter imposed on the HEP’s *operation*.¹¹⁵⁶
680. The Court agrees that Paragraph 8(c) identifies a design criterion, while Paragraph 15 sets out an operational criterion. Yet, any engineering work is designed with reference to the manner in which it may be, and is intended to be, operated; hence, design and operation cannot be so strictly separated. As the *Kishenganga* Court rightly noted in its Partial Award, a “review of the context of Paragraph 15 makes clear that the provision is placed within a continuum of design, construction and operation that cannot properly be separated into watertight compartments”.¹¹⁵⁷ To that end, it found that the provisions contained in Part 3 of Annexure D “must be interpreted in a mutually reinforcing manner to avoid forbidding with one provision what is permitted by others”.¹¹⁵⁸ In this instance, both design and operational provisions serve to constrain the volume of maximum Pondage at the HEP. Indeed, India’s ability to time the retention or release of water—the central concern of Paragraph 15—turns on the volume of water able to be temporarily stored as Pondage pursuant to Paragraph 8(c).
681. Thus, although Paragraph 8(c) does not expressly refer to Paragraph 15, the latter is a vital element for the methodology for calculating “maximum Pondage”, for it serves as a turbine

above Ramban, or is located on a tributary of the Jhelum on which Pakistan has “any Agricultural use or hydroelectric use”. See **PLA-0001**, Treaty, Annexure D, para. 15. Both the Baglihar and the Kiru HEPs, discussed above, were subject to such variations, requiring a daily downstream delivery of 50% rather than 30% of the upstream flow.

¹¹⁵² **P-0365**, Letter from Mr. Mueenuddin to Mr. W. A. Sheikh (Enclosure 2) dated 17 August 1959, para. 1.

¹¹⁵³ **P-0136**, Heads of Agreement dated 15 September 1959, Arts. X, XI, XIII.

¹¹⁵⁴ **P-0476**, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers, draft dated 23 April 1960, paras. 14, 15, 16.

¹¹⁵⁵ **P-0478**, Indus Waters Treaty 1960, Draft dated 6 June 1960, Annexure D, Generation of Hydro-Electric Power by India on the Western Rivers (Article III(2)(d)), paras. 15, 16, 17.

¹¹⁵⁶ Pakistan’s Memorial, paras. 11.35–11.37.

¹¹⁵⁷ **P-0003**, *Kishenganga* Partial Award, para. 407.

¹¹⁵⁸ **P-0003**, *Kishenganga* Partial Award, para. 409.

discharge constraint that must be considered in determining how to manage water storage to meet the HEP's daily and weekly load conditions. Absent the daily and weekly water delivery requirements contained in Paragraph 15, India would have much greater latitude to accumulate storage to meet peak load demands, contrary to the object and purpose of the Treaty.¹¹⁵⁹

682. Importantly, the requirements of Paragraph 15, considered as context, weigh against Pakistan's interpretation of the ordinary meaning of Paragraph 8(c). If the maximum Pondage volume is highly restricted, a dam operator will have limited ability to retain water for subsequent discharge, and the flow restriction in Paragraph 15 would have limited relevance in constraining India's ability to affect downstream flows. Under Pakistan's approach to the calculation of maximum Pondage, a dam operator could breach the upper limit of Paragraph 15's daily delivery requirements only when the river carries less than $1.66 \times \text{MMD}$, and could breach the lower limit only when the river carries less than $0.72 \times \text{MMD}$.¹¹⁶⁰ Especially the latter value will only rarely occur, given that the MMD, by definition, reflects an unusually low river flow. Using historic flow observations for the Kiru HEP as a hypothetical example (since the Chenab River at Kiru

¹¹⁵⁹ On the object and purpose of the Treaty more generally in relation to Paragraph 8(c), see paras. 701–707, *infra*.

¹¹⁶⁰ Except in certain specified circumstances, see para. 613, *supra*, Paragraph 15 requires that an Indian dam operator must release not less than 30% and not more than 130% of the volume received in the river above a plant during the same 24-hour period. To breach the lower limit, an operator would need to be able to store more than 70% of the daily flow overnight. To breach the upper limit, an operator would need to carry over more than 30% from a previous day or days and release it fully on the current day, together with the full discharge of that day.

A dam operator can exceed these limitations only if the storage volume is a sufficient portion of the daily inflow. On any day that the flow volume is more than 1.43 times the storage volume, the lower limit cannot be breached because there is insufficient storage to retain 70% of the flow. This result can be seen from the following calculation:

x is the storage volume of the reservoir; y is the daily flow volume

When the storage volume of the reservoir is full from withholding 70% of the daily flow
volume: $x = 0.7 \times y$

Therefore: $y/x = 1.43$

On any day that the flow volume is more than 3.3 times the storage volume, the upper limit cannot be breached because there is insufficient storage to carry over 30% of the flow for release the next day. This result can be seen from the following calculation:

When the storage volume of the reservoir is full from carrying over 30% of the daily flow
volume: $x = 0.3 \times y$

Therefore: $y/x = 3.33$

Under Pakistan's interpretation of the Treaty, the maximum allowed Pondage equals 50% of the daily flow volume under conditions of MMD. Thus, under that Pondage limitation, a dam operator could breach the upper limit of Paragraph 15 only when the river carries less than $1.66 \times \text{MMD}$, and the operator could breach the lower limit only when the river carries less than $0.72 \times \text{MMD}$.

falls under the 50% release criterion), Pakistan showed that these conditions occurred historically during certain periods of the low flow in the seasons of 1975, 1995, 2007, and 2011. Even during those conditions, the volume of overnight storage that would be available to breach the 30% release requirement is likely to be small. In combination with the low frequency of occurrence, such interference with the waters is unlikely to have a substantial impact on downstream water management.

683. Thus, under Pakistan’s methodology for calculating “maximum Pondage”, the resulting available storage might render the flow requirement of Paragraph 15—a seemingly key element in protecting Pakistan’s “let flow” rights—largely irrelevant. That consequence supports an inference that the Treaty drafters did not envisage a methodology for calculating “maximum Pondage” that renders downstream release restrictions of no or little import. The principle of *effet utile* in the interpretation of treaties favors reading Paragraph 8(c) in a way that gives practical meaning to Paragraph 15 and avoids rendering it redundant or ineffective.¹¹⁶¹
684. Pakistan submits that, on its construction, Paragraph 15 nevertheless acts to protect Pakistan’s hydrology in critical low-flow periods where the river flows below the MMD.¹¹⁶² However, Paragraph 15 is structured to govern *daily* and *weekly* operational consistency, which functions to prevent India from excessively fluctuating or limiting daily and weekly flows. While it may have particular relevance in critical low-flow periods,¹¹⁶³ Paragraph 15 is not intended to be limited to addressing such periods.
685. In sum, the ordinary meaning of Paragraph 8(c), read in context with Paragraph 15, confirms that the method for calculating maximum Pondage includes, as elements, the HEP’s installed capacity and anticipated load. Departing from that interpretation, at least if done along the lines advocated by Pakistan, would render Paragraph 15 often redundant or ineffective, an outcome not likely intended by the drafters of the Treaty.

3. Relevant Context: Paragraph 9 and Appendix II of Annexure D (Notification Requirements)

686. Further relevant context for interpreting Paragraph 8(c) of Annexure D is Paragraph 9 of Annexure D. Paragraph 9 imposes an obligation on India to provide Pakistan with information,

¹¹⁶¹ See para. 272, *supra*.

¹¹⁶² Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 70:5–13.

¹¹⁶³ **P-0003**, *Kishenganga* Partial Award, para. 512 (“In general, drawdown flushing would be incompatible with Paragraph 15 at hydrologically large reservoirs and at most reservoirs during the low flow season”).

prescribed in Appendix II, to enable Pakistan to satisfy itself that a proposed Annexure D, Part 3 HEP complies with the requirements of Paragraph 8.¹¹⁶⁴ The prescribed information includes: (1) “Location of Plant”; (2) “Hydrologic Data”; (3) “Hydraulic Data”; (4) “Particulars of Design”; and (5) other “General” information.¹¹⁶⁵

687. The required “Hydraulic Data” include: “(b) Full Pondage Level, Dead Storage Level and Operating Pool, together with the calculations for the Operating Pool”.¹¹⁶⁶ The required “Particulars of Design” include: “(h) Discharge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and the weekly load fluctuations”; and (i) “Maximum aggregate capacity of power units (exclusive of standby units) for Firm Power and Secondary Power”.¹¹⁶⁷
688. Neither Paragraph 9 nor Appendix II expressly indicates whether the calculation of maximum Pondage should take into account the plant’s installed capacity and anticipated load. Pakistan submits, however, that if the Treaty drafters had intended that the methodology for calculating maximum Pondage under Paragraph 8(c) would include the anticipated load of the plant, they would have required India to provide the “load curve that the HEP, once online, is intended to meet”.¹¹⁶⁸
689. Yet that supposition is not persuasive, as Appendix II can be read as requiring the provision of information as necessary to understand the plant’s installed capacity and anticipated load. Paragraph 3(b) of Appendix II directs that India provide “calculations for the Operating Pool”, and Paragraph 4 of Appendix II directs that India provide the aggregate capacity of power units and expected variations in turbine discharge on the account of load fluctuations. Such provisions are consistent with an interpretation of the ordinary meaning of Paragraph 8(c) that calls for calculating maximum Pondage using, in part, the plant’s installed capacity and anticipated load.

¹¹⁶⁴ **PLA-0001**, Treaty, Annexure D, para. 9:

To enable Pakistan to satisfy itself that the design of a Plant conforms to the criteria mentioned in Paragraph 8, India shall, at least six months in advance of the beginning of construction of river works connected with the Plant, communicate to Pakistan, in writing, the information specified in Appendix II to this Annexure. If any such information is not available or is not pertinent to the design of the Plant or to the conditions at the site, it will be so stated.

¹¹⁶⁵ **PLA-0001**, Treaty, Annexure D, Appendix II.

¹¹⁶⁶ **PLA-0001**, Treaty, Annexure D, Appendix II, para. (3)(b).

¹¹⁶⁷ **PLA-0001**, Treaty, Annexure D, Appendix II, paras. (4)(h), 4(i).

¹¹⁶⁸ Pakistan’s Memorial, para. 11.104; Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, pp. 134:13–135:14.

Such provisions are fully capable of being understood as requiring India, when notifying Pakistan of its intention to construct an Annexure D, Part 3 HEP, to inform Pakistan of the plant's installed capacity and anticipated load, given that such information would be necessary to calculate the Operating Pool and would be relevant to the expected variations in the turbine discharge.

690. In sum, the ordinary meaning of Paragraph 8(c), read in context with Paragraph 9 and Appendix II, is consistent with a method for calculating maximum Pondage that includes, as elements, the HEP's installed capacity and anticipated load.

4. Relevant Context: Annexure E (Storage of Waters)

691. Relevant context for interpreting Paragraph 8(c) of Annexure D is also to be found in Annexure E of the Treaty, which allows India to collect water in Storage Works on the Western Rivers subject to important restrictions.¹¹⁶⁹ Annexure E serves as relevant context because it contains an analogous provision on the calculation of "maximum Pondage" when a Storage Work incorporates a HEP.
692. By way of background, the term "Storage Works" includes large multi-purpose conservation reservoirs, but excludes works such as Run-of-River HEPs governed by Annexure D.¹¹⁷⁰ Paragraph 7 of Annexure E sets aggregate storage capacity for Storage Works that India may construct after the Effective Date of the Treaty.¹¹⁷¹ It includes a table showing limits on "General Storage Capacity", "Power Storage Capacity" (collectively "Conservation Storage Capacity"), and "Flood Storage Capacity" for each of the Western Rivers. The table provides these values in units of million acre-feet. For purposes of this discussion, the table below provides the same values converted to MCM:

¹¹⁶⁹ **PLA-0001**, Treaty, Annexure E, para. 1.

¹¹⁷⁰ **PLA-0001**, Treaty, Annexure E, para. 2(a).

¹¹⁷¹ **PLA-0001**, Treaty, Annexure E, para. 7.

River System	General Storage Capacity (MCM)	Power Storage Capacity (MCM)	Flood Storage Capacity (MCM)
The Indus	308.37	185.02	Nil
The Jhelum (excluding the Jhelum Main)	616.74	308.37	925.11
The Jhelum Main	Nil	Nil	As provided in Paragraph 9
The Chenab (excluding the Chenab Main)	616.74	740.09	Nil
The Chenab Main	Nil	740.09	Nil

Figure 16: Storage Capacity permitted under Annexure E to the Treaty

693. As this table indicates, India is entitled under Annexure E to store a very large volume of water on the Western Rivers, specifically 4,440 MCM. By way of comparison, such storage is roughly equivalent to the combined Operating Pools of 108 Baglihar HEP size plants, given that the Baglihar HEP’s Pondage (following the *Baglihar* Determination) is 32.56 MCM.

694. Importantly for present purposes, Annexure E provides that Storage Works that incorporate a HEP may include “Pondage” for operational purposes, and such Pondage does not count against the storage capacity limitations set out in Paragraph 7.¹¹⁷² Paragraph 21 of Annexure E sets limits on the “maximum Pondage”, stating in relevant part:

21. If a hydro-electric power plant is incorporated in a Storage Work ... the plant shall be so operated that:
 - (a) the maximum Pondage (as defined in Annexure D) shall not exceed the Pondage required for the firm power of the plant, and the water-level in the reservoir corresponding to maximum Pondage shall not, on account of this Pondage, exceed the Full Reservoir Level at any time ...

695. This Annexure E provision uses the same definition of “Pondage” that is used by Paragraph 8(c) of Annexure D. Further, this provision prescribes a method for calculating maximum Pondage for Annexure E based on “the Pondage required for the firm power of the plant” that is similar to the method of Paragraph 8(c), but without capitalizing “firm power” and without giving that term a specially-defined meaning. Based on such similarities, Paragraph 21 is potentially relevant context for interpreting Paragraph 8(c).

696. As a threshold matter, Paragraph 21’s unadorned prescription for calculating “maximum Pondage” indicates the Treaty drafters recognized a prevailing practice among hydro-power

¹¹⁷² See **PLA-0001**, Treaty, Annexure E, paras. 8(e), 21(a).

engineers for determining firm power and calculating the pondage required to achieve it, and they recognized that such practice could be captured using terms such as “Pondage” and “firm power”. Pakistan has acknowledged such background practice in this context, stating:

The lower-case ‘firm power’ refers to the firm power defined in conventional hydropower design practices, namely the dependable capacity of the generating units is determined as a function of the turbine discharge capacity, efficiency, and net generating head with the reservoir at the water level used to define firm energy.¹¹⁷³

697. As previously noted,¹¹⁷⁴ the 1950 treatise by Creager and Justin explained this prevailing method for calculating pondage using data on river discharge and plant load “to take care of the hour-to-hour fluctuations of the load on the plant throughout the period of 1 week”.¹¹⁷⁵ In this sense, Annexure E—as context for interpreting the ordinary meaning of Paragraph 8(c)—is supportive of an approach whereby Pondage is to be calculated by reference, in part, to a plant’s installed capacity and anticipated load.

698. Yet there is a difference between the text of Annexure D and the text of Annexure E, specifically that Annexure D¹¹⁷⁶ contains a definition for “Firm Power” while Annexure E does not. Pakistan suggests that this difference is supportive of its interpretation of Paragraph 8(c) as not including the HEP’s installed capacity and anticipated load when calculating maximum Pondage.¹¹⁷⁷ In the case of Annexure E Storage Works, Pakistan states:

The Treaty does not provide a specific computation method for the storage reservoir firm power because of the number of variables involved. The drafters of the Treaty would not have been able to pre-select the specific characteristics of any given reservoir, which affect the firm power and firm energy.¹¹⁷⁸

699. Pakistan contends that Run-of-River Plants do not present those complexities and therefore Paragraph 8(c) employs a simpler methodology—its proposed methodology—based solely on a special definition of “Firm Power” that is tied to the MMD at the plant.¹¹⁷⁹ Yet, Annexure E is more naturally read as consistent with an interpretation of Annexure D whereby maximum

¹¹⁷³ Pakistan’s Post-Hearing Submission, para. 3.34.

¹¹⁷⁴ See paras. 664–665, *supra*.

¹¹⁷⁵ **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), Ch. 10, p. 162.

¹¹⁷⁶ **PLA-0001**, Treaty, Annexure D, para. 2(i).

¹¹⁷⁷ Pakistan’s Post-Hearing Submission, para. 3.34; Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 194:17–25.

¹¹⁷⁸ Pakistan’s Post-Hearing Submission, para. 3.34.

¹¹⁷⁹ Pakistan’s Post-Hearing Submission, para. 3.34 (“the Firm Power in [Annexure D, Part 3] HEP[s] is determined only by the flow rate available at the Dead Storage Level with no effect of the storage”).

Pondage is calculated using, in part, the HEP's installed capacity and anticipated load. But for the use of a definition for "Firm Power", the two Annexures can be seen as essentially approaching the issue of maximum Pondage in the same way, even to the point of the Annexure E provision using the exact same definition of "Pondage" used by the analogous provision in Annexure D. The reason for the inclusion of a definition for "Firm Power" in Annexure D appears to be to link firm power for an Annexure D, Part 3 HEP to a specific measure of stream flow of the river (a carefully-defined MMD), a linkage not necessary for an Annexure E Storage Work. An Annexure E Storage Work typically entails an enormous reservoir of controllable storage, diminishing the need to specify the relationship of stream flow to Pondage. By contrast, an Annexure D, Part 3 HEP is expected to contain relatively minimal controllable storage, thus significantly increasing the importance of how low stream flow is to be measured when calculating the need for Pondage. Thus, "maximum Pondage" for an Annexure E Storage Work is not constrained by the specific definition of firm power contained in Annexure D, but "maximum Pondage" for an Annexure D, Part 3 HEP requires the use of a specific measure of the MMD to determine Firm Power, one that has the important collateral consequence of limiting the size of Pondage for those Run-of-River HEPs.¹¹⁸⁰

700. In sum, the ordinary meaning of Paragraph 8(c), read in context with Annexure E, is consistent with a method for calculating maximum Pondage that includes, as elements, the HEP's installed capacity and anticipated load.

