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

Licence

Environmental Protection Act 1986, Part V

Licensee: St Ives Gold Mining Company Pty Ltd

Licence: L8485/2010/2

Registered office: Level 5
50 Colin Street
WEST PERTH WA 6005

ACN: 098 386 273

Premises address: St Ives Gold Mine
Mining Tenements described in Schedule 1
KAMBALDA WEST WA 6442

Issue date: Thursday, 3 October 2013

Commencement date: Monday, 7 October 2013

Expiry date: Wednesday, 6 October 2021

Prescribed premises category
Schedule 1 of the *Environmental Protection Regulations 1987*

Category number	Category description	Category production or design capacity	Approved premises production or design capacity
05	Processing or beneficiation of metallic or non-metallic ore	50 000 tonnes or more per year	9 000 000 tonnes per annual period
06	Mine dewatering	50 000 tonnes or more per year	30 000 000 tonnes per annual period
07	Vat or in situ leaching of metal	5 000 tonnes or more per year	3 000 000 tonnes per annual period
54	Sewage facility	100 cubic metres or more per day	220 cubic metres per day
64	Class II or II putrescible landfill site	20 tonnes or more per year	1 000 tonnes per annual period

Conditions
This Licence is subject to the conditions set out in the attached pages.

[redacted].....
Tim Gentle
Manager Licensing – Industry Regulation (Resources Industries)
Officer delegated under section 20
of the *Environmental Protection Act 1986*

Contents

Introduction

This Introduction is not part of the Licence conditions.

DER's industry licensing role
The Department of Environment Regulation (DER) is a government department for the state of Western Australia in the portfolio of the Minister for Environment. DER's purpose is to advise on and implement strategies for a healthy environment for the benefit of all current and future Western Australians.

DER has responsibilities under Part V of the *Environmental Protection Act 1986* (the Act) for the licensing of prescribed premises. Through this process DER regulates to prevent, control and abate pollution and environmental harm to conserve and protect the environment. DER also monitors and audits compliance with works approvals and licence conditions, takes enforcement action as appropriate and develops and implements licensing and industry regulation policy.

Licence requirements
This Licence is issued under Part V of the Act. Conditions contained within the Licence relate to the prevention, reduction or control of emissions and discharges to the environment and to the monitoring and reporting of them.

Where other statutory instruments impose obligations on the Premises/Licensee the intention is not to replicate them in the licence conditions. You should therefore ensure that you are aware of all your statutory obligations under the Act and any other statutory instrument. Legislation can be accessed through the State Law Publisher website using the following link:
http://www.slp.wa.gov.au/legislation/statutes.nsf/default.html

For your Premises relevant statutory instruments include but are not limited to obligations under the:

- *Environmental Protection (Unauthorised Discharges) Regulations 2004* – these Regulations make it an offence to discharge certain materials such as contaminated stormwater into the environment other than in the circumstances set out in the Regulations.
- *Environmental Protection (Controlled Waste) Regulations 2004* - these Regulations place obligations on you if you produce, accept, transport or dispose of controlled waste.
- *Environmental Protection (Noise) Regulations 1997* – these Regulations require noise emissions from the Premises to comply with the assigned noise levels set out in the Regulations.

You must comply with your licence. Non-compliance with your licence is an offence and strict penalties exist for those who do not comply.

Licence holders are also reminded of the requirements of section 53 of the Act which places restrictions on making certain changes to prescribed premises unless the changes are in accordance with a works approval, licence, closure notice or environmental protection notice.

Licence fees
If you have a licence that is issued for more than one year, you are required to pay an annual licence fee prior to the anniversary date of issue of your licence. Non payment of annual licence fees will result in your licence ceasing to have effect meaning that it will no longer be valid and you will need to apply for a new licence for your Premises.

Ministerial conditions
If your Premises has been assessed under Part IV of the Act you may have had conditions imposed by the Minister for Environment. You are required to comply with any conditions imposed by the Minister.

Premises description and Licence summary
The St Ives Gold Mine (SIGM) is located approximately 8 km south of Kambalda and operated by St Ives Gold Mining Company Pty Ltd (St Ives). Mining operations on Lake Lefroy are licenced under L8485/2010/2 and approved under Ministerial Statement 879. SIGM ore is currently mined from four underground mines, three open pits and 10 surface stockpiles and processed at the Lefroy Mill.

Groundwater in the area is in the range of 50,000 to 300,000 mg/L total dissolved salts (TDS) with groundwater quality in the vicinity of Lake Lefroy ranging between 274,000 to 423,000 mg/L TDS and metal levels reflective of the mineralogy in the region. Mining operations are both land and lake based, where the latter operations are based on Lake Lefroy, a salt lake covering an area of 544 km^2. Playa lakes such as Lake Lefroy are prominent within the Salinaland Division and occur as dendritic and partly interconnected chains that outline fossil drainage systems (Dames & Moore 1999).

Dewatering activities at SIGM have previously been assessed by DER as presenting a low risk to the environment as groundwater mineralogy presents similar characteristics to the lake bed. The OEPA noted that Lake Lefroy is a hypersaline salt lake that generally has low levels of aquatic life and does not experience a freshwater phase. However, it is considered that the riparian zone, playas and clay pans that surround the lake are important in terms of providing habitat for aquatic biota and supporting the ecological function of the area. To minimise any further disturbance to the lake, dewatering pipelines are not bunded and telemetry and trigger alarms are used to assist in detecting leaks.

The main impacts associated SIGM are associated with discharges to land from tailings storage facilities (TSFs). Due to the high salinity of groundwater, mounding around TSFs presents a significant risk to native vegetation. Standing water levels around TSF4 have the potential to rise above the root zone of nearby native vegetation as a result of a recent 2.5 m lift authorised under Works Approval W5795/2015/1, which is expected to increase the hydraulic pressure on entrained water within TSF4 when further tailings are discharged to the facility. Therefore DER has made changes to the Licence to allow for the implementation of further seepage management measures to recover rising groundwater. The use of TSF4 as a primary tailings disposal option is only expected to continue for a short duration until the Leviathan In-pit TSF comes online in the third quarter of 2016.

This amendment aims to improve conditions relating to mine dewater discharges to surface water and groundwater within Lake Lefroy in a bid to reduce the regulatory requirement for St Ives to apply for future Licence amendments where the environmental risks of similar dewatering proposals have already been assessed as low. This coincides with St Ives application to relocate North Orchin In-Pit TSF decant water from Thunderer Pit to Bellerophon Pit to allow for the safe mining of Neptune Pit, directly adjacent to Thunderer Pit.

Approval to commence mining/dewatering at Delta Island South is required from the Office of Environmental Protection Authority with an amendment to Ministerial Statement 879. Therefore this amendment does not authorise the dewatering of Delta Island South and the premises boundary remains unchanged.

The licences and works approvals issued for the Premises since 01/10/2013 are:

Instrument log		
Instrument	**Issued**	**Description**
W5724/2014/1	15/09/2014	Mine dewatering at Invincible Project
W5583/2014/1	03/04/2014	Construction of TSF3
W5547/2013/1	06/02/2014	Mine dewatering at Idough Project Area
W5558/2013/1	30/01/2014	Mine dewatering at Swiftsure Project
W5557/2013/1	27/01/2014	Mine dewatering at Redback Project Area
W5497/2013/1	14/11/2013	Mine dewatering at Argo/Athena/Hamlet Complex
L8485/2010/2	03/10/2013	Licence re-issue
L8485/2010/2	08/01/2015	Licence amendment to new format and to extend dewatering operations to Invincible Pit
L8485/2010/2	06/08/2015	Licence amendment to expand the dewatering network
L8485/2010/2	11/02/2016	Licence amendment to reduce WWTP monitoring requirements and to authorise the discharge of tailings and return water to the newly lifted TSF4.
L8485/2010/2	17/03/2016	Licence amendment to change the dewatering configuration
L8485/2010/2	16/06/2016	Licence amendment to relocate North Orchin In-Pit TSF decant water from Thunderer Pit to Bellorophon Pit and to improve conditions relating to mine dewater discharges to surface water and ground water within Lake Lefroy.

Severance
It is the intent of these Licence conditions that they shall operate so that, if a condition or a part of a condition is beyond the power of this Licence to impose, or is otherwise *ultra vires* or invalid, that condition or part of a condition shall be severed and the remainder of these conditions shall nevertheless be valid to the extent that they are within the power of this Licence to impose and are not otherwise *ultra vires* or invalid.

END OF INTRODUCTION

Licence conditions

1 General

1.1 Interpretation

1.1.1 In the Licence, definitions from the *Environmental Protection Act 1986* apply unless the contrary intention appears.

