



# Amendment Report

<b>Licence Number</b>	L8676/2012/1
<b>Licence Holder</b>	AngloGold Ashanti Australia Limited
<b>ACN</b>	008 737 424
<b>File Number:</b>	2012/002666-3
<b>Premises</b>	Tropicana Gold Mine Part of mining tenement M39/1096 within coordinates: 646000 easting, 6770900 northing; 646000 easting, 6758500 northing; 654900 easting, 6758500 northing; 654900 easting, 6770900 northing. PLUMRIDGE LAKES WA 6431
<b>Date of Amendment</b>	02 September 2019

## Amendment

The Chief Executive Officer (CEO) of the Department of Water and Environmental Regulation (DWER) has amended the above Licence in accordance with section 59 of the *Environmental Protection Act 1986* (EP Act) as set out in this Amendment Report. This Amendment Report constitutes written notice of the amendment in accordance with section 59B(9) of the EP Act.

## Tim Gentle

### Manager – Resource Industries

an officer delegated under section 20 of the *Environmental Protection Act 1986* (WA)

## Definitions and interpretation

### Definitions

In this Amendment Report, the terms in Table 1 have the meanings defined.

**Table 1: Definitions**

Term	Definition
AACR	Annual Audit Compliance Report
ACN	Australian Company Number
Category/ Categories/ Cat.	categories of Prescribed Premises as set out in Schedule 1 of the EP Regulations
CEO	means Chief Executive Officer. CEO for the purposes of notification means: Director General Department Administering the <i>Environmental Protection Act 1986</i> Locked Bag 10 JOONDALUP DC WA 6919 <a href="mailto:info@dwer.wa.gov.au">info@dwer.wa.gov.au</a>
Delegated Officer	an officer under section 20 of the EP Act
Department	means the department established under section 35 of the <i>Public Sector Management Act 1994</i> and designated as responsible for the administration of Part V, Division 3 of the EP Act.
DWER	Department of Water and Environmental Regulation
EPA	Environmental Protection Authority
EP Act	<i>Environmental Protection Act 1986 (WA)</i>
EP Regulations	<i>Environmental Protection Regulations 1987 (WA)</i>
Existing Licence	The Licence issued under Part V, Division 3 of the EP Act and in force prior to the commencement of and during this amendment
Licence Holder	AngloGold Ashanti Australia Limited
m <sup>3</sup>	cubic metres
MS	Ministerial Statement
Mtpa	million tonnes per annum
Noise Regulations	<i>Environmental Protection (Noise) Regulations 1997 (WA)</i>
Occupier	has the same meaning given to that term under the EP Act
Prescribed Premises	has the same meaning given to that term under the EP Act

Premises	refers to the premises to which this Amendment Report applies, as specified at the front of this Amendment Report
Risk Event	as described in <i>Guidance Statement: Risk Assessment</i>
SMP	Seepage Mitigation Project
TSF	Tailings Storage Facility
WWTP	Wastewater Treatment Plant

## Amendment

This amendment is made pursuant to section 59 of the *Environmental Protection Act 1986* (EP Act) to amend the Licence issued under the EP Act for a prescribed premises as set out below. This amendment is given under section 59B(9) of the EP Act.

This amendment is limited only to an amendment for Category 5 and 52. No changes to the aspects of the original Licence relating to Categories 12, 54, 64 and 73 have been requested by the Licence Holder.

The following have informed the decision made on this amendment:

- *Guidance Statement: Regulatory Principles (July 2015)*
- *Guidance Statement: Setting Conditions (October 2015)*
- *Guideline: Decision Making (June 2019)*
- *Guidance Statement: Risk Assessment (February 2017)*

## Amendment description

On 7 June 2019, AngloGold Ashanti Australia Limited (Licence Holder) submitted an application to amend the Tropicana Gold Mine (Premises) licence L8679/2012/1. The Licence Holder has applied for the following changes:

- Increase the processing plant throughput and tailings deposition rate to 9 million tonnes per annum (Mtpa) (from 8 Mtpa). No additional works to the processing plant or tailings storage facility (TSF) is required to facilitate this change;
- Install and operate an additional three 2 MW gas fuelled generators to the Premises power station bringing the total capacity to 50 MW; and
- Removal of additional wastewater treatment infrastructure construction requirements as construction has now been completed. Compliance documentation was received on 24 July 2019.

This assessment has resulted in DWER issuing a Revised Licence L8676/2012/1 (Attachment 1) which incorporates the above requested changes. The Revised Licence also incorporates changes to conditions outlined in *Amendment Notice 1* (refer to Table 7 for description of amendment). Impacts from emissions and discharges as a result of the changes outlined in Amendment Notice 1 have not been reassessed as part of this amendment. No further assessment is required and a simple transfer of conditions has occurred to produce a single consolidated licence instrument.