5. Object and Purpose of the Treaty

701. The VCLT provides that the interpretation of the ordinary meaning of the terms of a treaty be done not just in their context, but also "in the light of [the treaty's] object and purpose".¹¹⁸¹ As discussed in Part VIII.B, due to the vulnerability of Pakistan as the downstream riparian of a critical but shared natural resource, and the potential for serious conflict between India and Pakistan in this regard, the Treaty seeks to delimit the two States' respective rights and obligations when utilizing the Indus system of rivers, in conjunction with effective dispute resolution procedures for whenever questions of interpretation or application of such rights and obligations arise.¹¹⁸²

¹¹⁸⁰ For example, firm power for an Annexure E Storage Work may be based on minimum stream flow over a different period than Annexure D specifies, or on projected power demand during a particular period, or a combination of those factors.

¹¹⁸¹ **PLA-0005**, VCLT, Art. 31(1).

¹¹⁸² See Part VIII.B.2.

702. The Court regards that object and purpose as consistent with interpreting Paragraph 8(c) to allow the proposed HEP's installed capacity and anticipated load to serve as elements for the calculation of maximum Pondage. The choice between that interpretation and Pakistan's preferred interpretation is not a choice between restrictions and no restrictions. Both interpretations embrace a restriction arising from the MMD of the river; maximum Pondage must be calculated based on what can be accumulated when the stream flow of the river is at a historically low level (though the Parties differ as to the length of time for such accumulation). Moreover, clarifying that the calculation of maximum Pondage shall be based on an accumulation of the MMD over no more than a seven-day period serves as an important restriction consistent with the object and purpose of the Treaty.
703. Both interpretations also view the calculation of maximum Pondage as limited, in practice, by the Paragraph 15 requirements, which provide that the volume of water received in the river upstream of the HEP in a week should be released back into the river below the plant in the same week, and that the volume of water delivered into the river in a day (subject to limited exceptions) shall not be less than 30 per cent or more than 130 per cent of the volume received above the plant during the same 24-hour period.
704. The issue is solely whether the proposed HEP's installed capacity and anticipated load may also serve as elements for calculating Pondage. While Pakistan's interpretation usually will result in a smaller volume of Pondage, an interpretation that regards the proposed HEP's installed capacity and anticipated load as additional elements for calculating Pondage still meaningfully restricts the maximum Pondage. Indeed, once the installed capacity and anticipated load are identified, those inputs, in combination with the MMD on no more than a weekly basis and the Paragraph 15 requirements, lead to a fixed outcome for maximum Pondage. Accordingly, it cannot be said that one interpretation serves the object and purpose of the Treaty while the other does not. In particular, it cannot be said that strict construction of Paragraph 8(c) requires identifying a methodology of some kind that leads to the smallest Pondage possible. While the exception to the "let flow" principle that allows India to design and construct Run-of-River HEPs on the Western Rivers is to be strictly construed, such construction does not dictate interpreting Paragraph 8(c) so as to allow only the smallest possible Pondage; what it calls for is to construe Paragraph 8(c) strictly in accordance with its terms.
705. With respect to fixing and delimiting the Parties' rights, Pakistan's methodology has the merit of providing a unique formula for calculating "maximum Pondage", which would eliminate any possibility of "manipulation" by India when it identifies the proposed HEP's installed capacity and anticipated load. Doing so could significantly reduce, at least in that respect, the prospects

for future disputes; indeed, Pakistan has expressed concern as to “outliers”, “data errors”, and “discrepancies”.¹¹⁸³ Yet the object and purpose of the Treaty does not require a unique formula for calculating maximum Pondage. In some instances, the Treaty does contain unique formulas—the delivery requirements of Paragraph 15 being one example—but many Treaty provisions contain no such formula, including Paragraph 8(c) on the calculation of maximum Pondage. While an interpretation that regards the proposed HEP’s installed capacity and anticipated load as additional elements for calculating maximum Pondage does introduce greater discretion, the general approach in the Treaty is not to reduce the design of a Run-of-River HEP to the application of unique formulas. Rather, it often sets standards that must then be implemented in good faith by the Parties in the context of a specific HEP. Indeed, while use of the proposed HEP’s installed capacity and anticipated load when calculating maximum Pondage results in some greater uncertainty in the calculation, the installed capacity and anticipated load advanced by India must be realistic and defensible under the Treaty, in the same way that the use and exact positioning of low-level outlets, crest-gated spillways, power intakes, and freeboard must be defensible.

706. Finally, a methodology that incorporates the proposed HEP’s installed capacity and anticipated load into the calculation of Pondage does not require any tools that would not have been available at the time the Treaty was drafted. In fact, Pakistan appears to accept that such tools were envisaged in Annexure D when calculating Pondage for Small Plants and for Annexure E Storage Works.
707. In sum, the ordinary meaning of Paragraph 8(c), when considered in light of the Treaty’s object and purpose, is consistent with a method for calculating maximum Pondage that includes, as elements, the HEP’s installed capacity and anticipated load.

6. Subsequent Practice of the Parties

708. Article 31 of the VCLT includes, as a relevant element for interpretation, “any subsequent practice in the application of the treaty which establishes the agreement of the parties regarding its interpretation”.¹¹⁸⁴ Even if an “agreement” of the parties is not established by such practice, subsequent practice by one or more of the parties in the application of a treaty nevertheless may

¹¹⁸³ Hearing for the First Phase on the Merits Tr., (Day 5), 12 July 2024, p. 61:7–14; Hearing for the First Phase on the Merits Tr., (Day 6), 15 July 2024, p. 98:2–10; Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, p. 75:20–24.

¹¹⁸⁴ **PLA-0005**, VCLT, Art. 31(1).

serve as a supplementary means of interpretation under Article 32 “in order to confirm the meaning resulting from the application of article 31”.¹¹⁸⁵

709. As noted in Part III, the Treaty entered into force on 12 January 1961 (with retroactive effect from 1 April 1960), but India did not immediately commence construction of Run-of-River HEPs on the Western Rivers. Initial correspondence between the Commissioners between 1962 and 1965 largely addressed the transitional arrangements, pre-Treaty HEPs to be notified by India to Pakistan under Part 2 of Annexure D to the Treaty, and the construction of several Small Plants between 1962 and 1965.¹¹⁸⁶ In response, and despite the pressures of completing the transitional works, Pakistan scrutinized the proposals and made inquiries to ensure that the plants would comply with Annexure D.¹¹⁸⁷
710. Between 1968 and 1992, India furnished Pakistan with notifications under Paragraph 9 and Appendix II of Annexure D to the Treaty in respect of eight Annexure D, Part 3 HEPs, as follows:
- (a) the Stakna HEP on the Indus River (22 MW), notified on 9 September 1968 with maximum Pondage calculated on the basis of daily load calculations;¹¹⁸⁸
 - (b) the Sumbal HEP on the Jhelum River (4 MW), notified on 11 September 1968 with maximum Pondage calculated on the basis of daily load calculations;¹¹⁸⁹

¹¹⁸⁵ **PLA-0005**, VCLT, Art. 31(2). The International Law Commission has concluded that “[a] subsequent practice as a supplementary means of interpretation under article 32 consists of conduct by one or more parties in the application of the treaty, after its conclusion”: **PLA-0052**, ILC, “Report of the Commission to the General Assembly on the work of its seventieth session” (2018) Vol. II(2), Yearbook of the International Law Commission, p. 24, Conclusion 4(3). The commentary to this Conclusion 4(3) explains that “any practice in the application of the treaty that may provide indications as to how the treaty is to be interpreted may be a relevant supplementary means of interpretation under article 32”: **PLA-0052**, ILC, “Report of the Commission to the General Assembly on the work of its seventieth session” (2018) Vol. II(2), Yearbook of the International Law Commission, p. 33, para. (24).

¹¹⁸⁶ See Part III.D.3, *supra*. **P-0649.0013**, Letter No. F4(28)/61-IC dated 6 March 1962 (Biling HEP); **P-0649.0052**, Letter No. F.4(28)/61-I.C. dated 23 December 1963 (Shansha HEP); **P-0649.0063**, Letter No. F.4(28)/61-I.C. dated 9 July 1964 (Sissu HEP); **P-0649.0074**, Letter No. F.4(6)/65-IC dated 26 April 1965 (Dras HEP); **P-0649.0076**, Letter No. F.4(6)/65-IC/II dated 26 April 1965 (Khardung HEP).

¹¹⁸⁷ See, e.g., **P-0649.0036**, Letter No. WT(15)/(851-A)/PCIW dated 27 June 1963; **P-0649.0056**, Letter No. 4.(28)/61-IC dated 2 March 1964; **P-0649.0058**, Letter No. WT(15)/(1154-A)/PCIW dated 18 April 1964; **P-0649.0065**, Letter No. WT(15)/(1262-A)/PCIW dated 21 August 1964; **P-0649.0068**, Letter No. WT(15)/(1319-A)/PCIW dated 14 October 1964; **P-0649.0077**, Letter No. WT(15)/(1522-A)/PCIW dated 17 June 1965; **P-0649.0078**, Letter No. WT(15)/(1521-A)/PCIW dated 17 June 1965; **P-0649.0081**, Letter No. WT(15)/(1619-A)/PCIW dated 19 February 1966; **P-0649.0082**, Letter No. WT(15)/(1618-A)/PCIW dated 19 February 1966; **P-0649.0083**, Letter No. WT(15)/(1617-A)/PCIW dated 19 February 1966; **P-0649.0084**, Letter No. WT(15)/(1616-A)/PCIW dated 19 February 1966.

¹¹⁸⁸ **P-0649.1730**, Letter No. F.4(1)/66-IC from the ICIW to the PCIW dated 9 September 1968.

¹¹⁸⁹ **P-0649.1731**, Letter No. 4(13)/65-IC dated 11 September 1968.

- (c) the Lower Jhelum HEP (22 MW) on the Jhelum River, notified on 21 November 1974 with maximum Pondage calculated on the basis of daily load calculations;¹¹⁹⁰
- (d) the Dul Hasti HEP (390 MW) on the Jhelum River, notified on 3 July 1978 with maximum Pondage calculated on the basis of weekly load calculations;¹¹⁹¹
- (e) the Upper Sindh HEP (105 MW) on the Jhelum River, notified on 18 May 1984 with maximum Pondage calculated on the basis of daily load calculations;¹¹⁹²
- (f) the Kargil HEP (3.75 MW) on the Indus River, notified on 30 January 1986 with maximum Pondage calculated on the basis of daily load calculations;¹¹⁹³
- (g) the Parnai HEP (37.5 MW) on the Jhelum River, notified on 15 January 1990 with maximum Pondage calculated on the basis of daily load calculations;¹¹⁹⁴ and
- (h) the Baglihar HEP (450 MW) on the Chenab River, notified on 20 May 1992 with maximum Pondage calculated on the basis of weekly load calculations.¹¹⁹⁵

711. The Court has carefully scrutinized the practice of the Parties with respect to these HEPs and explains below those aspects concerning the method for calculating maximum Pondage.

712. On 9 and 11 September 1968, India notified Pakistan of its plans to construct the Stakna HEP on the Indus River (with an installed capacity of 22 MW),¹¹⁹⁶ and the Sumbal HEP on the Jhelum River (with an installed capacity of 4 MW)¹¹⁹⁷ respectively, being the first Annexure D, Part 3 HEPs notified by India to Pakistan under Paragraph 9 of Annexure D to the Treaty.¹¹⁹⁸ This information included India's calculations for the Operating Pool for each plant.¹¹⁹⁹

¹¹⁹⁰ **P-0649.0268**, Letter No. F.4(1)/62-IC(IT) dated 21 November 1974.

¹¹⁹¹ **P-0649.0408**, Letter No. F.16(4)/62-IT dated 3 July 1978.

¹¹⁹² **P-0649.0500**, Letter No. F.11(2)/82-I.T./135 dated 18 May 1984.

¹¹⁹³ **P-0649.0534**, Letter No. F.3(5)/83-I.T./227 dated 30 January 1986.

¹¹⁹⁴ **P-0649.0695**, Letter No. 4(1)/86-I.T./485 dated 15 January 1990.

¹¹⁹⁵ **P-0585**, Letter No. 3/1/84-I.T./597 from PCIW to ICIW dated 20 May 1992.

¹¹⁹⁶ **P-0649.1730**, Letter No. F.4(1)/66-IC from the ICIW to the PCIW dated 9 September 1968.

¹¹⁹⁷ **P-0649.1731**, Letter No. 4(13)/65-IC dated 11 September 1968.

¹¹⁹⁸ **PLA-0001**, Treaty, Annexure D, para. 9.

¹¹⁹⁹ **P-0649.1731**, Letter No. 4(13)/65-IC dated 11 September 1968; **P-0649.1730**, Letter No. F.4(1)/66-IC from the ICIW to the PCIW dated 9 September 1968.

713. Pakistan did not ignore the issue; rather, it raised several issues regarding the Stakna and Sumbal HEPs as to the adequacy of the information supplied by India in order for Pakistan to “satisfy itself that the design of the Plant conforms to the criteria laid down in the Treaty”. This inadequacy included, relevantly, the method for the calculation of “maximum Pondage” under Paragraph 8(c) of Annexure D to the Treaty and the adequacy of the information provided for calculating the Operating Pool and the related particulars of design in accordance with Appendix II to Annexure D.¹²⁰⁰ Specifically, on 5 November 1968, Pakistan’s Commissioner requested with respect to the Sumbal HEP, *inter alia*, “the calculations for the Operating Pool allowed under the Treaty for the proposed Plant” pursuant to item 3(b) of Appendix II to Annexure D, with reference to Paragraphs 2(c) and 8(c) of Annexure D to the Treaty.¹²⁰¹
714. On 10 February 1969, India’s Commissioner responded, disagreeing with Pakistan’s Commissioner’s assessment as to the adequacy of the information provided, but nevertheless providing further clarifications regarding the Sumbal HEP, including a calculation of “maximum Pondage” based on a “load factor” (the projected average plant load divided by the peak load over a given time period).¹²⁰² Even though the Pondage of the Sumbal HEP was not especially large, Pakistan objected on 9 May 1969 to India’s calculations, insisting on use of an “actual load curve”:

According to your letter under reference the minimum mean discharge at the site has been assumed as 200 cusecs. However, no details of the estimation of this figure have been supplied. You will kindly appreciate that the Treaty rather than permit the assumption of any figure for the minimum mean discharge has laid down the basis of working it out from the available observed or estimated daily discharge data.

...

The Live Storage needed for meeting the water requirements of a Plant during the period of minimum mean discharge *would naturally depend on the load curve*. To see that the maximum Pondage being provided did not exceed twice the Pondage required for Firm Power, the magnitude of the Live Storage *has to be determined from the actual load curve worked out for the proposed Plant and not from any hypothetical load curve*. It would be appreciated that the Live Storage required for a plant having a load factor of 30% could vary considerably with the shape of the load curve.

According to my calculations the “Pondage required for Firm Power”, on the basis of the minimum mean discharge of 258 cusecs and the load pattern indicated in your letter under

¹²⁰⁰ **P-0649.0136**, Letter No. WT(16)/(2202-A)/PCIW dated 5 November 1968; **P-0649.0137**, Letter No. WT(16)/(2201-A)/PCIW dated 5 November 1968.

¹²⁰¹ **P-0649.0136**, Letter No. WT(16)/(2202-A)/PCIW dated 5 November 1968, p. 2.

¹²⁰² **P-0649.0140**, Letter No. 4(13)/65-IC dated 10 February 1969, p. 4 (“According to standard norms for a load factor of 30% ± 33% of daily requirements are necessary for Firm Power”).

reference, comes to 42.6 cusec days. Thus the total maximum Pondage on this Plant is not to exceed 85.2 cusec days.¹²⁰³

715. As expressed in this communication, Pakistan's Commissioner was objecting to "hypothetical load curve[s]" but, in doing so, he was not objecting to *any* use of load curves when calculating maximum Pondage. To the contrary, the Commissioner expressly stated that Pondage "has to be determined from the actual load curve worked out for the proposed Plant".
716. On 9 April 1970, without prejudice to the views held by the Commissioners, India's Commissioner provided, *inter alia*, modified calculations of the permissible capacity of the Operating Pool for the Sumbal HEP, based on the modified MMD and a chart based on a projected daily load schedule.¹²⁰⁴ India later observed that the information provided were calculations of "the pondage [that] even if worked out according to [the Pakistan's Commissioner's] method would still remain within the permissible limits".¹²⁰⁵ Pakistan responded, objecting to the calculation of the MMD, but not to the method of calculating "maximum Pondage" based on the HEP's projected load.¹²⁰⁶
717. In 1969, India provided a "maximum Pondage" calculation for the Stakna HEP, using a chart based on a projected daily load for that plant.¹²⁰⁷ Again, while the Stakna HEP was not projected to be of large size, Pakistan did not ignore issues concerning its design. Rather, it raised a number of detailed objections to the Stakna HEP design, but did not object to the use of a daily load in calculating "maximum Pondage".¹²⁰⁸
718. This practice, coming within the first decade after the entry into force of the Treaty, is consistent with an interpretation that Paragraph 8(c) calls for a method of calculating "maximum Pondage" based on the proposed HEP's installed capacity and anticipated load. Moreover, Pakistan's Commissioner for Indus Waters at the time of the exchanges on the Sumbal and Stakna HEPs was

¹²⁰³ **P-0649.0143**, Letter No. WT(16)/(2295-A)/PCIW dated 9 May 1969, pp. 1, 3 (emphasis added); see also **P-0649.0114**, Letter No. WT(16)/(2295-A)/PCIW dated 9 May 1969.

