

PCA Case No. 2016-39/AA641

In the Proceedings Between

Glencore Finance (Bermuda) Ltd.  
(Claimant)

- VS -

The Plurinational State of Bolivia  
(Respondent)

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**BOLIVIA'S POST-HEARING BRIEF ON QUANTUM**

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18 November 2021

*Members of the Tribunal:*

Prof. Ricardo Ramírez Hernández  
Prof. John Y. Gotanda  
Prof. Philippe Sands



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1. **INTRODUCTION**

1. Per the Tribunal’s letter of 22 September 2021, Bolivia submits its Post-Hearing Brief,<sup>1</sup> following the Hearing on Quantum (the “**Hearing**”) held between 28 March and 1 April 2021.

2. Prior to the Hearing, the Hearing on the Merits confirmed that Claimant’s claims do not fall within the scope of this Tribunal’s jurisdiction as, *inter alia*:

3. One, Claimant (Glencore Bermuda) never actively invested in Bolivia. Indeed, Mr. Eskdale confirmed that Glencore Bermuda is a shell company that has never directed any activity and was wholly detached from the management of its alleged “investment” (Merits D1:P228:L12-P229:L1, P302:L24-P303:L5, Eskdale Cross; D4:P843:L6-P844:L4, Bolivia’s Closing).

4. Two, Claimant’s acquisition of the Assets was designed to perpetrate an abuse of process. Glencore International was aware [REDACTED] and that the Mine’s operations could be permanently interrupted at any time due to social conflicts (Merits D1:P191:L11-22, Eskdale Cross; **R-302**, p. 6). The Hearing confirmed that, cognizant of this, Glencore International [REDACTED] and rerouted its investment through Bermuda to prepare its foreseeable investment claims.

5. [REDACTED]

6. Four, as the Hearing on the Merits confirmed Claimant is a shell company (one supra), it also established the true party in interest is a Swiss company not subject to the Treaty’s protection.

7. [REDACTED]

8. The Hearing on the Merits further confirmed that Bolivia’s conduct was consistent with the Treaty and international law: (i) the Assets were reverted through the legitimate exercise of police powers (under Bolivian law, a reversion may be authorized by decree and does not require prior compensation) (Merits D4:P851:L14-854-L3, P855:L7-P856:L4, Bolivia’s Closing; Slides 11-17); (ii) Bolivia provided full protection and security to the Assets at all times (Merits D4:P856:L4-11, Bolivia’s Closing; Slide 18; Rejoinder on the Merits, Section 5.2); and (iii) Bolivia acted in good faith, transparently and with respect for due process during the reversions, and satisfied Claimant’s legitimate expectations at all times (Merits D4:P855:L17-P856:L4, Bolivia’s Closing). Bolivia’s actions are, thus, not the proximate cause of Claimant’s losses in relation to the expropriation claim,

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<sup>1</sup> Unless otherwise indicated, the Post-Hearing Brief adopts the definitions used by Bolivia in its prior submissions.

and Claimant has not put forth a causation analysis in support of its FET and FPS claims (Rejoinder on Quantum, Section 3.1). In any event, were the Tribunal to find Bolivia liable (*quod non*), damages in relation to Colquiri and the Antimony Smelter should be reduced by at least 75%, and with respect to Vinto by at least 50% given Claimant's contribution to its own losses (Rejoinder on Quantum, Section 3.2).

9. Bolivia's arguments on quantum are without prejudice to its jurisdictional objections and its defenses on the merits of Claimant's claims. Likewise, the "Joint Expert Agreements" switches in the joint models are without prejudice to Bolivia's arguments on quantum and are merely intended to address certain scenarios defined in the Tribunal's letter of 22 September 2021, which Bolivia understands the Tribunal has yet to rule on.
10. Claimant's case on quantum fails to meet the legal standard for proving the existence of damages. Claimant has not discharged its burden of proving the claimed damages with certainty. Claimant's alleged damages are uncertain, speculative and contradict the historical performance of the Assets, and rest on the assumption that the production of a magical mine and smelter would increase immediately after their reversion to the State, without investments and against the weight of historical performance. Its valuation of the Mine assumes that an unreasonable and misinformed willing buyer would take the Triennial Plan, or the Old Tailings Project, both unsupported documents that are little more than aspirational pieces of paper, never approved or implemented, at face value. Claimant's valuation of Vinto is based on an unduly high production forecast – 22% over historical performance – without providing for any expansion of the existent decaying infrastructure. The valuation of the Antimony Smelter resorts to comparisons to non-industrial plots of land that are far away, ignoring the real condition of the land and buildings and need for costly remediation.
11. Claimant has inflated its claims at every turn, from the chosen valuation dates to the allegedly applicable interest rates. All DCF inputs it has put forward for Colquiri and Vinto have been manipulated to exaggerate its claims, as became evident at the Hearing. Claimant's quantification is thus not serious and a transparent attempt to loot Bolivia under the guise of investment protection.
12. As the joint models were only finalized on 18 November 2021 (today's date), Bolivia reserves its rights to comment on said models in its Reply Post-Hearing Brief.

## **2. THE HEARING CONFIRMED THAT CLAIMANT'S VALUATION OF COLQUIRI IS FLAWED AND GROSSLY INFLATED**

### **2.1 *In limine*, the FMV of the Mine Lease must be assessed *ex ante* as of 19 June 2012**

13. The Parties agree that Colquiri should be valued *ex ante*, but disagree on the appropriate valuation date (CLEX II, ¶16 footnote 6; Quadrant II, ¶ 1(a)). Pursuant to the Treaty, Colquiri should be valued as of 19 June 2012, *i.e.*, the day "*immediately before*" its alleged expropriation through the 20 June 2012 Reversion Decree (C-1, Article V(1); D1:P102:L2-16, Bolivia's Opening) and not 29 May 2012, as claimed by Glencore.
14. It is undisputed that Bolivia took control of the Mine only after the 20 June 2012 Reversion Decree and that, until then, Claimant had control over the Mine and all its legal rights under the Mine Lease.
15. Evidencing its control and rights over the Mine Lease, Claimant voluntarily entered into the Rosario Agreement with the *cooperativistas* on 7 June 2012, whereby it assigned the Rosario vein – the second richest vein in

Colquiri – to the *cooperativas*. This agreement exacerbated the conflict between workers and *cooperativistas*, turning Colquiri into a battlefield and prompting its reversion 2 weeks later. Any willing buyer after 7 June would have considered the impact of the Rosario Agreement on the Mine’s FMV (an impact of at least US \$ 56.2 million (Flores II, ¶ 87; D5:P771:L14-22, Flores)). For this reason, in Colquiri’s joint model, the Tribunal should select Flores’ date of valuation (19 June 2012) together with Flores’ Rosario Vein adjustment.

16. Glencore seeks to anticipate the valuation date to 29 May or, alternatively, 4 June 2012 to avoid the impact of the Rosario Agreement. However, Claimant’s own disclosures to the market stated that “*the Colquiri mine was nationalized on 22 June 2012*” (i.e., as a result of the 20 June 2012 Reversion Decree (R-257, p. 71)). As a publicly traded company, Glencore had an obligation to immediately inform the market about the loss of any material asset. Yet, Glencore did not inform the market about the loss of Colquiri until 22 June 2012 (R-258). Had Glencore “*finally and irrevocably lost control of its investment*” before that date, as it now claims, it would have been obligated to report it to the market immediately. It did not do so.

**2.2 The Hearing confirmed that Claimant’s valuation of the Mine Lease is premised on a negligent and misinformed willing buyer**

17. The Parties agree that the Tribunal must determine the FMV of the Mine Lease based on the willing seller and buyer standard, that is, the value that a well-informed, knowledgeable, and prudent willing seller and buyer would have agreed to assign to the Mine Lease as of the valuation date (Reply on Quantum, ¶¶ 51, 151, footnote 389; Rejoinder on Quantum, ¶ 335).

18. As Bolivia explained, such willing buyer would have based the valuation of the Mine Lease on (i) the historic performance of the Mine up to the valuation date, (ii) the known mineral reserves and resources, as reported in Glencore’s reserves and resources statement (interpreted in accordance with industry standards), (iii) the buyer’s projections of the costs necessary to mine such mineable material and likely revenues, and (iv) the risks associated with the transaction, including the inherent social risks (D5:P893-898:L16-16).

19. This is, for instance, what Glencore did when it purchased the Mine Lease in 2005. Its own contemporaneous due diligence documents show Glencore: (i) began by assessing the reported reserves and resources and “*should new reserve[s] continue to be identified as it has been in the past. We have not placed any value on this*” (C-196, pp. 1, 2, 5); (ii) identified the risk of reversion [REDACTED]

[REDACTED]  
[REDACTED]  
[REDACTED]  
[REDACTED]

Glencore’s conduct in 2005 is a relevant proxy for how a willing buyer would approach the valuation of the Mine as of 2012.

20. Despite agreeing that the willing buyer and seller standard applies, Claimant mistakenly premises its valuation on a negligent and misinformed willing buyer that would take the aspirational and unrealistic seller’s Triennial Plan at face value, like Claimant’s experts were instructed to do (Reply on Quantum, ¶67, “*the projections of Claimant’s expert, RPA, for the expansion of the Colquiri Mine and Concentrator Plant are based on the Triennial Plan*”). Claimant’s valuation is thus inconsistent with its conduct during the acquisition of the Mine.

21. A willing buyer would have disregarded the Triennial Plan for, at least, 2 main reasons:
22. *First*, looking at the Mine’s historic performance, a willing buyer would have immediately concluded that the Triennial Plan is unrealistic as it assumes (without proof) (i) that reserves and resources would magically replenish, (ii) that the Mine would double its production from a five-year average of 277,309 tpy to 550,000 tpy almost instantly and with minimal investments, (iii) that the Mine’s operational bottlenecks (limited extraction capacity, water and power supply, etc.) would magically disappear, and (iv) that historic negative trends consistent with industry standards (*e.g.*, decreasing head grades and metal recovery, and increasing capital and operating costs as mining goes deeper) would shift abruptly and without any technical explanation.
23. *Second*, a willing buyer would have noticed that the Triennial Plan:
- Was never approved, budgeted, or implemented by Claimant (after more than 5 years of Arbitration and Bolivia’s document requests, Claimant, Mr. Eskdale<sup>2</sup>, Mr. Lazcano, and RPA have been unable to explain when, how, or where the Triennial Plan was supposedly approved);
  - Lacks a feasibility study, an economic evaluation, and an environmental license (D3:P473:L8-14, RPA Cross); and
  - Is inconsistent with subsequent documents (such as Colquiri’s 2012 Production Budget (**R-33**), Sinchi Wayra’s 2012 budget (**SRK-36**), and the March 2012 Investment Plan (**EO-7**)).
24. Faced with this, a willing buyer would have concluded that the aspirational Triennial Plan is nothing but an unsupported piece of paper.
25. A diligent and informed willing buyer would not have based a valuation on the 7-page long March 2012 Investment Plan (or the 2012 Colquiri budget) either because, like the Triennial Plan, it was never approved or implemented, is inconsistent with the Mine’s historic performance, and, as RPA admitted at the Hearing, is wholly unsupported (“**Q:** *And, Mr. Clow, why did you base your opinions on the Triennial Plan instead of relying on the 2012 Colquiri budget or the March 2012 Investment Plan.* **R:** [...] *we relied on the Triennial Plan because it has the most detail behind it [...] we had nothing behind the other two of any consequence*”, D4:P523:L9-16). As a result, the Tribunal cannot base the FMV of the Mine on an investment plan that the Parties and their experts reject for legal and technical reasons (Reply on Quantum, ¶ 79; CLEX II, ¶ 22; Rejoinder on Quantum, ¶¶ 322-324).
26. Thus, the Tribunal must conclude that (i) Claimant has not discharged its burden of proof with respect to the technical and economic feasibility of the Triennial Plan, the March 2012 Plan, or the 2012 Colquiri budget,

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<sup>2</sup> At the Hearing, Mr. Eskdale (who, as the Tribunal will undoubtedly remember from the Hearing on the Merits, has an invested financial interest in this dispute (Merits D1:P151-154:L20-25; D4:P857-859:L10-19) suggested that the Triennial Plan had only been approved verbally without leaving documentary trace in emails or minutes of Glencore’s board of directors (D2:P199-200:L22-13). This is false. A multinational company like Glencore would never commit US\$ 47.3 million in expansion CAPEX for an investment plan without any written evaluation or approval. This is contrasted by the fact that, as Mr. Lazcano confirmed during the Hearing, Sinchi Wayra’s policies required, for example, that the simple purchase of computers or printers had to receive written approval from management (D3:P354-355:L19-19; **R-426**).

and (ii) as of the valuation date, a willing buyer would value the Mine based on all available technical, legal, and financial historic information (including the Rosario Agreement) up to the valuation date.

