Discussion Materials
Meeting in NYC (Public Side) - Part I

November 27, 2018

SAMARCO
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The business plan and other statements made herein are based on a number of assumptions including that there is a restart of operations which Samanco is working towards and targeting. Any restart of operations remains subject to a number of uncertainties including receiving all of the necessary approvals and licenses, which include, but are not limited to, environmental licenses for the disposal of tailings. Such approvals and licenses, even if obtained, are subject to expiration, limitation on renewal and, together with Samanco’s mining concessions, various other risks and uncertainties. As a result, or as a result of other factors not mentioned above the restart of Samanco may not take place. Even if certain needed licenses and consents can be obtained, licensing processes may be subject to significant delays and licenses may contain conditions that cannot be met or even if they can be met may not be on terms satisfactory to Samanco. Timetables and projections in this presentation that assume restart of operations of Samanco are forward looking statements (see disclaimer above). Furthermore, even if operations restart they are subject to numerous risks and uncertainties such as, but not limited to: (i) failure to recover reserve and resource estimates; (ii) failure to complete construction, commission or expansion of any proposed mining, production and processing facilities and port and pipeline infrastructure in the time frame and within estimated costs that may be currently planned; (iii) inability to obtain additional financing on commercially suitable terms; (iv) the performance of Samanco’s mines, production, processing, transportation infrastructure and port facilities; (v) changes in Brazilian taxation and export regulations; (vi) unavailability of key personnel, supplies, equipment, contractors and other necessary components of Samanco’s expansion activities; (vii) inability to obtain or maintain land rights or the required licenses or authorizations from government authorities; (viii) unforeseen geological, physical or meteorological conditions; (ix) changes in the regulatory environment, industrial disputes, labor shortages, political and other factors; (ix) disruptions to Samanco’s mines, production, pipeline, processing and shipping facilities; (x) global and regional recession, reduced economic activity or market disruption due to world and regional events; (xii) civil, criminal or regulatory liabilities to which Samanco may become subject, (xiv) changes in the market price of Samanco’s products; and (xv) appreciation of the Brazilian real against the U.S. dollar which increases certain of Samanco’s operating costs, or prolonged periods of exchange rate volatility, in each case among other factors. No representation or warranty is made that operations will restart. This document does not constitute and shall not be considered an offer or part of a solicitation of an offer to buy, sell or exchange Samanco securities. Any offer or solicitation of an offer to buy, sell or exchange Samanco securities will be made pursuant to offering materials that include all information required by applicable law (the “Offering Materials”). This document may not include all of the information that you may need to make an investment decision concerning Samanco securities. Before making any investment decisions, you should carefully review any Offering Materials concerning Samanco securities and any other information regarding Samanco that is publicly available as of the future date of such decision.
1. Background information: selected developments
   - Social and environmental remediation
   - Environmental licensing process
   - Processes to resolve claims
   - Tax claims

2. Operational continuity plan

3. Financial projections
On March 2nd, 2016 Samarco, its shareholders, Vale S.A. (“Vale”) and BHP Billiton Brasil Ltda. (“BHP Billiton Brasil”), the Federal Government, the state governments of Minas Gerais and Espírito Santo, and several governmental agencies entered into an agreement (“Framework Agreement”) that provides a framework to address the environment and communities affected by the rupture of the Fundão dam.

- Creates a private Foundation (“Fundação Renova”) that will be responsible for 42 social and environmental programs aimed to remediate and compensate the affected regions.
- The objective of the Framework Agreement is not only to establish the necessary framework in order to implement social and environmental programs in an efficient and coordinated manner, but also to execute it independently from Samarco.
- Mandatory annual cash contributions into Fundação Renova were established to guarantee the sustainability of all programs.
- Foundation has committed to carry on full remediation regardless of total remediation costs, pursuant to Brazilian laws.
- The term of the Framework Agreement is 15 years, renewable for periods of one year until all obligations are performed.
- To the extent Samarco does not meet its funding obligations as primary responsible party, Vale and BHP Billiton Brasil have the secondary obligation to fund 50/50 each.
- Fundação Renova shall also have a minimum working capital of R$100mm for the initial 10 years and R$10mm for the subsequent years thereafter.
- Mandatory contributions per annum are required as follows:

**Framework Agreement Funding Obligations**

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<tr>
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<td>Compensatory actions</td>
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<td>Maximum remediation actions</td>
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Social and environmental remediation: selected developments (cont’d)

Foundation thematic axes and key progress on remediation and compensation

- R$4.0 billion spent on repair and compensation programs from November 2015 through June 2018, of which R$2.3 billion was spent on projects and programs coordinated by Fundação Renova
  - R$1,111 million paid in indemnification and financial aid
  - R$642 million spent on the containment and treatment of tailings
  - R$463 million disbursed on the rehabilitation of the reservoir of Risoleta Neves (Candonga) Hydropower plant (HPP)

- 113 river tributaries recovered
- 92 data collection points placed to measure water quality along the Doce River Basin, which makes it likely the most monitored basin in Brazil
- 243,242 indemnification payments disbursed
- 41 monitoring points of aquatic life throughout Gualaxo do Norte, Carmo and Doce rivers
Social and environmental remediation: selected developments (cont’d)

