Government of **Western Australia**
Department of **Environment Regulation**

Amendment Notice 1

Licence Number	L8578/2011/1
Licence Holder	Regis Resources Limited
ACN	009 174 761
Registered business address	Level 1 1 Alvan Street SUBIACO WA 6008
Date of amendment	19 December 2016
Prescribed Premises	5 – Processing or beneficiation of metallic or non-metallic ore; 6 – Mine dewatering; 52 – Electric power generation; 54 – Sewage facility; 64 – Class II putrescible landfill site; and 73 – Bulk storage of chemicals, etc
Premises	Garden Well Gold Project M38/343, M38/250, M38/237, M38/352, M38/1249, M38/1250, M38/1257, M38/283, M38/1251, M38/292, M38/630, M38/114, M38/341, L38/201, L38/202, L38/203, L38/204, L38/212, and L38/219 BANDYA WA 6440

Amendment

The Chief Executive Officer (CEO) of the Department of Environment Regulation (DER) has amended the above licence in accordance with section 59 of the *Environmental Protection Act 1986* as set out in this Amendment Notice.

[redacted]

Tim Gentle

Manager Licensing – Resource Industries

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

Amendment Notice

This notice is issued under 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 notice of amendment is given under section 59B(9) of the EP Act.

Amendment Description

On 19 September 2016 Regis Resources Limited (Regis) submitted an application to DER for an amendment to the Garden Well Gold Project licence (L8578/2011/1). The licence amendment application relates to the proposed construction of tailings storage facility (TSF) 2. Regis require the new TSF to provide additional tailings storage to limit the tailings rate-of-rise on TSF1 to a rate that will allow for future upstream raises, and also to add total TSF volume due to increased ore reserves and life of mine. TSF2 is going to be constructed within the southern waste rock dump adjacent to TSF1 and east of the Garden Well pit. The perimeter embankment will be constructed in two 10m high stages, using the downstream construction method. There is no vegetation on the exposed waste dump, therefore no clearing is required. The two stages will have embankment crest levels of RL522m and RL532m respectively.

The supporting documentation has been prepared by consultants Coffey Corporate Services Pty Ltd and includes the full engineering design report. The supporting document states that the design has been done in accordance with the following guidelines:

- Department of Mines and Petroleum (DMP) (2013), 'Code of practice: tailings storage facilities in Western Australia; and
- Australian National Committee on Large Dams (ANCOLD) (2012) 'Guidelines on Tailings Dams, Planning, Design, Construction, Operation and Closure'.

The proposed facility is an activity that falls within the current Garden Well Gold Project licence (L8578/2011/1), being Category 5: Processing of beneficiation of metallic or non-metallic ore.

Risk Assessment

Table 1 below applies a screening level risk assessment for the potential emissions which may arise from the application. The table identifies whether these emissions present a material risk requiring regulatory control.

Table 1 – Risk assessment for proposed amendments during construction

Activity	Potential emission	Potential receptors	Potential pathway	Potential impacts	Material risk	Reasoning
Cat 5 Processing or beneficiation of metallic or non-metallic ore	**Dust:** associated with construction activities of TSF2	**Nearby residents:** Garden Well Gold Project is isolated with the closest community being the Mulga Queen Community, located 85 km north of the project.	**Air:** Particulate matter (fugitive dust)	Dust can cause health and amenity impacts to humans.	No	The Delegated Officer considers there is no material risk due to the distance to the nearest sensitive receptor.
	Noise: associated with construction activities of TSF2		**Air:** Noise generated by the operation of equipment during construction	Amenity impacts to nearby noise sensitive receptors	No	The Delegated Officer notes the lack of sensitive receptors and determines that there is no material risk of noise impact.