¹²⁰⁴ **P-0649.0166**, Letter No. F.4(13)/65-IC dated 9 April 1970, Annexure V.

¹²⁰⁵ **P-0649.0174**, Letter No. 4/13/65-IC dated 28 September 1970, para. 3.

¹²⁰⁶ **P-0649.0180**, Letter No. WT(16)/(2529-A)/PCIW dated 12 November 1970, para. 3; see also **P-0649.0215**, Letter No. WT(16)/(2726-A)/PCIW dated 20 August 1971, para. 3 (repeating objections to the calculation of the minimum mean discharge under Section 2(1)).

¹²⁰⁷ **P-0649.0163**, Letter No. F.4(1)/66-IC dated 24 December 1969, Enclosure IX, p. 8 ("The variation of discharge are on the basis of daily load fluctuations, and these have already been intimated. It is anticipated that there will not be any variation of weekly load fluctuations than those worked out on daily load fluctuations").

¹²⁰⁸ **P-0649.0168**, Letter No. WT(16)/(2453-A)/PCIW dated 18 April 1970.

Mr. Mian Khalil-Ur-Rahman, who served as a part of Pakistan’s delegation in the final stages of the negotiations that led to the conclusion of the Treaty and then served as Pakistan’s Second Commissioner from 8 June 1964 to 5 October 1971. Referred to in the *travaux préparatoires* of the Treaty as “Mr. Khalil”, he appears at one point to have been the deputy head of Pakistan’s delegation during the Treaty negotiations and is recorded as having attended several meetings during which the 1959–1960 draft agreements were developed.¹²⁰⁹ Pakistan confirmed that, “[a]s a part of Pakistan’s negotiating team, Mr Khalil would doubtlessly have been aware of the Parties’ evolving approach to the calculation of maximum Pondage over the course of the negotiations”.¹²¹⁰

719. Pakistan argues that the Sumbal and Stakna HEPs were “tiny” and with “miniscule Pondage”, and that, while Mr. Khalil “did not actively contest the premise of India’s calculations, he also did not expressly affirm them”.¹²¹¹ Further, Pakistan maintains that “it appears that Mr Khalil was not minded to challenge the premise of the ICIW’s calculation” and “appears to have confined his inquiries on Pondage to ensuring that India had applied its own method correctly”.¹²¹² Yet, despite the size of these HEPs and despite what were undoubtably important duties with respect to the ongoing transitional works, Mr. Khalil *did* engage on the calculation of pondage with respect to Sumbal HEP, expressly saying that “the magnitude of the Live Storage *has to be determined from the actual load curve* worked out for the proposed Plant”.¹²¹³ Further, Mr. Khalil objected to aspects of the design of Stakna HEP, but not to India’s calculation of that HEP’s maximum Pondage based on a projected daily load for the HEP. Had the calculation of maximum Pondage using the anticipated load of the HEP been rejected in the final stages of the negotiations of the Treaty, in favor of solely using the MMD for the calculation of pondage, Mr. Khalil likely would have known that, and likely would have included that point when making his objections to India regarding the design of the Sumbal and Stakna HEPs. While the stakes with respect to these smaller HEPs may have been low in and of themselves, Mr. Khalil’s approach in raising many objections regarding the design of these HEPs is consistent with the understanding that he knew precedents were being set that needed to be corrected at the outset. That he did not object to India’s calculation of maximum Pondage using the projected HEP load is consistent with an interpretation

¹²⁰⁹ Pakistan’s Final Comments, paras. 2.2–2.6.

¹²¹⁰ Pakistan’s Final Comments, para. 2.10.

¹²¹¹ Pakistan’s Final Comments, para. 2.31.

¹²¹² Pakistan’s Final Comments, paras. 2.35–2.36.

¹²¹³ **P-0649.0143**, Letter No. WT(16)/(2295-A)/PCIW dated 9 May 1969, p. 3 (emphasis added).

of Paragraph 8(c) that calls for using such loads as one element in the calculation of maximum Pondage.

720. On 21 November 1974, the issue of “maximum Pondage” arose for a third time, when India submitted to Pakistan information regarding its plans to construct the Lower Jhelum HEP (with an installed capacity of 22 MW) on the Jhelum River.¹²¹⁴ Relevantly, India’s method for calculating the maximum Pondage for the Lower Jhelum utilized the same principles as the Stakna and Sumbal HEPs (including use of a chart based on a daily load schedule).¹²¹⁵ Pakistan states that it protested the design of the Lower Jhelum HEP on the same basis as it later protested the much larger Baglihar HEP.¹²¹⁶ However, the record indicates that, while Pakistan objected to the calculation of maximum Pondage, it was not on the basis of India’s use of projected plant load. Rather, Pakistan claimed deficiencies in the MMD data, stating that “[f]rom the information supplied, it is not possible to ascertain the minimum mean discharge at the site of the plant”.¹²¹⁷ Pakistan also noted that the size of the plant’s designed Operating Pool was less than the calculated “maximum Pondage”, and it asked India to explain how the proposed power generation used in the Pondage calculation would be achieved.¹²¹⁸

721. India responded by providing additional detail on its MMD calculation.¹²¹⁹ It explained that the difference between the size of the Operating Pool and the “maximum Pondage” arose because of other design considerations, noting:

To the extent that the pondage that could be provided at site falls short of the requirement of the load curve, there will no doubt be a constraint on the peaking capability of the Plant.¹²²⁰

722. In other words, India planned to use less than the “maximum Pondage” that would be available under its calculation methodology, which utilized the plant’s design capacity and anticipated load, because of other design constraints.

723. In response, Pakistan argued that India was calculating the “maximum Pondage” based on a “hypothetical” plant load, rather than the “actual” load that the HEP would experience, writing:

¹²¹⁴ **P-0649.0268**, Letter No. F.4(1)/62-IC(IT) dated 21 November 1974.

¹²¹⁵ **P-0649.0268**, Letter No. F.4(1)/62-IC(IT) dated 21 November 1974, Annexure 14.

¹²¹⁶ Pakistan’s Final Comments, paras. 2.31(b), 2.41–2.43.

¹²¹⁷ **P-0649.0283**, Letter No. WT(85)/(3264-A)/PCIW dated 20 February 1975, para. 4.

¹²¹⁸ **P-0649.0283**, Letter No. WT(85)/(3264-A)/PCIW dated 20 February 1975, Enclosure, para. 3(iii).

¹²¹⁹ **P-0649.0319**, Letter No. F.4(1)/62-IC-(IT) dated 25 October 1975, Enclosure, para. 2.

¹²²⁰ **P-0649.0319**, Letter No. F.4(1)/62-IC-(IT) dated 25 October 1975, Enclosure, para. 10.

The generation pattern [for calculating “maximum Pondage”] has to be related to the Operating Pool provided at the site of the Plant. The calculations for the Operating Pool ... do not depict the actual variations through the turbines which are proposed to be met with the pondage provided and, therefore, appear to be hypothetical. It may please be appreciated that the capacity of the Operating Pool is to correspond to the Firm Power which can be actually generated at a time when the river is carrying the minimum mean discharge.¹²²¹

724. India replied by repeating its prior statement that there would “be a constraint on the peaking capability of the Plant”.¹²²² Pakistan rejoined by repeating its earlier view, stating:

Your observations imply that the calculations for the operating pool are to be based on a daily load curve which can not be met with the pondage provided at a time when the river is carrying the minimum daily discharge. I do not agree with the view and reiterate my earlier observation.¹²²³

725. Taken together, these exchanges indicate that Pakistan continued to interpret Paragraph 8(c) as calling for the use of the plant load in calculating “maximum Pondage”, but it insisted that the load must reflect the power demands that the plant will actually be called upon—and able—to meet. In other words, the disagreement between the Commissioners was about how to determine the load curve, not about the *use* of a load curve when calculating Pondage.
726. This practice by Pakistan and India with respect to the calculation of “maximum Pondage” at the Sumbal, Stakna, and Lower Jhelum HEPs, generally continued in the four other HEPs that India proposed from 1978 to 1990.¹²²⁴ Although Pakistan raised extensive objections to those plants for various reasons, including objections similar to its objection in Lower Jhelum that India was using “hypothetical” load curves, in none of those instances did Pakistan object to the general methodology of using installed capacity and anticipated load to determine “maximum Pondage”.¹²²⁵ It is only with the Baglihar HEP, notified by India in 1992, that Pakistan begins objecting to the use of such methodology.

¹²²¹ **P-0649.0343**, Letter No. F.21(2)/74-I.T. dated 30 January 1976, Enclosure, para. 3(c)(iii) (emphasis added).

¹²²² **P-0649.0356**, Letter No. F.4/1/62-IC(IT) dated 12 May 1976, Enclosure, para. 3(c)(iii).

¹²²³ **P-0649.0361**, Letter No. WT(85)/(3567-A)/PCIW dated 26 July 1976, Enclosure, para. 3(c)(iii).

¹²²⁴ **P-0649.0403**, Letter No. F.4(7)/64-IC(IT) dated 14 March 1978 (India’s proposal for the Chinani HEP); **P-0649.0408**, Letter No. F.10(4)/62-IT dated 3 July 1978 (India’s proposal for the Dul Hasti HEP); **P-0649.0500**, Letter No. F.11(2)/82-I.T./135 dated 18 May 1984 (India’s proposal for the Upper Sindh HEP); **P-0649.0534**, Letter No. F.3(5)/83-I.T./227 dated 30 January 1986 (India’s proposal for the Kargil HEP); **P-0649.0628**, Letter No. 3(6)/87-I.T./392 dated 29 September 1988 (India’s proposal for the Asthan Nalla HEP); **P-0649.0695**, Letter No. 4(1)/86-I.T./485 dated 15 January 1990 (India’s proposal for the Parnai HEP).

¹²²⁵ See, e.g., **P-0649.0425**, Letter No. WT(14)/(4023-A)/PCIW dated 4 August 1979, para. 2 (Pakistan’s objection to the Chinani HEP based on “hypothetical loads”); **P-0649.0412**, Letter No. F.16(4)/62-IT dated 6 October 1978 (Pakistan’s objection to the Dul Hasti HEP based on the calculated Pondage exceeding the

727. This practice of the Parties, in the first three decades following the Treaty’s adoption, may not rise to the level of establishing an “agreement”¹²²⁶ between the Parties as to the meaning of Paragraph 8(c). Yet it confirms¹²²⁷ an interpretation of the ordinary meaning of Paragraph 8(c) as calling for the calculation of maximum Pondage to include, as elements, the HEP’s installed capacity and anticipated load. Indeed, as indicated above, in a series of instances from 1969 to 1990, Pakistan acted in a manner that implicitly or explicitly accepted that the methodology for calculating “maximum Pondage” takes into account the proposed HEP’s installed capacity and anticipated load. Pakistan also appeared to accept that Pondage could be calculated on a daily or weekly basis. By contrast, at no point in this time period did either Party express a view that the Pondage was to be calculated solely based on the MMD at the site of the HEP. That practice confirms an interpretation that Paragraph 8(c) envisages taking into account the HEP’s installed capacity and anticipated load when calculating maximum Pondage.
728. Pakistan has suggested that it did not object to India’s methodology throughout this period because “it reflected the circumstances of the day—only a few planned, small capacity HEPs and a political imperative focused on accommodation”.¹²²⁸ Alternatively, Pakistan has suggested that it *did* object to India’s methodology during this period in a manner comparable to what came later, in 1992, with respect to the Baglihar HEP.¹²²⁹ Yet, the record shows that Pakistan regularly and vigorously objected to the design of those HEPs, regardless of their size, on many grounds, but not with respect to the calculation of pondage using actual load curves. Indeed, the record of correspondence shows intensive discussion and iteration on the final values of the MMD, with Pakistan scrutinizing the supplied records, typographical errors, outlier values, missing records, and diverging results when trying to replicate the calculations. Pakistan examined input data including, for example, topography and the volumes of intake canals. This record suggests that Pakistan was not operating under a political imperative focused on accommodation, but instead

designed Operating Pool); **P-0649.0503**, Letter No. WT(16)/(4618-A)/PCIW dated 18 August 1984, Enclosure, p. 16 (Pakistan’s objection that “the variations in load” for the Upper Sind HEP are in conflict with the “maximum Pondage” calculation); **P-0649.0703**, Letter No. WT(16)/(5138-A)/PCIW dated 14 April 1990, Enclosure, p. 5 (Pakistan’s objection to the Parnai HEP on the ground: “The calculations for the Operating Pool (Annexure-VIII) are hypothetical one; it may be revised based on the actual load curve or vice versa”).

¹²²⁶ **PLA-0005**, VCLT, Art. 31(3)(b).

¹²²⁷ **PLA-0005**, VCLT, Art. 32.

¹²²⁸ Pakistan’s Post-Hearing Submission, para. 2.13.

¹²²⁹ Pakistan’s Final Comments, paras. 2.46–2.50.

subjected all calculations to a critical review.¹²³⁰ Moreover, some aspects of the record even indicate that Pakistan continued to subscribe to the use of some form of actual load curves up until the neutral expert was appointed in the *Baglihar* Neutral Expert Proceedings.¹²³¹

729. Pakistan also argues that its “lack of complaint” over India’s approach during this early period constituted neither an acquiescence nor a waiver of its rights under the Treaty.¹²³² Specifically, Pakistan relies on Article IV(14) of the Treaty, which provides:

In the event that either Party should develop a use of the waters of the Rivers which is not in accordance with the provisions of the Treaty, that Party shall not acquire by reason of such use, by prescription or otherwise, a right to a continuance of such use.

730. Article IV(14), by its terms, protects one Party from the other Party claiming that it has acquired “a right to use” waters of the Eastern or Western Rivers that is “not in accordance with the provisions of the Treaty” by virtue of a past “use”. Yet, that is not what is now at issue before the Court. The Court is interpreting the meaning of a provision of the Treaty—Paragraph 8(c)—and it is doing so by reference to its text, the definitions of its terms, its context, and the object and purpose of the Treaty. In this subsection the Court is scrutinizing the subsequent practice of Parties in the application of the Treaty solely to ascertain whether that practice confirms or calls into

¹²³⁰ See, e.g., **P-0649.0137**, Letter No. WT(16)/(2201-A)/PCIW dated 5 November 1968; **P-0649.0163**, Letter No. F.4(1)/66-IC dated 24 December 1969; **P-0649.0168**, Letter No. WT(16)/(2453-A)/PCIW dated 18 April 1970; **P-0649.0136**, Letter No. WT(16)/(2202-A)/PCIW dated 5 November 1968; **P-0649.0140**, Letter No. 4(13)/65-IC dated 10 February 1969; **P-0649.0143**, Letter No. WT(16)/(2295-A)/PCIW dated 9 May 1969; **P-0649.0166**, Letter No. F.4(13)/65-IC dated 9 April 1970; **P-0649.0174**, Letter No. 4/13/65-IC dated 28 September 1970; **P-0649.0171**, Letter No. WT(16)/(2488-A)/PCIW dated 30 May 1970; **P-0649.0215**, Letter No. WT(16)/(2726-A)/PCIW dated 20 August 1971; **P-0649.0361**, Letter No. WT(85)/(3567)/PCIW dated 26 July 1976; **P-0649.0500**, Letter No. F.11(2)/82-I.T./135 dated 18 May 1984; **P-0649.0503**, Letter No. WT(16)/(4618-A)/PCIW dated 18 August 1984; **P-0649.0543**, Letter No. WT(124)/(4774-A)/PCIW dated 20 April 1986; **P-0649.0703**, Letter No. WT(16)/(5138-A)/PCIW dated 14 April 1990; **P-0649.0493**, Letter No. WT(104)/(4565-A)/PCIW dated 11 February 1984; **P-0649.0425**, Letter No. WT(14)/(4023-A)/PCIW dated 4 August 1979; **P-0649.0637**, Letter No. WT(15)/(5021-A)/PCIW dated 5 December 1988; **P-0649.0677**, Letter No. WT(103)/(5082-A)/PCIW dated 7 September 1989.

¹²³¹ In a “Secretary Level” meeting on the Baglihar controversy in 2005, Pakistan recorded this observation on India’s response to Pakistan’s views:

The pondage requirement depends on the load curve and Firm Power ... When the realistic load curve corresponding to the requirement of the Treaty showing Firm Power and fluctuation is provided by India maximum Pondage can be calculated accordingly.

P-0650.1, Minutes of Secretary Level Meeting on Baglihar Hydroelectric Project held in New Delhi, 3 to 6 January 2005, Enclosure I, Annexure VI. At that time, shortly before its request for appointment of a Neutral Expert, Pakistan’s position was in flux. See Pakistan’s Post-Hearing Submission, paras. 2.16–2.29. But the notes on the “Secretary Level” discussion suggest that Pakistan had not yet completely abandoned its prior view.

¹²³² Pakistan’s Post-Hearing Submission, para. 2.12.

question the Court’s initial interpretation of the ordinary meaning of Paragraph 8(c).¹²³³ The Court is not determining whether a single Party has acquired a right that is not in accordance with the Treaty.

731. In sum, the practice of the Parties in the first three decades following the Treaty’s adoption is consistent with an interpretation of Paragraph 8(c) that calls for calculating maximum Pondage based on, *inter alia*, the HEP’s installed capacity and anticipated load.