People & communities

Engagement and dialogue
- 67,561 people took part in collaborative dialogue meetings
- About 100 employees are receiving an average of 1,500 calls daily
- Creation of a virtual platform to assist affected individuals about the status of their requests and other programs

Identification and indemnity
- 38,799 registrations submitted, with ~25,000 approved by CIF\(^1\)
- 640 professionals engaged in negotiations
- Water Indemnification Mediated Program:
  - 266,749 indemnity proposals accepted
  - 243,242 payments already disbursed

Education and culture
- Partnership with Instituto Elou: 90 youths from different communities will be selected to help make a difference in their community
- In 2017, about 100 young children and youths from Mariana participated in a restoration initiative, helping mobilize surrounding communities
  - 1 million native species will be planted throughout the Doce River basin

Stimulation to local economy
- Investment funds established in partnership with BDMG\(^2\) and BANDES\(^3\)
- In 2018, it is expected to provide more than 1,000 seats in professional education courses
- R$40 million of low-rate loans made available to small and micro business owners in municipalities impacted by the Incident

Health and well-being
- 83 professionals staffed, including doctors, nurses, social assistants, psychologists and psychiatrists
- Established epidemiological and toxicological studies to analyze health indicators within a 10-year horizon prior to and at least 10 years following the Fundação incident

Indigenous and traditional communities
- 1,576 families of traditional and indigenous communities are within the scope of the Foundation with respect to economic, food and water security
- Families assisted with financial aid:
  - **Traditional groups**
    - Quilombolas Degredo (130 families)
    - Faiscadores (213)
  - **Indigenous tribes**
    - Krenaks (126 families)
    - Comboios (192)
    - Caleiras Velhas (915)

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\(^1\) Comitê Interfederativo or Interfederative Committee. It is the body responsible for overseeing and executing all programs of Fundação Renova.

\(^2\) Banco de Desenvolvimento de Minas Gerais or State Development Bank of Minas Gerais (in free translation)

\(^3\) Banco de Desenvolvimento do Espírito Santo or State Development Bank of Espírito Santo (in free translation)
**Social and environmental remediation: selected developments (cont’d)**

**Reconstruction & infrastructure**

**Relocation**
- 391 families are entitled to homes in urban and rural areas
- Bento Rodrigues (225 families)
  - Relocation area approved by the local community with 99% approval rate
  - Area acquired
  - All environmental licenses and urban approvals have been obtained and works to clear the land have commenced
  - Families are working with architects to design homes
- Paracatu de Baixo (140 families)
  - Relocation area approved by resident communities
  - Area acquired
- Gesteira (26 families)
  - Relocation area approved by resident communities
  - Selected area under negotiation

**Treatment of water and effluents**
- Enhancement of 14 water treatment stations
- 6 pipelines delivered
- Alternative water collection methods, such as pipelines or wells, installed in 24 municipalities
- R$500 million to be allocated for the construction of sewage treatment plants and landfills in 39 municipalities
- Sewage infrastructure rehabilitation of the 39 municipalities concluded in Mar-18

**Infrastructure and access**
- Recovery and reconstruction of damaged infrastructure
  - 630 projects completed
  - 232 km of recovered roads
- 205 km of fences rebuilt to meet new planting demands

**Candonga Hydro Power Plant**
- Three metallic barriers have been constructed in order to reduce the risk of new tailings outflows and to better contain sediments
- Land has been acquired (Fazenda Floresta) to deposit tailings removed from Candonga
- Working to assist the plant resuming operations which may happen in 2020
Social and environmental remediation: selected developments (cont’d)

Land & water

**Forest recovery**
- Recovery of 40 thousand hectares of preserved areas to be completed in the next 10 years
- 20 million seedlings to be planted in the upcoming years

**Biodiversity**
- Renova has partnered with the Foundation Pró-Tamar to monitor sea turtles in a 156 km segment in the state of Espírito Santo
- 41 monitoring points of aquatic life throughout Gualaxo do Norte, Carmo and Doce rivers
- Two CETAS (wild animal trial center) are expected to be completed in 2018

**Tailings management**
- The Tailings Management Plan, approved in June, divided the impacted region into 17 areas
- 670 km of waterways are within the scope of the Tailings Management Plan

**Water management**
- 92 monitoring points along Doce river and its coastal zone making it likely the most monitored river in the country
- 22 automatic stations

**Springs**
- Protection and restoration of 5,000 springs in the Doce River basin over a 10-year period
- More than 1,000 springs should be protected by the end of 2018

\*1 Includes physical, chemical and biological
Fundação Renova historical and projected program expenses (R$mm, real terms)

Historical

- Total historical: R$3,204

Projected

- Total forecast: R$12,817

The magnitude, full scope, timing and costs of the future remediation programs are subject to significant uncertainty as they depend on the conclusion of export studies, the preparation of action plans, the renegotiation of programs with Federal Prosecutors and also the outcome of pending court cases. Please refer to Samarco’s Financial Statement for further information; 2 Includes Renova’s total expected program expenses, excluding administrative expenses and any financial income earned on available cash balance. This amount doesn’t necessarily reflect actual disbursements into Fundação Renova by Samarco.
1. Background information: selected developments
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Environmental Licensing process: selected developments
Process update of certain key licenses and approvals

