2020 DIRECTORY OF TAILINGS STORAGE FACILITIES

This table provides detail on South32's operated tailings storage facilities (TSFs) including Worsley Alumina, Cannington, Cerro Matoso, South Africa Manganese, Australia Manganese, Illawarra Metallurgical Coal, Hermosa project and South Africa Energy Coal. This table also provides detail on the TSFs at our non-operated facilities of Mineração Rio do Norte S.A (MRN) (14.8% South32 interest) and Alumar (36% South32 interest).

Comments are provided in row 20 to provide additional context.
Notes on the directory questions are provided on page 31.

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2020 Directory Of Tailings Storage Facilities

Worsley Alumina, Western Australia

1. Tailings Storage Facility name	Worsley - BRDA 1	Worsley - BRDA 2	Worsley - BRDA 4	Worsley - BRDA 4X
2. Location	-33.22257, 116.08045	-33.21850, 116.07326	-33.22227, 116.06523	-33.21081, 116.06397
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Closed	Active	Active	Active
5. Date of initial operation	1983	1987	1994	2002
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes	Yes
7. Raising method	Upstream	Upstream	Modified Centreline, Upstream	Downstream, Upstream
8. Current maximum height (m)	26	24	55	54
9. Current tailings storage impoundment volume (Mm^3)	10	13	35	20
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	10	13	42	30
11. Most recent independent expert review	June 2020	June 2020	June 2020	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Low	High B	High B	High B
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, 2012	Yes, 2018	Yes, 2018	Yes, 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	No	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	18. This facility was closed in 2009 and is subject to ongoing monitoring.	Not applicable	Not applicable	Not applicable

Worsley Alumina, Western Australia continued

1.Tailings Storage Facility name	Worsley - BRDA 5	Worsley - SEP 1	Worsley - SEP 2A	Worsley - SEP 3
2. Location	-33.24424, 116.05635	-33.23063, 116.08190	-33.22632, 116.08137	-33.22863, 116.07973
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Active	Active	Inactive	Active
5. Date of initial operation	1994	2017	1987	1984
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes	Yes
7. Raising method	Downstream, Upstream	Downstream	Downstream	Downstream
8. Current maximum height (m)	52	7	15	12
9. Current tailings storage impoundment volume (Mm^3)	85	0	0	0
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	99	0	0	1
11. Most recent Independent expert review	June 2020	June 2020	June 2020	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High B	Low	Low	Low
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, 2018	Yes, 2018	Yes, 2018	Yes, 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	Not applicable	Not applicable	4. The pond is currently empty.	Not applicable

Cannington, Queensland Australia

1.Tailings Storage Facility name	Cell 1	Cell 2	Cell 3
2. Location	-21.85417, 140.91027	-21.84945, 140.90612	-21.84500, 140.90167
3. Ownership	Owned, Operated	Owned, Operated	Owned, Operated
4. Status	Active	Active	Active
5. Date of initial operation	1997	2002	2014
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Upstream	Upstream	Upstream
8. Current maximum height (m)	15	17	7
9. Current tailings storage impoundment volume (Mm^3)	5	6	3
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	6	7	4
11. Most recent Independent expert review	June 2020	June 2020	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High B	High C	High C
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, 2020	Yes, 2020	Yes, 2020
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	18. TSF closure included in Cannington site closure plan. Closure capping trials are currently underway.	18. TSF closure included in Cannington site closure plan. Closure capping trials are currently underway.	18. TSF closure included in Cannington site closure plan. Closure capping trials are currently underway.

Cerro Matoso, Colombia

1.Tailings Storage Facility name	Sajana TSF
2. Location	7.89259, -75.52460
3. Ownership	Owned, Operated
4. Status	Inactive
5. Date of initial operation	2008
6. Is the dam currently operated or closed as per currently approved design?	No
7. Raising method	Upstream
8. Current maximum height (m)	34
9. Current tailings storage impoundment volume (Mm³)	11
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	11
11. Most recent Independent expert review	December 2019
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Low
14. What guideline do you follow for the classification system?	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	13. No formal hazard categorization undertaken. The risk is considered low as there is no community downstream of TSF and Cerro Matoso is owner of all potentially affected areas. The facility is not used and is undergoing formal closure planning. 17. Draft closure report being developed by a third-party consultant.