Table 2 – Risk assessment for proposed amendments during operation

Activity	Potential emission	Potential receptors	Potential pathway	Potential impacts	Material risk	Reasoning
Cat 5 Processing or beneficiation of metallic or non-metallic ore	**Dust:** associated with operational activities	**Nearby residents:** Garden Well Gold Project is isolated with the closest community being the Mulga Queen Community, located 85 km north of the project.	**Air:** Particulate matter (fugitive dust)	Dust can cause health and amenity impacts to humans.	No	The Delegated Officer considers there is no material risk due to the distance to the nearest sensitive receptor. The substantive offenses of the *Environmental Protection Act 1986* provide enforceable prohibitions for dust emissions that result in pollution or environmental harm.
	Noise: associated with operational activities		**Air:** Noise generated by the operation of equipment during construction	Amenity impacts to nearby noise sensitive receptors	No	The Delegated Officer notes the lack of sensitive receptors and determines that there is no material risk of noise impact.
	Waste: leachate from TSF seepage	Groundwater dependent ecosystems, surrounding vegetation	**Land:** infiltration through soil profile to groundwater	Contamination of surrounding land and groundwater with toxic metals and metalloids, sulphide minerals (if present), dissolved solids and cyanide affecting soil and groundwater quality and causing vegetation stress or death.	Yes	Groundwater in the vicinity of the project is in a shallow semi-confined aquifer with natural depths of less than 6 metres below ground level (mgbl) in some areas. In the vicinity of TSF2, groundwater levels vary on each side. To the south-west levels are approximately 40 mblg, to the south-east they are approximately 6 mbgl and to the north they are 4 mbgl. Salinity ranges from potable at 1,000 mg/L total dissolved solids (TDS) to brackish at 11,000 mg/ TDS. Groundwater in the area is used for domestic and stock purposes by pastoral properties. The nearest pastoral bore is 3.5 km east-northeast of the process plant area and is actively used by the pastoralist. However, detailed groundwater studies have shown that the direction of groundwater flow is away from the bores and that any seepage from the new TSF will report to the nearby pit. The vegetation within the area has been disturbed by mining exploration activities and damage from cattle. There are no Threatened Ecological Communities (TEC) or Declared Rare Flora species within the project area; however two Priority Four Flora species; *Baeckea* sp. and *Eremophila pungens* occurs in the area. No fauna of conservation

						significance occurs within the project area. Regis implemented a groundwater abstraction plan in 2014 with the aim to draw water levels down to 6 mbgl, with high water utilisation in processing and dust suppression. Seepage from TSF1 is managed by the following measures: • sub-excavation of the embankment footprint area to remove topsoil and any weak or loose soils; • compaction of the foundation of the TSF to a low permeability (1 x 10^{-9}); • cut-off trenches to minimise seepage through the embankment foundation; • an earth fill embankment core and a decant system; • a 14 bore ground water monitoring program measuring ground water levels and chemical parameters; and • development and implementation of a ground water seepage recovery action plan. The design of TSF2 will differ to that of TSF1. TSF2 is going to be fully lined with a non-woven geofabric liner. This liner is to act as a filter medium retaining tailings while allowing draining. This design has been adopted to maximise water recovery for reuse in processing. The design report includes seepage modelling which concludes that an estimated range of 100 m^3/d to 800 m^3/d of seepage will occur once the final crest of RL532 m is reached. This is based on tailings permeability of 1 x 10^{-8} m/s and 1 x 10^{-6} m/s. The supporting document has stated that a minimum of 5 monitoring bores will be installed and the locations of the bores have been selected upon the advice of project hydrogeologists. The supernatant water collected through the decant system, will be pumped back to the process plant for re-use. Recovery bores are also going to be constructed downstream of the TSF as an additional safeguard to intercept drainage. A water balance model has also been included as part of the supporting document with results indicating an annual average return of approximately 30% of slurry water to the facility. In order to maximise the water recovery, Regis will operate TSF2 to ensure the water decant pond is maintained as small as practical. A geochemistry analysis of the waste rock and tailings was carried out in 2011, as part of a mining proposal and for development of the mine closure plan. The results indicated that the material is unlikely to be acid forming, contained no asbestiform materials and the majority of metals were not present at elevated levels with the exceptions of arsenic, nickel, cadmium and molybdenum. Based on the Licence Holder controls, and given that most seepage is expected to report to the nearby pit, the Delegated officer considers that the consequence would be ***minor*** and the likelihood is ***possible***.

