

Church of England: TSF Information Request - 6 June 2019	Didipio TSF, Nueva Vizcaya, The Philippines - OceanaGold Response
1. "Tailings Dam" Name/identifier	Didipio Tailings Storage Facility, Nueva Vizcaya, Philippines
2. Location	16°18'58.6"N 121°26'20.9"E
3. Ownership	Owned
4. Status	Active
5. Date of initial operation	2012
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream
8. Current Maximum Height	2790 mRL (60m total height)
9. Current Tailings Storage Impoundment Volume	14,346,242 m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	27,179,131 m ³
11. Most recent Independent Expert Review	August 2018.
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	High B
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?	External Engineering Support
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
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
<p data-bbox="49 1115 480 1149">20. Any other relevant information and supporting documentation.</p> <p data-bbox="49 1182 480 1216">Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.</p>	<p data-bbox="480 1115 1498 1126">Overview</p> <p data-bbox="480 1137 1498 1193">The Didipio TSF is an engineered zoned earth and rockfill dam. It is formed by an embankment constructed across a tributary of the Dinayuan River, near the head of the valley. The embankment is of downstream construction. Flow from the Dinayuan River is diverted beneath the embankment via a "flow-through" underdrain.</p> <p data-bbox="480 1227 1498 1261">An independent third-party expert was commissioned to provide design and subsequent Construction Phase Services. Construction of the starter TSF embankment commenced in January 2012, and the TSF was commissioned at a height of RL2753m in October 2012.</p> <p data-bbox="480 1294 1498 1350">Currently the TSF embankment is divided into two nomenclature stages, Stage 9B which comprises the raise of clay and filter zones while Stage 10/11 forms the downstream shell and ultimate footprint. The Stage 10/11 was constructed earlier than the filter horizons. This was done to minimize cost and allow direct placement of open waste rock to prevent re-handling.</p> <p data-bbox="480 1384 1498 1395">To date, the TSF had been raised approximately 60 meters from the basal foundation</p> <p data-bbox="480 1417 1498 1429">Management Processes</p> <p data-bbox="480 1440 1498 1473">The Didipio TSF has been designed to exceed compliance standards on Philippines guideline issued by the Department of Environment and Natural Resources (DENR) Memorandum Order No. 99-32 and the Australian National Committee on Large Dams (ANCOLD) Guidelines on Tailings Dams.</p> <p data-bbox="480 1507 1498 1563">Quality assurance and quality control (QA/QC) on construction criteria and construction materials is undertaken by an independent third-party engineer and OceanaGold TSF Supervisors to ensure all specifications of the zone/materials are met. Density tests are performed on the main embankment Zone 1 materials using a combination of Half Density Method to AS1289.5.7.1, Shear Vane tests, compaction and moisture.</p> <p data-bbox="480 1574 1498 1608">Filters 2A and 2B aggregates are tested in 40 tonne batches at the onsite soil test laboratory to ensure quality and size remain to specifications. Zones 3A, 3B and 3C mine rock are sourced from underground and open pit waste rock.</p> <p data-bbox="480 1641 1498 1653">Quarterly and annual monitoring has been implemented since the start of construction by the an independent third-party expert.</p> <p data-bbox="480 1686 1498 1697">Governance Process</p> <p data-bbox="480 1709 1498 1742">An annual external review is conducted by independent third-party experts. The most recent review in October 2017 was conducted jointly by two independent third-party experts.</p> <p data-bbox="480 1776 1498 1787">Following the Samarco tailings dam failure, an external review of the construction criteria was re-reviewed by two independent third-party expert.</p> <p data-bbox="480 1821 1498 1832">Performance Evaluation</p> <p data-bbox="480 1843 1498 1854">The key findings from the most recent independent third-party expert report are as follows:</p> <ul data-bbox="480 1865 1498 1899" style="list-style-type: none"> • Lab Testing of Zone 1 clay for permeability is recommended to be undertaken to meet the technical specifications. • Storage Capacity is sufficient to retain the 1:100 year event without spill. <p data-bbox="480 1910 1498 1921">The key findings from the external review conducted by a second independent third-party expert:</p> <ul data-bbox="480 1933 1498 2020" style="list-style-type: none"> • Design criteria is considered appropriate as parameters are based on ANCOLD Guidelines with reference to the DENR criteria • Site Geology and Geotechnical Investigations are considered suitable for a tailings dam as well as data gathered sufficient for design. • Embankment slopes are considered acceptable and design concepts are considered sound and are supported by the results of stability analyses. • All aspects of construction (execution and workmanship, management, supervision and QA/QC) are of a very high standard.