Table 2 below outlines the proposed changes to the Licence.

**Table 2: Proposed throughput capacity changes**

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
5	Not more than 8 000 000 tonnes per annual period	Not more than 9 000 000 tonnes per annual period	No additional works proposed. Increase in throughput due to efficiencies and improvements in processes
12	Not more than 5 000 000 tonnes per annual period	No change	Not applicable

Category	Current throughput capacity	Proposed throughput capacity	Description of proposed amendment
52	44 MW	50 MW	Installation of 3 x 2 MW gas generators to existing power station
54	500 m <sup>3</sup> per day	No change	Not applicable
64	Not more than 20 000 tonnes per year	No change	Not applicable
73	6 250 m <sup>3</sup>	No change	Not applicable

### Category 5 amendment

The Licence Holder has a licenced Category 5 throughput of 8 Mtpa. Through ongoing process efficiencies and improvements the processing throughput rate is expected to exceed the current licence limit prior to the end of 2019. To maintain compliance with the Existing Licence the Licence Holder is proposing to increase its Category 5 throughput and tailings deposition rate to 9 Mtpa.

Ore from the open pits is processed through a series of crushers and ball mills prior to entering a carbon in leach circuit. Gold particles leached from the ore are adsorbed onto grains of activated carbon. The carbon is stripped of the gold particles through an acid wash process before electrowinning and smelting into gold bars. A process follow diagram is shown in Figure 1.

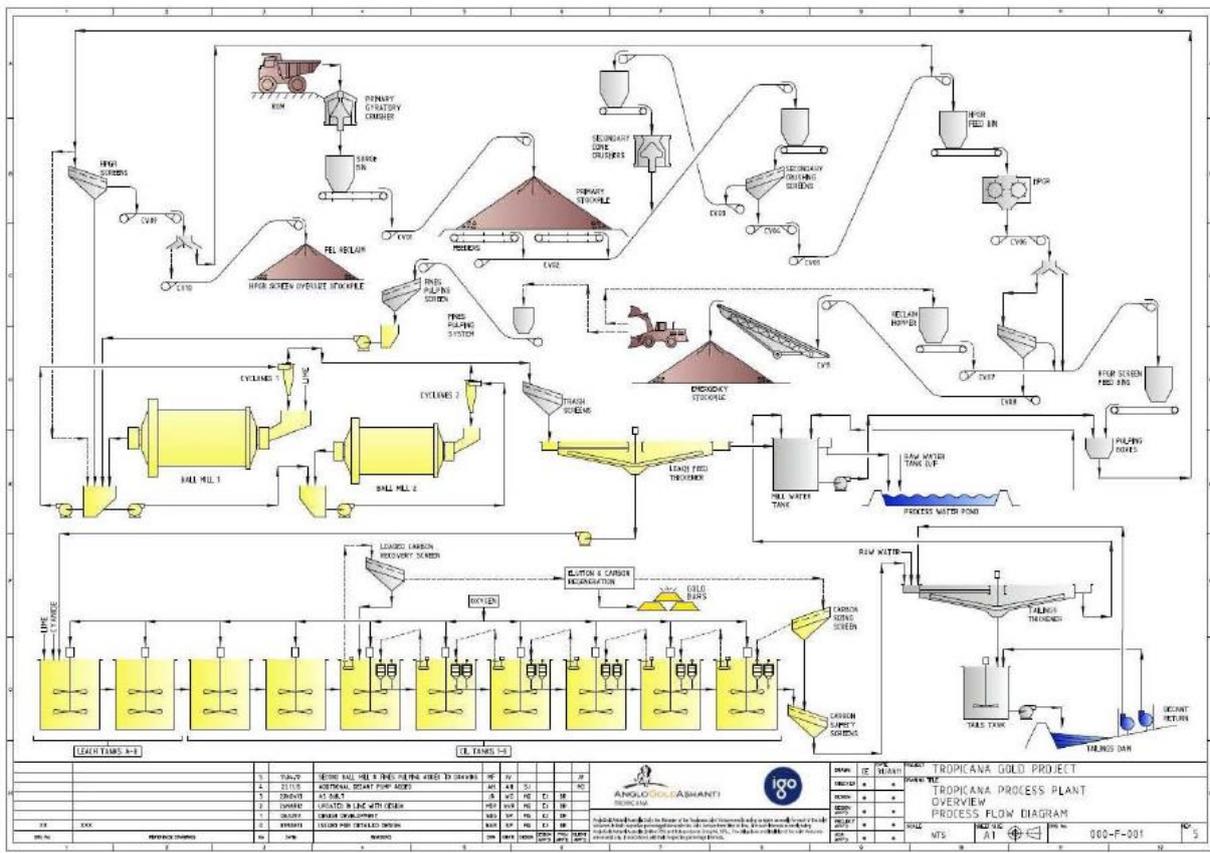


Figure 1: Tropicana Gold Mine Process Flow diagram

The treated ore waste (tailings) is thickened before being discharged to a paddock style TSF. The primary emission under this Category 5 amendment will be the additional 1 Mtpa of tailings (up from 8 Mtpa to 9 Mtpa) deposited into the TSF. The Premises TSF was initially designed and constructed with:

- A high density polyethylene (HDPE) liner over the area of the decant pond (permeability not greater than  $1 \times 10^{-9}$  m/s);
- A compacted low permeability soil liner (permeability not greater than  $1 \times 10^{-8}$  m/s);
- Herringbone finger drains to above the liner to assist drainage of water to the underdrainage system;
- The underdrainage pumping system; and
- Decant pumps to maximise extraction of decant water.

### TSF Seepage

In response to rising groundwater levels in monitoring bores around the TSF, the Licence Holder has implemented a Seepage Mitigation Project (SMP) to recover seepage from the TSF (since 2016). Recent upgrades have expanded the SMP to 18 bores installed in Q3 2019, resulting in a seepage recovery capacity of 230 m<sup>3</sup>/h.

Modelled seepage at 9 Mtpa is approximately 256 m<sup>3</sup>/h with no seepage recovery from the SMP. This is a 16% increase in predicted seepage from the TSF as a result of the increase in tailings deposition. Modelling has demonstrated that the net loss of seepage from the TSF will be 26 m<sup>3</sup>/h or approximately in balance with a 9 Mtpa throughput (i.e. almost no nett loss of seepage) (Technical Memorandum, 2019). A water balance is shown below in Table 3.

**Table 3: Water balance (all units in m<sup>3</sup>/day) (Groundwater Science, 2019)**

Water Balance	Current 8 Mtpa Case	Planned 9 Mtpa Case	Discussion
<b>In</b>			
Total water received	22,541	25,358	Citect data (01 Jan 2018 to 01 July 2018)
Rainfall	1,272	1,272	YAMARNA BOM Station 012219 1967-1998 annual average
<b>Total IN</b>	<b>23,813</b>	<b>26,631</b>	
<b>Out</b>			
Evaporation	4,001	4,001	YAMARNA BOM Station 012219 1967-1998
Seepage	5,166	6,153	By difference
Entrainment	6,311	7,100	28 % of discharged water
Recovery	8,335	9,377	Citect data (01 Jan 2018 to 01 July 2018)
<b>Total Out</b>	<b>23,813</b>	<b>26,631</b>	
<b>Nett</b>	<b>0.00</b>	<b>0.00</b>	

### **Category 53 amendment**

The Premises power station currently comprises of four diesel fuelled generators and 17 gas fuelled generators. The current approved throughput is 44 MW per annual period. Due to the improved efficiencies within the processing plant there is an additional power requirement at the Premises. The Licence Holder is proposing to construct three new 2 MW gas fuelled power generators increasing the approved capacity of the power station from 44 MW to 50 MW per annual period.

### Construction and commissioning

Infrastructure to be constructed are three new generators (same model already installed – Cummings QSV91G C2000 NSC), and an extension to the power station shed and control room. Commissioning is proposed for a period of 1 month once construction has been

completed. A period of dry commissioning and wet commissioning is proposed. Wet commissioning involves testing each gas generator's control system, alarms, trips and synchronising with the other generators. Each generator will be tested and synchronised one generator at a time. After wet commissioning, load commissioning will occur. Load commissioning involves increasing demand on the gas generators to run them at full load continuously where they will be used to supply electricity directly to the process plant. During this time, generator performance testing will be conducted. All on line testing will be done at this time, including repeating the wet commissioning tests then progressively loading up the generators.

The Licence Holder has proposed to not undertake emission testing as these generators are:

1. The same as the other gas fuelled generators already installed in the power station;
2. The previous emissions results from commissioning demonstrated a stable range of emissions;
3. There are no identified receptors that are of concern; and
4. Low level of risk from emissions due to the Premises isolation.

### Operation

Operation of the new gas fuelled generators will be the same as the other gas fuelled generators in the Premises power station:

- Air is drawn into the engine through a compressor, which pressurises and feeds the air into the combustion chamber.
- The combustion system comprising a ring of fuel injectors inject a steady stream of gas into the combustion chamber where it mixes with air. The mixture is then burnt at high temperatures creating a high pressure gas stream that enters and expands through the turbine section.
- The turbine comprises a series of rotating blades. As hot combustion gas expands through the turbine, it spins the rotating blades. The blades spin a generator to produce electricity whilst also drives the compressor to draw more pressurised air into the combustion section.
- Exhaust air is expelled from the generator through stacks.