South Africa Manganese

1.Tailings Storage Facility name	Wessels TSF	Mamatwan - Adams pit	Metalloys - New North Plant Sludge Dam	Metalloys - New West Plant Sludge Dam
2. Location	-27.11151, 22.85964	-27.38177, 22.98790	-26.56793, 27.98768	-26.56065, 27.98650
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Active	Active	Active	Active
5. Date of initial operation	1973	1988	1998	1998
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes	Yes
7. Raising method	Upstream	Other	Downstream	Downstream
8. Current maximum height (m)	6	Not applicable	5	4
9. Current tailings storage impoundment volume (Mm^3)	1	Unknown	0.06	0.09
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	1	0.03	0.075	0.105
11. Most recent independent expert review	June 2020	August 2016	2017	August 2016
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	No	No	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Low	Not applicable	Small Category 1	Small Category 1
14. What guideline do you follow for the classification system?	SANS 10286	Not applicable	GNR 139	GNR 139
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Internal	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No	Not applicable	No	No
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	10. The dam is currently being re-mined on the southern side to recover the concentrate product and sold to the market. Minimal concurrent deposition is occurring during re-mining operations. 18. Closure is included in the overall Wessels closure plan with rehabilitation of areas as part general surface rehabilitation.	8. In-pit disposal with no dam wall and therefore no dam height. 13 and 14. No formal hazard classification has been undertaken as the facility is located in-pit. It is likely to be considered a low under SANS 10286 or ANCOLD. 18. Closure included in the Mamatwan closure plan after rehabilitation of area as part general surface rehabilitation with monitoring for 5 years.	13. Department of Water and Sanitation in terms of GNR 139 of February 2012 promulgated in terms of the Water Act, 54 of 1956 and Chapter 12 of the National Water Act (Act No. 36 of 1998). Regulations regarding the safety of dams in terms of Section 123 (1) of the National Water Act, 1998. 17. Dams are lined ponds with low risk. 18. Closure is included in Metalloys site closure plan and the facility to be capped at closure and monitored for 5 years.	13. Department of Water and Sanitation in terms of GNR 139 of February 2012 promulgated in terms of the Water Act, 54 of 1956 and Chapter 12 of the National Water Act (Act No. 36 of 1998). Regulations regarding the safety of dams in terms of Section 123 (1) of the National Water Act, 1998. 17. Dams are lined ponds with low risk. 18. Closure is included in Metalloys site closure plan and the facility to be capped at closure and monitored for 5 years.

Australia Manganese

1.Tailings Storage Facility name	GEMCO - TSF5	GEMCO - TSF6	GEMCO - TSF7
2. Location	-13.97455, 136.43397	-13.97972, 136.43365	-13.97673, 136.42793
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	1972	1999	1999
6. Is the dam currently operated or closed as per currently approved design?	No	No	No
7. Raising method	Centreline	Centreline	Centreline
8. Current maximum height (m)	8	9	15
9. Current tailings storage impoundment volume (Mm^3)	5	1	7
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	5	1	7
11. Most recent independent expert review	June 2020	June 2020	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Partial	Partial	Partial
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Significant	Significant	Significant
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, 2012	Yes, 2012	Yes, 2012
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	12. Historic facility and not all the documentation is available. 18. Closure included in GEMCO site closure plan and implementation planned for 2020 - 2023.	12. Historic facility and not all the documentation is available. 18. Closure included in GEMCO site closure plan and implementation planned for 2020 - 2023.	12. Historic facility and not all the documentation is available. 18. Closure included in GEMCO site closure plan and implementation planned for 2020 - 2023.

Australia Manganese continued

1.Tailings Storage Facility name	GEMCO - TSF8	GEMCO - TSF10	GEMCO - TSF11
2. Location	-13.99272, 136.43852	-13.98817, 136.43248	-13.99637, 136.44885
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Inactive	Inactive	Active
5. Date of initial operation	2007	2010	2013
6. Is the dam currently operated or closed as per currently approved design?	No	No	Yes
7. Raising method	Centreline	Centreline	Downstream
8. Current maximum height (m)	8	14	15
9. Current tailings storage impoundment volume (Mm³)	2	2	11
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	2	2	12
11. Most recent independent expert review	June 2020	June 2020	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Partial	Partial	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Low	Significant	High A
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	Yes	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, 2012	Yes, 2012	Yes, 2019
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	12. Historic facility and not all the documentation is available. 15. TSF8 experienced a failure of its embankment on the north western corner on 3 January 2010. Prior to the failure seepage had been noted by a dozer operator who had been working in the area. Approximately 135,000m3 of water and tailings spilled into an adjacent unused pit. No one was injured and the entire spill was contained on the lease. TSF8 was decommissioned immediately after the event and the damaged embankment was repaired. 18. Sands in TSF8 will be reclaimed and reprocessed as part of its closure plan and the footprint is included in GEMCO site closure plan.	12. Historic facility and not all the documentation is available. 18. Sands in TSF10 is scheduled to be mined and re-processed as part of its closure plan and the footprint is included in GEMCO site closure plan.	18. TSF closure is included in GEMCO site closure plan. Dam break analysis has been completed and the levee wall extended to include the mine plan.