						Therefore the risk rating for seepage is ***medium*** The Delegated Officer considers existing conditions to manage the current TSF are satisfactory for the operation of TSF2. The Licence requires quarterly ambient groundwater monitoring through condition 3.4.1 of fourteen monitoring bores for TSF1. The nominated monitoring bores for TSF2 are going to be added to this condition with a corresponding map. This monitoring will indicate whether seepage and groundwater contamination is occurring. A standing water level limit of 4 mbgl has been applied in the past to the Licence as a safeguard against rising groundwater levels which can impact on surrounding vegetation. However, this figure does not take into account the natural levels of groundwater in the vicinity of the TSF and the Licence Holder has not been able to meet this limit at all times. Therefore, the limit is being removed in this amendment. The Licence Holder is required to continue to monitor standing water levels and report on these in the Annual Environmental Report, including identifying any trends or whether the water levels have had any environmental impacts. I A WAD cyanide limit of 0.5 mg/L has been imposed for both TSF1 and TSF2. This limit has been deemed appropriate as a precautionary measure and this is in accordance with Australian Drinking Water Guidelines 2004. The Licence includes condition 1.2.10 to ensure a seepage recovery system is in place should seepage occur in locations such that it will not report to the existing pit. Condition 1.2.13 has been included in this amendment and requires the Licensee to undertake an annual water balance which will identify amount of seepage occurring.
Cat 5 Processing or beneficiation of metallic or non-metallic ore	**Waste:** associated with tailings pipeline rupture or failure	Terrestrial ecosystems - surrounding soils, vegetation and surface water	**Direct discharge**	Contamination of surrounding soils with metals and metalloids, sulphide minerals (if present), dissolved solids and cyanide affecting soil and groundwater quality and causing vegetation stress or death.	Yes	Regis have an Operations Manual which outlines that two inspections are to be undertaken during each shift by an operation or shift supervisor, which will cover the following: • Pipelines (tailings delivery line and water return line) to and from the TSF; • Leak detection (pipes); • Pump operation and condition; • Tailings deposition; • Location and size of the decant pool; • Signs of toe erosion; • Drainage recovery pumps; • General integrity of the embankment; and • Changes to any existing cracking or erosion. There are no permanent surface water bodies within the Regis Operations and no point source emissions to surface water occur. A number of drainage lines located at around the site, which are shallow and ephemeral in nature. A shallow and narrow ephemeral creek, Mistake Creek, runs across the extreme southern end of the pit. The pit bund and waste landform have been designed to divert this drainage

						line. These surface water flows will be returned to natural drainage lines within a short distance down gradient of the pits and waste rock dumps. The site is generally drained in a southerly/south-westerly direction by Mistake Creek which discharges into Borodale Creek 6 km downstream of the site, which eventually reports to the Lake Irwin salt lake systems, 40km south-west of the site. Based on the Licence Holder controls, the Delegated officer considers that the consequence would be ***moderate*** and the likelihood is ***unlikely***. Therefore the risk rating for seepage is ***moderate***. The Delegated Officer considers existing conditions to manage pipelines containing tailings are satisfactory for the operation of pipelines associated with TSF2. Condition 1.2.12 ensures pipelines containing tailings will be managed appropriately and corrective action is taken in the event that pipelines leak or rupture.
	Waste: overtopping of tailings due to heavy rainfall resulting in /decant water outside of containment infrastructure	Terrestrial ecosystems - surrounding soils, vegetation and surface water	**Land and water:**	Contamination of surrounding soils with metals and metalloids, sulphide minerals (if present), dissolved solids and cyanide affecting soil and groundwater quality and causing vegetation stress or death.	Yes	TSF2 has been designed with the following considerations: • 'Staged construction is in a downstream direction, which means each lift is laid back against the surrounding mine waste rock storage and placed over previously placed mine waste. Therefore, construction of future embankments raises does not rely on the strength of deposited tailings and, as such, the rate-of-rise and strength of tailings will not impact on construction. • Tailings in the form of a slurry will be discharged sub-aerially and cyclically into the facility in discrete layers, to allow the tailings to gain optimum densities, maximising storage capacity, and strength by subjecting each layer to a drying cycle. Deposition will take place via multiple spigots located on the upstream edge of the crest of the perimeter embankment. • Spigotting/tailings deposition will be carried out such that a tailings beach will form and the supernatant pond which develops due to both tailings deposition and rainfall events will be maintained around the central decant structure. The pond will be maintained away from the perimeter embankment at all times. Limiting the size of the supernatant water pond will reduce evaporation from the facility and assist in optimising water recovery and tailings density. • Water (comprising supernatant water and incident rainfall seepage return to the decant system) from the facility will be removed via an independent decant pump located at the end of the central decant access way and piped back to the process plant. • The top surface of the tailings storage area will assume the form of a depression due to the development of a sloped tailings beach. The facility will have the capacity to store a considerable volume of water during a storm and be able to

