Styx Coal

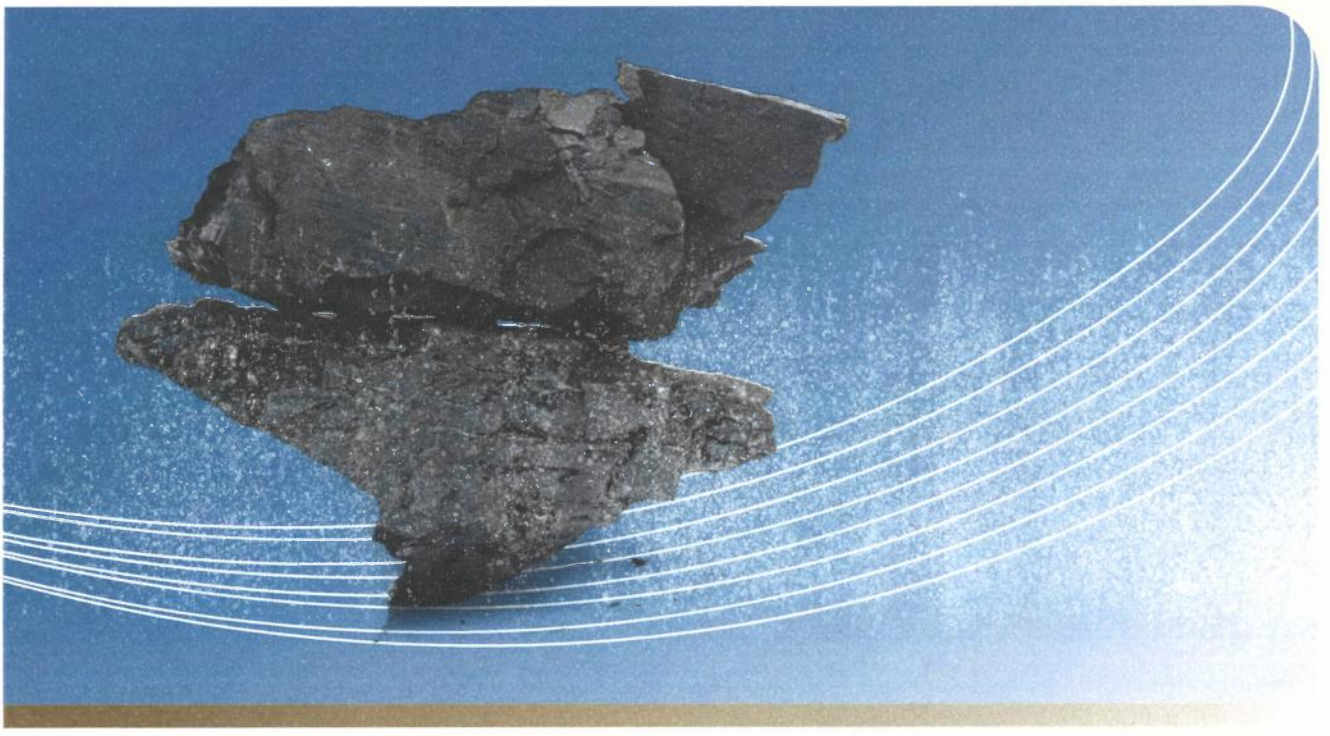
FairwayCoal

Styx Coal & Fairway Coal

Styx Coal Project

EPBC Referral

December 2016



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Referral of proposed action

Proposed action title: *Styx Coal Project*

1 Summary of proposed action

1.1 Short description

Styx Coal Proprietary Limited (Styx Coal) and Fairway Coal Proprietary Limited (Fairway Coal) (the Proponent), both wholly owned subsidiaries of Mineralogy Proprietary Limited, propose to develop the Styx Coal Project (the Project) located 130 km northwest of Rockhampton in the Styx Coal Basin in Central Queensland (see **Figure 1**). The proposed action (referred to as the Project) will be generally located within Mining Lease Application (MLA) 80178, which is adjacent to Mineral Development Licence (MDL) 468 and Exploration Permit for Coal (EPC) 1029, both of which are held by the Proponent.

The Project will initially involve the mining of an approximately 2 million tonnes per annum (Mtpa) with options of increasing to 5 or 10 Mtpa of high grade thermal coal (HGTC) and/or semi-soft coking coal (SSCC). Development of the Project is expected to commence in 2018 and extend for approximately 20 – 25 years until the current reserve is depleted.

The Project consists of two open cut pit operations that will be mined using a truck and shovel methodology. The proposed infrastructure layout is shown at **Figure 2**. The run-of-mine (ROM) coal will commence at 2 Mtpa with options to ramp up to approximately 5 Mtpa during Stage 1 (Year 1-2), where coal will be crushed and screened to HGTC with an estimated 95% yield. Stage 2 of the Project (Year 2-20) will include further processing of the coal within a coal handling and preparation plant (CHPP) which will be located in the Mine Industrial Area (MIA) to produce SSCC, with an estimated 80% yield. During Stage 2 of operation, production could potentially increase to a combined 10 Mtpa of HGTC and SSCC.

A new train loadout facility (TLF) will be developed to connect into the existing North Coast Rail Line. The TLF will require all new infrastructure and connect to the existing North Coast Rail network which will allow transport of the product coal to the established coal loading infrastructure at the Dalrymple Bay Coal Terminal (DBCT). There also exists the option to utilise southern coal terminals in Gladstone.

The Project is generally located within the Livingstone Shire Council Local Government Area (LGA). TLF Option 5 is located nearby to Wumalgi within the Isaac Regional Council LGA. The nearest major regional centre is Rockhampton, located approximately 130 km to the south of the Project. Apart from the TLF, the Project is located on the Mamelon property, described as real property Lot 11 on MC23, Lot 10 on MC493 and Lot 9 on MC496.

A detailed description of the Project is provided in the Styx Coal Project Initial Advice Statement (IAS) at **Attachment A**.

1.2 Latitude and longitude

The Project is located within the referral study area described in **Table 1** and as shown in **Figure 1.**

Table 1 – Coordinates of the referral study area

Point	Longitude GDA 94	Latitude GDA 94	Easting MGA55	Northing MGA55	Longitude DMS	Latitude DMS
A	149.5063	-22.479	757,880.72	7,511,998.13	149°30'22.32"	-22°28'44.24"
B	149.8	-22.4742	788,131.64	7,511,988.84	149°48'0.07"	-22°28'27.1"
C	149.8063	-22.7764	788,148.32	7,478,494.50	149°48'22.79"	-22°46'34.65"
D	149.5119	-22.7813	757,897.39	7,478,503.79	149°30'42.98"	-22°46'52.51"

1.3 Locality and property description

The Project is located in the Brigalow Belt Bioregion of Central Queensland and the Capricorn Coast region. The nearest residential township is Ogmore, located approximately 4 km to the north of the site. The nearest major regional centre is Rockhampton, located approximately 130 km to the south of the Project. The Project area is dominated by rural grazing properties.

The Project area is dissected by the Bruce Highway and adjacent to the North Coast Rail Line. A rural road network services the grazing properties within the area.

Tooloombah Creek Conservation Park is located approximately 2 km to the west of the Project site.

Deep Creek and Tooloombah Creek are prominent riparian features within the area. Both creeks flow into the Styx River, which is located to the downstream and to the north of the Project. The Great Barrier Reef World Heritage Area (GBRWHA) extends upstream of the Styx River to approximately 8 km north of the Project area (see **Figure 3**). The Broad Sound wetlands are also located approximately 8 km to the north of the Project.

1.4 Size of the development footprint or work area (hectares)

The MLA that underlies the mining area is approximately 2,276 ha. The disturbance footprint for the mine, MIA and associated mine infrastructure within the MLA will be approximately 1,174 ha. The disturbance footprint for the TLF will be approximately 35 ha; however, the final disturbance area will be dependent on the selected TLF option.

It is anticipated that approximately 55 ha of mapped remnant vegetation will be cleared for the overall Project, including the mine operations and the maximum clearance area of the five TLF options.

The referral study area is shown at **Figure 1** and the proposed layout and disturbance area including the five TLF options is shown at **Figure 2.**

1.5 Street address of the site

11 Saint Lawrence Road, Ogmore, Livingstone Shire.

1.6 Lot description

The MLA area incorporates three separate freehold allotments; a road reserve, easement and single parcel of leasehold land. The TLF and ancillary rail infrastructure will be located on either freehold or leasehold allotments outside of the MLA area. Land tenure within the MLA area and the five TLF options are provided in **Table 2** and shown at **Figure 4**.

Table 2 – Tenure of referral area

Lot on Plan	Land Type	Associated Project Infrastructure
10 MC493	Freehold	Mining, overburden dumps, ROM stockpile, haul roads. Possible MIA, CHPP and TLF
11 MC23	Freehold	Mining
9 MC496	Freehold	Mining
1RL3001	Lands Lease	Mining
AMC529	Easement	Nil
AAP16117	Road Reserve	Mining
119 CP900367	Freehold	Option 1 - TLF and ancillary infrastructure
4973 SP275117	Leasehold	Option 2 – TLF and ancillary infrastructure
9 MC230;	Freehold	Option 3 – TLF and ancillary infrastructure
193 on MC550 Reserve	Lands Lease	Option 4 – TLF and ancillary infrastructure
561 SP130109 and 3 RP602328	Lands Lease Freehold	Option 5 – TLF and ancillary infrastructure

1.7 Local Government Area and Council contact (if known)

The Project is generally located within the Livingstone Shire Council LGA with the exception of TLF Option 5, which is located within the Isaac Regional Council LGA.

The relevant council contacts are:

The CEO
Livingston Shire Council
25 Normanby Street
Yeppoon, QLD 4703

The CEO
Isaac Regional Council
36 Macartney Street
St Lawrence, QLD 4707

1.8 Time frame

The Proponent aims to have all the relevant approvals including the EIS process in 2017 with construction to begin in Q1 2018. Subject to Fairway Coal obtaining the relevant approvals, mine operations are planned to commence in Q2 2018 and to continue for approximately 20 to 25 years.