Australia Manganese continued

1.Tailings Storage Facility name	GEMCO - TSF13	GEMCO - TSF16	GEMCO - TSF18 (previously TSF14)
2. Location	-14.01340, 136.44860	-13.99868, 136.43625	13.99477, 136.43000
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Active	Inactive	Active
5. Date of initial operation	2018	2016	2014
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Centreline	Centreline	Centreline
8. Current maximum height (m)	13	5	13
9. Current tailings storage impoundment volume (Mm^3)	6	4	4
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	14	5	7
11. Most recent independent expert review	June 2020	June 2020	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Partial
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High C	Significant	Significant
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, 2017	Yes, 2018	Yes, 2019
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	12. TSF13 as-built report has been completed. 18. TSF closure is included in GEMCO closure plan.	18. TSF closure is included in GEMCO closure plan.	1. TSF14 was raised and re-numbered to TSF18. 18. TSF closure is included in GEMCO closure plan.

Australia Manganese continued

1.Tailings Storage Facility name	TEMCO - Fume dam 1	TEMCO - Fume dam 2	TEMCO - Fume dam 3
2. Location	-41.13427, 146.84538	-41.13308, 146.84416	-41.13351, 146.84726
3. Ownership	Joint Venture, Operated	Joint Venture, Operated	Joint Venture, Operated
4. Status	Inactive	Inactive	Active
5. Date of initial operation	1989	1998	2003
6. Is the dam currently operated or closed as per currently approved design?	No	No	Yes
7. Raising method	Centreline	Centreline	Centreline
8. Current maximum height (m)	7	7	6
9. Current tailings storage impoundment volume (Mm³)	0	0	0.152
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	0	0	0.167
11. Most recent Independent expert review	Not applicable, as inactive for over 20 years	Not applicable, as inactive for over 15 years	April 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Not applicable	Not applicable	Significant
14. What guideline do you follow for the classification system?	ANCOLD	ANCOLD	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No	No	Yes, 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	15. Dam inactive >20 years and the hazard category has not been defined. 18. Closure options are currently being re-examined in a pre-feasibility study.	15. Dam inactive >15 years and the hazard category has not been defined. 18. Closure options are currently being re-examined in a pre-feasibility study.	10. Based on 3,000m3 solids added to the dam per annum. 18. Closure options are currently being re-examined in a pre-feasibility study.

	Illawarra Metallurgical Coal, New South Wales, Australia	**Hermosa, Arizona, United States of America**
1.Tailings Storage Facility name	West Cliff Emplacement Area (Stages 1 – 4)	Hermosa - Filtered tailings facility
2. Location	-34.22193, 150.81717	31.46583, -110.72788
3. Ownership	Owned, Operated	Owned, Operated
4. Status	Active	Active
5. Date of initial operation	1975	2018
6. Is the Dam currently operated or closed as per currently approved design?	Yes	Yes
7. Raising method	Landform	Upstream
8. Current maximum height (m)	63	27
9. Current tailings storage impoundment volume (Mm^3)	Unknown	1
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	22	3
11. Most recent independent expert review	March 2019	July 2019
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Not applicable	High C
14. What guideline do you follow for the classification system?	Not applicable	ANCOLD
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No	Yes, 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	No	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	9. Actual volume of combined coarse and fines coal wash emplacement stockpile unknown at this stage. Awaiting aerial survey results to confirm. 13 and 14. Not a tailings dam - dry coal wash emplacement of combined coarse and fines using valley infill. 17. Formal analyses has been undertaken for the downstream water dam. 18. West Cliff Coal Wash Emplacement Area Management Plan included in Bulli seam closure plan, which includes progressively rehabilitation approach, water management, monitoring commitments. 19. Downstream water management facility has been evaluated against larger storms and is managed with increased freeboard.	8. Tailings at end of March 2019 are approximately 27m (40ft) above compacted engineered fill starter embankment. 11. This is a new facility and first audit was completed in 2019. 12. An Operations, Maintenance and Surveillance (OMS) manual has been developed for Stages 1 and 2, but would need to be updated for future expansions (Stages 3 and 4). 18. The tailings facility design report includes long term monitoring for closure. A closure plan has been created for the permitted tailings facility and conceptual closure for the future expansions (Stages 3 and 4).

South Africa Energy Coal, South Africa

1.Tailings Storage Facility name	Ifalethu - North Export Plant Slurry Facility	Wolvekrans - VDD Coal Fines Slurry Dams	Wolvekrans - South Export Plant Slurry Dams
2. Location	-25.94413, 29.41437	-26.09133, 29.29333	-26.00858, 29.33552
3. Ownership	Owned, Operated	Owned, Operated	Owned, Operated
4. Status	Active	Inactive	Active
5. Date of initial operation	2010	Unknown	2010
6. Is the dam currently operated or closed as per currently approved design?	Yes	No	Yes
7. Raising method	Downstream	Upstream	Centreline
8. Current maximum height (m)	15	8	11
9. Current tailings storage impoundment volume (Mm^3)	10.2	1	1
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	10.69	0	1
11. Most recent independent expert review	December 2019	November 2016	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	No	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	Medium	Low
14. What guideline do you follow for the classification system?	SANS 10286	SANS 10286	SANS 10286
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No	No	No
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	18. The slurry facility closure is included in Wolvekrans closure plan, which includes monitoring of the rehabilitation area for 5 years.	4. The facility is currently being re-mined.	18. The slurry facility closure is included in the Wolvekrans closure plan, which includes monitoring of the rehabilitation area for 5 years.