Emission testing of the most recently installed engines is presented as ranges in Table 4 below. The new generators are expected to demonstrate an equivalent range of emissions discharge (which is in line with the manufacturer's specifications – see Table 5) and further emissions testing is not proposed. The location on the three new emission points are shown in Figure 2 below.

**Table 4: Emission test results from the most recent power generator installation**  
(AngloGold Ashanti Australia Limited, 2019)

<b>Emission Source</b>	<b>Emission Discharged</b>	<b>Concentration Range from Emission Testing</b>
Emission Stacks	Carbon Monoxide (corrected to 5% O2)	960-1,100 mg/m <sup>3</sup>
	Nitrogen Oxides (corrected to 5% O2)	430-770 mg/m <sup>3</sup>
	Total Volatile Organic Compounds (corrected to 5% O2)	1,200-1,400 mg/m <sup>3</sup>

**Table 5: Manufactures specifications for emission concentrations for model Cummings C2000 N5C at 100% load (AngloGold Ashanti Australia Limited, 2017)**

<b>Emissions</b>		
NO <sub>x</sub> Emissions wet, ppm	5	156
NO <sub>x</sub> Emissions, mg/Nm <sup>3</sup> @5% O <sub>2</sub> (g/hp-h)	5	484 (1.02)
THC Emissions wet, ppm	13	1347
THC Emissions, mg/Nm <sup>3</sup> @5% O <sub>2</sub> (g/hp-h)	13	1444
CH <sub>4</sub> Emissions wet, ppm	13	961
CH <sub>4</sub> Emissions, mg/Nm <sup>3</sup> @5% O <sub>2</sub> (g/hp-h)	13	1047 2.21
NMHC Emissions wet, ppm	13	386
NMHC Emissions, mg/Nm <sup>3</sup> @5% O <sub>2</sub> (g/hp-h)	13	414
CO Emissions (dry), ppm	13	539
CO Emissions, mg/Nm <sup>3</sup> @5% O <sub>2</sub> (g/hp-h)	13	910 (1.92)
O <sub>2</sub> Emissions (dry), percent	13	9.2
Particulates PM <sub>10</sub> , g/hp-h	13	Not recorded



**Figure 2: Approximate location of emission points for the proposed new power station generators**

## Other approvals

The Licence Holder has provided the following information relating to other approvals as outlined in Table 6.

**Table 6: Relevant approvals**

Legislation	Number	Approval
<i>Environmental Protection Act 1989</i>	Ministerial Statement (MS) 839 (EPA Report 1361)	Seepage impacts from the operation of the TSF are regulated under Part IV of the EP Act, with the requirement to maintain the existing groundwater values via condition 8 of the MS 839. Condition 8 also requires monitoring of ambient groundwater.

## Amendment history

Table 7 provides the amendment history for L8676/2012/1.

**Table 7: Licence amendments**

Instrument	Issued	Amendment
L8676/2012/1	8/2/2013	Operating licence for crushing and screening, sewage facility and putrescible landfill (categories 12, 54 and 64).
L8676/2012/1	9/5/2013	Licence amendment for inclusion of used tyre storage and bulk chemical storage (categories 57 and 73).
L8676/2012/1	12/12/2013	Licence amendment and conversion to the REFIRE format for the inclusion of electric power generation (category 52) and processing and beneficiation of metallic or non-metallic ore (category 5).
L8676/2012/1	4/02/2016	Licence amendment to update Premises boundary in line with new Mining Tenement grant, WWTP discharge, change to power supply, concrete batching plant, removal of ambient groundwater monitoring condition as already required by Ministerial Statement 839, addition of improvement conditions.
L8676/2012/1	20/10/2016	Licence amendment to increase capacity of the landfill to not more than 10 000 tonnes of waste per year and consequent increase in category 64. DER administrative changes to remove conditions 1.1.5, 1.2.3 and AACR template. Expiry date changed as per the DER amendment notice of 29 April 2016.
L8676/2012/1	26/09/2017	Amendment Notice 1 Licence Amendment to authorise: <ul style="list-style-type: none"> <li>• Construction of embankment raises to TSF to a height of 364m RL;</li> <li>• Change to frequency of pipelines' inspections;</li> <li>• Change in fuel type for gold smelting and carbon regeneration from LPG to natural gas;</li> <li>• Remove category 57 (storage of waste tyres);</li> <li>• Increase the capacity of category 64 (Class II landfilling) to 20 000 tpa to authorise additional 10 000 tpa landfilling to include</li> </ul>