1.9	**Alternatives to proposed action**		No.
		✓	Yes, please also complete section 2.2
1.10	**Alternative time frames, locations or activities**		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 and 5 (where relevant).
1.11	**Commonwealth, State or Territory assessment**		No
		✓	Yes, please also complete section 2.5
1.12	**Component of larger action**	✓	No
			Yes, please also complete section 2.7
1.13	**Related actions/proposals**	✓	No
			Yes, provide details:
1.14	**Australian Government funding**	✓	No
			Yes, please also complete section 2.8
1.15	**Great Barrier Reef Marine Park**	✓	No
			Yes, please also complete section 3.1 (h), 3.2 (e)

2 Detailed description of proposed action

2.1 Description of proposed action

The Proponent is currently completing feasibility studies for the Project, which include detailed evaluation of the most cost effective and efficient designs for the mining operation. The studies include evaluation of the mining operations, pit and out of pit dump designs and the MIA and TLF general arrangements. The conceptual plan for the Project is shown at **Figure 2**.

The Proponent has identified a potential resource of multiple coal seams within the proposed MLA, confirming the presence of high volatile, low sulphur, thermal coal and SSCC. To access these resources, two open cut pit excavations will be developed with an anticipated rate of extraction of between 2 Mtpa to 5 Mtpa, with options of increasing up to 10 Mtpa of ROM coal. The ROM coal will be crushed and processed at an expected yield of 95% for the HGTC and 80% for the SSCC. Both products are for export to international markets.

The Proponent has identified total of 203 million tonnes Joint Ore Review Committee (JORC) compliant inferred/indicated resources within the MLA area. Ongoing and additional infill drilling is progressing within the MLA area where, over time, the Proponent expects to define sufficient coal quality data to categorise additional mineable areas to enable the life of the mine to be extended.

The disturbance footprint for the mine, MIA and associated infrastructure within the MLA will be approximately 1,174 ha. The disturbance footprint for the TLF will be approximately 35 ha; however, the final disturbance area will be dependent on the selected TLF option.

The majority of the workforce for the Project are anticipated to come from the local area as a drive-in drive out workforce. Where personnel require local accommodation, this will be provided at the townships of Marlborough, Ogmore, St Lawrence and Clairview.

The key components of the Project include:

- Two open cut pits;
- Internal haul roads and access roads;
- MIA including the ROM and product coal stockpiles, administration offices, workshops and fuelling facilities;
- Raw and potable water supply from local aquifers;
- Power requirements sourced from onsite generators located within the MIA; and
- Offsite haul road and TLF.

The key components are discussed in further detail below.

Mining

The mine will utilise an open cut mining technique where strips or blocks will be mined in succession, thus allowing waste from one strip or block to be dumped into a previously mined out area. Waste from an initial strip or box cut will be dumped into a predetermined out of pit dump. Stripped topsoil and box cut spoil will be stockpiled for later use in mine rehabilitation.

Two open cut pits will be developed – one either side of the Bruce Highway (south and north pits). After topsoil has been removed from a strip, the overburden waste material, where necessary, will be drilled and blasted and subsequently removed by a combination of truck/shovel, truck/excavator or dozer push methods in order to expose the top coal seam. Dozer ripping will be considered if the waste thickness is too thin for blasting.

The coal will be mined using front end loaders or small hydraulic excavators or surface miners and placed into rear dump trucks or B Double side tippers for haulage. The haul trucks will transport the coal along the strip or terrace, up a coal ramp out of the pit, then along a haul road to a ROM stockpile area located adjacent to the MIA. The coal will be dumped onto a stockpile or, if certain coal quality requirements are met, may be dumped directly into the ROM hopper where it will be crushed and conveyed to the CHPP feed stockpile ready for processing.

Mining the top seam will continue along the length of a strip or terrace until the end of the strip or terrace is reached. Once the top seam has been mined out, successively deeper coal seams will be mined in a similar fashion through to the designated basal seam, whereupon the strip will become available as a dumping destination.

Coal Handling and Preparation Plant (CHPP)

During Stage 1 of operations (Year 1-2), ROM coal will be hauled to a ROM pad where it will be crushed and screened for haulage to the TLF area as HGTC.

The Project will require a CHPP to process ROM coal delivered from the open cut excavations to achieve SSCC grade. The CHPP will be designed to accommodate 5 Mtpa ROM coal, commencing in Stage 2 of operations (Year 2). Coal will either be direct fed into the dump hopper and CHPP or transported from the ROM stockpile to the CHPP via an overland conveying system. The CHPP will remove (wash) the unwanted sediment and rock from the coal to improve the quality of coal exported to market.

The various coal seams will have dedicated raw coal stockpiles immediately preceding the CHPP. A surge bin before the CHPP will provide an opportunity for some blending, if required. It is expected that the CHPP will operate at a feed rate of around 800 tonnes per hour, operating for an average of 7,000 hours per annum. The product coal (approximately 4 Mtpa based on 80% yield and 5 Mtpa ROM coal) will be stockpiled for haulage and transfer to the TLF.

Coarse rejects and dewatered fine rejects will be transferred via haul truck and strategically mixed with overburden material in the out of pit dump or placed directly into the pit. This strategy removes the requirement of a tailings dam or out of pit co-disposal dump.

Waste water resultant from the rejects dewatering process will be drained to evaporation ponds. These evaporation ponds will be regularly emptied of solids to be mixed in-pit with overburden waste material. A network of mine water dams will treat sediment laden runoff prior to discharge to receiving waters, accept pit dewatered volumes for reuse within the CHPP and allow for discharges licenced within the Environmental Authority (EA) for the Project.

Haulage and Site Access

ROM coal will be conveyed or hauled from the south and north pits to raw coal stockpiles located at the MIA, or dumped directly into the ROM hopper at the MIA for crushing and screening. Coal being transferred from the south pit will need to cross the Bruce Highway to access the MIA. Two options exist to cross the Bruce Highway:

- A dedicated level crossing at the northern extent of the pit shells; and/or
- Conveyor crossing under the Deep Creek bridge crossing.

The locations of the level crossing and conveyor crossing of the Bruce Highway is shown in **Figure 2**. Assessment of the level crossing and conveyor under-bridge options is underway as part of feasibility studies. Whilst the under-bridge conveyor option avoids traffic management issues associated with the level crossing option, it presents management issues with preventing coal fines and dust entering Deep Creek as well as being located outside the MLA area.

Once processed, the product coal will be transferred from the product coal stockpile, located adjacent to the CHPP, by haul truck along a dedicated haul route to a separate product stockpile at the TLF. Product coal will then be loaded onto awaiting wagons from the product coal stockpile by front end loaders.

Rail Facilities

There are five options being investigated as part of the feasibility studies for the Project. Three of the TLF options are located directly east of the mine site and the remaining two TLF options are located nearby to the Kooltandra and Wulmagi rail sidings. All TLF options are located adjacent to the North Coast Rail Line to enable direct connection into the network.

The rail infrastructure area will consist of a rail spur and passing loop, stockpile area, sediment dam and haul road loop. The rail spur will be approximately 1,500 m in length, diverging off the main North Coast Rail Line. Access to and from the rail spur will be controlled by a dedicated Queensland Rail signalling system.

The coal stockpile area will be approximately 1 ha, capable of holding up to 100,000 t of product coal which is roughly the size of one cargo dedicated for shipping at DBCT. The stockpile area will be drained to a sediment pond, located down gradient of the site. A pump stand will be located next to the sediment pond to provide water for dust suppression of haul roads and stockpile areas.

A haul road leading from the MIA will terminate at the coal stockpile area with a truck turning loop.

The train configuration to be used for these operations will be supplied from the rail operator. These trains have a payload of 3,100 t with an axle load of 20 t and a length of 670 m.

Port Facilities

The DBCT at the Port of Hay Point is the preferred port facility to be utilised by the Project. The DBCT is located approximately 175 km north of the Project. DBCT is operated by North Queensland Bulk Ports Corporation and has a capacity to export 85 Mtpa. The terminal is a common user facility and is being upgraded to 153 Mtpa.

Currently there is surplus capacity with current users at DBCT. Pacific National have progressed negotiations on behalf of the Proponent to secure spare port capacity with existing customers. It is proposed to utilise the spare capacity and build a 20,000 t stockpile cargo over a three-day period using the 3,100 t trains for the Project. Therefore, it is projected that the DBCT will have capacity to export the Project's product coal.

As the port facilities are already operational and the proposed volume of coal from the proposed action is within the existing approvals for both port options no additional infrastructure will be required or approvals sought.

Additional Infrastructure

The proposed action will require various additional infrastructure to support the mine operation including water management system infrastructure (raw water storage, environment dams, pit sumps and pit dewatering dams, and a water treatment plant), internal power distribution network and workers' accommodation (located off-site in Marlborough and transported by bus). There will be a centralised MIA dedicated for offices, main stores, maintenance and overhaul of mobile fleet. This area will support the two adjacent open cut pits and the CHPP. The MIA will be located east of the open cut and adjacent to the North Coast Rail Line on the east side of the Mamelon property.

2.2 Feasible alternatives to taking the proposed action

There are no feasible alternatives for the Project other than the 'do nothing' case.

The Project will provide significant economic benefits to the local, region and Queensland state. The Project will employ a workforce of approximately 200 during the construction phase and will require a workforce of approximately 250 up to potentially 500 during the operational phase, the majority of which will come from the local region. The Australian Government will receive significant direct and indirect tax revenue from the Project, and the Queensland Government will obtain substantial royalties from the mine once operational.

Not proceeding with the Project would mean that the substantial socio-economic benefits would not be realised.

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

The Proponent is undertaking a feasibility study for the Project, which includes an assessment of alternatives for:

- The location of the TLF;
- Port locations; and
- Access to the south and north pits.

The options under consideration in the feasibility studies are summarised below.

Train Loadout Facility

The Proponent is considering five locations for the TLF (refer **Figure 2**) as part of the feasibility studies that are underway.

The TLF options are under investigation are located at:

- Lot 119 on CP900367
- Lot 4973 on SP275117;
- Lot 9 on MC230;
- Lot 193 on MC550; and
- Lot 561 on SP130109.

