Report and recommendations of the Environmental Protection Authority

St Ives Gold Mine: The Beyond 2018 Project

St Ives Gold Mining Company Pty Ltd

Report 1645

July 2019

Environmental impact assessment process timelines

Date	Progress stages	Time (weeks)
15/02/2017	EPA decides to assess – level of assessment set	
06/10/2017	EPA approved Environmental Scoping Document	33
28/09/2018	EPA accepted Environmental Review Document	51
03/10/2018	Environmental Review Document released for public review	5 days
14/11/2018	Public review period for Environmental Review Document closed	6
16/05/2019	EPA accepted Proponent Response to Submissions	26
28/05/2019	EPA received final information for assessment	2
20/6/2019	EPA completed its assessment	3
19/07/2019	EPA provided report to the Minister for Environment	5
24/07/2019	EPA report published	3 days
7/08/2019	Close of appeals period	2

Timelines for an assessment may vary according to the complexity of the proposal and are usually agreed with the proponent soon after the EPA decides to assess the proposal and records the level of assessment.

In this case, the Environmental Protection Authority met its timeline objective to complete its assessment and provide a report to the Minister.

Dr Tom Hatton
Chairman

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Summary

The St Ives Gold Mine: Beyond 2018 Project (the proposal) was referred to the Environmental Protection Authority (EPA) by St Ives Gold Mining Company Pty Ltd (the proponent) in December 2016. The revised proposal is to expand the existing mining operations on Lake Lefroy and on adjacent land. The mine is located approximately 20 kilometres (km) south east of Kambalda in the Goldfields region of Western Australia.

The EPA assessed the proposal at the level of Environmental Review with a six-week public review period and has concluded that the proposal is environmentally acceptable and can be implemented subject to certain conditions. As a part of the assessment, the existing Gold Mining Developments on Lake Lefroy authorised under Ministerial Statement (MS) 879 have been reviewed and a contemporary Ministerial Statement referencing updated EPA guidance, and incorporating all elements of the approved proposal as well as elements in this revised proposal, will replace MS879.

In the course of the assessment, the EPA examined potential impacts on the key environmental factors of Flora and Vegetation, Terrestrial Fauna and Inland Waters (Hydrological Processes and Inland Waters Environmental Quality).

The EPA has recommended conditions (Appendix 5) including development of environmental management plans for the protection of conservation significant flora, riparian vegetation, Malleefowl and confirmed and potential short ranged endemics only known from within the development envelope.

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1. Introduction

This report provides the advice and recommendations of the Environmental Protection Authority (EPA) to the Minister for Environment on the outcomes of the EPA's environmental impact assessment of the proposal by St Ives Gold Mining Company Pty Ltd. The proposal is to expand existing mining operations on Lake Lefroy and on adjacent land. The mine is located approximately 20 kilometres (km) south east of Kambalda in the Goldfields region of Western Australia (Figure 1).

The EPA has prepared this report in accordance with section 44 of the *Environmental Protection Act 1986* (EP Act). This section of the EP Act requires the EPA to prepare a report on the outcome of its assessment of a proposal and provide this assessment report to the Minister for Environment. The report must set out:

- what the EPA considers to be the key environmental factors identified during the assessment
- the EPA's recommendations as to whether or not the proposal may be implemented and, if the EPA recommends that implementation be allowed, the conditions and procedures to which implementation should be subject.

The EPA may also include any other information, advice and recommendations in the assessment report as it thinks fit.

The proponent referred the proposal to the EPA on 15 December 2016. On 15 February 2017 the EPA decided to assess the proposal and set the level of assessment at Environmental Review – 6 week public review period. The EPA approved the Environmental Scoping Document (ESD) for the proposal on 6 October 2017. The Environmental Review Document (ERD) was released for public review from 3 October 2018 to 14 November 2018.

1.1 EPA procedures

The EPA followed the procedures in the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Administrative Procedures 2016* (2016a) and the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* (2016b).

2. The revised proposal

2.1 Proposal summary

The proponent, St Ives Gold Mining Company Pty Ltd, proposes a change (referred to in this report as the 'proposal'), to its approved project to expand existing mining operations on Lake Lefroy and on adjacent land.

The proponent obtained approval to implement the Gold Mine Developments on Lake Lefroy Project through Ministerial Statement (MS) 548 on 13 July 2000. MS 548 approved the development of open cut and underground gold mining within a defined project area on Lake Lefroy. It also included waste rock dumps, access infrastructure and mining support facilities.

To support the continuation of mining MS 879 was issued on 16 November 2011. This approval included the expansion of the existing open cut and underground gold mining developments, within a defined project area, on the surface of Lake Lefroy. It also included the discharge of dewatering to the lake's surface and construction of associated mining infrastructure, including waste rock dumps.

Further expansion activities are proposed through a revised proposal at the St Ives gold mine to sustain current production levels. The proposed expansion includes additional land and lake based disturbance of 5,000 hectares (ha). The additional disturbance is for:

- new open cut pits
- new underground operations
- expansion to existing open cut and underground operations
- construction of new waste rock dumps
- construction of new tailings facilities
- construction of mining and ancillary infrastructure
- construction of new dewatering discharge structures.

The proposed change comprises the following additional activities and/or elements:

- lake based disturbance of approximately 200 ha per annum over a period of 10 years with a total maximum disturbance of up to 2,000 ha
- land based disturbance of approximately 300 ha per annum over a period of 10 years with a total maximum disturbance of up to 3,000 ha
- an increase in dewatering volume from 30 to 40 gigalitres per annum (GL/a).

The key characteristics of the revised proposal (such as, the amalgamation of the existing approved project and the proposed change) are summarised in Tables 1 and 2 below. A detailed description of the proposed change in relation to the existing approved project is provided in section 2 of the ERD (St Ives Gold Mining Company Pty Ltd, 2018).

In undertaking this assessment, the EPA has assessed the impacts of the proposed change in the context of the approved project, considering the cumulative impacts of the entire revised proposal where appropriate.

Table 1: Summary of the proposal

Proposal title	St Ives Gold Mine: The Beyond 2018 Project
Short description	The Beyond 2018 Project proposes to expand the existing open-cut and underground mining developments at Lake Lefroy, approximately 20 km south east of Kambalda. The mine would include open pits, waste rock dumps, dewatering and discharge, tailings storage facilities, and associated infrastructure.

Table 2: Location and proposed extent of physical and operational elements

Element	**Location**	**Existing approvals** **(Ministerial Statement/s and other regulatory approvals)**	**Proposed change** **(this proposal)**	**Proposed extent** **(revised proposal)** **total of existing approval + proposed change**
Physical elements				
Lake-based operations	Figure 2	2,061 ha	2,000 ha	4,061 ha within a development envelope of 45,013 ha
Land-based operations	Figure 2	2,085 ha (under *Mining Act 1978*)	3,000 ha	5,085 ha within a development envelope of 45,013 ha
Area of direct riparian zone disturbance (from clearing)	Figure 3	Up to 90 ha	20 ha	Up to 110 ha within a development envelope of 45,013 ha
Operational elements				
Mine dewatering volume and discharge to Lake Lefroy	Figure 2	30 GL/a (regulated under Part V of the EP Act)	10 GL/a	40 GL/a (regulated under Part V of the EP Act)

Element	Location	Existing approvals (Ministerial Statement/s and other regulatory approvals)	Proposed change (this proposal)	Proposed extent (revised proposal) total of existing approval + proposed change
Height of Waste Rock Dumps	-	Up to 40 m	No change	Up to 40 m
Waste rock disposal	-	118 million tonnes (regulated under *Mining Act 1978*) (A minimum of 95 million tonnes to be used for backfill)	450 million tonnes	663 million tonnes (regulated under *Mining Act 1978*) (A minimum of 95 million tonnes to be used for backfill)
Tailings disposal	-	Four above ground and five in-pit Tailings Storage Facilities (TSFs) (regulated under Part V of the EP Act and *Mining Act 1978*)	Additional above ground or in-pit TSFs	Above ground and in-pit TSFs (regulated under Part V of the EP Act and *Mining Act 1978*)
Ore Processing	-	Up to 9 million tonnes per annum (Mtpa) (Regulated under Part V of the EP Act)	No change	Up to 9 Mtpa (Regulated under Part V of the EP Act)