Church of England: TSF Information Request - 6 June 2019	Waihi TSF1A, New Zealand - OceanaGold Response
1. "Tailings Dam" Name/identifier	TSF1A. Waihi, New Zealand
2. Location	37°23'58.8"S 175°52'43.4"E
3. Ownership	Owned
4. Status	Active
5. Date of initial operation	Active
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream
8. Current Maximum Height	172 mRL (66m total height)
9. Current Tailings Storage Impoundment Volume	12,000,000 m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	13,300,000 m ³
11. Most recent Independent Expert Review	September 2018.
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	High Potential Impact
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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 - Dam Break Analysis TSF1A 2011
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
<p data-bbox="49 1160 480 1205">20. Any other relevant information and supporting documentation.</p> <p data-bbox="49 1216 480 1261">Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.</p>	<p data-bbox="480 1160 1501 1182">Overview</p> <p data-bbox="480 1182 1501 1249">Waihi has two tailings storage facilities, TSF1A and TSF2. Tailings deposition ceased in TSF2 in 2005 and is effectively now a dormant wetland and TSF1A is operational. Both the TSFs are paddock-style facilities, constructed using the downstream construction method. These structures have been designed and constructed around existing topographical features so that the final landforms will blend in with the landscape.</p> <p data-bbox="480 1261 1501 1305">These facilities were designed by an independent third-party expert in accordance with the New Zealand Society of Large Dams (NZSOLD) guidelines and based on a high potential impact classification (PIC). This is the highest risk category and conservative for design purposes.</p> <p data-bbox="480 1328 1501 1417">The design team has had a long association with the site. The external Project Engineer has been involved in the design and construction of the dams since pre-development. He is a member of NZSOLD, a Fellow of the Institution of Professional Engineers New Zealand (IPENZ), the New Zealand National Society of Earthquake Engineering, a Member of the Earthquake Engineering Research Institute, the New Zealand Geotechnical Society and the Structural Engineering Society of New Zealand and a member of the Management Committee for the New Zealand Society on Large Dams.</p> <p data-bbox="480 1440 1501 1462">Management Processes</p> <p data-bbox="480 1462 1501 1485">Both TSFs have the following controls in place:</p> <ul data-bbox="480 1485 1501 1653" style="list-style-type: none"> - Preparation of a TSF Monitoring Plan for review and approval by the local Regulators who are the regulators responsible for dams in New Zealand - Extensive internal monitoring requirements. - Detailed annual reporting requirements reviewing the stability and performance of pollution controls and environmental effects - Annual review of the construction and operation of the facility by the appointed independent Project Engineer - Prescription of receiving water quality criteria relating to the maximum acceptable impact of the TSF, in conjunction with all other discharges from site, on nearby water ways to be protective and not cause an adverse environmental effect. - Appointment, by Regulators, of an independent expert Peer Review Panel to review and sign off on the design, construction, annual monitoring and completion of the facility. <p data-bbox="480 1675 1501 1697">Governance Process</p> <p data-bbox="480 1697 1501 1720">The peer review comprises an annual external review of governance process for TSF Management, and includes reviewing the following information:</p> <ul data-bbox="480 1720 1501 1809" style="list-style-type: none"> - Design, construction, monitoring, performance and stability reports from embankment construction. - Operation, maintenance and surveillance records for the period of review. - Other internal and external reports related to operations and closure of TSFs, including reviews of compliance against the New Zealand Society of Large Dams (NZSOLD) Dam Safety Guidelines. <p data-bbox="480 1821 1501 1843">Peer review is conducted in the following areas:</p> <ul data-bbox="480 1843 1501 1955" style="list-style-type: none"> - Geotechnical - Geochemistry - Underdrainage - Groundwater - Rehabilitation <p data-bbox="480 1966 1501 2033">The peer reviewers also conduct annual site inspections and attend an annual peer review meeting where feedback is provided to staff and regulators. Final peer review reports are generated annually for the Regulators and operation. This process has been in place since 1987, the entire life of the storage facility.</p> <p data-bbox="480 2045 1501 2067">Performance Evaluation - There were no major issues highlighted in the review.</p>

Church of England: TSF Information Request - 6 June 2019	Waihi TSF2, New Zealand - OceanaGold Response