1.1.2 For the purposes of this Licence, unless the contrary intention appears:

'Act' means the *Environmental Protection Act 1986;*

'annual period' means the inclusive period from 1 January until 31 December in the same year;

'AS/NZS 2031' means the Australian Standard AS/NZS 2031 *Selection of containers and preservation of water samples for microbiological analysis;*

'AS/NZS 5667.1' means the Australian Standard AS/NZS 5667.1 *Water Quality – Sampling – Guidance of the Design of sampling programs, sampling techniques and the preservation and handling of samples;*

'AS/NZS 5667.4' means the Australian Standard AS/NZS 5667.4 *Water Quality – Sampling – Guidance on sampling from lakes, natural and man-made;*

'AS/NZS 5667.10' means the Australian Standard AS/NZS 5667.10 *Water Quality – Sampling – Guidance on sampling of waste waters;*

'AS/NZS 5667.11' means the Australian Standard AS/NZS 5667.11 *Water Quality – Sampling – Guidance on sampling of groundwaters;*

'AS/NZS 5667.12' means the Australian Standard AS/NZS 5667.12 Water Quality – Sampling – Guidance on sampling of bottom sediments;

'averaging period' means the time over which a limit is measured or a monitoring result is obtained;

'CEO' means Chief Executive Officer of the Department of Environment Regulation;

'CEO' for the purpose of correspondence means;

Manager - Licensing (Resource Industries)
At the following address:

Department Administering the *Environmental Protection Act 1986*
Locked Bag 33
CLOISTERS SQUARE WA 6850
Telephone: (08) 9333 7510
Facsimile: (08) 9333 7550
Email: info@der.wa.gov.au;

'cfu/100 mL' means colony forming units per 100 millilitres;

'clean fill' has the meaning defined in Landfill Definitions;

'freeboard' means the distance between the maximum water surface elevations and the top of retaining banks or structures at their lowest point;

'Hazardous waste' has the meaning defined in Landfill Definitions;

'Inert Waste Type 1' has the meaning defined in Landfill Definitions;

'Inert Waste Type 2' has the meaning defined in Landfill Definitions;

'Landfill Definitions' means the document titled "Landfill Waste Classification and Waste Definitions 1996" published by the Chief Executive Officer of the Department of Environment as amended from time to time.

'Licence' means this Licence numbered L8485/2010/2 and issued under the Act;

'Licensee' means the person or organisation named as Licensee on page 1 of the Licence;

'mbgl' means metres below ground level;

'mRL' means metres Relative Level or, height above a standardised 'mean sea level' datum;

'NATA' means the National Association of Testing Authorities, Australia;

'NATA accredited' means in relation to the analysis of a sample that the laboratory is NATA accredited for the specified analysis at the time of the analysis;

'Premises' means the area defined in the Premises Map in Schedule 1 and listed as the Premises address on page 1 of the Licence;

'quarterly' means the 4 inclusive periods from 1 January to 31 March, 1 April to 30 June, 1 July to 30 September and 1 October to 31 December;

'Schedule 1' means Schedule 1 of this Licence unless otherwise stated;

'Schedule 2' means Schedule 2 of this Licence unless otherwise stated;

'six monthly' means the 2 inclusive periods from 1 January to 30 June and 1 July to 31 December in the following year;

'spot sample' means a discrete sample representative at the time and place at which the sample is taken;

'Stage 1' means construction of dewatering infrastructure for Temeraire Pit;

'Stage 2' means construction of dewatering infrastructure for Intrepide Pit;

'Stage 3' means construction of dewatering infrastructure for A5 Pit;

'Stage 4' means construction of the turkeys nest and connecting dewatering pipeline infrastructure from Foster Shaft;

'tipping area' means the area of the landfill in which waste other than cover material is being deposited;

'TSF' means tailings storage facility;

'turkey's nest' means a settlement dam that receives dewater and is lined with a geotextile fabric that allows dewater to permeate through to Lake Lefroy;

'USEPA' means United States (of America) Environmental Protection Agency;

'usual working day' means 0800 – 1700 hours, Monday to Friday excluding public holidays in Western Australia;

'WWTP' means the wastewater treatment plants located at Cave Rocks (P1) and Lefroy Admin (P2), Leviathan (P3), Argo (P4) and Athena Paste (P5) sites as depicted in Schedule 1; and

'zone of influence' means the area of a receiving environment with the potential to be altered or changed as a result of an emission or discharge.

1.1.3 Any reference to an Australian or other standard in the Licence means the relevant parts of the the standard in force from time to time during the term of this Licence.

1.1.4 Any reference to a guideline or code of practice in the Licence means the version of that guideline or code of practice in force from time to time, and shall include any amendments or replacements to that guideline or code of practice made during the term of this Licence.

1.2 Premises operation

1.2.1 The Licensee shall ensure that all pipelines containing saline dewatering effluent, tailings or return water are either:

(a) equipped with telemetry systems and pressure sensors along pipelines to allow for the detection of leaks and failures; or
(b) equipped with automatic cut-outs in the event of a pipe failure; or
(c) provided with secondary containment sufficient to contain any spill for a period equal to the time between routine inspections.

1.2.2 The Licensee shall ensure that any saline dewatering effluent shall only be managed in the following manner:
(a) used for dust suppression in a manner that minimises damage to surrounding vegetation;
(b) discharged to previously mined pits; or
(c) discharged to Lake Lefroy at discharge points defined in Schedule 1.

1.2.3 The Licensee shall ensure that tailings, decant water, dewater effluent and sewage are only discharged into containment cells, ponds and enclosed tanks with the relevant infrastructure requirements and at the locations specified in Table 1.2.1 and identified in Schedule 1.

Table 1.2.1: Containment infrastructure

Containment point reference	Containment cell or dam number(s)	Material	Infrastructure requirements
C1	TSF2	Tailings	Lined with low permeability materials to limit seepage to groundwater
C2	TSF3		
C3	TSF4	Tailings	Lined with low permeability materials to limit seepage to groundwater TSF built to a height no greater than 311.5 mRL
C4	TSF3 Decant Water Pond	Decant Water	Lined with at least 0.5m of clay with a permeability of $<10^{-7}$ m/s or equivalent
C5	TSF1 Decant Water Pond		
C6	TSF4 Decant Water Pond	Decant Water and recovered water from TSF4-11A, TSF-11B, TSF12A, TSF12B, TSF4-16, TSF4-20A, TSF4-21, TSF4-22A and TSF4-24	
C7 and C8	Processing pond for Lefroy Mill	Ore, TSF decant water, process chemicals	Lined with a geotextile liner to limit seepage to groundwater
C9	Processing pond for the Heap Leach Facility	Ore, process chemicals	Lined with an HDPE liner
P1 to P5	WWTPs	Sewage	Closed tank system

1.2.4 The Licensee shall manage containment cells in Table 1.2.1 such that:
(a) a minimum top of embankment freeboard of 300 mm or a 1 in 100 year/72 hour storm event (whichever is greater) is maintained; and
(b) methods of operation minimise the likelihood of erosion of the embankments by wave action.

1.2.5 The Licensee shall manage TSFs such that:
(a) a seepage collection and recovery system is provided and used to capture seepage from the TSF;
(b) seepage is returned to the TSF or re-used in process;

(c) the supernatant pond on the TSF is minimised as far as practicable.

1.2.6 The Licensee shall:
(a) undertake inspections as detailed in Table 1.2.2;
(b) where any inspection identifies that an appropriate level of environmental protection is not being maintained, take corrective action to mitigate adverse environmental consequences as soon as practicable; and
(c) maintain a record of all inspections undertaken.

Table 1.2.2: Inspection of infrastructure

Scope of inspection	Type of inspection	Frequency of inspection
Tailings pipelines	Visual integrity	8 hourly
Return water lines	Visual integrity	8 hourly
Embankment freeboard	Visual to confirm required freeboard capacity is available	8 hourly
Tailings deposition	Visual to confirm that tailings are deposited evenly around the TSF	Daily
Ponding on the surface of the TSF	Visual to confirm ponding is not concentrated on TSF internal embankments	Daily
External walls of TSF	Visual to confirm no visible seepage is apparent	Daily
Borefield pipelines and pump stations	Visual integrity	Every two days

1.2.7 The Licensee shall undertake an annual assessment of vegetation within the zone of influence of TSF 4. The assessment shall:
(a) photograph and record the presence and condition of key vegetation features within the zone of influence;
(b) compare the results of the assessment against previous years assessments and identify whether any deterioration in the presence and/or quality of vegetation has taken place; and
(c) be undertaken by a person suitably qualified in vegetation identification and sampling.

1.2.8 The Licensee shall undertake an annual water balance for TSF 4. 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.

1.2.9 The Licensee shall only allow waste to be accepted on to the Premises if:
(a) it is of a type listed in Table 1.2.3; and
(b) the quantity accepted is below any limit listed in Table 1.2.3; and
(c) it meets any specification listed in Table 1.2.3

Table 1.2.3: Waste acceptance

Waste	Quantity Limit	Specification[1]
WWTPs		
Sewage	Cumulative total for all WWTPs of 220 m^3/day	Accepted through sewer inflows only
Landfill		
Clean Fill	None	None Specified
Inert Waste Type 1	1,000 tonnes	Waste containing visible asbestos or ACM shall not be

		accepted.
Inert Waste Type 2		Scrap metal, tyres and plastic only
Putrescible waste		None specified

Note 1: Additional requirements for the acceptance of controlled waste are set out in the *Environmental Protection (Controlled Waste) Regulations 2004.*

1.2.10 The Licensee shall ensure that where waste does not meet the waste acceptance criteria set out in condition 1.2.9 it is removed from the Premises by the delivery vehicle or, where that is not possible, the Licensee shall contact the CEO to agree a course of action in relation to the waste.

1.2.11 The Licensee shall ensure that the wastes accepted onto the Premises are only subjected to the process(es) set out in Table 1.2.4 and in accordance with any process requirements described in that table.

Table 1.2.4: Waste processing

Waste type	Process	Process requirements
Sewage	Physical, biological and chemical treatment	Treatment of sewage waste shall not exceed 200 m^3/day cumulative volume.
Sewage sludge	Disposal	Removed by a licensed controlled waste carrier
All	Disposal of waste by landfilling	The separation distance between the base of the landfill and the highest groundwater level shall not be less than 2m.
Clean Fill	Receipt, handling and storage prior to disposal	Stockpile clean fill to allow for the covering of waste for at least two weeks.
Inert Waste Type 1		Placed into landfill trenches
Inert Waste Type 2		Tyres to be incorporated into waste rock material.
Putrescibles waste	Disposal	Covered with a minimum of 200 mm clean fill at least weekly.
Hazardous waste	Receipt, handling and storage prior to disposal	Must be stored in a bunded area/container prior to disposal offsite.