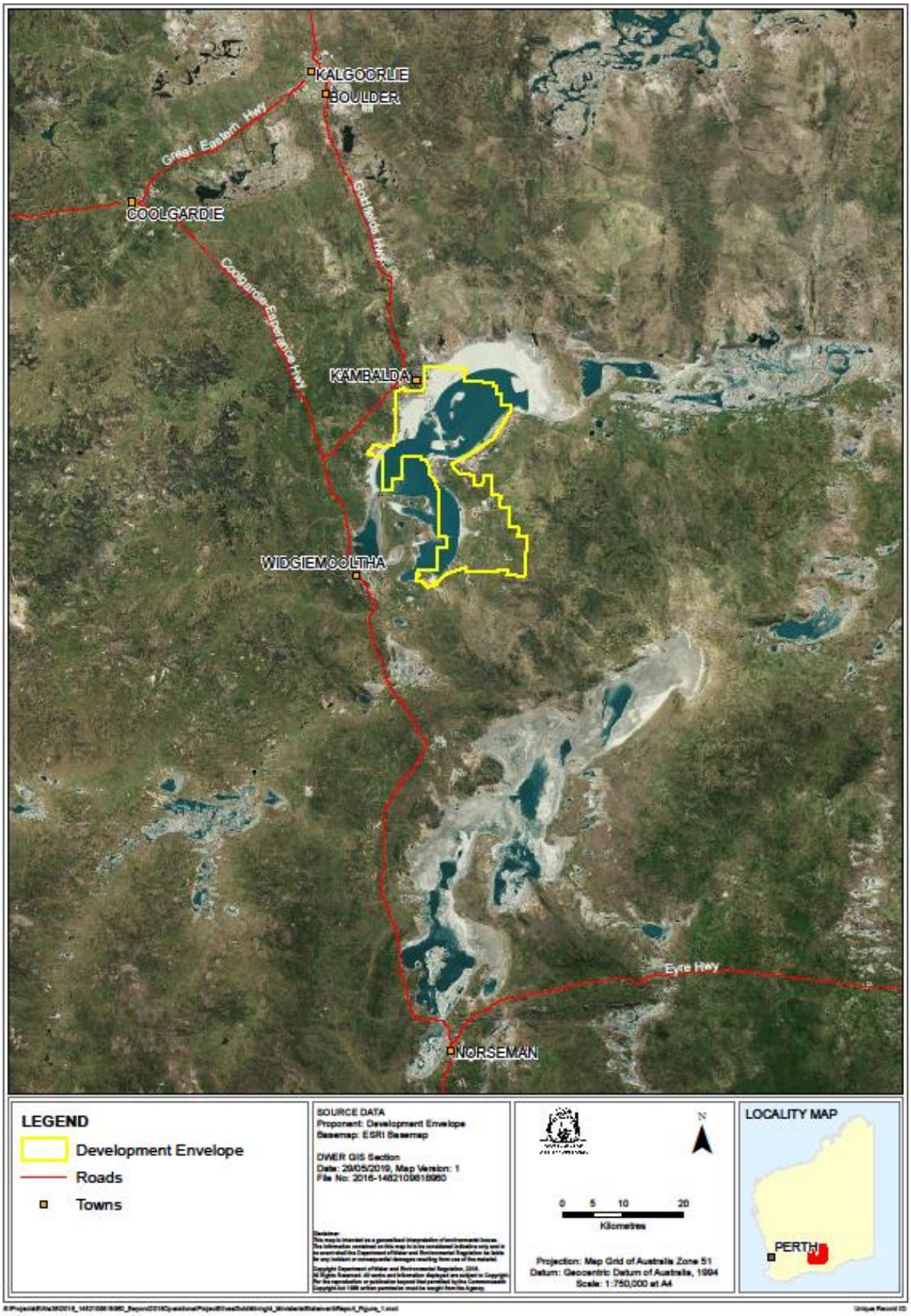

Figure 1: Regional location

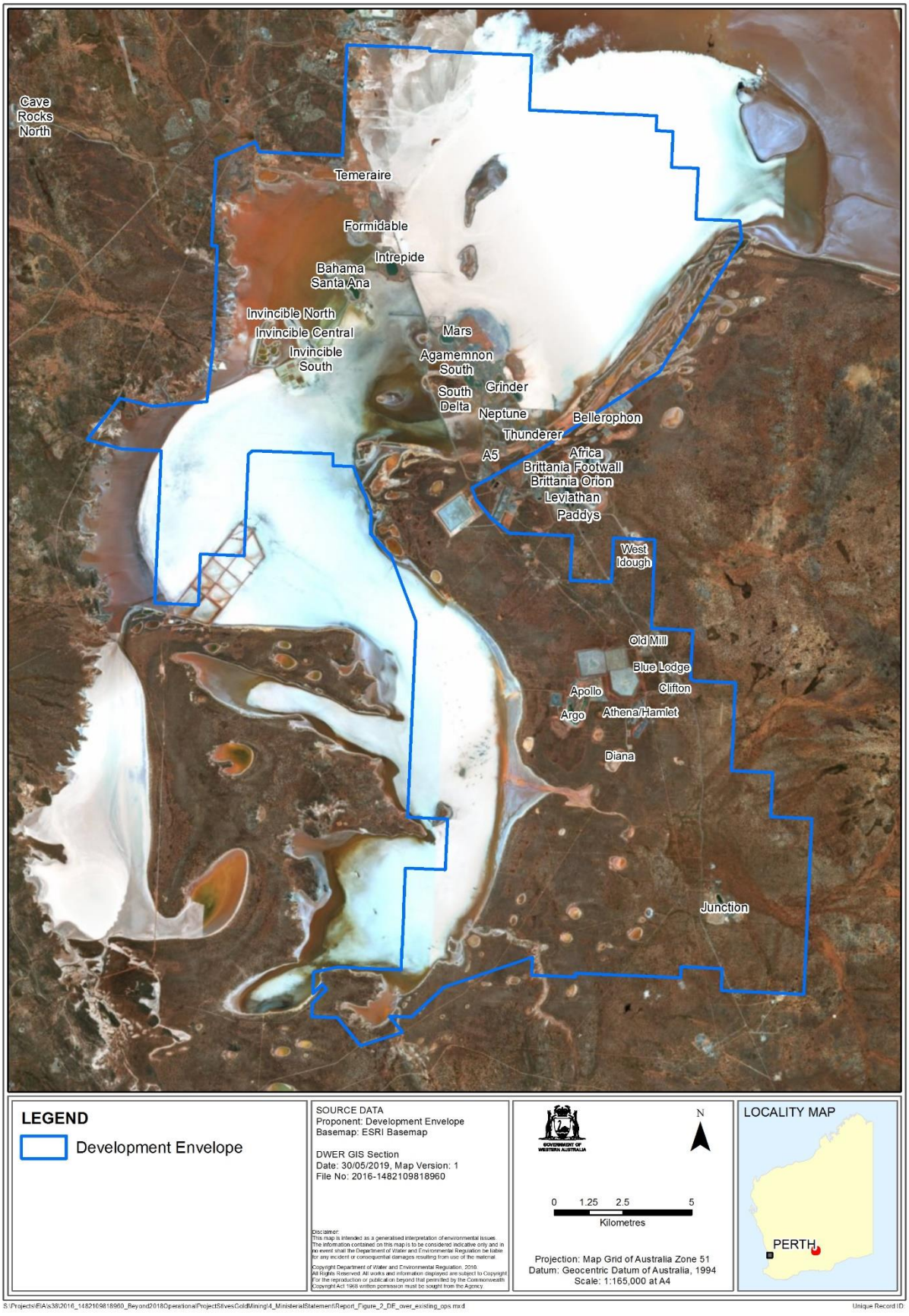

Figure 2: Development envelope and existing operations

2.2 Changes to the proposal during assessment

The St Ives Gold Mining Company Pty Ltd requested EPA consent to a change to the proposal during assessment on 5 July 2017. The change was an alteration to the development envelope and for an increase in dewatering discharge from 30 GL/a to 40 GL/a. Tables 1 and 2 above include this change.

The Chairman, as a delegate of the EPA, concluded that the changes were unlikely to significantly increase any impact that the proposal may have on the environment, above what was being considered in the revised proposal, and gave consent under section 43A of the EP Act to the change on 21 July 2017.

2.3 Context

The proposal is located within the Interim Biogeographic Regionalisation of Australia (IBRA) Eastern Goldfields (COO3) subregion – Coolgardie 3. The main land use in the region is pastoral, with the project located within or adjacent to the Woolibar, Madoonia Downs and Mt Monger Pastoral stations. The C Class Kambalda Nature Reserve and C Class Kambalda Timber Reserve lie approximately five kilometres North West of the development envelope.

Lake Lefroy and its surrounds have a long history of mining operations and the area has been extensively mined for gold, nickel, salt and sand. Current operations close to or within the development envelope include Beta Hunt underground operation (gold), Foster and Jan Shaft Nickel mines (within development envelope), Long underground operation (nickel), Kambalda concentrator (nickel), Lanfranchi Nickel Mine and Kambalda land holdings (gold and nickel).

3. Consultation

The EPA advertised the referral information for the proposal for public comment in January 2017 and received three submissions. All submissions requested 'Public Environmental Review'.

The proponent consulted with government agencies and key stakeholders during the preparation of the ERD. The agencies and stakeholders consulted, the issues raised, and the proponent's response are detailed in Appendix C of the proponent's ERD (St Ives Gold Mining Company Pty Ltd, September 2018).

The ERD was released for public review for a period of six weeks between 3 October and 14 November 2018. Seven agency submissions and two public submissions were received during the public review period. The key issues raised relate to:

- potential short range endemics are only found within the development envelope and should be protected in exclusion zones
- all terrestrial habitats in the development envelope may be suitable for Malleefowl, and Lidar surveying and pre-clearance surveys should be carried out prior to ground disturbing activities to mitigate impacts to Malleefowl
- assessment of the dewatering impacts from the proposed activities needs to be undertaken and the monitoring and management of these impacts need to be addressed
- concerns regarding the disposal and seepage of metals from waste rock materials on the lake surface
- potential impacts from seepage from the TSFs and impacts on water flow regimes and groundwater quality.

The proponent addressed the issues raised in the Response to Submissions document (St Ives Gold Mining Company Pty Ltd, 9 May 2019).

The EPA considers that the consultation process has been appropriate and that reasonable steps have been taken to inform the community and stakeholders about the proposed development. Relevant significant environmental issues identified from this process were taken into account by the EPA during its assessment of the proposal.

4. Key environmental factors

In undertaking its assessment of this proposal and preparing this report, the EPA had regard for the object and principles contained in s4A of the EP Act to the extent relevant to the particular matters that were considered.

The EPA considered the following information during its assessment:

- the proponent's referral information and ERD
- public comments received on the referral, stakeholder comments received during the preparation of the proponent's documentation, and public and agency comments received on the ERD
- the proponent's response to submissions raised during the public review of the ERD
- the EPA's own inquiries
- the EPA's *Statement of Environmental Principles, Factors and Objectives* (EPA 2018a)
- the relevant principles, policy and guidance referred to in the assessment of each key environmental factor in sections 4.1 to 4.3.

Having regard to the above information, the EPA identified the following key environmental factors during the course of its assessment of the proposal:

- **Flora and Vegetation** – Direct and indirect impacts as a result of clearing, inundation of riparian vegetation around the lake and peripheral wetlands, introduction or spread of weeds and impacts from dust generation and fire.

- **Terrestrial Fauna** – Loss of potential habitat and individuals as a result of clearing, vehicle movement, dust on vegetation, weeds, changes in fire regimes and feral animals.

- **Inland Waters** – Hydrological Processes and Inland Waters Environmental Quality were identified as preliminary key environmental factors during the earlier stages of the assessment. These factors are now considered as Inland Waters in the EPA Policy framework.
    - **Hydrological Processes** – potential changes to the hydrological regime of Lake Lefroy and peripheral wetlands as a result of mining, dewatering and discharge of surplus dewatering water.
    - **Inland Waters Environmental Quality** – potential impacts to surface and groundwater quality through mining operations and the discharge of surplus dewatering water to Lake Lefroy.

The EPA considered other environmental factors during the course of its assessment of the proposal. These factors, which were not identified as key environmental factors, are discussed in the proponent's ERD (St Ives Gold Mining Company Pty

Ltd, September 2018). Appendix 3 contains an evaluation of why these other environmental factors were not identified as key environmental factors.

Having regard to the EP Act principles, the EPA considered that the following principles were particularly relevant to its assessment of the proposal:

1. **The precautionary principle** – Investigations on the biological and physical environment undertaken by the proponent have provided sufficient certainty to assess risks and identify measures to avoid or minimise impacts.
2. **The principle of intergenerational equity** – The proponent has assessed the impacts at a local and regional scale to ensure that impacts to health, diversity and productivity of the environment has been considered. The EPA notes that the proponent has proposed an approach to rehabilitation and closure to ensure the environment is maintained for the benefit of future generations.
3. **The principle of the conservation of biological diversity and ecological integrity** – The proponent has undertaken a significant number of baseline biological surveys to determine the potential impacts of the project on biological diversity and ecological integrity. The proponent has proposed exclusion areas to minimise the impacts to significant flora species, and confirmed and potential Short Range Endemics (SREs) only known from within the development envelope.
4. **Principles relating to improved valuation, pricing and incentive mechanisms** –The proponent will bear the costs relating to management of waste and pollution, including avoidance, containment, decommissioning, rehabilitation, and closure.
5. **The principle of waste minimisation** –The proponent proposes to minimise waste by applying the waste hierarchy to the proposal.

Appendix 2 provides a summary of the principles and how the EPA considered these principles in its assessment.

The EPA's assessment of the proposal's impacts on the key environmental factors is provided in sections 4.1 – 4.3. These sections outline whether or not the EPA considers that the impacts on each factor are manageable. Section 5 provides the EPA's conclusion as to whether or not the proposal as a whole is environmentally acceptable.

4.1 Flora and Vegetation

EPA objective

The EPA's environmental objective for this factor is *to protect flora and vegetation so that biological diversity and ecological integrity are maintained.*

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016c)
- *Technical Guidance – flora and vegetation surveys for environmental impact assessment* (EPA 2016d)
- WA Environmental Offsets Policy (Government of Western Australia 2011)
- WA Environmental Offsets Guidelines (Government of Western Australia 2014).

The considerations for environmental impact assessment (EIA) for this factor are outlined in *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016c).

EPA assessment

Existing Environment

Flora and vegetation surveys have been undertaken in different years and seasons within the development envelope and surrounding areas since 1996. These surveys have been used and added to with additional surveys in accordance with EPA Guidance.

The proponent's environmental consultant undertook a detailed flora and vegetation survey within the development area, covering over 45,000 ha, a lower intensity regional flora and vegetation survey within St Ives tenements, covering over 60,000 ha, and flora and vegetation assessment over potentially restricted riparian vegetation types around Lake Lefroy and targeted surveys for conservation significant species such as *Tecticornia*.

The environmental surveys identified:

- no Threatened Ecological Communities (TECs) or Priority Ecological Communities (PECs) are known to occur within the development envelope;
- no flora listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) or gazetted as Threatened under the Western Australian *Wildlife Conservation Act 1950* (WC Act) were recorded within the development envelope; and
- three Priority 1 (P1) flora species were recorded within the development envelope.

The three priority flora species recorded within the development envelope were:

- *Calandrinia sp.* Widgiemootha (P1)
- *Ptilotus rigidus* (P1)
- *Tecticornia mellarium* (P1)

The three priority species recorded within the development envelope are considered to not be groundwater dependent.

Two species of *Tecticornia* (*Tecticornia SIGMb* and *Tecticornia* SIGMq) are only known from sterile material. As a precaution these have been treated as conservation significant taxa in this assessment.

Twenty vegetation types were recorded in the development envelope, comprising of seven woodland communities, three chenopod shrub lands, seven shrub lands and three riparian vegetation types. The riparian vegetation types are recorded within five metres of the Lake Lefroy shoreline.

The riparian vegetation of the peripheral wetlands has had limited surveying to date and are likely to have high biodiversity values with the potential to support conservation significant flora and vegetation.

The vegetation within the development envelope ranges from excellent to pristine.

Potential Impacts

Flora and vegetation could be potentially impacted, either directly or indirectly through:

- clearing of an additional 3,000 ha of native vegetation, including an additional 20 ha of riparian vegetation, in excellent to pristine condition
- increase in inundation of riparian vegetation around the lake and peripheral wetlands
- introduction or spread of weeds
- impacts from dust generation and fire.

Mitigation and management

The EPA notes that in designing the revised proposal the proponent has considered the application of the mitigation hierarchy, in accordance with the *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016c).

To ensure the protection of flora and vegetation values, the proponent proposes to exclude development in a number of areas (exclusion areas). Five exclusion areas, namely Exploration 1, Coral and Oyster Islands, Pistol Club West, Pilbailey and Implacable are proposed. These are shown in Figure 3 and cover 5,204.2 ha which equates to 11.6 per cent of the development envelope.

The exclusion areas include a 100 m buffer and will protect 100 per cent of *Calandrinia sp.* Widgiemooltha (P1), 100 per cent of *Ptilotus rigidus* (P1), 100 per cent of *Tecticornia* SIGMb, 100 per cent of *Tecticornia* SIGMq and 77.7 per cent of *Tecticornia mellarium* (P1) ensuring that the only direct impact to priority flora will be up to 22.8 per cent of *Tecticornia mellarium* (P1).

In addition, the proponent has also committed to avoiding *Tecticornia mellarium* (P1) outside the exclusion areas where possible through the positioning of infrastructure. Studies undertaken to date identified 2,103.2 ha of peripheral wetlands within a two kilometre buffer zone around Lake Lefroy. A total of 1,002 ha (47 per cent) of those recorded were within the development envelope. The EPA notes that many of the peripheral wetlands occur within the five exclusion areas proposed, and the additional exclusion area, namely ‘clay pans’, which include a 30 m buffer (Figure 3).

Of the 2,103.2 ha of peripheral wetlands recorded, 1,803.3 ha occur either outside the development envelope or within exclusion areas which equates to 85.3 per cent being protected.

