



Referral of proposed action

Project title: Langloh Coal Project, Hamilton, Tasmania

1 Summary of proposed action

1.1 Short description

Indicoal Mining Australia Pty Ltd (Indicoal) is proposing to develop the Langloh Coal Project (the project), located near Hamilton in Tasmania.

The project would consist of a thermal coal open cut coal mine that could supply both domestic and export consumers. A small open cut mine, the Kimbolton Mine (Mining Lease 1679) currently operates adjacent to the project area. The Kimbolton Mine covers approximately 175 ha and owned by Cornwall Crown Company (CCC).

1.2 Latitude and longitude

location point	Latitude			Longitude		
	degrees	minutes	seconds	degrees	minutes	seconds
1	-42	32	3.839	146	48	29.519
2	-42	33	10.602	146	48	8.83
3	-42	33	07.243	146	47	37.752
4	-42	32	51.55	146	47	38.853
5	-42	32	51.532	146	47	27.891
6	-42	32	21.729	146	47	27.992
7	-42	32	20.097	146	47	16.861
8	-42	32	10.338	146	47	16.807
9	-42	32	10.276	146	46	44.41
10	-42	32	6.147	146	46	37.938
11	-42	31	38.629	146	46	43.031
12	-42	31	32.52	146	46	52.521

1.3 Locality and property description

The project is located within cleared grazing land adjacent to the Lyell Highway, approximately 4 km west of the township of Hamilton and approximately 60 km northwest of Hobart, Tasmania (refer Figure 1). The Kimbolton Mine is an operating coal mine that adjoins the western boundary of the Langloh Coal Project.

The project is located on gently undulating terrain. There are no surface water resources or remnant native vegetation areas located onsite. The project area (i.e., proposed Mining Lease area) would include an open mine pit, a waste rock storage area and associated mine infrastructure. The proposed Mining Lease for the project area is located within the current Exploration Licence (EL) 28/2008.

- 1.4 **Size of the development footprint or work area (hectares)** The approximate project footprint disturbance area would be 384.9 ha, and would be located within a Mining Lease. Indicoal is commencing the statutory process with the Tasmanian Government to apply for a Mining Lease. The exact boundary of the Mining Lease will be based on the requirements of the *Mineral Resources Development Act 1995*, but will encompass the entire project footprint disturbance area.
- 1.5 **Street address of the site** Not applicable

- 1.6 **Lot description**
Table 1 provides the lot descriptions for the allotment upon which the project is proposed to be located.

Table 1: Lot Description

Property ID	Description					
	5467312	5467312	5467312	1454119	1958122	1958114
Title Reference*	198284/24	198284/21	199522/1	125510/1	133550/2	133550/1
Address	"Ellangowan", 479 Langloh Road, Hamilton Tasmania	"Ellangowan", 479 Langloh Road, Hamilton Tasmania	"Ellangowan", 479 Langloh Road, Hamilton Tasmania	"Westfield", 5792 Lyell Highway, Hamilton Tasmania	"Kimbolton Farm", 5986 Lyell Highway, Hamilton Tasmania	Lyell Highway, Hamilton Tasmania
LPI	JVY67	JVY42	FXT31	JVY41	GG50	GG549

* Title reference is structured as plan number/lot number

These allotments are shown on Figure 2.

- 1.7 **Local Government Area and Council contact (if known)**
The proposed project is located wholly within the Central Highlands Council. Contact details for the Central Highlands Council are as follows:

Tarleton Street, Hamilton
TASMANIA, 7140

Tel (03) 6286 3202
Fax (03) 6286 3334
Contact Officer: Ms Jackie Tyson

- 1.8 **Time frame**
Construction of all mine infrastructure and the initial box cut would be undertaken over a 12 to 15 month period. It is anticipated that the mining operation would therefore commence within 12 to 15 months from receipt of all approvals. The estimated mine life, once operational, would be eight years.

1.9 Alternatives to proposed action	✓	No
		Yes, you must also complete section 2.2
1.10 Alternative time frames etc	✓	No

		Yes, you must also complete Section 2.3. For each alternative, location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	State assessment	No
	<input checked="" type="checkbox"/>	Yes, you must also complete Section 2.5
1.12	Component of larger action	No
	<input type="checkbox"/>	Yes, you must also complete Section 2.7
1.13	Related actions/proposals	No
	<input type="checkbox"/>	Yes, provide details:
1.14	Australian Government funding	No
	<input type="checkbox"/>	Yes, provide details:
1.15	Great Barrier Reef Marine Park	No
	<input type="checkbox"/>	Yes, you must also complete Section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

2.1.1 Introduction

The project is planned to be a conventional open cut mine of a thermal coal resource that could supply both domestic and export consumers. As a stand-alone project, the mine is planned to have an annual production of 900,000 t of thermal coal.

The proposed Mining Lease boundary is based on exploration activities conducted to date and the known, indicated and inferred coal reserves. Ground disturbance is expected to occur within this total area.

2.1.2 Estimated Resources

Based on current drilling information, the project contains an estimated 8.1 Mt of in situ coal resources. Table 2 summarises the estimated Joint Ore Resource Committee (JORC) compliant coal resources.

Table 2: Langlosh Estimate Resource

Description	Coal Resource Tonnes	Moisture (% adb*)	Ash (% adb)	Volatile Matter (% adb)	Fixed Carbon (% adb)	Calorific Value (MJ/kg adb)	Sulphur (% adb)
Measured	5,500,000	4.6	25.7	17.3	52.5	23.8	0.31
Indicated	1,200,000	5.2	28.9	19.2	46.7	24.1	0.32
Inferred	1,400,000	4.9	27.7	18.3	49.0	24.8	0.30
Total	8,100,000	4.7	26.5	17.7	51.0	24.0	0.31

* adb = air dry basis

Note: Coal resources are estimated in accordance with JORC Code

As can be seen in Table 2, nearly 68% of the resource is within a measured confidence level and nearly 83% is of a 'measured' and 'indicated' confidence level.

2.1.3 Estimated Life-of-Mine Production

Within the limits of the coal resources, a conceptual pit shell has been developed for use in designing a life-of-mine production schedule. The average annual run of mine (ROM) coal production (i.e., coal delivered from the mine to the crushing plant) is estimated at 900,000 t per year. Based on this mine production schedule and the limitations of the coal resources, the project is estimated to have a mine life of eight years and produce a total of 6.7 Mt as shown in Table 3. Conceptual mine studies completed to date have been based on an estimate of 5.36 Mt of coal product to be realised, at a yield of 80%.

Table 3: Mine Production Schedule

Year	Coal Tonnage (ROMt)	Waste Volume (bcm)	Stripping Ratio (bcm/ROMt)
1	400,000	1,900,000	4.8
2	850,000	4,500,000	5.3
3	910,000	5,500,000	6.0
4	910,000	5,500,000	6.0
5	910,000	5,600,000	6.2
6	910,000	5,600,000	6.2
7	910,000	5,600,000	6.2
8	900,000	5,100,000	6.2
Total	6,700,000	39,300,000	5.7

bcm = bank cubic metres

2.1.4 Mining Process and Operation of the Mine

The project would be developed using conventional open cut mining methods using dozers and an excavator/truck fleet operation to extract and transport the product to the ROM stockpile. Typically the mining process would involve removal of topsoil from areas to be disturbed for pit development and waste rock removed in benches until the ore is intercepted.

Waste rock would initially be dumped outside the pit in waste rock stockpiles. Once sufficient void space has been created within the pit, waste rock will be placed within the pit. Based on conceptual mine studies completed to date and results from exploration drilling, it is anticipated that approximately 73% of waste rock would require blasting, with the remaining material suitable for free digging. The actual drill and blast requirements will be adjusted as dictated by operational requirements.

The coal would be extracted with diesel powered hydraulic excavators matched with suitably sized dump haul trucks. Extracted coal would be hauled to a ROM stockpile. The ROM stockpile will be loaded onto a conveyor (approximately 130 m long) which would transport coal to the crushing plant.

The proposed layout of the facilities and the mine pit is shown in Figure 3.

To meet customer requirements, a raw (unwashed) coal product would be exported from the project. This eliminates the requirement for a coal handling and preparation plant, significantly reduces mine water and energy requirements and eliminates the need for a tailings disposal facility. This will result in maximum utilisation of the resource.

2.1.5 Water Management and Use

Site surface water management would be based on the principle of diverting clean surface water runoff away from disturbed areas, and intercepting runoff from disturbed areas and directing it through sediment control structures. Water management at the mine site would include development of water management structures. At least one sizable dam (approximately 4 ha) for onsite water management and storage purposes would be required (Figure 3). Mine water and runoff from disturbed areas will be directed towards either the proposed mine pit or the dam via a series of diversion drains. Other minor sediment control structures such as sediment traps and small dams may also be required. Water will be required for dust suppression and potable water. The potential source of water for the project is currently being investigated and may include one of more of the following options:

- Groundwater or surface water licences from purchased properties.
- Onsite sources including pit water and water stored in onsite dams.
- Meadowbank Lake.

2.1.7 Transport Infrastructure

Haul Roads and Other Site Roads

A series of internal roads would be established to provide access around the site to provide access to the pit, ROM stockpile and crushing plant. Internal access roads would be constructed of varying standards, depending upon the type of vehicle to utilise the road.

Transport to Market

Product coal will be stored on a designated stockpile area prior to transport to port. Based on stakeholder discussions and mine planning to date, it is likely coal transport options would transport coal to the existing port at Bell Bay on the north-central coast of Tasmania, approximately 250 km from the project.

Three potential alternatives for hauling the product coal from the mine to a port are currently being investigated and include the following:

- truck haulage only
- truck haulage combined with rail haulage
- truck haulage combined with barging.

2.1.8 Other Mine Infrastructure

Infrastructure for the project will be kept to a minimum. Due to a predicted short mine life, items will be temporary where possible. In addition to water management structures and transport infrastructure, the following structures and items are required for the project:

- Office building for administration (portable style).
- Maintenance area or shed (or a covered, free draining and compacted pad).
- ROM pad, conveyor to crusher and product stockpile.
- Park up area.

The conceptual locations for these items are shown on Figure 3. The ROM pad has been located as close as possible to the pit to minimise haulage distances and to reduce the requirement for trucks to climb the undulating terrain. The majority of the remaining infrastructure has been located towards the Lyell Highway, where the topography is flatter.

2.1.9 Workforce

In order to operate, the mine will require an estimated workforce of 39 employees (20 operations, 8 maintenance and 11 administration/support personnel). The workforce requirements assume that operations at the mine will follow a schedule of 12 hour shifts, with one shift per day, six days per week, and 48 weeks of the year.

2.1.10 Rehabilitation and Mine Closure

Mine closure planning is a continuous process which commences prior to project development. Closure plans will be progressively refined and adapted throughout the life of the mine. This ensures that the planning adapts as further site information becomes available during construction and operations, and to changes in regulations, stakeholder expectations, technology, knowledge and mine planning.

Mine closure planning will be conducted in consultation with stakeholders to ensure that the final rehabilitation and mine closure objectives incorporate their requirements and keep them informed of achievement of mine closure criteria.

The Mine Closure Plan will be developed in line with the following objectives:

- Protect human health and safety.
- Reduce the need for long term monitoring and maintenance through design of and construction of landforms that are geotechnically and geochemically stable.
- Develop landforms that are consistent with the surrounding landscape.
- Develop an environmental monitoring and reporting program which is focused towards demonstrating the achievement of closure outcomes.
- Where possible, undertake progressive rehabilitation of the site during operations.
- Understand decommissioning and rehabilitation and what mechanisms for funding exist.
- Residual risks and liabilities are identified and controlled to an acceptable level.

While rehabilitation and mine closure would continue to be refined during the life of the mine, generally the Mining Lease will be rehabilitated as follows:

- Open pit – waste material would be rehandled to rehabilitate the final pit zones, proposed to occur in the sixth and eighth years of the plan. Final pits will be designed to remain as water impoundment with perimeter side slopes graded to accommodate stable slopes, revegetation and access.
- Waste rock storages – at the completion of mining, waste rock stockpiles will be shaped and contoured before being spread with topsoil and revegetated with native species or other species appropriate for final land use.
- Infrastructure areas – mine infrastructure will be removed from site. Once infrastructure has been removed, any areas of contamination will be remediated and the areas will then be ripped, spread with topsoil and revegetated with native species.

2.2 Alternatives to taking the proposed action

The proposed project represents the optimum location, timing and activity description. The resource meets the requirements for existing supply contracts between Indicoal and its clients. The resource requirement for its clients enables the Langloh deposit to be mined with minimal treatment of the product (i.e., only requires crushing), reducing potential energy and water requirements that would otherwise be required if the deposit were to be mined by alternative companies for alternative clients.

A “do nothing” option was considered during the feasibility assessment for this project. The direct consequences of not proceeding with the project can be summarised as follows:

- Potential social and economic benefits of the project would not be realised. In particular, the jobs created directly at the mine during construction and operations and indirectly through the infrastructure and services required at the mine would not be available.
- Potential environmental (land, water, air and amenity) impacts associated with the development of an open pit mine will not occur.

2.3 Alternative locations, time frames or activities that form part of the referred action

2.3.1 Locations

A fundamental constraint of all mineral resource developments is that projects can only occur where a commercial deposit is found. There are no alternative locations available for the open pit. The location of the pit reflects the location of the deposits. The sequence of mining has however, taken into consideration potential visual impacts associated with the development. The proposed mining sequence would enable mining to commence using the natural topography to screen initial operations.

The location of mine infrastructure has been located close to the Lyell Highway due to the flatter topography in this area. The undulating topography of the site is a constraint in locating infrastructure and the proposed location is based on the following principals:

- The ROM stockpile has been located as close to the open pit as possible to minimise haulage distance and reduce energy requirements associated with trucks climbing up and down the hills.
- Topography would be utilised wherever possible to reduce the requirement for earthworks.
- To minimise the ultimate area of disturbance, wherever elements can be placed in areas that will be disturbed by subsequent mining, the opportunity has been taken to do so. This applies to temporary stockpiles, haul roads and the crushing and screening plant.
- Access to the site needs to be controlled for safety reasons. Locating the office before access to the broader site provides for control over visitors, deliveries and would-be sightseers.

2.3.2 Timeframes

Due to the existing client product requirements, the proposed timeframe for the Langloh Coal Project is considered to provide opportunity to realise the resource potential of the Langloh resource with only limited treatment of the resource prior to export (i.e., resource requires only crushing). Alternative development timeframes may result in product supply to alternative clients which may have different products that may require further treatment of the product. While a shorter timeframe would be desirable, it is not considered practical from an approval, procurement and construction perspective.

2.3.3 Activities

An alternative considered during the feasibility assessment was for ore to be processed through a coal handling and preparation plant. Processing the ore would significantly increase mine water and energy requirements and require a tailings disposal facility to be constructed at the site and is not considered a viable alternative for this project.

2.4 Context, planning framework and state/local government requirements

In Tasmania, approval to mine is obtained via approvals under three pieces of State legislation. A Mining Lease application is required under the *Mining Resources Development Act 1995* (MRD Act), which requires an assessment of environmental impact. However, in order for mining to commence, environmental and land use approvals must also be obtained via approvals under the *Land Use Planning and Approvals Act 1993* (LUPA Act) and *Environmental Management and Pollution Control Act 1994* (EMPC Act).

Further detail on the assessment processes for these approvals is provided in Section 2.5.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

2.5.1 Commonwealth Legislation

This *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) referral has been prepared and submitted to the Department of Sustainability, Environment, Water, Population and Communities (DESWPaC) to allow a determination of whether the project is a controlled action under the EPBC Act.

2.5.2 State Legislation

To initiate environmental approvals for a Level 2 activity under the EMPC Act, a Notice of Intent (NOI) is required to be submitted to the Tasmanian Environment Protection Authority (EPA). The NOI is essentially a scoping study that outlines the project, describes the environment, identifies potential impacts and presents the scope of the environmental and social investigations. Indicoal has had preliminary discussions with the EPA in relation to the submission of a NOI. A NOI will be formally submitted to the EPA upon receipt of the EPBC referral decision.