Port Locations

The Proponent is considering a number of potential port locations on the Queensland coast as part of the feasibility studies that are being undertaken for the Project. The port facility options under consideration as part of the feasibility studies are the RG Tanna Coal Terminal and the Wiggins Island Coal Export Terminal (WICET).

Access to South and North Pits

Assessment of the level crossing and under-bridge conveyor options is underway as part of feasibility studies.

2.4 Context, including any relevant planning framework and state/local government requirements

The Project will be subject to the MLA process pursuant to the *Mineral Resources Act 1989* (MR Act). Environmental approvals will be required pursuant to the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and the Queensland State's *Environmental Protection Act 1994* (EP Act). Once environmental approvals are obtained via the EPBC Act and EP Act an EA will be granted, authorising the Project's activities.

Depending on what TLF option is selected, the Proponent will either apply for a MLA for Infrastructure under the MR Act, or seek approvals under the *Sustainable Planning Act 2009* (SP Act).

The following Commonwealth and State legislation will be considered during the EIS assessment.

Commonwealth Legislation

- EPBC Act;
- *Native Title Act 1993;*
- *Aboriginal and Torres Straight Islander Heritage Protection Act 1984;* and
- *National Greenhouse Energy Reporting Act 2007.*

Queensland State Legislation

- EP Act;
- MR Act;
- *Mineral and Energy Resources (Common Provisions) Act 2014;*
- *Nature Conservation Act 1992* (NC Act);
- SP Act;
- *Water Act 2000;*
- *Regional Planning Interests Act 2015;*
- *Aboriginal Cultural Heritage Act 2003;*
- *Land Title Act 1994;*
- *Transport Infrastructure Act 1994;*
- *Forestry Act 1959;*
- *Fisheries Act 1994;* and
- *Vegetation Management Act 1999* (VM Act).

State and Local Government Planning Framework

In accordance with Sections 69 to 72 of the EP Act, the Proponent is preparing a voluntary EIS to be assessed by the Queensland Government Department of Environment and Heritage Protection (EHP). Chapter 3 of the EP Act details the EIS process through which the Project will be assessed.

The voluntary EIS will be developed to address the requirements provided in the Terms of Reference (ToR) for the Project. The ToR will be developed based on the requirements of relevant State government agencies, submissions of stakeholders, the community and on the outcomes of the IAS (refer to **Attachment A**).

Chapter 6 of the MR Act provides the legislative framework for exploration, development and mining tenure in Queensland. Compliance with the MR Act is administered by the Department of Natural Resources and Mines (DNRM). Granting of a Mining Lease (ML), in conjunction with the issuing of an EA from EHP under the EP Act entitles the holder to mine specified minerals and carry out activities that are associated with, or support the mining activity.

Various local government and regional organisation planning documents are likely to be applicable to the Project, these will be identified and addressed during the EIS process.

Environmentally Relevant Activities (ERAs)

The ERAs prescribed under the *Environmental Protection Regulation 2008* which are proposed to be undertaken as part of the Project are:

- ERA 8 –Chemical storage;
- ERA 13 – Mining black coal;
- ERA 31 – Mineral processing;
- ERA 33 – Crushing, milling, grinding or screening; and
- ERA 63 – Sewage treatment.

Socio-economic Context

The Project will require the hiring of 200 employees during the construction phase and 250 employees during operations with an option to increase to 500 employees should operations increase to maximum throughput tonnages. The labour resources will be sourced from within the general local area (Marlborough, St Lawrence, Sarina, Mackay and Rockhampton) as a drive-in drive-out workforce. A small portion of the workforce are anticipated to come from outside the broader central Queensland coalfields area on a fly-in fly-out basis.

In the last two years, Queensland has seen over a quarter of the mining workforce lose jobs (over 20,000 jobs) (Swann, Ogge and Campbell, 2016). The Project will positively contribute to the local and regional areas with increased direct and indirect employment opportunities through ongoing services and support requirements.

The Proponent will assess social impacts associated with the Project as part of the EIS process and appropriate management strategies will be developed.

2.5 Environmental impact assessments under Commonwealth, State or Territory legislation

The Project will be subjected to assessment by the Queensland State Government under the EP Act. The Project will require an EIS level of assessment and the Proponent has submitted an application for approval to prepare a voluntary EIS under Section 71 of the EP Act. The Project is expected to be assessed at the Queensland State Government level under Chapter 3, Part 1 of the EP Act.

It is expected that the Project will also trigger the requirement for environmental assessment under the EPBC Act. The EPBC Act trigger is the potential for significant impact to Matters of National Environmental Significance (MNES). Controlling provisions anticipated for the Project are:

- Listed threatened species and ecological communities (sections 18 and 18A);
- Migratory species protected under international agreements (sections 20 and 20A); and
- A water resource, in relation to a large coal mining development (sections 24D and 24E).

The Proponent is referring the proposed action to the Department of the Environment and Energy (DotEE), with the recommendation that the Project is declared a controlled action, due to uncertainty regarding potential impact on the MNES described above. The Proponent is seeking to have the Project assessed under the EPBC Act via the Bilateral Agreement between the Commonwealth and Queensland governments. This will enable the Project to be assessed under the accredited Queensland EIS process managed by EHP pursuant to Section 87 (1)(a) of the EPBC Act.

2.6 Public consultation (including with Indigenous stakeholders)

The Proponent will undertake a public notification program as part of the EIS process for the Project. The Proponent will prepare a community engagement plan prior to the commencement of construction activities to ensure stakeholders have access to relevant information, are able to voice their concerns and suggestions in relation to the Project and its impacts, and participate as valued partners in the development and operation of the mine. Affected and interested stakeholders to be included in consultation include:

- Property owners within and immediately adjacent to the mine footprint;
- Mining and petroleum tenement holders within and immediately adjacent to the Project;
- Local and regional service providers;
- Rockhampton Regional Council, Isaac Regional Council and Livingstone Shire Council;
- State government agencies;

- Commonwealth government agencies;
- Community interest groups/non-government organisations;
- Emergency service groups; and
- Aboriginal parties (Darumbal Enterprises Pty Ltd and Barada Kabalbara Yetimarala People – Area A).

2.7 A staged development or component of a larger action

The Project is not part of a staged development or a component of a larger action.

2.8 Related actions

There are no related actions to the Project.

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

3.1 (a)World Heritage Properties

Description

No world heritage properties occur within or immediately adjacent to the Project area.

The nearest boundary of the GBRWHA is located approximately 8 km from the Project boundary.

Nature and extent of likely impact

The Project is not anticipated to impact a World Heritage Property.

3.1 (b)National Heritage Places

Description

No World Heritage properties occur within or immediately adjacent to the Project area.

The GBRWHA listed as a National Heritage Place and the nearest boundary is located approximately 8 km to the north of the Project area.

Nature and extent of likely impact

The Project is not anticipated to impact a National Heritage Place.

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

Description

There are no Wetland of International Importance (Ramsar wetlands) present within the Project area or within a 20 km radius of the designated Project area. The closest Ramsar wetland is the Shoalwater and Corio Bays Area wetland that is located approximately 65 km to the north east of the Project area.

Nature and extent of likely impact

The Project is not anticipated to impact on any Wetlands of International Importance (declared Ramsar wetlands).

3.1 (d)Listed threatened species and ecological communities

The MLA encompasses a total area of 2,276 ha. The majority of this area has been cleared of native vegetation to establish a range of exotic and native pastures to support the cattle breeding and fattening enterprises on the Mamelon property. Native vegetation has been substantially cleared with approximately 1,812 ha mapped as non-remnant under current vegetation mapping (QH 2015). This equates to approximately 80% of the MLA being mapped as non-remnant.

The five TLF options also occur on disturbed land associated with beef cattle grazing and/or rail and road infrastructure.

The majority of the Project area occurs in the Marlborough Plains subregion (BRB14) of the Brigalow Belt bioregion. To a lesser extent and towards the southern part of the MLA, the Project falls in the Nebo-Connors Ranges (BRB12) subregions. The subregion is dominated by alluvial plains and colluvial slopes, usually supporting woodlands characterised by Poplar Gum (*Eucalyptus platyphylla*), Ghost Gum (*Corymbia dallachiana*), Forest Red Gum and tea-tree (*Melaleuca* spp.) with low rises supporting Narrow-Leaved Ironbark (*E. crebra*).

The Marlborough Plains subregion is a characteristically undulating to hilly subregion with a complex geology. The majority of the Project area is relatively flat floodplain sloping gently from south to north towards the coast. The far southern extent of the MLA includes a raised hilly area. The MLA is bounded by two creeks: Tooloombah Creek lies adjacent to the northwest boundary; and Deep Creek traverses the eastern edge of the MLA. Two minor drainage lines emptying into Deep Creek lie within the boundary of the Project area. The watercourses within the Project area drain to the north, joining the Styx River and then into Broadsound.

A desktop assessment of the ecological values of the Project area and surrounds was undertaken including relevant ecological databases such as:

- Commonwealth EPBC Act Protected Matters Search Tool (Department of the Environment and Energy (DotEE)) (to confirm potential presence of listed species and communities) (20 km radius surrounding Project area) accessed 16 November 2016 (see **Attachment B**);
- EHP's WildNet (Wildlife Online) database and Species Profile Search results (20 km radius surrounding Survey area) accessed 5 December 2016; and
- Atlas of Living Australia database.

Seasonal field surveys have been carried out across the broader Project area and the information from the site assessments has been used to inform the referral.

Threatened Ecological Communities

Based on the EPBC Act Protected Matters Search conducted for the Project, five Threatened Ecological Communities (TECs) listed under the EPBC Act are predicted to occur within the area. TECs predicted to occur are shown in **Table 3**.