1. "Tailings Dam" Name/identifier	TSF2, Waihi, New Zealand
2. Location	37°23'58.8"S 175°52'43.4"E
3. Ownership	Owned
4. Status	Inactive
5. Date of initial operation	1987
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream
8. Current Maximum Height	156 mRL (60m total height)
9. Current Tailings Storage Impoundment Volume	9,400,000 m3
10. Planned Tailings Storage Impoundment Volume in 5 years time.	9,400,000 m3 5 m crest raise permitted.
11. Most recent Independent Expert Review	September 2018.
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	High Potential Impact
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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 - Dam Break Analysis TSF2 1997
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
<p data-bbox="49 1115 480 1171">20. Any other relevant information and supporting documentation.</p> <p data-bbox="49 1171 480 1227">Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.</p>	<p data-bbox="480 1115 1501 1149">Overview</p> <p data-bbox="480 1149 1501 1216">Waihi has two tailings storage facilities, TSF1A and TSF2. Tailings deposition ceased in TSF2 in 2005 and is effectively now a dormant wetland and TSF1A is operational. Both the TSFs are paddock-style facilities, constructed using the downstream construction method. These structures have been designed and constructed around existing topographical features so that the final landforms will blend in with the landscape.</p> <p data-bbox="480 1216 1501 1283">These facilities were designed by an independent third-party expert in accordance with the New Zealand Society of Large Dams (NZSOLD) guidelines and based on a high potential impact classification (PIC). This is the highest risk category and conservative for design purposes.</p> <p data-bbox="480 1283 1501 1373">The design team has had a long association with the site. The external Project Engineer has been involved in the design and construction of the dams since pre-development. He is a member of NZSOLD, a Fellow of the Institution of Professional Engineers New Zealand (IPENZ), the New Zealand National Society of Earthquake Engineering, a Member of the Earthquake Engineering Research Institute, the New Zealand Geotechnical Society and the Structural Engineering Society of New Zealand and a member of the Management Committee for the New Zealand Society on Large Dams.</p> <p data-bbox="480 1373 1501 1406">Management Processes</p> <p data-bbox="480 1406 1501 1440">Both TSFs have the following controls in place:</p> <ul data-bbox="480 1440 1501 1518" style="list-style-type: none"> - Preparation of a TSF Monitoring Plan for review and approval by the local Regulators who are the regulators responsible for dams in New Zealand - Extensive internal monitoring requirements. - Detailed annual reporting requirements reviewing the stability and performance of pollution controls and environmental effects - Annual review of the construction and operation of the facility by the appointed independent Project Engineer <ul data-bbox="480 1518 1501 1619" style="list-style-type: none"> - Prescription of receiving water quality criteria relating to the maximum acceptable impact of the TSF, in conjunction with all other discharges from site, on nearby water ways to be protective and not cause an adverse environmental effect. - Appointment, by Regulators, of an independent expert Peer Review Panel to review and sign off on the design, construction, annual monitoring and completion of the facility. <p data-bbox="480 1619 1501 1653">Governance Process</p> <p data-bbox="480 1653 1501 1686">The peer review comprises an annual external review of governance process for TSF Management, and includes reviewing the following information:</p> <ul data-bbox="480 1686 1501 1765" style="list-style-type: none"> - Design, construction, monitoring, performance and stability reports from embankment construction. - Operation, maintenance and surveillance records for the period of review. - Other internal and external reports related to operations and closure of TSFs, including reviews of compliance against the New Zealand Society of Large Dams (NZSOLD) Dam Safety Guidelines. <p data-bbox="480 1765 1501 1798">Peer review is conducted in the following areas:</p> <ul data-bbox="480 1798 1501 1910" style="list-style-type: none"> - Geotechnical - Geochemistry - Underdrainage - Groundwater - Rehabilitation <p data-bbox="480 1910 1501 2000">The peer reviewers also conduct annual site inspections and attend an annual peer review meeting where feedback is provided to staff and regulators. Final peer review reports are generated annually for the Regulators and operation. This process has been in place since 1987, the entire life of the storage facility.</p> <p data-bbox="480 2000 1501 2020">Performance Evaluation - There were no major issues highlighted in the review.</p>

Church of England: TSF Information Request - 6 June 2019	Haile, South Carolina, USA - OceanaGold Response
1. "Tailings Dam" Name/identifier	Duckwood Tailings Storage Facility, Haile Gold Mine, South Carolina, USA
2. Location	34°36'57.00"N 80°32'13.56"W
3. Ownership	Owned
4. Status	Active
5. Date of initial operation	November, 2016
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream with composite clay/HDPE liner