**2.3 The Hearing confirmed that Claimant’s valuation of the Mine Lease is an artificial exercise of reverse engineering that relies on unsupported and grossly inflated inputs**

27. Dr. Rigby has valued the Mine Lease as a well-informed, knowledgeable, and prudent willing buyer would, that is, considering in this order: (i) the mineral reserves and resources that would be mined (as Mr. Eskdale explained during his cross-examination, “[w]e always look at Reserves first in trying to explain to the reader the sequence of trying to evaluate a mine”) (D1:P155:L1-3); (ii) the Mine’s extraction capacity; (iii) head grades for tin and zinc; (iv) concentrator plant’s processing capacity; (v) concentrator plant’s metallurgical recovery rates, and (vi) OPEX and CAPEX.

28. Conversely, RPA begins with the unrealistic production rates projected by the Triennial Plan (which it took at face value (Rejoinder on Quantum, ¶ 136; D1:P107:L7-24)) and then goes backwards in the production process, adjusting all the parameters as needed to justify the Triennial Plan’s production forecast.

29. RPA’s reverse-engineering approach assumes the feasibility of the Triennial Plan and ignores, at least, two fundamental points about its aspirational production rates: (i) it is undisputed that, as of the valuation date, the Mine did not have nearly enough reserves and resources to sustain such projected production, and (ii) as of the valuation date, Colquiri’s infrastructure was already working at full capacity to produce half of the Triennial Plan’s production. Mr. Eskdale admitted that in 2011 (when the Plant processed 289,888 tonnes of ore) Colquiri operated at 96% of its capacity and needed investment to increase its production (“*Q. [I]f I read you correctly, by 2011, you were at about--well, you said 96 percent of capacity within Colquiri. You needed to expand that or you wanted to expand that, and you had 56 million to do that; is that your testimony? A. That’s correct*”, D2:P202:L4-22)). Thus, increasing production to 307,000 tonnes required, per Mr. Eskdale, some investment, that Compass Lexecon has not included in its model (and Dr. Rigby includes as catch-up CAPEX).

30. As Mr. Eskdale also admitted, a valuation cannot be performed without having visited the Mine (“*I don’t think a geologist could come to a [valuation] opinion without having been to the site*”, D1:P175:L6-10; D1:P152:L2-7). That is why Glencore, Pincock Allen & Holt, and Dr. Rigby all visited the Mine and met with its management. The fact that RPA did not visit the Mine coupled with the instructions it received explain why RPA has valued a magical mine, not the Mine Lease.

**2.3.1 The Hearing confirmed that, contrary to industry standards, Claimant artificially extends the life of the Mine by including hypothetical mineable material and attributing full value to inferred mineral resources that lack sufficient geological and economic certainty**

31. Per industry standards, Dr. Rigby bases the Mine’s valuation on the *in situ* reserves (1.555 Mt) and resources (4.182 Mt) reported by Glencore closest to the valuation date (RPA-31, p. 72):

SINCHI WAYRA <sup>1,2</sup>	Commodity		Reserves			Resources			
			Proved	Probable	Total	Measured	Indicated	Inferred	Total
<b>Colquiri</b>									
	Ore	'000 MT	753	802	1 555	1 511	727	1 943	4 182
	Zinc	%	8.13	8.02	8.07	9.68	9.04	8.83	9.17
	Tin	%	1.54	1.27	1.40	1.64	1.89	1.93	1.82

32. RPA admitted that Glencore calculated the Life of Mine based solely on reserves and resources (D3:P499:L8-12 “*Q. [In Glencore’s 2011 annual report], Glencore is not calculating Life of Mine based on anything other than Resources and Reserves; correct? A. Yeah*”; **R-252**, p. 72, “**Remaining mine life: the expected life of the mines as a group, considering current production capacities, is an average of two years based on reserves and seven years based on resources**”).
33. Dr. Rigby bases his estimate of the mineable material considering that, in its 2011 annual report, Glencore reported resources **exclusive** of reserves, as shown in the above image. As Dr. Rigby explained at the Hearing, had he assumed, like RPA does, that Glencore reported resources **inclusive** of reserves (*i.e.*, that the 4.182 Mt of total resources include the 1.555 Mt of total reserves), then its mineable material estimate would be reduced substantially (D4:P545-546:L18-9, “[*If I am wrong and the Mineral Resources were actually inclusive of Ore Reserves as stated by RPA, my mineable material would be substantially lower than what I’ve computed, and that would result in a substantially reduced valuation*”); Rigby, Slide 15). For this and the following reasons, Dr. Rigby’s mineable material estimate is conservative.
34. Based on Glencore’s 2011 reserves and resources statement, and after applying the industry-based discounts described below, Dr. Rigby concludes that a willing buyer would have valued, at most, 4.16 Mt of mineable material at the Mine as of the valuation date:
35. *First*, given that, as Mr. Eskdale conceded, “*you don’t convert 100 percent of your resources into reserves*” (D1:P167:L22-23), Dr. Rigby applies the following industry discounts to **resources**:
36. One, Dr. Rigby applies a **15% discount that accounts for the geological uncertainty of resources**. This is a conservative estimate for, at least, two reasons:
- Per industry standards, Dr. Rigby could have very well excluded 100% of the inferred resources (which accounted for 46% of Colquiri’s total resources in 2011 according to Glencore)<sup>3</sup>; and
  - When Glencore acquired the Mine Lease, it applied an average geological uncertainty discount of **21%** to Colquiri’s reported resources (*i.e.*, 40% higher than Dr. Rigby’s **15%** discount) (Colquiri Updated Due Diligence, **SRK-42**, p. 3 (“*For the purpose of the mine plan and the prediction of grades and tonnages for a +10 year mine life, resource must be converted into reserve. Therefore, a conversion factor was applied to the resource depending on the confidence [...]. The conversion factors used were measured=0.9, indicated=0.8 and inferred= 0.7”); Argent Partners, Opportunity Overview, April 2004, **SRK-43**, p. 12 (“**Resource to reserve conversion factor: Measured = 90%, Indicated = 80%, Inferred = 70%**”); D4:P548:L11-21, Rigby Direct).*

<sup>3</sup> CIMVal Standards and Guidelines for Valuation of Mineral Properties, February 2003, **RPA-73**, p. 27 (“[*Inferred Resources*] *should be used in the Income Approach [e.g., a DCF analysis] with great care, should not be used if the Inferred Mineral Resources account for all or are a dominant part of total Mineral Resources. Any use of Inferred Mineral Resources in the Income Approach must be justified in the Valuation Report and treated appropriately for the substantially higher risk or uncertainty of Inferred Mineral Resources compared to Measured and Indicated Mineral Resources*”) (added emphasis); Australasian Code for Reporting of Exploration Results, Mineral Resources and Ore Reserves (The JORC Code) 2012 Edition, **R-255**, p. 24 (“**Confidence in the estimate of Inferred Mineral Resources is not sufficient to allow the results of the application of technical and economic parameters to be used for detailed planning in Pre-Feasibility (Clause 39) or Feasibility (Clause 40) Studies. For this reason, there is no direct link from an Inferred Mineral Resource to any category of Ore Reserves**”) (emphasis added).

37. Two, it is undisputed that most of the mining at Colquiri is undertaken with sub-level stoping (*i.e.*, using large blastholes to exploit stopes at different levels) (RPA II, ¶¶ 97-100). This method requires leaving pillars (vertical and horizontal) in the Mine (that never get mined) to support overlying or adjacent layers of rock.
38. As a result, Dr. Rigby applies a **25% mining recovery discount to resources** resulting from (i) a 15% deduction for “*inter stope rib pillars left in place to ensure stope stability*” (*i.e.*, vertical pillars), and (ii) a 10% deduction for “*sill and collection drive pillars left in place*” (*i.e.*, horizontal pillars) (Rigby, Slide 19; D4:P548-550:L23-16). These discounts account for the mineable material that is inevitably left behind as stope and protection pillars to ensure the Mine’s stability. During his cross examination, Mr. Eskdale admitted that “*not every cubic meter of [the resources] is going to be mined at the end of the day*” (D1:P179-180:L21-5).
39. Indeed, Glencore’s due diligence refers to such stopes and pillars and, thus, confirm the reasonability of Dr. Rigby’s mining recovery discount: (i) “[*t*]he mining method applied is sub level caving with long hole drill with sublevels every 12 m using a drill grid of 1.2 mt x 1.0 mt. **Stopes have a 40 mts length**” (Colquiri Updated Due Diligence, **SRK-42**, p. 6), and (ii) “[*t*]he operators leave a **2-m thick crown pillar** in the floor of the level above each stope panel, **and barrier and other pillars** are sometimes left for support in the stopes, **resulting in a mining recovery of about 85 to 90 percent**” (C-309, p. 19).
40. Against all industry standards, RPA applies zero discounts to its mineable material estimate. RPA could not deny that the resources should be discounted for geological uncertainty and mining recovery because, during his cross-examination, Mr. Eskdale acknowledged that, on average and depending on the categorization of the resources, only 60-80% of resources are converted into reserves (D1:P168:L1-8). However, RPA criticizes the amounts proposed by Dr. Rigby (i) without any technical support, and (ii) without providing an alternative value for the Tribunal to consider.
41. *Second*, Dr. Rigby applies a **mining recovery discount of 10% to the reserves** to account for the sill and collection drive pillars left inside the Mine to support the overlying layers of rock. As Dr. Rigby explained at the Hearing, this is consistent with Colquiri’s practice of reporting reserves without applying a mining recovery factor and only applying such factor when planning production, as noted by Glencore in its due diligence (D4:P549:L12-15, “*I applied a 10 percent deduction for sill and collection drive pillars because [...] at the Reserve estimation stage those pillars are not accounted for. They’re only accounted for by mine planning.*”; see also, **SRK-042**, p. 2 “*The reserve has not factored in a mine recovery; however, a [mining] recovery of 85% is used by the planning department*”). That is, Glencore applied a mining recovery discount of 15% to Colquiri’s reserves when it acquired the Mine Lease (higher than the 10% discount proposed by Dr. Rigby).
42. *Third*, because Dr. Rigby relied on Glencore’s resources and reserves as of 31 December 2011, he deducts the reserves depleted in the months of 2012 prior to the valuation date (*i.e.*, 125,000 Mt) (SRK II, ¶ 54).
43. *Lastly*, after applying the discounts and subtracting the reserves depleted during 2012 (which results in 3.785 Mt of mineable material), Dr. Rigby adds 10% due to “*dilution at zero grade*” (thus reaching the final amount of mineable material of 4.16 Mt). This last step in Dr. Rigby’s calculations accounts for the fact that, on average, run of mine grade at Colquiri was consistently 10% lower than the reserve grade and, assuming that

the reserve grade is reliable, then the lower run of mine grade can only be attributed to additional unplanned dilution (i.e., Colquiri unintentionally mines and processes ore that surrounds the reserves but is not mineralized). A 10% reduction in grade therefore equates to 10% additional tonnes of mineable material (D4:P552:L13-19; SRK I, ¶ 79; SRK II, ¶ 50).