The NOI is used by the EPA to determine the class of environmental and social impact assessment (ESIA) for the project and to prepare the guidelines to be addressed. An ESIA will be undertaken to address the EPA guidelines and submitted for assessment by the EPA.

A permit application is also required to be submitted to the local council in compliance with the LUPA Act. As the project will qualify as a Level 2 development under the EMPC Act, this application will initiate the referral to the EPA for assessment of the project under the EMPC Act.

A Mining Lease application is required under the MRD Act, which requires an assessment of environmental impact. In order for mining to take place however, a permit must be first approved by the EPA and local council.

2.6 Public consultation (including with Indigenous stakeholders)

Stakeholder engagement is a requirement of the State approvals process. It is also essential to the success of the project, ensuring stakeholders are informed and that stakeholder issues are identified and considered in the early stage of the project.

Indicoal is committed to establishing and maintaining relationships with its stakeholders and has put in place a framework for engagement which will be implemented during the NOI and environmental scoping phase. Targeted consultations are planned with the following identified groups or individuals:

- Landholders impacted by the project footprint.
- Regulators – such as EPA, Mineral Resources Tasmania (MRT) and Central Highlands Council.
- Key government representatives – Minister for Energy and Resources and Minister for Environment, Parks and Heritage.

In late 2012 Indicoal met with the EPA and MRT to introduce the project and to discuss project permitting needs. Potential environmental issues associated with the project (e.g., noise, dust and traffic) were also discussed. Landholders have also been consulted in relation to land access for exploration activities.

Other stakeholders identified for consultation in subsequent stages, following the submission of the NOI and during the environmental impact assessment phase, include the Hamilton community, Ouse community, industry groups and conservation groups.

A Stakeholder Engagement Plan (SEP) has been prepared for this preliminary phase of approvals and will be regularly reviewed and revised, following each stage of consultations. During the first stage of consultation, targeted project briefings (meetings) will be held with regulators (including Council) and key government representatives. Indicoal will be represented at these briefings by key staff and personnel from its environmental and social consultancy, Golder Associates Pty Ltd. Summary information to be covered in this material includes:

- How will the product be mined?
- Where will the product go – potential markets?
- What are the transport routes?
- How many people will the project employ?
- What environmental studies will be completed?
- What is the overall project/approvals schedule?
- How will community / stakeholder views be considered?

2.7 A staged development or component of a larger project

The project will not be a staged development. Approval is being sought for the full proposed mine development.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a) World Heritage Properties

Description

There are no World Heritage listed properties in the project area. The nearest World Heritage listed property is listed as Tasmanian Wilderness, Strathgordon, located approximately 28 km west of the project area. The project area generally drains in south-easterly direction away from the Tasmanian Wilderness.

Nature and extent of likely impact

There will be no impact to the values of any World Heritage property as a result of the project.

3.1 (b) National Heritage Places

Description

There are no nationally listed heritage places in the project area. The nearest National Heritage Place is listed as Tasmanian Wilderness, Strathgordon, located approximately 28 km west of the project area. The project area generally drains in south-easterly direction away from the Tasmanian Wilderness.

Nature and extent of likely impact

Due to the absence of drainage to the nearest World Heritage property there will be no impact to the values of any World Heritage property as a result of the project.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

There are no wetlands of international significance, Ramsar or otherwise, or of national significance near the project area.

The nearest wetlands of international significance to the project area are the Ramsar-listed Interlaken (Lake Crescent), which lies within the Interlaken Lakeside Reserve approximately 50 km northeast of the project area, and the Pitt Water-Orielton Lagoon approximately 65 km southeast of the project. These wetlands are outside of the project catchment area.

Nature and extent of likely impact

There will be no impact to the ecological character of any wetlands of international or national significance as a result of the project.

3.1 (d) Listed threatened species and ecological communities

Description

A desktop environmental baseline ecological assessment was undertaken over an area defined as the 'data review area' (DRA). The DRA includes the project area and a 5 km buffer for matters under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and for searching the recorded species in the Natural Values Atlas (NVA).

The ecological assessment examined the existing data to assess key ecological factors and included the following objectives:

- Identification of the plant species and vegetation association present, including species of conservation significance and significant weeds.
- Assessment of species of conservation significance that potentially could occur on the site.

- Preliminary assessment of the fauna present or likely to be present at the site.

A summary of listed threatened species and ecological communities is provided in Table 4. Additional information on these species is provided below the table.

Table 4: Listed threatened species and ecological communities

Species Name		Status in EPBC Act	Preferred Habitat	Likelihood of Presence with Project Area
Scientific Name	Common Name			
Ecological Community				
N/A	Lowland Native Grasslands of Tasmania	Critically endangered	Occur at elevation of up to 600 m above sea level (ASL) with low precipitation in the Tasmanian Midlands, Derwent Valley, east coast and southeast Tasmania (TSSC, 2008a).	Project area has been extensively cleared previously for grazing. Ecological community unlikely to occur at the site.
Flora				
<i>Acacia axillaris</i>	Midlands mimosa, midlands wattle	Vulnerable	Generally associated with moist areas, including watercourse or soaks (DSEWPac, 2012a).	The species is not previously known to occur in the area and suitable habitat is not present at the site due to historical land clearance. This species is unlikely to occur at the site.
<i>Barbarea australis</i>	Native wintercress, riverbed wintercress	Critically endangered	Occurs within the riparian zone of slower reaches (DSEWPac, 2012d).	This species is known to occur along the River Ouse (approximately 10 km northwest of the site) (DSEWPac, 2012d). Suitable riparian habitat is not present at the site.
<i>Caladenia anthracina</i>	Black-tipped spider-orchid	Critically endangered	Grassy Woodland on well drained sandy soil is the preferred habitat (Threatened Species Unit, 2001), with this species strongly associated with basalt (DSEWPac, 2012e).	Occurs in grassland and grassy woodland (DSEWPac, 2012b). Suitable habitat has potential to occur within introduced grassland in the project area. Due to agricultural development this species is unlikely to occur at site.

<i>Carex tasmanica</i>	Curly sedge	Vulnerable	Soaks and drainage lines within Grassy Woodland communities (Threatened Species Unit, 2003).	Suitable riparian habitat is not present at the site. Species is not likely to occur at the site.
<i>Colobanthus curtisiae</i>	Curtis' colobanth	Vulnerable	Grassy Woodland on gentle slopes. Commonly found on soils derived from sandstone or dolerite and basalt (DSEWPaC, 2012i).	The species is known to occur in Culny (approximately 9 km west) (DSEWPaC, 2012i). Suitable habitat has potential to occur within the introduced grassland within the project area.
<i>Dianella amoena</i>	Matted flax-lily	Endangered	Native grasslands and grassy woodlands, found mainly in the Midlands (Threatened Species Unit, 2008b).	The species is known to occur on the Hamilton Plains. Known remnant stands are generally restricted to roadsides (DSE, 2005). Suitable habitat may occur within the introduced grassland within the project area. There are no known remnant stands within the project area.
<i>Lepidium hyssopifolium</i>	Basalt pepper-cress	Endangered	Prefers open areas with little competition. Original habitat was probably grassy woodland (Tumino 2010).	The species is known to occur in highly modified habitats amongst pasture species, but does not like competition. It is considered unlikely to occur at the site.
<i>Prasophyllum apoxychilum</i>	Tapered leek-orchid	Endangered	This species is endemic to Tasmania and grows on sandy and clay loams, often amongst rocks (Threatened Species Unit, 2000 ^b).	Due to the agricultural development at the site this species is unlikely to occur.

<i>Pterostylis commutata</i>	Midland greenhood	Critically endangered	Occurs in well drained sandy soils and basalt loams within native grasslands and <i>Eucalyptus pauciflora</i> (snow gum) grassy woodlands (DSEWPaC, 2012 ^c).	Suitable habitat is absent and therefore this species is unlikely to occur.
<i>Pterostylis wapstrarum</i>	Fleshy greenhood	Critically endangered	Occurs in grassland and grassy woodland (DSEWPaC, 2012 ^b).	Extant population is known from a single location north of Hobart (DSEWPaC, 2012 ^b). This species is unlikely to occur at the site due to the extent of clearing and dominance of exotic pasture grasses.
<i>Pterostylis ziegeleri</i>	Grassland greenhood, Cape Portland greenhood	Vulnerable	<i>Themeda triandra</i> native grassland and grassy woodland on well-drained clay loams derived from basalt in the Midlands (TSSC, 2008b).	Suitable habitat is absent and therefore this species is unlikely to occur.
<i>Rytidosperma popinensis</i>	Roadside wallaby grass	Endangered	Open grassy woodland dominated by Snow Gums and Manna Gums (DSEWPaC, 2012 ^e) occurs on a range of soil types.	Unlikely to occur within the introduced grassland along the road verge of the project area.
Fauna				
<i>Aquila audax fleayi</i>	Wedge-tailed Eagle (Tasmanian)	Endangered	Preferred nesting habitat is mature old growth Eucalypt forest. Wedge-tailed Eagles will forage across all habitat types, in particular open areas including agricultural land (DSEWPaC, 2012 ^g).	<p>Potential exists for this species to forage within the DRA.</p> <p>It is considered unlikely this species would nest at the site due to its intolerance of disturbance and lack of suitable trees at site (DSEWPaC, 2012^g).</p>

<i>Botaurus poiciloptilus</i>	Australasian bittern	Endangered	This species prefers densely vegetated freshwater wetlands, with tall vegetation along the water's edge (DSEWPaC, 2011 ^a).	Suitable habitat does not occur at the site and therefore this species is not likely to occur at the site.
<i>Ceyx azureus diemenensis</i>	Tasmanian azure kingfisher	Endangered	Riverine forests with earth banks available as nesting sites (Threatened Species Section, 2012).	Suitable habitat does not occur at the site and therefore this species is not likely to occur.
<i>Lathamus discolor</i>	Swift parrot	Endangered	In Tasmania the habitat coincides with Tasmanian blue gum (Threatened Species Section, 2012 ^b).	Suitable habitat does not occur at the site and therefore this species is not likely to occur.
<i>Tyto novaehollandiae castanops</i> (Tasmanian population)	Masked owl (Tasmanian population)	Vulnerable	This species is commonly associated with forests and woodlands in particular where they adjoin cleared open areas that facilitate hunting (DSEWPaC, 2012 ^b).	Suitable nesting habitat does not occur at the site; however, the site could form part of a broader home range.
<i>Prototroctes maraena</i>	Australian grayling	Vulnerable	The Australian grayling is most commonly associated with streams that have a moderate flow with clear water and a gravelly bottom that drain into the sea (McDowell, 1996).	As there are no streams on site this species cannot occur at the site.
<i>Litoria raniformis</i>	Growling grass frog, southern bell frog, green and golden frog, warty swamp frog	Vulnerable	A range of natural or artificially created wetland habitats including irrigation channels and farm dams (Department for Environment and Heritage, undated)	Suitable habitat appears to be absent from the site and it is unlikely this species occurs at the site.

<i>Dasyurus maculatus maculatus</i> (Tasmanian population)	Spotted-tail quoll, spot-tailed quoll, tiger quoll (Tasmanian population)	Vulnerable	This species requires relatively large areas of intact native vegetation in which to forage (DSEWPaC, 2011 ^b).	Suitable habitat does not occur at the site and species is unlikely to occur.
<i>Perameles gunnii gunnii</i>	Eastern barred bandicoot (Tasmania)	Vulnerable	The preferred historical habitat was native grasslands and grassy woodlands, however improved pasture with remnant native vegetation is increasingly important habitat (DPIPWE, 2009 ^e).	It is considered possible this species occurs within the DRA due to pasture presence.
<i>Sarcophilus harrisii</i>	Tasmanian devil	Endangered	A wide range of habitats can be exploited by Tasmanian Devils including coastal heath, open dry sclerophyll forest and mixed sclerophyll-rainforest (DPIPWE, 2012 ^e).	There is potential for the species to transit through the site due to the wide ranging nature of potential habitats.

Ecological Communities

Lowland Native Grasslands of Tasmania

The Tasmanian Vegetation Mapping (TASVEG) identifies the project area to be agricultural land. No remnant native vegetation exists within the project area. However, based on the desktop assessment there is an area of listed Lowland *Poa labillardierei* Grassland approximately 1 km north-east of the project area.

The desktop assessment identified one threatened ecological community, Lowland Native Grasslands of Tasmania, within the DRA. This is listed as critically endangered under the EPBC Act. There are two major sub-types within the ecological community – Lowland *Poa labillardierei* (Silver Tussock Grass) Grassland and the Lowland *Themeda triandra* (Kangaroo Grass) Grassland. This community does not occur onsite.

Lowland Native Grasslands of Tasmania generally occur at elevation of up to 600 m above sea level (ASL) in the Tasmanian Midlands, Derwent Valley, east coast and southeast Tasmania. The grasslands are generally concentrated where precipitation is low and the soils are heavy, deep, mineral and fertile and are typically absent from rocky or highly infertile sites. They generally occur on soils underlain by basalt, dolerite, deep sands or alluvial deposits (TSSC, 2008).

Flora

Midlands mimosa, midlands wattle (*Acacia axillaris*)

Midlands mimosa (*Acacia axillaris*) is known to occur at five localities, all to the northeast of the DRA that range in altitude from 200 m to 1,400 m ASL (DSEWPaC, 2012a). No remnant native vegetation exists within the project area.

Generally these populations are associated with riparian zones, although one population occurs on a scree slope above the riparian zone. It occurs within *Richea scoparia* (scoparia) alpine heath, *Leptospermum lanigerum* (woolly tea tree) scrub/forest, *Eucalyptus rodwayi* (swamp peppermint) grassy woodland, *E. ovata* (swamp gum) shrubby forest/woodland and *Hakea microcarpa* (small-fruited hakea) grassy shrubland (DSEWPac, 2012a).

This species is unlikely to occur at the site.

Native wintercress, riverbed wintercress (Barbarea australis)

Favourable conditions are considered to be absent from the DRA and this lack of suitable riparian habitat coupled with the development of the site for agriculture indicates that this species is unlikely to occur at the site.

Native winter-cress (*Barbarea australis*) is endemic to Tasmania and grows within the riparian zone of watercourses (DSEWPac, 2012d). This species is known from several locations along the River Ouse, approximately 10 km northwest of the DRA. This species is often growing in areas that are rocky and open with little competition from other plants with colonisation of areas by seed typically following disturbance (DPIPWE, 2001).

Black-tipped spider-orchid (Caladenia anthracina)

The known populations of this species occur at Ross and the Campbelltown Golf Course in the Midlands (approximately 85 km northeast) and it is considered unlikely that new populations will be found due to the extensive clearance of suitable habitat to facilitate agricultural development (Threatened Species Unit, 2001). The preferred habitat, grassy woodland does not occur at the site. This, associated with the agricultural development of the property suggests that this species is not likely to occur at the site.

Curly sedge (Carex tasmanica)

This sedge grows in soaks and seepage areas where it largely relies on division due to physical disruption associated with large water flow events, disturbance by animals or in the case of roadside populations slashing or scraping as part of roadside maintenance (Threatened Species Unit, 2003). The closest record of occurrence to the DRA is a recorded sighting from 2006 at a dam near Hollow Tree approximately 8 km due east of the site. Additional records of occurrence are clustered west of Hollow Tree Road approximately 10 km northeast of the DRA and include records of the species occurring on highly modified land (ALA, 2012b).

It is considered unlikely that this species occurs within the DRA due to the apparent absence of a watercourse.

Curtis' colobanth (Colobanthus curtisiae)

The known populations of this species occur to the north and northeast of the project area; however, the species range extends from the Central Plateau to Ben Lomond in the north, to Fingal Tier in the east and Kempton in the south (Threatened Species Unit, 2002). The species is found in grassland and grassy woodland and is commonly found on gentle slopes with elevations between 160 m ASL and 1,300 m ASL and is most commonly found on soils derived from sandstone as well as clay loam derived from dolerite and basalt. The species can persist in remnant grasslands, which may be grazed by stock and the species is known to tolerate a wide range of environmental conditions (DSEWPac, 2012). The species has been recorded approximately 3 km north of the site.