8. Current Maximum Height	175 mRL - approximately 23 meter total depth.
9. Current Tailings Storage Impoundment Volume	2,555,000 short tons 1,800,000 m ³ @ settled density of 1.3t/m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	28,000,000 m ³
11. Most recent Independent Expert Review	2018
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	Low Potential Impact category
14. What guideline do you follow for the classification system?	South Carolina Department of Health and Environmental Control - Dam Safety
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?	External Engineering Support
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, by third party independent consultant to SC DHEC Dam Safety. Conducted in March 2018.
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
<p data-bbox="49 1137 480 1182">20. Any other relevant information and supporting documentation.</p> <p data-bbox="49 1205 480 1249">Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.</p>	<p data-bbox="480 1137 1501 1182">Overview The Haile TSF was constructed in 2016 and became operational in November 2016. South Carolina Department of Health and Environmental Control (SC DHEC) has jurisdictional authority of the facility through their Dam Safety Division. They were on site 12 times during all phases of construction and were given weekly QA / QC reports as physical evidence that the TSF was constructed to the design specification. Final regulatory approval was issued in November 2, 2016.</p> <p data-bbox="480 1272 1501 1317">Management Processes The TSF has the following controls in place: <ul data-bbox="480 1317 1501 1406" style="list-style-type: none"> • Extensive internal monitoring requirements • Detailed reporting requirements reviewing the stability and performance of pollution controls and environmental effects • Prescription of receiving water quality criteria relating to the maximum acceptable impact of the TSF, in conjunction with all other discharges from site, on nearby water ways to be protective and not cause an adverse environmental effect. </p> <p data-bbox="480 1429 1501 1473">Governance Process As a facility under construction OceanaGold commissioned an independent third-party expert to produce a Final Construction Inspection Report (issued March 24, 2017) and a Dam Safety and Structural Review Inspection Report (issued November 12, 2017). This organization is a third-party consultant responsible for design and construction oversight.</p> <p data-bbox="480 1518 1501 1765">The SC DHEC review included the following items prior to approval to operate the TSF: - TSF Design Review including Geotechnical Assessment along Camp Branch Creek; Structural Materials of Construction; Seismic Analysis within 250 mile radius; Earthwork Monitoring Procedures; Construction Oversight; Surface Water Drainage Patterns; Significant Storm Events Modelling; Hazard Risk Analysis; and Site-wide Water Balance; - Weekly Construction Reports with both construction notes and field inspection reports; - QA / QC Reports issues by an independent analytical inspection service; - <u>Construction reports from the earthworks contractor:</u> - Final As-Built drawings; - TSF Operating and Maintenance Procedures; - Stamped and Sealed summary reports from the independent third-party expert; and - Field inspection reports from the SC DHEC Mine Group and the Dam Safety Compliance Engineers.</p> <p data-bbox="480 1787 1501 1832">Performance Evaluation There have been no significant issues identified through the design, construction, commissioning, operation, and maintenance of the TSF and there were no significant findings issued during the construction review and approval process by SC DHEC.</p> <p data-bbox="480 1854 1501 1989">The Haile TSF is rated as a low potential impact category (PIC) structure due to the following conditions: <ul data-bbox="480 1877 1501 1989" style="list-style-type: none"> • It is a zero-discharge facility and so all waters accumulated from deposition or rainfall events must be recycled back to the Process Plant; • TSF is constructed on tributary network where the nearest impact to a populated area is over 40 miles away; • The volume of water retained in the supernatant pool is minimized during operation; and • Seismic activity at this location is minimal; • TSF is constructed on low-permeable soils and bedrock. </p>

Church of England: TSF Information Request - 6 June 2019.	Mixed Tails Impoundment, Macraes Mine, Otago, New Zealand - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Mixed Tails Impoundment, Macraes Mine, Otago, New Zealand.