1.2.12 The Licensee shall manage the landfilling activities to ensure:
- (a) the size of the tipping face is kept to a minimum and not larger than 30 m by 30 m;
- (b) waste is levelled and compacted to ensure all faces are stable and capable of retaining rehabilitation material;
- (c) waste is covered as soon as possible after it is discharged and not later than by the end of the working day; and
- (d) rehabilitation of a cell or phase takes place within 6 months after disposal in that cell or phase has been completed.

1.2.13 The Licensee shall take all reasonable and practical measures to ensure that no windblown waste escapes from the Premises and that windblown waste is collected on at least a weekly basis and appropriately contained.

1.2.14 The Licensee shall ensure that no waste is burnt on the Premises.

1.2.15 The Licensee shall manage the irrigation of treated wastewater such that:
- (a) treated wastewater is evenly distributed over the irrigation area;
- (b) no soil erosion occurs;
- (c) irrigation does not occur on land that is waterlogged; and

(d) vegetation cover is maintained over the irrigation area.

1.2.16 The Licensee shall manage the wastewater treatment vessels such that there is no discernible seepage loss from the vessels.

1.2.17 The Licensee shall construct and/or relocate dewatering infrastructure within the licenced premises as operational demands require in accordance with conditions of this Licence.

2 Emissions

2.1 General

2.1.1 The Licensee shall record and investigate the exceedance of any descriptive or numerical limit specified in any part of section 2 of this Licence.

2.2 Point source emissions to air

2.2.1 The Licensee shall ensure that where waste is emitted to air from the emission points in Table 2.2.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.2.1: Emission points to air

Emission point reference and location on Map of emission points	Emission Point	Emission point height (m)	Source, including any abatement
A1	Stack 1	2.69	Carbon regeneration stack
A2	Stack 2	13.28	Gold smelting furnace stack

2.3 Point source emissions to surface water

2.3.1 The Licensee is permitted, subject to conditions in the Licence, to emit wastes to water from the emissions points listed in Table 2.3.1 and identified in the Map of emission points in Schedule 1.

Table 2.3.1: Emission points to surface water

Emission point reference and location on Map of emission points	Description	Source including abatement
W1, W2, W3, W4, W6, W7, W9, W10, W11, W12, W13 and W14	Mine dewater	Mine dewater to Lake Lefroy from mine voids located within Lake Lefroy[1]. Mine dewater to Lake Lefroy from land-based pits; A5, Africa, Cave Rocks, Foster, Hamlet, West and Idough. Prior to discharge mine dewater must be settled in a turkey's nest lined with a geotextile fabric designed to filter sediment.
W5	Mine dewater	Mine dewater from Bellerophon Pit, Africa Pit and the Leviathan Complex[2] to Lake Lefroy via pipework and/or channels. Prior to discharge mine dewater must be settled in a turkey's nest lined with a geotextile fabric designed to filter sediment.
W8	Mine	Mine dewater from Athena underground mine,

	dewater	Apollo Pit and Argo Pit to Lake Lefroy via the Argo Hydroslide and two settling ponds

Note 1: Includes any mine voids, with the exception of Thunderer Pit, located on or within Lake Lefroy clay pans, saltpans and/or playas
Note 2: The Leviathan Complex consists of Leviathan Pit, Paddys Pit, Sirius Pit, Britannia/Orion Pit and Britannia Footwell Pit

2.3.2 The Licensee must cease the dewatering of Bellerophon Pit to Lake Lefroy upon the receipt of decant water from Thunderer Pit.

2.3.3 The Licensee shall not cause or allow point source emissions to surface water that do not meet the limits listed in Table 2.3.2.

Table 2.3.2: Point source emission limits to surface water

Emission point reference	Parameter	Limit (including units)	Averaging period
W1, W2, W3, W4, W5, W6, W7, W8, W9, W10 W11, W12, W13 and W14	pH[1]	Between 6.0 and 8.0	N/A

2.4 Point source emissions to groundwater

2.4.1 The Licensee shall ensure that where waste is emitted to groundwater from the emission points in Table 2.4.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.4.1: Point source emissions to groundwater

Emission point reference and location	Description	Source including abatement
Africa Pit and mine voids located within Lake Lefroy[1]. Includes discharges to nearby transfer dams associated with each pit.	Dewater from active mining voids to disused mining voids	Mine voids located within the Lake Lefroy[1,2]
Thunderer Pit	Decant water	North Orchin In-Pit TSF
Bellerophon Pit		Thunderer Pit
Africa Pit		Bellerophon Pit, Leviathan Pit, Leviathan underground, Britannia Pit, Brittania underground, Sirius Pit and Sirius underground
Argo Pit		Apollo Pit, Diana Pit and Athena Boxcut
Apollo Pit		Argo Pit

Note 1: Includes any mine voids, with the exception of Thunderer Pit, located on or within Lake Lefroy clay pans, saltpans and/or playas
Note 2: Dewatering of Bellerophon Pit to Lake Lefroy must cease after the receipt of decant water from Thunderer Pit.

2.5 Emissions to land

2.5.1 The Licensee shall ensure that where waste is emitted to land from the emission points in Table 2.5.1 and identified on the map of emission points in Schedule 1 it is done so in accordance with the conditions of this Licence.

Table 2.5.1: Emissions to land		
Emission point reference and location on Map of emission points	**Description**	**Source including abatement**
P1, P2, P3, P4 and P5	Discharge from irrigation pump station to on-site irrigation areas	Treated wastewater from Cave Rocks, Lefroy Admin, Leviathan, Argo and Athena Paste Sewage Treatment Plants.

2.6 Fugitive emissions

2.6.1 The Licensee shall ensure that fugitive emissions are managed in accordance with the documents, or parts of documents, specified in Table 2.6.1.

Table 2.6.1: Dust Management Plan		
Management Plan Reference	**Parts**	**Date of Document**
St Ives Gold Mine Dust Environmental Procedure (SIG-ENV-PR029	Section 3	01/06/2005

3 Monitoring

3.1 General monitoring

3.1.1 The licensee shall ensure that:
(a) all water samples are collected and preserved in accordance with AS/NZS 5667.1;
(b) all wastewater sampling is conducted in accordance with AS/NZS 5667.10;
(c) all surface water sampling is conducted in accordance with AS/NZS 5667.4, AS/NZS 5667.6 or AS/NZS 5667.9 as relevant;
(d) all groundwater sampling is conducted in accordance with AS/NZS 5667.11;
(e) all sediment sampling is conducted in accordance with AS/NZS 5667.12;
(f) all microbiological samples are collected and preserved in accordance with AS/NZS 2031; and
(g) all laboratory samples are submitted to and tested by a laboratory with current NATA accreditation for the parameters being measured unless indicated otherwise in the relevant table.

3.1.2 The Licensee shall ensure that :
(a) monthly monitoring is undertaken at least 15 days apart;
(b) quarterly monitoring is undertaken at least 45 days apart;
(c) six monthly monitoring is undertaken at least 5 months apart; and
(d) annual monitoring is undertaken at least 9 months apart.

3.1.3 The Licensee shall, where the requirements for calibration cannot be practicably met, or a discrepancy exists in the interpretation of the requirements, bring these issues to the attention of the CEO accompanied with a report comprising details of any modifications to the methods.

3.2 Monitoring of point source emissions to surface water

3.2.1 The Licensee shall undertake the monitoring in Table 3.2.1 according to the specifications in that table and record and investigate results that do not meet any limit specified.

Table 3.2.1: Monitoring of point source emissions to surface water				
Emission point reference	**Parameter**	**Units**	**Averaging Period**	**Frequency**
W1, W2, W3, W4, W5, W6, W7, W8, W9, W10, W11, W12, W13 and W14	Volumetric flow rate (cumulative)	L/s m^3/day	Monthly	Continuous
	pH[1]	N/A	Spot sample	Quarterly

Note 1: In-field non-NATA accredited analysis permitted.

3.3 Monitoring of emissions to land

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

Table 3.3.1: Monitoring of emissions to land					
Monitoring point reference and location	**Process description**	**Parameter**	**Units**	**Averaging period**	**Frequency**
P1, P2, P3, P4 and P5	Discharge from WWTPs to irrigation fields	*E.coli*	cfu/100 mL	Spot sample	Annually
		pH[1]	N/A		
		Biochemical Oxygen Demand	mg/L		
		Total Nitrogen			
		Total Phosphorus			
		Total Suspended Solids			
		Total Dissolved Solids			
		Ammonium-nitrogen			
		Nitrate+nitrate-nitrogen			

Note 1: In-field non-NATA accredited analysis permitted.

3.4 Monitoring of inputs and outputs

3.4.1 The Licensee shall undertake the monitoring in Table 3.4.1 according to the specifications in that table.

Table 3.4.1: Monitoring of inputs and outputs					
Input/Output	**Monitoring point reference**	**Parameter**	**Units**	**Averaging period**	**Frequency**
Sewage - Inlet Flow	Inflow meter at P1, P2, P3, P4 and P5	Volumetric flow rate (cumulative)	m^3/day	Monthly	Continuous
Waste Inputs	N/A	Inert Waste Type 1, Inert Waste Type 2	m^3 (where no weighbridge is present)	Annual	Each load arriving at the Premises
Waste Outputs	N/A	Waste type as defined in the Landfill Definitions			Each load leaving or rejected from the Premises

3.5 Ambient environmental quality monitoring

3.5.1 The Licensee shall undertake the monitoring in Tables 3.5.1 and 3.5.2 according to the specifications in those tables and record and investigate results that do not meet any limit specified.