Due to the soils (refer Section 3.3) and introduced grassland occurring across the project area, suitable habitat has potential to occur within the project area.

Matted flax-lily (Dianella amoena)

The matted flax-lily is found in Victoria and Tasmania. In Tasmania, the species generally grows in native grasslands and grassy woodlands within the Midlands (Threatened Species Unit, 2008b). The

species is known to grow on the Hamilton Plains, with the closest recorded specimen approximately 3 km east, near the township of Hamilton. Known remnant stands of the species are generally restricted to roadsides (DSE, 2005). There are no known remnant stands of this species within the project area.

Basalt pepper-cress (Lepidium hyssopifolium)

The closest record of occurrence of basalt pepper-cress (*Lepidium hyssopifolium*) to the DRA is located within a roadside along Hollow Tree Road approximately 10 km north east of the DRA where three plants were identified in 2011 and coincides with the occurrence of curly sedge (*Carex tasmanica*). The species prefers open ground without above ground competition and will grow in disturbed areas and can tolerate light grazing pressure (Threatened Species Unit, 2003^b). Species recruitment is generally close (within a few meters) from the parent plant due to a lack of any apparent long-distance dispersal mechanism (Tumino, 2010). The national recovery plan also recognises that geographic spread of populations may be expected to be slow and natural introduction of seed to new sites is unlikely.

It remains possible that this species occurs within the DRA however it is unlikely to be found within the project area.

Tapered leek-orchid (Prasophyllum apoxychilum)

The tapered Leek-orchid (*Prasophyllum apoxychilum*) flowers following hot fires typically associated with summer or other disturbance events, and this relationship makes it difficult to assess whether this species is present at a location when such an event has not occurred. This species is also dormant over summer and autumn and begins to grow in early winter, with a single leaf emerging from underground tubers. In Tasmania there are only four known populations of this species, with these populations found in coastal heathland or grassy and scrubby open eucalypt forest on sandy and clay loams, often among rocks. The closest known record of this species is at Knocklofty Reserve, Hobart approximately 55 km southeast of the DRA (Threatened Species Unit, 2000^b).

Preferred conditions are not present at the site and this coupled with the level of disturbance present, this species is not expected to occur at the site.

Midland greenhood (Pterostylis commutata)

Important locations of midland orchid (*Pterostylis commutata*) are present approximately 60 km to 80 km to the northeast of the data review area near Ross and Tunbridge (Threatened Species Unit, 2000).

The absence of snow gum grassy woodland or other suitable habitat indicates this species is unlikely to occur within the DRA.

Fleshy greenhood (Pterostylis wapstrarum)

The closest known record of fleshy greenhood (*P. wapstrarum*) is from near New Norfolk, at least 20 km to 30 km southeast of the DRA with the only recent record of occurrence is from Pontville near Brighton 30 km to 40 km also to the southeast (ALA, 2012; DSEWPaC, 2012^b).

It is considered unlikely that this species occurs within the site due to the lack of suitable habitat and existing level of disturbance.

Grassland greenhood, Cape Portland greenhood (Pterostylis ziegeleri)

Cape Portland Greenhood is known from 19 subpopulations that are widely located in the Midlands and near-coastal areas of the northwest, north, east and southeast of the State (TSSC, 2008b). The closest recording of the species is approximately 41 km southeast of the project area (ALA, 2012). The species is generally found in *Themeda triandra* native grassland and grassy woodland in the Midlands.

The extensive historical clearing in the project area means this species is unlikely to occur within the project area.

Roadside wallaby grass (Rytidosperma popinensis)

It is considered the original habitat for this species was snow gum (*Eucalyptus pauciflora*) and manna gum (*Eucalyptus viminalis*) grassy open woodland (DSEWPaC, 2012^f). This species is largely restricted to roadside verges due to the extensive development of these grassy woodland habitats. The closest records of this species to the DRA are two records from 1985 and 1987 near the Midland Highway between Kempton and Melton Mowbray approximately 30 km east of the DRA.

It remains possible that this species occurs within the DRA, in particular within the roadside verge however it is unlikely to be within the project area which due to historical clearing within the project area along the Lyell Highway.

Fauna – Birds

Wedge-tailed Eagle (Tasmanian) (Aquila audax fleayi)

This subspecies is listed as endangered under the *Threatened Species Protection Act* 1995 (TSP Act) and as an endangered subspecies under the EPBC Act (DPIPWE, 2010). The closest record of occurrence of a Tasmanian wedge-tailed eagle is approximately 2 km northeast of the DRA and was made in 1984, although a more recent record of occurrence from the south east of the site was made in 2005 (ALA, 2012e). This species has a wide distribution across Tasmania including the central highlands (DPIPWE, 2004) and the distribution ranges from a maximum of one pair per 20 km² to 30 km² within a mosaic of dry sclerophyll forest and open habitat in the eastern and northern lowlands to a minimum of one pair per 1,200 km² in the western and south-eastern highlands with approximately 220 territories across the whole of Tasmania (Bell and Mooney, 1998).

Tasmanian wedge-tailed Eagles forage across all habitats from coastal dunes to mountain peaks, while nesting sites are generally restricted to predominantly mature forests (almost exclusively eucalypt forest) on sheltered aspects (Threatened Species Section, 2006). The wedge tail eagle is an opportunistic carnivore with their diet generally consists of medium-sized mammals, such as rabbits, wombats, bandicoots and bilbies.

It is considered possible that the DRA contains suitable habitat for foraging by Tasmanian wedge-tailed eagles, but due to the historical vegetation clearance that has occurred at the site, it is considered unlikely that suitable breeding habitat exists at the site and the species is unlikely to be resident at the site.

Australasian bittern (Botaurus poiciloptilus)

The Australasian bittern (*Botaurus poiciloptilus*) occurs within wetland habitats and recent records suggest that this species is restricted to coastal regions in the north east of Tasmania (DSEWPaC, 2011a). There are no records of this species within 10 km of the DRA (ALA, 2012f).

It is unlikely to occur at the site.

Tasmanian azure kingfisher (Ceyx azureus diemenensis)

This species is listed as endangered under both the TSP Act and the EPBC Act (Threatened Species Section, 2012). This species nests within a hole dug out of the earth banks of rivers or very close to water. This habitat does not occur at the site.

The azure kingfisher is associated with the forested margins of major river systems preferring shady riverine forests dominated by wet sclerophyll and mixed forest (Threatened Species Section, 2012). This species will utilise the overhanging vegetation to perch and hunt with its diet consisting predominantly of small fish, freshwater crayfish, aquatic insects and larvae and occasionally frogs. This species is strongly associated with the riverine habitat that is not present at the site.

As suitable habitat is not present within the project area, this species is unlikely to occur at the site.

Swift parrot (Lathamus discolor)

Swift parrot (*Lathamus discolor*) is a migratory species that breeds in Tasmania, moves to the mainland in autumn and occurs predominantly in Victoria and New South Wales (DEWHA, 2009). On the mainland the Box-ironbark forests and woodlands inland of the Great Dividing Range in Victoria and New South Wales form the principal habitat (Swift Parrot Recovery Team, 2001). Swift parrots breed in Tasmania, between September and January within tree hollows of Eucalypt species (Threatened Species Section, n.d.). The breeding season coincides with flowering of Tasmanian blue gum (*Eucalyptus globulus*) which is a major food source for this species.

The distribution of swift parrots within Tasmania is linked to the distribution of this food source which principally occurs along the east coast of Tasmania (Threatened Species Section, 2012b). Swift Parrots are therefore unlikely to occur at the site as there would be insufficient foraging habitat. The closest record of occurrence of this species to the DRA is at Hamilton (approximately 4 km east of the project area) (ALA, 2012g) with greater numbers of Swift Parrots recorded along the southwest coast (Threatened Species Section, undated).

Swift Parrots are unlikely to occur at the site as there would be insufficient foraging habitat.

Masked owl (Tyto novaehollandiae castanops) (Tasmanian population)

The Tasmanian masked owl (*Tyto novaehollandiae castanops*) is thought to have large home ranges of approximately 1 800 ha to 2 500 ha within a highly modified rural landscape in the Huon valley. This species utilises forests and woodlands, in particular those with an open understorey or areas in which a mosaic landscape is present, as open or cleared areas are favoured for hunting. The removal of large old trees from the agricultural landscape has reduced the habitat of this species and it predominantly occurs in areas covered by the Tasmanian Regional Forestry Agreement (DSEWPaC, 2012h).

While there are no records of this species within or close to the DRA (ALA, 2012h) it remains possible this species could forage within the DRA, that is the DRA could form part of a home range. Due to the cleared nature of the project area it is unlikely to offer significant habitat.

Fauna – Fish

Australian grayling (Prototroctes maraena)

The EPBC Act search for matters of NES has listed the fish species, Australian grayling (*Prototroctes maraena*). There are no watercourses or water-bodies present at the site and there is no potential for fish to occur within the project area.

Fauna – Frogs

Growling grass frog, southern bell frog, green and golden frog, warty swamp frog (Litoria raniformis)

This species is listed as endangered under both the TSP Act and the EPBC Act (Threatened Species Unit, 2001b). This species breeds within permanent freshwater lagoons of water depth up to 1.5 m deep amongst dense vegetation, typically including emergent and submerged plants (Threatened Species Unit, 2001b).

Historically this species occurred within the midlands, however the distribution has contracted to be restricted to lowland areas and predominantly coastal zones (Threatened Species Unit, 2001b) The closest record of occurrence of this species is from near the River Clyde, approximately 2 km east from the project site (ALA, 2012i).

The lack of suitable aquatic habitat at the site indicates that this species is unlikely to occur.

Fauna – Mammals

Spotted-tail quoll, spot-tailed quoll, tiger quoll (Dasyurus maculatus maculatus) (Tasmanian population)

This species requires relatively large areas of intact native vegetation in which to forage (DSEWPaC, 2011b) and prefers dense shrub and ground layers in which it can hunt and forage and the site lacks such habitat. There is also a lack of suitable dens for this species at the site. The nearest records of this species to the DRA are from 1985 within Mount Field National Park approximately 11 km southwest of the DRA and more recently a record from 2008 within Waddles Creek Conservation Area 16 km east of the DRA (ALA, 2012j).

The spotted or spot-tailed quoll (*Dasyurus maculatus maculatus*) while listed in the search of Protected Matters of NES Report is unlikely to occur at the site.

Eastern barred bandicoot (Perameles gunnii gunnii) (Tasmania)

The eastern barred bandicoot (*Perameles gunnii gunnii*) historically occupied native grasslands and grassy woodlands of the Midlands, however with the clearance of these areas for agriculture the species has largely disappeared from these midlands regions (DPIPWE, 2009e). Within Tasmania areas of improved pasture that are interspersed with remnant native bushland are considered to be the stronghold of this species, with the absence of foxes a key determinant of this distribution (DPIPWE, 2009e). There are two records of occurrence of this species from within the DRA, including an individual road kill on the Lyell Highway, south of the site from 1987 and a sighting to the east of the site from 1976 (ALA, 2012k). The most recent sightings in the area come from another four road kills recorded at locations east and west of the DRA along the Lyell Highway from 1992 (ALA, 2012k).

It is considered this species occurred within the general area of the DRA; however, the extent of land clearance, lack of remnant vegetation corridors and the lack of recent sighting records suggests that this species may no longer occur within the area. It is considered possible this species may occur within the DRA.

Tasmanian Devil (Sarcophilus harrisii)

The Tasmanian devil (*Sarcophilus harrisii*) population has declined with the advent of Devil Facial Tumour Disease. The records of this species from within the DRA are of road kills along the Lyell highway south of the site from 2003 to 2009, indicating this species is active in the area of the DRA (ALA, 2012l). Numerous recent records of this species occur within the Mount Bethune Conservation Area south east of the DRA (ALA, 2012l).

As Tasmanian Devils may occur where there is food and shelter it remains possible this species occurs at the site.

Nature and extent of likely impact

Based on desktop review of potential species in section 3.1(d) and Table 4 it is considered the following species have potential to occur at the site:

- Flora:
 - *Colobanthus curtisiae*, Curtis' colobanth, listed as vulnerable
 - *Dianella amoena*, Matted flax-lily, listed as endangered
- Fauna:
 - *Aquila audax fleayi*, Wedge-tailed Eagle (Tasmanian), listed as endangered
 - *Tyto novaehollandiae castanops* (Tasmanian population), Masked owl (Tasmanian population), listed as vulnerable
 - *Perameles gunnii gunnii*, Eastern barred bandicoot (Tasmania), listed as vulnerable
 - *Sarcophilus harrisii*, Tasmanian devil, listed as endangered

While the ecological community Lowland Native Grasslands of Tasmania is considered unlikely to occur at the site, there is a known area of this community approximately 1 km north-east of the site. Due to the proximity of this ecological community to the project area, the nature and extent of likely impacts for this community has also been considered.

Ecological Communities

Lowland Native Grasslands of Tasmania

The project area has been extensively cleared for agriculture and this ecological community is considered unlikely to occur within the project area.

The project is unlikely to have a significant impact on this ecological community because:

- The project area has been extensively cleared and does not contain stands of remnant vegetation. Clearing within the project area will therefore not result in further fragmentation of this ecological community or other stands of remnant vegetation near the listed ecological community.
- The project area generally drains in a south-easterly direction away from the known stand of this ecological community. Changes to drainage will be localised to the project area catchment and will involve clean water runoff being diverted around disturbed areas and water within the project area being directed to on-site sediment dam. These changes in hydrology will not change the quantity or quality of surface water flows to the ecological community.
- As part of site management, Indicoal will implement a Pest Management Plan to manage pest plant and animal species within the project area. Pest management at the site is likely to include management of existing pest species within the site and minimising the potential for new pest species to be introduced.
- The project will not apply fertilisers or other chemicals to native remnant vegetation.

Flora

Curtis' colobanth (Colobanthus curtisiae)

The known populations of this species occur to the north and northeast of the project area, however it can persist in remnant grasslands, which may be grazed by stock and the species is known to tolerate a wide range of environmental conditions (DESWPaC, 2012). The species has been recorded approximately 3 km north of the site.

The main threat to this species is habitat destruction due to cropping and improved pastures. The project area has been previously cleared for grazing; however, development of the project would result in clearance of the introduced grassland currently existing on the site.

The development of the mine is not considered to cause fragmentation to an existing population or reduce the area of occupancy of the species. The mine development has an estimated life of eight years and would be progressively rehabilitated during this time, which may provide suitable habitat post-mining. The development of the project is considered unlikely to have a significant impact on the existing population of this species.

Matted flax-lily (Dianella amoena)

In Tasmania, the species generally grows in native grasslands and grassy woodlands within the Midlands (Threatened Species Unit, 2008b). The species is known to grow on the Hamilton Plains, with the closest recorded specimen approximately 3 km east, near the township of Hamilton. Known remnant stands of the species are generally restricted to roadsides (DSE, 2005).

Threats for the matted flax-lily include land clearing, fragmentation of remnant stands, grazing from introduced species and urban development. The project would not result in further fragmentation of any known remnant stands of this species. In addition it has been previously cleared and is used for grazing. The introduced grassland along the Lyell Highway may provide suitable habitat for this species.

Infrastructure associated with the project, with the exception of the site access road, would be located away from the Lyell Highway and potential remnant roadside vegetation. The site access road can be located to avoid remnant roadside vegetation. The mine development has an estimated life of eight years and would be progressively rehabilitated during this time, which may provide suitable habitat for this species post-mining. It is considered unlikely the project would significantly impact the existing population of this species.