Licensing processes

- In order to obtain the licenses to restart its operations, Samarco needs to finalize 2 (two) key licensing processes:
  - the Alegria South pit license and construction process for a new tailings disposal site
  - the Corrective Operation License, or LOC, related to reinstatement of the environmental licenses of the Germano complex

Return with reduced capacity

- Samarco has submitted licensing applications to restart operations at reduced capacity due to its technical restrictions on tailings disposal
  - C#3 restart is subject to the issuance of the LOC, completion of the construction works and licensing process for Alegria South pit, provision of water and a sufficient progress of filtration technology
  - C#2 restart is subject to the full implementation of filtration technology
  - C#1 restart is subject to the evolution of the licensing process of long term tailings storage options in order to avoid potential disruption in operations

Full capacity is conditional on new tailings disposal sites

- The operational continuity of C#2 and C#3 and the restart of C#1 in the current plan are subject to the licensing process of new tailings disposal sites
  - Samarco is currently working on the preliminary environmental studies for several alternatives sites including areas nearby the Germano site
  - Preliminary engineering technical studies have been initiated
  - Upon receiving the LOC, Samarco can file the licensing process of the selected long-term tailings disposal sites with the Environmental Agency of Minas Gerais ("SEMAD")
Environmental Licensing process: selected developments (cont’d)
Process update of certain key licenses and approvals (cont’d)

- In June 2016, Samarco submitted the environmental studies (“EIA-RIMA”) for licensing the tailings disposal in Alegria South pit
- In October 2016, Samarco revised the EIA-RIMA to include the area for temporary storage of the material removed from the Alegria South pit, during the preparation phase of this pit
- In December 2016, Samarco held public hearings in Mariana and Ouro Preto
- On April 27, 2017 Samarco obtained the approval from the Specialized Council for Protection of Biodiversity and Protected Areas (“CBP Council”)
- On July 13, 2017 Samarco obtained the consent from UAIMII State park and on August 03, 2017 Samarco received the IBAMA consent
- On December 11, 2017 the Technical Chamber of Mining Activities, part of the State Council of Environmental Policy of Minas Gerais (“COPAM”) approved Samarco’s licensing process for Alegria South Pit
- On February 09, 2018, Samarco formalized within SEMAD and ICMBio certain conditions precedent required to be completed prior to the beginning of works
- On September 28, 2018, Samarco signed a Letter of Commitment with prosecutors with respect to the works on the Alegria South pit
- October 01, 2018, Samarco commenced the preparation works of the Alegria South pit
In October 2016, Samarco was notified of the suspension of all of its environmental licenses in the Germano complex and was asked to perform the Corrective Operation Licensing (“LOC”)

On September 1, 2017, Samarco filed the Environmental Impact Assessment (EIA) regarding the LOC process with SEMAD (“LOC EIA”)

On September 05, 2017 SEMAD announced it had received Samarco’s LOC process and requested the interested parties to notify of their intention to have public hearings within 45 days
  - On December 06, 07 and 11, Samarco held public hearings in the municipalities of Matipó, Mariana and Ouro Preto

On February 19, 2018 Samarco obtained the consent from Minas Gerais State Forest Institute’s (“IEF”) Specialized Council for Protection of Biodiversity and Protected Areas

On August 10, 2018 SEMAD completed its technical site visit on Samarco’s Germano Complex

On October 09, 2018, UAIMII State Park provided its consent to Samarco’s LOC process

Next Steps: SEMAD to complete the following process (i) issue the required consents, (ii) issue Legal-Technical assessment approving the LOC studies and (iii) submit the LOC process for COPAM’s approval

Pending approval for the LOC include: Gandarela Federal National park authorization, State Institute of Historic and Artistic Heritage (“IEPHA”) consent, State Council for Water Resources (“CERH”) approval, IBAMA’s consent regarding the Atlantica Forest compensation program, and the consents from Piranga and Piracicaba Watershed Committees (“CBH”)

The completion of Alegria South works is also condition precedent for the LOC approval

If these steps are completed during the course of 2019, Samarco expects it would allow a return of operations during 2020
1. Background information: selected developments
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2. Operational continuity plan

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### Processes to resolve claims: selected developments