44. As Dr. Rigby explained during his cross-examination, his calculations already account for Colquiri's replenishment history: "***Q. So, Dr. Rigby, in both of your Reports, you acknowledge that Colquiri had a 'history of replenishing reserves' right? A. Yes. Q. Well, in light of this history, isn't it reasonable to conclude that Glencore Bermuda would have continued to identify new Reserves in 2012 onward, just as it had in years prior? A. Well, that's what I assumed. In 2012, I gave you my assessment of mineable material, and that assumed a substantial amount of the Resource, including Inferred Resource, but continued to be converted. Bear in mind, there is only 1.555 million tons of Proven and Probable Ore Reserves reported in 2011. I've given Colquiri the benefit of the doubt by converting a substantial portion of the Resources available to be mineable. I've actually overstepped my boundary by including Inferred Resources. So, I have given a lot of credit for ongoing exploration and replenishment of Resources and Reserves over that period***" (D4:P605-606:L19-15). As a result, Bolivia notes that Dr. Rigby's original mineable material is consistent with the Tribunal' Request No. 5 (based solely on historical performance, including replenishment, and without considering investment plans).
45. In contrast with Dr. Rigby's analysis, which is consistent with industry (and Glencore's) practice, RPA assumes (part of its reverse-engineering) that the Mine would have sufficient mineable material to sustain the Triennial Plan's production rate until the end of the Mine Lease in 2030 (D3:P437:L13-16, RPA Cross, "*We looked at taking the production of the Mine Life out to the end of the current lease, which resulted in a mine production of 10.7 million tons*"). RPA assumes that, based on Colquiri's history of replenishment of reserves, these would continue to replenish *ad infinitum*. RPA's assumption is wrong for, at least, 4 reasons:
46. *First*, RPA assumes that Colquiri would mine 100% of the 4.181 Mt of reserves and resources reported by Glencore in 2011. This is technically incorrect for, at least, 3 reasons:
47. One, in contradiction with all industry standards and Glencore's conduct during the purchase of Colquiri, RPA assumes that 100% of the inferred resources will be mined even though they have the lowest level of geological confidence. However, due to their uncertain nature, (i) the CIMVal Standards provide that inferred resources "***should not be used [in a valuation] if the Inferred Mineral Resources account for all or are a dominant part of total Mineral Resources***" (RPA-73, ¶ G4.8), and (ii) Glencore applied a 30% discount to Colquiri's inferred resources, as explained above (SRK-42, p. 3; SRK-43, p. 12; D4:P548:L11-21, Rigby).
48. Two, by failing to apply any geological discount to the measured or indicated resources, RPA assumes, against all industry standards, that such resources are equal to reserves. This is wrong. Mr. Eskdale admitted during his cross-examination that only 60-80% of resources are converted into reserves (D1:P168:L1-8).
49. Three, by failing to apply any mining recovery factor, RPA assumes that the various levels and stopes would magically remain suspended in a vacuum inside the Mine with no pillar support whatsoever. As explained

above, this is inconsistent with (i) Glencore's conduct when it acquired the Mine Lease ("*[t]he operators leave a 2-m thick crown pillar in the floor of the level above each stope panel, and barrier and other pillars are sometimes left for support in the stopes, resulting in a mining recovery of about 85 to 90 percent*" (C-309, p. 19)), and (ii) Mr. Eskdale's testimony during cross-examination (D1:P179:L21-5).

50. *Second*, to reach the 10.7 Mt of mineable material needed to sustain the Triennial Plan's production rate goal until the end of the Mine Lease, RPA not only assumes the existence of 6.5 Mt of hypothetical mineable material (*i.e.*, 61% of the total mineable material in Claimant's valuation), but also assumes its grade, without any technical analysis. This is simple reverse-engineering designed to reach an intended result (the Triennial Plan's production rate until the end of the Mine Lease).

51. Yet, it is undisputed (i) that exploration or sampling is needed to identify reserves and resources (D1:P183:L17-20, Eskdale Cross: "[T]o know that there is a mineralization in the ground, you need to see it in a drill core--that's clear--otherwise, you're just guessing and entering into speculative ventures"; D2:P274:L14-18, Lazcano Cross, "*Resources are defined from the basis of the sampling that one contracts with DDA [i.e., diamond drilling analysis]*"; D3:P497:L19-22, RPA Cross: "**Q.** Do you agree that a Mineral Resource cannot be estimated in the absence of sampling information? "Yes" or "no." **A.** Yes, correct. I agree."), and (ii) that RPA's additional 6.5 Mt of mineable material are neither (a) the result of exploration or sampling (D3:P468-469:L22-8, RPA Cross: "**Q.** And you've added about 6.5 more million tons; is that right? **A.** To get to 10.7, yes [...] **Q.** Right. So, that assumption--to be clear, that assumption is not based on exploration data, for example; correct? **A.** Yes, correct"; D3:P491-492:L24-10; P497-498:L23-2, RPA Cross), nor (b) classified as reserves or resources by Colquiri (D3:P468-469:L17-8, RPA; **RPA-31**, p. 72). They are entirely hypothetical.

52. *Third*, RPA turns to *ex post* information in an attempt to support their mineable material estimate. But on cross-examination, they confirmed (i) that their duty as experts is to inform the Tribunal what a willing buyer would have done as of the valuation date, and (ii) that such willing buyer would not have had access to *ex post* information (D3:P459-460:L20-7).

53. *Fourth*, RPA's mineable material estimate is at odds with Glencore's conduct when it invested in the Lease in 2005. As the documents in the record and the Hearing have confirmed, at the time:

- Glencore applied a 21% discount to resources (**SRK-42**, p. 3; D4:P548:L11-21, Rigby Direct);
- Glencore estimated a 12-year life of mine based on (i) Colquiri's reserves and resources statement (audited by Pincock Allen & Holt) and (ii) historic production (D1:P166:L20-23, Eskdale); and
- Glencore did not "*place any value*" on the potential to extend Colquiri's mine life or to ramp up its production (*i.e.*, did not pay for hypothetical mineable material) even though, at the time, Colquiri already had a history of replenishing reserves (**C-196**, pp. 1-3).

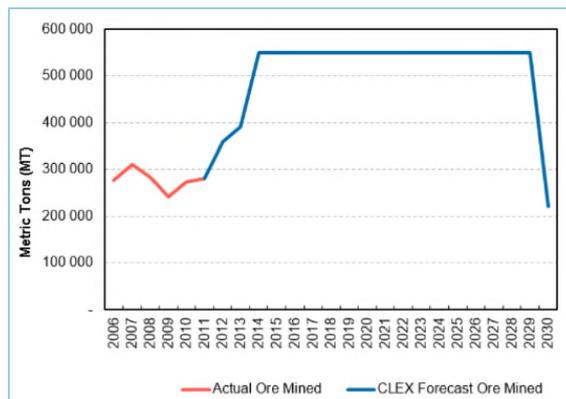
54. In sum, a willing buyer would follow Dr. Rigby's methodology (and Glencore's when it acquired the Mine Lease) and conclude that, as of the valuation date, Colquiri had, at most, 4.16 Mt of mineable material. Such willing buyer would base its analysis on the industry standards and Glencore's 2011 reserves and resources statement, and not "*place any value*" on a hypothetical and aspirational expansion of the life of mine.

### 2.3.2 Claimant's projected extraction levels are impossible to achieve given the Mine's bottlenecks

55. Claimant's valuation ignores the Mine's operating bottlenecks and the water and energy limitations in the Colquiri area (Rejoinder on Quantum, ¶ 407). Due to the limited extension of this brief, we will only refer to the main bottlenecks, the San José and Victoria winzes:
56. *First*, it is undisputed that, as of the valuation date, the San José winze was the only way to transport mineable material from the deeper levels of the mine up to level -405 (RPA I, p. 30). Given that Claimant conceded that all mineable material would have to come from levels below -405 (RPA II, ¶ 61; D3:P434:L21-23, RPA Cross), Colquiri's extraction is limited by the San José winze's capacity.
57. When Glencore purchased the Assets in 2005, it acknowledged that the San José winze – under construction at the time – “*could be possible bottle neck*” (R-302, p. 6). That assessment was based on almost half of the production that Claimant proposes in this Arbitration. During its tenure at the Mine, Glencore did not invest sufficient sustaining capital in the San José winze (it operated it with a repurposed old mill engine), which explains why it suffered constant breakdowns that affected Colquiri's production (R-457, p. 3 “*Mine ore production was below the plan due to [...] the repair of the engine of the San José shaft and some problems with the mining equipment*”). It would be technically impossible to double the production (as Claimant suggests) without first resolving this bottleneck.
58. *Second*, even if the San José bottleneck were resolved, the Victoria winze is also a bottleneck that would have made it impossible to reach Claimant's increased extraction level. It is not in dispute that, as of the date of valuation, the Victoria winze was the only way to extract mineable material from level -405 to the surface. Like the San José winze, the Victoria winze (i) was identified as a bottleneck when Glencore acquired the Assets (R-302, p. 6 “*Another bottleneck is the Victoria shaft and haulage in 405 Level*”), and (ii) did not receive proper maintenance or sustaining capital during Glencore's 7-year long tenure at the Mine.
59. In 2010, when the Mine was extracting approximately half of the production Claimant projects for 2014 onwards, Glencore noted that it could not increase production because (i) the Victoria winze was damaged and working at full capacity (R-436, p. 7, “[E]l problema principal por el cual no se puede lograr estas metas es porque la infraestructura del cuadro Victoria no lo permite, actualmente el cuadro se encuentra en su máxima capacidad. [...] La estructura de madera del cuadro se encuentra dañada por el tiempo de servicio”) and (ii) the low availability (due to mechanical problems and lack of spare parts) of the equipment needed to transport the ore inside the Mine (R-436, p. 7, “*Otra limitante es la baja disponibilidad de los equipos de mina (scoops y volquetas), se tiene paradas frecuentes por falta de repuestos y por falta en la capacidad de solucionar los problemas mecánicos*”). Mechanical problems and lack of equipment (due to underinvestment) constantly affected Colquiri's production throughout Glencore's tenure, as Claimant's own contemporaneous documents show (R-454, R-458 to R-462, p. 2; R-477; R-478; Rejoinder on Quantum, ¶422).
60. Claimant argues that, but for the Reversion, it would have solved the Victoria winze bottleneck by building a ramp from the surface down to level -405 in only 15 months and at a cost of only US\$ 4.2 million (the “**Main Ramp**”). This is misleading: (i) Glencore's own contemporaneous documents show longer timeframes (C-324, p. 7, “*El tiempo determinado por la Compañía es 20 meses*”) and, (ii) given that, as Mr. Lazcano admitted,

the construction of the San José winze took approximately 9 years (from 2000 to 2009) it would have been impossible to build the Main Ramp in only 15 months (D2:P301:L10-18). In light of that information, a willing buyer would assume that the Main Ramp’s construction would take much longer and, as a result, cost more. Reality confirms the reasonability of such assumption: it has taken Colquiri several years to complete the Main Ramp at a cost of US \$ 11.6 M (R-38; Rejoinder on Quantum, ¶437).

61. *Third*, it is not in dispute that between 2007 and 2011 Colquiri extracted a yearly average of 277,309 tonnes. According to Claimant, but for the Reversion, it would have increased the extraction rates to 360,000 tonnes by 2012, to 390,000 tonnes by 2013, and to 550,579 tonnes by 2014 (with the construction of a ramp from the surface down to the -405 level), as shown below:



62. Claimant’s extraction projections are unsupported and unreasonable – and would not have been accepted by a willing buyer – for, at least, 2 reasons:

63. One, Claimant bases its assumption of an immediate, exponential, and unprecedented increase of extraction rates solely on Mr. Lazcano’s testimony and the unrealistic and unapproved Triennial Plan. The Hearing and the many material corrections that Mr. Lazcano made to his written statements (to avoid the contradictions between his statements and Glencore’s case) have confirmed that Mr. Lazcano lacks any credibility and, like RPA, has conducted an artificial exercise of reverse engineering designed to reach Claimant’s extraction goals (Bolivia’s Rejoinder on Quantum, ¶ 320; D2:P373-374:L13-6; P311-325:L14-12).

64. Two, given that the Main Ramp would only reach the -405 level, it would not solve the bottleneck created by the deeper extraction bottleneck: the San José winze, through which 100% of the projected production would be transported. In any event, as Bolivia explained, Claimant underestimates the cost of construction of the Main Ramp and other improvements to the winzes and fails to consider their reasonable timing, to unduly accelerate production (D1:P118:L-15-21 and Bolivia’s Opening, Slide 40).

**2.3.3 Contrary to the reality of the Mine and industry practice, Claimant continues to assume unduly high head grades and keeps them constant throughout the life of the Mine**

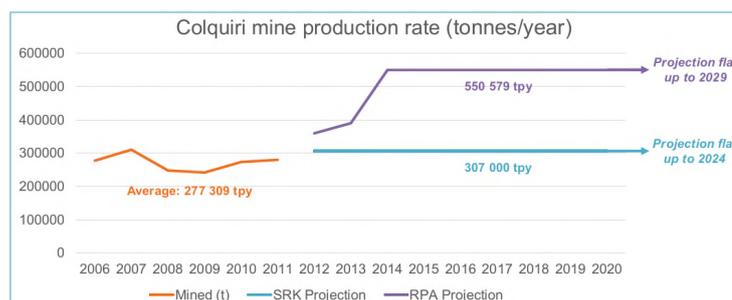
65. Dr. Rigby proposes head grades of 1.17% for tin and 6.70% for zinc based on: (i) Colquiri’s historic head grades (2007-2011 averages: 1.25% for tin and 7.16% for zinc); (ii) as Eng. Villavicencio explains, head grades decrease as mining goes deeper because of the decrease in cassiterite, an oxidized compound that contains the tin, which is richer towards the surface; and (iii) Colquiri’s increased reliance on the sub-level stoping mining

method (which increases waste dilution and, thus, reduces head grades) (SRK I, Section 7.3.3; SRK II, Section 35; D4:P557:L3-16, Rigby Direct; D3:P376:L10-23; Villavicencio I and III, ¶ 69 and ¶ 70, respectively).