						safely contain a 1 in 100 year ARI, 72-hour storm event while maintaining required total freeboard. • Upon decommissioning, the facility will remain as a permanent feature of the landscape and consolidate to an increasingly stable mass. The top surface and the batters will be stabilised and rehabilitated.' Based on the Licence Holder controls, the Delegated officer considers that the consequence would be ***moderate*** and the likelihood is ***rare***. Therefore the risk rating for seepage is ***medium***. Existing conditions in the Licence ensure the operation of TSF1 is managed appropriately. These conditions will apply to TSF2 and the Delegated Officer has deemed these are sufficient. TSF2 will be added to Table 1.2.4 'Containment infrastructure' and condition 1.2.9 requires that a minimum embankment freeboard of 300 mm is maintained. Inspection of infrastructure is outlined in Table 1.2.5 and this will also apply to TSF2. Inspections relating to TSF infrastructure are required every 12 hours. **Note: The geotechnical stability of the tailings storage facilities, including risk of tailings wall failure do not form part of the current assessment as these are matters regulated by the Department of Mines and Petroleum.**

Decision

The Delegated Officer has determined that the key emissions associated with the proposed TSF2 are waste via tailings seepage, pipeline spills or TSF overtopping.

The Delegated Officer has determined that the construction and operation of the TSF2 will not result in emissions which are unacceptable to public health or the environment.

The Licence Holder has committed to install 5 monitoring bores which will be included on the existing monitoring regime for groundwater. Existing conditions relating to TSF management will apply to TSF2.

Amendment History

Instrument	Issued	Amendment
L8575/2011/1	17 August 2012	Amended Licence for categories 5, 52, 64, 73 and 85
L8575/2011/1	19 December 2013	Amended Licence for categories 5, 52, 64 and 73
L8575/2011/1	22 May 2014	Licence amendment to increase processing plant throughput and conversion to current format.
L8575/2011/1	6 November 2014	Licence amendment to remove conditions 1.3.10 to 1.3.14
L8575/2011/1	4 February 2016	Licence amendment to include Type 2 inert waste.
L8575/2011/1	19 December 2016	Amendment Notice 1 Licence amendment to include conditions relating to the construction of TSF2

Amendment

1. Condition 1.2.13 to be added to the Licence as below:

   The Licensee shall undertake an annual water balance for the active TSF. The water balance shall as a minimum consider the following:
   - *(a) site rainfall;*
   - *(b) evaporation;*
   - *(c) decant water recovery volumes;*
   - *(d) seepage recovery volumes; and*
   - *(e) volumes of tailings deposited.*

2. Condition 1.2.14 to be added to the Licence as below:

In relation to the construction of the TSF2 infrastructure, the Licensee must construct the infrastructure in Column 1 of Table 3 at the location specified in Column 2 in accordance with the requirements set out in Column 3.

Table 1.2.7: Infrastructure requirements

Column 1	***Column 2***	***Column 3***
Infrastructure	***Location***	***Requirements (design and construction)***
Tailings Storage Facility 2	*TSF 2 as depicted in map of emission points and monitoring in Schedule 1.*	*-Constructed on top of existing waste rock dump adjacent to and south of TSF1 and approximately 1km south-east of the plant.* *-Facility will be constructed in two stages using downstream construction method.* *-The embankment crest level of Stage 1 will be RL522m.* *-The embankment crest level of Stage 2 will be RL532m.* *-The maximum embankment heights of Stages 1 and 2 will be 10m and 24m respectively.* *-The facility will be fully lined with non-woven geofabric to act as a filter medium.* *-The perimeter embankment will be constructed using traffic compacted mine waste with a total crest width of 20m.*

3. Condition 1.2.15 to be added to the Licence as below:

   The Licensee must not depart from the requirements specified in Table 1.2.7 except:
   (a) where such departures is minor in nature and does not materially change or affect the infrastructure; or
   (b) where such departure improves the functionality of the infrastructure and does not increase the risks to public health, public amenity or the environment.

4. Condition 1.2.16 to be added to the Licence as below:

   If condition 1.2.15 applies, then the Licensee must provide the CEO with a list of departures which are certified as complying with condition 28.