#### Current status

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| **Private lawsuits** | • Approximately 49,885 active private individual lawsuits in which Samarco was already served  
• Approximately 25,000 active private individual lawsuits in which Samarco has not been served  
• Majority of lawsuits relate to moral damages for water supply interruption stemming from the Fundão dam break | • To address the individual lawsuits, Samarco is seeking to standardize the indemnifications through special procedures named Incidents to Solve Repetitive Demands (IRDR):  
  • A first IRDR that covers small claims in the State of Espirito Santo ("ES"), which established R$ 1 thousand as indemnification for moral damage due to water supply interruption in the State  
  • Another IRDR that suspended individual private lawsuits in the State of Minas Gerais ("MG") until the court establishes an amount to the indemnifications for moral damage due to water supply interruption in the State  
  • In addition to the two procedures listed above, there is a third one, in the State of MG, in which a decision determined that, because of their complexity, claims that debate water quality should not be ruled by the small claims courts. |
| **Administrative proceedings** | • ~R$792mm in administrative sanctions from IBAMA (R$446mm), ICMBio (R$143mm), Sisema (R$195 mm) and others (R$8 mm)                                                                 | • R$129mm of the Sisema claims have been settled and agreed to be paid in installments  
  • The company continues to present its defenses and discuss the specific issues of each case |
| **Criminal lawsuits** | • 8 criminal lawsuits ongoing                                                                                                                                                                               | • The major criminal lawsuit is currently in the first phase of Brazilian jury proceeding and evidence is being gathered before the judge of the Federal Court of Ponte Nova, in the State of Minas Gerais |

(1) As of July, 2018
## Processes to resolve claims: selected developments (cont’d)

### Current status (cont’d)

<table>
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<td><strong>US class action</strong></td>
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<td>■ Putative US federal securities class action commenced on behalf of all purchasers of Samarco’s ten-year bond notes due 2022-2024 between October 31, 2012 and November 30, 2015</td>
<td>■ A motion to dismiss the putative class action is pending before the US District Court (Southern District of New York)</td>
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<td><strong>Public Civil Actions</strong></td>
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<td>■ 18 agreements, which are called TACs(2), to address claims arising from the incident have been entered into</td>
<td>■ Most of the 92 Civil Public Actions are duplicative of the petitions contained in the original R$20bn case, and later in the R$155bn case. The agreement signed on March 2016 (“Framework Agreement”) with State and Federal authorities in Brazil regarding the R$20bn case relating to the Fundão tailings dam failure and the subsequent agreements signed with State and Federal prosecutors (Preliminary and Barra Longa Agreement on January 18, 2017, the Amendment Agreement on November 16, 2017 and finally the Governance Agreement on June 25, 2018) consider a comprehensive approach to remediation and compensation of all impacts of the Fundão Dam Failure. As per the Governance Agreement, companies, Prosecutors and other signatories of the Framework Agreement have agreed to enter into a 24 month negotiation process to review the programs under the Framework Agreement. For more details and information on the agreements please refer to slides 18 and 19.</td>
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<td>■ TACs include:</td>
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<td>■ Framework Agreement and Governance Agreement</td>
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<td>■ Emergency &amp; socio-economic measures in Minas Gerais/Espirito Santo</td>
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<td>■ Construction/maintenance of water distribution</td>
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<td>■ Preservation/recovery of environmental and cultural areas</td>
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<td>■ 92 relevant actions, of which 71 are public civil actions and 21 are with public bodies (e.g. municipalities)</td>
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<td>■ In general, the actions relate to remediation and compensation obligations for damages suffered in connection with the Fundão failure, as well as legal obligation to provide information about remediation actions, risk/damage mitigation plans and assistance for people and villages</td>
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(1) As of July, 2018; (2) Stands for Termo de ajuste de conduta, or roughly Conduct Adjustment Agreement
Processes to resolve claims: selected developments (cont’d)

Summary of the negotiations with Federal and State Prosecutors

Overview

- The Federal Prosecutors Office ("Federal Prosecutors") was not party to the agreement signed on March 2016 ("Framework Agreement") regarding the R$20bn (~US$6.1bn) civil claim (the "R$20bn Public Civil Action") relating to the Fundão tailings dam failure on November 5, 2015.
- At the time, the Federal Prosecutors argued that expert analyses and additional community participation were required prior to an agreement and thus filed the R$155bn (~US$47.5bn) civil claim (the "R$155bn Public Civil Action").

Timeline of negotiations

- On January 18, 2017 Samarco, BHP Billiton Brasil and Vale (together with BHP Billiton Brasil the "Shareholders", together with Samarco "Companies") entered into a preliminary agreement ("Preliminary Agreement") with the Federal Prosecutors in Brazil in relation to the Fundão tailings dam failure.
- Among other things, the Preliminary Agreement (a) established a timeline for negotiations of a settlement of the R$155bn Civil Claim, (b) appointed 3 experts to advise the Federal Prosecutors, (c) replaced an injunction order requesting Samarco to deposit R$1.2bn in a Court account with security of R$2.2bn\(^1\), (d) suspended the R$155bn Public Civil Action and the R$20bn Public Civil Action, and (e) established the obligation of the Companies to, within 90 days from signing, reserve R$200mm to fund remediation and compensation activities for certain municipalities.
- On June 21, 2017 the Companies filed a judicial request to extend the deadline for a final settlement agreement and the Interim Security validity to October 30, 2017, allowing the parties to continue negotiations.
- On November 16, 2017 the parties agreed to replace the initially appointed expert from the socioeconomic area, and entered with Federal and State Prosecutors into an amended Preliminary Agreement ("Amendment Agreement") which extended the negotiation for an additional 150 days, ending on April 20, 2018.
- Among other things, the Amendment Agreement appointed (i) Fundo Brasil to coordinate the technical advisory to be provided to the affected communities to and conduct 15 public hearings in the impacted localities and (ii) Fundação Getúlio Vargas ("FGV") as the entity in charge of the assessment of the social and economic damages resulting from the Fundão dam break.
- On April 19, 2018, Samarco and Shareholders requested an additional extension for the negotiations until June 25, 2018.
- On June 25, 2018, Samarco, Shareholders, State and Federal Prosecutors announced an agreement to amend the Framework Agreement ("Governance Agreement"). The Governance Agreement was ratified by the 12th Federal Court of Minas Gerais on August 08, 2018.