South Africa Energy Coal continued

1.Tailings Storage Facility name	Ifalethu - Dam 45	Ifalethu - Dam 46	Rietspruit Coal Fines Slurry Dam
2. Location	-25.92100, 29.40410	-25.91962, 29.39858	-26.15572, 29.19435
3. Ownership	Owned, Operated	Owned, Operated	Joint Venture, Operated
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	Unknown	Unknown	1987
6. Is the dam currently operated or closed as per currently approved design?	No	No	No
7. Raising method	Upstream	Upstream	Upstream
8. Current maximum height (m)	25	15	22
9. Current tailings storage impoundment volume (Mm^3)	5.08	4.85	6
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	0	0	0
11. Most recent independent expert review	June 2019	June 2019	June 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	No	No	No
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	Medium	Medium
14. What guideline do you follow for the classification system?	SANS 10286	SANS 10286	SANS 10286
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	Yes
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No	No	Yes
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes

South Africa Energy Coal continued

	Ifalethu - Dam 45 continued	Ifalethu - Dam 46 continued	Rietspruit Coal Fines Slurry Dam continued
20. Using the question numbers for reference, any other relevant information and supporting documentation.	12. Historic facility and to be re-mined. 18. The slurry facility closure is included in Wolvekrans closure plan, which includes monitoring of the rehabilitation area for 5 years.	4.The facility is currently being re-mined. 12. Historic facility and to being re-mined. 18. The slurry facility closure is included in Wolvekrans closure plan, which includes monitoring of the rehabilitation area for 5 years.	3. Joint Venture between South32 and Glencore with South32 being the operating entity. 11. Most recent stability assessment was conducted in June 2020, however further sampling, testing and analysis is required to determine uncertainties of material properties underlying the starter wall embankment. 12. Historic facility and is being closed. OMS Manual developed for care and maintenance activities, however trigger levels and detailed TARPs are still in the process of being developed. 15. The Rietspruit TSF experienced a local failure of its embankment of the north western corner of the Southern Cell on 17 December 1998 during active operation of the tailings facility. Prior to the failure, seepage had been observed. An unknown quantity of coal tailings and water spilled. No one was injured and the entire spill was contained on lease. The Rietspruit TSF was repaired and a buttress with drains installed. The TSF was put back into service until operations ceased in approximately 2009. 15. In November 2019, we became aware of occasional burning of the coal slurry within the Rietspruit TSF. This was identified through work being conducted to assess our dams under ANCOLD standards. Mitigation measures were implemented to minimise any potential impact to the structure. This included covering burning areas, digging a drainage channel that enabled excess water run-off to be managed and construction of a berm to provide an additional barrier. We have also increased monitoring of the TSF while the closure plan is being implemented. The facility is certified as stable. 17. Dam breach assessment was completed in November 2019. 18. A closure plan with long term monitoring and probability of failure report by external consultant is in progress.

South Africa Energy Coal continued

1.Tailings Storage Facility name	Ifalethu - Checkpoint 1 Slurry Dam	Wolvekrans - PSS Slurry Dam	Khutala - 5# Slurry Cells
2. Location	-25.93147, 29.39660	-26.08450, 29.29420	-26.10593, 29.02593
3. Ownership	Owned, Operated	Owned, Operated	Owned, Operated
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	Unknown	2002	2004
6. Is the dam currently operated or closed as per currently approved design?	No	No	No
7. Raising method	Upstream	Upstream	Downstream
8. Current maximum height (m)	30	Not applicable	3
9. Current tailings storage impoundment volume (Mm^3)	0.7	24	0
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	0	0	0
11. Most recent independent expert review	June 2019	November 2016	November 2016
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Partial	Yes	No
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	Medium	Low
14. What guideline do you follow for the classification system?	SANS 10286	SANS 10286	SANS 10286
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	No	No	Not applicable
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	8. This dam is subject to spontaneous combustion and the stored coal fines tailings are more the 80 per cent burnt. The dam height is reducing as the coal fines are turned to ash. 12. Historic facility and documents no longer relevant due to combustion of dam. 18. A specific facility closure has been developed for the facility.	18. The slurry facility closure is included in the Wolvekrans closure plan, which includes monitoring of the rehabilitation area for 5 years.	17. Slurry cells are empty and not currently used, and therefore no formal analysis of downstream impacts needs to be undertaken at this stage. 12. Historic facility and no longer required. 18. The slurry facility closure is included in the Khutala closure plan, which includes monitoring of the rehabilitation area for 5 years.