Fauna

Wedge-tailed Eagle (Tasmanian) (Aquila audax fleayi)

Given opportunistic feeding habits and size of the home range, negative impacts to wedge tail eagle food sources, home range or breeding as a result of the project, construction and operation, are considered unlikely and insignificant. The cleared nature of the project site has removed any trees which may provide nesting sites.

Masked owl (Tyto novaehollandiae castanops) (Tasmanian population)

It is considered likely that suitable habitat for foraging exists within the project area, but there is no suitable habitat of large trees or forest/woodland within the project area for the species to be resident. Negative impacts to the masked owl food sources, home range or breeding as a result of the project's construction and operation are considered unlikely and insignificant. Due to the short term nature of the mining and progressive rehabilitation approach it is unlikely to cause long term disturbance of surrounding resources that the masked owl may also utilise. In addition the project area does not contain any surface water resources.

Eastern barred bandicoot (Perameles gunnii gunnii) (Tasmania)

The eastern barred bandicoot (*Perameles gunnii gunnii*) historically occupied native grasslands and grassy woodlands of the Midlands, however with the clearance of these areas for agriculture the species has largely disappeared from these midlands regions (DPIPWE, 2009e). Within Tasmania areas of improved pasture that are interspersed with remnant native bushland are considered to be the stronghold of this species, with the absence of foxes a key determinant of this distribution (DPIPWE, 2009e).

The eastern barred bandicoot may be present within suitable habitat in the project and surrounding areas and could be disturbed during construction and operation activities. It is noted that the lack of native vegetation within the existing project pastures reduces the potential for the likely presence of this species on the site.

However, any impacts to this species, should they occur, are not predicted to be significant given:

- Critical habitat has not been identified in a recovery plan or listed on the Register of Critical Habitat maintained by the Minister under the EPBC Act.
 - Records of species occurrence indicate the species could transit through the area; however, the project and surrounding areas are not known to have a significant resident

population of the species. As such, it is unlikely that any mining activities will affect a significant habitat or significant population of this species.

- Habitat clearance is recognised as a threat to the species.
 - While the project area has the potential to provide suitable habitat, it has been extensively cleared for grazing and agriculture. Further, the proposed method of mining lends itself to progressive rehabilitation of disturbed areas, minimising the period of time between ground disturbance and re-establishment of habitat.
- Predation of the eastern barred bandicoot by introduced species such as cats, dogs and foxes have significantly impacted on the eastern barred bandicoot populations.
 - Cats and dogs are already present in the project area. All existing pest populations within the project area will be controlled through pest management measures.

Tasmanian Devil (Sarcophilus harrisii)

As Tasmanian Devils may occur where there is food and shelter it remains possible this species may be present within the project and surrounding area and could be disturbed during construction and operation activities. However, any impacts to this species, should they occur, are not predicted to be significant:

- It is unlikely the project will adversely affect the availability or quality of habitat to the extent that it would cause a further decline of the Tasmanian devil.
 - Critical habitat has not been identified in a recovery plan or listed on the Register of Critical Habitat maintained by the Minister under the EPBC Act. However, the Tasmanian devil is known to occupy and hunt across a wide range of habitats in Tasmania. It is a nocturnal hunter and scavenger that often covers large distances while hunting, as such the species may transit through the project area while hunting.
 - Potential habitat disturbed during construction and operation of the project would be minor in the context of the extensive areas of similar suitable habitat across the Midlands. Also, the proposed mining method ensures that progressive rehabilitation of disturbed areas is carried out, minimising the period of time between ground disturbance and re-establishment of habitat.
- Vehicle collisions is a major threat to Tasmanian devil, especially as Tasmanian devils frequently favour food sources such as carcasses on roads. The project would operate one 12 hour shift per day, six days per week. Product transport would not occur throughout the night, reducing the risk of vehicle collision with Tasmanian devils.
 - The Environmental Management Plan for the site will include a management strategy for dealing with vehicle and wildlife collisions.
- Foxes and deliberate culling by humans are also seen as threats to the species.
 - The project would develop and implement pest management measures during the construction and operation of the project to reduce the potential to increase feral animal numbers. Deliberate culling of Tasmanian devils by employees or contractors would be prohibited.

Another major threat to the Tasmanian devil is Devil Facial Tumour Disease. Potential pathway for disease transmission is direct horizontal transmission between devils thought to occur during feeding or mating episodes. Three factors may limit transmission rate/prevalence – low devil densities (limited evidence does not support this to date), bio-geographical barriers, and unique Major Histocompatibility Complex (MHC) genes (not confirmed in south-western devils). The project would not impact the occurrence of this disease.

The area disturbed as a result of the project is unlikely to limit the availability or quality of habitat to the extent that it would potentially increase the density of devils in the area.

3.1 (e) Listed migratory species

Description

DSEWPAC EPBC Act protected matters search of the project area lists nine migratory species (three marine, three terrestrial and three wetland), refer Table 5.

Table 5: Listed migratory species with potential to occur in the project area

Species Name		Status in EPBC Act	Preferred Habitat	Likelihood of Presence with Project Area
Scientific Name	Common Name			
<i>Apus pacificus</i>	Fork-tailed swift	Migratory marine	Almost exclusively aerial, flying from less than one meter to at least 300 m above ground. They occur across a wide range of habitats including riparian woodland, tea-tree swamps, low scrub, heathland or saltmarsh (DSEWPaC, 2012).	Unlikely to occur due to lack of forest habitat, but may pass over the site during migration.
<i>Ardea alba</i>	Great egret, white egret	Migratory wetland Migratory marine	Occurs in wetland habitats including swamps and marshes, margins of rivers and lakes, damp or flooded grasslands, pastures or agricultural lands. The species usually frequents shallow waters (DSEWPaC, 2012).	Unlikely to occur due to lack of wetland habitat. May pass over the site during migration.
<i>Ardea ibis</i>	Cattle egret	Migratory wetland Migratory marine	Preferred habitat is grasslands, woodlands and wetlands. It also uses pasture land.	Unlikely to occur at the site, but could utilise the area to forage.
<i>Haliaeetus leucogaster</i>	White bellied sea eagle	Migratory terrestrial	Coastal habitats and around terrestrial wetlands in tropical and temperate regions of mainland Australia. Habitats are characterised by the presence of large areas of open water. Breeding territories are located close to water, and mainly in tall open forest or woodland (DSEWPaC, 2012).	Unlikely to occur at the site. May pass over the site during migration.
<i>Hirundapus caudacutus</i>	White-throated needletail	Migratory terrestrial	It is widespread in Tasmania. Almost exclusively aerial in	Project area has been extensively cleared. Species

			Australia, flying from less than 1 m to at least 1,000 m above ground. The species exhibits a preference for wooded areas. The species has been known to roost in woodlands and breeds in wooded lowlands and sparsely vegetated hills and also mountains covered with coniferous forests. The species does not rely on a listed threatened ecological community (DSEWPaC, 2012).	unlikely to occur at the site. May pass over the site during migration.
<i>Myiagra cyanoleuca</i>	Satin flycatcher	Migratory terrestrial	Habitat generally heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, often near wetlands or watercourses. On migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests (DSEWPaC, 2012).	Project area has been extensively cleared. Species unlikely to occur at the site. May pass over the site during migration.
<i>Gallinago hardwickii</i>	Latham's snipe, Japanese snipe	Migratory wetland	A non-breeding visitor to south-eastern Australia. The species is widespread in Tasmania. In Australia, the species occurs in permanent and ephemeral wetlands up to 2,000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (DSEWPaC, 2012).	Unlikely to occur due to lack of wetland habitat. May pass over the site during migration.

Fork tailed swift (Apus pacificus)

Fork tailed swifts are small insectivorous birds that spend the majority of their time in flight. They never voluntarily come to ground as they have small feet which they use to cling to vertical surfaces. This species has a large range, with an estimated global extent of occurrence of 10,000,000 km², breeding from central Siberia eastwards through Asia. It is a rare vagrant in western Europe, but has been recorded as far west as Norway and Great Britain (Birdlife International, 2008). This species is migratory, spending winter in Australia and summer in the northern hemisphere. The species is distributed over much of Australia.

Although global populations have yet to be quantified populations of the fork tailed swift are thought to be stable and they are considered of least concern on the IUCN redlist (IUCN, 2012).

The species is unlikely to occur due to lack of forest habitat, but may pass over the site during migration.

Great egret, white egret (Ardea alba)

The great egret or white egret is found across most of Australia, with breeding colonies on mainland Australia. There are no known breeding colonies in Tasmania. The species feeds in shallow water and breeds in colonies in trees close to large lakes with reed beds or other extensive wetlands.

The species is unlikely to occur due to lack of wetland habitat, and it may pass over the site during migration.

Cattle egret (Ardea ibis)

The cattle egret is considered to be widespread and common according to migration movements and breeding locality surveys. The preferred habitat of the cattle egret is tropical and temperate grasslands, woodlands and terrestrial wetlands, although is known to also use pasture land. The species forages away from water on low lying grasslands, improved pastures and croplands. In Australia, the principal breeding sites are along the central east coast of mainland Australia. Cattle egret roost trees, or amongst ground vegetation in or near lakes and swamps (DSEWPac, 2012).

Given the historical clearing of the project area, suitable habitat for the cattle egret is unlikely to be present and therefore the species is unlikely to be resident at the site. However, the project area may provide suitable area for the species to forage.

White bellied sea eagle (Haliaeetus leucogaster)

The white-bellied sea-eagle is a large raptor and is generally seen singly or in pairs, though it may occasionally congregate around sites where food is abundant. The species is found in coastal habitats (especially those close to the sea-shore) and around terrestrial wetlands in tropical and temperate regions of mainland Australia. The habitats occupied by the sea-eagle are characterised by the presence of large areas of open water (larger rivers, swamps, lakes, the sea). Birds have been recorded in (or flying over) a variety of terrestrial habitats. The species generally forages over large expanses of open water; this is particularly true of birds that occur in coastal environments close to the sea-shore, where they forage over in-shore waters. However, the White-bellied Sea-Eagle will also forage over open terrestrial habitats (such as grasslands).

The species is found in coastal habitats close to the sea shore. The project is located away from the coast, and given the lack of suitable habitat, the white bellied sea eagle is considered to be unlikely to be resident within the project area. However, the species may pass over the site during migration.

White-throated needletail (Hirundapus caudacutus)

The white-throated needletail is widespread in eastern and south-eastern Australia and is widespread in Tasmania. The estimated global extent of occurrence is 1,000,000 km² to 10,000,000 km², with the species area of occupancy in Australia estimated to be approximately 126 200 km². The species is

almost exclusively aerial in Australia; however, the species displays a habitat preference for wooded areas, including open forest and rainforest, woodland and heathland. They are less frequently recorded over treeless areas, such as grassland or swamps. The white-throated needletail forages aurally within areas of preferred habitat and have been known to forage over recently disturbed areas. The species does not breed in Australia.

Given the historical clearing of the project area, suitable habitat for the white-throated needletail is unlikely to be present. The species is therefore unlikely to be resident at the site. However, the project area may provide suitable area for the species to forage.

Satin flycatcher (Myiagra cyanoleuca)

The satin flycatcher is widespread in eastern Australia and in Tasmania they are more widespread in the east, although they are occasionally recorded along the western and northern coast. The species inhabit heavily vegetated gullies in eucalypt-dominated forests and taller woodlands, and on migration, occur in coastal forests, woodlands, mangroves and drier woodlands and open forests. Satin flycatchers prefer to nest in a fork of outer branches of trees, such as paperbarks, eucalypts, and banksias (DSEWPac, 2012). The species is an arboreal forager, feeding high in the canopy and subcanopy of trees.

The project area has been extensively cleared for grazing and is unlikely to provide suitable habitat for the species to be resident at the site. However, the species may pass over the site during migration.

Latham's snipe, Japanese snipe (Gallinago hardwickii)

Latham's Snipe is a non-breeding visitor to south-eastern Australia, and is a passage migrant through northern Australia (i.e. it travels through northern Australia to reach non-breeding areas located further south). The species has been recorded along the east coast of Australia from Cape York Peninsula through to south-eastern South Australia (including the Adelaide plains and Mount Lofty Ranges, and the Eyre Peninsula). The species is widespread in Tasmania and is found in all regions of Victoria except for the north-west.

In Australia, Latham's Snipe occurs in permanent and ephemeral wetlands up to 2,000 m above sea-level. They usually inhabit open, freshwater wetlands with low, dense vegetation (e.g. swamps, flooded grasslands or heathlands, around bogs and other water bodies). However, they can also occur in habitats with saline or brackish water, in modified or artificial habitats, and in habitats located close to humans or human activity.

Nature and extent of likely impact

It is considered the project area does not provide suitable breeding or feeding habitat for the potential migratory species however there is potential for these species to pass over the site during migration. Due to the small footprint of disturbance (less than 400 ha), short term nature of the mine (less than 10 years) and existing level of disturbance associated with agricultural activities although species may pass over during migration it is considered unlikely the project would pose a risk of potential negative impact. A brief summary of potential impacts for each migratory species with potential to pass over the area is provided below.

Fork tailed swift (Apus pacificus)

The project area encompasses only a minor part of available habitat for this species and the project is not expected to make a significant impact on populations.

Great egret, white egret (Ardea alba)

This species is unlikely to be resident within the project area due to a lack of suitable habitat or water resources. However, the species may pass over the site during migration. Due to the lack of suitable habitat within the project area, the project is unlikely to have a significant impact on the species.

Cattle egret (Ardea ibis)

The project area encompasses a minor part of the available pasture land in the surrounding area and the project is not expected to make a significant impact on areas available to forage. As such, the project is not expected to make a significant impact on the cattle egret.

White bellied sea eagle (Haliaeetus leucogaster)

Due to the lack of suitable habitat within the project area, the project is unlikely to have a significant impact on the species.

White-throated needletail (Hirundapus caudacutus)

The project area encompasses a minor part of the estimated occupancy in Australia (approximately 4 km² of an estimated 126,200 km² occupancy). The project is not expected to make a significant impact on the white-throated needletail.

Satin flycatcher (Myiagra cyanoleuca)

Due to the lack of suitable habitat within the project area, the project is unlikely to have a significant impact on the species.

Latham's snipe, Japanese snipe (Gallinago hardwickii)

Due to the lack of suitable habitat within the project area, the project is unlikely to have a significant impact on the species.

3.1 (f) Commonwealth marine area

(If the action is in the Commonwealth marine area, complete 3.2(c) instead. This section is for actions taken outside the Commonwealth marine area that may have impacts on that area.)

Description

There are no Commonwealth marine areas in or near the project area.

Nature and extent of likely impact

There will be no impact to any part of a Commonwealth marine area.

3.1 (g) Commonwealth land

(If the action is on Commonwealth land, complete 3.2(d) instead. This section is for actions taken outside Commonwealth land that may have impacts on that land.)

Description

There is no Commonwealth land in the vicinity of the project area.

Nature and extent of likely impact

This project will not affect any Commonwealth land.

3.1 (h) The Great Barrier Reef Marine Park**Description**

The project will not occur within or in close proximity to the Great Barrier Reef Marine Park. The Great Barrier Reef Marine Park is located approximately 2,000 km north-northeast of the project area.

Nature and extent of likely impact

Due to the significant distance to the Great Barrier Reef Marine Park, there will be no impact to the values of the Great Barrier Marine Park as a result of the project.

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	Is the proposed action a nuclear action?	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	✓	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

3.3 (a) Flora and fauna

3.3.1 (a) Flora

There were no threatened plant species recorded within the DRA and the land has been cleared for agriculture and is classified as agricultural land (map classification: FAG) in accordance with Harris and Kitchener (2005).

Pre-European Settlement Vegetation

The site is located within the Tasmanian South East subregion of the Interim Biogeographic Regionalisation for Australia (IBRA). The major vegetation groups within the Tasmanian South East subregion prior to European settlement are provided in Table 6.