\(^1\) Comprised of (i) pledge over Samarco’s assets of R$800 million, (ii) insurance bonds of R$1.3 billion, and (iii) deposits of short-term financial instruments of R$100 million — herein together as “Interim Security”
The main effects:

- Termination of the R$20bn case and suspension of the R$155bn case for 2 years;
- Acceptance of the Framework Agreement by the Federal Prosecutors as a valid agreement among the original signatory parties;
- A revised governance structure, based on the Framework Agreement, was agreed upon to improve community participation in the remediation and compensation process;
- Extension of the Interim Security provided by the Companies in the Preliminary Agreement for 30 months. After this period, the Companies will need to keep guarantees in an amount equal or greater to Renova’s annual budget for the year, but always limited to R$2.2bn;
- Creation of a network of community committees along the Rio Doce River to secure public participation.
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   - Social and environmental remediation
   - Environmental licensing process
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2. Operational continuity plan

3. Financial projections
Tax claims: selected developments

Overview

- Per Brazilian law, if a company receives a tax infraction notice from a tax authority, it first has the opportunity to contest it at the administrative level. If the petition is not successful at the administrative level, the company can continue to challenge the infraction notice at the judicial level.

- However, to do so, in some cases, it must provide guarantees for the amount in dispute in the form of cash, letters of credit (“LCs”) and/or fixed assets. If a company does not provide acceptable security at the judicial level and does not receive a favorable decision that suspends the tax credit in dispute, it would be required to pay the amount in question, plus interests, monetary adjustments, penalties and, as applicable, public attorney fees and other legal charges. Except for cash/judicial deposit, all other types of guarantee are subject to pre-approval by Procuradoria-Geral da Fazenda Nacional (“PGFN”). If the company fails to pay such amount, it could then be subject to a judicial tax enforcement, which after the regular legal process, could lead to the forfeiture of the company’s assets.

- As of June 2018, Samarco is party to several administrative (R$5.7bn) and tax judicial (R$8.3bn) proceedings in various courts and government agencies:
  - CSLL - Contribuição Social sobre o Lucro Líquido (Social Contribution over Net Profit): dispute over Samarco’s exemption in the payment of a CSLL 9% tax rate of taxable income.
  - IRPJ - Imposto de Renda Pessoa Jurídica (Corporate income tax): Dispute regarding the applicable income tax rate to Samarco (25% statutory rate vs 18% incentivized rate relating to the export of minerals).
  - CFEM - Compensação Financeira pela Exploração de Recursos Minerais (Financial compensation for the Exploration of Mineral Resources): Disputes regarding the applicable taxable basis (sales price vs production costs).
  - Other: Include general corporate tax disputes (IPTU, ICMS, PIS/COFINS, etc.).

- Of the tax amounts currently under judicial dispute (R$8.3bn), Samarco provided security of R$2.8bn through a combination of cash deposits (R$1.53bn) and LCs (R$1.23bn). Another R$5.1bn are currently with its enforceability suspended due to judicial court decisions and R$0.4bn is currently awaiting the formalization of security by tax authorities.

Note: All figures and classifications are provisional, based on interim internal analyses and subject to further review and change.
1. Background information: selected developments
2. Operational continuity plan
3. Financial projections
Operational Continuity Plan
Summary of Samarco’s operations

German Complex (Mariana/MG)
- Drilling/blasting
- Shoveling/loading
- Ore haulage by truck or conveyor
- Run of Mine ("ROM")
  - ~55-60 Mtpy @ 100% production
  - 10.2 Mtpy sourced from Vale until 2026
- Mining waste:
  - 29 Mtpy avg. @ 100% production
  - Stored at waste piles
- Processing waste:
  - 27 Mtpy avg. of slimes and sand tailings @ 100% production
  - See tailings management strategy on following slides

Beneficiation (concentrators)
- 3 concentrators
- Crushing
- Fine grinding
- Flotation
- Input: ROM
  - Output: Concentrate
  - 45-50% conversion rate
  - 25-28 Mtpy of concentrate @ 100% production

Pipeline
- 3 slurry pipelines
- Concentrate transport from Germano (MG) complex to Ubu (ES)
- Input: Concentrate
  - Loss: 0%
  - Output: Concentrate

Pelletizing
- 4 pellet plants
- Filtering
- Preparation
- Pelletizing
- Input: Concentrate
  - Loss: ~3.6% avg.
  - Output:
    - Pellets (97.2%)
    - Feed/Screening (2.8%)

Shipping
- Port with two berths
- 33 Mtpy annual loading capacity
- Overland conveyor
- Port/ship loader