Brazil Alumina - MRN

1.Tailings Storage Facility name	MRN - SP-01	MRN - SP-2/3	MRN - SP-4N
2. Location	-1.683217, -56.417983	-1.684450, -56.403800	-1.685150, -56.426833
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	1989	1989	1994
6. Is the dam currently operated or closed as per currently approved design?	No	No	No
7. Raising method	Single raise	Centreline	Centreline
8. Current maximum height (m)	15	19	19.5
9. Current tailings storage impoundment volume (Mm³)	2.36	6.36	6.96
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	2.36	6.36	6.96
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High	High	High
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes, June 2018	Yes, June 2018	Yes, June 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes

Brazil Alumina - MRN continued

	MRN - SP-01 continued	MRN - SP-2/3 continued	MRN - SP-4N continued
20. Using the question numbers for reference, any other relevant information and supporting documentation.	4. The facility is considered inactive as it is not currently receiving any tailings discharge. 6. This structure is being utilised for rehabilitation tests. The closure and decommissioning plan is underway. 7. This classification is according to Brazil's National Mining Agency. 8. The height specified refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by an independent auditor in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	4. The facility is considered inactive as it is not currently receiving any tailings discharge. 6. This structure is being utilised for rehabilitation tests. The closure and decommissioning plan is underway. 7. This classification is according to Brazil's National Mining Agency. 8. The height specified refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation 13. The classification was performed by an independent auditor in September 2019 and needs to be validated by the mining regulatory agency. 14. The classification is done by the independent auditor. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. This structure is being utilised for rehabilitation tests. The closure and decommissioning plan is under way. 7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height specified refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - SP-4S	MRN - SP-5L	MRN - SP-5O
2. Location	-1.691483, -56.427433	-1.683483, -56.437533	-1.684650, -56.444883
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	1994	1997	1997
6. Is the dam currently operated or closed as per currently approved design?	No	No	No
7. Raising method	Centreline	Centreline	Centreline
8. Current maximum height (m)	16.4	20.3	22.4
9. Current tailings storage impoundment volume (Mm³)	5.57	6.43	8.36
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	5.57	6.80	8.36
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	High	High
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes. June 2018	Yes. June 2018	Yes. June 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes

Brazil Alumina – MRN continued

	MRN - SP-4S continued	MRN - SP-5L continued	MRN - SP-5O continued
20. Using the question numbers for reference, any other relevant information and supporting documentation.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - SP-06	MRN - SP-7A	MRN - SP-7B
2. Location	-1.677467, -56.424850	-1.672150, -56.434317	-1.670083, -56.440100
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	2005	2000	2001
6. Is the dam currently operated or closed as per currently approved design?	No	No	No
7. Raising method	Centreline	Centreline	Centreline
8. Current maximum height (m)	16.4	15.9	21.5
9. Current tailings storage impoundment volume (Mm^3)	0.36	3.76	6.14
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	0.36	3.76	6.14
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High	Medium	Medium
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes. June 2018	Yes. June 2018	Yes. June 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes

Brazil Alumina – MRN continued

	MRN - SP-06 continued	MRN - SP-7A continued	MRN - SP-7B continued
20. Using the question numbers for reference, any other relevant information and supporting documentation.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - SP-7C	MRN - SP-08	MRN - SP-09
2. Location	-1.669850, -56.445067	-1.673133, -56.452567	-1.674583, -56.460983
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Inactive	Active	Active
5. Date of initial operation	2002	2005	2006
6. Is the dam currently operated or closed as per currently approved design?	No	Yes	Yes
7. Raising method	Centreline	Single raise	Single raise
8. Current maximum height (m)	28.2	19.7	23.7
9. Current tailings storage impoundment volume (Mm^3)	8.29	13.90	9.49
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	8.29	14.64	11.38
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	High	High
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes. June 2018	Yes. June 2018	Yes. June 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes

Brazil Alumina – MRN continued

	MRN - SP-7C continued	MRN - SP-08 continued	MRN - SP-09 continued
20. Using the question numbers for reference, any other relevant information and supporting documentation.	4. The facility is classified as active because it corresponds to the registration at SIGBM-ANM, however it is not currently in operation. 6. The closure and decommissioning plan is under way. 7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). A re-evaluation of the classification is underway by ANM and AECOM consultants. 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 13. The classification was performed by independent auditing in September 2019 and needs to be validated by the mining regulatory agency. 17. There is a Dam Break study. 18. A closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	7. This is the current classification in accordance with Brazil's National Mining Agency (ANM). 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - SP-9A	MRN - SP-10	MRN - SP-11
2. Location	-1.668250, -56.462083	-1.683250, -56.452983	-1.683133, -56.462717
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Active	Active	Active
5. Date of initial operation	2007	2009	2010
6. Is the dam currently operated or closed as per currently approved design?	No	Yes	Yes
7. Raising method	Single raise	Single raise	Single raise
8. Current maximum height (m)	19.2	15.8	16.5
9. Current tailings storage impoundment volume (Mm³)	2.17	7.64	6.97
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	2.17	8.89	7.94
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	High	High
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes. June 2018	Yes. June 2018	Yes. June 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	6. The closure and decommissioning plan is under way. 7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The operation has previously considered a 1,000 year rainfall event.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation; 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - SP-12	MRN - SP-13	MRN - SP-14
2. Location	-1.686483, -56.469067	-1.694050, -56.467833	-1.699183, -56.470183
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Active	Active	Active
5. Date of initial operation	2010	2011	2012
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Single raise	Single raise	Single raise
8. Current maximum height (m)	16.5	15.8	13.3
9. Current tailings storage impoundment volume (Mm^3)	5.21	2.56	3.18
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	5.72	3.07	4.02
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	Medium	Medium
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes. June 2018	Yes. June 2018	Yes. June 2018
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - SP-15	MRN - SP-16	MRN - SP-19
2. Location	-1.699167, -56475033	-1.687350, -56.479617	-1.681783, -56.468767
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Active	Active	Active
5. Date of initial operation	2014	2016	2019
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Single raise	Single raise	Single raise
8. Current maximum height (m)	13.1	18.4	20
9. Current tailings storage impoundment volume (Mm^3)	4.68	5.04	1.66
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	5.73	8.24	1.88
11. Most recent independent expert review	March 2020	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Medium	High	High
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes. June 2018	Yes. June 2018	Yes. August 2019
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.	7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified in this column refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 17. There is a Dam Break study. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.

Brazil Alumina – MRN continued

1.Tailings Storage Facility name	MRN - TP-01	MRN - TP-02
2. Location	-1.683417, -56.410983	-1.676467, -56.437867
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Inactive	Active
5. Date of initial operation	1989	2002
6. Is the dam currently operated or closed as per currently approved design?	No	Yes
7. Raising method	Single raise	Single raise
8. Current maximum height (m)	11.3	15.4
9. Current tailings storage impoundment volume (Mm³)	3.48	5.47
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	3.48	5.47
11. Most recent independent expert review	March 2020	March 2020
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High	High
14. What guideline do you follow for the classification system?	ANM/DNPM Ordinance nº 70.389	ANM/DNPM Ordinance nº 70.389
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	Yes	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Yes	Yes
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and No	Yes and No
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	4. The facility is designated as inactive since it is not currently receiving any tailings. 6. The closure and decommissioning plan is under way. 7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 15. A prior study raised a concern regarding a specific section within this structure - a spillway was added to address this concern, as recommended in the study. The concern no longer exists and the structure has never failed to obtain a declaration of stability as required under applicable regulations. 17. A risk analysis was conducted in April 2017 and a Dam Break study completed in June 2018. 18. Closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.	4. The facility is designated as inactive since it is not currently receiving any tailings. 6. The closure and decommissioning plan is under way. 7. This classification is in accordance with Brazil's National Mining Agency (ANM). 8. The height specified refers to the downstream slope of the structure. 12. The available documents are sufficient to ensure the safety of the structure, including an independent stability report and As-built documentation. 15. A prior study raised a concern regarding a specific section within this structure - a spillway was added to address this concern, as recommended in the study. The concern no longer exists and the structure has never failed to obtain a declaration of stability as required under applicable regulations. 17. A risk analysis was conducted in April 2017 and a Dam Break study completed in June 2018. 18. Closure plan is under development, where long term monitoring will be specified. 19. The structures are being evaluated for a Probable Maximum Precipitation rainfall. The project until then considered the service during the operation to a rainfall of 10,000 years of recurrence.

Brazil Alumina - Alumar

1.Tailings Storage Facility name	RSA 1	RSA 2	RSA 3
2. Location	-2.730, -44.317	-2.726, -44.315	-2.728, -44.312
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Closed	Closed	Closed
5. Date of initial operation	1984	2000	2007
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Not Raised	Upstream	Upstream
8. Current maximum height (m)	28	31	27
9. Current tailings storage impoundment volume (Mm^3)	2.4	5.1	6.1
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	2.4	5.1	6.1
11. Most recent independent expert review	2019	2019	2019
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Low	Significant	Significant
14. What guideline do you follow for the classification system?	Internal – based on Canadian Dam Association Guidelines	Internal – based on Canadian Dam Association Guidelines	Internal – based on Canadian Dam Association Guidelines
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Refer to question 20	Refer to question 20	Refer to question 20
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.	8. Additional 5.2m of upstream deposition. 13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.	13. Hazard Category of High according to SEMA No 132 Regulation 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.