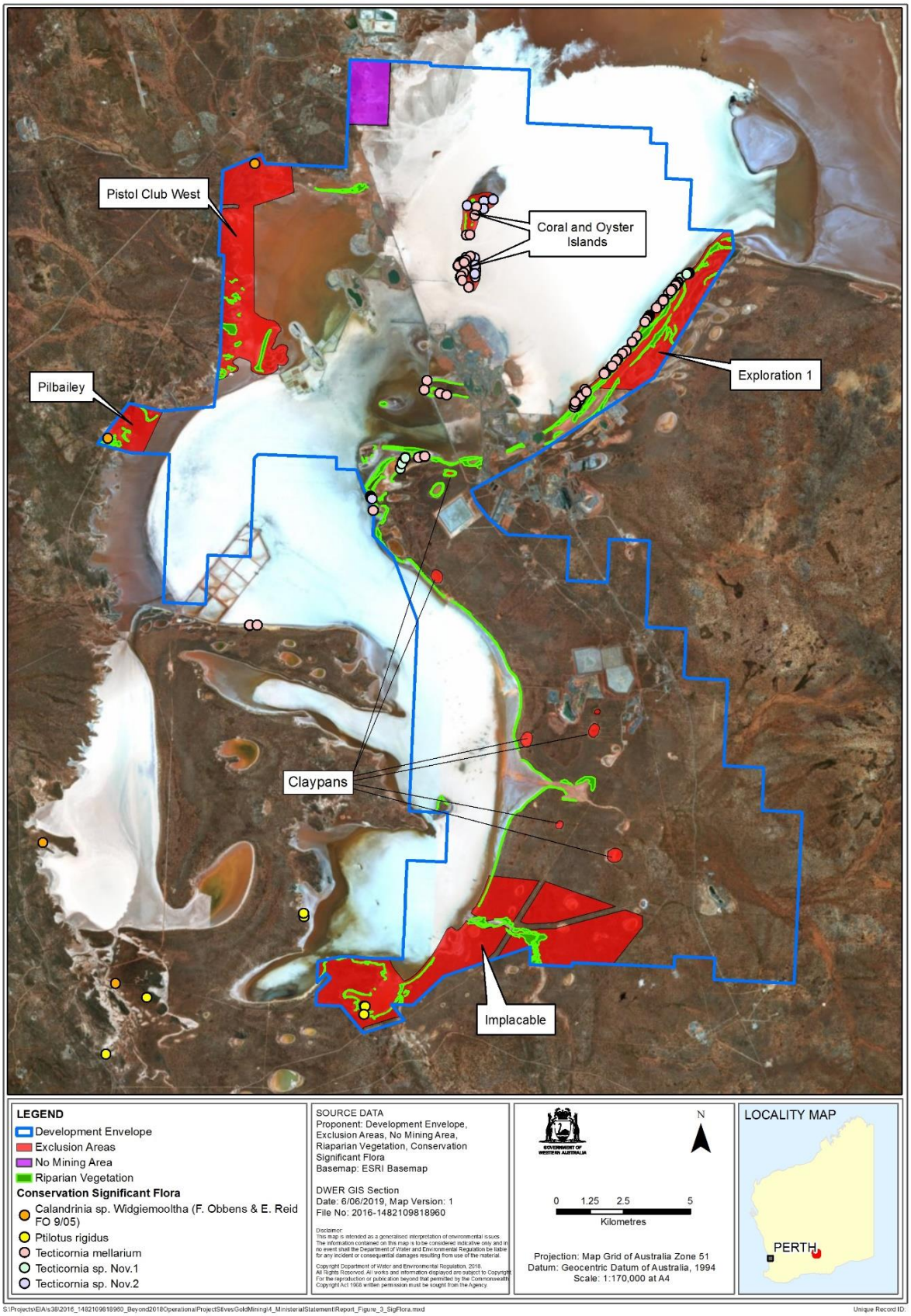

Figure 3: Conservation significant flora and riparian vegetation

The EPA notes the importance of the riparian vegetation due to its potential to contain conservation significant priority flora species and SRE habitat. A total of 51 per cent of the riparian vegetation within the development envelope is protected in exclusion areas. The proponent has committed to directly impacting less than 20 ha of riparian vegetation which equates to 4.9 per cent of the riparian vegetation within the development envelope.

The proponent has undertaken surface water modelling to assess the potential surface water impacts to riparian vegetation from dewatering discharge to the lake. Based on the proponents modelling it is expected that the level of inundation would not change under a range of dewatering discharge scenarios. Likewise, the proponent has also shown that placing dewatering points 200 m from fringing vegetation is unlikely to cause impacts from dewatering discharge. The proponent has committed to monitor vegetation health to validate the modelling during operations.

The proponent has a range of management measures it currently utilises to manage weeds, fire and dust impacts to vegetation. These management measures would continue to be implemented as part of the expansion.

The EPA notes that the proponent will undertake progressive rehabilitation in areas where mining operations have been completed. The rehabilitation will be undertaken in accordance with the existing Rehabilitation and Mine Closure Plan (RMCP). The EPA considers that these activities can be managed under the *Mining Act 1978*.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Flora and Vegetation* (EPA 2016c)
- proponent's application of mitigation hierarchy to avoid and minimise clearing of conservation significant flora and vegetation
- proposed additional clearing of 3,000 ha of vegetation in excellent to pristine condition, including up to 20 ha of riparian vegetation
- proposed application of five exclusion areas and the additional exclusion of several peripheral wetlands (clay pans)
- placement of dewatering points at least 200 m from the lake fringing vegetation
- commitment to monitor vegetation health in the exclusion areas.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Flora and Vegetation that the impacts to this factor are manageable and would no longer be significant, provided there is:

- a limit on the clearing of native vegetation through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)

- implementation of measures to ensure objectives of condition 5-1 are met through the implementation of a Flora and Vegetation Environmental Management Plan (Condition 5-2).

4.2 Terrestrial Fauna

EPA objective

The EPA's environmental objective for this factor is *to protect terrestrial fauna so that biological diversity and ecological integrity are maintained.*

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e)
- *Technical Guidance – Terrestrial fauna surveys* (EPA 2004)
- *Technical Guidance – Sampling methods for terrestrial vertebrate fauna (EPA 2010)*
- *Technical Guidance – Sampling of short range endemic invertebrate fauna (EPA 2009)*
- WA Environmental Offsets Policy (Government of Western Australia 2011)
- WA Environmental Offsets Guidelines (Government of Western Australia 2014).

The considerations for environmental impact assessment (EIA) for this factor are outlined in *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e).

EPA assessment

Existing Environment

Fauna surveys have been undertaken in different years and seasons within the development envelope and surrounding areas since 1995. These surveys have been utilised in the most recent surveys undertaken and added to where required in accordance with EPA guidance.

The proponent's environmental consultant undertook a Level 1 vertebrate fauna and Level 2 SRE assessment over the development envelope in October 2016. In addition, a targeted survey for the night parrot (*Pezoporus occidentalis*) was undertaken in July/August 2017 and two bat echolocation call recording devices were deployed at two sites on 15 and 16 November 2016.

The environmental surveys identified evidence of three species of conservation significance within the development envelope (Figure 4). These were:

- Malleefowl (*Leipoa ocellate*) listed as Vulnerable under the Environment Protection and Biodiversity (EPBC Act) and WC Act

- Fork-tailed Swift (*Apus pacificus*) listed as Migratory and Marine under the EPBC Act and Migratory under the WC Act)
- Rainbow Bee-eater (*Merops ornatus*) listed as Migratory under EPBC Act and WC Act

The Hooded Plover has also previously been recorded in the development envelope.

The development envelope includes three main habitat types, open woodland on plain, salt lake playa and associated riparian zone and shrub land on dune.

Short Range Endemics

During the desktop review one confirmed SRE was found to occur in the development envelope (Figure 5). This is the Player Specialist Wolf Spider (*Tetralycosa baudinettei*).

During the Level 2 survey undertaken in October 2016, a total of 26 specimens were collected in the study area. Of those collected, seven potential SRE species were only known from within the development envelope. These were three mygalomorph spiders (*Aname* 'MYG223', *Aname* 'SIGM121' and *Aname* 'SIGM122'), three scorpions (*Lychas* 'SIGM132', *Urodacus* 'SIGM131' and *Urodacus* 'lefroy') and one slater (*Philosciidae* 'lefroy').

Potential Impacts

Terrestrial Fauna and SREs could be potentially impacted, either directly or indirectly through:

- loss and fragmentation of fauna habitat
- mortality during land clearing
- habitat degradation through dust on vegetation, weeds, changes in fire regimes and feral animals.

Mitigation and management

The EPA notes that in designing the revised proposal the proponent has considered the application of the mitigation hierarchy, in accordance with the *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e).

In order to protect fauna values the proponent proposes to use a number of exclusion areas, where there are more restricted vegetation communities and habitat. Five exclusion areas, namely Exploration 1, Coral and Oyster Islands, Pistol Club West, Pilbailey and Implacable are proposed and cover 5,204 ha within the development envelope.

The exclusion areas represent key SRE habitats, as most are riparian habitat specialists or were found in the expansive woodlands that occur inside and outside the development envelope. For example, the only confirmed SRE, the Player

Specialist Wolf Spider (*Tetralycosa baudinettei*) will be protected in the Pilbailey exclusion area and is known from other lakes in the region.