66. In contrast, RPA assumes (based only on the unrealistic and unapproved Triennial Plan) that by 2013, only six months after the Reversion, Colquiri’s head grades would be set at a rate higher than historic average that would remain constant until the end of the life of the Mine (Rigby, Slide 26).
67. In any event, Claimant’s assumption lacks any basis and is incorrect for, at least, three reasons: (i) as explained above, head grades are expected to decrease as the Mine goes deeper; (ii) as Dr. Rigby explains, doubling production as proposed by Claimant would put enormous pressure on the quantity and not the quality of the tonnes (*i.e.*, reducing grade selectivity and increasing unplanned dilution), thus resulting in a lower head grade (SRK II, ¶ 52), and (iii) against all industry standards, Claimant assigns unreasonably high fixed head grades to 6.7 Mt of hypothetical mineable material without any support.
68. As a result of the above, a willing buyer would (i) select the head grades estimated by Dr. Rigby as they are consistent with Colquiri’s historic performance and sound geologic and production principles, and (ii) conclude that RPA’s proposal is unsupported and speculative.

### 2.3.4 Claimant’s ore processing forecasts ignore the limitations of the Plant and are inconsistent with its historic ore processing rates

69. It is not in dispute (i) that as of the valuation date, the Concentrator Plant had a limited capacity of 1,000 tpd (D3:P435:L17-18, RPA Direct), and (ii) that under Claimant’s management the Concentrator Plant processed a yearly average of only 277,309 tpy (or 903 tpd) between 2007 to 2011 (the Plant’s ore processing rate depends on (i) the amount of ore extracted and (ii) its processing capacity).
70. Dr. Rigby considers that Colquiri could have increased its production from 277,309 tpy to 307,000 tpy (*i.e.*, an 11% increase) with an investment of (i) US\$ 25 million in catch-up CAPEX over 5 years (*i.e.*, US\$ 5 million per year) and (ii) US\$ 5 million per year in sustaining CAPEX until the end of the life of the Mine (SRK I, ¶ 79(h); SRK II, ¶ 48), as explained in Section 2.3.6 *infra*.
71. In contrast, based solely on the Triennial Plan, Claimant argues that, but for the Reversion, it would have managed to achieve an immediate and exponential increase in production: (i) 360,000 tonnes in 2012, (ii) 390,000 tonnes in 2013, and (iii) 550,000 tpy (or 2,000 tpd) starting in 2014 through 2031 (*i.e.*, an increase in production of 30%, 40%, and 98%, respectively) (RPA-55bis, tab “Colquiri mine”, row 22; EO-2, Table 3).
72. The following illustration shows that Claimant’s exponential and immediate increase of Colquiri’s production is inconsistent with its historic performance (Rigby, Slide 26):



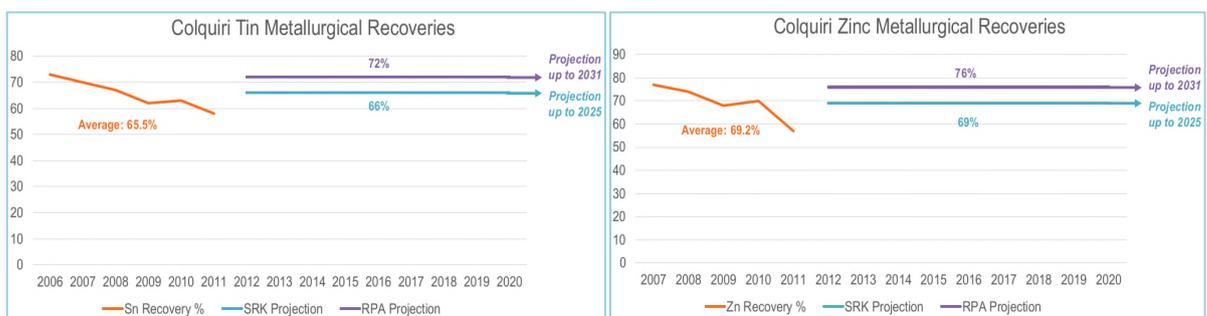
73. An informed and diligent willing buyer would (i) adopt the production rate calculated by Dr. Rigby, and (ii) conclude that RPA’s proposal is unsupported, speculative, and clearly exaggerated.

74. In reply to the Tribunal’s request No. 5, the Parties and their experts have agreed that, without considering any of the projections contained in any investment plan, Colquiri would have had a production rate of no more than 307,000 tpy. There still is disagreement about the catch-up CAPEX needed to reach such production rate. As Bolivia explains in Section 2.3.6 below, US\$ 25 million of catch-up CAPEX would be needed to increase Colquiri’s yearly average production from 277,309 tpy to 307,000 tpy. Claimant argues that no catch-up CAPEX would be needed, which is inconsistent with Mr. Eskdale’s admission that investment is needed to increase production (D2:P204:L18-24). As a result, the model includes both options. However, should the Tribunal desire to select a different amount, the Parties’ experts could adjust the model accordingly.

**2.3.5 Contrary to the reality of the Mine and industry practice, Claimant continues to assume unduly high metallurgical recovery rates and keeps them constant throughout the life of the Mine**

75. Dr. Rigby calculates metallurgical recovery rates of 66% for tin and 69% for zinc based on the average of Colquiri’s historic recovery rates between 2006 and 2011 (*i.e.*, 65.5% for tin and 69.2% for zinc) (SRK I, Section 7.3.6; SRK II, Section 3.6; Rigby, Slides 29-30).

76. In contrast, without any support other than the unrealistic and unapproved Triennial Plan, Claimant assumes that, only 6 months after Reversion, the Concentrator Plant’s metallurgical recovery rates would revert a 5-year downtrend and magically be set above all historic averages (at 72% for tin and 76% for zinc), remaining constant for 17 years thereafter (Rigby, Slides 29 and 30):



77. A willing buyer would (i) select the metallurgical recovery rates estimated by Dr. Rigby (66% for tin and 69% for zinc), which are consistent with Colquiri’s historic performance and (ii) conclude that RPA’s proposal (72% for tin and 76% for zinc) is unsupported, speculative, and clearly exaggerated. In any event, the Parties’ experts have included an option in the joint model that reflects Colquiri’s 2005-2012 average metallurgical recovery rates (65.8% for tin and 69.0% for zinc) for the 307,000 tpy production scenario described in para. 74 above.

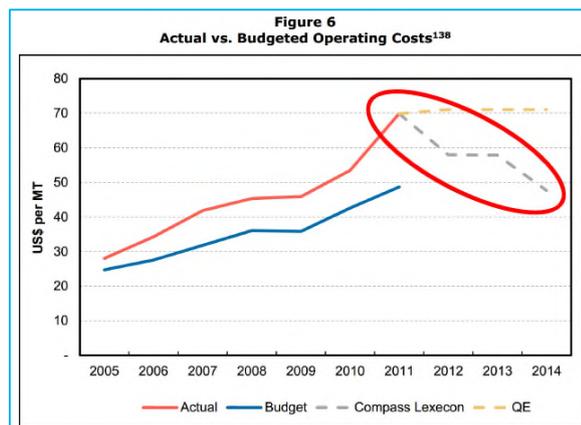
**2.3.6 The Hearing confirmed that Claimant underestimates capital and operating expenses**

78. Claimant underestimates CAPEX and OPEX, leading to an inflated valuation:

79. *First*, as to OPEX, Claimant ignores Colquiri’s historic trend of increasing unit costs (US\$/tonne of ore processed). Between 2005 and 2011, Colquiri’s unit costs more than doubled as production was extracted from deeper levels of the Mine. This is consistent with Claimant’s own expectations during due diligence in 2004

*“As the Mine gets deeper it will be difficult to maintain the same costs. We estimated an increase in value each two years of 5 percent in mine costs and 2 percent in maintenance by deeper exploration”*, R-302, p. 6).

80. The OPEX proposed by Bolivia (US\$71 per tonne of ore processed adjusted yearly for inflation) was calculated by Dr. Flores “using the forecasted 2011 operating expense, adjusted upward by 23% to acknowledge the average underestimation of OPEX made by Colquiri’s management for each of the five years between 2005 and 2010 for which there is data” (Flores II, ¶ 67). This is a conservative estimate as it is very close to Colquiri’s actual OPEX during 2011 (US\$ 69.88) and does not account for Colquiri’s trend of increasing OPEX, as Bolivia’s proposed OPEX remains constant until the end of the life of the Mine, save for inflation. In reply to the Tribunal’s request to the Parties regarding the “estimate of OPEX without regard to the Triennial Plan”, Dr. Flores considers that the Tribunal should adopt Colquiri’s actual OPEX during 2011 (US\$ 69.88). There is nothing on the record suggesting 2011 was an exceptional year.
81. In contrast, and in contradiction with Glencore’s expectations during the acquisition of the Mine Lease, Claimant now suggests that, but for the Reversion, it would have immediately reverted Colquiri’s historic trend of increasing unit costs, as shown in the figure *infra* (Flores II, Figure 6):



82. Against all logic, under Claimant’s case, unit costs decrease as the Mine goes deeper based on the assumption that, because of the increased production derived from the Triennial Plan, Colquiri would have achieved economies of scale (based almost exclusively in a reduction in labor costs).
83. As Dr. Flores explained during the Hearing, this assumption is (i) inconsistent with Colquiri’s historic performance (Colquiri’s operating costs have increased constantly and there is no evidence that the Mine has ever achieved economies of scale), (ii) should be taken with a grain of salt given Glencore’s track record of underestimating operating costs (as shown by the difference in the red (actual) and blue (budget) lines in the illustration above), and (iii) lacks technical support. In Dr. Flores’ words: “[M]y problem from a point of view of a willing buyer as of the Valuation Date is that we don’t have any documentation about the feasibility of that drastic reduction in labor cost, neither technically [...] So, that’s the only real information that the buyer in 2012 would have. It wouldn’t have access to these imagined economies of scale. That would be a speculation, and that’s why I have not incorporated that into the my model” (D5:P17:L17-7, Flores Direct). In any event, given that, as explained above, Claimant’s production rate and the Triennial Plan should be rejected by the Tribunal, so should the hypothetical economies of scale derived from them.

84. As a result, a willing buyer would adopt Bolivia’s experts proposed OPEX (US\$71 per tonne of processed ore, adjusted for inflation) or, alternatively, Colquiri’s actual OPEX during 2011 (*i.e.*, the last full year before the valuation date) (US\$ 69.88 per tonne, adjusted for inflation).
85. *Second*, as explained during the Hearing, Claimant severely underestimates the CAPEX needed to (i) double the ore extraction and processing rates, (ii) expand the tailings dam or building a new dam needed to store the additional tailings that would result from the increased production, and (iii) account for the resulting Mine’s closure and remediation costs (D1:P121-122:L7-4, Bolivia’s Opening; D4:P540-541:L18-16, Rigby; Rejoinder on Quantum, Section 4.1.3.6).
86. As explained in Section 2.3.4 above, an increase in production rate from the 5-year average 277,309 tpy to 307,000 tpy would require some catch-up investment, at least of US\$ 25 million during 2012-2017. During the Hearing, Dr. Rigby explained Colquiri’s need for catch-up CAPEX as follows: *“I was conscious reading the Sinchi Wayra reports, Annual Reports and everything, where consistently capital was significantly or substantially below budget, [that] **this Asset [...] was starved of capital. [...] I thought that it was appropriate to apply maybe five years of [catch-up] capital to redress the undercapitalization** that mine had experienced basically under Glencore ownership”* (D4:P559:L12-20, Rigby Direct. See also, D4:P558:L11-18). This is confirmed by Dr. Flores: *“In the years prior to the Colquiri Valuation Date, Claimant spent less on annual CAPEX than it had budgeted”* (Flores II, ¶ 47). This is why, as explained in Section 2.3.2 above, under Glencore’s management Colquiri constantly failed to meet production forecasts due to the unresolved Mine’s operating bottlenecks and mechanical problems, among others. Dr. Rigby’s conclusion is consistent with a commonsense notion that Mr. Eskdale confirmed during his cross-examination: production simply cannot increase without investment (*“Q. And would it be fair, then, to say that, without all of those technical things in the Triennial Plan, increasing production was just not as easy as just saying: ‘I will simply produce more with what I have.’ There had to be some investment; correct? A. **That’s absolutely right, yes. There needed to be investment**”*, D2:P204:L18-24).
87. In addition, as explained by Bolivia’s experts, Colquiri would require (i) US\$ 5 million per year in sustaining CAPEX from 2012 to 2024 (which is consistent with Colquiri’s actual 2011 sustaining CAPEX of US\$ 4.84 million, when it had a lower production rate of 289,888 tpy), and (ii) US\$ 8.1 million in closure CAPEX from 2018 to 2024 (SRK I, ¶ 79; SRK II, ¶ 72).
88. According to Claimant, the implementation of the Triennial Plan would only require the investment of US\$ 177.9 million in CAPEX from 2012 to 2030, distributed as follows: (i) US\$ 43.8 million in expansion CAPEX in 2012 to increase production rates; (ii) an average of US\$ 6.9 million per year in sustaining CAPEX from 2012 to 2030; and (iii) US\$ 3.3 million in closure CAPEX from 2024 to 2030. It must be noted that the difference in the Parties’ CAPEX is explained by the fact that they underlie considerably different production rates (Claimant proposes an unrealistic production rate of 2,000 tpd for the Mine plus 3,000 tpd for the Old Tailings Project, while Bolivia proposes a production of 1,000 tpd). In any event, further to the Tribunal’s invitation, the Parties’ experts have agreed to include Colquiri’s actual 2011 sustaining CAPEX (US\$ 4.84 million) in the model.