7. *Travaux Préparatoires*

732. Article 32 of the VCLT allows for recourse to “the preparatory work of the treaty and the circumstances of its conclusion, in order to confirm the meaning resulting from the application of article 31”.¹²³⁴ As such, the *travaux préparatoires* and the broader negotiating history may assist in confirming an interpretation based on the ordinary meaning of Paragraph 8(c).
733. The Court has carefully reviewed the preparatory work and negotiating history of the Treaty, which was explained in Part III.B. As a general matter, the Court agrees with Pakistan that “the negotiating history and the available *travaux préparatoires* of the Treaty cast little light on the meaning of the Treaty provisions with which the Court of Arbitration is most directly concerned here”, including Paragraph 8(c).¹²³⁵ There is, however, one aspect of the negotiations that confirms the interpretation of the ordinary meaning of Paragraph 8(c).
734. The September 1959 Heads of Agreement contained provisions that dealt with the calculation of Pondage for both regular Run-of-River Plants and Small Plants. For regular Run-of-River Plants, the provision read: “The volume between the maximum and minimum levels of the operating pool shall not exceed that required to meet the daily or weekly load fluctuations as the case may require”.¹²³⁶ For Small Plants, the provision read: “no storage is involved in connection with the plant, except the forebay pondage required for daily and weekly load fluctuations and the storage incidental to the diversion structure”.¹²³⁷ Pakistan acknowledges that: “So far as Pondage was concerned, therefore, the 1959 Heads of Agreement treated regular Run-of-River Plants and Small

¹²³³ **PLA-0005**, VCLT, Art. 31(3)(b).

¹²³⁴ **PLA-0005**, VCLT, Art. 31(2).

¹²³⁵ Pakistan’s Memorial, Appendix A, para. 6.

¹²³⁶ **P-0136**, Heads of Agreement dated 15 September 1959, Annex B. para. 3(b).

¹²³⁷ **P-0136**, Heads of Agreement dated 15 September 1959, Annex B. para. 14(b).

Plants in accordance with the same fundamental principle, namely, that Pondage was to be calculated by reference to ‘daily and weekly load fluctuations’”.¹²³⁸

735. For the April 1960 Heads of Agreement, however, the text of those provisions (as modified) was then moved to be the single definition of “Pondage” in what would become Annexure D, Paragraph 2(c), which served for both regular Plants and Small Plants. Rather than having gradually diminished the significance of loading in the calculation of pondage in the final stages of the negotiations, the drafters appear to have simply consolidated that element into a single text, albeit as a definition,¹²³⁹ with that definition serving as a basis for the calculation of Pondage for both regular Plants and Small Plants.¹²⁴⁰ At a minimum, had the Parties intended to make a significant change as to the calculation of Pondage by the movement of text in this manner—a change on an important issue that would diverge significantly from the common understanding as to how pondage was normally calculated—the negotiating record might be expected to explain or acknowledge such a change, such as in correspondence by the Parties or the World Bank. The absence in the record of any such explanation or acknowledgment weighs against Pakistan’s interpretation.¹²⁴¹
736. In sum, the preparatory work of the Treaty provides limited guidance, but what guidance exists confirms an interpretation of Paragraph 8(c) that calls for calculating maximum Pondage based on, *inter alia*, the HEP’s installed capacity and anticipated load.

8. Overall Assessment of the Interpretation of Paragraph 8(c)

737. For the reasons indicated above, the ordinary meaning of Paragraph 8(c), read in conjunction with its defined terms and against the background of how such terms are understood in the context of hydro-electric dam engineering, indicates that the Treaty’s method for calculating maximum Pondage in Paragraph 8(c) includes, as elements, the HEP’s installed capacity and anticipated load. Had the Treaty drafters intended to depart from the familiar engineering practice of the time, they would not have left the Treaty silent on that intention; they were well versed in that existing practice and would have discerned a need to highlight any such departure.

¹²³⁸ Pakistan’s Final Comments, para. 2.13.

¹²³⁹ Pakistan’s Preliminary Comments, para. 7.

¹²⁴⁰ See para. 672, *supra*.

¹²⁴¹ See **PLA-0049**, *Oil Platforms (Islamic Republic of Iran v. United States of America)*, Preliminary Objection, Judgment, [1996] ICJ Rep 803, para. 29 (“it may be thought that, if that Article had the scope that Iran gives it, the Parties would have been led to point out its importance during the negotiations or the process of ratification”).

738. The context of Paragraph 8(c) in the form of Paragraph 15 supports that interpretation, given that the water delivery requirements of that paragraph are largely rendered redundant or ineffective if Pakistan’s approach is adopted. Further, context relating to Paragraph 9 and Appendix II is consistent with an interpretation of Paragraph 8(c) as encompassing a plant’s installed capacity and anticipated load in its methodology, given that the information that India must supply to Pakistan accommodates the information relevant for applying that methodology. Yet still further context relating to Annexure E reinforces the interpretation, in that the methodology for calculating Pondage for Storage Works is closely allied to that envisaged for Annexure D, Part 3 HEPs. In that regard, the principal difference in language (the presence in Annexure D of a definition for “Firm Power”) appears driven by the difference in the nature of Run-of-River Plants and Storage Works, not by an intention to sharply change the methodology as between the Annexures. Indeed, it appears that the definition of Pondage in Paragraph 2(c) of Annexure D applies in four places in the Treaty—new Run-of-River Plants in Annexure D;¹²⁴² Small Plants in Annexure D;¹²⁴³ new plants on irrigation channels;¹²⁴⁴ and Storage Works under Annexure E that incorporate a HEP.¹²⁴⁵ In each instance, Pondage is calculated based in part on the plant’s installed capacity and anticipated load.
739. The object and purpose of the Treaty is also consistent with a method for calculating maximum Pondage that includes, as elements, the HEP’s installed capacity and anticipated load. In particular, the choice between that method and Pakistan’s preferred method is not a choice between restricting or not restricting Pondage; both methods restrict Pondage and do so in a meaningful way. While the exception to the “let flow” principle that allows India to design and construct Annexure D, Part 3 HEPs on the Western Rivers is to be strictly construed, such construction does not dictate interpreting Paragraph 8(c) so as to allow only the smallest possible Pondage; what it calls for is to construe Paragraph 8(c) strictly in accordance with its terms, as the Court is doing.
740. The practice of the Parties, in the first three decades following the Treaty’s adoption, confirms this interpretation of the ordinary meaning of Paragraph 8(c). With respect to the Annexure D, Part 3 HEPs proposed between 1968 and 1990, Pakistan acted in a manner that implicitly or explicitly accepted that the methodology for calculating “maximum Pondage” takes into account

¹²⁴² **PLA-0001**, Treaty, Annexure D, para. 8.

¹²⁴³ **PLA-0001**, Treaty, Annexure D, para. 18.

¹²⁴⁴ **PLA-0001**, Treaty, Annexure E, paras. 7–8.

¹²⁴⁵ **PLA-0001**, Treaty, Annexure E, para. 21.

the proposed HEP's installed capacity and anticipated load. By contrast, at no point in this time period did either Party express a view that the Pondage was to be calculated solely based on the MMD at the site of the HEP. Likewise, while the preparatory work of the Treaty provides limited guidance, what guidance exists confirms the ordinary meaning of Paragraph 8(c).

741. Therefore, in light of the various elements of the interpretive approach called for by Articles 31 and 32 of the VCLT, the Court determines that the calculation of “maximum Pondage” in Paragraph 8(c) requires, *inter alia*, consideration of the proposed HEP's installed capacity and anticipated load.
742. In light of that determination, the Court wishes to emphasize three points. *First*, consistent with the notification requirements set forth in Appendix II of Annexure D, India is under an obligation *inter alia* to convey to Pakistan, at an early stage, the “[o]bserved or estimated daily river discharge data”,¹²⁴⁶ “the calculations for the Operating Pool”,¹²⁴⁷ and the “particulars of design”, including the dimensional plan,¹²⁴⁸ the “[d]ischarge proposed to be passed through the Plant, initially and ultimately, and expected variations in the discharge on account of the daily and weekly load fluctuations”,¹²⁴⁹ and the “[m]aximum aggregate capacity of power units ... for Firm Power and Secondary Power”.¹²⁵⁰ Thus, to fulfill its Treaty obligations, India must include information and an explanation relating to its calculation of maximum Pondage pursuant to Paragraph 8(c). India's notification must give Pakistan sufficient time to respond with its views as to whether the design is compliant with the Treaty. In this respect, the deadline of *at least* six months before construction in Paragraph 9 of Annexure D should be seen as a minimum, and notification provided earlier (indeed, potentially much earlier) as necessary to enable India still to modify its design in the face of valid concerns. If Pakistan raises timely objections, India must give them careful consideration and both Parties must proceed in a spirit of cooperation and good faith. Ultimately, if a difference emerges in this regard between the Parties, it is for India, as the proponent of the design and construction of the HEP, to establish that the proposed maximum Pondage satisfies the requirements of Paragraph 8(c), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.

¹²⁴⁶ PLA-0001, Treaty, Annexure D, Appendix II, para. 2(b).

¹²⁴⁷ PLA-0001, Treaty, Annexure D, Appendix II, para. 3(b).

¹²⁴⁸ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(a).

¹²⁴⁹ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(h).

¹²⁵⁰ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(i).

743. *Second*, as Pakistan has maintained that the proposed HEP's installed capacity and anticipated load is not relevant to the determination of "maximum Pondage", the Court does not address in detail in this Award whether and how the Treaty regulates the basis upon which India may determine such installed capacity and anticipated load. The neutral expert in the *Baglihar* Neutral Expert Proceedings addressed the question of the appropriate projection of load with respect to the Baglihar HEP,¹²⁵¹ but his determination is not controlling outside of that proceeding. If a question has arisen or arises between the Parties in this regard, either generally or in the specific context of the KHEP or RHEP, Pakistan or India may seek to pursue the matter through the Treaty's dispute resolution procedures, including a further phase of these proceedings. As a general matter, the plant's installed capacity and anticipated load must correspond to how the plant will actually be operated; it cannot be hypothesized in a manner that serves to inflate the amount of maximum Pondage.
744. *Third*, Part XIII of this Award addresses the critical role that cooperation of the Parties plays for effective implementation of the Treaty. Here, it is stressed that the cooperation by the Parties with respect to India's notification of information pertinent to the application of Paragraph 8(c), Pakistan's response, and cooperation within the Commission on any questions that may arise, are critical for Paragraph 8(c) to operate as the Parties intended.

9. Conclusion

745. The Court concludes that Paragraph 8(c) requires that, when designing an Annexure D, Part 3 HEP, India shall calculate the maximum Pondage pursuant to Paragraph 8(c) by taking into account the following restrictions.
746. *First*, "Firm Power", shall be calculated as the hydro-electric power corresponding to the MMD at the site of the plant, calculated in accordance with Paragraph 2(i) of Annexure D.
747. *Second*, "Pondage required for Firm Power" shall be calculated based on the water that can be accumulated and released at the site of the plant during the course of no more than a seven-day period, within the following constraints:
- (a) Pondage required for Firm Power shall be calculated based on what can be accumulated during that period when the stream flow of the river is at the MMD, as set forth in Paragraph 2(i) of Annexure D.

¹²⁵¹ **PLA-0002**, *Baglihar* Determination, pp. 79–80, 104.

- (b) Pondage required for Firm Power shall be calculated based on a realistic, well-founded, and defensible projection of the proposed Annexure D, Part 3 HEP's installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D.
- (c) Pondage required for Firm Power shall be calculated in a manner that abides by the daily and weekly release requirements set forth in Paragraph 15 of Annexure D.

748. *Third*, the maximum Pondage shall be no more than twice the Pondage calculated in accordance with the above requirements.

* * *

this page intentionally blank

XII. GENERAL INTERPRETATION OF ANNEXURE D, PARAGRAPH 8(A) ON THE ARTIFICIAL RAISING OF THE WATER LEVEL ABOVE FULL PONDAGE LEVEL (INCLUDING THE USE OF FREEBOARD)

749. The third question of the Court outlined in Procedural Order No. 6 is as follows:

With respect to Annexure D, paragraph 8(a), what is to be taken into account for the purposes of designing the freeboard for a plant and what is to be excluded?

750. Paragraph 8(a) of Annexure D to the Treaty specifies the following criterion for design of any new Run-of-River Plant on the Western Rivers:

The works themselves shall not be capable of raising artificially the water level in the Operating Pool above the Full Pondage Level specified in the design.

A. THE PARTIES' POSITIONS

1. Pakistan's Position

751. Pakistan's position is that Paragraph 8(a) of Annexure D, by its terms, imposes an absolute prohibition on the artificial raising of the water level above the Full Pondage Level.¹²⁵² To that end, Paragraph 8(a) limits *any* mechanism or design feature that would allow India to exceed the specified Full Pondage Level.¹²⁵³ Freeboard can act as such a mechanism in combination with gates (as designed or subsequently modified) and/or other structural features.¹²⁵⁴ As such, Paragraph 8(a) applies to regulate the height of a "HEP's freeboard to limit further the artificial raising of the operating pool above the full pondage level".¹²⁵⁵ According to Pakistan, the height of the freeboard must be limited to what is strictly required for dam safety and for Surcharge Storage.

752. *First*, Pakistan submits that the terms of Paragraph 8(a) impose an *absolute* prohibition on increasing the reservoir level in an Annexure D, Part 3 HEP above the Full Pondage Level, when doing so has the effect of "increasing the amount of water stored and therefore controlled by the HEP operator".¹²⁵⁶ In Pakistan's view, this prohibition is not an operational rule, but rather a design and construction rule that prohibits India from designing an Annexure D, Part 3 HEP

¹²⁵² Pakistan's Memorial, para. 12.23.

¹²⁵³ Pakistan's Memorial, para. 12.18.

¹²⁵⁴ Request for Arbitration, para. 93.

¹²⁵⁵ Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, pp. 202:11–14; Pakistan's Memorial, para. 12:31.

¹²⁵⁶ Pakistan's Memorial, para. 12.18; Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 189:6–14.

capable of artificially raising the level of the Operating Pool above the Full Pondage Level.¹²⁵⁷ This prohibition includes, for instance, a design whereby the HEP operator is able to shut all means of egress from the reservoir (spillways, intakes, and any other outlet) and let the water level rise.¹²⁵⁸ Pakistan acknowledges, however, that such prohibition does not cover Surcharge Storage, as referred to in Paragraph 8(b),¹²⁵⁹ which is a distinct concept involving uncontrollable storage above the Full Pondage Level.¹²⁶⁰ In Pakistan's view, while Paragraph 8(b) contemplates the possibility of Surcharge Storage, it does not give India any *entitlement* to Surcharge Storage.¹²⁶¹ As such, where India's design does not *require* any Surcharge Storage, there is no need to raise the top of the dam above the normal freeboard level.¹²⁶²

753. *Second*, the design constraints under Paragraph 8(a), which give effect to that prohibition, apply to “[t]he works themselves”, which Pakistan argues includes all components of an Annexure D, Part 3 HEP, including freeboard, spillways, intakes, outlets, and other structural features.¹²⁶³ As such, it is necessary to examine these various components and their interaction with the freeboard to determine whether an Annexure D, Part 3 HEP is compliant with Paragraph 8(a).¹²⁶⁴ The capability that India may have to block structural features with fusegates, flashboards, or other similar obstacles may also be relevant.¹²⁶⁵

¹²⁵⁷ Pakistan's Memorial, para. 12.19.

¹²⁵⁸ Pakistan's Memorial, paras. 12.22–12.23.

¹²⁵⁹ **PLA-0001**, Treaty, para. 8(b) (“The design of the works shall take due account of the requirements of Surcharge Storage and of Secondary Power”), 2(e) (“‘Surcharge Storage’ means uncontrollable storage occupying space above the Full Pondage Level”).

¹²⁶⁰ Pakistan's Memorial, paras. 12.18, 12.22–12.23.

¹²⁶¹ Pakistan's Memorial, para. 12.32.

¹²⁶² Pakistan's Memorial, para. 12.32.

¹²⁶³ Pakistan's Memorial, para. 12.47. Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, pp. 217:11–19 (“If India were to insert stoplogs into the RHEP's gated spillway or add additional height to the spillway gates, the gap that that spillway relies on to render it paragraph 8(a)-compliant would be diminished or eliminated, and its operator could easily fill the Operating Pool above the full pondage level, breaching paragraph 8(a). Freeboard regulation minimises the potential for such abuse, and is therefore a logical and necessary element of paragraph 8(a)”).

¹²⁶⁴ Pakistan's Memorial, para. 12.14, *referring to PLA-0001*, Treaty, paras. 8(d) (“satisfactory operation of the works”), 8(e) (“satisfactory construction and operation of the works”).

¹²⁶⁵ Pakistan's Memorial, paras. 12.33–12.35, *citing PLA-0002, Baglihar Determination*, p. 64. See, e.g., Hearing for the First Phase on the Merits Tr., (Day 7), 16 July 2024, pp. 57:24–58:8 (“The problem with the spillway is not the fusegates: it's the fact that India could, with very little effort, using very well-recognised means, block the spillway by installing fusegates and permitting overfilling. And it's that potential of the works as constructed that justifies the limitation on the freeboard under paragraph 8(a). An ungated spillway comes with an automatic possibility of being blocked, and therefore the freeboard above it must be limited to limit the potential for abuse”).

754. *Third*, Pakistan recognizes that under Paragraph 8(a), “India is entitled to a safe and effective freeboard, with a view to preventing overtopping and dam failure, *but not more than that*”.¹²⁶⁶ To assess whether this criterion is satisfied, the usual factors for the calculation of freeboard, as set out in the major international standards,¹²⁶⁷ are to be taken into account.¹²⁶⁸ These include: (i) the nature of the dam and the risk factors associated with it in light of its design flood;¹²⁶⁹ (ii) the spillway design and the extent to which Surcharge Storage is required;¹²⁷⁰ and (iii) the meteorological and geometric conditions at the dam site (in particular, wind velocity and its intersection with wave run up on the face of the dam).¹²⁷¹ However, anything that is not necessary to guarantee the safety of the dam as a whole is to be excluded from the analysis.¹²⁷² In particular, the desire to prevent certain design features from getting wet (for example, keeping the girders of the spillway bridge clear of wave splashes, or ensuring that the bearings of the bridge are not submerged below the Full Pondage Level) does not warrant a higher freeboard under Paragraph 8(a),¹²⁷³ especially where multiple Treaty-compliant alternatives are available to India.¹²⁷⁴ Pakistan emphasizes the importance of setting the interpretative parameters of Paragraph 8(a), notwithstanding the seemingly marginal difference between the Parties concerning the height of the freeboard, given its significance with respect to India’s ability to

¹²⁶⁶ Pakistan’s Memorial, para. 12.37 (emphasis added); Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 202:15–20 (“Now, this is not to say that India does not get a freeboard for its [Annexure D, Part 3] HEPs. To the contrary, given the role that the freeboard plays in dam safety, these HEPs must have a freeboard for the safety of India and Pakistan both. But ... that freeboard must be no higher than safety requires”).