5. Condition 1.2.17 to be added to the Licence as below:

   The Licensee shall submit a construction compliance document to the CEO, following construction of TSF2 and prior to operation.

6. Condition 1.2.18 to be added to the Licence as below:

   The Licensee must ensure the construction compliance document:
   (a) is certified by a suitably qualified professional engineer or builder stating that each item of infrastructure specified in Table 1.2.7 has been

constructed in accordance with the conditions of the Licence with no material defects; and

(b) *be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.*

7 Condition 1.2.19 to be added to the Licence as below:

The Licensee shall operate TSF2 in accordance with the conditions of this Licence, following submission of the construction compliance document required under condition 1.2.17.

8 Condition 1.2.8 of the Licence is amended by the insertion of the red text shown in underline below:

The Licensee shall ensure that tailings, decant water and saline water are only discharged into containment cells with the relevant infrastructure requirements and at the locations specified in Table 1.2.4.

Table 1.2.4 Containment infrastructure		
Containment cell or dam number	***Material***	***Infrastructure requirements***
TSF 1	*Tailings*	*Constructed in accordance with W4926/2011/1 to achieve a permeability of at least <10^{-9} m/s*
TSF2	*Tailings*	*Maintain a 300 mm freeboard when operating*
Rosemont pit	*Mine dewater*	*None specified*
Return water dams	*Return water from TSF*	
Raw water dams	*Raw water*	

9 Condition 3.3.1 of the Licence is amended by the insertion of the red text show in underline below:

The Licensee shall undertake the monitoring in Table 3.3.1 according to the specifications in that table.

Table 3.3.1: Process monitoring					
Monitoring point reference	***Process description***	***Units***	***Limit***	***Frequency***	***Method***
Mine dewater discharging to Rosemont pit	*Cumulative volumes (discharging from Garden Well pit to Rosemont pit)*	*m^3*		*Monthly (if discharging)*	*None specified*
	Standing water level	*mbgl*	*4*		
WWTP evaporation	*Cumulative volumes of treated waste water*	*m^3*		*Quarterly*	*None specified*

/oxidation ponds	discharged to evaporation basin				
Tailings deposition	Volumes of tailings deposited into the TSF	kL	-	Continuous	None specified
	Volumes of water recovered from the TSF				
	Volumes of seepage recovered and reused to Process Plant				