**2.4 The Hearing confirmed that the Old Tailings Project was neither a going concern nor economically viable as of Claimant's or Bolivia's valuation dates**

89. To further inflate its claims, Claimant argues that, right after the Reversion, it would have implemented an Old Tailings Reprocessing Project that would have operated at full capacity of 3,000 tpd (*i.e.*, 3 times Colquiri's actual production before the Reversion) within only 2 years.

90. The Hearing confirmed that a well-informed, knowledgeable, and prudent willing buyer would not assign any value to the Old Tailings Reprocessing Project for, at least, 4 reasons:

91. *First*, more than 40-years after the Old Tailings Project was first evaluated as a potential project, it was still not implemented by any operator (Bolivia, Comsur and Claimant). Hence, a diligent and informed willing buyer would consider that the Project's feasibility is not established and, as a result, ascribe no value to it.

92. *Second*, the Old Tailings Project only exists on paper. Despite Bolivia's document requests, there is no evidence that Claimant ever approved or implemented the Old Tailings Project. Neither the Triennial Plan, nor the March 2012 Investment Plan, nor Colquiri's 2012 Budget mention this Project. Had Glencore approved or planned to implement the Old Tailings Reprocessing Project, it would have mentioned it in these plans. It did not. Any willing buyer would have noted this and not attributed any value to the Project.

93. In fact, Glencore's contemporaneous documents show that it was not considering implementing the Project:

94. One, Colquiri's February 2012 Capital Expenditure and Projects statement shows that capital expenses were neither budgeted nor approved for this project in 2010, 2011 or 2012 (**R-432**, rows 1-6, 21-23). Tellingly, Mr. Eskdale confirmed during the Hearing that "*if [Glencore] want[s] to spend money on something, it needs to be in the budget*" (D2:P215:L13-14). The fact that Claimant did not implement the Project during the seven years it operated Colquiri, confirms it had no intention of carrying it out, which would be relevant to a willing buyer.

95. Two, in cross-examination, RPA confirmed that, in its reserves and resources statements, Glencore reported both its operating assets and its development projects (D3:P498-501:L20-14). Although Glencore's 2011 statement of reserves and resources includes tailing dams as both operating assets and development projects (**R-252**, *e.g.*, Kazzinc's Staroye, Chashinskoye, and Tishinsky Tailings Dams at pp. 69-70), it does not mention the Old Tailings Project (**R-252**, see Sinchi Wayra at p.72). This confirms that, as of the Reversion, Glencore did not consider the Old Tailings Project to be either an operating asset or a development project.

96. Three, Glencore's May 2011 IPO prospectus shows that the Old Tailings Reprocessing Project was nothing but a plan "*currently being considered further by management*" (**CLEX-15**, p. 87 and D2:P242-243:L5-14).

97. As a result of the above, a willing buyer would have concluded that, after 7 years at Colquiri, Glencore had still not established the feasibility of the Project.

98. *Third*, the Old Tailings Project lacks an Environmental and Social Impact Study. This is significant. It is not in dispute that the *cooperativistas* were manually exploiting the old tailings as of the Reversion. As a result, a reasonable, well-informed and prudent willing buyer would seriously question the possibility of starting to reprocess the old tailings right after the valuation date.

99. *Lastly*, as Dr. Rigby explained at the Hearing, Claimant (i) overstates the head grades and the metallurgical recoveries of the Project, (ii) understates the CAPEX and OPEX requirements of the Project, and (iii) fails to account for exponential increase in power and water consumption that would be needed for the Project (D4:P541-542:L2-5). These issues “*seriously question the economic viability of the Project, and may explain why, after 43 years since this project was first evaluated, no owner--nobody--has committed to the development of this Project and provided the funds to do so*” (D4:P542:L6-10, Dr. Rigby).

100. As a result of the above, the Tribunal must conclude that (i) Claimant has not discharged its burden of proof with respect to the technical and economic feasibility of the Old Tailings Reprocessing Project, and (ii) as of the valuation date, a willing buyer would assign no value to such Project.

**3. THE HEARING CONFIRMED THAT CLAIMANT [REDACTED] AND THAT, IN ANY EVENT, ITS VALUATION IS PREMISED ON A NEGLIGENT AND MISINFORMED WILLING BUYER, SPECULATIVE AND GROSSLY INFLATED**

101. [REDACTED]

102. [REDACTED]

103. *Ex abundanti cautela*, while the Parties’ experts agree on the use of the DCF method to calculate Vinto’s FMV on the basis of its projected cash flows from 2007 to 2026 as of 8 February 2007, they disagree as to the projected revenues (3.1) and costs (3.2) that a diligent and informed willing buyer would factor into a valuation. Despite agreeing that the willing buyer standard applies, Claimant insists on estimating Vinto’s FMV in disregard of its past performance (including data of Glencore’s operations in 2005 and 2006). Claimant posits that a willing buyer would have taken at face value that the same smelter that Glencore described in 2004 as a “ghost plant” (C-310) would have – conveniently, but for the reversion – immediately increased production of tin ingots by 22%, with only 3 remaining furnaces from the 1970s, which had not seen any investment since 1997. The Hearing confirmed that this is not what an informed and diligent willing buyer would have done.

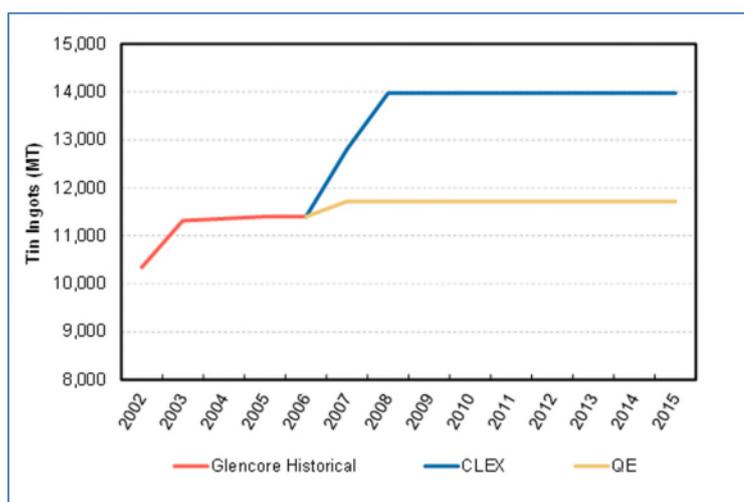
**3.1 The Hearing confirmed that Claimant’s revenues for Vinto are unsupported and grossly inflated**  
104. It is common ground that Vinto purchases tin concentrates from various sources (including Huanuni, Colquiri, cooperativas, etc.) (CLEX I, ¶¶ 79-80; Eskdale I, ¶ 34, RPA I, ¶ 42, 64; R-407; Bolivia’s Opening, Slide 58)

to produce high quality tin ingots for sale, which constitute its only source of revenues. The Parties' experts disagree on (i) the future rate of tin ingot production and (ii) the projected premium over the market price for such ingots that a willing buyer would have reasonably considered as of February 2007.

105. **Tin ingot production** is a function of (i) the available smelting furnaces' capacity to process tin concentrates as well as the necessary reagents/additives; (ii) the availability of high grade tin concentrates in Bolivia (as admitted by RPA at the Hearing, “*you can't have more at the end without having the right feed up front. [...] it's not just more feed. It's more feed at the right grade*” (D4:P518:L3-10, Cross)) and (iii) the metallurgical recovery rate (D3:P385:L9-P386:L3, Villavicencio Cross).
106. Bolivia's experts conservatively assume the same grade of tin concentrates (48.7%) and recovery rate (95.5%) as Claimant's experts. Although Dr. Rigby explained that “[*t*]here'd been a long downward trend in the average grade of the purchased tin concentrate long before the Valuation Date [...] that led to a consistent decline or partially led to a consistent decline in tin recovery before the Valuation Date” (D4:P562:L20-25, Direct), which has continued after 2007 as confirmed by *ex post* data (Bolivia's Opening, Slides 66-67) as well as Eng. Villavicencio (whose testimony on this was not challenged at the Hearing), Dr. Rigby was unable to estimate such decline into the future to offer an alternative projection (Flores II, footnote 196 and ¶ 102).
107. The remaining disagreement is thus whether a willing buyer would have assumed (as Claimant does) that a 22% jump in production starting in 2008 would be possible with the same furnaces that had been in operation since the 70s and without any expansion capital. It would not.
108. *First*, as of the valuation date, Vinto needed significant capital investments. Mr. Eskdale admitted that Claimant operated the same “ghost plant” it acquired in 2004, where “70% of the shops are closed or not operated anymore” (C-310, p. 2) and that it intended to continue operating with the same 3 furnaces in the future (D2:P219:L23-P220:L1, Eskdale Cross). Eng. Villavicencio – who worked at Vinto for almost 3 decades and served as General Manager – explained that, since “2004 [*only 3 furnaces operated*], it was Reverberator 3, 4, and electrical furnace. [*The rest*] were decommissioned” (D3:P412:L23-P413:L7, Cross). But even those 3 operating furnaces had not seen capital investment since 1997 (Villavicencio I, ¶ 36) and Claimant did not have any contemporaneous plans to invest in Vinto.
109. It is undisputed that Claimant did not invest during its operations of Vinto (in 2005-2006) nor planned to do so as of February 2007. In 2005, Claimant did not execute any expansion capital; it only budgeted US\$ 860,000 in sustaining capital, out of which it invested only 69% (CLEX-11-2, pp. 6 and 14). In 2006, it had planned about US\$ 1.1 million in CAPEX but only invested US\$ 7,000 (that is, 0.64%) (RPA-21, pp. 9-10). Confronted with the January 2007 Sinchi Wayra Management Report (R-518, p. 84), Mr. Eskdale conceded that there was “*nothing spent*” (D2:P234:L14-15, Cross). Cognizant that its track record of undercapitalization is detrimental to its case, Claimant instructed Compass Lexecon before the Hearing to include US\$ 2.3 million in 2007 CAPEX (D4:P684:L23-24, CLEX Cross).
110. *Second*, a willing buyer would have seen, as Dr. Rigby, that “*the production rate of tin ingots was relatively flat throughout the privatization periods [2000 to February 2007], levels approximately 20 percent below those*

projected by RPA and Compass Lexecon” (D4:P564:L24-P565:L3, Direct) and Claimant itself “never achieved tin ingot production levels projected by RPA” (D4:P563:L5-6, Direct). The actual tonnage processed in 2005 and 2006 was 24,995 and 25,277, i.e., 20% less than RPA’s 30,000 tonnes (**RPA-55bis**).