¹²⁶⁷ These standards include those articulated by ICOLD, the U.S. Army Corps of Engineers, and the American Society of Civil Engineers.

¹²⁶⁸ Pakistan’s Memorial, para. 12.38, *referring to P-0532*, Federal Energy Regulatory Commission, Engineering Guidelines on Selecting and Accommodating Inflow Design Floods for Dams (August 2015), Sections 2–4.3.2. See also Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, pp. 217:20–218:13.

¹²⁶⁹ Pakistan’s Memorial, para. 12.39.

¹²⁷⁰ Pakistan’s Memorial, para. 12.40.

¹²⁷¹ Pakistan’s Memorial, para. 12.41.

¹²⁷² Pakistan’s Memorial, para. 12.42; Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 221:8–18.

¹²⁷³ Pakistan’s Memorial, paras. 12.45–12.46, *referring to P-0083*, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, paras. 39–40; *P-0024*, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 26. See also Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, p. 218:14–22.

¹²⁷⁴ Hearing for the First Phase on the Merits Tr., (Day 4), 11 July 2024, pp. 218:23–219:10.

artificially raise the water level, and the large number of HEPs planned as part of India's construction program on the Western Rivers.¹²⁷⁵

2. India's Position in the Permanent Indus Commission, the *Baglihar* Neutral Expert Proceedings, and the *Kishenganga* Arbitration

755. India's position is that the design of the freeboard for a plant will be "necessitated by the site conditions, consistent with sound and economical design and satisfactory construction and operations of the works".¹²⁷⁶ In this regard, it emphasizes several points.
756. *First*, India has highlighted in the Commission that "freeboard is an essential safety requirement in the case of dams" that provides necessary assurance "against overtopping resulting from wind setup, landslide and seismic motion, settlement, malfunction of structures and other uncertainties in design, construction, and operation".¹²⁷⁷ Beyond this, India submits that other practical considerations must be taken into account when designing the freeboard for a HEP.¹²⁷⁸ For instance, where a spillway bridge has been included in the design, India submits that the "freeboard criteria shall also be governed by the safety of [the] bridge", including ensuring that bridge bearings are kept free from wave splashes at full reservoir condition.¹²⁷⁹ Equally, India's stated position in the Commission is that the height of the total freeboard may be "purely a design requirement", designed to accommodate design wave height and wind setup corresponding to Full Pondage Level and in accordance with "Indian Standards".¹²⁸⁰ India considers that practical

¹²⁷⁵ Pakistan's Memorial, para. 12.47.

¹²⁷⁶ **P-0057**, Letter No. 3/7/82-IT/1369 (with enclosure) dated 25 May 2007, pp. 4–5; **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 8; **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 26; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 76; **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 23.

¹²⁷⁷ **P-0215**, Record of the 116th Meeting of the Permanent Indus Commission, 23 to 24 March 2021, para. 36.

¹²⁷⁸ **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, para. 40; **P-0215**, Record of the 116th Meeting of the Permanent Indus Commission, 23 to 24 March 2021, para. 37.

¹²⁷⁹ **P-0215**, Record of the 116th Meeting of the Permanent Indus Commission, 23 to 24 March 2021, para. 37; **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, paras. 39–40; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, paras. 72, 74, 76.

¹²⁸⁰ **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1 to 3 March 2022, para. 41; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, p. 60.

considerations such as these must be taken into account when designing the freeboard for a plant.¹²⁸¹

757. *Second*, India draws a distinction between “what is acceptable academically and what needs to be provided, following the sound engineering practices”.¹²⁸² Where a particular design of the freeboard for a plant is necessitated by the actual conditions at the site of the plant, in accordance with international best practices, it cannot be considered non-compliant with Paragraph 8(a).¹²⁸³ Equally, different practices may give a range of results for the calculation of the height of the freeboard, and “adopting a value among them instead of the lowest value should not be construed as a contravention of Paragraph 8(a) of Annexure D”.¹²⁸⁴
758. *Third*, India emphasizes that Paragraph 8(a) of Annexure D concerns the *capability* of the existing works *themselves* of raising artificially the water level in the Operating Pool above the Full Pondage Level specified in the design.¹²⁸⁵ Accordingly, India considers that the critical issue is whether the works are capable of raising the water level in the Operating Pool above the Full Pondage Level “as they are”.¹²⁸⁶ Therefore, Pakistan is not entitled to object to the design of a HEP on “the basis of what additions and alterations India might make at a later stage”.¹²⁸⁷ Any such objections, India argues, are based on Pakistan’s “apprehensions” of post-completion actions that India might take in violation of the Treaty, which relies on an impermissible bad faith interpretation of the Treaty.¹²⁸⁸ In this regard, India has observed that, where a plant has an

¹²⁸¹ **P-0083**, Record of the 109th Meeting of the Permanent Indus Commission, 22 to 25 September 2013, para. 40.

¹²⁸² **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 8.

¹²⁸³ **P-0057**, Letter No. 3/7/82-IT/1369 (with enclosure) dated 25 May 2007, p. 5; **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 8; **P-0024**, Record of the 110th Meeting of the Permanent Indus Commission, 23 to 27 August 2014, para. 26; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 76.

¹²⁸⁴ **P-0070**, Record of the 108th Meeting of the Permanent Indus Commission, 24 to 25 March 2013, para. 40.

¹²⁸⁵ **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 88; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 4.5.

¹²⁸⁶ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 4.5; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, para. 88; **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 8.

¹²⁸⁷ **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 4.5; **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, para. 70(I).

¹²⁸⁸ **P-0547 (BR-0008)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Counter-Memorial of the Government of India dated 23 September 2005, p. 60; **P-0547 (BR-0012)**, *Baglihar Hydro-electric Plant (Pakistan v. India)*, Rejoinder of the Government of India dated 20 March 2006, Ch. 4.5.

ungated surface spillway at the Full Pondage Level, the possibility of artificially raising the water above the Full Pondage Level “does not exist due to the free passage of water above the gate top”.¹²⁸⁹ Equally, such a plant with a crest-gated spillway at the Full Pondage Level will not contravene Paragraph 8(a) of Annexure D to the Treaty.¹²⁹⁰

B. THE COURT’S ANALYSIS

759. This Part addresses what is to be taken into account, and what is to be excluded, for the purposes of designing the freeboard for an Annexure D, Part 3 HEP under Paragraph 8(a) of Annexure D to the Treaty.
760. As explained in Part IX, every HEP dam has a maximum water level for which the dam’s reservoir is designed. For an Annexure D, Part 3 HEP, the Treaty divides the reservoir into Dead Storage, which is not used for operational purposes and may not be depleted; the Operating Pool, located above Dead Storage and extending up to Full Pondage Level, which may be used as Pondage for the generation of hydro-electric power; and Surge Storage, which is “uncontrollable storage occupying space above the Full Pondage Level”¹²⁹¹ that is used temporarily to hold flood waters that cannot be passed quickly enough through the dam.
761. The dam itself, however, must be somewhat higher than the maximum water level provided for in the design so as to prevent overtopping by waves generated by wind, landslides, seismic motion, and other uncertainties, such as malfunction or blockage of spillways. Overtopping of the dam is a serious concern, as it can compromise the integrity of the dam, leading to its breach or collapse, and was understood as such when the Treaty was adopted.¹²⁹² Thus, the height of the dam may be designed to address not just dead and controllable storage, but also surge storage of flood waters and protection against overtopping.
762. Freeboard is not a term defined (or even used) in the Treaty, but connotes in engineering terms the vertical distance between the full supply level and the top of the dam not designed for overflow.¹²⁹³ The dam of any Annexure D, Part 3 HEP would be designed to have “normal

¹²⁸⁹ **P-0016**, Letter No. Y-11017/2/2015-IT/2155 dated 21 August 2015, para. 8; **P-0025**, Record of the 111th Meeting of the Permanent Indus Commission, 31 January to 4 February 2015, paras. 89, 91.

¹²⁹⁰ **P-0216**, Record of the 117th Meeting of the Permanent Indus Commission, 1 to 3 March 2022, para. 41.

¹²⁹¹ **PLA-0001**, Treaty, Annexure D, para. 2(e).

¹²⁹² **P-0309**, W. P. Creager and J. D. Justin (eds.), *Hydro-Electric Handbook* (John Wiley & Sons, 2nd ed. 1950), pp. 410–411.

¹²⁹³ See para. 487, *supra*.

freeboard”, which denotes the vertical distance between the Full Pondage Level and the top of the dam. Where the reservoir of the dam is designed additionally to accommodate Surcharge Storage above the Full Pondage Level, the normal freeboard includes the height necessary for such storage. In such circumstances, the vertical distance between the top of the Surcharge Storage anticipated in the design and the top of the dam may be referred to as the “minimum freeboard”.¹²⁹⁴

1. Annexure D, Paragraph 8(a)

763. The *chapeau* of Paragraph 8 of Annexure D provides that “the design of any new Run-of-River Plant ... shall conform to the following criteria”. Paragraph 8(a) of Annexure D then provides:

The works themselves shall not be capable of raising artificially the water level in the Operating Pool above the Full Pondage Level specified in the design.¹²⁹⁵

764. Thus, the *chapeau* makes clear that the sub-paragraphs to follow are addressing the “design” of Annexure D, Part 3 HEPs, the ordinary meaning of which entails the conceptual planning of the HEP features on paper (i.e., rendering it as part of a technical drawing), with the intent and expectation that the HEP will be constructed and operated in accordance with that plan. Paragraph 8(a) focuses on one particular aspect of that design.

765. The reference to “works themselves” places the focus on the elements of the dam that might be employed for a particular purpose. The term “works” is not defined in the Treaty, but appears in a variety of provisions in Annexure D and elsewhere in the Treaty, indicating that the term was intended to cover all aspects of the engineering works as a whole, as well as individual components of a plant.¹²⁹⁶ Accordingly, the phrase “[t]he works themselves”, as it appears in Paragraph 8(a) of Annexure D, has broad application, encompassing the entirety of a Run-of-River Plant, including the individual components.¹²⁹⁷

¹²⁹⁴ See Part IX.C.5, *supra*.

¹²⁹⁵ PLA-0001, Treaty, Annexure D, para. 8(a).

¹²⁹⁶ For instance, Paragraphs 8(d) and 8(e) of Annexure D refer to the “satisfactory operation of the works” and the “satisfactory construction and operation of the works”, respectively, Paragraph 2(a)(ii) of Annexure E refers to the “the works specified in Paragraphs 3 and 4 of Annexure D” (being “Hydro-Electric Plants in operation, or under construction, as on the effective date”), Article VII(1)(c) refers broadly to “engineering works on the Rivers”, and various references are made in Annexures D and E to “outlet works”, “diversion works”, and “river works”. See, e.g., PLA-0001, Treaty, Annexure D, Appendix II, paras. 4–5; Appendix III. 4(a); Annexure E, Appendix, paras. 4–5.

¹²⁹⁷ PLA-0003, *Kishenganga* Partial Award, para. 386.

766. The reference to those works not being “capable” indicates that the works should not have the ability or capacity to be manipulated in a particular way to achieve a certain objective. As noted above and addressed further below, there is a point of difference between the Parties concerning the meaning of the phrase “shall not be capable” and whether the prohibition in Paragraph 8(a) addresses solely the design of an Annexure D, Part 3 HEP as it is to be normally operated after construction (India’s position) or also addresses the design of the dam as it *might* be operated, including with future modifications (Pakistan’s position).
767. The objective that is prohibited is “of raising artificially” the water level in the dam. The adverb “artificially” in Paragraph 8(a) confirms that the prohibition applies to a raising of the water level in the Operating Pool above the Full Pondage Level through human intervention, rather than by occurrences arising from nature, such as flooding (which is designed to be addressed by Surcharge Storage) or waves caused by winds.
768. Thus, this provision limits an Annexure D, Part 3 HEP from being designed so that the works can be manipulated to raise artificially the level in the reservoir, so that it is higher than the Full Pondage Level for which the dam is designed. In other words, given that the Pondage for an Annexure D, Part 3 HEP is strictly controlled by the Treaty,¹²⁹⁸ the dam must be designed¹²⁹⁹ in a manner that permits only such Pondage and does not permit the artificial raising of the reservoir beyond Full Pondage Level. Paragraph 8(a) therefore has implications for *any* element of the dam design that could enable the artificial raising of the reservoir, including freeboard. For instance, a crest-gated spillway with gates extending above Full Pondage Level (a matter not at issue in the present proceedings) would be inconsistent with this provision, as it would allow for increasing the amount of controllable storage beyond what the Treaty permits.
769. Given that freeboard is the principal concern advanced by Pakistan, the following analysis will emphasize how Paragraph 8(a) regulates that particular element of dam design. In light of the analysis elaborated below, the Court regards the ordinary meaning of Paragraph 8(a) in relation to the design of freeboard to be straight-forward, though its exact contours are informed by reference to that paragraph’s context and to the object and purpose of the Treaty. The practice of the Parties in the application of the Treaty evinces no agreement that Paragraph 8(a) is to be

¹²⁹⁸ See Part XI.B, *supra*.

¹²⁹⁹ Paragraph 8(a) is not an operational limitation but a design limitation.

interpreted any differently.¹³⁰⁰ Likewise, a review of the *travaux préparatoires* reveals no evidence in support of a different interpretation.

(a) *Freeboard is Permitted to Address Overtopping and Surcharge Storage, But Freeboard for Other Purposes is Prohibited*

770. Both Parties agree that freeboard, as such, is not prohibited by the Treaty. That understanding is consistent with the purpose of freeboard, which is to address circumstances not brought about by the dam operator, notably overtopping from waves; indeed, any dam will require at least some freeboard to address that issue. Given that the text of Paragraph 8(a) only prohibits designing the works to be “capable” of “raising artificially” the reservoir, inclusion of at least some freeboard in the design to address overtopping is permissible.
771. Likewise, Paragraph 8(a) cannot be viewed as prohibiting freeboard designed to address Surcharge Storage required for floods that cannot be passed through the dam quickly enough. Here, too, such freeboard is not being designed so that the works are “capable” of “raising artificially” the reservoir; it is being designed to address uncontrollable flooding. That understanding is reinforced by Paragraph 8(a)’s context. Paragraph 8(b) of Annexure D provides that the “design of the works shall take due account of the requirements of Surcharge Storage”.¹³⁰¹ Thus, Paragraph 8(b) expressly contemplates that the design of the works *shall* take account of the capability of the reservoir to handle a design flood.¹³⁰²
772. Even so, Paragraph 8(a) expressly precludes any *further* freeboard that would allow manipulation of the water level in the Operating Pool above the Full Pondage Level. This prohibition must be read against the backdrop of the overall approach to be taken when interpreting Article III and Annexure D, Part 3.¹³⁰³ That approach is to acknowledge: (1) a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use; (2) there are certain

¹³⁰⁰ See, e.g., **P-0647.41**, Record of the 41st Meeting of the Permanent Indus Commission, 24 to 28 May 1975; **P-0647.42**, Record of the 42nd Meeting of the Permanent Indus Commission, 28 March to 2 April 1976; **P-0647.91**, Record of the 102nd Meeting of the Permanent Indus Commission, 23 to 25 October 2008.

¹³⁰¹ **PLA-0001**, Treaty, Annexure D, para. 8(b).

¹³⁰² The height of freeboard that is permissible under Paragraph 8(b) of Annexure D to address Surcharge Storage is *not* before the Court in these proceedings and therefore is not addressed in this Award. The height of minimum freeboard that is permissible under Paragraph 8(a) of Annexure D to address overtopping *is* before the Court. Paragraph 8(b), therefore, is only considered here as relevant context for the interpretation of Paragraph 8(a). By contrast, in the *Baglihar* Neutral Expert Proceedings, the height of freeboard to address Surcharge Storage and minimum freeboard were both at issue. See **PLA-0002**, *Baglihar* Determination, pp. 72–75; see also Part III.D.4, *supra*.

¹³⁰³ See Part VIII.B, *supra*.

specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power; (3) that exception is to be strictly construed, in the sense that it does not permit India to generate hydro-electric power on the Western Rivers based on what might be the ideal or best practices approach for engineering a run-of-river HEP but, rather, only allows the design and operation of Run-of-River HEPs that hew strictly to the requirements set forth in Article III and Annexure D, Part 3; (4) yet those requirements cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with Treaty; and (5) in furtherance of the Treaty's objective and obligations of mutual cooperation, any questions concerning the balance in these rights and obligations are to be identified through the Treaty's procedures for notification and objection, and addressed through the Treaty's procedures for resolving such questions.¹³⁰⁴

773. Against this backdrop, Paragraph 8(a) limits the amount of freeboard that India may include in the dam above the Full Pondage Level (or, if applicable, the Surcharge Storage level), so as to exclude any capability of artificially raising the reservoir beyond the Full Pondage Level specified in the design. Depending on the design of an Annexure D, Part 3 HEP, the inclusion of additional freeboard may or may not be sufficient *on its own* to enable the reservoir to be artificially raised above Full Pondage Level.¹³⁰⁵ But in all cases, the inclusion of additional freeboard adds to the *capability* of the works in this respect and is thus impermissible.