Map:
- Nova Era – Antônio Dias (Gualmei – Antônio Dias)
- Belo Horizonte (Main offices)
- Mariana – Ouro Preto (Germano operational unit)
- Vitória (Sales Office)
- Anchorita (operational unit and Ocean Terminal at Porto Ubu)
- Municípios (Hydroelectric Plant)
Operational Continuity Plan (cont’d)
Tailings management technical solution

Before the incident

20% Slimes

80% Sand tailings

Indicates tailings disposal site

Dams

After the incident

20% Slimes

80% Sand tailings

Slime thickening

Pits

Anthropized region

Naturally contained structure, formed by rocks

Filtration

Reduces the % of water which can allow tailings disposal in piles and save the existing pits (confined deposition area)

Dry stacking

Anthropized region

Geotechnical stability and decrease on the propagation risk

Description:

Slime thickening:
- Reduces the % of water which can extend the useful life of the tailings storage facility

Pit:
- Anthropized region
- Naturally contained structure, formed by rocks

Filtration:
- Reduces the % of water which can allow tailings disposal in piles and save the existing pits (confined deposition area)

Dry stacking:
- Anthropized region
- Geotechnical stability and decrease on the propagation risk

(1) Slime thickening and filtration processes were not used by Samarco previous to the Fundão dam break
Run-of-mine is extracted from the mine (1) and moved through the crushing and screening processes (2) to control ore sizing. ROM is then sent to the ROM piles (3), which feeds into the concentrators (4), where grinding, desliming, and flotation take place, thereby increasing the iron concentration. The concentrated mineral is directed to the pipeline (6) and sent to the pelletizing plants, located in the Ubu (Anchieta-ES) unit. The tailing resulting from the beneficiation process is then disposed as follows: the sand tailing goes through the filter (5), where its moisture is reduced, allowing for dry stacking (6a), while the slime tailings are then sent to the slime thickening and finally to Alegria South Pit (6b).

Note: Slime thickening and Filtration structures will only be fully implemented at the time of restart of C#2.
## Operational Continuity Plan (cont’d)

### Summary of disposal solutions

<table>
<thead>
<tr>
<th>Tailings from concentration</th>
<th>Phase I: Resume operations</th>
<th>Phase II: Continuity</th>
<th>Phase III: Long Term Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Duration</td>
<td>12 months</td>
<td>30 months</td>
<td>44 months</td>
</tr>
<tr>
<td>Concentrators in operations</td>
<td>C#3</td>
<td>C#3 and C#2</td>
<td>C#3, C#2 and C#1</td>
</tr>
<tr>
<td>Capacity</td>
<td>31-28%</td>
<td>~7.7 Mt of concentrate</td>
<td>64-61%</td>
</tr>
</tbody>
</table>

- **Sand tailings 80%**
- **Alegria South pit**
  - Sand tailings filtration
  - Dry tailings piled up in new structures

- **Alegria South pit**
  - Slime 20%
  - New Intermediate Structure ('27-30)
  - New Long-term Structure ('30)
Alegria South pit will have an initial capacity of 14.5 Mm³ that will be further increased to 16.05 Mm³ after the construction of a dike with compacted soil.

Preparation works will mainly comprise the removal of around 13.5 Mt of material from the pit.

Total required capex in 2018-2019: R$248mm
Summary of disposal solutions: location of structures

<table>
<thead>
<tr>
<th>From</th>
<th>To</th>
<th>Distance (km)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Alegria South pit</td>
<td>C#3</td>
<td>1.2</td>
</tr>
<tr>
<td>Natividade</td>
<td>C#3</td>
<td>3.0</td>
</tr>
<tr>
<td>Mirandinha</td>
<td>C#3</td>
<td>7.3</td>
</tr>
<tr>
<td>Santarem</td>
<td>C#3</td>
<td>7.0</td>
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<tr>
<td>Camargos</td>
<td>C#3</td>
<td>15.5</td>
</tr>
<tr>
<td>Germano Dam</td>
<td>C#1</td>
<td>3.1</td>
</tr>
<tr>
<td>Germano pit</td>
<td>C#1</td>
<td>0.8</td>
</tr>
<tr>
<td>Germano pit</td>
<td>C#2</td>
<td>1.6</td>
</tr>
<tr>
<td>Alegria North mine/pit</td>
<td>C#2</td>
<td>2.3</td>
</tr>
</tbody>
</table>
Operational Continuity Plan (cont’d)
Summary of disposal solutions: timeline and structures

<table>
<thead>
<tr>
<th>Structure</th>
<th>2019</th>
<th>2020</th>
<th>2021</th>
<th>2022</th>
<th>2023</th>
<th>2024</th>
<th>2025</th>
<th>2026</th>
<th>2027</th>
<th>2028</th>
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<th>2031</th>
<th>2032</th>
<th>2033</th>
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<tbody>
<tr>
<td>SLIME</td>
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<td>C#1</td>
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<td>W</td>
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<tr>
<td>SAND TAILINGS</td>
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<td>C#1</td>
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<td>C#2</td>
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<tr>
<td>Al. South</td>
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<tr>
<td>Al. North</td>
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</tr>
</tbody>
</table>