Table 3: Threatened Ecological Communities

Threatened community	Status	Type of presence	Potential occurrence in the Project area or surrounds
Brigalow *(Acacia harpophylla* dominant and codominant*)*	Endangered	Community known to occur within area	**Likely.** REs equivalent to this TEC known to occur in the Project area and surrounds.
Broad leaf tea-tree (*Melaleuca viridiflora*) woodlands in high rainfall coastal north Queensland	Endangered	Community may occur within area	**Does not occur.** Community occurs only in the Wet Tropics and Central Mackay Coast bioregions (TSSC 2012).
Coolibah - Black Box Woodlands of the Darling Riverine Plains and the Brigalow Belt South Bioregions	Endangered	Community may occur within area	**Does not occur.** Community occurs only in the Darling River Plains and Brigalow Belt South bioregion (TSSC 2011).
Natural Grasslands of the Queensland Central Highlands and the northern Fitzroy Basin	Endangered	Community may occur within area	**Unlikely.** Community does not occur in the Marlborough Plains subregion (TSSC 2009) which dominates the Project area. Southern portion of the Project area occurs in Nebo-Connors Range subregion although habitat supports eucalypt woodlands in this area.
Semi-evergreen vine thickets of the Brigalow Belt (North and South) and Nandewar Bioregions	Endangered	Community likely to occur within area	**Potential.** REs equivalent to this TEC not known to occur within the Project area but known from surrounding area associated with alluvial terraces along the Styx River (Yeats 2012).

Current Queensland Herbarium vegetation mapping (Version 9.0; 2015) indicates there is one Regional Ecosystem (RE) present within the Project area (RE 11.4.9) that may be considered as a Brigalow TEC. This RE is mapped as occurring in two discrete patches in the northern portion of the Project area **(Figure 5)**. No other TECs are represented by REs indicated in the DNRM mapping.

Vegetation communities surveyed within the wider area included eucalypt open-forest and woodlands, Brigalow woodland, semi-evergreen vine thicket, patches of regrowth and cleared sites associated with pastoral land use. Vegetation communities confirmed on or adjacent to the Project area include Poplar Box/Narrow-leaved Ironbark woodland (RE 11.4.2), Forest Red Gum/Weeping Paperbark (*Melaleuca leucadendra*) open forest (RE 11.3.25) and Pink Bloodwood (*Corymbia intermedia*)/Narrow-leaved Ironbark woodland with a patchy Broad-leaved Paperbark (*M. viridiflora*) understorey layer (RE 11.5.8). The vegetation communities currently ground-truthed on the site are broadly consistent with current vegetation mapping. The presence of TEC associated REs will be further verified through additional field assessment.

Threatened Flora

Database searches identified 12 conservation significant flora species listed as Endangered or Vulnerable under the EPBC Act as potentially occurring in the Project area. The WildNet database search identified 10 threatened flora species recorded previously within a 20 km radius of the Project area. The Protected Matters Online Search Tool predicted the occurrence in the wider area of a further two conservation significant flora species listed under the EPBC Act.

An assessment of the species and their potential to occur within the Project area based on habitat preferences is discussed in **Table 4.** No threatened flora species are considered as 'likely' to occur in the Project area.

Table 4: Conservation status listed species that are known or are highly likely to occur

Common Name	Species	EPBC Act Status	Likelihood of occurrence*
	Capparis thozetiana	V	**Unlikely**. This community is recognised as a distinct regional ecosystem (RE 11.11.7 *E. fibrosa* subsp. (Glen Geddes), *C. xanthope* woodland on serpentinite) which has not been recorded within the Project area
Glen Geddes bloodwood	*Corymbia xanthope*	V	**Unlikely**. Habitat for this species not represented in the Project area.
Marlborough Blue	*Cycas ophiolitica*	E	**Unlikely**. Serpentine derived soils not represented in the Project area.
Three-veined Hakea	*Hakea trineura*	V	**Unlikely**. Habitat for this species not represented in the Project area.
	Marsdenia brevifolia	V	**Unlikely**. Rainforest habitat for this species not represented in the Project area.
	Neoroepera buxifolia	V	**Unlikely**. Habitat for this species not represented in the Project area.
	Olearia macdonnellensis	V	**Unlikely**. Habitat for this species not represented in the Project area.
	Omphalea celata	V	**Unlikely**. Habitat for this species not represented in the Project area.
Lesser Swamp-orchid	*Phaius australis*	E	**Unlikely**. Serpentine derived soils not represented in the Project area.
	Pimelea leptospermoides	V	**Unlikely**. Serpentine derived soils not represented in the Project area.
	Pultenaea setulosa	V	**Unlikely**. Serpentine derived soils not represented in the Project area.
Quassia	*Samadera bidwillii*	V	**Potential.** Habitat for this species represented in the Project area; however, no individuals were recorded during field surveys.

Notes: *Likelihood of occurrence: **known** = species recorded within the Project area; **likely** = species identified in wider area by database searches, having geographical range overlapping the wider study area and suitable habitat is mapped within the Project area; **potential** = species identified by database searches as having geographical range overlapping the wider study area and sub-optimal habitat or preferred habitat features are mapped within the Project area; **unlikely** = species identified by database searches as having geographical range overlapping the wider study area and suitable habitat is not mapped within the proposed Project area.

Targeted floristic surveys were conducted in March 2011 using methods defined by the Queensland Herbarium (EHP) for mapping REs and vegetation communities (Neldner et al., 2005). Flora surveys were conducted in areas of remnant vegetation including mapped REs, high-value regrowth and non-remnant vegetation. A total of 215 plant species were recorded from all sites surveyed across the wider area. These include 171 native and 44 exotic or weed species. The field assessment did not record any threatened flora species. A copy of the flora survey report is at **Attachment C**.

Threatened Fauna Species

The MNES Protected Matters Report identified 24 threatened terrestrial species with potential to occur in the Project area and surrounds. The threatened species from the EPBC Act Protected Matters Report are presented in **Table 5**.

Table 5: Threatened species

Common Name	Scientific Name	EPBC Act Status	Potential to Occur	Likelihood of Occurrence*
Birds				
Curlew Sandpiper	*Calidris ferruginea*	Critically Endangered	Species or species habitat may occur within area	**Unlikely.** Limited habitat available in the Project area.
Great Knot	*Calidris tenuirostris*	Critically Endangered	Species or species habitat likely to occur within area	**Unlikely.** Limited habitat available in the Project area.
Capricorn Yellow Chat	*Epthianura crocea macgregori*	Critically Endangered	Species or species habitat may occur within area	**Unlikely.** Not known to occur in the area. Suitable habitat unlikely to exist in the Project area.
Red Goshawk	*Erythrotriorchis radiates*	Vulnerable	Species or species habitat known to occur within area	**Likely.** The Project area and surrounds provides potential habitat. This species may utilise the area for foraging. Potential nesting habitat occurs along creek lines adjacent to the Project.
White-bellied Storm-Petrel	*Fregetta grallaria grallaria*	Vulnerable	Species or species habitat likely to occur within area	**Unlikely.** Pelagic bird species. Will not occur within the Project area.

Common Name	Scientific Name	EPBC Act Status	Potential to Occur	Likelihood of Occurrence*
Squatter Pigeon	*Geophaps scripta scripta*	Vulnerable	Species or species habitat likely to occur within area	**Known.** Several individuals were recorded within and adjacent to the Project area during the 2011/2012 surveys and extensive habitat exists within the area associated with grassy woodlands.
Western Alaskan Bar-tailed Godwit	*Limosa lapponica bauera*	Vulnerable	Species or species habitat may occur within area	**Known.** Recorded in the wider area during the 2011/2012 surveys. Very limited habitat exists within the Project area
Northern Siberian Bar-tailed Godwit	*Limosa lapponica menzbieri*	Critically Endangered	Species or species habitat may occur within area	**Unlikely.** This subspecies occurs in north-west Western Australia.
Star Finch (eastern and southern)	*Neochmia ruficauda ruficauda*	Endangered	Species or species habitat may occur within area	**Unlikely.** Habitat in the Project area is generally unsuitable. Although once widespread this species is now very rare.
Eastern Curlew	*Numenius madagascariensis*	Critically Endangered	Species or species habitat may occur within area	**Known.** Recorded in the wider area during the 2011/2012 surveys. Very limited habitat exists within the Project area
Southern Black-throated Finch	*Poephila cincta cincta*	Endangered	Species or species habitat may occur within area	**Unlikely.** No suitable habitat exists in the Project area.
Kermadec Petrel	*Pterodroma neglecta neglecta*	Vulnerable	Foraging, feeding or related behaviour may occur within area	**Unlikely.** Pelagic bird species. Will not occur within the Project area.
Australian Painted Snipe	*Rostratula australis*	Endangered	Species or species habitat may occur within area	**Potential.** May be occasional visitor to dams in the Project area. Very uncommon species that occurs erratically over eastern and northern Australia.
Mammals				
Large-eared Pied Bat	*Chalinolobus dwyeri*	Vulnerable	Species or species habitat likely to occur within area	**Potential.** There is potential suitable foraging habitat within the wider Project area. Roost habitat may occur in the southernmost portion of the site
Northern Quoll	*Dasyurus hallucatus*	Endangered	Species or species habitat likely to occur within area	**Potential.** Potential denning, shelter and foraging habitat associated with woodland and open forest occurs in the wider area, mainly to the south and west.
Ghost Bat	*Macroderma gigas*	Vulnerable	Species or species habitat likely to occur within area	**Likely.** No records from wider area but potential foraging habitat within the Project area. Known maternity colony from Mt Etna caves area to the south of the Project area.
Greater Glider	*Petauroides Volans*	Vulnerable	Species or species habitat may occur within area	**Likely.** Habitat generally variable but some potential habitat available.
Koala	*Phascolarctos cinereus*	Vulnerable	Species or species habitat may occur within area	**Known.** Recorded within the Project area during the 2011 and 2012 surveys. Suitable habitat exists within areas of remnant Eucalyptus woodlands within the area.
Grey-headed Flying-fox	*Pteropus poliocephalus*	Vulnerable	Foraging, feeding or related behaviour may occur within area	**Likely.** Potential for the species to forage in the Project area during eucalypt flowering periods. Although there is no known roost habitat in or near the Project area, the site may provide some seasonal flowering resources for foraging.
Water Mouse	*Xeromys myoides*	Vulnerable	Species or species habitat likely to occur within area	**Unlikely.** No suitable habitat exists in the Project area.
Reptiles				
Collared Delma	*Delma torquate*	Vulnerable	Species or species habitat may occur within area	**Potential.** Limited potential suitable habitat occurs in the Project area.