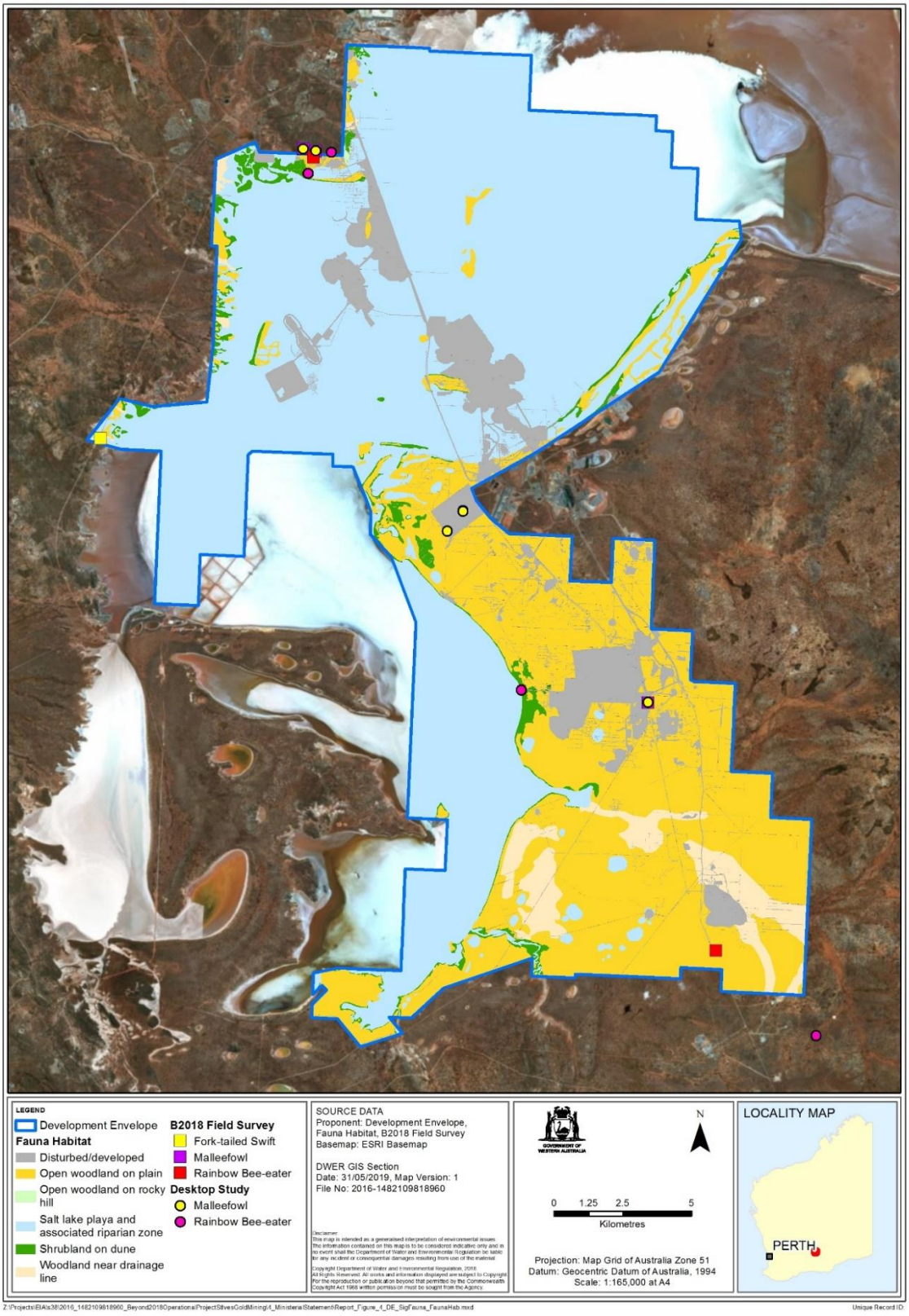

Figure 4: Fauna habitat and recorded conservation significant vertebrate species

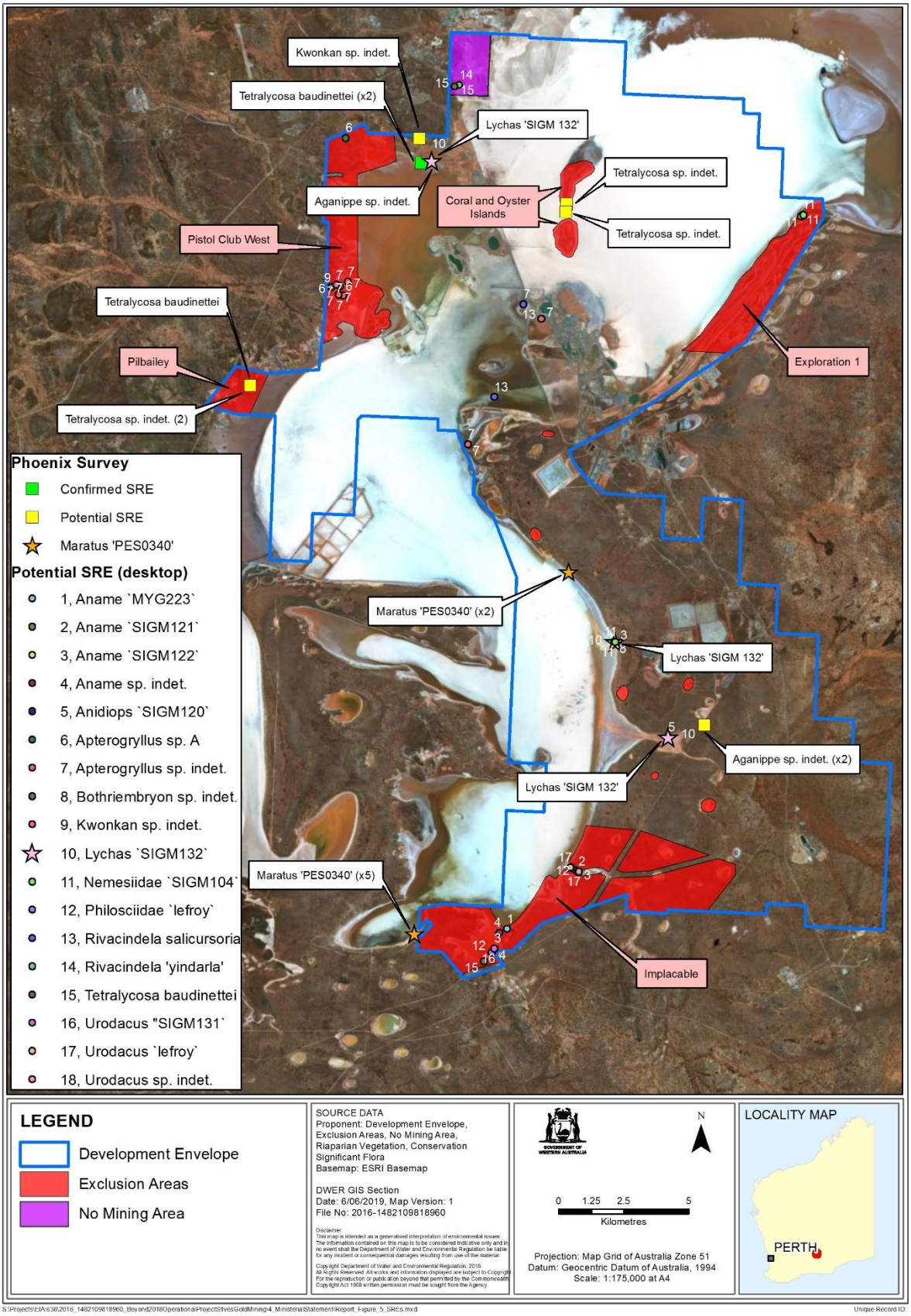

Figure 5: Short Range Endemic Invertebrates

There were two potential SRE species which were found only within the development envelope and not the exclusion areas. These are *Lychas* 'SIGM132' and *Aganippe* sp. indet. The proponent has noted that *Lychas* 'SIGM132' was found across an area of 20 km, so is highly likely to occur in areas that are not subject to impacts. *Aganippe* sp. indet. was found in a woodland that may occur outside the development envelope, so is also unlikely to be restricted. In addition to the above, the proponent has committed to undertake further SRE surveys for *Lychas* 'SIGM132' and *Aganippe* sp. indet. prior to undertaking ground disturbing works, so that these species are either confirmed to occur in exclusion areas or impacts to known locations of these species are avoided.

The vertebrate fauna species of conservation significance that has the potential to be impacted the most by the proposal is the Malleefowl. Three old inactive Malleefowl mounds were recorded during the survey, of which one was within the development envelope. No Malleefowl species were recorded during the survey, however several previous records of the species exist within the development envelope and suitable open woodland habitat is broadly present, indicating that Malleefowl may utilise the development envelope.

While the Malleefowl is likely to utilise broader habitat in the region, potential localised impacts to Malleefowl would be minimised as far as practicable, as the proponent has committed to undertake surveys for Malleefowl prior to disturbance of terrestrial habitats, using LIDAR or a similar technology.

Other species were found to be more widespread across Western Australia.

The EPA considers that the proponent has existing processes to manage dust, weeds, fire and feral animals and that impacts from surface water discharge are unlikely to have a significant impact on vertebrate fauna or SRE habitat.

Summary

The EPA has paid particular attention to the:

- *Environmental Factor Guideline – Terrestrial Fauna* (EPA 2016e).
- proponent's application of mitigation hierarchy to avoid and minimise habitat of conservation significant terrestrial fauna
- proposed additional clearing of 3,000 ha of terrestrial habitats, including up to 20 ha of riparian habitat
- proposed application of three exclusion areas which will protect SREs
- terrestrial fauna habitat being widespread outside of the development envelope
- existing procedures to manage weeds, dust, fire and feral animals
- commitment to undertake surveys for Malleefowl and minimize impacts to this species
- commitment to undertake further SRE surveys for *Lychas* 'SIGM132' and *Aganippe* sp. indet. and minimize impacts to these species.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Terrestrial Fauna that the impacts to this factor are manageable and would no longer be significant, provided there is:

- a limit on the clearing of terrestrial habitat through the authorised extent in schedule 1 of the Recommended Environmental Conditions (Appendix 5)
- implementation of measures to ensure objectives of condition 6-1 are met through the implementation of a Terrestrial Fauna Environmental Management Plan (Condition 6-2)
- implementation of measures to ensure objectives of condition 7-1 are met so that suitable habitat is maintained for *Lychas* 'SIGM132' and *Aganippe* sp. indet.

4.3 Inland Waters

EPA objective

The EPA's environmental objective for this factor is *to maintain the hydrological regimes and quality of groundwater and surface water so that environmental values are protected.*

Relevant policy and guidance

The EPA considers that the following current environmental policy and guidance is relevant to its assessment of the proposal for this factor:

- *Environmental Factor Guideline – Inland Waters* (EPA 2018b)
- WA Environmental Offsets Policy (Government of Western Australia 2011)
- WA Environmental Offsets Guidelines (Government of Western Australia 2014).

The considerations for EIA for this factor are outlined in *Environmental Factor Guideline – Inland Waters* (EPA 2018b).

EPA assessment

Existing Environment

The proposal is located within the Lake Lefroy catchment. The lake is the main receptor in the region and covers an area of approximately 554 square kilometres (km^2). The surrounding catchments drain via ephemeral gullies and drainage lines towards Lake Lefroy.

Groundwater quality at Lake Lefroy ranges between 274,000 and 423,000 milligrams per litre (mg/L) TDS with metal concentrations reflective of the mineralogy of the region. Groundwater in the region is commonly acidic (pH to 3 to 5) except where buffered by alkaline ultramafic rocks. The regional water table ranges from one metre below ground level (bgl) beneath Lake Lefroy to 50 m bgl in elevated areas.

Several peripheral wetlands occur within the development envelope.

The peripheral wetlands show freshwater or low salinity conditions. The peripheral wetlands are set back from the surface of the lake and have limited, if any hydrological connection to the lake.

Aquatic invertebrates

Several studies have investigated the aquatic invertebrate communities of Lake Lefroy and the peripheral wetlands during flooding, including 1999, 2014 and 2017, and based on re-wetting trials. Together, these studies have recorded a total of 103 taxa; predominantly crustaceans and insects. Of the taxa recorded, 101 taxa were recorded from the peripheral wetlands, and 13 taxa were recorded from Lake Lefroy.

Potential Impacts

Inland waters has the potential to be directly and indirectly impacted by the proposal through:

- changes to the hydrology and water balance of Lake Lefroy
- discharge of potential contaminants, salt load and salt crust formation to Lake Lefroy
- groundwater drawdown and mounding
- acid forming material oxidisation and mobilisation of metals.

Mitigation and management

A total of up to 2,000 ha (8.3 per cent) of the lake surface will be directly disturbed as part of the Beyond 2018 Project.

Discharge of hypersaline water to Lake Lefroy has been occurring since 1965. The surface water assessment found that under each modelled scenario discharge dewater was a small component of inputs to Lake Lefroy and concluded that dewatering discharge will have little impact on the extent of inundation of Lake Lefroy. In addition, the proponent has committed to placing the dewatering discharge points 200 m away from riparian vegetation so that any localised inundation does not occur.

The dewater discharge points used in the current operations have shown elevated concentrations of metals in surface water and sediment, particularly copper, lead and zinc when compared to reference sites. The EPA notes that the ecological assessment of the lake considered that due to the high salinity, clay content and natural mineralisation associated with the lake environment any potential metal contaminants will remain immobilised and biologically unavailable, and unlikely to pose a risk to aquatic biota and fauna.

The most recent annual environmental monitoring indicated the concentrations of selenium and mercury, which are contaminants of concern due to their ability to biomagnified in food webs, are well-below site specific and available ANZECC trigger values, and do not pose a toxicity risk to aquatic biota.

The proponent has confirmed that any new dewatering points will be on the lake only and will not impact peripheral wetlands.

The EPA notes that the discharge of dewater onto the lake's surface is currently regulated by the Department of Water and Environmental Regulation (DWER) under the Part V operating licence L8485/2010/2. The EPA considers the impacts of the dewater discharge onto the surface of Lake Lefroy are unlikely to have an unmanageable impact on Inland Waters and can continue to be regulated and managed under Part V of the EP Act. The EPA considers that the commitment to place tailings storage facilities 1,000 m away from peripheral wetlands is appropriate and will assist with water quality management.

Groundwater drawdown modelling shows that the one metre drawdown contour does not extend far beyond the proponents tenements and is unlikely to significantly impact other users. Deeper drawdown is limited to the immediate vicinity of the operation.

The EPA notes that there are no other groundwater users.

Several studies have been undertaken to assess acid and metalliferous drainage (AMD) characterisation and risk at St Ives since 2000. The latest assessment conducted in 2016 considered past assessments.

The lithology identified as having high AMD risk within the development envelope is Kapai Slate, which forms less than 11 per cent of the total volume of waste rock.

Current management practices involve identification and selective handling of AMD material and include placement of AMD waste in open pit voids or in core areas of waste rock dumps in accordance with appropriate guidelines. In addition, the proponent has committed to undertake a kinetic testing program to consider the potential impacts of hypersaline conditions on the generation of metalliferous leachate.

The EPA considers that any seepage from tailings facilities and the management of AMD is unlikely to have a significant impact to Inland Waters and can be adequately managed under the *Mining Act 1978*, administered by the Department of Mines, Industry Regulation and Safety (DMIRS) and Part V of the EP Act, administer by the DWER.

In addition the proponent has committed to undertake several monitoring surveys, which are discussed in Section 6 'Other Advice'.

Summary

The EPA has paid particular attention to:

- the direct impact of 2,000 ha (8.3 per cent) of the lakes surface
- the protection of peripheral wetlands (clay pans) within exclusion areas
- the positioning of the dewater discharge points to be more than 200 m from the lake fringing shoreline
- the low aquatic diversity in Lake Lefroy
- the proponent's commitment to undertake a dewatering strategy for each new open pit
- locating tailings storage facilities 1,000 m away from peripheral wetlands
- the ecological risk assessment undertaken by the proponent.

The EPA considers, having regard to the relevant EP Act principles and environmental objective for Inland Waters that the impacts to this factor are manageable and can be adequately regulated through Part V of the EP Act and the *Mining Act 1978* rather than conditions under Part IV of the EPA Act.

5. Conclusion

The EPA has considered the proponent's proposal to expand existing mining operations by increasing the land and lake based mining activity on Lake Lefroy. The EPA notes that the protection of environmental values by the proponent has resulted in potentially avoiding and minimising impacts on key environmental factors.

Application of mitigation hierarchy

Consistent with relevant policies and guidance, the proponent has addressed the mitigation hierarchy by identifying measures to avoid, minimise and rehabilitate environmental impacts including, but not limited to:

- use of exclusion areas to protect riparian vegetation, conservation significant flora and vegetation as well as SRE and fauna habitat
- avoiding removal of *Lychas* 'SIGM132' and *Aganippe* sp. indet. habitat
- minimisation of impacts from inundation and dewatering on riparian vegetation
- minimisation of impacts from water discharge and AMD
- minimisation of impacts to Malleefowl as far as possible.

The EPA has taken the following into account in its assessment of the proposal as a whole, including the:

- impacts to all the key environmental factors
- EPA's confidence in the proponent's proposed mitigation measures
- relevant EP Act principles and the EPA's objectives for the key environmental factors
- EPA's view that the impacts to the key environmental factors are manageable, provided the recommended conditions are met.

Given the above, the EPA has concluded that the proposal is environmentally acceptable and therefore recommends the proposal may be implemented subject to the conditions recommended in Appendix 5.