2. Location	45°22'00.9"S 170°26'00.8"E
3. Ownership	Owned
4. Status	Inactive
5. Date of initial operation	1991
6. Is the Dam currently operated or closed as per currently approved design?	<p>No.</p> <p>As background, the design requires enough storage (called freeboard) to store the water falling on the dam during the maximum foreseeable rainfall event (called the potential maximum precipitation event (PMP)) while still having 1m of TSF wall above the pond level. This extra meter is to make sure that wind generated waves do not cause erosion. TSF's have ponds, as the material put in them is a mix of ground rock and water. As the material settles, the water is squeezed out forming a pond. This is either reused or treated and put back into waterways.</p> <p>MTI is partially capped as part of closure works, significantly reducing the likelihood of wind generated waves occurring.</p> <p>MTI currently has enough freeboard to contain the PMP event while having .5m of wall above the pond. MTI requires an additional .5m of freeboard.</p> <p>MTI is actively monitored, with water pumps installed that can be used to control the water level.</p> <p>Independent design engineers are currently revising the freeboard requirements taking into consideration the partial capping that has been completed.</p>
7. Raising method	Downstream up to 515 mRL and then upstream construction to 548 mRL
8. Current Maximum Height	180m (downstream toe to crest)
9. Current Tailings Storage Impoundment Volume	52,000,000m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	52,000,000m ³
11. Most recent Independent Expert Review	October 17.
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	High Potential Impact - due to location of process plant
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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 - Combined SP11A and MTI Dam break analysis conducted 2017
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
<p>20. Any other relevant information and supporting documentation.</p> <p>Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.</p>	<p>Overview</p> <p>The Macraes Mine Site has three tailings storage facilities including the Mixed Tails Dam (MTD), Southern Pit 11A (SP11A) and the Top Tipperary Tailings Storage Facility (TTTSF). The Mixed Tails Dam and Southern Pit 11A have effectively been decommissioned but they remain only partially rehabilitated due to either the need for emergency water storage capacity (in the case of SP11A), or the possibility of removal and/or retreatment (in the case of MTD). The TTTSF is currently in use and was developed in 2012/13.</p> <p>Management Processes</p> <p>All TSFs have the following controls in place:</p> <ul style="list-style-type: none"> • Extensive internal monitoring requirements • Detailed reporting requirements reviewing the stability and performance of pollution controls and environmental effects • Prescription of receiving water quality criteria relating to the maximum acceptable impact of the TSF, in conjunction with all other discharges from site, on nearby water ways to be protective and not cause an adverse environmental effect. <p>Governance Process</p> <p>The most recent external review - Tailings Dams Safety and Stability Risk Assessment Review (SSRAR) – was commenced by third party external experts in 2016 and completed in 2017.</p> <p>The SSRAR is an update of a similar assessment performed in 2011 and included a review of design, operation and monitoring processes and a risk assessment of the safety and stability of the tailings embankments based on their current status.</p> <p>The 2016-17 SSRAR comprised an evaluation of the governance process for TSF Management, and included reviewing the following forms of documentation:</p> <ul style="list-style-type: none"> - Design reports and construction reports from embankment construction during the period of review. - Operation, maintenance and surveillance records for the period of review. - Other internal and external reports related to operations and closure of TSFs, including reviews of compliance against the New Zealand Society of Large Dams (NZSOLD) Dam Safety Guidelines. <p>Performance Evaluation</p> <p>The TTTSF is rated as a medium potential impact category structure (PIC) and the MTD and SP11A embankments are both rated as high PIC structures. These ratings are based on the "New Zealand Dam Safety Guidelines", (2000) and relate to the potential consequence of failure and impact to safety and the downstream environment.