Common Name	Scientific Name	EPBC Act Status	Potential to Occur	Likelihood of Occurrence*
Ornamental Snake	*Denisonia maculate*	Vulnerable	Species or species habitat may occur within area	**Known.** One individual was recorded during the 2011 survey within Brigalow woodland and adjacent to a cleared gilgai area. Potential habitat occurs within the Project area associated with Brigalow and Belah woodlands and gilgai areas.
Yakka Skink	*Egernia rugose*	Vulnerable	Species or species habitat may occur within area	**Potential.** Potentially suitable habitat in the Project area associated with open forest and woodlands with suitable shelter and cover.
Dunmall's Snake	*Furina dunmalli*	Vulnerable	Species or species habitat may occur within area	**Unlikely.** Species not known to occur in the broader area.

Although 61 marine and oceanic species are identified in the EPBC Act Protected Matters Report the Project area does not encompass habitat for these species and have therefore not been included in this referral.

Terrestrial, avian and aquatic fauna within the Project area are expected to be typical of the region. Amongst the fauna previously recorded within a 20 km radius of the Project area on EHP's WildNet database are six species of conservation significance. This includes four fauna species listed as threatened under the EPBC Act:

- Red Goshawk (*Erythrotriorchis radiatus*) - Endangered;
- Squatter Pigeon (southern race) (*Geophaps scripta*) - Vulnerable;
- Black-breasted Button-Quail (*Turnix melanogaster*) - Vulnerable; and
- Koala (*Phascolarctos cinereus*) - Vulnerable.

With extensive clearing of native vegetation in the Styx Basin and elsewhere in the northern Brigalow Belt, remaining areas of woodland and forest habitat within the Project area may be of considerable importance to native fauna at the local level. Of particular importance in this regard are areas of riparian woodland/forest linking more extensive areas of remnant vegetation to the south-west and east of the Styx River catchment including riparian vegetation along Deep Creek and Tooloombah Creek which lie adjacent to the Project.

Seasonal field assessments for fauna were carried out in March 2011, September 2011 and February 2012. Field surveys included systematic surveys at sites broadly representative of mapped remnant vegetation within the study area, supplementary surveys at a number of additional sites, systematic assessment of habitat values at a range of sites across the study area and road transects targeting nocturnal fauna. Systematic surveys comprised bird census, small mammal trapping, remote camera trapping, diurnal habitat searches, spotlighting and microbat echolocation call recording. Supplementary surveys comprised a subset of these techniques including bird census, diurnal habitat searches, spotlighting with call playback (targeting owl species) and microbat echolocation call recording. A copy of the terrestrial fauna survey report is at **Attachment D**.

Field-based investigations were conducted at various locations within and surrounding the Project area during March 2011, September 2012 and February 2012. There were 236 fauna species recorded during these surveys (Meyer, 2012).

This includes five species that are listed as threatened under the EPBC Act including:

- Squatter Pigeon (southern race) – Vulnerable;
- Eastern Curlew (*Numenius madagascariensis*) - Critically Endangered and Migratory;
- Bar-tailed Godwit (*Limosda lapponica bauera*) - Vulnerable and Migratory;
- Ornamental Snake (*Denisonia maculata*) - Vulnerable; and
- Koala - Vulnerable.

Of the species recorded, Squatter Pigeon was recorded within the current Project area boundary. Ornamental Snake was recorded approximately 4 km north of the Project area.

Habitat information provided by the 2011 and 2012 fauna assessments indicated the wider area surrounding the Project may provide suitable habitat for the following conservation significant species: Yellow Chat (*Epthianura crocea*), Australian Painted Snipe (*Rostratula australis*), Yakka Skink (*Egernia rugosa*), Black-breasted Button-quail, Northern Quoll (*Dasyurus hallucatus*), Red Goshawk (*Erythrotriorchis radiatus*) and Collared Delma (*Delma torquata*).

Threatened Aquatic Species

The Protected Matters search did not identify any EPBC Act listed threatened species as potentially occurring within a 20 km radius of the Project site.

Baseline assessments for aquatic fauna, flora and physical habitat within and adjacent to the EPC were undertaken in June 2011. The aquatic surveys were undertaken in freshwater streams of representative stream orders and representative off channel wetland habitat. A copy of the aquatic survey report is at **Attachment E**.

A total of 736 fish from 27 taxa were collected across all of the survey sites. No EPBC or NC Act listed taxa were found during the survey.

The highest fish diversity for individual sites was recorded from the Styx River and at Tooloombah Creek to the north and west of the main Project area respectively with 15 species recorded at both locations. The lowest diversity sites were the Deep Creek site to the west of the main Project area. The highest diversity of fish overall was recorded from the Styx River where 22 species were caught over the three sites. This was well ahead of Tooloombah Creek (15 species from two sites), Granite Creek (12 species from a single site), and Deep Creek (11 species from three sites).

The fish taxa recorded during the June 2011 sampling round are generally typical of what would be expected to occur in a Central Queensland coastal catchment with some possible exceptions. The main exceptions are that an unidentified eel was recorded at several sites. The other notable exception is that no exotic species were recorded. There taxa recorded were a mix of freshwater and estuarine / marine associated species. The two main commercially targeted fish taxa found in the survey area are the Sea Mullet (*Mugil cephalus*) and the Barramundi (*Lates calcarifer*).

Nature and extent of likely impact

Total proposed clearing of remnant vegetation is anticipated to be 55 ha under the current mine plan (refer to **Table 6** and **Figure 5**). The remainder of the disturbance area is not mapped as remnant vegetation. Under current vegetation mapping this is predicted to include a small area (< 1 ha) of an RE that may be equivalent to a Brigalow TEC – RE 11.4.9.

Table 6: Vegetation communities to be cleared

RE	VM Act status	EP Act status	Description	Potential disturbance area
11.3.25	Least Concern	Of Concern	*E. camaldulensis* or *E. tereticornis* open forest to woodland. Occurs on fringing levees and banks of major rivers and drainage lines of alluvial plains throughout the region. Soils are very deep, alluvial, grey and brown cracking clays.	<1 ha
11.4.2	Of Concern	Of Concern	*Eucalyptus* spp. and/or *Corymbia* spp. grassy or shrubby woodland on Cainozoic clay plains	52 ha
11.4.9	Endangered	Endangered	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	<1 ha

Vegetation clearing has the potential to impact habitat for some of the listed species should they indeed be present in the area. Further ecological studies, which will be conducted as part of the EIS, will ground truth these areas. These studies will provide further information on the extent of likely impacts to species listed likely to occur or may occur under the EPBC Act.

In general, the potential impacts to fauna in the area include:

- Direct loss of habitat through vegetation clearing and physical alteration; and
- Alteration of habitat through a contaminant discharge or emissions.

The potential impacts to flora in the area are:

- Loss of vegetation due to clearing for surface infrastructure;
- Soil erosion and sedimentation;
- Introduction of weeds through clearing, vehicle movement on/off lease and changes in land use;
- Changes to water catchment geomorphology and/or alteration of stream flows; and
- Use of water for dust suppression altering flora growth.

Establishment of the proposed mine will result in the loss and fragmentation of habitat known or likely to be utilised by conservation significant fauna within the mine disturbance area.

Clearing of riparian vegetation within the proposed disturbance area may also further inhibit fauna movement between areas of remnant vegetation in the west and east of the Project area, although connectivity between these areas of remnant

vegetation is currently very limited. It is proposed, that riparian vegetation will be avoided, where possible, to minimise impacts on fauna movement corridors.

The establishment and spread of pest plant and animal species may impact on native fauna species and their habitat. Clearing of vegetation may result in fauna mortality, particularly less mobile or slow-moving species. It is proposed that a spotter-catcher will be present during clearing activities to minimise fauna impacts.

Increased accidental mortality on roads and disturbances created by increased noise and light pollution may also occur; however, it is expected that these impacts will be minimal.

Contaminated runoff may result in the bioaccumulation of toxins which may affect the health of higher order predators feeding on fish and other aquatic fauna within Deep Creek and the Styx River. In addition, contamination of sediments could pose a threat to migratory shorebirds feeding on tidal flats near the mouth of the Styx River. Treatment of water discharged from the mine site will be undertaken to minimise water quality impacts.

It is expected that potential impacts on fauna species can be appropriately managed through implementation of fauna control strategies to avoid or minimise environmental harm.

No threatened aquatic species are considered likely to occur within or in the vicinity of the Project site, and consequently the Project is not predicted to impact any threatened aquatic species.

3.1 (e)Listed migratory species

Description

The Protected Matters Report for the Project identified that 13 Threatened Migratory Species may occur within the Project area (refer to **Table 7**). The WildNet database search identified an additional two bird species listed as Migratory as having previously been recorded from the wider area: Rufous Fantail (*Rhipidura rufifrons*) and Spectacled Monarch (*Symposiarchus trivirgatus*).

The Project does not occur within or adjacent to any Ramsar sites, but is approximately 8 km from where the Styx River enters the boundary of Broad Sound, an internationally important area for migratory shorebirds including Red-necked Stint (*Calidris ruficollis*), Sharp-tailed Sandpiper (*Calidris acuminate*) and Marsh Sandpiper (*Tringa stagnatilis*). Broad Sound is also of national significance for the Great Knot (*Calidris tenuirostris*), supporting one of the largest aggregations of this species on Australia's east coast (Jaensch, 2009).

Six bird species listed as Migratory under the EPBC Act (also Special Least Concern under the NC Act) were recorded during the 2011 and 2012 site surveys, including:

- Glossy Ibis (*Plegadis falcinellus*);
- Rufous Fantail;
- Whimbrel (*Numenius phaeopus*);
- Fork-tailed Swift (*Apus pacificus*);
- Caspian Tern (*Sterna caspia*);
- Oriental Cuckoo (*Cuculus saturatus*); and
- Rainbow Bee-eater (*Merops ornatus*).