6. Other advice

Dewatering and discharge into Lake Lefroy

The EPA notes that emissions and discharges at the operating St Ives Gold Mine are approved and regulated under Part V of the EP Act. The EPA notes the DWER will assess changes to emissions and discharges from the expansion as well as the mitigation and monitoring conditions which are recommended to be applied to the proposal.

The DWER should note that the proponent has committed to undertake the following:

- routine monitoring of salt crust formation around the lake and consideration of closure options for the dewatering discharge points and associated salt crusts to prevent dispersal across the lake

- development of a dewatering strategy for each new open pit which will consider existing dewatering practices, discharge volumes, potential for localised flooding, placement of dewatering discharge facilities no closer than 200 m from shoreline vegetation, consideration of the water quality ahead of discharge, and potential impacts to exclusion areas and the riparian vegetation, and

- monitoring of dissolved radium content of groundwater.

Waste rock management and acid and metalliferous drainage

The EPA notes that regulation of waste rock management and the potential for Acid and Metalliferous Drainage (AMD) is via the continued application and implementation of Mining Proposal and a Mine Closure Plan, required under the *Mining Act 1978*. The DMIRS will assess the risk associated with waste rock and AMD management, consistent with best practice detailed in the Global Acid Rock Drainage Guide (GARD Guide), and mitigation and monitoring conditions are expected to be applied.

The DMIRS should note the proponent has committed to initiate a kinetic testing program for waste rock.

Tailings Storage Facilities

The EPA notes that the design of the above or below ground TSF would be consistent with the Australian National Committee on Large Dams (ANCOLD, 2012) Guidelines. It is the responsibility of DMIRS, as part of its regulatory function, to consider all physical conditions within the Mining Proposal and Mine Closure Plan, and where a risk-based impact assessment process has identified a potential risk, ensure that appropriate tailings design and management measures are implemented.

7. Recommendations

That the Minister for Environment notes:

1. That the proposal assessed is for the expansion of existing mining operations by increasing the land and lake based mining activity on Lake Lefroy, Western Australia.
2. The key environmental factors identified by the EPA in the course of its assessment are Flora and Vegetation, Terrestrial Fauna and Inland Waters set out in section 4.
3. The EPA has concluded that the proposal may be implemented, provided the implementation of the proposal is carried out in accordance with the recommended conditions and procedures set out in Appendix 5. Matters addresses in the conditions include the following:
    a) environmental management plan to minimise impacts to riparian vegetation and exclusion areas to avoid priority flora (condition 5)
    b) environmental management plan to minimise impacts to Terrestrial Fauna (condition 6)
    c) exclusion areas to avoid impacts to *Lychas* 'SIGM132' and *Aganippe* sp. indet. (condition 7)
4. Emissions and discharges can be regulated by the DWER under the EP Act Part V operating licence and waste management and mine closure can be managed by the DMIRS under the *Mining Act 1978*.

References

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St Ives Gold Mining Company Pty Ltd, 2019, St Ives Gold Mine – The Beyond 2018 Project Environmental Review Document Response to Submissions, EPA Assessment No. 2113, Kambalda, WA

Appendix 1: List of submitters

Organisations:

Department of Water and Environmental Regulation
Department of Biodiversity, Conservation and Attractions
Department of Planning, Lands and Heritage
Department of Mines, Industry Regulation and Safety
The National Malleefowl Recovery Team
The Wilderness Society Western Australia

Appendix 2: Consideration of principles

EP Act Principle	Consideration
1. The precautionary principle *Where there are threats of serious or irreversible damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation.* *In application of this precautionary principle, decisions should be guided by –* *a) careful evaluation to avoid, where practicable, serious or irreversible damage to the environment; and* *b) an assessment of the risk-weighted consequences of various options.*	In considering this principle, the EPA notes that vegetation in 'Excellent' to 'Pristine' condition, riparian vegetation and terrestrial fauna habitat could be impacted by the proposal. The assessment of these impacts is provided in this report. The proponent has undertaken investigations on the biological and physical environment which have provided sufficient certainty to assess the risks and identify measures to avoid or minimise impacts. The EPA has recommended conditions to ensure that environmental protection outcomes are achieved. From its assessment of this proposal, the EPA has concluded there is not a threat of serious or irreversible harm if the recommended conditions are imposed in relation to the proposal.
2. The principle of intergenerational equity *The present generation should ensure that the health, diversity and productivity of the environment is maintained and enhanced for the benefit of future generations.*	In considering this principle, the EPA notes that Flora and Vegetation and Terrestrial Fauna could be significantly impacted by the proposal. The assessment of these impacts is provided in this report. In assessing this proposal, the EPA has recommended conditions to manage impacts to Flora and Vegetation and Terrestrial Fauna, in particular to protect priority flora species, riparian vegetation, Malleefowl and confirmed and potential Short Range Endemics. The EPA notes that the proponent has a Mine Closure Plan which will be updated to include the expansion to ensure that the proposal is closed in a manner to ensure that the environment is maintained for the benefit of future generations.

EP Act Principle	Consideration
	From its assessment of this proposal, the EPA has concluded that the environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.
3. The principle of the conservation of biological diversity and ecological integrity *Conservation of biological diversity and ecological integrity should be a fundamental consideration.*	This principle is a fundamental and relevant consideration for the EPA when assessing and considering the impacts of the proposal on the environmental factors of Flora and Vegetation, Terrestrial Fauna and Inland Waters. The proponent has undertaken comprehensive baseline studies to understand and assess potential threats to biological diversity and ecological integrity and supplementary studies will also be undertaken. The EPA notes that the proponent has identified measures to avoid or minimise impacts to these factors. The EPA has considered these measures during its assessment and these are provided in this report. Furthermore, the EPA has recommended conditions for the factors of Flora and Vegetation and Terrestrial Fauna to ensure that impacts are not greater than predicted. From its assessment of this proposal, the EPA has concluded that the proposal would not compromise the biological diversity and ecological integrity of the affected areas.
4. Principles relating to improved valuation, pricing and incentive mechanisms *(1) Environmental factors should be included in the valuation of assets and services.*	In considering this principle, the EPA notes that the proponent has carried the cost of environmental management associated with its operation, such as the cost of investigations and surveys, rehabilitation of land and future rehabilitation and closure, safe storage of tailings, and contributions to the Western Australian Mining Rehabilitation Fund.

EP Act Principle	Consideration
(2) The polluter pays principles – those who generate pollution and waste should bear the cost of containment, avoidance and abatement. *(3) The users of goods and services should pay prices based on the full life-cycle costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste.* *(4) Environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structure, including market mechanisms, which enable those best placed to maximise benefits and/or minimize costs to develop their own solution and responses to environmental problems.*	The proponent will continue to operate under an Operating Licence, issued under Part V of the EP Act that will ensure that pollution (when or if generated) is paid for in line with legislation. The EPA has had regard to this principle during the assessment of the proposal.
5. The principle of waste minimisation *All reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.*	In considering this principle, the EPA notes that the proponent has committed to implement all reasonable and practicable measures to minimise the generation of waste for its St Ives operation. The proponent also has, and will continue to operate under an Operating Licence, issued under Part V of the EP Act, that will manage wastes. The EPA has had regard to this principle during the assessment of the proposal.

Appendix 3: Evaluation of other environmental factors

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
LAND			
Subterranean Fauna	Subterranean fauna could potentially be impacted from the direct removal of habitat, groundwater drawdown and discharge of surplus water to Lake Lefroy.	**DWER** • The ERD relies on historical studies – four desktop studies and one Level 1 field survey – and a contemporary desktop assessment and reconnaissance survey to inform its assessment of impacts to subterranean fauna. The Level 1 field survey involved habitat assessment and limited troglofauna sampling in one area, while the reconnaissance survey involved habitat assessment only. No detailed (Level 2) sampling has been conducted. This level of survey effort provides an adequate basis for assessment, given the low level of prospectivity for subterranean fauna habitat in the proposal area. EPA guidance allows for desktop studies and Level 1 surveys in such cases. • The ERD states that while groundwater is present in the proposal area, it has salinity levels over 70,000 mg/L throughout much of the development envelope. This	The proponent has undertaken four desktop studies, one Level 1 field survey and a contemporary desktop assessment and reconnaissance survey to inform its assessment of impacts to subterranean fauna. The surveys undertaken confirm that stygofauna are unlikely to be present due to the high salinities in groundwater. Studies show that troglofauna may occur in the land based Quaternary alluvial deposits which are located to the south-east and north-west of the development envelope. The proponent has demonstrated that the Quaternary alluvial deposits are widespread outside the development envelope. From the surveys undertaken 5.7 per cent of the Quaternary alluvial deposits within a 25 km radius of Lefroy Mill occur within the development envelope. Of this 266 ha occur within exclusion areas, which

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		suggests that stygofauna are unlikely to be present, as the likelihood of them being found in waters with salinity over 60,000 mg/L is low. This conclusion was supported by each of the three different technical consultants that have conducted the historical studies in the proposal area. • The ERD states that due to local geology and groundwater characteristics the only potential habitat for troglofauna in the proposal area is represented by areas of Quaternary alluvial deposits that reach into the south-east of the development envelope (and, to a lesser extent, the north-west). Troglofauna sampling has not been conducted in these areas, although troglofauna sampling in 2011 at 15 uncased holes in the West Idough area obtained no specimens. • The ERD states that some loss of potential troglofauna habitat may occur in these areas of Quaternary alluvial deposits. The ERD then concludes that impacts to troglofauna from such habitat loss are likely to be negligible, because these habitats are widespread in the surrounding landscape and the extent of disturbance to these habitats in the development envelope is	reduces the potential impact to 366 ha or 3.3 per cent of the potential habitat. The proponent has committed to undertake a pilot troglofauna survey should disturbance exceed 20 ha in the deposits to the south-east of the development envelope. Having regard to: • the EPA's *Environmental Factor Guideline – Subterranean Fauna* (EPA 2016f) • the proponents studies of Subterranean fauna • the extent of Quaternary alluvial deposits outside the development envelope • the protection of Quaternary alluvial deposits within Exclusions areas within the development envelope • DWER's confirmation that this level of survey is an adequate basis for the assessment, and • the significant considerations in the *Statement of Environmental Principles, Factors and Objectives* the EPA considers it is unlikely that the proposal would have a significant impact

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		expected to be minimal. In addition, the ERD provides mapping to demonstrate that Quaternary alluvial deposits outside of the development envelope are generally well-connected to those within. Although it may be reasonable, the conclusion is not adequately supported. While the ERD implies that very little of the Quaternary alluvial deposits will be disturbed due to implementation of the proposal, it does not explicitly commit to this by specifying the precise extents and locations of such areas that may be impacted by the proposal. To allow confidence that the proposal is unlikely to result in a high level of impact to troglofauna, the proponent should either provide quantitative data and impact footprints confirming that the extent of impacts to Quaternary alluvial deposits will be minimal, and/or survey data demonstrating that troglofauna assemblages within the Quaternary alluvial deposit habitats, if any, are unlikely to contain range restricted taxa. Such an approach is consistent with the recommendations of the proponent's technical consultant, who recommended a troglofauna pilot study be conducted it the	of Subterranean fauna and that the impacts to this factor are manageable. Accordingly, the **EPA did not consider Subterranean fauna to be a key environmental factor** at the conclusion of its assessment.

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		Quaternary alluvial deposits in the south-eastern part of the development envelope are intended to be disturbed. **The Wilderness Society WA (TWSWA)** • The study mentions that, while the occurrence of stygofauna is unlikely throughout the development envelope, mainly due to the high salinity of the area in general, there are localities where the water salinity is lower and could potentially sustain stygofauna life (p.4-93 in the review). This is outlined in the EPA assessment for the Pilbara 2007, included in the St Ives review, and acknowledges that stygofauna may occur in rather significant levels of salinity, up to 60,000 mg/L TDS. TWSWA notes that the St Ives review recognises the 2007 EPA assessment for the Pilbara and also, that there are local areas within the DE that measure lower than 70,000mg/L TDS. The review document does not mark or mention more exactly where these local areas of lower salinity are or whether any profounder analysis of their potential as stygofauna habitat, present or future, will be undertaken. This needs to be addressed.	