Table 6: Vegetation Type and Area prior to European Settlement compared to 1997 – Tasmanian South East IBRA Subregion

Major Vegetation Group	1750 Area (ha)	Total Extent (%)	Circa 1997 Area (ha)	Total Extent (%)
Cleared / modified native vegetation	0	0	274,648	25
Rainforest and vine thickets	1,392	0.1	1,392	0.1
Eucalyptus tall open forests	86,128	7.8	67,232	6.1
Eucalyptus open forest	528,916	48.2	329,552	30
Eucalyptus low open forest	2,564	0.2	532	0
Eucalyptus woodlands	264,492	24.1	213,096	19.4
Acacia forest and woodlands	1,876	0.2	1,736	0.2
Callitris forest and woodlands	16	0	-	-
Casuarina forest and woodlands	1,428	0.1	832	0.1
Other forests and woodlands	108	0	104	0
Eucalyptus open woodlands	71,432	6.5	71,400	6.5
Low closed forest and closed shrublands	8,564	0.8	8,504	0.8
Acacia shrublands	588	0.1	568	0.1
Other Shrublands	4,236	0.4	4,224	0.4
Heath	4,900	0.4	4,896	0.4
Tussock grasslands	19,508	1.8	19,508	1.8
Other grasslands, herblands, sedgeland and rushlands	88,440	8.1	88,436	8.1
Chenopod shrub, samphire shrub and forelands	1,784	0.2	1,784	0.2
Mangroves, tidal mudflat, samphire and bare areas, claypan, sand, rock, salt lakes, lagoons, lakes	9,836	0.9	9,836	0.9

Source: Commonwealth of Australia, 2001

Existing Vegetation

The project area has been cleared for agriculture and is zoned as agricultural land (map classification: FAG) in accordance with Harris and Kitchener (2005). No remnant native vegetation exists within the DRA or project site.

The existing vegetation within the area of the DRA is shown in Figure 4. There is an area of silver peppermint (*Eucalyptus tenuiramis*) forest and woodland on sediments (map classification: DTO) adjacent to Meadowbank Lake, approximately 1 km south of the project area. There is an area of remnant native vegetation approximately 1 km east of the DRA adjacent to the River Clyde north of

Hamilton. This vegetation community is classified as Bursaria – Acacia woodland and scrub (map classification: NBA) and is characterised by small (<10 m high) trees and shrubs, typically sweet bursaria (*Bursaria spinosa*), sticky hop-bush (*Dodonaea viscosa*), silver wattle (*Acacia dealbata*), black wattle (*A. mearnsii*), blackwood (*A. melanoxylon*), prickly Moses (*A. verticillata*) over a grassy understorey of kangaroo grass (*Themeda triandra*) or wallaby grass (*Austrodanthonia* sp.) (Harris and Kitchener, 2005).

A search of the Tasmanian Natural Values Atlas was also conducted on 6 July 2012 utilising the Tasmanian DPIPWE LISTMap tool and a DRA comprised of a 5 km radius from the approximate centre of the site. This search returned 428 individual records within the DRA that represents approximately 104 species records. It is noted that there are several records that are restricted in identification to genus.

Of the species recorded, there were 70 records of individual flora species recorded within the DRA, of which 20 records (29%) are of introduced species and 10 (14%) species are threatened under either the TSP Act and/or the EPBC Act. No threatened plants species had been recorded as occurring at the project site. The threatened flora species are listed in Table 7, and the distribution of threatened plant species within the DRA is provided in Figure 5

4.

Table 7: Natural Values Atlas Flora Records and Status

Species	Common Name	No. of Records	Status Tasmania	Status C'wealth
<i>Acacia axillaris</i>	Midlands wattle	4	VU	VU
<i>Acacia riceana</i>	Arching wattle	1	-	-
<i>Acaena echinata</i>	Sheepsburr	1	-	-
* <i>Agrostis stolonifera</i>	Creeping bent	1	-	-
* <i>Arabidopsis thaliana</i>	Thale cress	1	-	-
<i>Asperula conferta</i>	Common woodruff	1	-	-
<i>Asperula</i> sp.		1	-	-
<i>Austrodanthonia caespitose</i>	Common wallabygrass	1	-	-
<i>Austrodanthonia carphoides</i>	Short wallabygrass	1	-	-
<i>Austrostipa stiposa</i>	Corkscrew speargrass	1	-	-
* <i>Briza</i> sp.		1	-	-
<i>Bulbine</i> sp.		1	-	-
<i>Carex breviculmis</i>	Shortstem sedge	1	-	-
* <i>Carthamus lanatus</i>	Saffron thistle	3	-	-
<i>Chrysocephalum apiculatum</i>	Common everlasting	1	-	-
<i>Convolvulus angustissimus</i> subsp. <i>Angustissimus</i>	Blushing bindweed	1	-	-
<i>Craspedia glauca</i>	Common billybuttons	1	-	-
<i>Cryptandra amara</i>	Pretty pearlflower	1	EN	-
<i>Danthonia</i> sp.		1	-	-
<i>Dianella amoena</i>	Grassland flaxlily	1	R	EN
<i>Dianella revoluta</i> var. <i>revoluta</i>	Spreading flaxlily	1	-	-
<i>Discaria pubescens</i>	Spiky anchorplant	1	-	-
<i>Elymus scaber</i>	Rough wheatgrass	1	-	-
<i>Eucalyptus pauciflora</i> subsp. <i>pauciflora</i>	Cabbage gum	11	-	-

Species	Common Name	No. of Records	Status Tasmania	Status C'wealth
<i>Eucalyptus perriniana</i>	Spinning gum	1	r	-
<i>Eucalyptus tenuiramis</i>	Silver peppermint	1	-	-
<i>Gentianella diemensis</i> subsp. <i>diemensis</i>	Tasmanian snowgentian	1	-	-
<i>Geranium potentilloides</i> var. <i>potentilloides</i>	Mountain cranesbill	1	-	-
<i>Geranium solanderi</i>	Southern cranesbill	1	-	-
<i>Goodenia elongata</i>	Lanky native-primrose	1	-	-
* <i>Hydrocotyle sibthorpioides</i>	Shining pennywort	1	-	-
<i>Lepidium pseudotasmanicum</i>	Shade peppergrass	1	R	-
<i>Leptorhynchus squamatus</i>	Scaly buttons	1	-	-
<i>Lobelia pedunculata</i>	Matted pratia	1	-	-
<i>Lobelia pratensis</i>	Poison lobelia	1	VU	-
* <i>Marrubium vulgare</i>	Horehound	1	-	-
* <i>Medicago</i> sp.		1	-	-
* <i>Onopordum acanthium</i>	Cotton thistle or scotch thistle	5	-	-
<i>Oxalis perennans</i>	Grassland wood sorrel	1	-	-
* <i>Phalaris aquatica</i>	Toowoomba canary grass	1	-	-
<i>Pimelea humilis</i>	Dwarf riceflower	1	-	-
* <i>Pinus radiata</i>	Radiata pine	1	-	-
* <i>Plantago</i> sp.		1	-	-
<i>Plantago varia</i>	Variable plantain	1	-	-
* <i>Poa bulbosa</i>	Bulbous meadow grass	1	-	-
<i>Poa</i> sp.		1	-	-
<i>Podolepis jaceoides</i>	Showy copperwire-daisy	2	-	-
* <i>Polypogon monspeliensis</i>	Annual beard grass	1	-	-
<i>Potamogeton perfoliatus</i>	Clasped pondweed	1	-	-
<i>Ptilotus spathulatus</i> f. <i>spathulatus</i>	Pussytails	2	-	-
* <i>Ranunculus muricatus</i>	Sharp buttercup	1	-	-
* <i>Rosa rubiginosa</i>	Sweet briar	1	-	-
<i>Rumex crispus</i>	Curled dock	1	-	-
<i>Rumex dumosus</i>	Wiry dock	1	-	-
* <i>Salix</i> sp.	Willow	1	-	-
* <i>Salvia verbenaca</i> var. <i>verbenaca</i>	Wild sage	1	-	-
<i>Schoenus apogon</i>	Common bog sedge	1	-	-
<i>Senecio quadridentatus</i>	Cotton fireweed	1	-	-
<i>Solenogyne</i> sp.		1	-	-
<i>Stipa</i> sp.		1	-	-
<i>Thelymitra</i> sp.		1	-	-
<i>Themeda triandra</i>	Kangaroo grass	2	-	-
<i>Trifolium ornithopodioides</i>	Birdsfoot clover	1	-	-
* <i>Trifolium tomentosum</i>	Woolly clover	1	-	-

Species	Common Name	No. of Records	Status Tasmania	Status C'wealth
* <i>Ulex europaeus</i>	Gorse	12	-	-
* <i>Valerianella eriocarpa</i>	Italian cornsalad	1	-	-
<i>Velleia paradoxa</i>	Spur velleia	4	VU	-
<i>Vittadinia cuneata</i> var. <i>cuneata</i>	Fuzzy new-holland-daisy	1	R	-
<i>Vittadinia gracilis</i>	Woolly new-holland-daisy	1	R	-
<i>Wahlenbergia stricta</i> subsp. <i>stricta</i>	Tall bluebell	1	-	-
<i>Westringia angustifolia</i>	Narrowleaf westringia	1	R	-
* denotes introduced species				

R = rare

VU = vulnerable

EN = endangered

3.3.2 (a) Invasive Plant Species

The Protected Matters Report identified four invasive plant species, boneseed (*Chrysanthemoides monilifera*), blackberry (*Rubus fruticosus* aggregate), willows (*Salix spp.*) and gorse (*Ulex europaeus*) that either occur in the DRA or for which suitable habitat may occur. It is possible these species occur within the DRA.

Boneseed (Chrysanthemoides monilifera)

There are no records of this species within the DRA (ALA, 2012d; DPIPWE, 2009b) and within Tasmania it occurs in coastal areas, within the Tamar Valley and in and around Hobart. Elsewhere in Tasmania boneseed occurs occasionally as a weed of disturbed bushland and coastal vegetation (DPIPWE, 2012b). The DRA occurs in an area in which occasional occurrences of boneseed occur and therefore while the potential exists for this species to occur, it is considered unlikely.

Blackberry (Rubus fruticosus aggregate)

While the closest record of this species is from approximately 14 km northwest of the DRA near Lake Repulse (ALA, 2012c), it is likely that *Rubus fruticosus* aggregate (blackberry) occurs within the DRA, in particular associated with watercourses, disturbed bushland, roadsides and neglected farmland (DPIPWE, 2012). The DRA is located within an area designated as potential habitat for this species (DPIPWE, 2009). Blackberries are declared weeds under the Tasmanian *Weed Management Act 1999* and occur in all settled areas (DPIPWE, 2012).

Willows (Salix spp.)

The mapped distribution of willows (*Salix spp.*) except *S. babylonica*, *S. X calodendron* and *S. X reichardtii* indicates that willows may occur within the DRA (DPIPWE, 2009c). Willows are a declared weed under the Tasmanian *Weed Management Act 1999* (DPIPWE, 2012c). It is considered unlikely this species occurs within the DRA as it is principally a weed species associated with waterways, which are not present onsite.

Gorse (Ulex europaeus)

Gorse occurs in the area of the DRA (DPIPWE, 2009d) and is considered a major agricultural weed within Tasmania (DPIPWE, 2012d). It is considered likely that Gorse occurs within the DRA.

3.3.3 (a) Fauna

As previously described, a search of the Tasmanian Natural Values Atlas was conducted on 6 July 2012 with a DRA comprised of a 5 km radius from the approximate centre of the site. There are five species of birds recorded within the DRA and four of these species are birds of prey. The scarcity of reptile records may be reflective of the survey effort in the area. The introduced pest species brown

hare (**Lepus capensis*) and rabbit (**Oryctolagus cuniculus subsp. cuniculus*) occur within the DRA and are likely to occur at the site.

The fauna species are listed in Table 8. The linear nature of records of Tasmanian devil (*Sarcophilus harrisi*) and eastern barred bandicoot (*Perameles gunnii*) along the Lyell Highway are road kills as discussed previously. The number of records of these two species within the DRA indicates that they may occur at the site. No records of threatened fauna occur at the site.

Table 8: Natural Values Atlas Fauna Records and Status

Species	Common name	No. of Records	Status Tasmania	Status C'wealth
Mollusca				
<i>Nanocochlea parva</i>		1		
Insecta				
<i>Austroagrion watsonia</i>	Eastern billabong fly	1		
<i>Austrolestes cingulatus</i>		1		
<i>Ischnura heterosticta</i>		1		
Crustacea				
<i>Astacopsis gouldi</i>	Giant freshwater crayfish	1	VU	VU
Fish				
<i>Anguilla australis</i>	Southern short-finned eel	118		
<i>Gadopsis marmoratus</i>	Blackfish	103		
<i>Galaxias maculatus</i>	Jollytail	4		
<i>Galaxias truttaceus</i>	Trout galaxias	4		
<i>Lovettia sealii</i>	Tasmanian whitebait	1		
<i>*Perca fluviatilis</i>	Redfin	2		
<i>*Salmo trutta</i>	Brown trout	2		
Frogs				
<i>Crinia signifera</i>	Brown froglet	3		
<i>Limnodynastes dumerili subsp. Insularis</i>	Banjo frog	1		
<i>Limnodynastes tasmaniensis</i>	Spotted marsh frog	5		
<i>Litoria ewingi</i>	Brown tree frog	2		
<i>Litoria raniformis</i>	Green and gold frog	1	VU	VU
Birds				
<i>Aquila audax subsp. fleayi</i>	Wedge-tailed eagle	2	EN	EN
<i>Cacatua galerita</i>	Sulphur-crested cockatoo	1		
<i>Circus approximans subsp. gouldi</i>	Swamp harrier	1		
<i>Falco berigora</i>	Brown falcon	1		
<i>Ninox novaeseelandiae subsp. Leucopsis</i>	Southern boobook	1		
Reptiles				
<i>Tiliqua nigrolutea</i>	Blotched bluetongue	1		
Mammals				
<i>Dasyurus viverrinus</i>	Eastern quoll	2		

Species	Common name	No. of Records	Status Tasmania	Status C'wealth
<i>Nyctophilus geoffroyi subsp. Pacificus</i>	Lesser long-eared bat	1		
<i>Ornithorhynchus anatinus</i>	Platypus	1		
<i>Perameles gunnii</i>	Eastern barred bandicoot	6		VU
<i>Sarcophilus harrisii</i>	Tasmanian devil	8	EN	EN
<i>Thylogale billardierii</i>	Tasmanian pademelon	2		
<i>Trichosurus vulpecula subsp. Fuliginosus</i>	Common brushtail possum	30		
<i>*Lepus capensis</i>	Brown hare	4		
<i>*Oryctolagus cuniculus subsp. Cuniculus</i>	Rabbit	9		

R = rare

VU = vulnerable

EN = endangered

3.3 (b) Hydrology, including water flows

3.3.1 (b) Groundwater

Project area groundwater is mapped as being a fractured rock aquifer. In the south of the project area the groundwater is mapped as having an average yield of 0.99 L/s and a salinity range of between 116 mg/L to 13,225 mg/L. Groundwater is used for domestic, garden, stock and irrigation purposes.

In the north of the project area the groundwater is mapped as having an average yield of 3.78 L/s and a salinity range of between 70 mg/L to 11,200 mg/L. Groundwater is used for domestic, garden and stock uses (Mathews & Latinovic, 2006).

3.3.2 (b) Surface Water

The project is located within the Clyde River catchment, which is approximately 1,120 km². The Clyde River catchment area is within the driest region of Tasmania. The catchment contains two significant water storages, Lake Sorell and Lake Crescent, located approximately 54 km to the northeast of the project area. These storages provide water for irrigation and domestic purposes for the towns of Bothwell and Hamilton. The catchment area flows into Lake Meadowbank to the south of the project area (DPIWE, 2009).

This catchment is located within the Lower Derwent Hydro-Electric District and Hydro Tasmania has rights to access all unallocated water within the catchment (DPIWE, 2005).

The project site generally drains in south-easterly direction towards Lake Meadowbank. Ellangowan Creek is to the north east and Cartwrights Creek is to the north west of the project area.