774. In sum, freeboard necessary to address overtopping is permissible. Freeboard necessary to address Surcharge Storage is permissible. Yet additional height for the freeboard beyond what is necessary for those purposes is not permissible, even if—absent the Treaty—a best practices approach to dam design would favor additional freeboard. Indeed, the Treaty restricts even relatively small incremental elevation increases in the reservoir, given that they can significantly increase the controllable storage capacity of the reservoir, due to the expanding surface area of the reservoir at higher elevations.

(b) *Freeboard to Prevent Overtopping Relates to the Safety of the Dam as a Whole*

775. The Parties appear to agree that the conditions at the site of the Annexure D, Part 3 HEP are relevant when designing the amount of minimum freeboard necessary to prevent overtopping of

¹³⁰⁴ See Part VIII.B.2, *supra*.

¹³⁰⁵ For a HEP design with crest-gated spillways, for instance, additional freeboard could permit the reservoir level to be raised artificially simply by closing the gates. For a design with ungated spillways, a further modification of the spillways, together with additional freeboard, might be necessary (a point addressed below).

the dam. For any given dam site, those conditions are: meteorological conditions (wind setup and wave run up); bathymetric conditions (water depth and length of the reservoir); and geological conditions (seismic activity, risk of landslide, risk of settlement of an embankment).

776. The Parties disagree, however, as to whether other factors specific to the works themselves may be taken into account when designing the amount of minimum freeboard necessary to prevent overtopping of the dam. On the one hand, the natural processes indicated above are necessarily to be considered in relation to their interaction with the dam, and the nature of the dam as a whole is pertinent in this regard. For example, an embankment dam will typically require more freeboard than a concrete dam due to the risk of erosion or settlement of the dam; were such erosion or settlement to occur, a lack of minimum freeboard may well lead to overtopping and collapse of the dam. Yet, natural processes may also interact in a lesser way with particular elements of the dam, in a manner that does not imperil the dam as a whole. For example, increased minimum freeboard might be viewed as desirable for the purpose of protecting ancillary structures on top of the dam, such as spillway bridges, walkways, or electrical components, from waves.
777. Based on the ordinary meaning of Paragraph 8(a), when considered in relation to the object and purpose of the Treaty and the general approach to the interpretation of Article III and Annexure D, the minimum freeboard may only be of a height necessary to address the safety of the dam *as a whole* from overtopping. Minimum freeboard as necessary to address the safety of the dam as a whole is essential for the operation of any HEP; without it, the dam risks collapse. Indeed, it is noted that the interests of both Parties are at stake in this regard; should the dam collapse, there would be not only consequences for India, but there could be extreme downstream consequences for Pakistan as well. The ordinary meaning of Paragraph 8(a), which is to be read in a manner that is not so strict as to deny India an ability to operate Annexure D, Part 3 HEPs on the Western Rivers, permits minimum freeboard as necessary to address the safety of the dam as a whole.
778. By contrast, minimum freeboard for other purposes is not essential for the operation of the HEP and thus falls victim to the strict interpretation of Annexure D that the Treaty compels. For example, if the purpose of additional freeboard is to protect ancillary structures on the top of the dam, there are other ways of protecting such structures, such as placing rubber on walkways, housing structures in concrete, or moving them elsewhere. Allowing such structures to justify an increase in minimum freeboard is inconsistent with the obligations of India, generally, not to store or have the capacity to store water at an Annexure D, Part 3 HEP except as needed for the generation of hydro-electric power.

779. This interpretation is consistent with the context of Paragraph 8(a) concerning the information to be shared with Pakistan by India when designing an Annexure D, Part 3 HEP.¹³⁰⁶ Paragraph 9 of Annexure D imposes an obligation on India to provide Pakistan with information, prescribed in Appendix II, to enable Pakistan to satisfy itself that a proposed Annexure D, Part 3 HEP complies with the requirements of Paragraph 8.¹³⁰⁷ The prescribed information includes: (1) “Location of Plant”; (2) “Hydrologic Data”; (3) “Hydraulic Data”; (4) “Particulars of Design”; and (5) other “General” information.¹³⁰⁸ The required “Hydraulic Data” include: “(e) Maximum designed flood discharge, discharge-capacity curve for spillway and maximum designed flood level”; and “(f) Designated range of operation”.¹³⁰⁹ The required “Particulars of Design” include: “(a) Dimensioned plan showing dam”; and “(b) type of dam, length and height above mean bed of river”.¹³¹⁰
780. Such information is of the type that allows for analysis of the minimum freeboard necessary to address the safety of the dam as a whole from overtopping. This information, however, is not sufficient for informing Pakistan as to issues of a smaller magnitude, such as whether there is a concern with waves affecting ancillary structures located on the top of the dam. Had the Parties intended that the determination of minimum freeboard would include consideration of such lesser issues, then the sharing of additional information of that nature would have been envisaged in Appendix II. Its absence favors an interpretation that minimum freeboard is meant solely to address the safety of the dam *as a whole* from overtopping.

(c) *Absent Agreement of the Parties, International Standards Determine What Minimum Freeboard is Necessary to Ensure the Safety of the Dam as a Whole from Overtopping*

781. The Parties appear to disagree as to what standards should be applied when designing the amount of minimum freeboard necessary to ensure the safety of the dam as a whole. As a general matter,

¹³⁰⁶ Part XIII, *infra*, addresses the critical role that such sharing of information and cooperation of the Parties plays for effective implementation of the Treaty.

¹³⁰⁷ PLA-0001, Treaty, Annexure D, para. 9:

To enable Pakistan to satisfy itself that the design of a Plant conforms to the criteria mentioned in Paragraph 8, India shall, at least six months in advance of the beginning of construction of river works connected with the Plant, communicate to Pakistan, in writing, the information specified in Appendix II to this Annexure. If any such information is not available or is not pertinent to the design of the Plant or to the conditions at the site, it will be so stated.

¹³⁰⁸ PLA-0001, Treaty, Annexure D, Appendix II.

¹³⁰⁹ PLA-0001, Treaty, Annexure D, Appendix II, paras. 3(e)–(f).

¹³¹⁰ PLA-0001, Treaty, Annexure D, Appendix II, paras. 4(a)–(b).

India appears to refer to standards it has adopted nationally for the construction of HEPs. Pakistan has favored reference to internationally-recognized standards, though in doing so it has viewed the standards of a particular country, the United States, as especially pertinent. Pakistan notes that the U.S. Bureau of Land Reclamation indicated in a 1982 memorandum that for new concrete dams:

The standard 3.5 foot (1.1 m) high solid parapet entirely above the elevation of the nonoverflow section provides for minimum freeboard in the event of the probable maximum flood (PMF). Due to the ability of concrete dams to resist erosion, this is ordinarily the only type of freeboard necessary to consider. Exceptional cases may point to a need for more freeboard, depending on the anticipated wave height or other factors[.]¹³¹¹

782. The Treaty does not call for application of standards adopted for use within one Party or the other. Implicitly, the Treaty may be seen as preventing a Party from invoking its own standards so as to dictate the correct interpretation and application of a provision such as Paragraph 8(a). The object and purpose in delimiting the rights and obligations of India and Pakistan would be undermined if either Party could simply invoke standards or rules adopted nationally as a means of shaping its rights or obligations.
783. There may be circumstances where the Parties can agree upon application of standards developed by national government agencies or societies involved in dam design and construction, including those of the United States. However, in the absence of such agreement, the Treaty is best interpreted as calling for the application of standards adopted internationally, through the expertise of highly-experienced dam engineers worldwide. Doing so aligns with the Treaty's objectives of fixing and delimiting the rights and obligations of the Parties in a manner that is predictable and stable, and aligns with the other parts of Paragraph 8 that generally seek sound or satisfactory design and operation of the works of the Annexure D, Part 3 HEP. The primary source for international standards in this context is the widely-respected ICOLD.¹³¹² Based on the information currently before the Court, ICOLD appears to recommend a minimum freeboard of between one and two meters for a concrete dam.¹³¹³

¹³¹¹ **P-0535**, United States Bureau of Reclamation, "Freeboard Criteria and Guidelines for Computing Freeboard Allowances for Storage Dams" (1981), pp. 1, 7.

¹³¹² Founded in 1928, ICOLD is a non-governmental organization that has national committees from more than 100 countries and some 10,000 members, many specializing in engineering or geology. In essence, it provides a forum for the exchange of knowledge and experience in dam engineering.

¹³¹³ **P-0536**, ICOLD, "Bulletin 82", Selection of Design Flood: Current Methods (1992), Ch. 4.6.

(d) *Freeboard Not Required to Address Overtopping and Surcharge Storage is Prohibited, Including Provisions for Future Modifications that Raise Artificially the Water Level*

784. As previously noted, a further point of difference between the Parties concerns the meaning of “shall not be capable” in Paragraph 8(a) of Annexure D. In short, the dispute concerns whether Paragraph 8(a) solely addresses the design of the dam as it is to be normally operated after construction, which would allow additional freeboard beyond what is needed to address overtopping and surcharge storage, so long as that additional freeboard, by itself, is not capable of raising artificially the water level (India’s position); or whether Paragraph 8(a) also addresses the design of the dam as it *might* be operated after future modifications (Pakistan’s position). In this regard, Pakistan notes that, after construction of the dam, artificial raising of the reservoir level may be possible by installing “fusegates”, “flashboards”, or “stoplogs”, which serve to block off an ungated surface spillway or to seal off a crest-gated spillway, which would then allow India to take advantage of the additional freeboard.¹³¹⁴
785. The inclusion of additional freeboard adds to the capability of the works to raise the reservoir level above Full Pondage Level in all instances. The reference in Paragraph 8(a) to design of “[t]he works themselves” is not directed solely at the works as they are to be operated immediately after construction or as they might normally be operated. Rather, Paragraph 8(a) more broadly encompasses a prohibition on designing those works to be “capable” of artificially raising the water level. In this context, the term “capable” means that the works should not be designed to include components that would readily allow for artificial raising of the water level at whatever point in the future. Additional freeboard beyond that required to prevent overtopping and for Surcharge Storage unequivocally adds to the capability of the works in this respect, and thus is prohibited.

¹³¹⁴ “Fusegates”, “flashboards”, or “stoplogs” (or “stop planks”), which can be made of concrete, steel, or timber, are permanent or temporary structures that can be used to increase the effective height of a dam, thereby allowing a higher level of water in the reservoir. They are designed to be easily removed (or to open) in the event of a flood, so as to prevent overtopping of the dam. The *Baglihar* Neutral Expert found that “(f)or a surface gated spillway, the artificial raising of the level is possible by increasing the height of the gates; however, this is not technically easy unless measures for this purpose were allowed for in the initial design”. By contrast, the *Baglihar* Neutral Expert said that “[i]n the case of ungated surface spillways, the artificial raising of the height of the full pondage level is easier. It is a generally accepted way of improving the performance of an existing dam. This is achieved by placing gates on the crest (possibly fusegates) so as not to affect the spilling capacity of the spillway”: **PLA-0002**, *Baglihar* Determination, p. 64.

(e) Notification Requirement

786. Consistent with the notification requirements set forth in Appendix II of Annexure D, India is under an obligation to convey, *inter alia*, the “particulars of design” to Pakistan at an early stage, including the dimensional plan showing the dam,¹³¹⁵ as well as its type, length, and height.¹³¹⁶ To fulfill its Treaty obligations, India must include an explanation of why the works themselves are not capable of raising artificially the water level as proscribed by Paragraph 8(a). India’s notification must give Pakistan sufficient time to respond with its views as to whether the design is compliant with the Treaty. In this respect, the deadline of *at least* six months before construction in Paragraph 9 of Annexure D should be seen as a minimum, and notification provided earlier (indeed, potentially much earlier) as necessary to enable India still to modify its design in the face of valid concerns. If Pakistan raises timely objections, India must give them careful consideration and both Parties must proceed in a spirit of cooperation and good faith. Ultimately, if a difference emerges in this regard between the Parties, it is for India, as the proponent of the design and construction of the HEP, to establish that the design of the dam satisfies the requirements of Paragraph 8(a), bearing in mind any Pakistani position that a more Treaty-compliant alternative exists.

2. Conclusion

787. In sum, Paragraph 8(a) of Annexure D provides that, when designing an Annexure D, Part 3 HEP, the “works themselves shall not be capable of raising artificially the water level in the Operating Pool above the Full Pondage Level specified in the design”. Paragraph 8(a) does not prohibit the designing of an Annexure D, Part 3 HEP to have minimum freeboard for addressing the overtopping of the dam, nor prohibit further freeboard (when necessary) to accommodate Surcharge Storage. Paragraph 8(a), however, prohibits any other freeboard.
788. Further, Paragraph 8(a) requires that the minimum freeboard be designed only to be of a height necessary to address the safety of the dam as a whole from overtopping. For any given dam site, the factors that may be considered in this regard are the meteorological conditions (wind setup and wave run up); bathymetric conditions (water depth and length of the reservoir); and geological conditions (seismic activity, risk of landslide, risk of settlement of an embankment), and their interaction with the dam as a whole. Factors that may not be considered are the effects of these natural processes in a lesser way on particular elements of the dam, which do not imperil the dam

¹³¹⁵ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(a).

¹³¹⁶ PLA-0001, Treaty, Annexure D, Appendix II, para. 4(b).

as a whole. Assessment of the relevant factors and their interaction with the dam as a whole so as to determine the required minimum freeboard shall be done (absent agreement otherwise) by reference to internationally-recognized standards, specifically those of ICOLD, and not standards developed within a national system.

789. The Paragraph 8(a) prohibition concerns not just the design of a work as it is intended to operate at the outset, but also any design that would readily allow for future modifications that would permit the works to raise artificially the water level in the Operating Pool above the Full Pondage Level specified in the design.

* * *

XIII. COOPERATION AND INFORMATION SHARING UNDER THE TREATY

790. In the foregoing sections of this Award, the Court has interpreted the Treaty with respect to specific questions concerning the design of Annexure D, Part 3 HEPs on the Western Rivers. As articulated in the Court's Procedural Order No. 6 for this First Phase on the Merits, the Court approaches these questions in terms of "what is to be considered" and "what is to be excluded" in respect of the application of the provisions of Annexure D concerning outlets, spillways, and intakes; concerning the calculation of maximum Pondage; and concerning the artificial raising of the water level above Full Pondage Level at an Annexure D, Part 3 HEP.
791. As will be apparent from the extended discussion in preceding Parts, however, the technical aspects of HEP design on these issues are linked to the process by which such aspects are notified by India to Pakistan through the Commission and the subject of exchanges between the Commissioners, potentially including objections. On some matters, the Treaty imposes clear rules or prohibitions that are to be automatically applied. On others, the Treaty's provisions contain standards that entail an element of engineering judgment within the design process. The application of these types of provisions to the design of any particular HEP is not within the sole purview of either Party and will necessarily be the subject of engagement between them culminating, if necessary, in the application of the dispute resolution provisions of the Treaty. Accordingly, the question of "what is to be considered" in the application of these Treaty provisions necessarily includes the question of how the Treaty envisages that the Parties will engage with one another when there is an element of engineering judgment within the design process.
792. Pakistan has not placed before the Court a "dispute" concerning the application of the Treaty provisions on information sharing or notification as such.¹³¹⁷ The Court notes that the procedures of the Commission do not presently appear to be functioning as intended by the drafters of the Treaty,¹³¹⁸ but the Court makes no findings regarding the compliance of either Party with these provisions. Given, however, the importance of information sharing and cooperation in the

¹³¹⁷ Hearing for the First Phase on the Merits Tr., (Day 1), 8 July 2024, pp. 195:22–196:12 ("Pakistan did not, in its Request for Arbitration on 19 August 2016, raise a dispute about information-sharing. It didn't do so then. Of course, we haven't therefore included it in the Amended Request for Arbitration, which hewed to the terms of the original interest. Nor, as will be abundantly clear, did we include that as part of the request for relief in our Memorial. So it's not part of the petitum of the case and you haven't addressed it in PO6, Mr Chairman, as you noted. So the issue of Pakistan's dispute/disagreement with India over what we perceive to be India's failure to comply with its information-sharing obligations is not a dispute with which you are seised and it's not a dispute that is currently waiting in the wings to go to another court of arbitration").

¹³¹⁸ See Part III.D.2, *supra*.

intended application of the Treaty provisions that are before the Court in this phase of the proceedings, the Court considers it not only appropriate but essential to address these matters in general terms.

A. THE PROVISIONS OF THE TREATY CONCERNING COOPERATION AND INFORMATION SHARING

793. Far from being an ancillary or procedural matter, cooperation between the Parties is central to the object and purpose of the Treaty and its implementation.¹³¹⁹ In this respect, the Treaty does not simply lay out specific rights and obligations with respect to use of the Indus system of rivers; it confirms the Parties' intention to cooperate in identifying, clarifying, and fulfilling those rights and obligations. This obligation of the Parties to cooperate in the implementation of the Treaty is expressly stated throughout the various provisions of the Treaty addressing cooperation, information sharing, monitoring, and notification as between India and Pakistan.

794. *First*, the Court recalls the importance placed in the Preamble of the Treaty on the need for the Parties to utilize the waters of the Indus system of rivers through the fixing and delimiting of their respective rights and obligations "in a spirit of goodwill and friendship" and for the settlement of questions that may arise "in a cooperative spirit".¹³²⁰ This general duty of cooperation is repeated and reinforced in Article VII ("Future co-operation"), which expressly records the Parties' recognition that "they have a common interest in the optimum development of the Rivers", and, to that end, declares "their intention to co-operate, by mutual agreement, to the fullest possible extent".¹³²¹ Article VII specifically identifies particular forms of such cooperation, including the establishment of "hydrologic observation stations" and "meteorological observation stations" at the request of a Party;¹³²² coordination of new drainage works at the request of a Party;¹³²³ and the joint undertaking of "engineering works on the Rivers".¹³²⁴ Equally, the general duty of cooperation is further reflected in Pakistan's obligation during the Transition Period to "use its best endeavours to construct and bring into operation, with due regard to expedition and economy", those works necessary to replace, from the Western Rivers, waters Pakistan previously

¹³¹⁹ See Part VIII.B, *supra*.