Brazil Alumina - Alumar continued

1.Tailings Storage Facility name	Interface 2/3	RSA 4	RSA 5
2. Location	-2.727, -44.313	-2.724, -44.307	-2.718, -44.303
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Inactive	Inactive	Inactive
5. Date of initial operation	2015	2014	2016
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Upstream	Upstream	Upstream
8. Current maximum height (m)	9	27	22
9. Current tailings storage impoundment volume (Mm^3)	1.0	8.3	11.0
10. Planned tailings storage impoundment volume in 5 years time (Mm^3)	1.0	8.3	11.0
11. Most recent independent expert review	2019	2019	2019
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	Significant	High	High
14. What guideline do you follow for the classification system?	Internal – based on Canadian Dam Association Guidelines	Internal – based on Canadian Dam Association Guidelines	Internal – based on Canadian Dam Association Guidelines
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Refer to question 20	Refer to question 20	Refer to question 20
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.	13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.	13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.

Brazil Alumina - Alumar continued

1.Tailings Storage Facility name	RSA 6	RSA 7	RSA 8
2. Location	-2.726, -44.302	-2.723, -44.298	-2.727, -44.313
3. Ownership	Non-operated, Joint Venture	Non-operated, Joint Venture	Non-operated, Joint Venture
4. Status	Active	Active	Active
5. Date of initial operation	2016	2019	2020
6. Is the dam currently operated or closed as per currently approved design?	Yes	Yes	Yes
7. Raising method	Not raised	Not Raised	Not raised
8. Current maximum height (m)	24	23	25
9. Current tailings storage impoundment volume (Mm³)	5.1	3.5	10
10. Planned tailings storage impoundment volume in 5 years time (Mm³)	5.1	3.5	10
11. Most recent independent expert review	2019	2019	Refer to question 20
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance, and/or closure?	Yes	Yes	Yes
13. What is your hazard categorisation of this facility, based on the consequence of failure?	High	High	Very High
14. What guideline do you follow for the classification system?	Internal – based on Canadian Dam Association Guidelines	Internal – based on Canadian Dam Association Guidelines	Internal – based on Canadian Dam Association Guidelines
15. Has this facility, at any point in its history, failed to be confirmed or certified as stable, or experienced notable stability concerns, as identified by an independent engineer (even if later certified as stable by the same or a different firm)?	No	No	No
16. Do you have internal/in house engineering specialist oversight of this facility? Or do you have external engineering support for this purpose?	Both	Both	Both
17. Has a formal analysis of the downstream impact on communities, ecosystems and critical infrastructure in the event of catastrophic failure been undertaken and to reflect final conditions? If so, when did this assessment take place?	Refer to question 20	Refer to question 20	Refer to question 20
18. Is there a) a closure plan in place for this dam, and b) does it include long term monitoring?	Yes and Yes	Yes and Yes	Yes and Yes
19. Have you, or do you plan to assess your tailings facilities against the impact of more regular extreme weather events as a result of climate change, e.g. over the next two years?	Yes	Yes	Yes
20. Using the question numbers for reference, any other relevant information and supporting documentation.	13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.	13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.	11. This is a new facility and not yet had an annual review. 13. Hazard Category of High according to SEMA No 132 Regulation. 17. The location has developed Emergency Response Plans (ERPs) that cover the potential impacts from a major loss of containment from a residue storage area. These ERPs are informed by Dam Break studies at each location. 18. Progressive closure being implemented in accordance with well-established standards.

Notes on the directory questions

1. A tailings storage facility is typically either an earth-fill embankment dam or a landform used to store fine grained material by-products of the mining operation washing or separation and metal liberation process. Tailings can be liquid, solid, or a slurry of fine particles. Solid tailings are often used as part of the structure itself and the facility is typically raised in succession throughout the life of the particular mine. Every tailings storage facility is identified and if there are multiple dams (saddle or secondary dams) within that facility, this is detailed within question 20.
2. Longitude and Latitude coordinates.
3. Owned and Operated, Subsidiary, Joint Venture: Operated, Non-Operated Joint Venture, as of 30 June 2020. The Boddington Gold Mine (100% Newmont GoldCorp owned) has TSFs on tenements held by the participants in the Worsley Alumina Joint Venture (86% South32 owned). These TSFs are not included in this disclosure.
4. Active, Inactive, Care and Maintenance or Closed. We take closed to mean a closure plan was developed and approved by the relevant local government agency, and key stakeholders were involved in its development; a closed facility means the noted approved closure plan was fully implemented or the closure plan is in the process of being implemented. A facility that is inactive or under care and maintenance is not considered closed until such time a closure plan has been implemented.
5. When initial operation commenced.
6. Yes or No. If No, more information is provided in question 20.
7. Upstream, Centreline, Modified Centreline, Downstream, Landform, Other. Refer to the containment descriptions below.
9. As of 30 June 2020.
10. As planned for June 2025.
11. Independent means independent of South32.
12. Yes or No. All necessary documents are in place to make an informed and substantiated decision on the safety of the dam, be it an old facility, or an acquisition, or legacy site.
15. Yes or No. A Yes answer may not indicate heightened risk. Stability concerns might include toe seepage, dam movement, overtopping, spillway failure or piping. If yes, detail on mitigation actions are provided. We also note that this question does not bear upon the appropriateness of the criteria, but rather the stewardship levels of the facility or the dam.
16. Answers may be Both.
17. Yes or No. If Yes, date is included.
18. Both parts of the question is answered i.e. Yes and Yes.
19. Yes or No.
20. Further context on answers and numbers refer to questions.