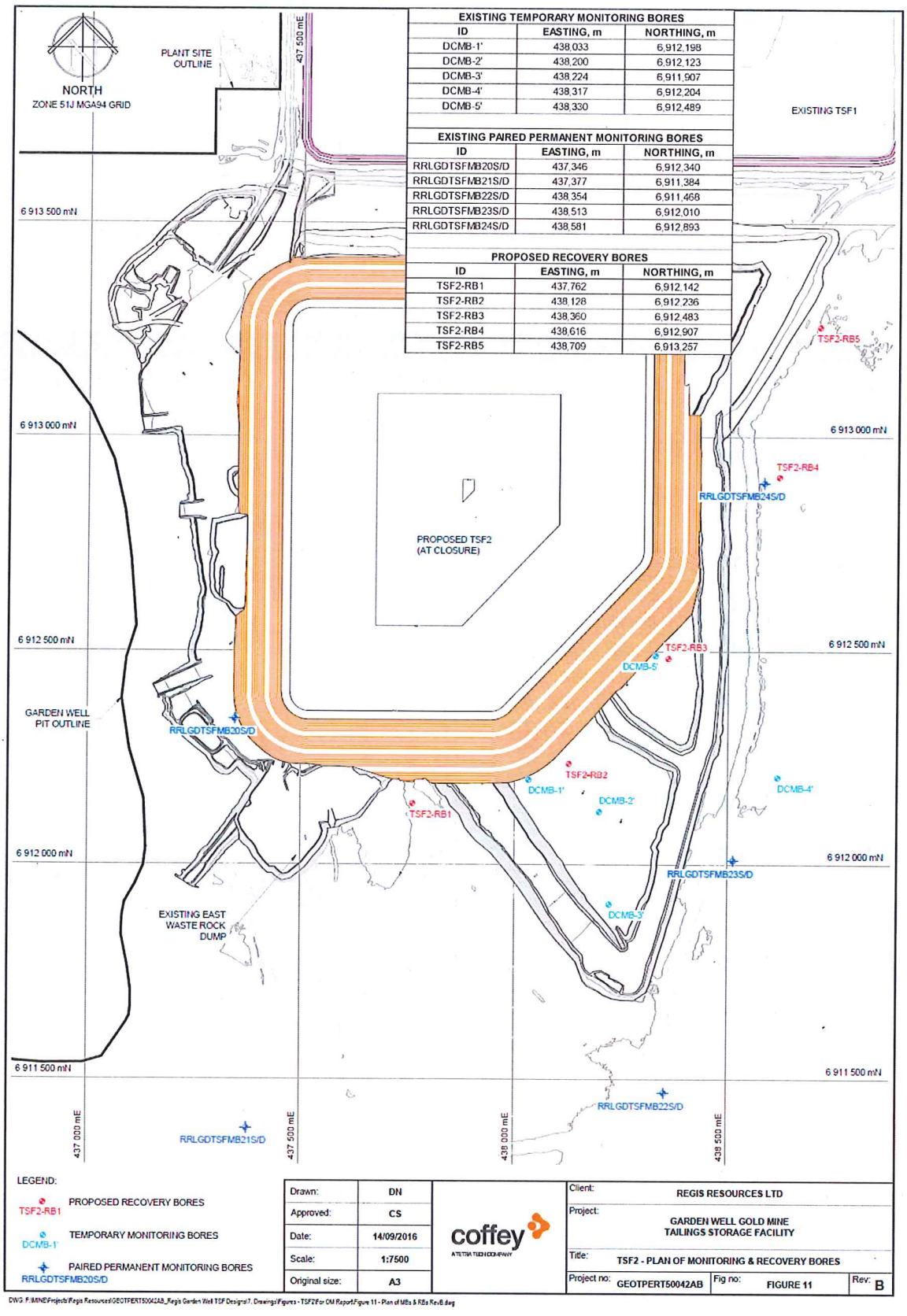
10 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.4.1: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
RRLGDTSFMB1A	~~Standing water level~~	~~4~~	~~mbgl~~		
RRLGDTSFMB1D	Total cyanide	-	mg/L	Spot sample	Quarterly
RRLGDTSFMB1S	WAD cyanide	0.5	mg/L		
RRLGDPB025	pH*	-	-		
RRLGDTSFMB3D	Electrical conductivity	-	mS/m		
RRLGDTSFMB3S	Total dissolved solids, As, Hg, Ni, Fe, Pb, Na, K, Ca, Cd, Mg, Zn, Cu, Tl, Mo, Se, Cr, NO_3, SO_4, HCO_3, CO_3, Cl	-	mg/L		
RRLGDTSFMB4D					
RRLGDTSFMB4S					
RRLGDPB027					
RRLGDPB026					
RRLGDTSFMB7D					
RRLGDTSFMB7S					
RRLGDTSFMB8					
RRLGDTSFMB9					
RRLGDTSFMB20S/D					
RRLGDTSFMB21S/D					
RRLGDTSFMB22S/D					
RRLGDTSFMB23S/D					
RRLGDTSFMB24S/D					

* In-field non-NATA accredited analysis permitted.

11 Map of monitoring locations to be added to Schedule 1



Appendix 1: Key Documents

	Document Title	Availability
1	DER, 2015, *Guidance Statement: Regulatory Principles.* Department of Environment Regulation, Perth.	accessed at http://www.der.wa.gov.au
2	DER, Sept 2015, *Guidance Statement on Setting Conditions.* Department of Environment Regulation, Perth.	
3	DER, Nov 2014, *Guidance Statement on Licensing Duration.* Department of Environment Regulation, Perth.	
4	DER, Sept 2015, *Guidance Statement on Licensing and Works Approvals.* Department of Environment Regulation, Perth.	
5	Licence amendment supporting documentation received on 19 September 2016: • Coffey, 16 September 2016, *Regis Resources Ltd - Garden Well Tailings Storage Facility 2 Design Report,* Coffey Corporate Services Pty Ltd, Burswood.	DER Records (A1167646)

Appendix 2: Summary of Licence Holder comments

Comments received	Environmental risk	DER consideration of risk:
• No comments	• N/A	• N/A