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		TWSWA recommends that the 70,000mg/L TDS localities are clearly marked for the study and monitored for potential change. Any area deemed to be <60,000mg/L TDS should be chartered and assessed for the potential presence of stygofauna species. If no presence is detected, it should be reassessed after an appropriate amount of time to ensure the continuous unsuitability as stygofauna habitat. • The general review of the troglofauna occurrence and disturbance has been equally thorough as previous sections in the review. For Lake Lefroy itself, it is unlikely that troglofauna would occur. The only areas where it could potentially occur in the development envelope is in the peripheral southeast and northwest Quaternary alluvials. It is, however, considered in the review to be of too small an occurrence to bear significance due to the alluvials significant size outside of the development envelope. TWSWA disagrees from the viewpoint that this mining project has had a phase of expansion to date already. There is little to say that there will not be additional expansion into the surrounding areas in the future with more disturbance and larger areas affected. It is not enough	

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		to conclude that there may be a potential habitat affected and that there may be disturbance to it (and adjacent areas) without charting the areas. Especially in the southeast, a large portion of alluvials are affected according to Figure 4-17 'Potential Troglofauna Habitat' in the review. If there is an implication that a habitat and/or species may be affected by the human activities of today, if only to a smaller extent, then that extent and the species themselves should be marked today as well – even if only for future reference. The Western Australian Biodiversity Science Institute (WABSI) has been given a research priority for subterranean fauna to close knowledge gaps. Three of the five focus areas for this research are to: improve survey and sampling protocols to optimise the efficiency of survey and monitoring; improve understanding of habitat requirements to better define species distributions; and improve understanding of resilience to disturbance to inform mitigation strategies. TWSWA therefore recommends that there are appropriate studies undertaken to assess and chart the actual occurrence in the southeast and northwest Quaternary alluvials of current troglofauna species and	

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		the impact of the disturbance to the alluvials as a subterranean fauna habitat in general – especially considering they fringe most of the development envelope.	
AIR			
Air Quality	Air quality has the potential to be directly impacted through: • particulate (dust) emissions from mining operations including but not limited to: vehicle movement, construction activities, blasting activities, stockpiling material and transport; and wind erosion in cleared areas • additional Scope 1 emissions of up to approximately 83,389 tpa CO_2-e	**TWSWA** • With specific consideration of the Climate Council IPCC summary and the fact that global warming has already occurred to 1°C and any further warming would be devastating to the climate, it may be argued that even minimal emissions from the St Ives Gold Mine are not acceptable. There appears to be no evidence that the St Ives Gold Mine project has any interest in investing in new forms of lower emissions mining and transportation methods or machinery. The EPA encourages practices such as "proposal design, technology and operation that ensure emissions are minimised". The IPCC report states that "by 2030 global emissions must be down by at least 45% from 2010 levels", and that "we are not on track to achieve this woefully inadequate target". The projection results predict a total of 259,589,702 Tonnes CO_2 – e for the years 2018-28, which certainly does not align with targets of emissions reduction by 2030. If emissions continue at	Dust emissions will be managed through established strategies, including the use of dewater for dust suppression, minimising clearing, and the rehabilitation of areas no longer in use. Dust is currently and will continue to be managed in accordance with the existing the Part V Operating Licence L8485/2010/2 in accordance with the St Ives Dust Environmental Procedure (SIG-ENV-PR029). The proponent has committed to the continuation of management of greenhouse gas emissions in accordance with relevant legislation and national and state strategies relating to greenhouse gas emissions. Greenhouse gas emissions have been and will continue to be reported annually in accordance with the requirements of the Commonwealth National Greenhouse

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		their current rate, by 2030 global warming will exceed 1.5°C between the years 2030 and 2052. The Climate Council has urged in their summary the need for "a deep and rapid transformation of economic, technological and social systems, beginning immediately". It is in this light that we find the expansion of the St Ives mine objectionable. If all other countries around the world were to follow Australia's abysmal targets, the Climate Council writes, "warming could reach over 3°C and up to 4°C". There is also evidence to suggest that there is an impending "long-term decline in ore grade, which increases energy consumption". As the St Ives mine in 2012 only achieved a 4% progress ratio in mining recovery processes "to maintain or decrease the energy consumption during mining operations", the mine must increase its efficiency to justify the emissions it is projected to create within the next decade. If this does not occur, the justification for an extended period of mining is flawed. Additionally, the air quality concerns surrounding mining and mining areas must be addressed. If pollution occurs in the form of dust or particles equal to or smaller in size than PM10, it poses a threat to human and animal life. Such particles become	and Energy Reporting (NGER) Scheme, which operates under the *National Greenhouse and Energy Reporting Act 2007* (NGER Act). Other emissions will be reported annually to the National Pollution Inventory (NPI). Having regard to: • the EPA's *Environmental Factor Guideline – Air Quality* (EPA 2016g) • the proponents management strategies including dust suppression and rehabilitation • regulatory requirements of existing Operating Licence L8485/2010/2 • the significance considerations in the *Statement of Environmental Principles, Factors and Objectives* and • the additional Scope 1 emissions do not exceed 100,000 tpa CO_2-e The EPA considers it is unlikely that the proposal would have a significant impact on Air Quality and that the impacts to this factor are manageable. Accordingly, **the EPA did not consider the factor Air Quality to be a key environmental factor** at the conclusion of its assessment.

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		trapped in the cilia that lines airways in the human body, which can stick to mucus that "can then be swallowed or coughed up. TWSWA recommends that further research is required regarding sustainability practices outlined by the proposal which directly address reductions in emissions.	
PEOPLE			
Social Surroundings	Potential impacts to Social Surroundings include: • Sites of archaeological and/or ethnographic significance to the Ngadju people could potentially be impacted by proposed activities such as clearing, alteration of the natural hydrological regime and groundwater drawdown. • Mining operations could lead to increased noise, road use and a decrease in visual amenity.	**DPLH (The Department of Planning, Lands and Heritage)** • The DPLH has reviewed the ERD and notes that Aboriginal heritage is addressed in the Social Surrounding section of the ERD. DPLH notes the following information: o A total of 35 heritage surveys (archaeological and ethnographic) have been undertaken within the development envelope, which is within the Native Title Claim of the Ngadju People. There are still unsurveyed areas within the development envelope, within which St Ives will ensure future heritage surveys are undertaken in consultation with the Ngadju People. o St Ives has implemented a Heritage Management Plan (HMP) to mitigate any potential impact to Aboriginal sites and Aboriginal heritage places. The HMP is intended to provide high level	**Heritage** A total of 35 heritage surveys (archaeological and ethnographic) have been undertaken within and around the development envelope which identified one registered site, four other heritage places and one other heritage site within the development envelope. The proponent has committed to undertake further heritage surveys within the development envelope where surveys have not yet been undertaken in consultation with the Ngadju People. St Ives has implemented a Heritage Management Plan (SIG-ENV-PL043) and Heritage Assessment Procedure (SIG-ENV-PR035) to mitigate any potential impact to Aboriginal sites and Aboriginal heritage places.

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		guidance for the management of heritage through the life of the Proposal. ○ In the event that disturbance to Aboriginal sites and Aboriginal heritage places is unavoidable, statutory applications (section 18) under the *Aboriginal Heritage Act 1972* will be submitted. Based on the above, DPLH considers that Aboriginal heritage has been adequately addressed. **TWSWA** • The review stated that research helps predict the location and assess the significance of any archaeological sites, however, there is very little evidence confirming whether all sites have been inspected or not. It was also emphasised that the heritage survey has not been collated or synthesised. Under the Heritage Act, the results of a heritage survey allow the government's decision regarding heritage protection for organisations to enter the local heritage register and which specific areas is needed for protection. Carrying out a heritage survey is essential in maintaining care for heritage places for	The DPLH has confirmed that they consider that Aboriginal heritage has been adequately addressed. **Noise** The proponent has undertaken investigations into noise. All modelled scenarios in relation to the mine operations were predicted to comply with the Environmental Protection (Noise) Regulations 1997. The proponent has developed a Noise Management Plan (SIG-ENV-PL047) which includes a number of noise mitigation measures. **Visual amenity** A visual impact assessment was undertaken for the Beyond 2018 proposal using viewshed and photomontage. The results showed the view from elevated areas was obvious, whereas from less elevated viewpoints a large proportion of the development envelope is obscured. In order to mitigate visual impacts to the landscape the proponent proposes to site

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		Aboriginal and Torres Strait Islander people. The heritage survey would in turn provide a 29 No. Submitter Submission and/or issue Response to comment consolidated final report which would include a systematic investigation of heritage resources and sacred sites associated with the Aboriginal tradition or Island custom and places that are connected to their history prior to the settlement of Europeans. Hence, it is recommended the proponent carry out a heritage survey and provide the consolidated report before taking further steps. The review also mentions that the ground disturbance associated with the proposed project may have an impact on the previously undisturbed, undiscovered or in situ archaeological deposits and that there will be a major impact on any archaeological remains at or near the surface because such material, if it is present, would either be damaged by heavy machinery or removed from its stratigraphic context. TWSWA recommends the proponent first carry out a complete heritage survey and provide the consolidated report before taking further	and design mining infrastructure to make it more visually pleasing, screen infrastructure with waste rock dumps, undertake staged mining where possible and carry our progressive rehabilitation and backfilling of sterilised pits and rehabilitation. **Traffic** As the expansion of the mine relates to the continuation of mining with no increase in production it is expected there will be no change to traffic or personnel. Having regard to: • the EPA's *Environmental Factor Guideline – Social Surroundings* (EPA 2016h) • 35 heritage surveys being undertaken within and around the development envelope • the proponents commitment to undertake further heritage surveys within the development envelope where surveys have not yet been undertaken in consultation with the Ngadju People • the implementation a Heritage Management Plan (SIG-ENV-PL043) and Heritage Assessment Procedure

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		steps. Should any cultural heritage site be discovered, TWSWA recommends the project not go ahead to ensure all archaeological remains are preserved in situ. • New proposed boundary in close proximity (approximately 2 km) to Kambalda East townsite which has a high risk for creating amenity issues for the residents. The close distance of the expanded mine operation to the townsite is also in opposition to the Shire of Coolgardie's objectives for rural land as specified in the Local Planning Scheme, where it specifies that the rural character of the town should be retained. Points of concern from the expansion of mining operations regarding amenities are as follows: • Impacts on Kambalda East residents from noise and air pollution from an increase in vehicles servicing the mine site and also mining equipment associated with the proposed expansion of the gold mine; and Increased risk for other road users near the Kambalda East townsite from increased traffic. • Extension of operation also suggests the potential for more onsite employees, which	(SIG-ENV-PR035) to mitigate any potential impact to Aboriginal sites and Aboriginal heritage places • the confirmation from DPLH that it considers Aboriginal heritage has been adequately addressed • all modelled scenarios in relation to the mine operations being predicted to comply with the Environmental Protection (Noise) Regulations 1997 • the implementation of a Noise Management Plan detailing noise mitigation measures • no anticipated change to traffic or mine personnel • results of the visual impact assessment • management practices to reduce visual impacts, and • the significance considerations in the *Statement of Environmental Principles, Factors and Objectives* the EPA considers it is unlikely that the proposal would have a significant impact on Social Surroundings and that the impacts to this factor are manageable. Accordingly, **the EPA did not consider the factor Social Surroundings to be a**

Environmental factor	Description of the proposal's likely impacts on the environmental factor	Government agency and public comments (Addressed in the Response to Submissions document)	Evaluation of why the factor is not a key environmental factor
		would require extra accommodation needs in the Townsite. As the number of potential extra employees is not classified in the EPA review, there should be considerations of amenity issues that relate to the expansion of the mining workforce in the townsite. The Shire of Coolgardie should determine whether they have the capacity in Kambalda East townsite for extra mining accommodation. The proposal presented to the EPA not only did not address these amenity issues, nor did it did acknowledge the possibility of these amenity issues occurring and the close proximity of the expansion to the Kambalda East Townsite. TWSWA recommends that the proponent should address the issues of increased noise, pollution, road use and a decrease in visual amenity.	**key environmental factor** at the conclusion of its assessment.

Appendix 4: Proposed changes to conditions for revised proposal

Proposed Implementation Agreement (Ministerial Statement)

The EPA recommends that the proposal may be implemented and further recommends that the implementation of the proposal be subject to the Implementation Agreement (Ministerial Statement) set out in Appendix 5.

The recommended Ministerial Statement has been developed in accordance with the *Environmental Impact Assessment (Part IV Divisions 1 and 2) Procedures Manual 2016* and includes a review of the following implementation conditions:

- Ministerial Statement 548: Gold Mine Development on Lake Lefroy, 7 km South-East of Kambalda, issued on 13 July 2000
- Ministerial Statement 879: Gold Mine Development on Lake Lefroy, issued on 16 November 2011.

Proposed changes

The main changes between the proposed new Ministerial Statement (Appendix 5) and the existing Ministerial Statements relate to:

- removal of redundant conditions
- removal of conditions that are managed under other processes (such as emissions and discharges) and as such, do not require regulation under Part IV of the EP Act
- updating conditions to reflect contemporary conditions.

Recommended proposal details (Schedule 1)

The revised proposal details contained in Schedule 1 (Appendix 5) have been amended to include an updated description which reflects the EPA's contemporary approach to project descriptions described in the EPA's Procedures Manual.

Changes include the following:

- Clearing values updated to reflect the cumulative area in the revised proposal
- Removal of the height of waste rock dumps as that is managed under the *Mining Act 1978.*

Appendix 5: Identified Decision-Making Authorities and Recommended Environmental Conditions

Identified Decision-making Authorities

Section 44(2) of EP Act specifies that the EPA's report must set out (if it recommends that implementation be allowed) the conditions and procedures, if any, to which implementation should be subject. This Appendix contains the EPA's recommended conditions and procedures.

Section 45(1) requires the Minister for Environment to consult with decision-making authorities (DMAs), and if possible, agree on whether or not the proposal may be implemented, and if so, to what conditions and procedures, if any, that implementation should be subject.