Table 7: Migratory species

Common Name	Scientific Name	Potential to Occur	Likelihood of Occurrence
Migratory Marine Bird			
Fork-tailed Swift	*Apus pacificus*	Species or species habitat likely to occur within area	**Known.** Wide ranging aerial species, which migrates from the northern hemisphere to Australia. May be aerial visitor to the Project area in the summer months as suitable foraging habitat occurs over much of the Project area. This species was recorded during the 2011 surveys.
Little Tern	*Sternula albifrons*	Species or species habitat may occur within area	**Unlikely.** Occurs in coastal areas including coastal lagoons. The Project area is not suitable habitat.
Migratory Terrestrial Species			
Oriental Cuckoo, Horsfield's Cuckoo	*Cuculus optatus*	Species or species habitat may occur within area	**Potential**. Potential habitat occurs in the Project area associated worth woodlands and open forests.
White-throated Needletail	*Hirundapus caudacutus*	Species or species habitat may occur within area	**Likely.** Wide ranging aerial species, which migrates from the northern hemisphere to Australia. May be aerial visitor to the Project area in the summer months as suitable foraging habitat occurs over much of the Project area.
Black-faced Monarch	*Monarcha melanopsis*	Species or species habitat likely to occur within area	**Potential.** There is potential habitat for this species within the wider Project area.
Spectacled Monarch	*Monarcha trivirgatus*	Species or species habitat may occur within area	**Potential.** There is potential habitat for this species within the wider Project area.
Yellow Wagtail	*Motacilla flava*	Species or species habitat may occur within area	**Potential.** Wetland habitat to the north of the Project area present may be suitable for this species.
Satin Flycatcher	*Myiagra cyanoleuca*	Species or species habitat likely to occur within area	**Potential.** This species may utilise the Project area during autumn/spring migrations.
Rufous Fantail	*Rhipidura rufifrons*	Species or species habitat likely to occur within area	**Known.** Recorded within the wider area during the 2011 surveys within Brigalow woodland.
Migratory Wetland Species			
Curlew Sandpiper	*Calidris ferruginea*	Species or species habitat may occur within area	**Unlikely.** Limited habitat available in the Project area.
Great Knot	*Calidris tenuirostris*	Species or species habitat likely to occur within area	**Unlikely.** Limited habitat available in the Project area.
Latham's Snipe, Japanese Snipe	*Gallinago hardwickii*	Species or species habitat may occur within area	**Likely.** Wetland habitat to the north of the Project area may be suitable for this species.
Bar-tailed Godwit	*Limosa lappanoica baueri*	Species or species habitat likely to occur within area	**Unlikely.** Limited habitat available in the Project area.
Eastern Curlew, Far Eastern Curlew	*Numenius madagascariensis*	Species or species habitat may occur within area	**Known.** Recorded from the wider Project area during previous fauna surveys.
Whimbrel	*Numenius phaeopus*	Species or species habitat likely to occur	**Known.** Recorded from the wider Project area during previous fauna surveys.
Common Greenshank	*Tringa nebularia*	Species or species habitat may occur within area	**Potential.** Wetland habitat may be suitable for this species.
Osprey	*Pandion haliaetus*	Species or species habitat likely to occur within area	**Potential.** Suitable habitat may occur along creeklines adjacent to the Project.

Habitat suitable for migratory bird species associated with wetlands is limited in the Project area largely to man-made waterbodies such as farm dams. Aerial species such as Fork-tailed Swift and White-throated Needletail may occur over heavily disturbed areas and will not be impacted by Project activities. The remaining terrestrial Migratory species may occur seasonally in any vegetated habitat present but will prefer habitats with a heavier canopy cover such as along creek lines or Brigalow communities.

Nature and extent of likely impact

Potential impacts to the listed migratory species include:

- Direct loss of habitat through vegetation clearing and physical alteration; and
- Alteration of habitat through a contaminant discharge or emissions.

3.1 (f)Commonwealth marine area

If the action is in the Commonwealth marine area, please 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 present within the Project area or within a 20 km radius of the designated Project area.

Nature and extent of likely impact

The Project is not anticipated to impact on any Commonwealth Marine Areas.

3.1 (g)Commonwealth land

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

Description

No Commonwealth land is present within the Project area or within a 20 km radius of the Project area.

Nature and extent of likely impact

The Project is not anticipated to impact on Commonwealth Land.

3.1 (h)The Great Barrier Reef Marine Park

Description

The Great Barrier Reef Marine Park (GBRMP) is not present within the Project area. The nearest boundary of the GBRMP is located 33 km north of the designated Project area (see **Figure 3**). The GBRWHA is located approximately 8 km from the Project area and is associated with the tidal reach of the Styx River.

Nature and extent of likely impact

The Project is not anticipated to impact the GBRMP.

3.1 (i)A water resource, in relation to coal seam gas development or large coal mining development Description

Surface Water

The Project is located entirely within the Styx River catchment (Queensland river basin 127), a small catchment forming part of the Fitzroy River Natural Resource Management region, which discharges into the Coral Sea adjacent to Rosewood Island. The catchment is formed by the Connors and Broadsound Ranges to the west (Nogoa/Mackenzie system). The catchment is located within the Brigalow Belt bioregion, in the Central Queensland Coast region, and abuts the Broad Sound Fish Habitat Area (see **Figure 6)**, as well as the GBRMP. No water resource plan is in force over the catchment.

Environmental values of the broader area include high integrity estuarine and riparian habitat with relatively few anthropogenic influences. Apart from natural bank erosion associated with tidal movement and recent flooding, the only other disturbances are related to minor clearing of mangroves for boat access, vehicle access to parts of the saltmarsh

and minor road and walkway construction associated with the Newport Conservation Area. The large tidal movement means that the Styx River estuary is well flushed. This will result in a short residence time of any eroded sediment and contaminants associated with theroposed action within this estuary. Receiving waters in the Styx River are already turbid, but runoff from the Project has the potential to further increase turbidity.

The mine infrastructure is located between two tributaries of the Styx River, namely Deep Creek and Tooloombah Creek. Each of the five TLF site options are located in the vicinity of mapped watercourses and most typically either stream order 2 or 3.

Groundwater

According to the Australian Natural Resources Atlas (ANRA, 2009), the Styx Basin is not covered by any Groundwater Management Unit (GMU), and the area is also characterised as Unmanaged-001 (i.e. not a managed unit) by the National Water Commission (2005). Limited data regarding groundwater resources are available, other than an estimate by CSIRO (2008) of a sustainable groundwater yield of 4 GL/year. However, this is likely to be a very approximate estimate given the scarcity and distribution of data.

The Styx catchment lies outside of any declared sub-artesian and mapped alluvial areas, and does not contain any groundwater monitoring network bores. A search of the DNRM groundwater database was undertaken to identify registered groundwater bores within 100 km of Ogmore. This search located approximately 1,200 bores, 112 of which are within the Styx catchment. Seventeen of the Styx catchment bores are located within the original EPC 1029 which underlies the MLA area.

Coarse mapping of Australia at 1:5,000,000 by the Australian Geological Survey Organisation (1998) identified almost the entire Project to be located within a region described as porous, extensive aquifers of low to moderate productivity. To the west, south and east are fractured or fissured, extensive aquifers of low to moderate productivity. These differentiations are broadly supported by bore records from the DNRM groundwater database.

The groundwater bore records included information on the depth of the aquifers encountered, and the standing water level measured after drilling. While limited data was available to provide a high level of certainty for most areas, the information does indicate that the water table / peizometric head is broadly a subdued reflection of the land surface (topography). Springs or artesian aquifers were not identified in the mapping or groundwater records for the Styx catchment.

The indicative groundwater flow is from south of the MLA area to north, towards the Styx River and into Broad Sound.

The aquifer location and standing water level from the well records were typically:

- Alluvial flood plains - 4 to 10 m depth to the top of the aquifer, with a groundwater head of 2 to 5 m below ground;
- Terraces and lower slopes – 8 to 20 m depth to the top of the aquifer, with a groundwater head of 4 to 20 m below ground; and
- Slopes and hills - 8 to 40 m to the top of the aquifer, with a groundwater head 2 to 15 m below ground.

Generally, groundwater bores within or close to the Project area were drilled in unconfined aquifers, on Quaternary alluvium (sand, mud and gravel commonly with 'melon holes' on higher terraces, and clay, silt, sand and gravel associated with floodplains) (Marlborough Geology, Sheet 8852, 1:100,000 DNRM&W, 2006). A bore located close to the investigation area on the Mamelon property (Bore RN97864) is drilled in the Cretaceous Styx Coal Measures. The borelog describes a sub-artesian fractured rock aquifer located approximately 40 m below ground surface and peizometric head 12 m below ground.

The information suggests that groundwater flow would be moderate to low in the vicinity of the Project area. Aquifer thicknesses were between 1 m and 6 m typically, with slightly thicker aquifers (up to 9 m thick) on terraces and lower slopes.

Nature and extent of likely impact

The extent of water affecting activities and their potential impacts on water resources will depend largely on the scale of the mining operation, mining method, and process water requirements, as well as the climatic and geological setting. Potential impacts on water resources will be comprehensively assessed in the EIS process. Potential impacts to water resources will be identified in accordance with the following guidelines:

- Significant impact guidelines 1.3: Coal seam gas and large coal mining developments – impacts on water resources; and
- Information Guidelines for the Independent Expert Scientific Committee (IESC) advice on coal seam gas and large coal mining development proposals.

Given the nature and location of the Project, preliminary potential impacts to surface water and groundwater are identified below. The potential impacts to surface water resources from the Project include:

- Erosion and sedimentation of waterways;
- Habitat loss;
- Surface water contamination;
- Increased surface water seepage;
- Coal dust emissions and spills during haulage;
- Riparian vegetation clearing and modification;
- Modification to in-stream habitat;
- Fish passage barriers;
- Runoff or chemical spills; and
- Alteration of stream and floodplain hydrology.

Potential impact to surface water resources and the cumulative impacts taking in to consideration other water uses in the area will be further assessed in the EIS.