		<p>waste tyres/rubber;</p> <ul style="list-style-type: none"> <li>• Construction and operation of new wastewater treatment plant infrastructure;</li> <li>• Additional chemical storage capacity under category 73; and</li> <li>• The installation of the gas generators has also been completed and the conditions relating to construction and commissioning of these units are now removed from the Licence.</li> </ul>
L8676/2012/1		<p>Licence Amendment to:</p> <ul style="list-style-type: none"> <li>• Increase the processing plant throughput and tailings deposition rate to 9 Mtpa (from 8Mtpa). No additional works to the processing plant or TSF is required to facilitate this change;</li> <li>• Install and operate an additional three 2 MW gas fuelled generators to the sites power station bringing the total capacity to 50 MW;</li> <li>• Removal of additional WWTP infrastructure construction requirements as construction has now been completed. Compliance documentation was received on 24 July 2019; and</li> <li>• Amalgamate Amendment Notice 1 into Licence instrument and update licence template.</li> </ul>

## Location and receptors

The Premises is located in a remote area. There are no adjacent receptors. The nearest residential community is at Laverton approximately 220 km north-west of the Premises.

Table 8 below lists the relevant sensitive land uses in the vicinity of the Premises which may be receptors relevant to the proposed amendment.

**Table 8: Receptors and distance from activity boundary**

Residential and sensitive premises	Distance from Prescribed Premises
Town of Laverton	220 km north-west of the Premises

Table 9 below lists the relevant environmental receptors in the vicinity of the Premises which may be receptors relevant to the proposed amendment.

**Table 9: Environmental receptors and distance from activity boundary**

Environmental receptors	Distance from Prescribed Premises
Groundwater (predominately saline – hypersaline)	<p>Variable groundwater levels - approximately 20m below ground level (mbgl).</p> <p>The Licence Holder is the only groundwater user in the area. No other users of groundwater occur within 100 km of the Premises.</p>
Surface water	<p>Drainage is to the north-east toward a chain of ephemeral palaeochannel lakes which extend from the ephemeral Lake Rason to the Eucla Basis (lakes are approximately 7 km north east of the TSF). There are no defined surface drainage features with runoff predominantly occurring as sheet wash (Groundwater science, 2019).</p>
Flora and Fauna	<p><i>Leipoa ocellata</i> (malleefowl) has been sited within the premises boundary (3 km west of TSF)</p>

	<p>and adjacent (west) to the Premises.</p> <p>Threatened / Priority flora have also been identified within the premises boundary (2 km west of TSF) and adjacent (west) to the Premises.</p> <p>The only potentially groundwater dependent vegetation mapped during baseline studies occurs near the Lake Rason chain of palaeodrainage lakes 7 km north of the TSF. Stygofauna monitoring during baseline studies did not yield any stygofauna (Technical Memorandum, 2019).</p>
Threatened Ecological Communities	None within 10 km of the Premises.

## Risk assessment

Tables 10 and 11 below describe the Risk Events associated with the amendment consistent with the *Guidance Statement: Risk Assessments*. Both tables identify whether the emissions present a material risk to public health or the environment, requiring regulatory controls.

**Table 10: Risk assessment for proposed amendments during construction**

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
<b>Category 52 -</b> Power generation	Installation of three new 2 MW gas fueled generators (Cummins QSV91 C2000 N6C gas generators)	<b>Noise:</b> associated with construction activities	No residential premises within 200 km of the Premises	Air	Health and amenity impacts	N/A	N/A	N/A	<p>The distance to residential receptors is considered to be too great for noise impacts from construction of the new gas generators to occur. It is considered that a pathway for noise emissions to residential receptors does not exist.</p> <p>The provisions of the <i>Environmental Protection (Noise) Regulations 1997</i> are applicable.</p>
		<b>Dust:</b> associated with construction activities	No residential premises within 200 km of the Premises	Air	Health and amenity impacts	N/A	N/A	N/A	<p>Minimal dust is expected to be generated during construction of the new gas generators.</p> <p>The distance to residential receptors is considered to be too great for dust impacts from construction to occur. It is considered that a pathway for dust emissions to residential receptors does not exist.</p> <p>Any potential dust emissions can be regulated by section 49 of the EP Act.</p>