The following decision-making authorities have been identified:

Decision-making Authority	Legislation (and Approval)
1. Minister for Environment	*Biodiversity Conservation Act 2016* (taking or disturbing threatened species)
2. Minister for Water	*Rights in Water and Irrigation act 1914* (Amendments to Water abstraction licences, Permit to obstruct or interfere with beds or banks, Licence to construct bores)
3. Minister for Aboriginal Affairs	*Aboriginal Heritage Act 1972* (Section 18 clearances)
4. Minister for Mines and Petroleum	*Mining Act 1978*
5. Chief Executive Officer, Department of Water and Environmental Regulation	*Environmental Protection Act 1986* (Part V Works Approval and Licence)
6. Executive Director, Resource and Environmental Compliance Division, Department of Mines, Industry Regulation and Safety	*Mining Act 1978* (Mining proposal)
7. Chief Dangerous Goods Officer, Department of Mines, Industry Regulation and Safety	*Dangerous Goods Safety Act 2004* (Dangerous goods)
8. State Mining Engineer, Department of Mines, Industry Regulation and Safety	*Mines Safety and Inspection Act 1994* (Mine safety) Mines Safety and Inspection Regulations 1995 (Approval to commence mining operations)
9. Chief Executive Officer, Shire of Coolgardie	*Health Act 1911* and Health (Treatment of Sewage and Disposal of Effluent and Liquid Waste) Regulations 1974

Note: In this instance, agreement is only required with DMA 1 to 4 since these DMAs are Ministers.

RECOMMENDED ENVIRONMENTAL CONDITIONS

STATEMENT THAT A REVISED PROPOSAL MAY BE IMPLEMENTED
(*Environmental Protection Act 1986*)

ST IVES GOLD MINE: THE BEYOND 2018 PROJECT

Proposal: Proposal to expand existing mining operations by increasing the land and lake based mining activity on Lake Lefroy and on adjacent land, approximately 20 kilometres (km) south east of Kambalda in the Goldfields region of Western Australia. The proposal includes the discharge of dewatering to the lakes surface and the construction of associated mine infrastructure, including open pits, underground operations, waste rock dumps and tailings storage facilities, the subject of Statement No. 879 dated 16 November 2011.

Proponent: St Ives Gold Mining Company Pty Limited
Australian Company Number 098 386 273

Proponent Address: PO Box 359
KAMBALDA WEST WA 6444

Assessment Number: 2113

Report of the Environmental Protection Authority: 1645

Previous Assessment Number: 1809 and 1250

Previous Report of the Environmental Protection Authority: 1411 and 976

Previous Statement Number: 879 and 548

Pursuant to section 45, read with section 45B of the *Environmental Protection Act 1986,* it has been agreed that:

1. the Proposal described and documented in Table 2 of Schedule 1 may be implemented;

2. the implementation of the revised proposal to which the above reports of the Environmental Protection Authority relate is subject to the following conditions and procedures, which replace and supersede all previous conditions and procedures of Statement 879.

1 Proposal Implementation

1-1 When implementing the Revised Proposal, the proponent shall not exceed the authorised extent of the Revised Proposal as defined in Table 2 of Schedule 1, unless amendments to the Revised Proposal and the authorised extent of the Revised Proposal have been approved under the EP Act.

2 Contact Details

2-1 The proponent shall notify the CEO of any change of its name, physical address or postal address for the serving of notices or other correspondence within twenty-eight (28) days of such change. Where the proponent is a corporation or an association of persons, whether incorporated or not, the postal address is that of the principal place of business or of the principal office in the State.

3 Compliance Reporting

3-1 The proponent shall prepare and maintain a Compliance Assessment Plan which is submitted to the CEO at least six (6) months prior to the first Compliance Assessment Report required by condition 3-6, or within six (6) months of this statement being issued, whichever is sooner.

3-2 The Compliance Assessment Plan shall indicate:

(1) the frequency of compliance reporting;

(2) the approach and timing of compliance assessments;

(3) the retention of compliance assessments;

(4) the method of reporting of potential non-compliances and corrective actions taken;

(5) the table of contents of Compliance Assessment Reports; and

(6) public availability of Compliance Assessment Reports.

3-3 After receiving notice in writing from the CEO that the Compliance Assessment Plan satisfies the requirements of condition 3-2 the proponent shall assess compliance with conditions in accordance with the Compliance Assessment Plan required by condition 3-1.

3-4 The proponent shall retain reports of all compliance assessments described in the Compliance Assessment Plan required by condition 3-1 and shall make those reports available when requested by the CEO.

3-5 The proponent shall advise the CEO of any potential non-compliance within seven (7) days of that non-compliance being known.

3-6 The proponent shall submit to the CEO the first Compliance Assessment Report by 30 June 2020 addressing the previous twelve (12) month period and then annually from the date of submission of the first Compliance Assessment Report, or as otherwise agreed in writing by the CEO.

The Compliance Assessment Report shall:

(1) be endorsed by the proponent's CEO or a person delegated to sign on the CEO's behalf;

(2) include a statement as to whether the proponent has complied with the conditions;

(3) identify all potential non-compliances and describe corrective and preventative actions taken;

(4) be made publicly available in accordance with the approved Compliance Assessment Plan; and

(5) indicate any proposed changes to the Compliance Assessment Plan required by condition 3-1.

4 Public Availability of Data

4-1 Subject to condition 4-2, within a reasonable time period approved by the CEO of the issue of this Statement and for the remainder of the life of the proposal the proponent shall make publicly available, in a manner approved by the CEO, all validated environmental data (including sampling design, sampling methodologies, empirical data and derived information products (e.g. maps)), management plans and reports relevant to the assessment of this proposal and implementation of this Statement.

4-2 If any data referred to in condition 4-1 contains particulars of:

(1) a secret formula or process; or

(2) confidential commercially sensitive information;

the proponent may submit a request for approval from the CEO to not make these data publicly available. In making such a request the proponent shall provide the CEO with an explanation and reasons why the data should not be made publicly available.

5 Flora and Vegetation Environmental Management Plan

5-1 The proponent shall implement the proposal to meet the following environmental outcomes:

(1) The proponent shall ensure there is no proposal-related direct or adverse indirect impacts to flora and vegetation within the exclusion areas and no mining area as shown on Figure 3 and delineated by coordinates in Schedule 2.

(2) The proponent shall ensure there is no adverse impact, as a result of inundation from dewatering discharge from the proposal, to the health of riparian vegetation, as shown on Figure 3 and delineated by coordinates in Schedule 2.

5-2 In order to meet the requirements of condition 5-1, the proponent shall prepare and submit to the CEO a Flora and Vegetation Environmental Management Plan within six (6) months of this statement being issued.

5-3 The Flora and Vegetation Environmental Management Plan shall:

(1) Include actions to ensure that dust, weeds and fire are appropriately managed within the development envelope.

(2) specify trigger criteria that must provide an early warning that the threshold criteria identified in condition 5-3(3) may not be met;

(3) specify threshold criteria to demonstrate compliance with the environmental outcomes specified in condition 5-1. Exceedance of the threshold criteria represents non-compliance with these conditions;

(4) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;

(5) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded;

(6) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; and

(7) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 5-1 has been met over the reporting period in the Compliance Assessment Report required by condition 3-1.

5-4 After receiving notice in writing from the CEO that the Flora and Vegetation Environmental Management Plan satisfies the requirements of condition 5-3 the proponent shall:

(1) implement the provisions of the Flora and Vegetation Environmental Management Plan; and

(2) continue to implement the Flora and Vegetation Environmental Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in conditions 5-1 have been met.

5-5 In the event that monitoring, or investigations indicates exceedance of threshold criteria specified in the Flora and Vegetation Environmental Management Plan, the proponent shall:

(1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;

(2) implement the threshold contingency actions specified in the Flora and Vegetation Environmental Management Plan within 24 hours of the exceedance being reported as required by condition 5-5(1) and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;

(3) investigate to determine the cause of the threshold criteria being exceeded;

(4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and

(5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 5-5(1). The report shall include:

(a) details of threshold contingency actions implemented;

(b) the effectiveness of the threshold contingency actions implemented, against the threshold criteria;

(c) the findings of the investigations required by conditions 5-5(3) and 5-5(4);

(d) measures to prevent the threshold criteria being exceeded in the future;

(e) measures to prevent, control or abate the environmental harm which may have occurred; and

(f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

5-6 The proponent:

(1) may review and revise the Flora and Vegetation Environmental Management Plan, or

(2) shall review and revise the Flora and Vegetation Environmental Management Plan as and when directed by the CEO.

5-7 The proponent shall implement the latest revision of the Flora and Vegetation Environmental Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 5-3.

6 Terrestrial Fauna Environmental Management Plan

6-1 The proponent shall implement the proposal to meet the following environmental outcomes:

(1) The proponent shall ensure there is no direct proposal-related significant adverse impacts to Malleefowl or active Malleefowl mounds within the development envelope.

(2) The proponent shall ensure there is no project-related direct or indirect impacts to the habitats of confirmed and potential SREs within the exclusion areas and no mining area as shown on Figure 3 and delineated by coordinates in Schedule 2.

6-2 In order to meet the requirements of condition 6-1, the proponent shall prepare and submit to the CEO a Terrestrial Fauna Environmental Management Plan within six (6) months of this statement being issued.

6-3 The Terrestrial Fauna Environmental Management Plan shall:

(1) outline how the pre-clearance surveys will be undertaken using LIDAR or similar technology, in consultation with the Department of Biodiversity, Conservation and Attractions;

(2) specify trigger criteria that must provide an early warning that the environmental objectives identified in condition 6-1 may not be met;

(3) specify threshold criteria to demonstrate compliance with the environmental objectives specified in condition 6-1. Exceedance of the threshold criteria represents non-compliance with these conditions;

(4) specify monitoring to determine if trigger criteria and threshold criteria are exceeded;

(5) specify trigger level actions to be implemented in the event that trigger criteria have been exceeded;

(6) specify threshold contingency actions to be implemented in the event that threshold criteria are exceeded; and

(7) provide the format and timing for the reporting of monitoring results against trigger criteria and threshold criteria to demonstrate that condition 6-1 has been met over the reporting period in the Compliance Assessment Report required by condition 3-6.

6-4 After receiving notice in writing from the CEO that the Terrestrial Fauna Environmental Management Plan satisfies the requirements of condition 6-3 the proponent shall:

(1) implement the provisions of the Terrestrial Fauna Environmental Management Plan; and

(2) continue to implement the Terrestrial Fauna Environmental Management Plan until the CEO has confirmed by notice in writing that the proponent has demonstrated the objectives specified in conditions 6-1 have been met.

6-5 In the event that monitoring, tests, surveys or investigations indicates exceedance of threshold criteria specified in the Terrestrial Fauna Environmental Management Plan, the proponent shall:

(1) report the exceedance in writing to the CEO within seven (7) days of the exceedance being identified;

(2) implement the threshold contingency actions specified in the Terrestrial Fauna Environmental Management Plan within 24 hours of the exceedance being reported as required by condition 6-5(1) and continue implementation of those actions until the CEO has confirmed by notice in writing that it has been demonstrated that the threshold criteria are being met and the implementation of the threshold contingency actions is no longer required;

(3) investigate to determine the cause of the threshold criteria being exceeded;

(4) investigate to provide information for the CEO to determine potential environmental harm or alteration of the environment that occurred due to threshold criteria being exceeded; and

(5) provide a report to the CEO within twenty-one (21) days of the exceedance being reported as required by condition 6-5(1). The report shall include:

(a) details of threshold contingency actions implemented;

(b) the effectiveness of the threshold contingency actions implemented, against the threshold criteria;

(c) the findings of the investigations required by conditions 6-5(3) and 6-5(4);

(d) measures to prevent the threshold criteria being exceeded in the future;

(e) measures to prevent, control or abate the environmental harm which may have occurred; and

(f) justification of the threshold remaining, or being adjusted based on better understanding, demonstrating that objectives will continue to be met.

6-6 The proponent:

(1) may review and revise the Terrestrial Fauna Environmental Management Plan, or

(2) shall review and revise the Terrestrial Fauna Environmental Management Plan as and when directed by the CEO.

6-7 The proponent shall implement the latest revision of the Terrestrial Fauna Environmental Management Plan, which the CEO has confirmed by notice in writing, satisfies the requirements of condition 6-3.

7 Short Range Endemics

7-1 The proponent shall confirm that the juvenile species identified were *Lychas* 'SIGM132' and *Aganippe* sp. indet and ensure that suitable habitat is maintained for these species.

7-2 Subject to condition 7-3, the proponent shall not undertake ground disturbing activities within the SRE exclusion areas as shown on Figure 3 and delineated by coordinates in Schedule 2;

7-3 No ground disturbing activities may occur within the SRE exclusion areas as shown in Figure 3 of Schedule 1 until:

(1) the CEO is satisfied that *Lychas* 'SIGM132' and *Aganippe* sp.indet. has been found outside the development envelope as shown on Figure 3; and

(2) the proponent has received notice in writing from the CEO that ground disturbing activities may occur within the SRE exclusion areas as shown in Figure 3 of Schedule 1.

Schedule 1

Table 1: Summary of the Proposal

Proposal Title	St Ives Gold Mine: The Beyond 2018 Project
Short Description	The Beyond 2018 Project comprises new open-cut and underground mining developments and the expansion of the existing open-cut and underground mining developments at Lake Lefroy, approximately 20 kilometres (km) south east of Kambalda in the Goldfields region of Western Australia. The proposal includes the discharge of dewatering to the lakes surface and the construction of associated mine infrastructure, including wast rock dumps and tailings storage facilities.