W - Wet
D - Dry

Alegria South Pit
Structure I
Structure II
Structure III
Structure IV
Structure V
Next structure
1. Background information: selected developments
2. Operational continuity plan
3. Financial projections
Revenue Assumptions (cont’d)
Price build-up: Platts market consensus projections

Iron ore - 62% Fe (US$/tms) (real terms)*

---

1. Samarco’s iron ore price projections are based on market consensus from the median of projections from select brokers, including broker-dealers and independent third party consultants.
2. Some brokers present their projections only in nominal terms, thus, we adjusted it according to the US inflation per broker’s forecasts.
Operating Costs
Operating costs in BRL - nominal terms

Operating costs (R$mm, nominal terms)

1 Includes iron ore, consumables, outsourced services, materials, electricity, personnel expenses and other.
Operating costs (ex-iron ore(1)) - R$/ton (real terms as of 2018 adj. by IGP-M)

(1) Excluded iron ore purchases.
Other Expenses (R$mm in real terms as of 2018 adj. by IGP-M)\(^1\)

<table>
<thead>
<tr>
<th>Year</th>
<th>R$ MM Nominal</th>
<th>R$ MM Real</th>
<th>USD MM Nominal</th>
<th>USD MM Real</th>
</tr>
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<tr>
<td>2014</td>
<td>718</td>
<td>589</td>
<td>289</td>
<td>352</td>
</tr>
<tr>
<td>2015</td>
<td>634</td>
<td>539</td>
<td>260</td>
<td>320</td>
</tr>
<tr>
<td>2016</td>
<td>78</td>
<td>73</td>
<td>28</td>
<td>34</td>
</tr>
<tr>
<td>2017</td>
<td>115</td>
<td>116</td>
<td>56</td>
<td>70</td>
</tr>
<tr>
<td>2018</td>
<td>158</td>
<td>158</td>
<td>66</td>
<td>64</td>
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<tr>
<td>2019</td>
<td>129</td>
<td>141</td>
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<tr>
<td>2020</td>
<td>341</td>
<td>390</td>
<td>103</td>
<td>134</td>
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<tr>
<td>2021</td>
<td>513</td>
<td>611</td>
<td>160</td>
<td>186</td>
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<tr>
<td>2022</td>
<td>537</td>
<td>665</td>
<td>170</td>
<td>183</td>
</tr>
<tr>
<td>2023</td>
<td>612</td>
<td>789</td>
<td>198</td>
<td>188</td>
</tr>
<tr>
<td>2024</td>
<td>762</td>
<td>1,022</td>
<td>252</td>
<td>254</td>
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<tr>
<td>2025</td>
<td>764</td>
<td>1,065</td>
<td>259</td>
<td>253</td>
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<tr>
<td>2026</td>
<td>765</td>
<td>1,110</td>
<td>265</td>
<td>263</td>
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<tr>
<td>2027</td>
<td>729</td>
<td>1,100</td>
<td>259</td>
<td>251</td>
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<tr>
<td>2028</td>
<td>698</td>
<td>1,094</td>
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<tr>
<td>2029</td>
<td>675</td>
<td>1,100</td>
<td>263</td>
<td>263</td>
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<tr>
<td>2030</td>
<td>691</td>
<td>1,171</td>
<td>280</td>
<td>285</td>
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<tr>
<td>2031</td>
<td>719</td>
<td>1,268</td>
<td>285</td>
<td>285</td>
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<tr>
<td>2032</td>
<td>716</td>
<td>1,314</td>
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<tr>
<td>2033</td>
<td>698</td>
<td>1,331</td>
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</tr>
</tbody>
</table>

(1) Includes ICMS, CFEM, R&D, social investments, employee profit sharing and other.
Capex assumptions (R$mm, real terms)

- **Year 2018**: 132
- **Year 2019**: 584
- **Year 2020**: 831
- **Year 2021**: 588
- **Year 2022**: 735
- **Year 2023**: 637
- **Year 2024**: 866
- **Year 2025**: 1,352
- **Year 2026**: 1,432
- **Year 2027**: 813
- **Year 2028**: 1,023
- **Year 2029**: 979
- **Year 2030**: 605
- **Year 2031**: 571
- **Year 2032**: 525
- **Year 2033**: 542
## Financial Projections