Table 3.5.1: Monitoring of ambient groundwater quality

Monitoring point reference and location	Parameter	Limit	Units	Averaging period	Frequency
Heap leach facility bores: CD10114, CD10116, CD10118, CD9261, CD9263, CD9265, CD9267, CD9271 and CD9739 **TSF1:** CD5574 **TSF2:** SID580 **TSF3:** CD10100, CD10104, CD10110, CD10102 **TSF4:** TSF4-4A, TSF4-5A, TSF4-6A, TSF4-7A, TSF4-8A and TSF4-9A **North Orchin TSF:** NOMB09, NOMB02d, NOMB03 d, NOMB04 d	Standing water level	4	mbgl	Spot sample	Quarterly
TSF4: TSF4-11A, TSF4-11B	Standing water level	4	mbgl	Spot sample	Monthly
TSF4: TSF4-12A, TSF4-12B	Standing water level	4	mbgl	Spot sample	Monthly
TSF4: TSF4-13A, TSF4-13B, TSF4-14A	Standing water level	N/A	mbgl	Spot sample	Monthly
Heap leach facility bores: CD10114, CD10116, CD10118, CD9261, CD9263, CD9265, CD9267, CD9271 and CD9739 **TSF1:** CD6194, CD5574	pH[1]	Between 3.0 and 9.0	N/A	Spot sample	Six monthly
	Weak Acid Dissociable Cyanide	0.5 mg/L	mg/L		
	Electrical Conductivity	N/A	µS/cm		
	Total Dissolved Solids		mg/L		
	Aluminium				
	Arsenic				
	Calcium				
	Cadmium				
	Chlorine				
	Chromium				
	Chromium (III)				
	Chromium (VI)				
	Cobalt				
	Copper				
	Iron				
	Lead				
	Mercury				
	Magnesium				
	Manganese				
	Nickel				
	Potassium				
	Selenium				

	Sodium				
	Strontium				
	Vanadium				
	Zinc				
TSF2: SID580, SID597, CD2538 **TSF3:** CD10099, CD10105, CD10110, CD10102 **TSF4:** TSF4-4A, TSF4-5A, TSF4-7A, TSF4-9A, TSF4-11A, TSF4-12A, TSF4-13B, TSF4-21, TSF4-24 **North Orchin TSF:** NOMB09	pH[1]	Between 3.0 and 9.0	N/A	Spot sample	Quarterly
	Weak Acid Dissociable Cyanide	N/A	µS/cm		
	Electrical Conductivity		mg/L		
	Total Dissolved Solids				
	Aluminium				
	Arsenic				
	Calcium				
	Cadmium				
	Chlorine				
	Chromium				
	Chromium (III)				
	Chromium (VI)				
	Cobalt				
	Copper				
	Iron				
	Lead				
	Mercury				
	Magnesium				
	Manganese				
	Nickel				
	Potassium				
	Selenium				
	Sodium				
	Strontium				
	Vanadium				
	Zinc				

Note 1: In-field non-NATA accredited analysis permitted.

Table 3.5.2: Monitoring of ambient sediment quality

Monitoring point reference and location	Parameter	Units	Averaging Period	Frequency
W1, W2, W3, W4, W5, W6, W7, W8, W9, W10, W11, W12, W13 and W14	pH[1]	N/A	Spot sample	Annually in the same month
	Aluminium	mg/L		
	Arsenic			
	Beryllium			
	Cadmium			
	Copper			
	Chromium			
	Cobalt			
	Iron			
	Lead			
	Mercury			
	Manganese			
	Nickel			
	Selenium			
	Vanadium			
	Zinc			

Note 1: In-field non-NATA accredited analysis permitted.

4 Information

4.1 Records

4.1.1 All information and records required by the Licence shall:
- (a) be legible;
- (b) if amended, be amended in such a way that the original and subsequent amendments remain legible or are capable of retrieval;
- (c) except for records listed in 5.1.1(d) be retained for at least 6 years from the date the records were made or until the expiry of the Licence or any subsequent licence; and
- (d) for those following records, be retained until the expiry of the Licence and any subsequent licence:
  - (i) off-site environmental effects; or
  - (ii) matters which affect the condition of the land or waters.

4.1.2 The Licensee shall ensure that:
- (a) any person left in charge of the Premises is aware of the conditions of the Licence and has access at all times to the Licence or copies thereof; and
- (b) any person who performs tasks on the Premises is informed of all of the conditions of the Licence that relate to the tasks which that person is performing.

4.1.3 The Licensee shall complete an Annual Audit Compliance Report indicating the extent to which the Licensee has complied with the conditions of the Licence, and any previous licence issued under Part V of the Act for the Premises for the previous annual period.

4.1.4 The Licensee shall implement a complaints management system that as a minimum records the number and details of complaints received concerning the environmental impact of the activities undertaken at the Premises and any action taken in response to the complaint.

4.2 Reporting

4.2.1 The Licensee shall submit to the CEO an Annual Environmental Report within 90 calendar days after the end of the annual period. The report shall contain the information listed in Table 4.2.1 in the format or form specified in that table.

Table 4.2.1: Annual Environmental Report

Condition or table (if relevant)	Parameter	Format or form[1]
-	Summary of any failure or malfunction of any pollution control equipment and any environmental incidents that have occurred during the annual period and any action taken	None specified
4.1.3	Compliance	Annual Audit Compliance Report (AACR)
4.1.4	Complaints summary	None specified
1.2.7	Borefield pipeline log of seepage, spills or leaks	
1.2.8	Annual vegetation monitoring around TSF4	
1.2.9	Annual water balance for TSF4	
2.6.1	Measures taken to suppress dust	
Table 3.2.1	Monitoring of point source emissions to surface waters	WR1
Table 3.3.1	Monitoring of emissions to land	LR1
	Contaminant loading (total annual loading kg/yr and kg/ha/yr) to land of parameters monitored in Table 3.3.1 (except pH and E.coli)	None specified

Table 3.4.1	Monitoring of inputs and outputs	None specified
Table 3.5.1	Monitoring of ambient groundwater quality	AGWQ1
Table 3.5.2	Monitoring of ambient sediment quality	None specified

Note 1: Forms are in Schedule 2

4.2.1 The Licensee shall ensure that the Annual Environmental Report also contains:
(a) an assessment of the information contained within the report against previous monitoring results and Licence limits; and
(b) a Dewatering Discharge Report.

4.2.2 The Dewatering Discharge Report required by condition 4.2.2 (b) shall address the environmental effects of mine dewater discharge to the Lake Lefroy environment and include but not limited to:
(a) cumulative discharge volumes;
(b) a map depicting dewater source locations and discharge points to Lake Lefroy; and
(c) methods/infrastructure used to prevent environmental impacts at each discharge location

4.3 Notification

4.3.1 The Licensee shall ensure that the parameters listed in Table 5.3.1 are notified to the CEO in accordance with the notification requirements of the table.

Table 5.3.1: Notification requirements

Condition or table (if relevant)	Parameter	Notification requirement[1]	Format or form[2]
2.1.1	Breach of any limit specified in the Licence	Part A: As soon as practicable but no later than 5pm of the next usual working day. Part B: As soon as practicable	N1
3.1.5	Calibration report	As soon as practicable.	None specified

Note 1: Notification requirements in the Licence shall not negate the requirement to comply with s72 of the Act
Note 2: Forms are in Schedule 2