Open cut mining operations may locally impact on groundwater resources by the lowering of groundwater levels as a result of dewatering operations. Should the Project utilise groundwater resources for water supply, an impact in the form of lowered groundwater levels may occur in the alluvium associated with Tooloombah Creek and/or Deep Creek (depending on the draw location). Direct effects on groundwater dependent ecosystems as a result of mining activities may include:

- Quantity (groundwater levels, pressures and fluxes);
- Quality (concentrations of salts and other toxic water quality constituents);
- Groundwater interactions (interactions between groundwater systems and between groundwater and surface systems); and
- Physical disruption of aquifers (excavation of mining pits and underground workings).

Further investigations are being undertaken to assess the level of impact that may occur.

3.2Nuclear 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 Description of the proposed action area and affected area for the proposed action

3.3 (a)Flora and fauna

Refer to section 3.1 (d).

3.3 (b)Hydrology, including water flows

Refer to section 3.1 (j).

3.3 (c)Soil and vegetation characteristics

Other than small areas associated with the foothills of Mount Bison and Mount Mamelon, the soils overlying the base geology on Quaternary alluvial sediments are predominantly Sodosols, Kandosols and Vertosols (see **Figure 7**). These soils are considered to be imperfectly drained, clay loam to clay, and are associated with floodplains, areas of alluvium near rivers/creeks and flat to very gently undulating topography.

The key soils occurring within the Project area are Sodosols, Vertosols and Kandosols, with the Sodosols being the dominant soils where drilling has occurred, bounded to the north by Vertosols and the south by Kandosols. Similarly, Sodosols, Vertosols and Kandosols are the key soils occurring at the various TLF locations. Broad soil associations across the Project area are described in **Table 8**.

The north and south pit and initial out of pit spoil dump areas contain strongly sodic cracking clays; bleached loamy and clay loamy surface, alkaline sodic duplex soils; and bleached loamy and clay and loamy surface, alkaline sodic duplex soils, while the MIA area also contains bleached loamy and clay loamy surface, alkaline sodic duplex soils and massive fine sandy loams.

Table 8: Soils in the proposed MLA area

Soil landscape	ASC*	Surface area in MLA (ha)	Approx. area to be disturbed		Major soil description
			ha	%	
Blackwater	Ve, So	1132	0	-	Grey, brown and black cracking clays
Hedlow	So	1	0	-	Bleached loamy, clay loamy and silty surface, brown and grey, alkaline sodic duplex soils
Kooltandra	So	10	0	-	Bleached clay loamy and silty surface, brown and grey, alkaline sodic duplex soils
Plainview	So	3809	951	13	Black and grey, strongly sodic cracking clays, bleached loamy and clay loamy surface, brown and grey, alkaline sodic duplex soils
Rosewood	So	977	0	-	Bleached sandy and loamy surface, brown and grey, alkaline sodic duplex soils
Somerby	Ve, So	343	286	4	Black and brown cracking clays, bleached loamy and clay loamy surface, brown and grey, alkaline sodic duplex soils
Styx	Ve	230	59	1	Brown, massive fine sandy loams
Tooloomba	Sp	916	0	-	Bleached sandy and loamy surface, brown and grey, alkaline sodic duplex soils
Torilla	Ka	51	0	-	Red, structured gradational clay loams and uniform clays

*ASC = Australian Soils Classification, Ve = Vertosol, So = Sodosol, Ka = Kandosol

Due to the close proximity of the Project area to the coast, coastal Acid Sulfate Soils (ASS) could potentially occur within the Project area. Ross (2002) undertook intrusive ASS investigations, identifying a high occurrence of ASS on the coastal plain between Tannum Sands and St Lawrence. ASS formation was recorded up to 5 mAHD in the Broadsound coast with minor occurrence of ASS situated in some landforms where the ground surface elevation is greater than 5 m (located at Stanage Bay), in particular beach ridge plains and marine couch plains.

The CSIRO (2013) National ASS Mapping describes the Project area as having a low to extremely low probability of containing ASS. Areas likely to be associated with ASS are those at low elevation (around 5 mAHD) in close proximity to coastal areas and tidal areas of the Styx River, occurring in the alluvial plains and flood plains present to the north of the MLA.

Further soil investigation works to identify soil and geology of the area, and areas that could potentially be at risk of disturbing ASS will be undertaken as part of the EIS.

3.3 (d)Outstanding natural features

There are no outstanding natural features documented for the Project area. The Great Barrier Reef Coastal Marine Park (GBRCMP) and the GBRWHA extends upstream of the Styx River to approximately 8 km north of the site. The Broad Sound wetlands are also located approximately 8 km north of the site.

3.3 (e)Remnant native vegetation

The Project is located in the Brigalow Belt North Bioregion of Central Queensland, and the Capricorn Coast region. This bioregion is described as a dry, flat to rolling landscape with remnant grasslands and forest areas, and includes Rockhampton and Gladstone, together with smaller areas of coastal development.

The MLA has a total of 2,276 ha, of which approximately 1,812 ha or 80% has been cleared of native vegetation to establish a range of exotic and native pastures to support the cattle breeding and fattening enterprises on the Mamelon property. Connectivity between remnant patches across the surrounding landscape is greatly reduced due to extensive clearing for agriculture. Remnant riparian vegetation along watercourses currently provides some connectivity across the landscape.

Vegetation clearing for the Project will result in loss of remnant vegetation within the mine disturbance area. Total proposed clearing of remnant vegetation (under current vegetation mapping) is anticipated to be approximately 55 ha with the current mine plan (refer to **Table 9** and **Figure 5**). Further ground-truthing studies carried out during the EIS process will confirm the extent of existing remnant vegetation communities and potential TECs within the Project area. Depending on what TLF option is selected for the Project, it is anticipated a maximum disturbance footprint of 35 ha will be required. Given the locations of the TLF options under investigation is anticipated that <5 ha of remnant vegetation will be disturbed.

Table 9: Vegetation communities to be cleared

RE	VM Act status	EP Act status	Description*	Potential Disturbance Area
11.3.25	Least Concern	Of Concern	*E. camaldulensis* or *E. tereticornis* open forest to woodland. Occurs on fringing levees and banks of major rivers and drainage lines of alluvial plains throughout the region. Soils are very deep, alluvial, grey and brown cracking clays.	<1 ha
11.4.2	Of Concern	Of Concern	*Eucalyptus* spp. and/or *Corymbia* spp. grassy or shrubby woodland on Cainozoic clay plains	52 ha
11.4.9	Endangered	Endangered	*Acacia harpophylla* shrubby woodland with *Terminalia oblongata* on Cainozoic clay plains	<1 ha

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

Elevations across the Styx catchment range from 0 to 540 m above sea level; predominantly comprising of flat or undulating lands, draining via a number of smaller creeks and tributaries to the Styx River and estuary, and into the Coral Sea. The land within the Project area can be described as gently undulating.

A LiDAR survey was conducted of the original EPC 1029 of which the MLA no forms part of. Elevations within the MLA area vary between 4.5 and 155 mAHD, with elevations within the disturbance area being between 11.4 and 43.8 mAHD.

3.3 (g)Current state of the environment

Refer to section 3.1 (d).

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

There are no Commonwealth Heritage Places within the Project area or Wetlands of International Importance (Ramsar) within close proximity to the Project. The nearest boundary of the GBRWHA, listed as both a World Heritage Property and National Heritage Place, is located approximately 8 km to the north of the Project area. The nearest boundary of the GBRMP is located approximately 33 km to the north of the Project area and there is a Commonwealth Marine area located 120 km east of the Project area.

3.3 (i)Indigenous heritage values

The Cultural Heritage bodies for the Project area are the Darumbal Enterprises Pty Ltd and Barada Kabalbara Yetimarala People. The Darumbal People have a current Native Title claim over the area where the TLF Options 1 – 4 are proposed and the Barada Kabalbara Yetimarala People have a current Native Title claim over the area where the mine pits and ancillary infrastructure are proposed. The area associated with TLF Option 5 has not had a Native Title claim determined yet.

A search of the Australian Heritage Place Inventory and Aboriginal Cultural Heritage Database and Register did not identify any listed area within the Project area.

The extent to which Indigenous Heritage values occur within the Project area will be determined as part of the consultation process with the Traditional Owners. A Cultural Heritage Management Plan will be negotiated by the Proponent with the relevant Traditional Owners with the principal objective of the plan being to demonstrate the Proponent's statutory duty of care under the *Aboriginal Cultural Heritage Act 1993*.

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

The Broad Sound wetlands, located approximately 8 km north of the site, is an internationally important area for migratory shorebirds including Red-necked Stint, Sharp-tailed Sandpiper and Marsh Sandpiper. Broad Sound is also of national significance for the Great Knot, supporting one of the largest aggregations of this species on Australia's east coast. Tooloombah Creek Conservation Park is located approximately 2 km to the west of the Project area boundary. Deep Creek and Tooloombah Creek are prominent riparian features adjacent to the Project area.

3.3 (k)Tenure of the action area (e.g. freehold, leasehold)

Refer to section 1.6.

3.3 (l)Existing uses of area of proposed action

The Project area is predominately used for cattle breeding and grazing. Land disturbed by the Project will be re-established by the Proponent to support cattle breeding and grazing where practical.

3.3 (m)Any proposed uses of area of proposed action

The proposed land uses in the Project area is open cut coal mining and associated infrastructure. It is expected that cattle breeding and grazing will continue as the land use outside of the proposed mine and associated infrastructure.

4 Environmental outcomes

It is not anticipated that there would be significant impact to the following MNES as a result of the Project:

- World Heritage values of a declared World Heritage property. No World Heritage Properties occur in or immediately adjacent to the proposed disturbance area;
- National Heritage values of a National Heritage Place. No National Heritage Values occur in or immediately adjacent to the proposed disturbance area;
- Declared Ramsar wetland. No Ramsar wetlands occur in or immediately adjacent to the proposed disturbance area;
- Commonwealth marine area. No Commonwealth marine areas occur in or immediately adjacent to the proposed disturbance area; and
- Commonwealth land. No Commonwealth land occur in or immediately adjacent to the proposed disturbance area.

The Proponent will assess the following MNES as part of technical assessments undertaken during the preparation of the EIS for the Project:

- Listed threatened species or ecological communities or their habitat;
- Listed migratory species;
- The GBRMP; and
- Water resource, in relation to coal seam gas development and large coal mining development.