3.3 (c) Soil and Vegetation characteristics

3.3.1 (c) Geology

The Langloh deposit consists of a dominantly lithic sandstone sequence interbedded with minor mudstone bands and coal seams, forming part of the Upper Parmeener Super Group. The sequence is said to be of fluvial origin and Carnian in age. The lithic sandstone sequence is underlain by a quartz sandstone sequence which is devoid of coal.

The coal measures at the Langloh project are contained in a wedge shaped fault block, bounded on the west by a Tertiary graben fault, to the east by Jurassic dolerite, to the north by Tertiary basalt and by outcrops to the south. Three major seams exist throughout the Langloh deposit, each on

average about one meter thick. The coal geology throughout the deposit is lensoidal in nature, hence the seams tend to thin and pinch out in areas. The three major seams are separated by silty mudstone units, with a typical thickness of 0.2 m between the top two seams and approximately 1 m between the bottom two seams.

3.3.2 (c) Soils

The soils of the project area are mapped as part of the *Reconnaissance Soil Map Series of Tasmania – Ellendale* (Spanswick & Kidd, 2000). The southern portion of the project area is mapped as forming part of the Rotherwood Association, which is described as a hydrosol for the dominant soil under the Australian Soil classification. Rotherwood Association is generally soils on flat to gently undulating (0% to 3%) river terraces.

The northern part of the project area is mapped as Brown Soils on Feldspathic Sandstone, which is described as a chromosol for the dominant soil under the Australian Soil classification. Brown Soils on Feldspathic Sandstone is generally imperfectly drained grey-brown soils developed on Triassic feldspathic sandstone bedrock and colluviums on undulating to railing land (3% to 32%) (Spanswick & Kidd, 2000).

3.3 (d) Outstanding natural features

There are no outstanding natural features on or near the project area. The nearest World Heritage listed property is listed as Tasmanian Wilderness, Strathgordon, located approximately 28 km west of the project area. The project area generally drains in south-easterly direction away from the Tasmanian Wilderness.

3.3 (e) Remnant native vegetation

The land has been cleared for agriculture and is zoned as agricultural land (map classification: FAG) in accordance with Harris and Kitchener (2005). No remnant native vegetation exists within the project area.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The project is located on gently undulating land. The project area generally ranges from approximately 110 m Australian Height Datum (AHD) to 200 m AHD. The site generally drains in south-easterly direction towards Meadowbank Lake. Ellangowan Creek is to the north east and Cartwrights Creek is to the north west of the project area. Meadowbank Lake is to the south west of the project area.

3.3 (g) Current state of the environment

There is no known native vegetation within the mine footprint area. Habitat quality of remnant vegetation in the DRA is degraded due to historical clearing for grazing purposes and the introduction of non-native pasture grasses. Introduced flora and fauna pest species are known to occur within the project area and are recognised as being a key threatening process to a number of EPBC listed species.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

No archaeological assessments have taken place within the project area; however, one previous archaeological assessment was undertaken beside the project area. In November 1998, an Aboriginal heritage survey was undertaken for the then proposed mine at Kimbolton (Green, 1998). The project brief was reviewed by the Tasmanian Aboriginal Land Council and a field survey was recommended. No aboriginal material was found during the site field survey however, it was noted that there are a number of Aboriginal sites (rock shelters and stone artefact scatters) located approximately 3 km south of the project area. While there was no evidence of Aboriginal material, the report commented on the amount of historic material present including; fragments of old china, historic artefacts, old farm cottages, dams, irrigation channels, pits and other mining and farming infrastructure. The report recommended no further Aboriginal assessment was required. This report is included in Appendix B.

Summary of Historic Heritage

One historic archaeological assessment has been undertaken in the vicinity of the project area. In April, 2001 a survey was undertaken for the Langloh Colliery. The study occurred because a brick manufacturer applied to MRT to mine waste rock from the site. MRT commissioned an archaeological historic assessment of the area, in order to record the heritage features of the site prior to mining activities commencing.

The April 2001 survey noted that the mine and associated infrastructure offer one of the only complete examples of a small steam-powered underground colliery. As such, the report states it is likely the most significant coal mine to operate in the southern part of the Tasmania. The report concludes that the mine a very well preserved example of a steam (and possibly horse) powered mine giving it regional, if not state significance.

The April 2001 survey recommended that there be an ongoing liaison between the company and MRT about the progress of mining at the Langloh mine dump. This report is included in Appendix D.

3.3 (i) Indigenous heritage values

A search of the Tasmanian Aboriginal Site Index (TASI) data base undertaken by Golder for the project area shows that there are a total of 40 registered Aboriginal heritage sites located within a 10 km radius of the study area (Figure 6). The sites are comprised of isolated artefact finds, artefact scatters, quarry sites, rock shelter sites and an art engraving/painting site.

In communication with AHT regarding the TASI review, the AHT archaeologist noted there are likely to be more aboriginal sites in the region, especially along the banks of Meadowbank Lake and that the lack of sites can likely be attributed to the fact that the area has not yet been subjected to an archaeological survey (Smith pers. comm., 2012). The results of the TASI search are located in Appendix C.

3.3 (j) Other important or unique values of the environment

There are no other important or unique values of the environment in the project area.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

The project is located wholly within freehold land. Details of the allotments are provided in Section 1.

3.3 (l) Existing land/marine uses of area

The site is currently used for agricultural grazing purposes. The site is adjacent to the existing Kimbolton Mine (Mining Lease 1679) and is situated approximately 2.5 km east of Meadowbank Lake on the River Derwent. Broad scale land use mapping identified the project area as agricultural land use (map classification: FAG).

3.3 (m) Any proposed land/marine uses of area

Aside from the project, there are no other proposed uses of the area.

4 Measures to avoid or reduce impacts

Indicoal is committed to implementing environmental mitigation measures during construction, operation and closure of the project. This section outlines high level management and mitigation measures that will be followed to minimise the potential for impacts to the environment (including EPBC Act listed species, in the unlikely event they are present) during construction, operation and closure of the project.

4.1 Air Quality

The key issues associated with air quality would result from dust associated with construction and operation of the project. Issues relate to the potential adverse impacts on human health, vegetation and amenity. The main sources of dust would include:

- General vehicle movements over unsealed roads
- Wind erosion from exposed surfaces (e.g. topsoil and waste rock stockpiles)
- Loading and unloading of product and waste rock
- Drilling and blasting.

Emissions of combustion products such as carbon monoxide, sulphur dioxide, nitrogen dioxide and particulate matter from fuel combustion of fixed on-site sources (i.e. plant and equipment and machinery) and vehicles would occur and also have the potential for minor adverse impacts to local air quality.

Measure to manage and/or mitigate potential air quality impacts include:

- Dust suppression on trafficked areas and exposed surfaces (i.e. stockpiles)
- Minimising the extent of exposed surfaces susceptible to wind erosion.
- Regular cleaning of vehicles to prevent debris falling onto roads and creating a source of dust.
- Designing and scheduling blasting to minimised dust emissions.
- Establishing a complaints register that records the frequency of occurrence, intensity, duration, offensiveness and location of public complaints regarding dust.

4.2 Greenhouse Gas and Climate Change

The construction, operation of the project would increase the greenhouse gas emissions for the region as well as the export of coal for end users of the product. Of the main greenhouse gases, carbon dioxide and nitrogen oxide are the most significant in relation to the project. Direct greenhouse gas emissions from the project would be generated from the combustion of fuel from the project vehicles and equipment. The coal produced from the project will also contribute to the total worldwide production of greenhouse gas.

The project would develop and apply policies and procedures for energy efficient mine operation to minimise the greenhouse gas emissions at the project. Procedures that may be employed may include minimising haul distances to minimise diesel consumption, monitor emissions and calculate and report greenhouse gas emissions, consider alternative fuels. The project will also be subject to Commonwealth carbon taxes on these emissions.

4.3 Land Use and Resources

Soil contamination may occur during project activities from chemical or fuel spills, product spills and dust emissions. Soil contamination may reduce pasture quality, inhibit revegetation and limit suitable future land uses.

Indicoal will consult with key stakeholders on the potential mine closure and rehabilitation criteria to minimise the areas that may permanently be unavailable for agricultural or other beneficial use post-closure. Spill response procedures would also be implemented during construction and operation to minimise the potential for contamination of soils.

4.4 Ecology

Vegetation

The project has the potential to impact upon individual species of flora and the vegetation communities within the project area. Based on the desktop review it is considered unlikely the project would negatively impact EPBC listed species with potential to occur at the site.

Key issues associated with vegetation are as follows:

- ***Loss of Vegetation.*** The site has been extensively cleared in the past for agricultural use; however, development of the project could remove individual flora species from the broader regional population. This has the potential to impact on the distribution, dispersal and genetic diversity of populations of species in the region. The removal of vegetation also has the potential to fragment and reduce the area of habitat available for fauna species dependent on it for resources.
- ***Introduction of Weeds.*** Project-related vehicles and equipment (especially earth-moving equipment) have the potential to introduce and/or spread weed species within and around the project site.

Indicoal would minimise vegetation clearing where possible and manage weeds in the Mining Lease. Progressively rehabilitation of areas no longer required for mining and avoiding unnecessary future disturbance of these areas will assist in reducing potential impacts to vegetation as a result of the project. As part of baseline assessment ecology survey would be undertaken of the project area.

Ensuring vehicles and project equipment arrive on site free of vegetative matter, seeds and mud would also minimise the potential for establishment of new weeds or the introduction and spread of *Phytophthora cinnamomi*. Monitoring areas with a high potential for, or susceptibility to, weed invasion would also assist with controlling existing weed infestations, establishment of new weed species or expansion of existing weed into new areas.

Fauna

Key issues associated with fauna include the potential loss or fragmentation of habitat, breeding areas or foraging area. Consequences of such loss or fragmentation of these areas includes increased inter- and intra-specific competition for resources due to reduced foraging areas, increased hunting pressure from prey species due to a reduction in habitat providing cover, and the isolation of breeding populations. The project could also increase the abundance of introduced fauna through increased artificial food sources (due to the presence of rubbish) and water sources as a result of the project. Based on the desktop review it is considered unlikely the project would negatively impact EPBC listed species with potential to occur at the site.

Other key issues associated with fauna relate to the potential increase in noise and vibration disturbing existing resident species. Noise and vibration associated with mining activities are typically generated by vehicle traffic, excavations, blasting and ore processing. Given the proposed project's proximity to the existing Kimbolton Coal Mine, noise and vibration associated with the proposed project will be an incremental increase in existing conditions.

Measures that could be implemented to minimise the potential issues associated with fauna include implementing appropriate waste management procedures to deter pest animals, minimising vegetation clearance and where possible, consolidating areas of vegetation to be cleared so that large blocks of habitat are preserved where possible. Progressive rehabilitation of areas no longer required for mining will also assist with re-establishing habitat for fauna.

4.5 Groundwater

Key issues associated with groundwater and project related activities include loss of groundwater with over-extraction of groundwater resources or contamination due to project related activities. Groundwater contamination could result from contaminants entering groundwater aquifers from spills or seepage from waste rock storages and final voids. The geochemical characterisation of the waste

rock also has potential to contaminate groundwater resources. Geochemical characterisation will be undertaken as part of the detailed environmental investigations to be undertaken as part of the project.

Measures that may be implemented to minimise these issues include operating bores at sustainable extraction rates and monitoring baseline water level and quality in existing wells. Appropriate mine design and construction of waste rock stockpiles and tailings storage facility can minimise the potential for waste materials to contaminate groundwater resources. Appropriate bunding and management of chemicals stored on-site can also minimise the potential for these products to contaminate groundwater.

4.6 Surface Water

Key issues associated with surface water relate to reduction in water quality or potential contamination of surface water resources. Waste rock and ore stockpiled on site has the potential to release metals and salts into the surrounding environment. The leaching of surface waters through the waste rock storages can acidify surface through acid rock drainage and mobilise metal components. As previously mentioned, geochemical characterisation of the waste rock will be undertaken as part of the detailed environmental investigations. In addition to leaching of surface water through waste rock stockpiles, potentially contaminated water can also be generated from mine activities including water used for dust suppression, pit water, water from the CHPP and tailings storage facility.

If geochemistry demonstrates that the waste material or ore is potentially acid forming or has potential to leach other contaminants management measures to reduce or avoid impacts will include the implementation of Waste Rock Management Plan. Such a plan would include details on the selective placement of potentially reactive waste rock materials.

While there are no watercourses or other surface water features (e.g., lakes or springs) within the project area, other measures to minimise the potential contamination of surface water resources include site water management. As previously described, clean water will be diverted around the disturbed areas, while dirty water will be retained on-site and managed through the water management structures such as diversion drains and sediment ponds.

5 Conclusion on the likelihood of significant impacts

5.1 Do you THINK your proposed action is a controlled action?

- ☒ No, complete section 5.2
- ☐ Yes, complete section 5.3

5.2 Proposed action IS NOT a controlled action.

The project is located within an area previously cleared of native vegetation for grazing and is adjacent an existing coal operation. There are no surface water resources located on the site and no significant conservation areas adjacent the site. In general the flora and fauna of the project area limited. There are no records of EPBC Act listed flora or fauna species within the project area.

It is concluded the development of the project would not result in a significant impact to potential EPBC listed species due to the following:

- Known populations of black-tipped spider-orchid are located approximately 80 km to 90 km northeast of the project area. It is considered unlikely new populations of this species would be found at the site due to extensive historical clearing.
- While potentially suitable habitat for the Curtis' colobanth and the matted flax-lily will be cleared for the project, there are no known remnant populations of these species within the project area. The short mine life and progressive rehabilitation during mining may also provide suitable habitat for these species. The project is unlikely to result in significant impacts to these species.
- The project would not cause further introductions of, and would manage existing, populations of introduced species. Control of these species during the life of the project may in fact improve the condition of habitat in the project area.
- The project area does not encompass any areas of critical habitat or critical populations of the eastern barred bandicoot or the Tasmanian devil.
- The historical vegetation clearance of the project area means it is unlikely that suitable habitat for the wedge-tailed eagle and masked owl to be resident within the project area. These species may disperse through or forage within the project area. The size of the project of the project is unlikely to have a significant impact upon the area available to these species for foraging.
- Listed migratory species would most likely occur as occasional transients through the project area and there is an absence of critical wetland habitat for most of these species in the project area. Therefore, the project will cause no disruption to critical habitat for listed migratory species.

Therefore, it is proposed that the project is not a controlled action.

In considering significant impact criteria outlined in the EPBC Act Policy Statement 1.1 Significant Impact Guidelines Matters of National Environmental Significance (Department of the Environment and Heritage, 2006) for other matters protected under the EPBC Act, it is concluded that the project will not have a significant impact to any other matter of national environmental significance because:

- There are no World Heritage areas in the vicinity of the project area.
- There are no National Heritage Places in the vicinity of the project area.
- There are no Wetlands of International Importance in the vicinity of the project area.
- There are no Nuclear Actions associated with the project.
- The proposed project area is not located near any Commonwealth Marine Areas.
- There are no listed threatened ecological communities within the project area.