### Unlevered Free Cash Flow

**Unlevered free cash flow forecast (US$mm, nominal terms)**

<table>
<thead>
<tr>
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</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating data</strong></td>
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</tr>
<tr>
<td>Pellet production (<em>000 tons</em>)</td>
<td>280</td>
<td>-</td>
<td>7,959</td>
<td>16,464</td>
<td>16,803</td>
<td>19,907</td>
<td>26,259</td>
<td>26,996</td>
<td>27,162</td>
<td>26,528</td>
<td>25,056</td>
<td>23,862</td>
<td>24,135</td>
<td>24,864</td>
<td>24,614</td>
<td>24,002</td>
</tr>
<tr>
<td>Blended BF/DR Pellet price ($/ton)</td>
<td>114</td>
<td>110</td>
<td>99</td>
<td>95</td>
<td>103</td>
<td>105</td>
<td>110</td>
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<td>114</td>
<td>116</td>
<td>119</td>
<td>122</td>
<td>124</td>
<td>127</td>
<td>129</td>
</tr>
<tr>
<td>Net Revenue</td>
<td>57</td>
<td>51</td>
<td>800</td>
<td>1,555</td>
<td>1,716</td>
<td>2,078</td>
<td>2,860</td>
<td>2,930</td>
<td>3,007</td>
<td>2,998</td>
<td>2,886</td>
<td>2,812</td>
<td>2,908</td>
<td>3,058</td>
<td>3,086</td>
<td>3,070</td>
</tr>
<tr>
<td>(-) Operating costs</td>
<td>(120)</td>
<td>(126)</td>
<td>(426)</td>
<td>(701)</td>
<td>(725)</td>
<td>(898)</td>
<td>(1,135)</td>
<td>(1,177)</td>
<td>(1,211)</td>
<td>(1,107)</td>
<td>(1,105)</td>
<td>(1,112)</td>
<td>(1,216)</td>
<td>(1,362)</td>
<td>(1,418)</td>
<td>(1,410)</td>
</tr>
<tr>
<td>(-) Framework Agreement</td>
<td>(559)</td>
<td>(824)</td>
<td>(994)</td>
<td>(348)</td>
<td>(108)</td>
<td>(82)</td>
<td>(63)</td>
<td>(60)</td>
<td>(131)</td>
<td>(113)</td>
<td>(95)</td>
<td>(106)</td>
<td>(108)</td>
<td>-</td>
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<td>-</td>
</tr>
<tr>
<td>(-) Other expenses w/accident (Ex-Renova)</td>
<td>(53)</td>
<td>(47)</td>
<td>(28)</td>
<td>(15)</td>
<td>(91)</td>
<td>-</td>
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</tr>
<tr>
<td><strong>EBITDA</strong></td>
<td>(723)</td>
<td>(982)</td>
<td>(751)</td>
<td>331</td>
<td>622</td>
<td>900</td>
<td>1,410</td>
<td>1,434</td>
<td>1,399</td>
<td>1,519</td>
<td>1,432</td>
<td>1,343</td>
<td>1,221</td>
<td>1,416</td>
<td>1,383</td>
<td>1,375</td>
</tr>
<tr>
<td>% of Net Revenue</td>
<td>n.m.</td>
<td>n.m.</td>
<td>n.m.</td>
<td>21.3%</td>
<td>36.2%</td>
<td>43.3%</td>
<td>49.3%</td>
<td>49.0%</td>
<td>46.5%</td>
<td>50.7%</td>
<td>49.6%</td>
<td>47.8%</td>
<td>45.4%</td>
<td>46.3%</td>
<td>44.8%</td>
<td>44.6%</td>
</tr>
<tr>
<td>(+/- Δ WC and others)</td>
<td>43</td>
<td>(12)</td>
<td>(107)</td>
<td>(143)</td>
<td>(87)</td>
<td>(206)</td>
<td>(156)</td>
<td>(151)</td>
<td>(165)</td>
<td>(47)</td>
<td>(62)</td>
<td>(75)</td>
<td>(49)</td>
<td>(51)</td>
<td>(56)</td>
<td>(1,489)</td>
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<tr>
<td><strong>Unlevered FCF</strong></td>
<td>(714)</td>
<td>(1,161)</td>
<td>(1,134)</td>
<td>(146)</td>
<td>123</td>
<td>261</td>
<td>613</td>
<td>483</td>
<td>394</td>
<td>679</td>
<td>666</td>
<td>592</td>
<td>684</td>
<td>814</td>
<td>799</td>
<td>779</td>
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</table>

1 Framework Agreement refers to payments forecasted to be made under the terms of the Framework Agreement to Fundação Renova
Financial Projections (cont’d)
Sensitivity analysis on 2018-2033 cumulative UFCF (US$ mm, nominal terms)

<table>
<thead>
<tr>
<th>Levers</th>
<th>Description</th>
<th>Impact</th>
</tr>
</thead>
<tbody>
<tr>
<td>C2 and C3 Restart Date</td>
<td>3-month move (backward or forward)</td>
<td>+/- US$ 114 mm(^{(1)})</td>
</tr>
<tr>
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<tr>
<td>C1 Restart Date</td>
<td>6-month move (backward or forward)</td>
<td>+/- US$ 147 mm(^{(1)})</td>
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<tr>
<td>Foreign Exchange</td>
<td>R$ 0.50 move in Real vs. US$</td>
<td>+/- US$ 148 mm per year(^{(2)})</td>
</tr>
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</tr>
<tr>
<td>Pellet price</td>
<td>5% change in Pellet price</td>
<td>+/- US$ 85 mm per year(^{(2)})</td>
</tr>
<tr>
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</tr>
<tr>
<td>Freight discount</td>
<td>US$1.00 (real) change in freight</td>
<td>+/- US$ 16 mm per year(^{(2)})</td>
</tr>
</tbody>
</table>

\(^{(1)}\) Refers to the accumulated impact on UFCF after Framework Agreement from 2018 to 2033

\(^{(2)}\) Average annual change from 2018-2033