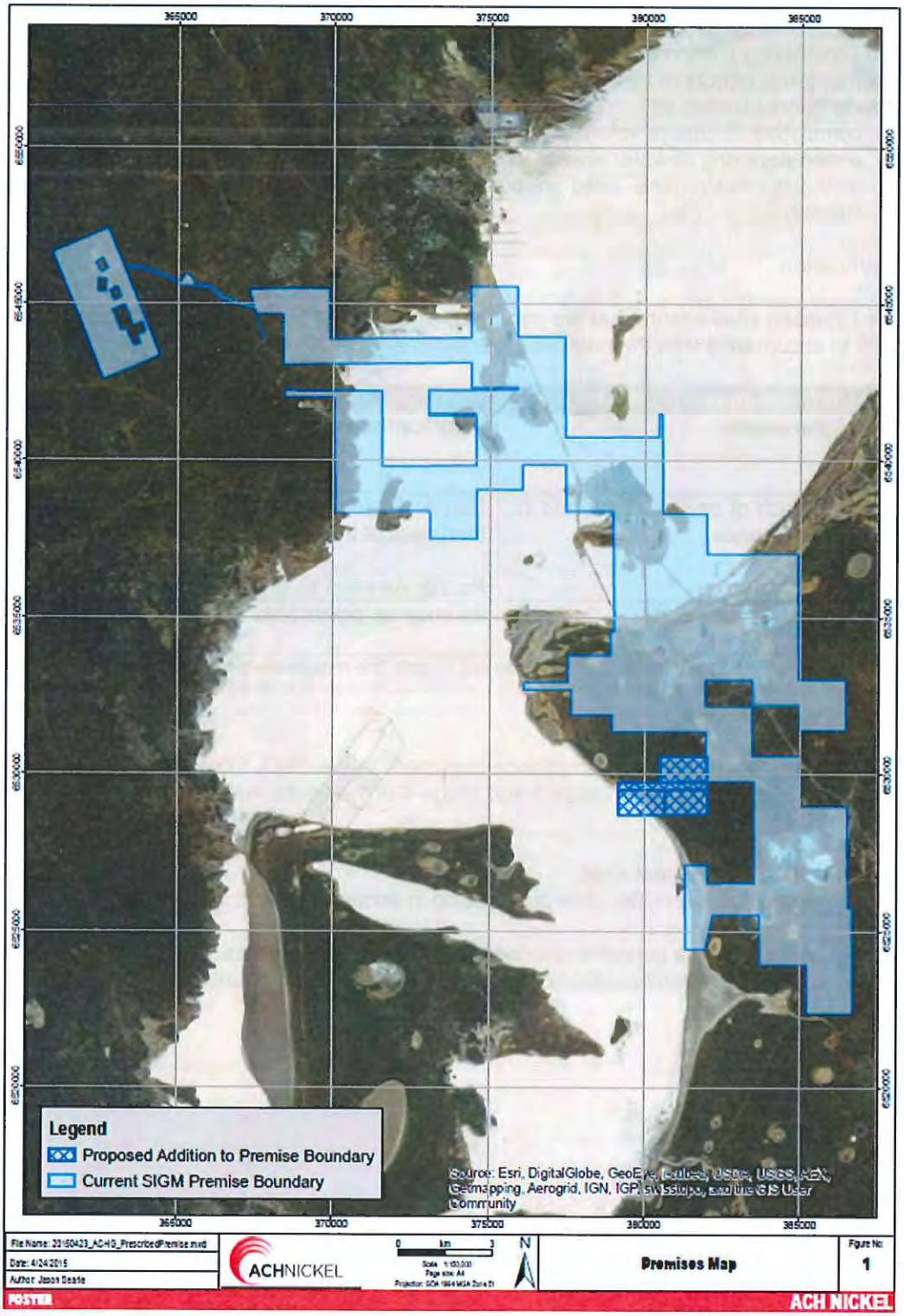
4.3.2 The Licencee shall submit a compliance document to the CEO, following the construction of each of Stage 1, Stage 2, Stage 3 and Stage 4 of the works and prior to commissioning of the same.

4.3.3 The compliance document shall:
(a) certify that the works were constructed in accordance with the conditions of the Licence;
(b) be signed by a person authorised to represent the Licensee and contain the printed name and position of that person within the company.

Schedule 1: Maps

Premises map

The Premises is shown in the map below. The blue line depicts the Premises boundary.



Premises tenement list

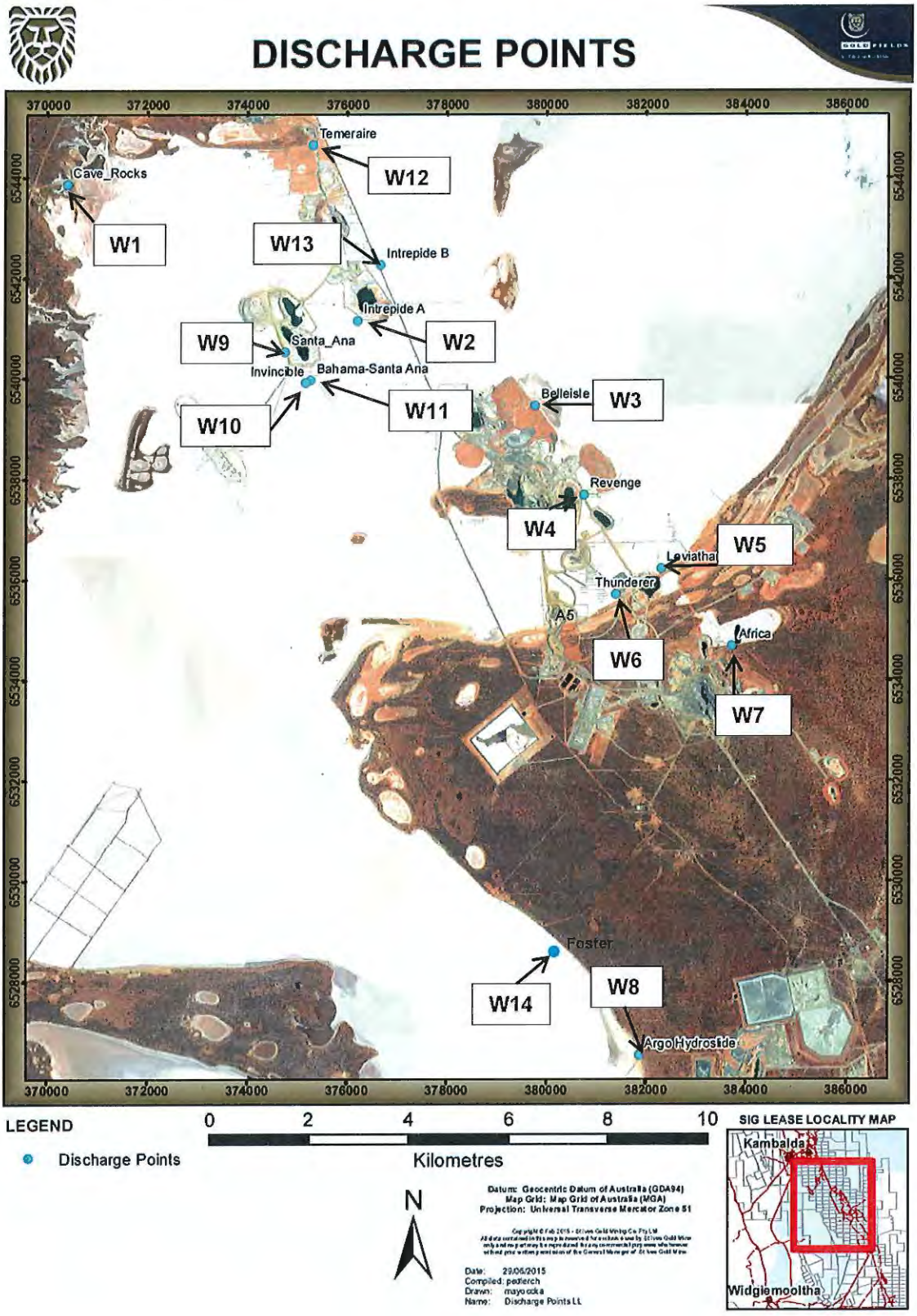
The Premises boundary is defined by the tenements listed in the table below:

St Ives Gold Mining Pty Ltd				
L15/214	M15/1544	M15/1579	M15/1629	M15/1695
M15/300	M15/1546	M15/1580	M15/1630	M15/1698
M15/476	M15/1549	M15/1581	M15/1631	M15/1699
M15/1226	M15/1550	M15/1590	M15/1632	M15/1702
M15/1495	M15/1556	M15/1591	M15/1633	M15/1703
M15/1496	M15/1559	M15/1593	M15/1634	M15/1802
M15/1503	M15/1560	M15/1594	M15/1657	
M15/1509	M15/1561	M15/1607	M15/1658	
M15/1513	M15/1562	M15/1608	M15/1659	
M15/1516	M15/1564	M15/1610	M15/1664	
M15/1517	M15/1565	M15/1611	M15/1668	
M15/1518	M15/1566	M15/1612	M15/1669	
M15/1527	M15/1567	M15/1614	M15/1670	
M15/1531	M15/1568	M15/1615	M15/1673	
M15/1532	M15/1570	M15/1618	M15/1675	
M15/1537	M15/1572	M15/1619	M15/1687	
M15/1540	M15/1573	M15/1622	M15/1690	
M15/1541	M15/1575	M15/1623	M15/1692	
M15/1542	M15/1576	M15/1627	M15/1693	
M15/1543	M15/1578	M15/1628	M15/1694	