</p> <p>Overall observations on performance within the SSAR Report included the following summations:</p> <ul style="list-style-type: none"> - Although the construction on the final lifts for the MTD and SP11A were undertaken using the upstream embankment method, the three facilities at Macraes have benefited from substantial design input from experienced professionals, and design reports demonstrate a good understanding of potential hazards. - Monitoring and surveillance of facilities at Macraes is comprehensive and frequent and has suitable internal and external reviews including assessment to NZSOLD compliance. <p>The MTI was the initial starter TSF for the Macraes Operation. SP10 and Sp11A TSF's were constructed to facilitate upstream construction on the MTI and SP11A embankments. Tailings discharge was alternated between the two embankments to allow the beach to dry out and construction to occur of the upstream lifts.</p> <p>Lift Construction dates are:</p> <ul style="list-style-type: none"> - 1990 - 2001 RL515 Downstream construction - 2002 - 2003 RL520.5 Upstream construction - 2004 - 2005 RL526 Upstream construction - 2005 - 2007 RL527 Upstream construction - 2007 - 2008 RL533 Upstream construction - 2009 - 2010 RL539 Upstream construction - 2011 - 2012 RL544 Upstream construction - 2012 - 2013 RL548 Upstream construction <p>A combination of internal tailings drainage (tailings seepage drains and rockfill mattress drains), toe berms, buttressing and crest setbacks were included within the design of the upper upstream lifts to ensure static and seismic stability requirements were met.</p>

Church of England: TSF Information Request - 6 June 2019. Updated 29 August 2019	Southern Pit 11A, Macraes Mine, Otago, New Zealand - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Southern Pit 11A, Macraes Mine, Otago, New Zealand.
2. Location	45°21'44.1"S 170°26'34.4"E
3. Ownership	Owned
4. Status	Inactive
5. Date of initial operation	2000
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream up to 530 mRL and then upstream construction to 544 mRL
8. Current Maximum Height	85m (downstream toe to crest)
9. Current Tailings Storage Impoundment Volume	20,000,000m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	20,000,000m ³
11. Most recent Independent Expert Review	October 17, 2017
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	High Potential Impact
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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 - Combined SP11A and MTI Dam break analysis conducted 2017
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
20. Any other relevant information and supporting documentation. Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.	Capacity of embankment is 20Mm ³ or 27Mt tailings Current use is for pit water storage and routing of pit water to process circuit. Status is 'Resting' since Jan 2012 Important information: High PIC embankment due to its proximity to the processing plant PMP and Freeboard compliance is maintained through transfer of water into the process circuit or dust suppression activities Partial impoundment rehab undertaken Lift construction dates: <ul style="list-style-type: none"> • 2005 - 2006 SP11A RL 525 Downstream Construction • 2006 - 2007 SP11A RL 525 - RL 530 Downstream Construction • 2007 - 2009 SP11A RL 530 - RL 537 Upstream Construction • 2010 - 2011 SP11A RL 537 - RL 540 Upstream Construction An array of Internal tailings seepage drains was included within the design of the upper upstream lifts to ensure static and seismic stability requirements were met.

Church of England: TSF Information Request - 6 June 2019. Updated 29 August 2019	Top Tipperary Tailings Storage Facility, Macraes Mine, Otago, New Zealand - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Top Tipperary Tailings Storage Facility, Macraes Mine, Otago, New Zealand.