**Table 11: Risk assessment for proposed amendments during operation / commissioning**

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts				
<b>Category 52</b> - Power generation	Operation of three new 2 MW gas fueled generators (Cummins QSV91 C2000 N6C gas generators)	<b>Noise:</b> associated with operation of the additional 3 gas generators	No residential premises within 200 km of the Premises	Air	Health and amenity impacts	N/A	N/A	N/A  The distance to residential receptors is considered to be too great for noise impacts from operation of the new gas generators to occur. It is considered that a pathway for noise emissions to residential receptors does not exist.  The provisions of the <i>Environmental Protection (Noise) Regulations 1997</i> are applicable.
		<b>Air emissions:</b> nitrogen oxides, carbon monoxide and VOCs	No residential premises within 200 km of the Premises	Air	Health and amenity impacts	N/A	N/A	N/A  The distance to residential receptors is considered to be too great for air emission impacts to occur. It is considered that a pathway for air emissions to residential receptors does not exist.  All existing gas generators at the Premises are tuned to operate within a set range of operating parameters specified by the generator manufacturer (Cummins) to ensure generators operate at the optimal efficiency and effectiveness. Gas generators are re-tuned on an approximate three monthly basis including at major services and when there is significant change in conditions (i.e. change in ambient temperature between summer and winter), as per manufacturer's requirements (AngloGold Ashanti Australia Limited, 2017). The operation of the three new generators will be carried out in the same way as

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
								<p>the existing gas generators (AngloGold Ashanti Australia Limited, 2019).</p> <p>It is expected that emission concentrations emitted from the three new gas generators will meet manufacturer's specifications once commissioning is complete and the generators are fully operational. Commissioning is expected to take 1 month.</p> <p>The Delegated Officer has determined that emission testing during commissioning and during operation is not required due to the isolated location of the Premises. Data provided to DWER demonstrate that the existing 17 gas generators onsite (which are the same make and model of the three proposed new generators) have all met manufacturer's specifications once fully operational. It is expected that the three new generators will also meet these specifications (AngloGold Ashanti Australia, 2019).</p> <p>Construction requirements will be added to condition 1.2.11 (Table 1.2.5) to allow for construction of the new generators.</p>	
<b>Category 5:</b> Processing or beneficiation of metallic	Increase in throughput from 8 Mtpa to 9 Mtpa (no works)	<b>Noise:</b> associated with the operation of processing plant at the	No residential premises within 200 km of the Premises	Air	Health and amenity impacts	N/A	N/A	N/A	The distance to residential receptors is considered to be too great for noise impacts from operation of the processing plant at the increased

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts				
and non-metallic ores	involved)	increased throughput						throughput. It is considered that a pathway for noise emissions to residential receptors does not exist.  The provisions of the Environmental Protection (Noise) Regulations 1997 are applicable.
		<b>Dust:</b> associated with the operation of the processing plant at the increased throughput	No residential premises within 200 km of the Premises	Air	Health and amenity impacts	N/A	N/A	N/A
	Increase tailings deposition from 8 Mtpa to 9 Mtpa	<b>Waste:</b> Increase in seepage from TSF	Adjacent native vegetation, including priority flora species (closest ~2k m west of TSF)  No other users of groundwater occur within 100 km of the Premises  The only potentially groundwater dependent vegetation mapped during baseline studies occurs near the Lake Rason chain of palaeodrainage	Seepage of contaminated water from the TSF into groundwater	Inundation of vegetation root zones from rising groundwater levels  Contamination of groundwater with cyanide and other toxic metals	Moderate	Unlikely	Medium

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities		Potential emissions	Potential receptors	Potential pathway				
			lakes 7 km north of the TSF					<p>diminishing with distance from the TSF.</p> <p>The Licence Holder has undertaken a SMP to manage rising groundwater levels surrounding the TSF. The current installed SMP comprises of 18 recovery bores surrounding the TSF for pumping and recycling seepage for reuse. The installed capacity of the SMP is 5,520 m<sup>3</sup>/day which is expected to have the capacity to manage the increased seepage.</p> <p>The Delegated Officer considers that the likelihood of this event occurring to be 'Unlikely' due to the Licence Holders proposed controls. The consequence is considered to be 'Moderate'. Therefore the risk rating is Medium.</p> <p>Ambient groundwater monitoring conditions have been re-added to the licence to allow for monitoring of ambient groundwater quality and standing water levels around the TSF. This condition was mistakenly removed in 2016 from the licence to avoid overlap with MS 839 conditions. The Delegated Officer considers it necessary to re add this condition to allow DWER - licencing to adequately monitor the impact of TSF seepage on groundwater quality and levels.</p>