Table 2: Location and authorised extent of physical and operational elements

Column 1	Column 2	Column 3
Element	**Location**	**Authorised Extent**
Lake-based operations	Figure 3	4,061 ha within a development envelope of 45,013 ha
Land-based operations	Figure 3	5, 085 ha within a development envelope of 45,013 ha
Area of direct riparian zone disturbance from clearing	Figure 3	Up to 110 ha within a development envelope of 45,013 ha
Volume of waste rock used for backfilling	-	A minimum of approximately 95 million tonnes and backfilling of sterilised pits

Table 3: Abbreviations and Definitions

Acronym or Abbreviation	Definition or Term
Adverse	Impacts not likely to change the conservation status or local population numbers of a species
CEO	The Chief Executive Officer of the Department of the Public Service of the State responsible for the administration of section 48 of the *Environmental Protection Act 1986*, or his delegate.
EP Act	*Environmental Protection Act 1986*
Ground Disturbing Activities	Activities that are associated with the substantial implementation of a proposal including but not limited to, digging (with mechanised equipment), blasting, earthmoving, vegetation clearance, grading, gravel extraction, construction of new or widening of existing roads and tracks.
ha	Hectare
LIDAR	A remote sensing technology which uses the pulse from a laser to collect measurements which can then be used to create 3D models and maps of objects and environments. LIDAR is an acronym of Light Detection and Ranging

SREs	Short Range Endemics

Figures (attached)

Figure 1 Regional Location
Figure 2 Development envelope and existing operations
Figure 3 Exclusion areas and riparian vegetation

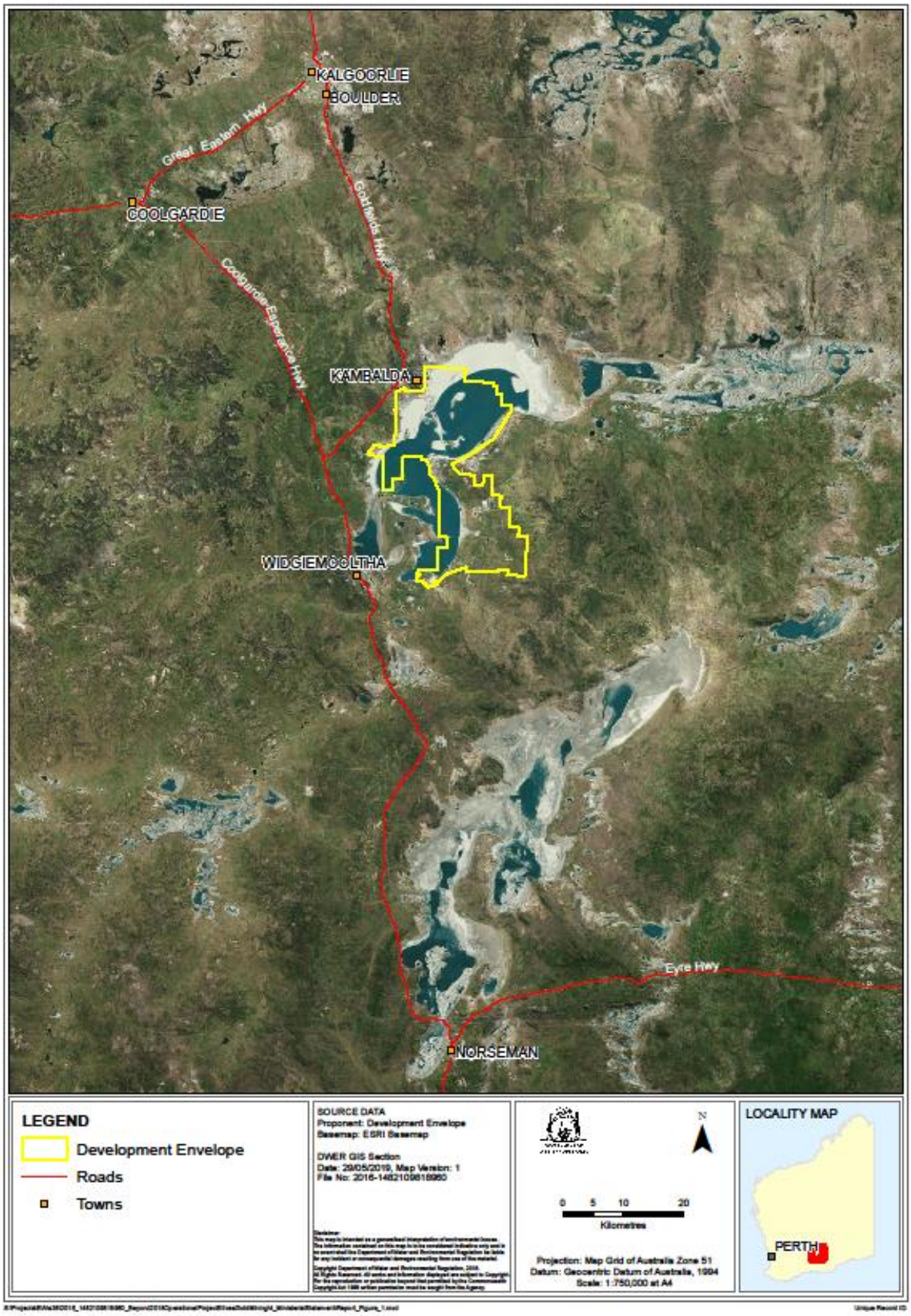

Figure 1: Regional Location

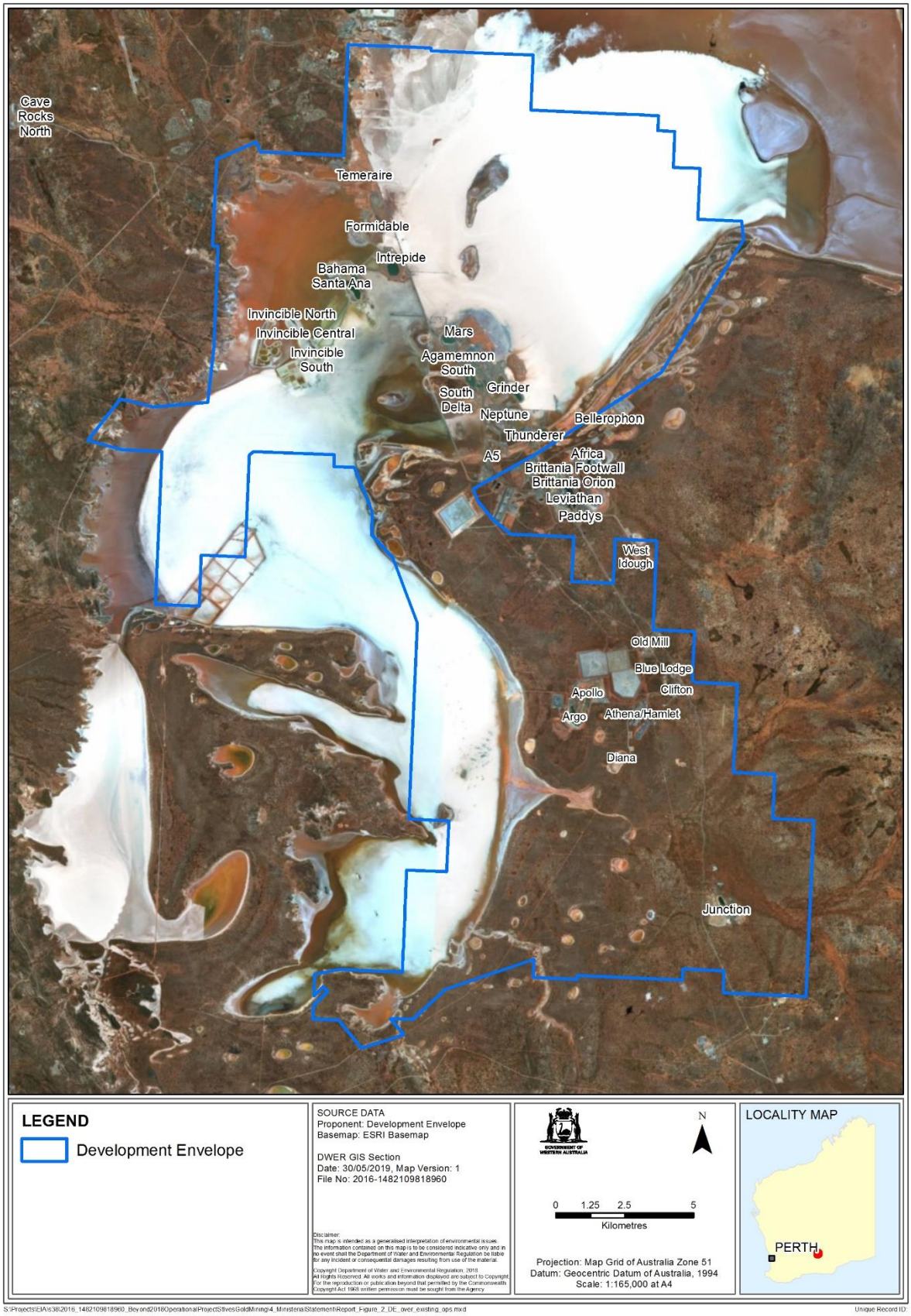

Figure 2 Development envelope and existing operations

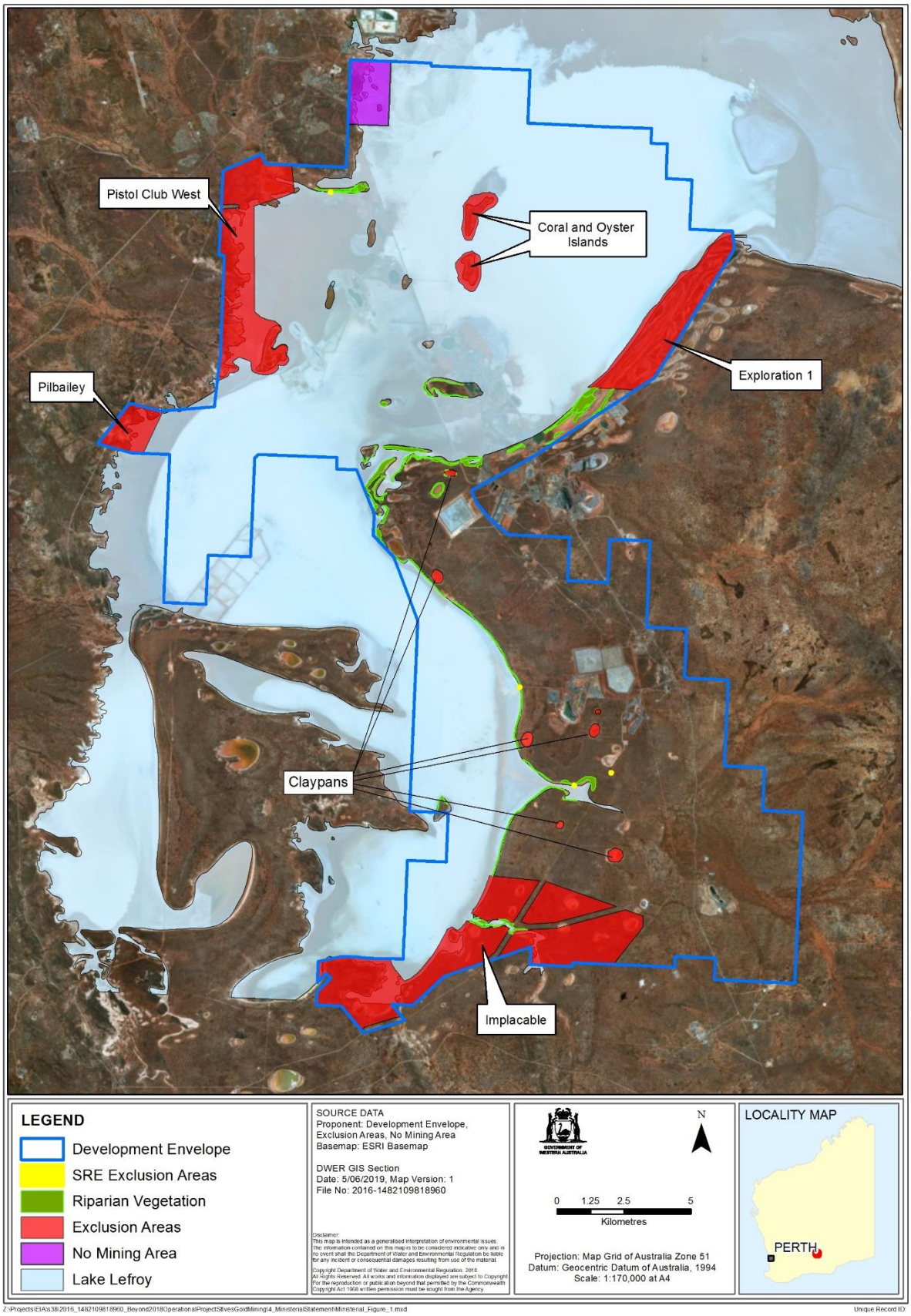

Figure 3: Exclusion areas and riparian vegetation

Schedule 2

Co-ordinates defining the areas shown in Figures 3 are held by the Department of Water and Environmental Regulation (DWER) under the following reference numbers:

- Development Envelope – DWERDT165781
- Development Envelope (Lake based) – DWERDT165791
- Development Envelope (Land based) – DWERDT165790
- Exclusion Areas – DWERDT165792
- SRE Exclusion Areas – DWERDT165793
- No Mining Area – DWERDT165794
- Riparian Vegetation – DWERDT165796

All co-ordinates are in metres, listed in Map Grid of Australia Zone 50 (MGA Zone 50), datum of Geocentric Datum of Australia 1994 (GDA94).