Abbreviations used

ANCOLD: Australian National Committee on Large dams

ANM: Brazilian National Mining Agency

BRDA: Bauxite Residue Disposal Area

DNPM: Brazil National Department of Mineral Production

ERP: Emergency Response Plans

GNR: Government National Regulations (Regulations Regarding Safety of Dams)

OMS: Operations, Maintenance and Surveillance manual

RSA: Residue Storage Area

SANS: South African National Standards

SEMA: Brazilian Environment Secretariat

SEP: Solar Evaporation Pond

SIGBM: Brazilian Integrated Management System for Dam Safety

SP: Settling Pond

TARP: Trigger Action Response Plan

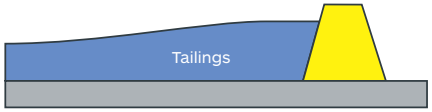
TP: Tailings Pond

TSF: Tailings Storage Facility

Tailings storage facilities and containment approaches

We apply the most appropriate containment approaches in the TSF design. Containment approaches include single lift water retaining facilities, multiple raise facilities and in-pit disposal.

Single lift water retaining facility

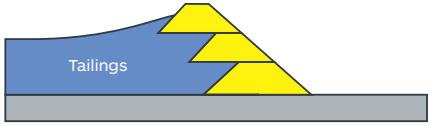


These facilities are investigated, designed and constructed to their full height before any tailings disposal occurs, and meet water retaining standards.

Multiple raise facilities

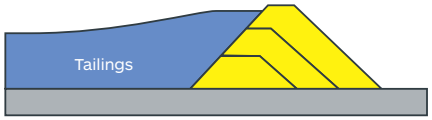
These facilities are investigated, designed and constructed as a single lift dam initially then during the operational life, raised several times to reach their full height. Tailings are deposited into the facility between raises. Raised construction is the most common approach in TSF management. The three principal construction methods for TSF raising are upstream, downstream and centreline. South32 utilises all three methods as detailed below.

Upstream method



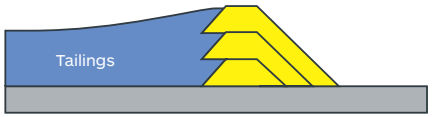
An initial single lift (starter) embankment is constructed. Tailings are then discharged from the starter embankment, which then forms a tailings beach. Beach refers to the surface slope of the tailings after being deposited by water from a discharge point. The tailings beach then forms part of the foundation for the next raise of the tailings embankment. This process continues as the embankment increases in height. Central to this process is the formation of a competent tailings beach by limiting the rate of filling (rise), depositing thin layers and allowing the tailings to dry and desiccate. This process is further enhanced by the removal of the remaining excess water from the surface, known as supernatant water.

Downstream method



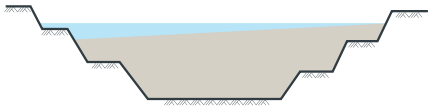
An initial starter embankment is constructed. Tailings are then discharged from the starter embankment. Subsequent raises are constructed by placing fill downstream of the initial embankment. The rate of raising is less restrictive because the design is not structurally reliant on the tailings to have any strength.

Centreline method



An initial starter embankment is constructed. The tailings are then discharged from the starter embankment. A portion of subsequent raises are then founded on the deposited tailings beach as well as by placing fill downstream of the starter embankment.

In-pit



In-pit tailings disposal typically uses a depleted pit and normally has minimal or no containment walls.

Tailings disposal techniques

TSFs are designed to achieve compaction and consolidation of the tailings material. This is achieved by designing the tailings disposal method to manage the removal of water from the tailings slurry. South32 employs several tailings disposal techniques, including the disposal of conventional unthickened tailings slurry, thickened tailings and filtered tailings that are stacked.

- Conventional slurry occurs where the slurry is either deposited unthickened or with some thickening at a low solids content (high water content).
- Thickened tailings involve dewatering the tailings using mechanical thickeners, to recover water for re-use in the mineral processing. This also increases the density of the tailings and therefore requires less area for tailings disposal. Following deposition in the tailings dam, further mechanical reworking of the tailings may be undertaken, using special amphibious mixers (amphirollers) combined with ploughing of the tailings, to assist with drying and strengthening.
- Filter tailings involve the mechanical dewatering of the tailings prior to disposal. These tailings are then either trucked or conveyed to the disposal area. Some of the filtered tailings are subject to additional compaction, to limit oxygen ingress or to meet a density requirement.

SOUTH32