111. Indeed, Claimant has not submitted any contemporaneous plan or projection proving that it intended to increase production of tin ingots (much less by 22%) as of February 2007. Claimant has not even submitted witness testimony from its Vinto management. Conversely, Eng. Villavicencio, who was involved in the day to day operations of the smelter, ratified at the Hearing that “definitely there was no plan or budget to increase the production of metal” (D3:P416:L19-20, Cross).
112. Third, Vinto did not even have the capacity under Glencore’s tenure to process all the tin concentrates acquired, much less to process the additional tonnage needed to sustain its 22% increase in tin ingot production. In 2005, Claimant had 12,605 fine tonnes of tin concentrate available, but only produced 11,401 tonnes. Similarly, in 2006, from 11,671 fine tonnes of available tin concentrate, Claimant only turned 11,403 tonnes into ingots (**R-401bis**). Mr. Eskdale admitted that the difference was not due to recovery or to concentrates left in the pipeline (D2:P229:L4-17, Cross), so it must be due to the furnaces’ insufficient capacity. As Bolivia has explained, Glencore simply could not process more concentrates because the 3 furnaces were operating at maximum capacity given their old age and the lack of investments.
113. Thus, any willing buyer would have reasonably concluded that, as of February 2007, Vinto could, at most, maintain the same production of tin ingots as in 2005-2006.
114. Hence, Dr. Flores conservatively estimates that Vinto would, *at most*, process, 25,161 tonnes of tin concentrate per year, producing 11,720 tonnes of ingots per year from 2007 until 2026. As shown in yellow *infra*<sup>4</sup>, that is a slight increase with respect to historical performance, including the production rate during Claimant’s operations in 2005 and 2006 (in red):



115. Conversely, Claimant posits that a willing buyer would ignore historical production levels and would instead conclude that Vinto would process 30,000 tonnes of tin concentrates per year producing 14,000 tonnes of tin

<sup>4</sup> Based on **QE-49**, Updated DCF for Vinto, Table 2 and Tab “Production” with Processing set to “QE” in the “Dashboard”.

ingots per year starting in 2008 through 2026 as shown in blue (Reply on Quantum, ¶¶ 123, 128; CLEX II, Section II.2.1; RPA II, Section 3.1.3). Claimant's production forecast is unsupported and purely aspirational for, at least, four reasons:

116. *First*, Claimant relies on Vinto's production rate in the 90s (prior to privatization), when a willing buyer as of February 2007 would have looked at all the data up to 2007, especially the most recent data available (2005-2006). In any event, the production levels in the 90s do not support Claimant's case. Eng. Villavicencio clarified that, on the one hand, if production in 1994 was close to 20,000 tonnes of ingots, "*this had to do with three important aspects*" (D3:P388:L1-P389:2, Cross): (i) availability of 2 additional furnaces (that no longer existed as of February 2007), (ii) additional high grade tin concentrates sourced from Peru, and (iii) tin ingots from another smelter in Oruro that were brought to Vinto for final processing. These conditions did not continue after the privatization.
117. On the other hand, Eng. Villavicencio added that, "[a]t the time of the privatization [in December 1999], [Vinto] didn't reach 20,000 [tonnes of ingots]. It was three years prior to that. When the privatization happened, [Vinto] really couldn't reach 12,000 tons of metallic tin, perhaps less than that" (D3:P387:L8-11, Cross). Due to the lack of investment by the private operators, in "2004 [when Glencore acquired Vinto], [...] perhaps you could reach 80 or maybe 90 tons [of concentrate treated per day], but that's what you can reach with these furnaces [only 3 compared to the 5 available in 1994]" (D3:P396:L1-10, Villavicencio Cross). Therefore, "[t]hese three furnaces could treat concentrates, 30 tons in Reverberator 3, 30 tons in Reverberator 4, and if I'm not mistaken, 20 tons in the electric furnace. That is 80 tons per day of [production] capacity. If we multiply this by 30 days, we would get about 24,000 FMT for these three furnaces. That's the material coming into those three furnaces. If we assume that the grade is 50 percent, we would get approximately 11,000 tons, and the recovery would be 1.95, just about, so the figure would be close to those 11,500 FMT. Let me clarify that every year starting in 2000 until 2006--I was still working at the Plant at that time--we always scheduled the production of tin--of metallic tin on the basis of the three furnaces we had: The electric furnace and Reverberators 3 and 4. This takes us to 11,500 FMT." (D3:P391:L23-P392:L14, Villavicencio Cross).
118. *Second*, Claimant relies on the furnaces' "*design capacity*" (RPA I, ¶ 65) as reported in the 1999 Paribas report (RPA-4) to justify a concentrate processing capacity of 30,000 tonnes, which it needs to reach a production of 14,000 tonnes of ingots. Claimant's reverse-engineering is flawed in, at least, two key aspects:
119. On the one hand, as Dr. Rigby put it at the Hearing, "[t]here is a difference between the theoretical capacity of the Tin Smelter and the actual capacity achieved in practice" (D4:P563:L23-25, Direct). Eng. Villavicencio further explained that Paribas refers to "'design capacity' of 1975, this for the reverberator furnaces, and for the electric furnace" (D3:P395:L19-20, Cross) but, with the passage of time and lack of capital investments, design capacity declines (D3:P396:L1-10, Cross).
120. On the other hand, Claimant ignores that the smelting process requires additives that take up part of the furnaces' processing capacity; thus it is wrong to suggest that all of the design capacity can be filled up with concentrates (R-419, p. 7; R-391; Villavicencio III, ¶ 25). At the Hearing, Eng. Villavicencio clarified that "*processing capacity goes beyond the volume of concentrates and also includes these additives*" (D3:P382:L9-

18, Cross), “we cannot avoid all the additives and just talk about concentrates. We need to include everything” in the furnaces (D3:P383:L21-25, Cross).

121. Third, the “optimization projects” (**RPA-53**) referred to by Claimant do not justify a 22% increase in production. Eng. Villavicencio recalled that “these are CAPEX only to maintain production or to go on with the maintenance, but none of these things is used to increase production” (D3:P425:L8-16, Cross). RPA agrees that the optimization projects would not increase Vinto’s installed capacity (RPA II, p. 27), admitting at the Hearing that they were “routine maintenance” to “maintain capacity” (D4:P514:P21-P515:L2, Cross).
122. When asked whether “assuming there was enough feed of appropriate grade by 2006, and that these projects were in place by 2006, would you agree with me that we would see those effects in 2006?”, RPA replied “I believe so, yes” (D4:P518:L15-19). Yet, the increase in production from 2005 to 2006 was 0.578%, even though Vinto had more metal available in the concentrates. This confirms that Vinto was operating at maximum capacity and that the optimization projects were not sufficient to increase production by 22%.
123. Finally, *ex post* data also confirms that Claimant’s projections are aspirational and inflated. Claimant suggests that Vinto’s production was low between 2007 and 2012 because Colquiri exported concentrates instead of selling them to Vinto, but actual 2007-2012 data confirms Colquiri could have provided only 19% of the concentrates needed by Vinto to achieve the production projected by Claimant (**RPA-48; RPA-34**; Rejoinder on Quantum, ¶¶ 649-650). Claimant is incapable of identifying where the concentrates needed to achieve its projected production would be sourced from. The increase in production after 2012 was only possible because of Bolivia’s investments of over US\$ 40 million to ensure operating conditions of the existing furnaces, incorporate additional units and build an Ausmelt furnace (Bolivia’s Opening, Slide 63). But even with this significant investment, production has not reached the levels projected by Claimant, because of the decline in grade of the available concentrates (Bolivia’s Opening, Slide 64).
124. **Premium over tin ingot sale price**: the Parties’ experts disagree on the premium over the market price charged by Vinto. The Tribunal must decide whether in estimating the premium until 2026 a diligent and informed willing buyer would have (i) looked at historical data, *i.e.*, the premia in 18 sales contracts entered by Vinto between 2002 and 2006 (**CLEX-32**) and the historical relationship between market price and premium, as Dr. Flores has done to estimate an average premium of 1.68% (Flores I, ¶¶ 117-119; Bolivia’s Opening, Slide 68) or (ii) only looked at a single outlier contract with Soft Metais, a Brazilian purchaser, with the highest premium (as Claimant’s experts do to project a 3% premium for 20 years).
125. The Hearing confirmed that the Tribunal should select Dr. Flores’ estimated premium for, at least, six reasons: one, Claimant itself noted in 2004 that “only the Brasil [*sic*] sales have a 3%” (**C-310**, p. 7); two, Compass Lexecon’s reliance on the CRU Monitor Report is both truncated (it ignores sales in Europe at a much lower premia (**CLEX-17**, p. 5; D5:P759:L9-P760:14, Cross)) and misplaced (as Compass Lexecon conceded, CRU is not a forecast (D5:P761:L8-9, Cross; D5:P775:L1-9, Flores Direct)); three, “[a]s tin prices increase or decrease, so do the premiums” (Flores II, ¶ 114 and Figure 14) and Compass Lexecon recognizes that, as of February 2007, tin prices were expected to fall in real terms (**CLEX-30**, tab “Summary”, “Real”, rows 16-17; D5:P774:L21-25, Flores Direct and Slide 20; Flores II, Figure 15); four, tin ingot sales contracts are short-term,

it is thus unreasonable to assume a fixed, high premium for 20 years; five Glencore International's contracts with Vinto shortly after the reversion provided premia ranging from 0.2% to 0.8% (**R-79; R-80; R-81; D5:P774:L7-21, Flores Direct; Bolivia's Opening, Slide 69**); and six, Glencore offered to purchase ingots from Vinto without a premium in September 2017 (**R-83**).

### 3.2 The Hearing confirmed that Claimant's costs for Vinto are unsupported and underestimated

126. Claimant contends that production of tin ingots would have increased by a staggering 22% starting in 2008, yet its cost projections do not support such an unrealistic increase.
127. **CAPEX**: initially, Claimant's experts did not include any expansion CAPEX under pretext that the optimization projects carried out at Vinto between 2002 and 2006 (listed in **RPA-53**) and yearly sustaining CAPEX of US\$ 800,000 would suffice for such as surge in production (D4:P513:L1-19, RPA Cross). Shortly before the Hearing, Claimant recognized the absurdity of this proposition and instructed Compass Lexecon to include US\$ 2.3 million in CAPEX in 2007 (D4:P684:L23-24, CLEX Direct). Nevertheless, such level of CAPEX is still insufficient to justify a 22% increase in production given the limited capacity of the smelter and would, at most, support the production forecasted by Dr. Flores (Flores II, ¶ 103).
128. **OPEX**: as of the valuation date, any diligent and informed willing buyer would have looked at the actual unit costs for the last full year of Claimant's operations, which were reported in the 2006 Vinto Management Report (**RPA-21**). As Dr. Rigby explained, any willing buyer would have seen that "*there'd been a consistent trend of increasing operating costs per unit of tin production*" (D4:P564:L12-13, Direct). Indeed, a comparison of Vinto's 2005 and 2006 reports (**RPA-19, RPA-20, and RPA-21**) shows that actual operating unit costs increased as tonnes treated increased (see Table 11 of RPA I).
129. Dr. Flores looked at actual unit costs for the last full year of Claimant's operations (**RPA-21; Flores II, Section IV.B, ¶¶ 105-108**) and projected operating costs at US\$ 368.8 (adjusted for inflation) per tonne of concentrate processed until 2026. Dr. Flores' estimate is conservative given the documented trend of increasing unit costs.
130. To artificially increase the valuation, Claimant's experts take 2006 unit costs and assume operating costs of US\$ 368.8 per tonne of concentrate processed in 2007 decreasing to US\$ 315 per tonne from 2008 onwards under pretext of economies of scale from alleged higher production (CLEX II, Section II.2.2). Compass Lexecon's OPEX are underestimated, and the Tribunal should select Dr. Flores' forecast for two reasons:
131. *First*, Claimant's alleged economies of scale are contingent on a 22% increase in production. Claimant misleadingly suggested in its opening statement (D1:P44:L24-P45:L2) that Eng. Villavicencio would have confirmed that Vinto would benefit from economies of scale. Yet Eng. Villavicencio's complete statement is that "*the processing expense to produce 1,000 FMT of tin per month would be practically the same to reach 1,100-1,300 FMT per month, but only if the installed capacity to reach those production levels exists. In Glencore's case, its estimate is wrong because it never made investments to increase the plant's installed capacity*" (Villavicencio III, ¶ 81). For the reasons explained *supra*, no willing buyer would consider such a production increase possible at Vinto, given the condition of the plant and the lack of capital investments to increase the smelter's capacity. Hence, neither would a willing buyer consider economies of scale.