2. Location	45°21'34.7"S 170°29'05.2"E
3. Ownership	Owned
4. Status	Active
5. Date of initial operation	2012
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream construction to approved design height 560 mRL
8. Current Maximum Height	66m (downstream toe to crest)
9. Current Tailings Storage Impoundment Volume	25,000,000m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	36,000,000m ³ to 560 mRL
11. Most recent Independent Expert Review	October 17, 2017
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	Medium Potential Impact
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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- Dam break analysis conducted 2011
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
20. Any other relevant information and supporting documentation. Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.	<p>In Oct 2013 the TTTSF was commissioned and tailings delivery has been to this embankment since this date. The TTTSF is currently at RL 551 and is consented to RL 560. The current LOM has the TTTSF being at capacity by the end of 2021. Options are being investigated to raise the TTTSF to RL 564 by a continuation of downstream construction.</p> <p>Construction Methodology</p> <ul style="list-style-type: none"> • TTTSF RL560 design is entirely downstream construction • A zone has been sourced from local borrow areas by contractor fleet • A Zone RL537 - RL544 was sourced from Pit and stockpiled for use by Mine fleet • Majority of B zone and C zone up to RL540 was laid by the Mining fleet. • B Zone above RL540 has been sourced primarily from local borrow areas and rehandle of Frasers East Dump by Contractor Fleet <p>Dates of Construction</p> <ul style="list-style-type: none"> • 2013 - 2014 TTTSF RL 525 • 2014 - 2015 TTTSF RL 525 - RL532 • 2015 - 2016 TTTSF RL 532 - RL537 • 2016 - 2017 TTTSF RL 537 - RL544 • 2017 - 2018 TTTSF RL 544 - RL551 <p>Capacity of embankment (RL 560) is 36Mm³ or 49Mt tailings. Tailings storage to end of 2018 is 31Mt</p> <p>Current use - sole impoundment for tailings containment and return water.</p> <p>Status - 'Active' - Receiving Tailings since Oct 2013</p>

Church of England: TSF Information Request - 6 June 2019	Sheahan-Grants TSF, Mandurama, NSW, Australia - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Sheahan-Grants TSF, Mandurama, NSW, Australia
2. Location	33°37'45.27"S 148°59'52.05"E
3. Ownership	Owned (Climax Resources)
4. Status	Closed
5. Date of initial operation	1987
6. Is the Dam currently operated or closed as per currently approved design?	Closed
7. Raising method	Downstream
8. Current Maximum Height	640 mRL
9. Current Tailings Storage Impoundment Volume	1,744,450m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	1,744,450m ⁴
11. Most recent Independent Expert Review	1998 To justify the declassification of the dam as a prescribed dam.
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	Declassified as a Dam following completion of rehabilitation.
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?	External Engineering Support
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 and Yes
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?	No as closed
20. Any other relevant information and supporting documentation. Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.	On the 11th of January 1999 the Sheahan-Grants TSF was removed from Schedule 1 of the NSW Dam Safety Act, removing it as a prescribed Dam following successfully achieving all closure requirements.

Church of England: TSF Information Request - 6 June 2019	Sheahan-Grants In-Pit, Mandurama, NSW, Australia - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Sheahan-Grants In-Pit TSF, Mandurama, NSW, Australia
2. Location	33°37'23.01"S 148°59'25.31"E
3. Ownership	Owned (Climax Resources)
4. Status	Closed
5. Date of initial operation	1992
6. Is the Dam currently operated or closed as per currently approved design?	Closed
7. Raising method	Other, storage is within a former open pit within a low permeability in-situ rock mass, there are no embankments
8. Current Maximum Height	565 mRL Below pit crest.
9. Current Tailings Storage Impoundment Volume	771,850m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	771,850m ⁴
11. Most recent Independent Expert Review	-
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	-
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?	External Engineering Support
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 as within an old open pit
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?	No as closed
20. Any other relevant information and supporting documentation. Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.	The Sheahan-Grants in Pit Tailings has been rock capped and rehabilitated in accordance with the approved closure plan - this work was completed in 1996. The TSF does not require extensive ongoing stability monitoring due to the self-contained, non-walled nature of containment.