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning	
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts					
		<b>Waste:</b> Overtopping of TSF	Adjacent native vegetation, including priority flora species (closest ~2 km west of TSF)	Direct release of tailings to land	Poor vegetation health or death from tailings inundation  Contamination of surround soil	Moderate	Rare	Medium	<p>The TSF has adequate tailings storage capacity for several years with 39 Mt out of the approved 75 Mt utilised to date. The increase in deposition throughput will result in the rate of rise for the TSF increasing from 2.8 m/year to 3.0 m/year.</p> <p>The Licence Holder has committed to maintaining a 500 mm freeboard as a minimum (maximum operating level set to 500 mm below the height of the embankment) and to undertake daily inspections of the TSF freeboard to ensure overtopping does not occur.</p> <p>The Delegated Officer considers that the likelihood of this event occurring to be 'Rare' due to the Licence Holders proposed controls. The consequence is considered to be 'Moderate'. Therefore the risk rating is Medium.</p> <p>Existing Condition 1.2.10 require the inspection of TSF to confirm freeboard capacity on a daily basis.</p> <p>Existing condition 1.2.9 also requires the Licence Holder to maintain a minimum top embankment freeboard of 300 mm on all containment cells or ponds.</p> <p>The Delegated Officer considers that existing conditions on the Licence to manage the risk of TSF overtopping are adequate.</p>

Risk Event					Consequence rating	Likelihood rating	Risk	Reasoning
Source/Activities	Potential emissions	Potential receptors	Potential pathway	Potential adverse impacts				
		<b>Waste:</b> Pipeline leaks	Vegetation and soil adjacent to tailings pipeline alignment	Direct release of tailings to land	Moderate	Unlikely	Medium	<p>Tailings and return water pipelines are installed within v-drains and are equipped with telemetry. Pipelines are also inspected for leaks on a twice daily basis.</p> <p>The Delegated Officer considers that the likelihood of this event occurring to be 'Unlikely' due to the Licence Holders proposed controls. The consequence is considered to be 'Moderate'. Therefore the risk rating is Medium.</p> <p>Existing Condition 1.2.10 requires the inspection of TSF pipelines on a twice daily basis. Also existing condition 1.2.8 requires that all pipelines containing hazardous substances must be equipped with telemetry systems or with automatic cut-outs in the event of a pipeline failure and provided with secondary containment sufficient to contain any spill.</p> <p>The Delegated Officer considers that existing conditions on the Licence to manage the risk of pipeline spills is adequate.</p>

## Decision

### Category 5 – Increase in approved throughput from 8 Mtpa to 9 Mtpa

Increasing the approved throughput for Category 5 activities on the Premises from 8 Mtpa to 9 Mtpa will not significantly change the risk profile of emissions from the processing plant due to the isolated location of the Premises. Modelling has shown that an increase in seepage (16%) from the TSF will occur due to the increase in tailings deposition. This impact has been determined to have a medium risk to the environment. The following changes to conditions have been made:

- New condition 3.2.1 (Ambient environmental quality monitoring) has been added to the licence to allow for monitoring of ambient groundwater quality and standing water levels around the TSF. This condition was mistakenly removed in 2016 from the licence to avoid overlap with MS 839 conditions. The Delegated Officer considers it necessary to re-add this condition to allow DWER - licencing to adequately monitor the impact of TSF seepage on groundwater quality and levels;
- Condition 4.2.1 has been updated to include the requirement to provide ambient groundwater quality monitoring data as part of the Annual Environmental Report;
- Two maps showing the location of the monitoring bores surrounding the TSF have been added to Schedule 1 of the licence; and
- The approved throughput for Category 5 outlined in Schedule 2 has been updated from 8 Mtpa to 9 Mtpa.

### Category 52 – Installation and operation of three new gas power generators

Increasing the approved throughput for Category 52 from 44 MW to 50 MW will not significantly change the risk profile of emissions from the power station due to the isolated location of the Premises. The following changes to conditions have been made:

- Condition 1.3.11 has been updated to include construction requirements for the upgraded power station;
- Condition 1.3.15 has been replaced by another condition allowing the Licence Holder to commence commissioning of the upgraded power station once construction compliance documents have been submitted in accordance with condition 4.2.3;
- Condition 2.2.1 (Table 2.2.1) has been updated to include the three new gas power generators;
- Previous conditions 3.1.3, 3.2.1 to 3.2.3 have been deleted from the Existing Licence. These condition previously related to point source emissions to air from the Premises power station. The condition required a once off sampling event of off-gas stacks of four of the previously installed gas generators following optimisation of operation. This sampling event has occurred and the data has been provided to DWER. No additional air monitoring is required for the commissioning and operation of the three new gas power generators due to the isolated location of the Premises. Recent data provided to DWER demonstrate that the existing 17 gas generators onsite (which are the same make and model of the three proposed new generators) have all met manufacturer's specifications once fully operational. It is expected that the three new generators will also meet these specifications.
- Condition 4.2.1 (table 4.2.1) has been updated to remove reference to emissions to air monitoring data;
- Condition 4.2.3 has been updated to include reference to submission of construction

compliance documents for the three new gas generators; and

- The approved throughput for Category 52 outlined in Schedule 2 have been updated from 44 MW to 50 MW.