¹³²⁰ **PLA-0001**, Treaty, Preamble; **PLA-0003**, *Kishenganga* Partial Award, para. 360.

¹³²¹ **PLA-0001**, Treaty, Art. VII(1).

¹³²² **PLA-0001**, Treaty, Art. VII(1)(a).

¹³²³ **PLA-0001**, Treaty, Art. VII(1)(b).

¹³²⁴ **PLA-0001**, Treaty, Art. VII(1)(c).

had received from the Eastern Rivers.¹³²⁵ Cooperation can also be discerned in Treaty obligations that are to be fulfilled in a “practicable” manner.¹³²⁶

795. *Second*, at the heart of the Parties’ overarching duty to cooperate under the Treaty are the general and specific obligations with respect to information sharing. Article VI (“Exchange of Data”) requires the regular exchange of hydrologic data between the Parties, specifically with respect to the flow of the Eastern and Western Rivers, as well as particular uses of the waters, such as daily extractions for (or releases from) reservoirs and daily deliveries from link canals. More broadly, Article VI(2) provides that if “either Party requests the supply of any data relating to the hydrology of the Eastern and Western Rivers, or to canal or reservoir operation connected with the Eastern and Western Rivers, or to any provision of this Treaty, such data shall be supplied by the other Party to the extent that these are available”. Article IV(8) also imposes an obligation on each Party to communicate “any information it may have in regard to such extraordinary discharges of water from reservoirs and flood flows as may affect the other Party”.¹³²⁷ Similarly, Article VII(1) contemplates the possibility of the Parties cooperating to set up or install hydrologic observation stations and meteorological observation stations within the drainage basins of the Eastern and Western Rivers, and to share data obtained through such stations.¹³²⁸
796. The Parties similarly agreed on specific information-sharing obligations with respect to the construction and operation of engineering works on the Indus system of rivers. The obligation to notify at the planning stage of a work is found in Article VII(2), which bears repeating in full:

If either Party plans to construct any engineering work which would cause interference with the waters of any of the Rivers and which, in its opinion, would affect the other Party materially, it shall notify the other Party of its plans and shall supply such data relating to the work as may be available and as would enable the other Party to inform itself of the nature, magnitude and effect of the work. If a work would cause interference with the waters of any of the Rivers but would not, in the opinion of the Party planning it, affect the other Party materially, nevertheless the Party planning the work shall, on request, supply the other Party with such data regarding the nature, magnitude and effect, if any, of the work as may be available.¹³²⁹

¹³²⁵ **PLA-0001**, Treaty, Art. IV(1). Pakistan fulfilled this obligation on the time frame envisioned, thereby allowing India by 1970 make full use of the Eastern Rivers.

¹³²⁶ **PLA-0001**, Treaty, Art. IV(2) (“as far as practicable”); Art. IV(3)(a) (same); Art. IV(8) (“as far in advance as practicable”); Art. IV(10) (“as far as practicable”); Art. VII(1)(a) (“to the extent it considers practicable”); Art. VII(1)(b) (same); Art. IX(3) (“as early as practicable”).

¹³²⁷ **PLA-0001**, Treaty, Art. IV(8).

¹³²⁸ **PLA-0001**, Treaty, Art. VII(1)(a).

¹³²⁹ **PLA-0001**, Treaty, Art. VII(2). See also **PLA-0001**, Treaty, Art. I(15).

Although not specific to the construction of HEPs, the Court considers that Article VII(2) would naturally apply to a planned HEP in addition to—and likely at an earlier stage than—the more specific provisions on information sharing found in Annexure D. In keeping with its general scope and potential application at an early phase of the planning of any engineering work, Article VII(2) is not specific in the information to be provided and is expressly limited to such data “as may be available”. At the same time, within the scope of what is available, the provision envisages broad transparency and the supply to the other Party, at least upon request, of such data regarding the nature, magnitude, and effect of the work as is available.

797. While Article VII(2) is of general application, more specific obligations may then be found with respect to the planned construction of HEPs under Annexure D and Storage Works under Annexure E. Annexure D provides that India shall notify Pakistan at least six months in advance of the construction of an Run-of-River HEP (other than Small Plants), with an eye to Pakistan’s being able to react as to whether the design of the planned HEP is consistent with the limitations set forth in Annexure D. Paragraph 9 of Annexure D provides:

To enable Pakistan to satisfy itself that the design of a Plant conforms to the criteria mentioned in Paragraph 8, India shall, at least six months in advance of the beginning of construction of river works connected with the Plant, communicate to Pakistan, in writing, the information specified in Appendix II to this Annexure. If any such information is not available or is not pertinent to the design of the Plant or to the conditions at the site, it will be so stated.¹³³⁰

798. Appendix II then sets out in detail the types of information to be conveyed by India with respect to such plants, listed under the following categories: location of the plant; hydrologic data; hydraulic data; particulars of design; and general.¹³³¹ Having been notified of such information, Pakistan is to communicate to India within three months any objection that the design is not in accordance with Annexure D.¹³³² If no such objection is received, then Pakistan is deemed to have none. If Pakistan does object, then a question has arisen that may be resolved in the Commission and, if necessary, through binding dispute resolution.¹³³³ Annexure D also sets forth continuing obligations of India to notify Pakistan as to any proposed alterations in such an Annexure D, Part 3 HEP both before and after it comes into operation that would result in a material change in the information previously furnished to Pakistan,¹³³⁴ as well as any such repairs or alterations required

¹³³⁰ PLA-0001, Treaty, Annexure D, para. 9 (citations omitted).

¹³³¹ PLA-0001, Treaty, Annexure D, Appendix II.

¹³³² PLA-0001, Treaty, Annexure D, para. 10.

¹³³³ PLA-0001, Treaty, Annexure D, para. 11.

¹³³⁴ PLA-0001, Treaty, Annexure D, para. 12.

in the event of an emergency.¹³³⁵ Similar obligations of notification exist with respect to Small Plants constructed under Annexure D, Part 3¹³³⁶ and with respect to Storage Works constructed under Annexure E.¹³³⁷

799. *Third*, in order to “establish and maintain cooperative arrangements for the implementation of this Treaty” and to “promote co-operation between the Parties in the development of the waters of the Rivers”, Article VIII of the Treaty establishes the Commission, consisting of two Commissioners: the ICIW and the PCIW.¹³³⁸ As noted in Part III.C,¹³³⁹ each Commissioner, who “should ordinarily be a high-ranking engineer competent in the fields of hydrology and water use”, is designated as the representative of the appointing Party for “all matters arising out of the Treaty” and is to serve as the regular channel of communication for all matters relating to the implementation of the Treaty.¹³⁴⁰ In this respect, the Commission is required to meet “regularly at least once a year” and whenever requested by either Commissioner, and shall produce an annual report on its work.¹³⁴¹ Equally, Article IX foresees that, whenever any question arises between the Parties concerning the interpretation or application of the Treaty, or the existence of any fact which, if established, might constitute a breach of the Treaty, the Parties may first reach a bilateral, negotiated solution through the Commission or (if the Commission cannot resolve the matter) may put a matter before either a neutral expert or court of arbitration.¹³⁴²
800. The Commission therefore plays a critical role in promoting cooperation, transparency, and information sharing between the Parties under the Treaty by acting as the designated mechanism for the exchange of data and for the monitoring of the Parties’ uses of the Indus system of rivers.¹³⁴³ In this regard, as noted in Part III.C,¹³⁴⁴ Article VIII(4) provides for tours of inspection to be undertaken by the Commission. Specifically, Article VIII(4)(c) states that the Commission shall “undertake once in every five years, a general tour of inspection of the Rivers for

¹³³⁵ PLA-0001, Treaty, Annexure D, para. 13.

¹³³⁶ PLA-0001, Treaty, Annexure D, paras. 19–22, Appendix III.

¹³³⁷ PLA-0001, Treaty, Annexure E, paras. 13–16, Appendix.

¹³³⁸ PLA-0001, Treaty, Art. VIII.

¹³³⁹ See also Part III.D.2, *supra*.

¹³⁴⁰ PLA-0001, Treaty, Annexure D, para. 9.

¹³⁴¹ PLA-0001, Treaty, Arts. VIII(5), (6).

¹³⁴² PLA-0001, Treaty, Arts. IX(1)–(2). See also PLA-0003, *Kishenganga* Partial Award, para. 444.

¹³⁴³ PLA-0004, *Kishenganga* Final Award, paras. 120–122.

¹³⁴⁴ See also Part III.D.2, *supra*.

ascertaining the facts connected with various developments and works on the Rivers”.¹³⁴⁵ In addition to these general tours of inspection, Article VIII(d) states that there is an obligation “to undertake promptly, at the request of either Commissioner, a tour of inspection of such works or sites on the Rivers as may be necessary by him for ascertaining the facts connected with those works or sites”.¹³⁴⁶ Thus, special tours of inspection are required when requested with respect to a particular work or site.

801. *Fourth*, if the Commission fails to reach agreement on questions that arise concerning the interpretation or application of the Treaty, or facts that might constitute a breach of it, Article IX(2) sets out avenues for third-party dispute resolution.¹³⁴⁷ Depending on the circumstances, the questions may be resolved through a neutral expert, a court of arbitration, or “in any other way agreed upon by the Commission”.¹³⁴⁸ Articles IX(3) through (6), supplemented by Annexures F and G, set out the details of those resolution processes.

B. RELEVANCE OF THE TREATY PROVISIONS ON INFORMATION SHARING AND COOPERATION TO THE MATTERS BEFORE THE COURT

802. The above provisions of the Treaty addressing cooperation, information sharing, monitoring, and notification as between India and Pakistan confirm that cooperation is central to the good faith interpretation and application of the Treaty. Such provisions, along with the Treaty’s Preamble,¹³⁴⁹ reflect an intent of the Parties to build an enduring bilateral relationship based upon the Treaty, one rooted in good faith and trust, and yet capable of dialogue and verification, as well as, when necessary, binding dispute resolution. These provisions are not just legally binding; they must also be performed in good faith¹³⁵⁰ and in such a manner that their purpose can be realized.¹³⁵¹ The ICJ, reflecting on similar provisions concerning notification in a bilateral treaty between Argentina and Uruguay of plans for construction along a river, found that “the obligation to notify is intended to create the conditions for successful co-operation between the parties, enabling them

¹³⁴⁵ **PLA-0001**, Treaty, Article VIII(4)(c).

¹³⁴⁶ **PLA-0001**, Treaty, Article VIII(4)(d).

¹³⁴⁷ Article IX also preserves, both expressly and by implication, the retained powers of the Parties to settle any disagreements through other means of their mutual choice: See **PLA-0001**, Treaty, Art. IX(2) (“any difference ... may be settled in any other way agreed upon by the Commission”). See Part III.C, *supra*.

¹³⁴⁸ **PLA-0001**, Treaty, Art. IX(2).

¹³⁴⁹ **PLA-0001**, Treaty, Preamble (indicating that the Parties sought to utilize the waters of the Indus system of rivers through the fixing and delimiting of their respective rights and obligations “in a spirit of goodwill and friendship”, and for the settlement of questions that may arise “in a cooperative spirit”).

¹³⁵⁰ **PLA-0005**, VCLT, Art. 26.

¹³⁵¹ *Gabčíkovo-Nagymaros Project (Hungary/Slovakia)*, Judgment, [1997] ICJ Rep 7, para. 142.

to assess the plan's impact on the river on the basis of the fullest possible information and, if necessary, to negotiate the adjustments needed to avoid the potential damage that it might cause".¹³⁵² Indeed, the ICJ has noted that "[o]ne of the basic principles governing the creation and performance of legal obligations, whatever their source, is the principle of good faith. Trust and confidence are inherent in international co-operation".¹³⁵³

803. Such cooperation must also be seen in the broader framework of international law and, in particular, the principle that States have a duty to cooperate with one another. This principle, which imposes a duty upon all States to act in good faith and to work together to achieve shared goals, serves as an essential foundation for effective international relations and the functioning of the international legal system. The principle is a key aspect of the United Nations Charter, through which its Members seek to "develop friendly relations among nations" and to "achieve international co-operation in solving international problems".¹³⁵⁴ Reflecting on this principle, the U.N. General Assembly in the 1970 Friendly Relations Declaration maintained that "States have the duty to co-operate with one another, irrespective of the differences in their political, economic and social systems, in the various spheres of international relations, in order to maintain international peace and security and to promote international economic stability and progress".¹³⁵⁵
804. Thus, the principle of cooperation between India and Pakistan must be seen as essential to the operation of the framework of the Treaty, including the operation of Article III and Annexure D, Part 3. The Treaty recognizes this, not merely as a procedural formality, but repeatedly as a substantive obligation of the Parties central to the object and purpose of the Treaty. Specifically, the Treaty sets out an equipoise between Pakistan's general right to the use of the waters of the Western Rivers and India's limited right to use the waters of those rivers for hydro-electric power generation, so long as the design and operation of any Run-of-River HEP complies strictly to the requirements set forth in Annexure D, Part 3.¹³⁵⁶

¹³⁵² *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, [2010] ICJ Rep 14, para. 113; see also *Pulp Mills on the River Uruguay (Argentina v. Uruguay)*, Judgment, [2010] ICJ Rep 14, para. 145 (noting that the obligation to perform a treaty in good faith "applies to all obligations established by a treaty, including procedural obligations which are essential to co-operation between States").

¹³⁵³ **PLA-0025**, *Nuclear Tests (Australia v. France)*, Judgment [1974] ICJ Rep 253, para. 46.

¹³⁵⁴ UN Charter, Arts. 1(2)–(4).

¹³⁵⁵ Declaration on Principles of International Law concerning Friendly Relations and Cooperation among States in accordance with the Charter of the United Nations G.A. Res. 2625 (XXV), Annex (24 October 1970).

¹³⁵⁶ **PLA-0003**, *Kishenganga* Partial Award, para. 433.

805. In order to maintain such equilibrium, no provision can be viewed in isolation; each is part of an integrated framework that requires continuous bilateral cooperation between the Parties so that any questions concerning the balance in these rights and obligations can be identified through the Treaty's procedures for notification and objection, and addressed through the Treaty's procedures for resolving such questions. Accordingly, in order for the provisions of Article III and Annexure D, Part 3 to work as intended, cooperation between the Parties on information sharing, among other things, is required from the outset of the design process, at each stage of the design and construction, and continues during the operation of the HEP.
806. As recognized by the *Kishenganga* Court, "the Treaty prescribes a formal procedure designed to bring a measure of order and certainty in the resolution of competing claims, and to questions of propriety of Plant design, *before* construction commences".¹³⁵⁷ In this regard, plans to construct any Indian engineering work on the Western Rivers that would interfere with the waters shall be notified by India to Pakistan when such interference would materially affect Pakistan (in India's opinion), or when otherwise requested by Pakistan. Moreover, specific to the design of Annexure D, Part 3 HEPs on the Western Rivers, Paragraphs 9 through 11 of Annexure D require India to notify Pakistan—six months in advance of construction—of specific information regarding the proposed HEP's design.
807. These provisions cannot function as intended if they are seen as a mechanical exercise of one Commissioner notifying the other of a decision already effectively taken or of a design for a HEP that is all but finalized, with preparation underway for the imminent commencement of construction. They are, rather, the beginning of a dialogue between the two Parties that will normally include the exploration by the Commission of design choices advanced by India and, potentially, the consideration of alternative approaches advanced by Pakistan.¹³⁵⁸ Accordingly, the deadline of six months before construction set out in Paragraph 9 of Annexure D should be seen as a minimum, with much earlier engagement not only permitted by the Treaty, but expressly envisaged by Article VII(2). Far from imposing an additional burden on India, early engagement through the Commission in respect of contemplated HEPs, well before design choices are complete and contract tenders are prepared for issuance, maximizes the likelihood that the Commission will resolve any questions without resort to third-party dispute resolution, thereby

¹³⁵⁷ **PLA-0003**, *Kishenganga* Partial Award, para. 443.

¹³⁵⁸ See, e.g., para. 557, *supra*.

achieving the desired equipoise and enabling India to design and construct works for the generation of hydro-electric power within the limits it accepted under the Treaty.

* * *

this page intentionally blank

XIV. DECISION

808. The Court of Arbitration recalls the following findings reached unanimously in its Award on Competence of 6 July 2023:

- A. that India's non-appearance in these proceedings does not deprive the Court of Arbitration of competence.
- B. that the Court of Arbitration has competence, in accordance with Paragraph 16 of Annexure G to the Indus Waters Treaty 1960, to decide all questions relating to its competence.
- C. that the matters referred to arbitration in Pakistan's Request for Arbitration concern a dispute or disputes within the meaning of Article IX(2) of the Indus Waters Treaty 1960.
- D. that the initiation of the present proceedings was in accordance with Article IX(3), (4), and (5) of the Indus Waters Treaty 1960.
- E. that the Court of Arbitration was properly constituted in accordance with Paragraphs 4 to 11 of Annexure G to the Indus Waters Treaty 1960.
- F. that India's request for, and the World Bank's appointment of, a Neutral Expert does not, pursuant to Article IX(6) of the Indus Waters Treaty 1960, deprive the Court of Arbitration of competence or limit its competence.
- G. that Paragraph 1 of Annexure G to the Indus Waters Treaty 1960 does not create an independent test for the necessity of the constitution of a Court of Arbitration beyond the requirements of Article IX of the Treaty.

809. The Court of Arbitration recalls the following findings reached unanimously in its Supplemental Award on Competence of 27 June 2025 in respect of the "abeyance" position announced by India in April 2025:

- A. that India's position that it is holding the Treaty in "abeyance", however that position may be characterized as a matter of international law, does not deprive the Court of Arbitration of competence.
- B. that the Court of Arbitration has a continuing responsibility to advance its proceedings in a timely, efficient, and fair manner without regard to India's position on "abeyance", and that a failure to do so would be inconsistent with its obligations under the Treaty.
- C. that the above findings apply, *mutatis mutandis*, with respect to any competence that the Neutral Expert otherwise possesses.