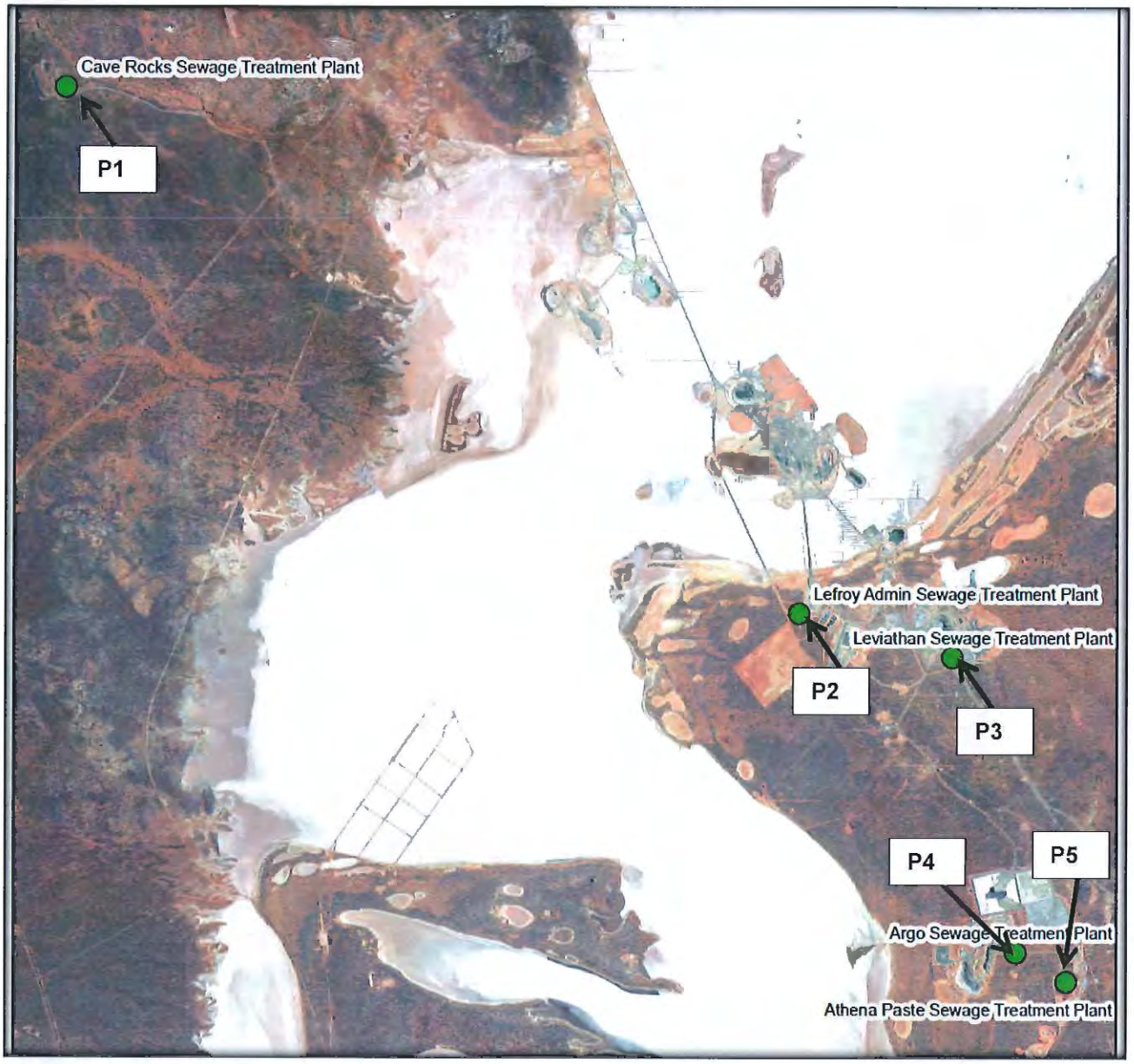
Map of emission and monitoring points

The locations of the emission points defined in Table 2.2.1 are shown below.

The locations of the emission points defined in Tables 2.3.1, 2.3.2 and 2.4.1 are shown below. These locations also indicate the monitoring points defined in Table 3.5.2.

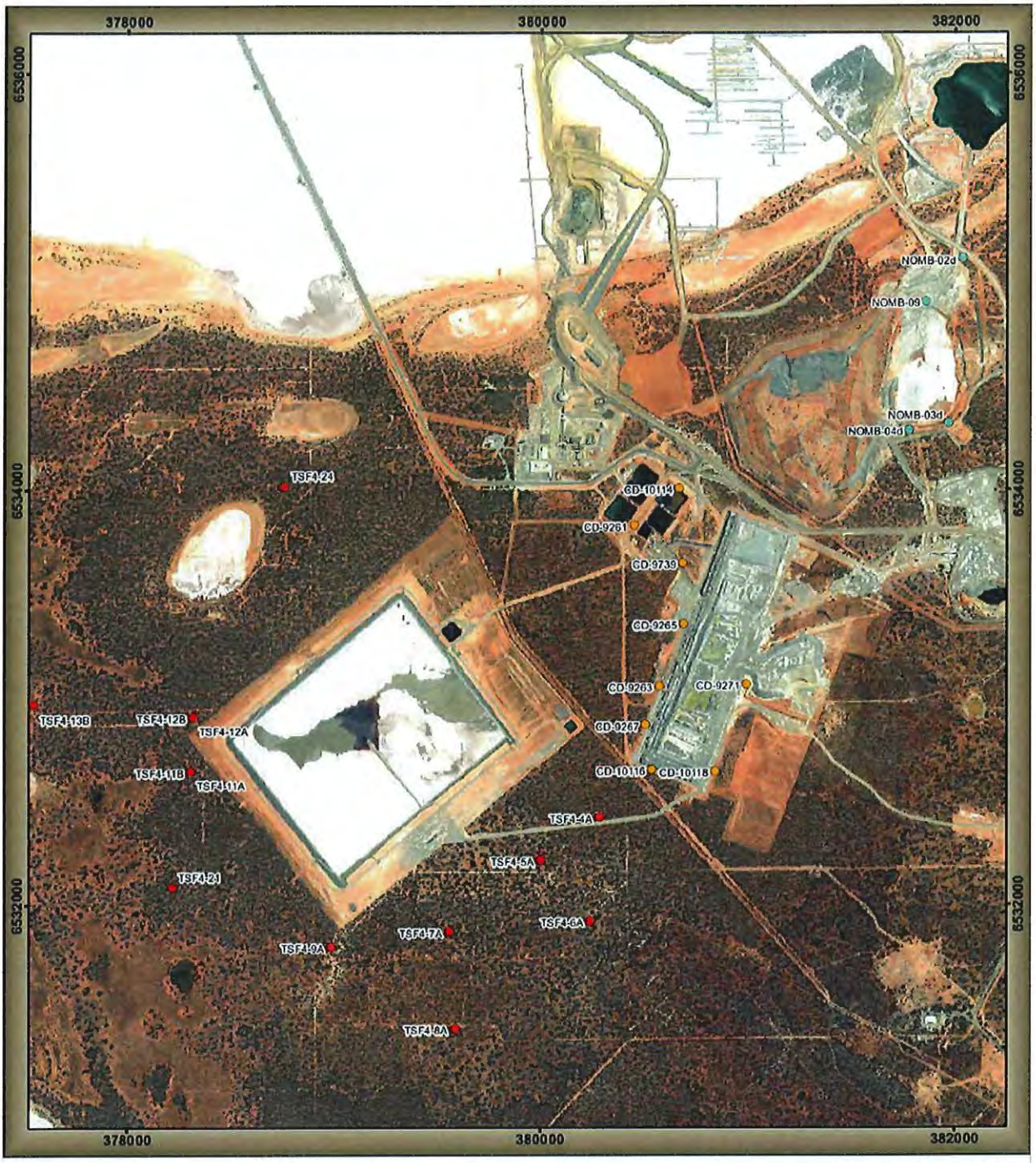


The locations of the emission points defined in Tables 1.2.4, 2.5.1 and 3.4.1 are shown below.



Map of monitoring locations

The locations of the monitoring points defined in Tables 3.5.1 are shown below. Dual monitoring and recovery bores TSF4-21 and TSF4-24 shown below are also defined in Table 1.2.1



LEGEND

Licenced Bores

Location

- HLF
- North Orchin
- TSF4

0 0.5 1 1.5 2

Kilometres

N

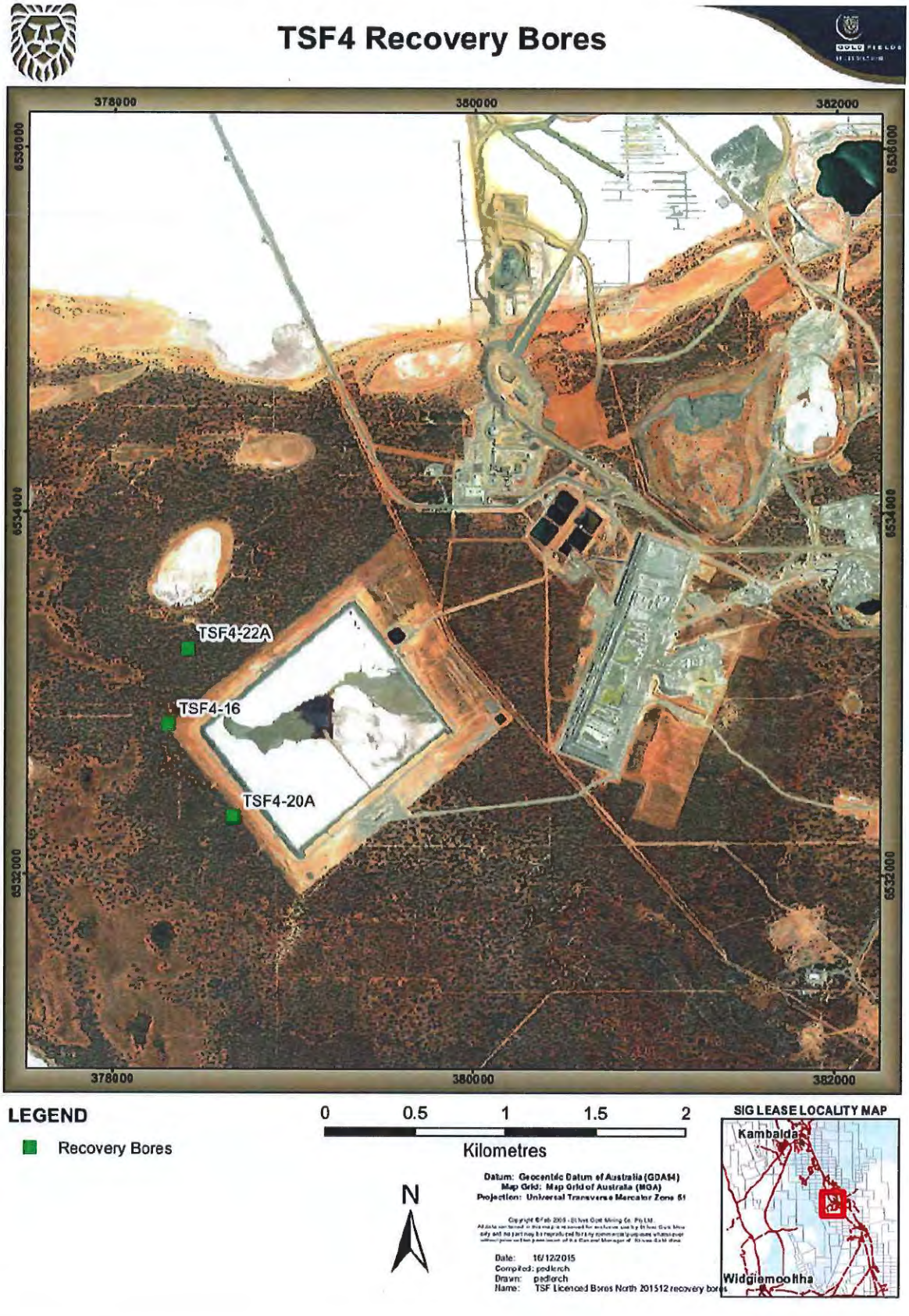
Datum: Geocentric Datum of Australia (GDA94)
Map Grid: Map Grid of Australia (MGA)
Projection: Universal Transverse Mercator Zone 51