## Other changes

All reference to the upgrade of the sites WWTP have been removed from the licence as construction of this infrastructure has been completed. Compliance documentation was submitted on 7 July 2019 to DWER by the Licence Holder confirming compliance with the WWTP construction requirements set out in the licence. As a result the following changes to conditions have been made;

- Conditions 1.3.11 and 4.2.3 has been updated to remove the reference to the upgraded WWTP infrastructure;
- Old Condition 1.3.15 relating to the WWTP works and its location has been deleted and replaced with another condition not relating to the WWTP; and
- WWTP layout map has been replaced with an updated WWTP infrastructure map.

Amendment Notice 1 and the licence document, along with the changes made as part of this amendment, have been amalgamated into one document. Impacts from emissions and discharges as a result of the changes outlined in Amendment Notice 1 have not been re-assessed as part of this amendment.

## Licence Holder's comments

The Licence Holder was provided with the draft Amendment Report and draft Licence on 13 August 2019. Comments were received on the 30 August 2019. Comments received from the Licence Holder have been considered by the Delegated Officer as shown in Appendix 2.

## Appendix 1: Key documents

	Document title	In text ref	Availability
1	AngloGold Ashanti Australia Limited, Application Form for Licence amendment to L8676/2012/1. Including all attachments	AngloGold Ashanti Australia Limited, 2019	DWER record (A1794966)
2	Letter to Louise Lavery, 20 November 2017, AngloGold Ashanti Australia Limited – Power station upgrade gas generator Emissions – Tropicana Gold Mine, from Rosemarie Lane Superintendent Environment Tropicana Gold Mine	AngloGold Ashanti Australia Limited, 2017	DWER records (A1567735)
3	Technical memorandum, Tropicana Gold Mine 9 Mtpa Throughput Seepage Assessment, AngloGold Ashanti Australia Limited, 6 June 2019	Technical memorandum, 2019	DWER records (A1794966)
4	Tropicana Gold Mine Licence L8676/2012/1 and Amendment Notice 1	Existing Licence  Amendment Notice 1	accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
5	Tropicana Gold Mine – Tailings Storage Facility – Throughput Increase Seepage Assessment, Groundwater science Prepared for Anglo Gold Ashanti Australia Limited, May 2019.	Groundwater Science, 2019	DWER records (A1794966)
6	Ministerial Statement 839	MS 839	accessed at <a href="http://www.epa.wa.gov.au/">www.epa.wa.gov.au/</a>
7	DER, July 2015. <i>Guidance Statement: Regulatory principles.</i> Department of Environment Regulation, Perth.	N/A	accessed at <a href="http://www.dwer.wa.gov.au">www.dwer.wa.gov.au</a>
8	DER, October 2015. <i>Guidance Statement: Setting conditions.</i> Department of Environment Regulation, Perth.		
9	DER, November 2016. <i>Guidance Statement: Risk Assessments.</i> Department of Environment Regulation, Perth.		
10	DWER, June 2019. <i>Guideline: Decision Making.</i> Department of Water and Environmental Regulation, Perth.		

## Appendix 2: Summary of Licence Holder comments

The Licence Holder was provided with the draft Amendment Report and draft Licence on 13 August 2019 for review and comment. The Licence Holder responded on 30 August 2019.

Condition	Summary of Licence Holder's comment	DWER response
1.3.2	Process limit for waste disposal is incorrect. Old limit of 10 000 tonnes per year was included in table 1.3.1. Current licence limit is 20 000 tonnes as per amendment notice 1.	The wrong limit was mistakenly used in Table 1.3.1. This has now been updated to the current licence limit of 20 000 tonnes as per Amendment Notice 1.
1.3.11	Incorrect model number listed for the new gas generators. N6C should be N5C.	Request has been accepted.
1.3.11	Consider the removal of the bioremediation pad as a construction requirement in table 1.3.5.	It has been confirmed that the bioremediation pad has now been decommissioned and removed. This requirement has been removed from table 1.3.5.
1.3.15	Consider rephrasing this conditions to: The Licence holder shall not commence commissioning...until the construction compliance document has been submitted...	Request has been accepted.
3.2.1	Monitoring bores have been updated to align with site naming convention.	Request has been accepted.
4.3.1	Incorrect condition number (3.1.5) has been referenced in Table 4.3.1 for calibration report. It should be 3.1.4.	Request has been accepted.
4.3.1	Request to remove requirement to notify CEO of commencement of commissioning and completion of commission as this relates to previous gas generator commissioning.	Request has been accepted.