132. *Second*, even assuming an increase in production of tin ingots at Vinto (*quod non*), such increase does not in itself result in economies of scale. Claimant has not provided any evidence of economies of scale (in fact, Table 11 of RPA I confirms that actual operating unit costs increased as tonnes treated increased between 2005 and 2006). While Claimant and its experts suggest that the majority of Vinto's costs would be fixed and that the more ingots produced the lower costs per unit (because those same costs would be divided between more tin ingots), they have not proven the premise of their argument (*i.e.*, that 90% of Vinto's OPEX would be fixed). To the contrary, as stated *supra*, Vinto's 2005 and 2006 reports show that operating unit costs increased as tonnes treated increased (see Table 11 of RPA I).
133. Claimant disregards that smelting costs are driven by tonnage. As Dr. Rigby explained at the Hearing, increases in the processing of lower grade concentrates increase impurities and waste, driving up unit costs (D4:P565:L14-20, Direct). Dr. Rigby concluded that "*it's hardly conceivable that economies of scale would result from increased through-put as claimed by RPA*" (D4:P565:L21-P566:L1, Direct) because the lower average concentrate grade increases the costs per unit of recovered tin. If less metal is recovered, there are fewer tin ingots against which to distribute the operating costs (D4:P565:L10-13, Rigby Direct).
134. **Remediation and closure costs**: any diligent and informed willing buyer would conclude on the basis of a site visit as well as Claimant's own acknowledgements during its due diligence in 2004 (C-310) that there is contamination at Vinto (D4:P563:L5-11, Rigby Direct).
135. In line with this, Dr. Flores maintains that remediation and closure costs at Vinto would be, at least, US\$ 23.2 million as of 2026 (Flores II, ¶ 121) based on Dr. Rigby's assessment following his site visit and review of Glencore's 2004 Due Diligence Report (C-310). Dr. Rigby, who "[has] actually been involved with smelters in different parts of the world being closed, and we've researche[d] costs, estimates, I think we used--gave a couple of examples in either Canada or the U.S.", explained at the Hearing that "[t]hese are difficult sites to remediate, and they are expensive sites to remediate" (D4:P641:L17-P642:L3, Cross). Dr. Rigby "determined 1.8 million square meters which required remediation. [...] assessed the remediation cost at \$10 per-square meter, and that gives an 18 million remediation cost. Then there's the cost of demolishing and removing of all plant, and removal and disposal of all slag. And, therefore, that's why I concluded that the likely total cost would be about 20 million at the end of the Smelter life." (D4:P566:L23-P567:L10, Direct). When Claimant challenged his estimate, Dr. Rigby explained the relevance of his findings during the 2017 visit and "*certainly the Glencore 2004 Due Diligence Report, which flagged this as a significant issue*". Even though Vinto's valuation is as of 2007, "*the closure would be in 202[6]*" (D4:P640:L22-P641:L14, Rigby Cross).
136. Conversely, Claimant instructed its experts shortly before the Hearing to include US\$ 5.5 million as of 2007 in remediation and closure costs based on Vinto's 2007 Financial Statements, without regard to the actual condition of the smelter that Claimant's experts did not visit (CLEX, Slide 68). However, a diligent and informed willing buyer would have seen that the same US\$ 5.5 million figure appears in the 2003 Vinto Financial Statements and was never updated in the years that Claimant ran the operation (CLEX-16 for 2003, 2006 and 2007, pp. 14, 13, and 16 of PDF, respectively), further confirming Claimant's track record of undercapitalization at Vinto.

137. As to **G&A expenses**, a diligent and informed willing buyer would look at the actual expenses incurred by Vinto historically. Dr. Flores forecasts G&A expenses of US\$ 513,000 per year (adjusted for inflation) from 2007 to 2026, based on the last full year of Claimant's actual expenses as reported in the December 2006 Vinto Management Report (CLEX-11-3, p. 15). Conversely, prior to the Hearing, Claimant instructed Compass Lexecon to increase its G&A forecast to US\$ 450,000 per year (adjusted for inflation) from 2007 to 2026, based on the 2005-2006 average expenses (CLEX II, Section II.2.2). Further to the Tribunal's invitation, the Parties' experts have agreed to include the simple average of their G&A forecasts in the joint model, that is, US\$ 481,500 per year (adjusted yearly for inflation) from 2007 to 2026.

138. **Working capital**: further to the Tribunal's invitation, the Parties' experts have also agreed to include the simple average of their methodologies to estimate working capital in the joint model, that is, 113 days of revenues for accounts receivable and inventories (comprised of 39 days for accounts receivable and 75 days for inventories), 39 days of costs for accounts payable, and 28 days of concentrate purchases plus smelter site costs for VAT.

139. As a result of the above and the experts' agreements in the joint model, *at most*, Vinto's FMV is US\$ 19 million as of 8 February 2007, [REDACTED]

**4. THE HEARING CONFIRMED THAT THE COMMERCIAL VALUE OF THE NON-OPERATING ANTIMONY SMELTER IS NIL, GIVEN THE NEED FOR DISMANTLING AND REMEDIATION**

140. The Parties agree on an asset-based valuation for the Antimony Smelter but disagree on the valuation date (4.1). Moreover, Claimant's valuation is methodologically flawed and ignores remediation costs, which any willing buyer would consider (whether *ex ante* or *ex post*), rendering the Antimony Smelter a liability (4.2).

**4.1 In accordance with the Treaty, the Antimony Smelter should be valued *ex ante* as of 30 April 2010 (the day immediately before its reversion to the State)**

141. Claimant posits that it should benefit from any alleged increase in value post-reversion. As explained in Sections 2.2.2 and 4.3.1 of the Rejoinder of Quantum, Claimant's position is contrary to the Treaty and international law as it would lead to punitive damages and to Claimant's unjust enrichment.

142. In any event, Claimant's factual premise is wrong. While *residential* land in Oruro may have appreciated since 2010, the land of the Antimony Smelter is *industrial* (DM-4; and D1:P48:L16-20, Claimant's Opening) and has not appreciated because (i) new smelting activity is prohibited since 2014 in Bolivia within city limits and 100 meters of roads (R-441, art. 93) and (ii) a 2016 Municipal Decree prohibited new industries in the Vinto area (R-440, art. 1). Thus, even if, *par impossible*, the Tribunal were to consider an *ex post* valuation, any willing buyer would conclude that the Antimony Smelter lacks commercial value as an industrial site. Even a willing buyer interested in the site for residential use would have to remediate the site at significant costs, hence it would not be willing to pay any value for the Antimony Smelter.

**4.2 Claimant's valuation of the Antimony Smelter is flawed and ignores dismantling and remediation costs that any willing buyer would factor in (*ex ante* or *ex post*), rendering the Antimony Smelter a liability**

143. *First*, the buildings lack commercial value. Ms. Russo corrected her initial valuation and accepted Architect Mirones' valuation as of 2010 adjusted for inflation (Russo II, ¶ 1.4(b)). But Ms. Russo continues to ignore dismantlement costs, which would be at least as high as the buildings' residual value (Mirones II, ¶¶ 113, 127).

144. *Second*, as explained in Section 4.3.3 of the Rejoinder on Quantum, the comparable transaction method is “*only suitable for the valuation of real estate as long as it is applied in accordance with its requirements. At a minimum [...] identify land with analogous characteristics*” (Mirones II, ¶ 57). Bolivia’s expert, Architect Mirones, visited the site and concluded that its characteristics (e.g., size, location, irregular shape, lack of direct access to roads, environmental liabilities, etc.) render it unique in Oruro. In the absence of comparable transactions, Architect Mirones took the cadastral value as a starting point and adjusted it to the characteristics of the land to calculate a FMV of, approximately, US\$ 294,000 as of 30 April 2010, before clean-up and remediation costs (Mirones II, ¶ 126; Section 7.3.6 of the Statement of Defense and Section 4.3.4 of the Rejoinder on Quantum). Dr. Rigby explained that “[r]emediation measures will be required to achieve any real-estate value. That would require excavation, removal and capping, disposal of the excavated material, and then demolition of all buildings” (D4:P567:L17-20, Direct). Dr. Rigby shows that such costs are around US\$ 44 million based on an example of similar cleanup projects, such as Asarco’s Everett Smelter in Washington State (SRK II, ¶ 108).
145. Claimant’s valuation of the land is flawed for, at least, four reasons: one, it is based on information about *residential* (not industrial) land in a *different* location (e.g., **GR-27-I**; compare **GR-3-C** with **GR-27**); two, none of the so-called comparables are similar to the Antimony Smelter’s size (Flores II, ¶ 127 and ¶ 129); three, Claimant relies on asking prices as advertised in a newspaper (**GR-6**), *i.e.*, a seller’s valuation, not the price a willing buyer and seller would agree to; and four, Claimant disregards its remediation obligation per the 2009 Constitution (**C-95**, art. 347). It should be undisputed that there is significant contamination at the Antimony Smelter. In 2004, Claimant identified “*significant*” and “*noticeable*” contamination (**C-310**). Dr. Rigby explained that “*demolition and disposal of the antimony smelter facilities and heavy metal soil contamination soil remediation [sic] would cost substantially more than the US\$1.9 million residual value, determined by Ms. Russo [i.e., Claimant’s real estate expert]*” (SRK I, ¶ 114). Dr. Flores further noted that, “*even accepting the value she [Ms. Russo] places on the land, buildings and alleged improvements of the Antimony Smelter, once the remediation costs identified by SRK are accounted for, the value of the Antimony Smelter is zero*” (Flores I, ¶¶ 127-128). Yet Ms. Russo values the land as pristine even after she “*noticed the presence of what appeared to be slag and a pool containing a liquid substance*” (Russo II, ¶ 3.4.8). Claimant has failed to show that said contamination would have been caused prior to its acquisition of the Antimony Smelter (**R-523**, art. 16). In any event, in accordance with the 2002 SPA, Comsur (purchaser) was obligated to perform an environmental baseline study. Claimant has not established that Comsur performed such study; it did not. Comsur assumed liability for any existing contamination regardless of when it was caused (**C-9**, clause 10.1). Neither has Claimant submitted nor alleged to have performed such baseline study when it acquired the Antimony Smelter from Comsur. Instead, Claimant waived any claim against Comsur in relation to environmental liabilities (**C-198**, p. 32, section 7.9). Any willing buyer would have reduced the remediation costs from the value it would be willing to pay. The Tribunal will, thus, have to decide whether remediation and demolition costs should be deducted, independently of which valuation it adopts.

146. *Lastly*, after initially disregarding the 3% tax applicable to real estate transactions (**R-525**, arts. 72, 75 and 107), Claimant has now instructed its experts to include an option in the joint model to select the 3% transaction tax in Compass Lexecon’s valuation scenario as well.

147. In light of the foregoing, any willing buyer would conclude (whether *ex ante* or *ex post*) that the Antimony Smelter is a liability and lacks commercial value.

**5. THE HEARING CONFIRMED THAT CLAIMANT’S VALUATION OF THE TIN STOCK IS ALSO INFLATED AND UNSUPPORTED**

148. The Parties agree the Tin Stock should be valued as of 30 April 2010 (**EO-2**, Table 7; Reply on Quantum, ¶ 173; CLEX II, ¶¶ 81-82). Their disagreement is limited to the quantity of the Tin Stock as of the valuation date. As explained in Section 4.4 of the Rejoinder on Quantum, there were 157.6 tonnes of tin concentrate as of the reversion, per the notarized inventory of 15 September 2010 (**EO-17**, pp. 1, 3). Claimant ignores the notarized inventory relies on its letter of May 2010, which does not contain any proof of quantity (**C-28**). Claimant has also failed to prove that Bolivia would have used (*quod non*) part of the Tin Stock. Eng. Villavicencio ratified that “*we did not use the Tin Stock and that the September 2010 notarized audit of the concentrates reflects the existing stock at the time of the reversion*” (Villavicencio III, ¶ 88). Claimant chose not to challenge this testimony at the Hearing. Thus, the Tin Stock should be valued at US\$ 606,264.

**6. THE HEARING CONFIRMED THAT COMPASS LEXECON’S DISCOUNT RATES TO ESTIMATE THE NPV OF COLQUIRI AND VINTO ARE UNREALISTICALLY LOW**

149. As explained during the Hearing, the main differences between the discount rates used by the Parties are (i) the country risk premium (“**CRP**”) and (ii) the additional risk premium that account for well-known shortcomings of the pure Capital Asset Pricing Model (“**CAPM**”), such as the failure to consider the illiquidity of assets. Both Parties have used the CAPM to calculate the cost of equity and have determined the cost of debt with the same synthetic approach (a sum of the risk-free rate, the corporate debt spread and the country debt risk premium). Prior to the Hearing, the experts already used the same capital structure and tax rate, and applied almost the same beta (which measures the exposure of a company’s equity to overall risk in the market). Disregarding the CRP and the additional premium, the proposed discount rates would have been similar, with a difference of 0.3% for Colquiri and 3.2% for Vinto (CLEX II, Figure 6).