Date: 14/12/2015
Compiled: pedlerch
Drawn: pedlerch
Name: TSF Licenced Bores North 201512

SIG LEASE LOCALITY MAP

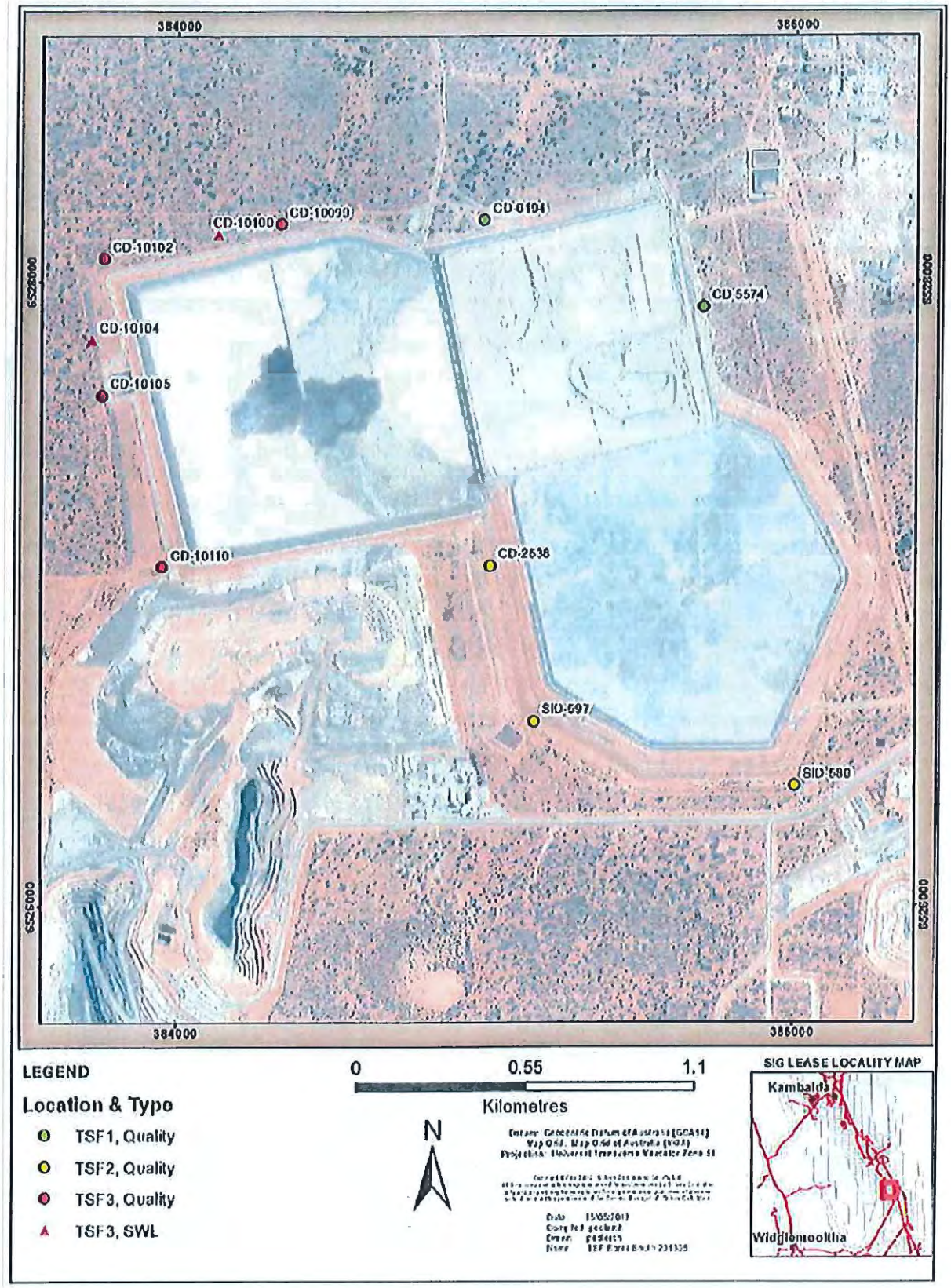
Map of recovery bores

The locations of the seepage recovery bores defined in Table 1.2.1 are shown below.



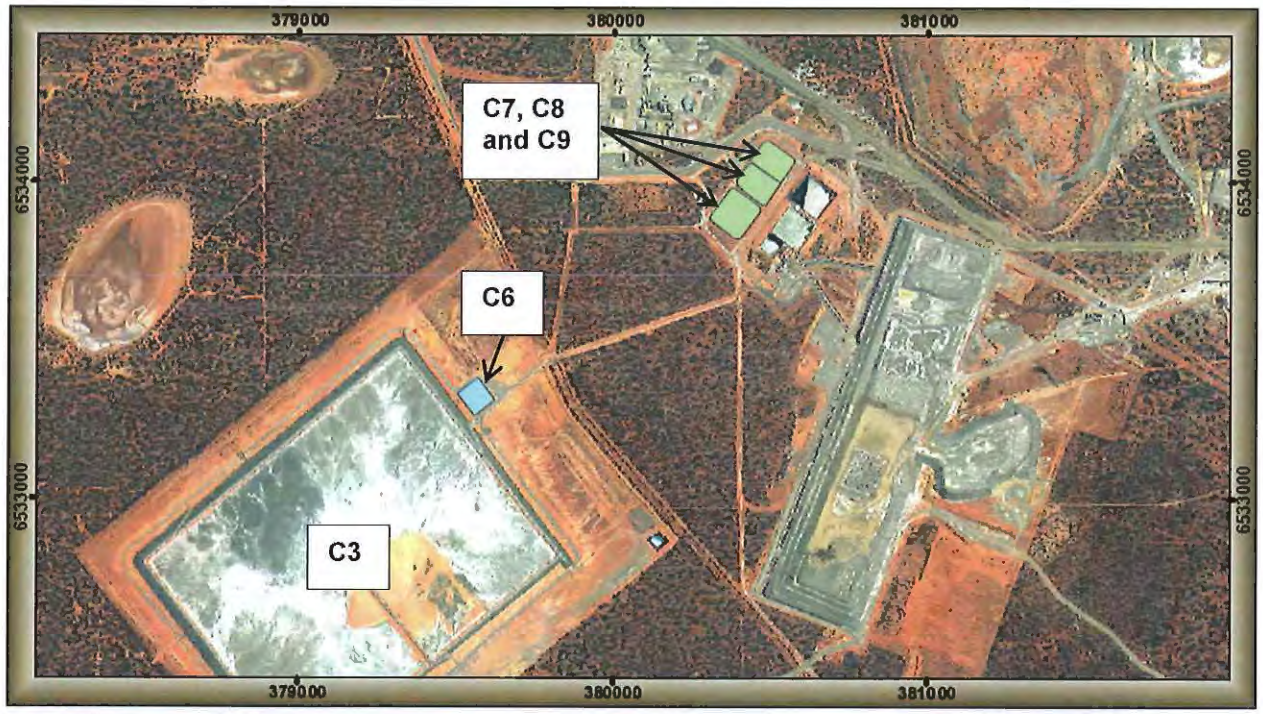
Map of monitoring locations

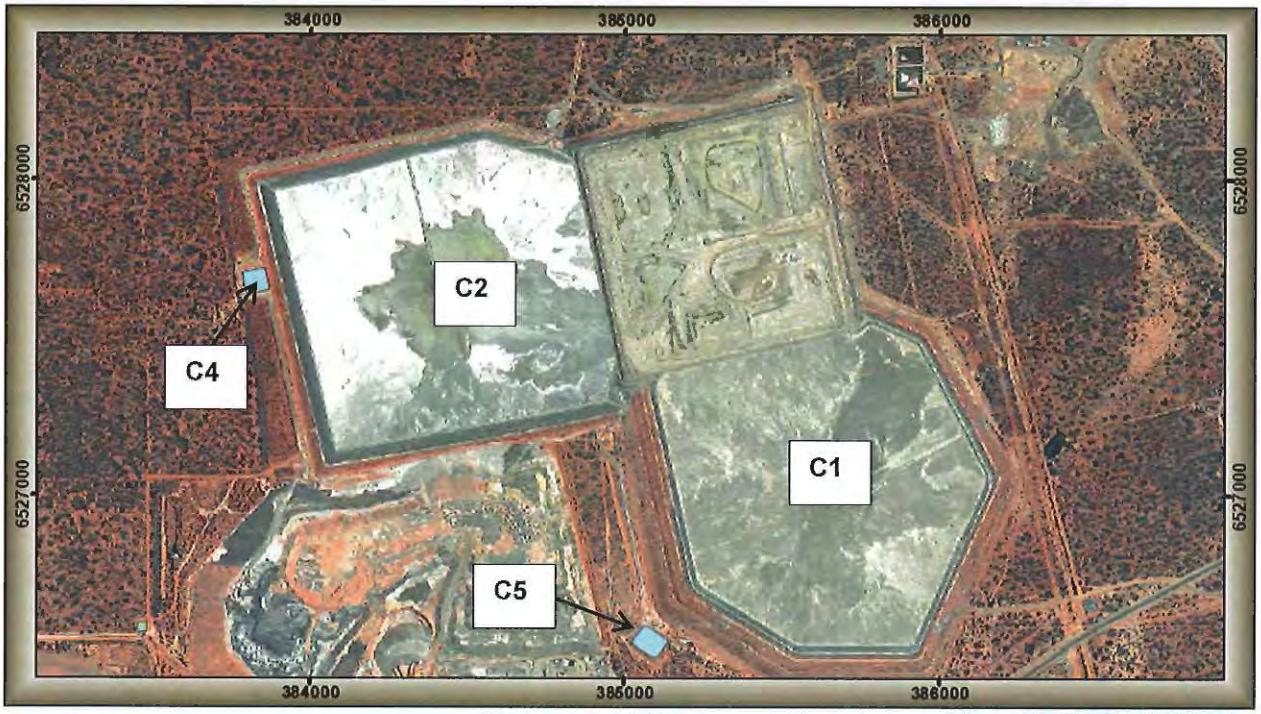
The locations of the monitoring points defined in Tables 3.5.1 are shown below.