810. The Court of Arbitration reaffirms its prior findings that the Court of Arbitration is competent to consider and determine the disputes set forth in Pakistan's Request for Arbitration.

811. For the above reasons set out in this Award, the Court of Arbitration:

- A. FINDS, unanimously, with respect to the binding or otherwise legally controlling effect of awards of a court of arbitration established under the Indus Waters Treaty 1960 and for the reasons set out in paragraphs 294 to 362, that:

- (1) the awards of a court of arbitration are final and binding upon the Parties, and otherwise have a controlling legal effect upon a subsequent neutral expert, upon a subsequent court of arbitration, and upon the court of arbitration that issued the awards;
 - (2) the awards of a court of arbitration are final and binding, or otherwise have a controlling legal effect, whether they be awards on competence, partial awards, or final awards, and whether they concern competence, matters of fact, the interpretation of the Indus Waters Treaty 1960, or the application of the Treaty in particular factual circumstances;
 - (3) the binding or otherwise controlling effect associated with a court of arbitration's awards relates not only to the ultimate decisions reached in the awards (often referred to as the *dispositif*), but also to the reasoning that underlies those decisions in so far as that reasoning clarifies the scope and meaning of those decisions;
 - (4) a court of arbitration is not limited to issuing decisions in its awards that only govern the particular HEP that is the subject of a dispute between the Parties, but extends as well to decisions that are "systemic" or "generic" in nature, in other words, decisions that relate generally to how a provision of the Indus Waters Treaty 1960 is to be interpreted; and
 - (5) to the extent that a court of arbitration and a neutral expert are both operating at the same time on related matters, it is incumbent on both to pay attention to any awards or decisions rendered by the other that have a binding or otherwise controlling effect.
- B. FINDS, unanimously, with respect to the binding or otherwise legally controlling effect of a decision of a neutral expert established under the Indus Waters Treaty 1960 and for the reasons set out in paragraphs 363 to 396, that:
- (1) the decision of the neutral expert on all matters within his or her competence is final and binding, in respect of the particular HEP for which the decision is made, upon the Parties and upon any court of arbitration;
 - (2) for a matter to be within the competence of a neutral expert:
 - (i) the neutral expert must have been appointed in a manner consistent with the terms of the Indus Waters Treaty 1960;
 - (ii) the matter must concern a difference that was referred to the neutral expert; and
 - (iii) the matter must fall within the scope of Annexure F, Part 1; and
 - (3) a decision on a matter that is not within the competence of a neutral expert has no final and binding effect.
- C. FINDS, unanimously, for the reasons set out in paragraphs 420 to 438, that due to the vulnerability of Pakistan as the downstream riparian of a critical but shared natural resource, and the potential for serious conflict between India and Pakistan in this regard, the object and purpose of the Indus Waters Treaty 1960, including as it relates to the Western Rivers, is to delimit the two States' respective rights and obligations when utilizing the Indus system of rivers, in conjunction with mutual cooperation between the Parties and effective dispute resolution procedures for whenever questions of interpretation or application of such rights and obligations arise.

- D. FINDS, unanimously, for the reasons set out in paragraphs 439 to 459, that the overall approach to be taken when interpreting Article III of and Part 3 of Annexure D to the Indus Waters Treaty 1960 is to acknowledge that:
- (1) there is a general rule that India shall “let flow” the waters of the Western Rivers for Pakistan’s unrestricted use;
 - (2) there are certain specified exceptions to the general rule, one of which allows India to use the Western Rivers to generate hydro-electric power;
 - (3) this exception is to be strictly construed, in the sense that it does not permit India to generate hydro-electric power on the Western Rivers based on what might be the ideal or best practices approach for engineering a Run-of-River HEP but, rather, only allows the design and operation of Run-of-River HEPs that hew strictly to the requirements set forth in Article III and Annexure D, Part 3;
 - (4) those requirements cannot be so strictly construed as to deny to India the capacity to generate electricity from HEPs on the Western Rivers provided they are built in conformity with Indus Waters Treaty 1960; and
 - (5) in furtherance of the objective of the Indus Waters Treaty 1960 and the Parties’ obligations of mutual cooperation, any questions concerning the balance in these rights and obligations are to be identified through the Treaty’s procedures for notification and objection, and addressed through the Treaty’s procedures for resolving such questions.
- E. FINDS, unanimously, for the reasons set forth in paragraphs 532 to 535, that the limitations on low-level outlets, gated spillways, and power intakes as contained in Paragraphs 8(d), (e), and (f) of Annexure D to the Indus Waters Treaty 1960 were of central significance in addressing Pakistan’s concerns during the Treaty negotiations as to India’s potential ability to release virtually all the water contained in the reservoir above the lowest outlet along with sediment and concomitantly, once released, to hold back a large volume of water when refilling the reservoir.
- F. FINDS, unanimously, with respect to the relationship among Paragraphs 8(d), (e), and (f) of Annexure D to the Indus Waters Treaty 1960 and for the reasons set out in paragraphs 536 to 552, that:
- (1) Paragraph 8(d) on “outlets below Dead Storage Level” applies to openings that are located partially or entirely below Dead Storage Level, including outlets that might be referred to as orifice spillways, but does not apply to crest-gated spillways and intakes for the turbines;
 - (2) Paragraph 8(e) on “a gated spillway” applies to crest-gated spillways, meaning spillways located at the crest of the dam structure; and
 - (3) Paragraph 8(f) on “intakes for the turbines” applies to such intakes to the turbines wherever located.
- G. FINDS, unanimously, for the reasons set out in paragraphs 553 to 557, that Paragraphs 8(d), (e), and (f) of Annexure D to the Indus Waters Treaty 1960 do not refer to the use or placement of their respective dam components by reference to engineering best practices, such as seeking maximum efficiency or power output for the HEP; rather, they depart from prevailing HEP engineering principles and practices, so as to contain specific directions as to the existence, size, and/or location of low-level outlets, gated spillways, and power intakes.

- H. FINDS, unanimously, for the reasons set out in paragraphs 560 to 583, that when designing an Annexure D, Part 3 HEP and to ensure compliance with Paragraph 8(d) of Annexure D to the Indus Waters Treaty 1960, India shall:
- (1) as a starting point, endeavor to design the HEP so that it does not have any outlets partially or entirely below Dead Storage Level.
 - (2) only include an outlet partially or entirely below Dead Storage Level if it:
 - (i) is compliant with provisions of the Indus Waters Treaty 1960 other than Paragraph 8(d); and
 - (ii) is necessary for sediment control or some other technical purpose, meaning that there is no other method (or methods) available to address sediment (or the other technical purpose) that is equally effective or only marginally less effective; and
 - (3) if an outlet partially or entirely below Dead Storage Level is necessary, identify the reasonable options based on the standards set forth in Paragraph 8(d), whereby the outlet is designed to be of the minimum size and at the highest level possible, consistent with:
 - (i) the outlet being able to perform effectively and efficiently the function that it serves;
 - (ii) customary and accepted HEP engineering principles and practices followed within States generally; and
 - (iii) the suitable and workable operation of the HEP as a whole once it has been constructed; however
 - (iv) the cost of constructing and operating the low-level outlet is not to be taken into account in determining the minimum size and the highest level possible for the low-level outlet; and
 - (4) among those options, select the outlet that is of the minimum size and at the highest level in the dam.
- I. FINDS, unanimously, with respect to compliance with Article VII(2), with Paragraph 8(d) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged:
- (1) to convey the “particulars of design” to Pakistan, including the dimensional plan and a description of the outlet works, at an early stage;
 - (2) to include with its communication of the “Particulars of Design” for its HEP an explanation of why an outlet partially or entirely below Dead Storage Level is necessary and, if so, why among the options available as to the size and location of the outlet, the design meets the requirement of minimum size and highest level set forth in Paragraph 8(d);
 - (3) to give sufficient time for Pakistan to respond with its views as to whether the design is compliant with the Indus Waters Treaty 1960 and for India still to modify its design in the face of valid concerns;

- (4) to give careful consideration to timely objections, including any Pakistani position that a more Treaty-compliant alternative exists; and
 - (5) as the proponent of the design and construction of the HEP, to establish that the outlet satisfies the requirements of Paragraph 8(d).
- J. FINDS, unanimously, for the reasons set out in paragraphs 584 to 594, that when designing an Annexure D, Part 3 HEP and to ensure compliance with Paragraph 8(e) of Annexure D to the Indus Waters Treaty 1960, India shall:
- (1) as a starting point, endeavor to design the HEP so that it does not have any gated spillways;
 - (2) only include a crest-gated spillway if it:
 - (i) is compliant with provisions of the Indus Waters Treaty 1960 other than Paragraph 8(e); and
 - (ii) is necessary for flood control or sediment management, meaning that there is no other method (or methods) for addressing floods or sediment that is equally effective or only marginally less effective;
 - (3) if a crest-gated spillway is necessary, identify reasonable options based on the standards set forth in Paragraph 8(e), whereby the bottom level of the gates of the spillway in normal closed position are located at the highest level possible, consistent with:
 - (i) the spillway being able to perform effectively and efficiently the function that it serves;
 - (ii) customary and accepted HEP engineering principles and practices followed within States generally; and
 - (iii) the suitable and workable construction and operation of the HEP as a whole; however
 - (iv) the cost of constructing and operating the spillway is not to be taken into account in determining the highest possible level for the bottom of the gates; and
 - (4) among those options, select the gated spillway for which the bottom level of the gates in normal closed position is located at the highest level in the dam.
- K. FINDS, unanimously, with respect to compliance with Article VII(2), with Paragraph 8(e) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged:
- (1) to convey the “particulars of design” to Pakistan, including the dimensional plan and a description of the spillways, at an early stage;
 - (2) to include with its communication of the “Particulars of Design” for its HEP an explanation of why a gated spillway is necessary and, if so, why among the options available as to the location of the gated spillway, the design meets the requirement of highest level set forth in Paragraph 8(e);

- (3) to give sufficient time for Pakistan to respond with its views as to whether the design is compliant with the Indus Waters Treaty 1960 and for India still to modify its design in the face of valid concerns;
 - (4) to give careful consideration to timely objections, including any Pakistani position that a more Treaty-compliant alternative exists; and
 - (5) as the proponent of the design and construction of the HEP, to establish that the gated spillway satisfies the requirements of Paragraph 8(e).
- L. FINDS, unanimously, for the reasons set out in paragraph 597, that the “intake” for the purposes of Paragraph 8(f) of Annexure D to the Indus Waters Treaty 1960 is to be measured at the point of control separating the flow into the headrace tunnel from the main body of the reservoir.
- M. FINDS, unanimously, for the reasons set out in paragraphs 595 to 608, that when designing an Annexure D, Part 3 HEP and to ensure compliance with Paragraph 8(f) of Annexure D to the Indus Waters Treaty 1960, India shall:
- (1) as a starting point, endeavor to design the HEP so that the intake for the turbines is located at the highest possible level in the dam, meaning that the invert of the intake shall be just below the Dead Storage Level;
 - (2) if the customary and accepted practice of design for HEPs calls, in the context of a particular HEP, for the invert of the intake to be located lower in the dam than just below the Dead Storage Level, identify reasonable options based on the standards set forth in Paragraph 8(f), whereby the intake is at the highest level possible that is suitable and not wasteful of resources for the HEP’s construction and operation, and is consistent with contemporary HEP engineering principles and practices; and
 - (3) among those options, select the intake that is at the highest level in the dam.
- N. FINDS, unanimously, with respect to compliance with Article VII(2), with Paragraph 8(f) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged:
- (1) to convey the “particulars of design” to Pakistan, including the dimensional plan and a description of the intakes, at an early stage;
 - (2) to include with its communication of the “Particulars of Design” for its HEP an explanation of why the location of the intake for the turbines in the design meets the requirement of the “highest level” set forth in Paragraph 8(f);
 - (3) to give sufficient time for Pakistan to respond with its views as to whether the design is compliant with the Indus Waters Treaty 1960 and for India still to modify its design in the face of valid concerns;
 - (4) to give careful consideration to timely objections, including any Pakistani position that a more Treaty-compliant alternative exists; and
 - (5) as the proponent of the design and construction of the HEP, to establish that the intake satisfies the requirements of Paragraph 8(f).
- O. FINDS, by four votes to one, for the reasons set out in paragraphs 649 to 748, that when designing an Annexure D, Part 3 HEP, India is limited to a maximum Pondage pursuant

to Paragraph 8(c) of Annexure D to the Indus Waters Treaty 1960 taking into account the following restrictions:

- (1) “Firm Power”, shall be calculated as the hydro-electric power corresponding to the minimum mean discharge at the site of the Plant, calculated in accordance with Paragraph 2(i) of Annexure D;
 - (2) “Pondage required for Firm Power” shall be calculated based on the water that can be accumulated and released at the site of India’s proposed Annexure D, Part 3 HEP during the course of no more than a seven-day period, within the following constraints:
 - (i) Pondage required for Firm Power shall be calculated based on what can be accumulated during that period when the stream flow of the river is at the MMD, as set forth in Paragraph 2(i) of Annexure D;
 - (ii) “Pondage required for Firm Power” shall be calculated based on a realistic projection of the proposed HEP’s installed capacity and anticipated load, reflecting the fluctuations in the discharge of the turbines arising from variations in the daily and weekly loads of the plant, as set forth in Paragraph 2(c) of Annexure D; and
 - (iii) “Pondage required for Firm Power” shall be calculated in a manner that abides by the daily and weekly release requirements set out in Paragraph 15 of Annexure D; and
 - (3) “maximum Pondage” shall be no more than twice the Pondage calculated in accordance with the above requirements.
- P. FINDS, unanimously, with respect to compliance with Article VII(2), with Paragraph 8(c) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged:
- (1) to convey, at an early stage, “hydrologic data”, “hydraulic data”, and the “particulars of design” to Pakistan, including the estimated river discharge rate, the dimensional plan, and the installed capacity and anticipated load of the plant, along with the calculations for the Operating Pool;
 - (2) to include with its communication of the “Particulars of Design” for its HEP an explanation of why the proposed maximum Pondage meets the requirements set forth in Paragraph 8(c);
 - (3) to give sufficient time for Pakistan to respond with its views as to whether the design is compliant with the Indus Waters Treaty 1960 and for India still to modify its design in the face of valid concerns;
 - (4) to give careful consideration to timely objections, including any Pakistani position that a more Treaty-compliant alternative exists; and
 - (5) as the proponent of the design and construction of the HEP, to establish that the maximum Pondage satisfies the requirements of Paragraph 8(c).
- Q. FINDS, unanimously, for the reasons set out in paragraphs 759 to 789, that when designing an Annexure D, Part 3 HEP and to ensure compliance with Paragraph 8(a) of Annexure D to the Indus Waters Treaty 1960, India is limited to a minimum freeboard of only a height necessary to address the safety of the dam as a whole from overtopping, as determined after

reference to internationally-recognized standards and in the context of the particular dam site at issue.

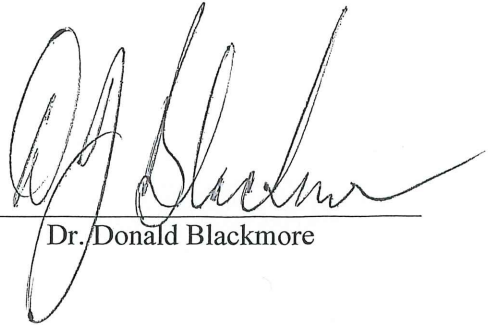
- R. FINDS, unanimously, with respect to compliance with Paragraph 8(a) of Annexure D to the Indus Waters Treaty 1960, that the prohibition in that paragraph concerns not just the design of a work as it is intended to operate at the outset, but also any design that would readily allow for future modifications that would permit the works to raise artificially the water level in the Operating Pool above the Full Pondage Level specified in the design.
- S. FINDS, unanimously, with respect to compliance with Article VII(2), with Paragraph 8(a) of Annexure D to the Indus Waters Treaty 1960, and with Paragraph 9 of Annexure D to the Treaty, that India is obliged:
- (1) to convey the “particulars of design” to Pakistan, including the dimensional plan showing the dam and its height, at an early stage;
 - (2) to include with its communication of the “Particulars of Design” for its HEP an explanation of why the works themselves are not capable of raising artificially the water level in the Operating Pool as proscribed by Paragraph 8(a);
 - (3) to give sufficient time for Pakistan to respond with its views as to whether the design is compliant with the Indus Waters Treaty 1960 and for India still to modify its design in the face of valid concerns;
 - (4) to give careful consideration to timely objections, including any Pakistani position that a more Treaty-compliant alternative exists; and
 - (5) as the proponent of the design and construction of the HEP, to establish that the works satisfy the requirements of Paragraph 8(a).
- T. RESERVES the costs of the proceedings to be awarded by the Court pursuant to Paragraph 26 of Annexure G to the Indus Waters Treaty 1960 for determination in the Court’s Final Award.
- U. RESERVES for further consideration and directions all issues not decided in this Award.
- V. REMAINS seized of the disputes set forth in Pakistan’s Request for Arbitration.

* * *

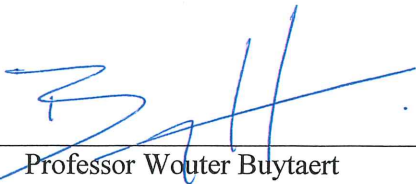
Done this 24 day of August 2025:



Judge Awn Shawkat Al-Khasawneh



Dr. Donald Blackmore



Professor Wouter Buytaert



Professor Jeffrey P. Minear



Professor Sean D. Murphy
Chairman



Mr. Garth Schofield
Registrar