150. In the joint models, the experts further agreed on using the same beta and corporate debt spread. Bolivia notes, however, that there has been no agreement regarding the risk-free rate. Claimant’s experts’ opportunistic decision to use Dr. Flores’ rates, absent agreement on other variables, actually increases its valuation for Colquiri, driving the valuations of the experts further apart (as Dr. Flores’ risk free rate was lower than Compass Lexecon’s). Claimant’s proposal for the risk-free rates is thus disingenuous as it creates no more than a veneer of cooperation, when in fact Claimant is simply cherry picking the rate that maximizes its claims.

151. Despite the similarities and agreements, Claimant’s chosen discount rates remain unduly low, as they (i) do not properly account for country risk and (ii) ignore the Assets’ illiquidity.

152. *First*, in the absence of an EMBI for Bolivia, Claimant’s experts sought to reconstruct a synthetic EMBI and used it as a proxy for the CRP. Yet the EMBI, by definition, measures the risk of *default of the sovereign bonds*

of a given country, not the risk of *doing business* in that country. Thus, Claimant wrongly assumes that the risk of doing business in Bolivia – or of investing in the Mine and Vinto – is at most equal to the risk of default by Bolivia on its hypothetical sovereign bonds. At the Hearing, Claimant’s experts first conceded they assumed such equivalence (D5:P712:L16-21, Cross), only to contradict themselves soon after (D5:P729:L17-25, Cross). Although incoherent, Compass Lexecon’s position is self-serving, as it leads to an unduly low CRP.

153. In assessing the CRP, Dr. Flores considered Compass Lexecon’s proxy EMBI, yet corrected it to account for business risk (since the EMBI only measures the risk of default on sovereign bonds) by using the 1.5 global average multiplier proposed by Prof. Damodaran (EO-22, p. 59; Quadrant II, ¶¶ 161-165). This 1.5 multiplier is *not* a size/illiquidity premium or an additional premium: it is a correcting factor applied to Compass Lexecon’s proxy EMBI to adjust a measure of sovereign debt risk to a measure applicable to equity risks such as those facing Glencore’s business operations in Bolivia. At the Hearing, Compass Lexecon failed to explain why they did not apply the multiplier (D5:P716:L11-P717:L3, Cross) and struggled to grasp the consequences of their flawed methodological choice (as evidenced by the contradictory positions mentioned *supra*). In any event, their objection to the multiplier is unsupported and inconsistent with Prof. Damodaran’s methodology.
154. To provide for a more precise measure of country risk, Dr. Flores relied on an *average* of the corrected EMBI and another methodology: the Country Risk Rating Model published by Ibbotson/Morningstar, which estimates business risk directly (and hence does not require a multiplier). This rating, unlike Compass Lexecon’s synthetic reconstructed EMBI, has been published specifically for Bolivia for over two decades and has produced stable results over time (Quadrant II, ¶ 167).
155. As to the Tribunal’s request for a precedent where “*a tribunal has calculated a country risk premium in the same way as the Respondent proposes for this case*” (Tribunal’s Question No. 3(a)), there is none because one of the methods used in the average was created by Claimant exclusively for this case and cannot be found in any published source. The Tribunal should rather ask itself whether a tribunal has calculated a CRP in the same way as the Claimant’s experts propose for this case. We are aware of none. Had Dr. Flores relied solely on the Country Risk Rating Model by Ibbotson/Morningstar (which would have led to a higher CRP of 18.45% for 2007 and 15.51% for 2012), then the Tribunal’s question would be answered in the positive: it is the same publication relied on by the *Tidewater* tribunal to account for the risk of doing business in Venezuela (RLA-60, ¶¶ 189-190; see Tribunal’s Question No. 3(b)).
156. *Second*, the discount rate used by Claimant’s experts ignores the shortcomings of the pure CAPM, such as its failure to consider an asset’s illiquidity. It should be undisputed that Vinto and Colquiri are small and rather illiquid assets compared to the large publicly traded US companies upon which the CAPM method is constructed, and hence that a higher discount rate should be applied to the cash flows of the former. By failing to apply an additional premium, Claimant’s experts are effectively considering that there is no difference in liquidity between shares of large US corporations traded in stock markets and the Assets, as they conceded at the Hearing (D5:P741:L16-25, Cross). This is illogical at best.
157. Dr. Flores’ model accounts for these differences by applying a size/illiquidity premium, and further explains that this premium accounts for risk pertaining to individual aspects of the assets, not foreseen in the CRP (*i.e.*,

there is no overlap between the two), and that its application is supported by literature and practice (Quadrant II, ¶¶ 146-155). In *Rurelec*, the tribunal held that the “*shares of nonlisted companies [...], should be considered illiquid. Hence, while they are not subject to the vagaries and volatility of stock markets, they should attract a significant illiquidity premium*” (CLA-120, ¶ 600). Size/illiquidity premia have also been applied by the *RREEF v. Spain* (RLA-214, ¶¶ 34-37), *Quiborax* (CLA-127, ¶¶ 492-493) and *RDC v. Guatemala* (RLA-211, ¶¶ 272-274) tribunals, all of which dealt with valuating companies that did not fit the profile of large, publicly traded companies that serve as basis for the CAPM method.

158. The size/illiquidity premium should not be confused with the 1.5 multiplier that corrects Claimant’s synthetic reconstructed EMBI proxy. Accordingly, in response to the Tribunal’s Question No. 3(c), there is no need for Bolivia to provide a precedent where “*a tribunal has included in a DCF model both a size/illiquidity premium together with an additional size premium,*” as Dr Flores has not included in his DCF model a size/illiquidity premium together with an additional size premium.

**7. THE HEARING CONFIRMED CLAIMANT’S INTEREST CLAIM IS GROSSLY INFLATED**

159. Claimant’s inflated US\$ 432.1 million claim for pre-award interest as of 16 November 2021 represents 49.7% of its claim: for Vinto, interest is more than twice the amount of the compensation sought at the valuation date; for the Tin Stock, the interest claim is roughly equal to the total damages claimed; and for the Mine Lease, interest is approximately 80% of the damages at the valuation date. The Hearing confirmed the evident arbitrariness of Claimant’s interest claim, since it is the result of an unduly high interest rate (7.1) improperly compounded (7.2) for over 14 years for Vinto, over 11 years for the Tin Stock, and over 9 years for Colquiri.

160. [REDACTED]

**7.1 The Hearing confirmed that, were the Tribunal to award interest (*quod non*), it should apply a risk-free rate to avoid overcompensation**

161. Bolivia reiterates that, as explained at the Hearing and pursuant to international law, interest should be compensatory, *i.e.*, should compensate the claimant for the time value of money and not for risks that it did not bear. As Claimant ceased bearing any business risk associated with the Assets after their reversion, pre-judgment interest should not reward business risks and should, instead, be awarded at a risk-free rate (Bolivia’s Opening, Slide 87; Rejoinder on Quantum, Section 5.1.1).

162. Claimant proposes instead “*rates published by the Central Bank of Bolivia for commercial loans denominated in US dollars granted by banks to corporations in Bolivia*” (Reply on Quantum, ¶ 177). By definition, these rates account for the risks of loans granted to Bolivian companies, which operate in Bolivia and are exposed to

business risks from their operations. With such a risked rate, Claimant would receive a windfall, as all risks related to the operation of the Assets have been borne by the State (not Claimant) since their reversion.

163. In addition, the Hearing showed that Claimant's rate is based on statistics reported by Bolivian banks to the Central Bank of Bolivia regarding loans granted in foreign currency and that Claimant does not know whether such statistics are representative of the rate the Tribunal should apply. For instance, Claimant's experts did not know (i) if the loans were denominated in US dollars or in other foreign currencies, such as Euro (D5:P749:L21-P750-L14, Cross); (ii) the number of loans reflected in the statistics (D5:P750:L15-25, Cross), which is relevant since a small number of loans means that the interest rate of a single loan could skew the data set; and (iii) the delinquency ratio of the borrowers (D5:P751:L14-25, Cross). Claimant's rates (8.57% for Vinto, 6.74% for the Antimony Smelter, and 6.4% for Colquiri) are, therefore, at odds with its own interpretation of Article V of the Treaty, as Claimant has failed to demonstrate that they "*reflect rates that are available to private, commercial enterprises in Bolivia*" (Reply on Quantum, ¶ 177).
164. Among all possible rates applicable in Bolivia, the Tribunal should opt for one that is risk-free, such as the one proposed by Bolivia: a rate equivalent to the 6-month or 1-year yield of US Treasury Bills. This rate is available to Bolivian citizens (D5:P803:L5-11, Flores Cross) and to banks located in Bolivia.
165. Interpreting Article V of the Treaty as demanding rates only available to Bolivian companies running business in Bolivia, as Claimant suggests (despite the shortcomings of its proposed rate, discussed *supra*), would lead to "*manifestly absurd or unreasonable results,*" which would call for "*recourse to supplementary means of interpretation*", in the terms of Article 32 of the VCLT. In Claimant's interpretation, the Treaty would authorize the application of a rate that is wholly unrelated to Claimant (which borrows at a much lower rate and does not seek funding from Bolivian banks) and the risks it bore, going beyond compensating Claimant for the time value of money (see Tribunal's Question No. 4).
166. Were the Tribunal to award Claimant interest at a risked rate (*quod non*), it should adopt a rate equivalent to the US LIBOR + 1%, as Claimant has secured financing of billions of dollars at an average rate of US LIBOR + 1% in the past (Rejoinder on Quantum, Section 5.1.2).

## **7.2 The Hearing confirmed that the Tribunal can, at most, award simple interest**

167. Article V of the Treaty does not mandate the compounding of interest. By arguing the opposite, Claimant is thus abandoning the application of Article V, which otherwise governs Claimant's position on interest, in favor of what it perceives as a more favorable regime. Claimant's position is incorrect for three reasons:
168. *First*, the Commentary to the ILC's Articles on State Responsibility notes that simple interest should be awarded under international law (CLA-30, p.108).
169. *Second*, compound interest should only be awarded according to specific circumstances, as explained by the *Santa Elena* tribunal (CLA-25, ¶ 103), and Claimant has failed to indicate which circumstances other than its own financial betterment would justify such award.
170. *Third*, international law allows tribunals to refer to domestic law when ruling on interest. Accordingly, the tribunals in *Desert Line v Yemen* (RLA-119, ¶¶ 294-295), *Aucoven v Venezuela* (CLA-44, ¶ 396) and *Duke*

*Energy v Ecuador* (RLA-120, ¶ 457) have enforced local prohibitions against compound interest, favoring simple interest instead. The Bolivian Civil Code prohibits the application of compound interest in Articles 412 and 413. Only simple interest may, at most, be awarded to Claimant in the present case.

**8. THE HEARING CONFIRMED THAT ANY COMPENSATION AWARDED TO CLAIMANT (QUOD NON) SHOULD NOT BE EXEMPT OF TAXES**

171. Claimant posits that any compensation received in this Arbitration should be exempt from taxes, arguing that its valuations were prepared net of taxes, and that any taxation would result in it being taxed twice for the same income. Claimant is incorrect for the following reasons:

172. *First*, taxation is an essential attribute of sovereignty, and Claimant has failed to establish that Bolivian taxes would be expropriatory or in breach of international law. The Tribunal cannot prevent Bolivia from levying taxes over amounts awarded to Claimant consistent with its own laws of general application.

173. *Second*, while Claimant's DCF models for Colquiri and Vinto considered the effects of *some* Bolivian taxes (such as taxes on revenues, royalties, and remittance taxes), Claimant's valuations have not accounted for *all* taxes. For instance, Claimant avoided accounting for a 3% tax applicable to real estate transactions, which would be due in the event Claimant receives compensation for the Antimony Smelter (*quod non*).

174. In any event, any possible taxation of the award is now purely speculative, so Claimant is seeking – through its request for an award exempt from taxation – compensation for future hypothetical damages that may not materialize. Under international law, only damages that are certain are compensable. The ruling of the *Crystallex* tribunal, which rejected a request similar to Claimant's for being “*speculative and premature*” (CLA-130, ¶ 946 mentioned by the Tribunal in its Question No. 2), has recently been affirmed by several other tribunals, such as *Eiser v. Spain* (CLA-226, ¶ 456) and *RREEF v. Spain* (RLA-214, ¶ 55) to quote only those in the record of this Arbitration (many more are in the public domain).

175. In light of the foregoing, Bolivia incorporates by reference the relief sought detailed in its Rejoinder on Quantum.

Respectfully submitted this 18<sup>th</sup> day of November 2021

*Dechert (Paris) LLP*

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