5.3 Proposed action IS a controlled action

Matters likely to be impacted

<input type="checkbox"/>	World Heritage values (sections 12 and 15A)
<input type="checkbox"/>	National Heritage places (sections 15B and 15C)
<input type="checkbox"/>	Wetlands of international importance (sections 16 and 17B)
<input type="checkbox"/>	Listed threatened species and communities (sections 18 and 18A)
<input type="checkbox"/>	Listed migratory species (sections 20 and 20A)
<input type="checkbox"/>	Protection of the environment from nuclear actions (sections 21 and 22A)
<input type="checkbox"/>	Commonwealth marine environment (sections 23 and 24A)
<input type="checkbox"/>	Great Barrier Reef Marine Park (sections 24B and 24C)
<input type="checkbox"/>	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
<input type="checkbox"/>	Protection of the environment from Commonwealth actions (section 28)
<input type="checkbox"/>	Commonwealth Heritage places overseas (sections 27B and 27C)

6 Environmental record of the responsible party

	Yes	No
<p>6.1 Does the party taking the action have a satisfactory record of responsible environmental management?</p> <p>Provide details</p> <p>Indicoal regards sound environmental management and protection as an integral part of its business and of playing its part in the community, and is committed to excellence in this area of activity.</p> <p>Indicoal has a number of operations outside of Australia. These operations are conducted in an environmentally responsible manner.</p> <p>Indicoal aims to minimise environmental impacts at every stage of work, from planning, exploration, development, mining, production and through to decommissioning. Prior to the commencement of the project, an environmental management system, procedures and standards will be implemented to ensure:</p> <ul style="list-style-type: none"> • High operating standards in all aspects of activities to minimise environmental impact and prevent environmental harm. • Communication and consultation with all stakeholders. • Employee awareness of sound environmental practice as part of day-to-day activities. • Continuous improvement through measurement of environmental performance. • Regular audits and review of policies, systems and procedures. • Compliance with applicable legislation. <p>Key elements of the environmental management systems are:</p> <ul style="list-style-type: none"> • Commitment. • Planning, this includes assessing risks and preparing of a risk-based environmental management plan and emergency response plan. • Implementation, this includes assigning responsibilities to roles, implementing the plans and communicating requirements. • Checking and corrective action. • Management review. • Monitoring. 	✓	
<p>6.2 Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources?</p> <p>If yes, provide details</p>		✓
<p>6.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework?</p> <p>If yes, provide details of environmental policy and planning framework</p>	N/A	

6.4	<p>Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act?</p> <p>Provide name of proposal and EPBC reference number (if known)</p>		✓
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7 Information sources and attachments

(For the information provided above)

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7.2 Reliability and date of information

The information presented here is the most recent available for the project area and based on a desktop review undertaken in 2012. These sources include:

- DSEWPac EPBC Act protected matters database
- published scientific literature.

7.3 Attachments

Figure 1: Langloh Coal Project Location

Figure 2: Allotments Subject to this Referral

Figure 3: Proposed Site Layout

Figure 4: Mapped Distribution Of Tasveg Vegetation Communities (Harris And Kitchener 2005) - DRA

Figure 5: Natural Values Atlas (NVA) Flora and Fauna Records – Threatened Species (DRA 5 km)

Figure 6: Registered Aboriginal Heritage Sites Within 10 km Of The Study Area

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	Figure 1: Project Location Figure2: Allotments Subject to this Referral Figure3: Proposed Mine Layout and Mine Plan Figure4: Mapped Distribution of TASVEG Vegetation Communities Figure 5: Natural Values Atlas Flora and Fauna Records – Threatened Species (DRA 5 km)
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)		
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)		
	copies of any flora and fauna investigations and surveys (section 3)		
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)		
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

8 Contacts, signatures and declarations

Project title:

8.1 Person proposing to take action

Name Hari Kiran Vadlamani
Title *Diveeta*
Organisation Indicoal Mining Australia Pty Ltd
ACN / ABN (if applicable) 64 145 103 868
Postal address 15 Lovegrove Close
Mount Claremont, WA 6010
Telephone +65 65497116
Email kiran@advaita.sg

Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.

I understand that giving false or misleading information is a serious offence.

I agree to be the proponent for this action.

I acknowledge that I may be liable for fees related to my proposed action following the introduction of cost recovery under the EPBC Act.



Signature

Date *26/02/13*

8.2 Person preparing the referral information (if different from 8.1)

Name	Rebecca Powlett
Title	Senior Environmental Planner
Organisation	Golder Associates Pty Ltd
ACN / ABN (if applicable)	64 006 107 857
Postal address	PO Box 6079 Hawthorn, Vic 3122
Telephone	08 8213 2158
Email	rpowlett@golder.com.au
Declaration	I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct. I understand that giving false or misleading information is a serious offence.
Signature	
Date	1 March 2013

REFERRAL CHECKLIST

HAVE YOU:

- ✓ Completed all required sections of the referral form?
- ✓ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ✓ Provided a map showing the location and approximate boundaries of the project area?
- ✓ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ✓ Provided complete contact details and signed the form?
- ✓ Provided copies of any documents referenced in the referral form?
- ✓ Ensured that all attachments are less than two megabytes (2mb)?
- ✓ Sent the referral to the Department (electronic and hard copy preferred)?

Attachments

Figures:

Figure1: Langloh Coal Project Location

Figure 2: Allotments Subject to this Referral

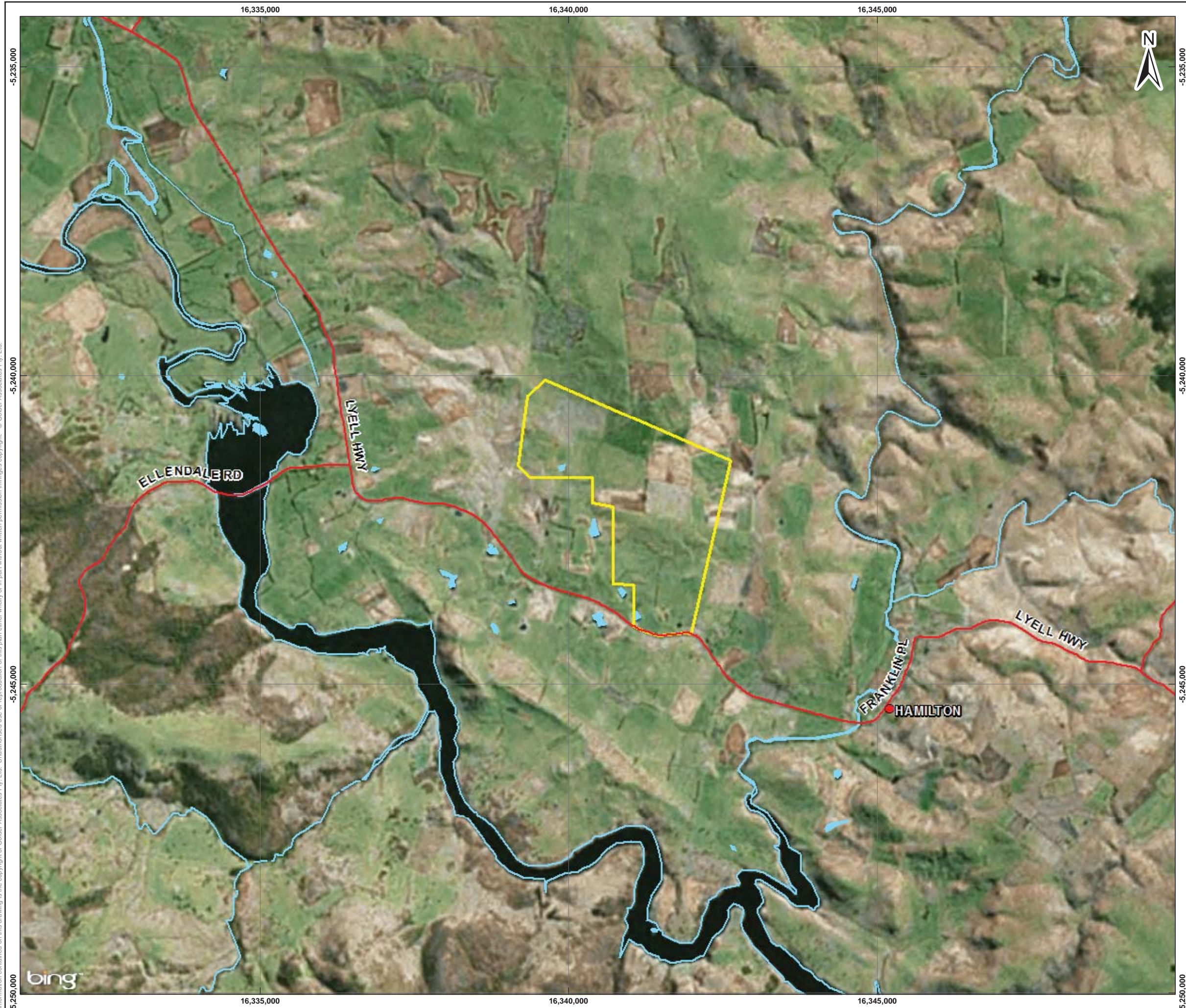
Figure 3: Proposed Site Layout

Figure 4: Mapped Distribution Of Tasveg Vegetation Communities (Harris And Kitchener 2005) - DRA

Figure 5: Natural Values Atlas (NVA) Flora and Fauna Records – Threatened Species (DRA 5 km)

Figure 6: Registered Aboriginal Heritage Sites Within 10 km Of The Study Area

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EPBC REFERRAL LANGLOH COAL PROJECT HAMILTON, TASMANIA

INDICOAL MINING AUSTRALIA PTY LTD

LANGLOH COAL PROJECT LOCATION



LEGEND

- Approximate Site Boundary
- Major Road
- Watercourse
- Waterbody
- Township

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Watercourse, township and road data sourced from
MapInfo StreetPro.

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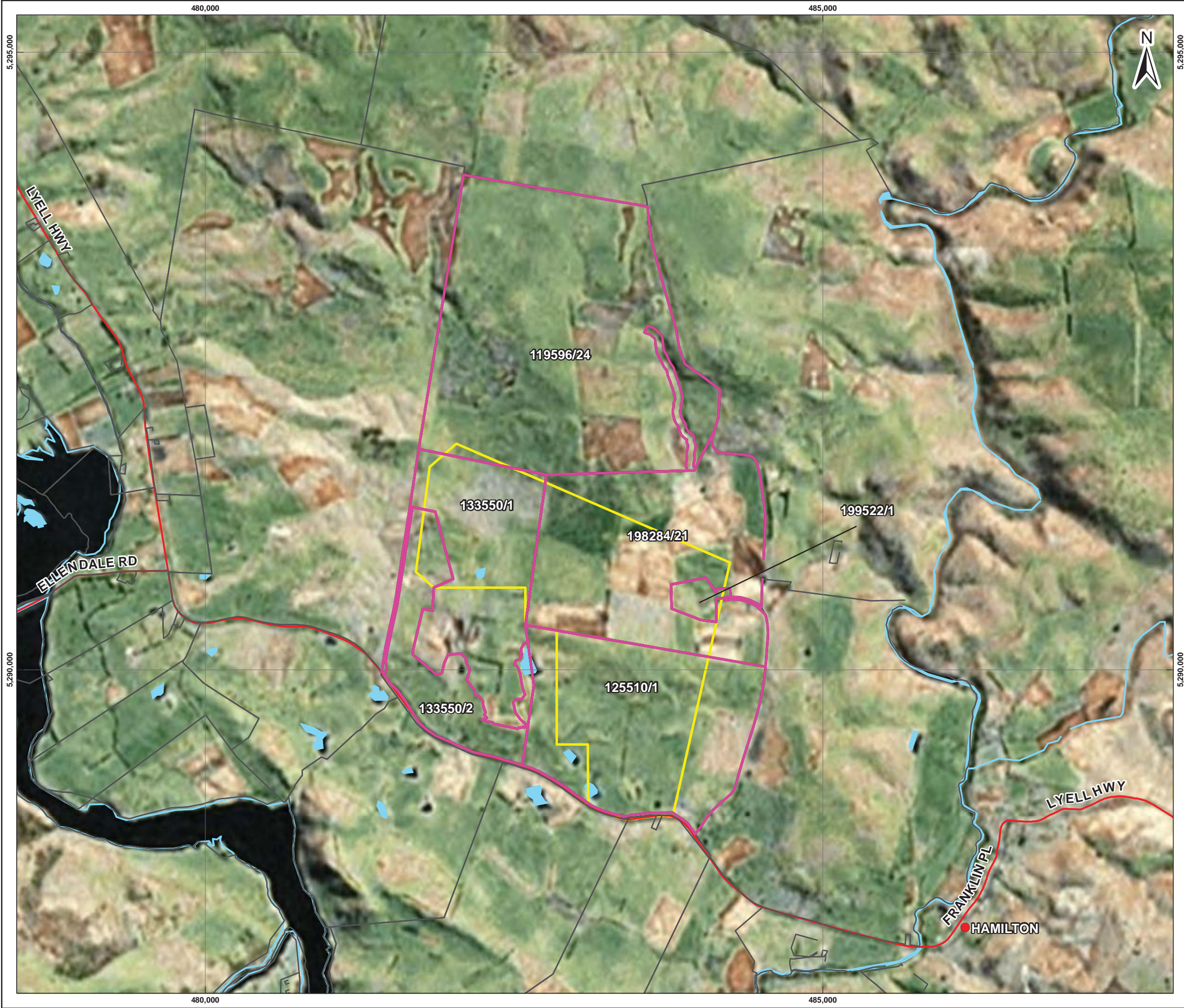
DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 127613050
DATE: 01 MAR 2013
DRAWN: KB
CHECKED: RP

FIGURE 1



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EPBC REFERRAL
LANGLOH COAL PROJECT
HAMILTON, TASMANIA

INDICOAL MINING AUSTRALIA PTY LTD

ALLOTMENTS SUBJECT
TO THIS REFERRAL



LEGEND

- Approximate Site Boundary
- Allotment Subject To Referral
- Allotment Not Subject To Referral
- Watercourse
- Waterbody
- Township
- Major Road

NOTES

Plan Number: 199522
Lot Number: 1

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Watercourse, township and road data sourced from MapInfo
StreetPro.

0 100 200 400 600 800 1,000 metres

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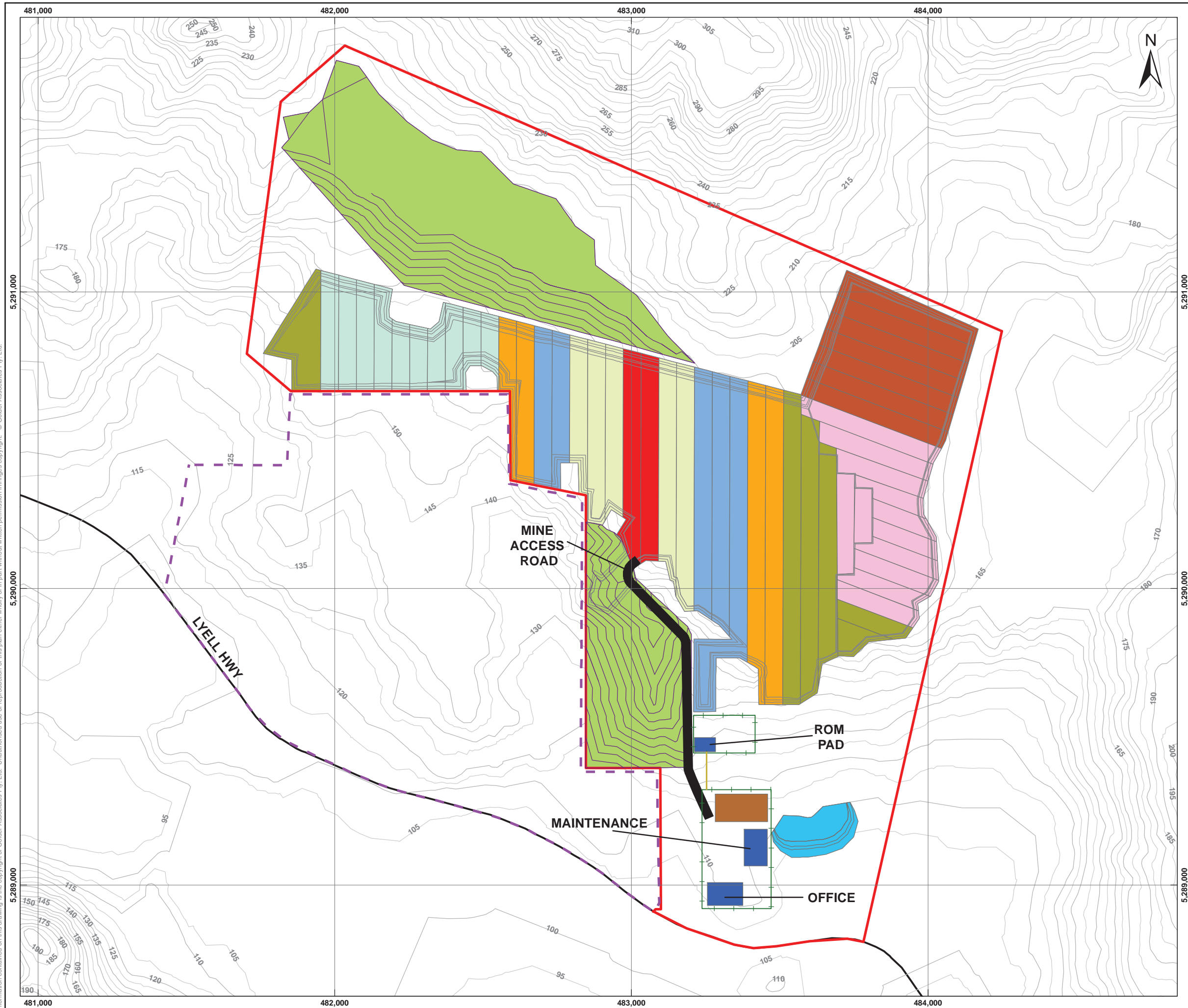
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PROJECT: 127613050
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FIGURE 2



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EPBC REFERRAL LANGLOSH COAL PROJECT HAMILTON, TASMANIA

INDICOAL MINING AUSTRALIA PTY LTD

PROPOSED SITE LAYOUT



LEGEND

- Proposed Site Boundary
 - Lease 1679 - Kimbolton Mine
 - Site Infrastructure
 - Conveyor
 - Product Stockpile
 - Conceptual Dam
 - Fence
 - Contour (m AHD)
 - Waste Rock Stockpile
 - Major Road
- Mining Sequence
- Year 1
 - Year 2
 - Year 3
 - Year 4
 - Year 5
 - Year 6
 - Year 7
 - Year 8

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Township and road data sourced from MapInfo Street Pro.