Church of England: TSF Information Request - 6 June 2019	Fossickers TSF, Reefton, New Zealand - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Fossickers Tailings Storage Facility, Reefton, New Zealand
2. Location	42°10'50.6"S 171°53'18.7"E
3. Ownership	Owned
4. Status	Closed
5. Date of initial operation	March 2007.
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Downstream
8. Current Maximum Height	523 mRL (40m total height)
9. Current Tailings Storage Impoundment Volume	9670000m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	9670000m ³ - Facility Closed
11. Most recent Independent Expert Review	October 17.
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	Medium Potential Impact Classification
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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 - November 2011
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
20. Any other relevant information and supporting documentation. Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.	<p>Overview At Reefton Tailings is stored in the Fossickers Main Embankment (FME) and Fossickers Saddle Embankments No. 1, 2 & 3 (FSE1, FSE2 & FSE3) as well as the closed Souvenir Pit . With the cessation of mining in 2016, capping of the Reefton TSF is now underway.</p> <p>The Souvenir Pit Tailings, an old open pit has been be rock capped and does not require the same levels of ongoing stability monitoring due to the self-contained, non-walled nature of containment.</p> <p>Management Processes The TSF, not including Souvenir Pit has the following controls in place: <ul style="list-style-type: none"> •Extensive internal monitoring requirements •Detailed reporting requirements reviewing the stability and performance of pollution controls and environmental effects •Prescription of receiving water quality criteria relating to the maximum acceptable impact of the TSF, in conjunction with all other discharges from site, on nearby water ways to be protective and not cause an adverse environmental effect. </p> <p>Governance Process The most recent external review - Tailings Dams Safety and Stability Risk Assessment Review (SSRAR) – was undertaken by third party external experts and commenced in 2016 and completed in 2017.</p> <p>The SSRAR is an update of a similar assessment performed in 2011 and included a review of design, operation and monitoring processes and a risk assessment of the safety and stability of the tailings embankments based on their current status.</p> <p>The 2016-17 SSRAR comprised an evaluation of the governance process for TSF Management, and included reviewing the following forms of documentation: - Design reports and construction reports from embankment construction during the period of review. - Operation, maintenance and surveillance records for the period of review. - Other internal and external reports related to operations and closure of TSFs, including reviews of compliance against the New Zealand Society of Large Dams (NZSOLD) Dam Safety Guidelines.</p> <p>Performance Evaluation The Fossickers TSF at Reefton is rated as Medium and Souvenir as low PIC structures under the NZSOLD guidelines.</p> <p>Overall observations on performance within the SSAR Report included the following summations: - The design and construction methodology of the Reefton TSF were typical for earth and rock fill structures and tried and tested from a safety and stability perspective. - Based on site inspection and monitoring data the TSF at Reefton was being operated safely prior to Care and Maintenance.</p>

Church of England: TSF Information Request - 6 June 2019	Souvenir TSF, Reefton, New Zealand - Oceana Gold Response
1. "Tailings Dam" Name/Identifier	Souvenir Tailings Storage Facility, Reefton, New Zealand
2. Location	42°11'04.5"S 171°53'46.8"E
3. Ownership	Owned
4. Status	Closed
5. Date of initial operation	August 2014.
6. Is the Dam currently operated or closed as per currently approved design?	Yes
7. Raising method	Other, storage is within a former open pit within a low permeability in-situ rock mass, there are no embankments
8. Current Maximum Height	555 mRL (71 m depth)
9. Current Tailings Storage Impoundment Volume	270000m ³
10. Planned Tailings Storage Impoundment Volume in 5 years time.	270000m ³ - Facility Closed
11. Most recent Independent Expert Review	October 17, 2019
12. Do you have full and complete relevant engineering records including design, construction, operation, maintenance and/or closure.	Yes and Yes
13. What is your hazard categorisation of this facility, based on consequence of failure?	Low Potential Impact Classification
14. What guideline do you follow for the classification system?	NZSOLD
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?	External Engineering Support
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 - but not consider required due to self-contained, non-walled structure of containment.
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?	Effects of climate change are considered during the permitting process and are deemed conservative and are expected to be more than sufficient. However as part of the rollout of our new environmental framework documents, there will be a requirement for periodic review of any impact of climate change.
20. Any other relevant information and supporting documentation. Please state if you have omitted any other exposure to tailings facilities through any joint ventures you may have.	The Souvenir Pit Tailings has been rock capped and rehabilitated in accordance with the approved closure plan - this work was completed in September 2018. The TSF does not require extensive ongoing stability monitoring due to the self-contained, non-walled nature of containment.