Map of storage locations

The location of the storage areas defined in Table 1.2.1 are shown below.





LEGEND

Process Pond

TSF Decant Pond

0 0.5 1 1.5

Kilometres

N

Datum: Geocentric Datum of Australia (GDA94)
Map Grid: Map Grid of Australia (MGA)
Projection: Universal Transverse Mercator Zone 51

Date: 12/12/2014
Compiled: pedlerch
Drawn: pedlerch
Name: SIG_REFIRE_TSF_Decant_Ponds_201412

SIG LEASE LOCALITY MAP

Schedule 2: Reporting & notification forms

These forms are provided for the proponent to report monitoring and other data required by the Licence. They can be requested in an electronic format.

ANNUAL AUDIT COMPLIANCE REPORT PROFORMA

SECTION A

LICENCE DETAILS

Licence Number:	Licence File Number:
Company Name: Trading as:	ABN:
Reporting period: _____ to _____	

STATEMENT OF COMPLIANCE WITH LICENCE CONDITIONS

1. Were all conditions of the Licence complied with within the reporting period? (please tick the appropriate box)

Yes ☐ Please proceed to Section C

No ☐ Please proceed to Section B

Each page must be initialled by the person(s) who signs Section C of this Annual Audit Compliance Report (AACR).

Initial:

SECTION B
DETAILS OF NON-COMPLIANCE WITH LICENCE CONDITION.

Please use a separate page for each Licence condition that was not complied with.

a) Licence condition not complied with:	
b) Date(s) when the non compliance occurred, if applicable:	
c) Was this non compliance reported to DER?:	
☐ Yes ☐ Reported to DER verbally Date _____ ☐ Reported to DER in writing Date _____	☐ No
d) Has DER taken, or finalised any action in relation to the non compliance?:	
e) Summary of particulars of the non compliance, and what was the environmental impact:	
f) If relevant, the precise location where the non compliance occurred (attach map or diagram):	
g) Cause of non compliance:	
h) Action taken, or that will be taken to mitigate any adverse effects of the non compliance:	
i) Action taken or that will be taken to prevent recurrence of the non compliance:	

Each page must be initialled by the person(s) who signs Section C of this AACR

Initial:

SECTION C

SIGNATURE AND CERTIFICATION

This Annual Audit Compliance Report (AACR) may only be signed by a person(s) with legal authority to sign it. The ways in which the AACR must be signed and certified, and the people who may sign the statement, are set out below.

Please tick the box next to the category that describes how this AACR is being signed. If you are uncertain about who is entitled to sign or which category to tick, please contact the licensing officer for your premises.

If the licence holder is		The Annual Audit Compliance Report must be signed and certified:
An individual	☐	by the individual licence holder, or
	☐	by a person approved in writing by the Chief Executive Officer of the Department of Environment Regulation to sign on the licensee's behalf.
A firm or other unincorporated company	☐	by the principal executive officer of the licensee; or
	☐	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A corporation	☐	by affixing the common seal of the licensee in accordance with the *Corporations Act 2001*; or
	☐	by two directors of the licensee; or
	☐	by a director and a company secretary of the licensee, or
	☐	if the licensee is a proprietary company that has a sole director who is also the sole company secretary – by that director, or
	☐	by the principal executive officer of the licensee; or
	☐	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
A public authority (other than a local government)	☐	by the principal executive officer of the licensee; or
	☐	by a person with authority to sign on the licensee's behalf who is approved in writing by the Chief Executive Officer of the Department of Environment Regulation.
a local government	☐	by the chief executive officer of the licensee; or
	☐	by affixing the seal of the local government.

It is an offence under section 112 of the *Environmental Protection Act 1986* for a person to give information on this form that to their knowledge is false or misleading in a material particular. There is a maximum penalty of $50,000 for an individual or body corporate.

I/We declare that the information in this annual audit compliance report is correct and not false or misleading in a material particular.

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SIGNATURE: _____

NAME:
(printed) _____

POSITION: _____

DATE: _____/_____/_____

SEAL (if signing under seal)

Licence: L8485/2010/2 Licensee: St Ives Gold Mining Company Pty Ltd
Form: WR1 Period:
Name: Monitoring of point source emissions to surface water

Form WR1: Monitoring of point source emissions to surface water						
Emission point	**Parameter**	**Limit**	**Result[1]**	**Averaging Periods**	**Method**	**Sample date & times**
W1, W2, W3, W4, W5, W6, W7, W8, W9, W10 and W11	Volumetric flow rate	N/A	m^3/s	Spot sample		
	pH	Between 6.0 and 8.0		Spot sample		

Signed on behalf of St Ives Gold Mining Company Pty Ltd: .....
Date: .....

Licence: L8485/2010/2 Licensee: St Ives Gold Mining Company Pty Ltd
Form: LR1 Period:
Name: Monitoring of emissions to land

Form LR1: Monitoring of emissions to land						
Emission point	**Parameter**	**Result**	**Load (kg/d)**	**Averaging Periods**	**Method**	**Sample date & times**
P1 to P5	Volumetric flow rate	kL		Continuous		
	E.coli	cfu/100mL		Spot sample		
	pH[1]	N/A		Spot sample		
	Biochemical Oxygen Demand	mg/L	kg/d	Spot sample		
	Total Nitrogen	mg/L	kg/d	Spot sample		
	Total Phosphorus	mg/L	kg/d	Spot sample		
	Total Suspended Solids	mg/L	kg/d	Spot sample		
	Total Dissolved Solids	mg/L	kg/d	Spot sample		
	Ammonium-nitrogen	mg/L	kg/d	Spot sample		
	Nitrate+nitrate-nitrogen	mg/L	kg/d	Spot sample		

Signed on behalf of St Ives Gold Mining Company Pty Ltd: .....
Date: .....

Licence: L8485/2010/2 Licensee: St Ives Gold Mining Company Pty Ltd
Form: AGWQ Period :
Name: Ambient groundwater quality monitoring

Form AGQW1: Monitoring of ambient groundwater quality							
Monitoring point	**Parameter**	**Limit**	**Result**	**Result**	**Averaging period**	**Method**	**Sample date & times**
	Standing water level		mbgl				
	pH[1]		N/A				
	Electrical Conductivity		µS/cm				
	Total Dissolved Solids		mg/L				
	Aluminium		mg/L				
	Arsenic		mg/L				
	Calcium		mg/L				
	Cadmium		mg/L				
	Chlorine		mg/L				
	Chromium		mg/L				
	Chromium (III)		mg/L				
	Chromium (VI)		mg/L				
	Cobalt		mg/L				
	Copper		mg/L				
	Iron		mg/L				
	Lead		mg/L				
	Mercury		mg/L				
	Magnesium		mg/L				

	Manganese		mg/L				
	Nickel		mg/L				
	Potassium		mg/L				
	Selenium		mg/L				
	Sodium		mg/L				
	Strontium		mg/L				
	Vanadium		mg/L				

Signed on behalf of St Ives Gold Mining Company Pty Ltd: .....
Date: .....

Licence: L8485/2010/2 Licensee: St Ives Gold Mining Company Pty Ltd
Form: N1 Date of breach:

Notification of detection of the breach of a limit.

These pages outline the information that the operator must provide.
Units of measurement used in information supplied under Part A and B requirements shall be appropriate to the circumstances of the emission. Where appropriate, a comparison should be made of actual emissions and authorised emission limits.

Part A

Licence Number	
Name of operator	
Location of Premises	
Time and date of the detection	

Notification requirements for the breach of a limit	
Emission point reference/ source	
Parameter(s)	
Limit	
Measured value	
Date and time of monitoring	
Measures taken, or intended to be taken, to stop the emission	

Part B

Any more accurate information on the matters for notification under Part A.	
Measures taken, or intended to be taken, to prevent a recurrence of the incident.	
Measures taken, or intended to be taken, to rectify, limit or prevent any pollution of the environment which has been or may be caused by the emission.	
The dates of any previous N1 notifications for the Premises in the preceding 24 months.	

Name	
Post	
Signature on behalf of St Ives Gold Mining Company Pty Ltd	
Date	