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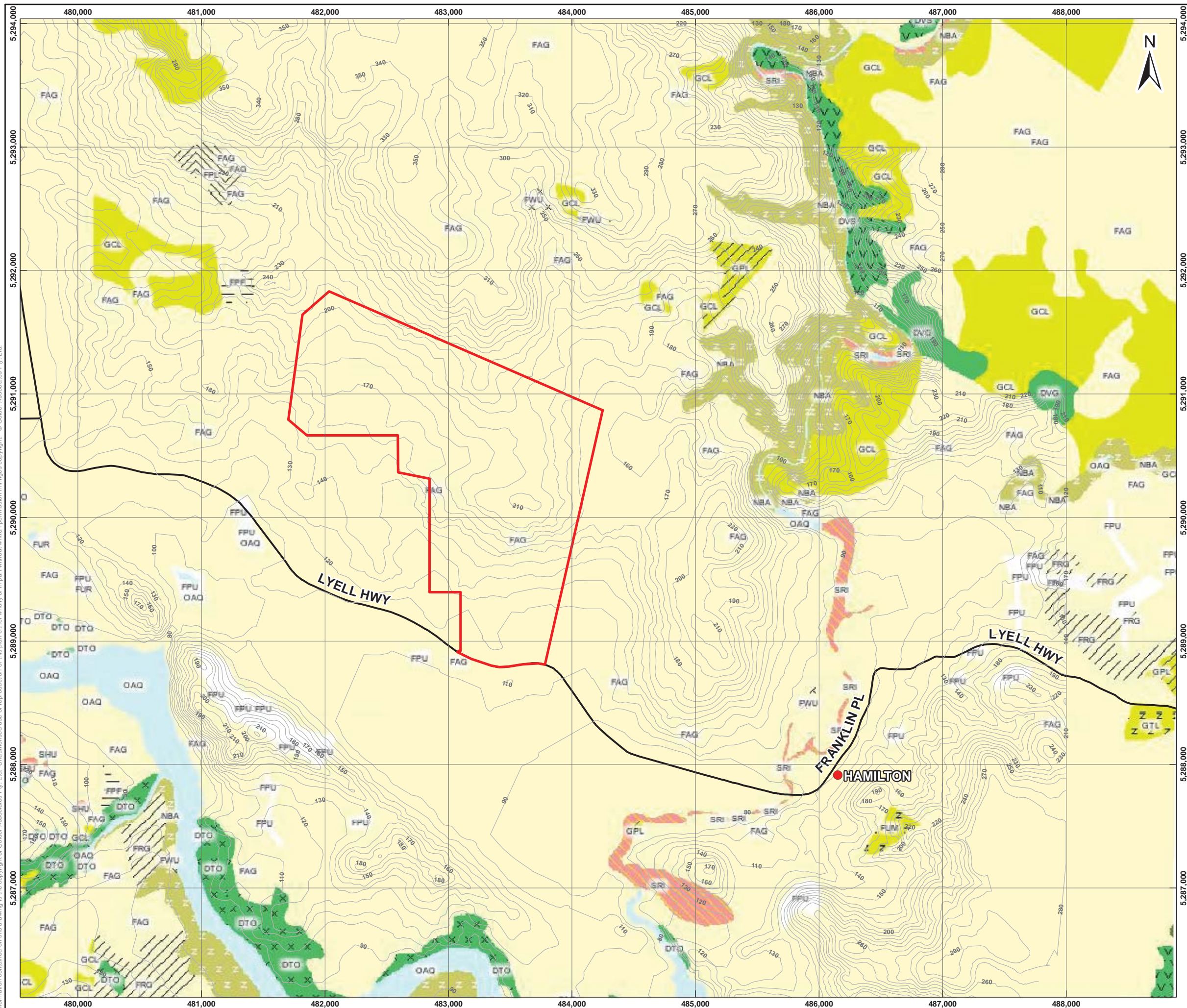
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FIGURE 3



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EPBC REFERRAL
LANGLOH COAL PROJECT
HAMILTON, TASMANIA
INDICOAL MINING AUSTRALIA PTY LTD

MAPPED DISTRIBUTION OF TASVEG VEGETATION COMMUNITIES (HARRIS AND KITCHENER 2005) - DRA



LEGEND

- Proposed Site Boundary
- Contour (m AHD)
- Major Road
- Township

Vegetation Community Key

- | | |
|---|--|
| DVG | E. viminalis grassy forest and woodland |
| DTO | E. tenuiramis forest and woodland on sediments |
| DVS | E. viminalis shrubby/heathy woodland |
| NBA | Bursaria–Acacia woodland and scrub |
| SHU | Inland heathland (undifferentiated) |
| SRI | Riparian scrub |
| GCL | Lowland grassland complex |
| GPL | Lowland Poa labillardierei grassland |
| GTL | Lowland Themeda triandra grassland |
| FAG | Agricultural land |
| FPU | Pteridium esculentum fernland |
| FRG | Regenerating cleared land |
| FPL | Plantations for silviculture |
| FWU | Weed infestation |
| FUM | Extra-urban miscellaneous |
| FUR | Urban areas |
| QAQ | Water |

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Base image sourced from LISTmap, Department of Primary Industries and Water, Tasmanian Government, sourced Aug 2012.

Township data sourced from MapInfo StreetPro.

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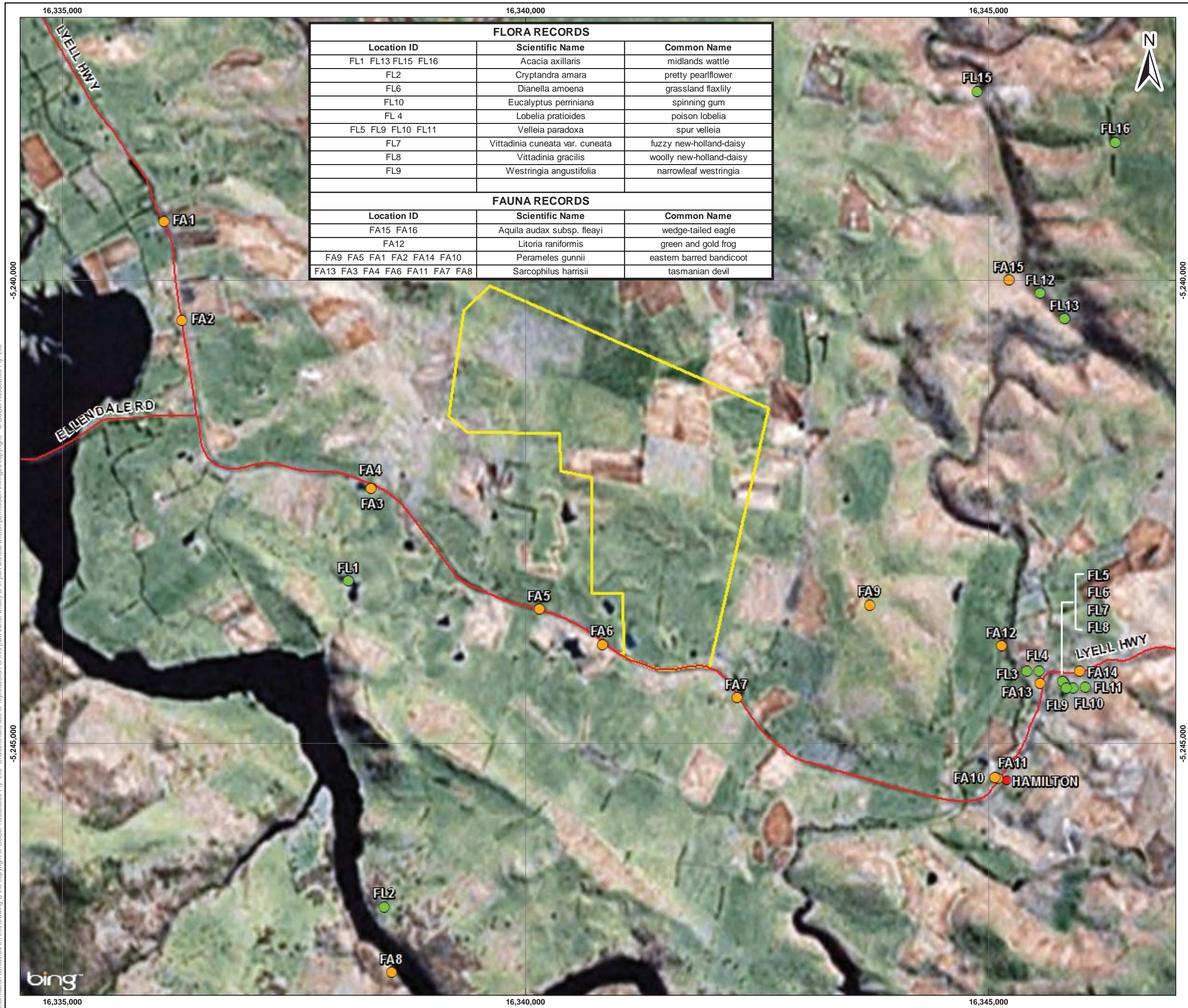
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FIGURE 4



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EPBC REFERRAL
LANGLOH COAL PROJECT
HAMILTON, TASMANIA

INDICOAL MINING AUSTRALIA PTY LTD

NATURAL VALUES ATLAS
(NVA) FLORA AND FAUNA
RECORDS - THREATENED
SPECIES (DRA 5KM)



LEGEND

- Proposed Site Boundary
- Flora
- Fauna
- Township
- Major Road

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SCALE (at A3) 1:40,000

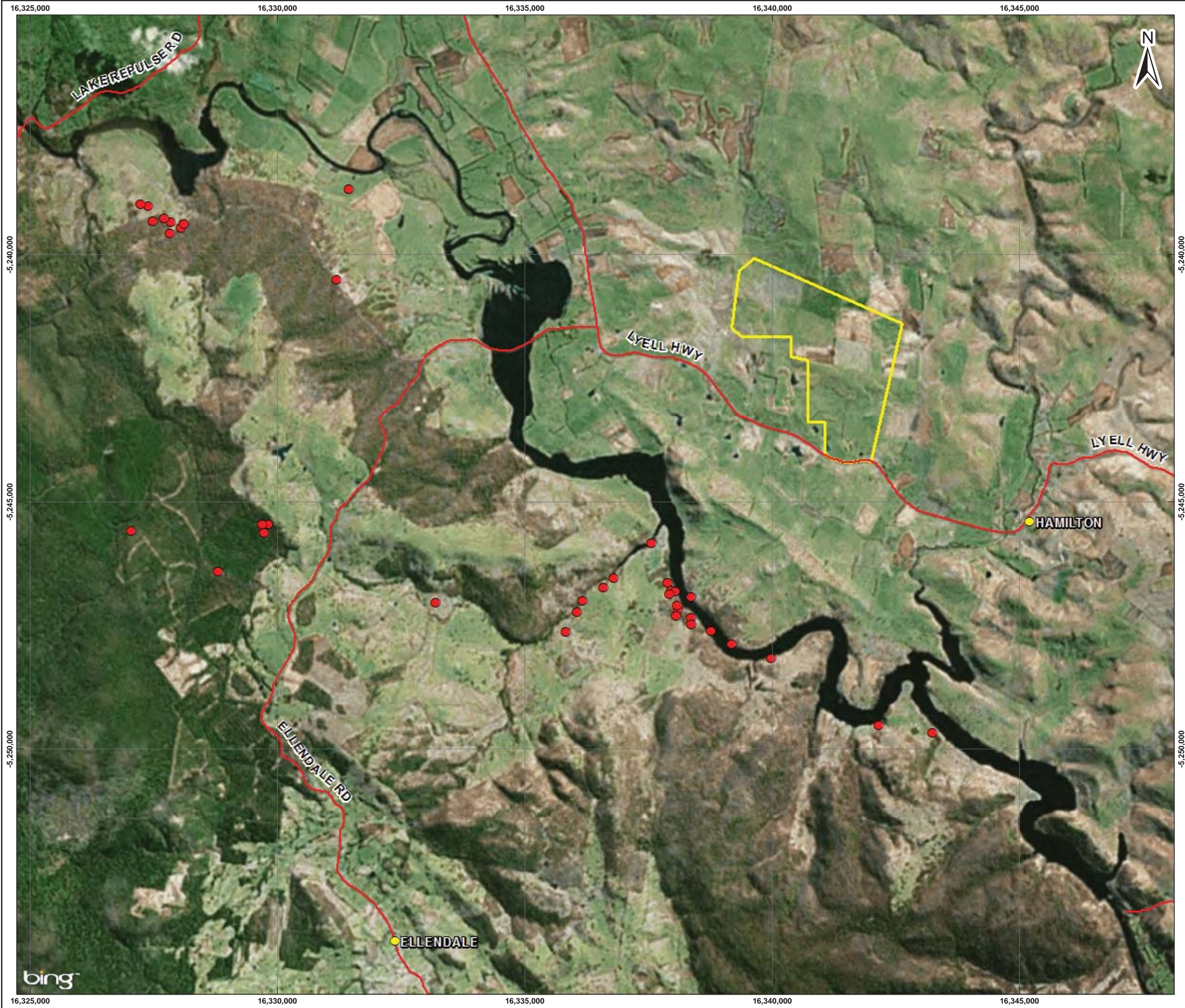
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PROJECT: 127613050
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FIGURE 5



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EPBC REFERRAL
LANGLOH COAL PROJECT
HAMILTON, TASMANIA

INDICOAL MINING AUSTRALIA PTY LTD

REGISTERED ABORIGINAL HERITAGE SITES WITHIN 10 KM OF THE STUDY AREA



LEGEND

- Proposed Site Boundary
- Archaeological Sites
- Township
- Major Road

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0 500 1,000 2,000 3,000 4,000 metres

SCALE (at A3) 1:75,000

DATUM GDA 94, PROJECTION MGA Zone 55

PROJECT: 127613050
DATE: 01 MAR 2013
DRAWN: KB
CHECKED: RB

FIGURE 6