The Proponent does anticipate there would be significant impacts to listed threatened species or their habitat. No listed flora were identified during floristic surveys undertaken within the Project area. Fauna surveys undertaken within the broader study area have confirmed the presence of Squatter Pigeon (southern race), Eastern Curlew, Ornamental Snake and Koala. No Essential Habitat for listed species is mapped for any listed fauna species near the Project area. Further surveys will better establish the presence or absence of these species and suitable habitat within the disturbance area of the Project.

The Proponent does anticipate there be significant impacts to ecological communities. Current Queensland Herbarium vegetation mapping (Version 9.0; 2015) indicates there is one RE present within the Project area (RE 11.4.9) that may be considered as a Brigalow TEC. This RE is mapped as occurring in two discrete patches in the northern portion of the MLA; one patch adjacent to the TLF Option 1 area and the other nearby but outside of the disturbance area for the MIA. No other TECs are represented by REs indicated in DNRM mapping.

The Proponent does anticipate there will be significant impacts to listed migratory species. Habitat suitable for Migratory bird species associated with wetlands is limited in the Project area largely to man-made waterbodies such as farm dams. Aerial species such as Fork-tailed Swift and White-throated Needletail may occur over heavily disturbed areas and will not be impacted by activities associated with the Project. The remaining terrestrial Migratory species may occur seasonally in any vegetated habitat present but will prefer habitats with a heavier canopy cover such as along creek lines or Brigalow communities.

The Proponent does anticipate there be significant impacts to the GBRMP. Appropriate water management measures will be developed and implemented for the Project to preserve the existing water quality within the watercourses associated with the Project's disturbance area. The action is not proposing a tailing storage facility (TSF) and will manage waste associated with the CHPP through in-pit disposal. The removal of the TSF from the design significantly mitigates potential risks to the GBRMP.

Open cut mining operations may locally impact on groundwater resources by the lowering of groundwater levels as a result of dewatering operations. Should the Project utilise groundwater resources for water supply, an impact in the form of lowered groundwater levels may occur in the alluvium associated with Tooloombah Creek and/or Deep Creek (depending on the draw location). Direct effects on groundwater dependent ecosystems as a result of mining activities may include:

- Quantity (groundwater levels, pressures and fluxes);
- Quality (concentrations of salts and other toxic water quality constituents);
- Groundwater interactions (interactions between groundwater systems and between groundwater and surface systems); and
- Physical disruption of aquifers (excavation of mining pits and underground workings).

Further investigations are being undertaken to assess the level of impact that may occur. Where potential impacts are to the above MNES are identified, appropriate mitigation measures will be developed for implementation by the Proponent.

5 Measures to avoid or reduce impacts

Given the early stages of planning of the Project, no management plans have been prepared or implemented. The extent and magnitude of environmental and social impacts associated with the Project will be assessed during the preparation of the EIS. Once the extent of impacts are established through the EIS assessment the Proponent will develop appropriate management measures to avoid, reduce, manage or offset any relevant impacts of the Project.

Typical mitigation measures would include:

- The establishment of offset areas for any clearing of TECs;
- Locating and minimising disturbance from mine infrastructure and operations, where feasible, to avoid significant environmental values;
- Consideration of significant vegetation communities and other environmentally sensitive areas in mine planning where possible;
- Implement weed and pest control measures;
- Surface and groundwater control measures to minimise impact on surface and groundwater flow regimes and quality, and relationships to groundwater dependent ecosystems if present in the Project disturbance area; and
- Progressive rehabilitation of disturbed areas to existing land use values.

The above management strategies would be used during the detailed design phase of the Project and established within the management plans to be prepared for the Project.

6 Conclusion on the likelihood of significant impacts

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

	No, complete section 5.2
✓	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action

Not applicable.

6.3 Proposed action IS a controlled action

	Matters likely to be significantly impacted
	World Heritage values (sections 12 and 15A)
	National Heritage places (sections 15B and 15C)
	Wetlands of international importance (sections 16 and 17B)
✓	Listed threatened species and communities (sections 18 and 18A)
✓	Listed migratory species (sections 20 and 20A)
	Protection of the environment from nuclear actions (sections 21 and 22A)
	Commonwealth marine environment (sections 23 and 24A)
	Great Barrier Reef Marine Park (sections 24B and 24C)
✓	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
	Protection of the environment from Commonwealth actions (section 28)
	Commonwealth Heritage places overseas (sections 27B and 27C)

7 Environmental record of the person proposing to take the action

		Yes	No
7.1	**Does the party taking the action have a satisfactory record of responsible environmental management?**	✓	
	Provide details The Proponent has adhered to its regulatory responsibilities in association with its exploration and mining activities. The Proponent has not been the subject of any environmental legal proceedings that have resulted in fines or prosecution.		
7.2	**Provide details of any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources against:** **(a) the person proposing to take the action, or** **(b) if a permit has been applied for in relation to the action - the person making the application.**		✓
	If yes, provide details		
7.3	**If the person taking the action is a corporation, please provide details of the corporation's environmental policy and planning framework and if and how the framework applies to the action.**	✓	
	See **Attachment F**.		
7.4	**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?**	✓	
	Provide name of proposal and EPBC reference number (if known) 2012/6250Waratah Coal Pty Ltd/Transport - water/25km north of Bowen/QLD/Abbot Point Coal Terminal Project 2008/4366Waratah Coal/Mining/Mine in Galilee Basin; Port south of Port Clinton; pipeline to Lake Dalrymple/QLD/Galilee Coal Project including development of coal mine, 495km railway, port and 285 km pipeline.		

8 Information sources and attachments

8.1 References

- ALS (2011) Styx River Catchment Aquatic Baseline Monitoring Program, 2011.
- CSIRO (2013) National ASS Mapping - 1:100,000, Australian Soil Resource Information System, CSIRO land and Water, Canberra.
- Department of the Environment and Energy, Matters of National Environmental Significance - Protected Matters Search Tool.
- Department of Environment and Heritage Protection, Regional Ecosystems Mapping Tool.
- DPI (1995) Land Systems of the Capricornia Coast: Map 1 St Lawrence - Marlborough Area, Map 1 of the Land
- Resources and Evaluation of the Capricornia Coastal Lands (CCL) Project, Department of Primary Industries,
- Queensland Government, Reference No. 95-CCL-R-AO-3409.
- Meyer, E (2011a) *A preliminary assessment of faunal values within and adjacent EPC 1029*, Styx Basin, central east Queensland, Version 2, August 2011.
- Meyer, E (2011b) *Fauna survey results for EPC 1029, Styx Basin, central-east Queensland*, Version 1: 30 November 2011.
- Meyer, E (2012) *Fauna survey results for EPC 1029, Styx Basin, central-east Queensland*, Version 1: 31 March 2012.
- Oberonia Botanical Services (2011) *Flora and vegetation assessment Styx Coal*.
- Ross DJ (2002). Acid Sulfate Soils, Tannum Sands to St Lawrence, Central Queensland Coast. Department of Natural Resources and Mines, Queensland.

8.2 Reliability and date of information

The information in Section 3.0 was based on the field studies of the terrestrial habitat within and adjacent to the mine disturbance area during March 2011, September 2012 and February 2012 (Meyer 2011a, 2011b and 2012). As these field studies were completed over four year ago additional field studies will be completed to provide information to assist the development of the EIS.

A review of the current (as of December 2016) relevant State and Commonwealth databases (refer to Section 3.1) was also used to inform this assessment.

All information relied on in the development of this referral has been sources from established, reliable sources. Refer to Section 8.1 for the relevant sources.

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the locality of the project (section 1)	✓	**Figure 1** – Proposed location and referral study area **Figure 2** – Infrastructure layout **Figure 4** – Land tenure
	GIS file delineating the boundary of the referral area (section 1)		
	figures, maps or aerial photographs showing the location of the proposed action in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	**Figure 3** – GBRWHA and GBRMP boundaries **Figure 5** – Remnant vegetation **Figure 6** – Fish habitat areas **Figure 7** – Dominant soils

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)	✓	**Attachment B** – EPBC Act Protected Matters Search **Attachment C** – Flora and vegetation assessment Styx Coal **Attachment D** - A preliminary assessment of faunal values within and adjacent EPC 1029, Styx Basin, central east Queensland, Version 2, August 2011. **Attachment E** - Styx River Catchment Aquatic Baseline Monitoring Program 2011
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3) conclusions in the referral (section 3 and 4)	✓	**Attachment A** – IAS **Attachment F** - Environmental Policy
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)		

9 Contacts, signatures and declarations

Proposed action title: *Styx Coal Project*

9.1 Person proposing to take action

Name and Title:	Mr Nui Harris
Organisation	Fairway Coal Pty Ltd
Trust deed:	not applicable
ACN / ABN:	ACN:127 220 642
Postal address:	GPO Box 1538, Brisbane Qld 4001
Telephone:	0418872181
Email	nharris@waratahcoal.com
I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:	Not applicable.
If you are small business entity you must provide the Date/Income Year that you became a small business entity:	
I would like to apply for a waiver of full or partial fees under regulation 5.21A of the EPBC Regulations. Under regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:	Not applicable.
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 declare that I am not taking the action on behalf of or for the benefit of any other person or entity.
Signature:	**Date:** 21.12.2016

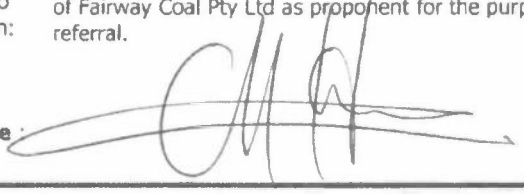
9.2 Designated proponent

Name of proposed proponent	Fairway Coal Pty Ltd
ACN / ABN:	ACN: 127 220 642
Postal address:	GPO Box 1538, Brisbane Qld 4001
Telephone:	0418872181
Email	nharris@waratahcoal.com

Declaration by the proposed proponent: I Fairway Coal Pty Ltd, the proposed proponent, consent to the proposed designation of myself as the proponent for the purposes of the action described in this referral.

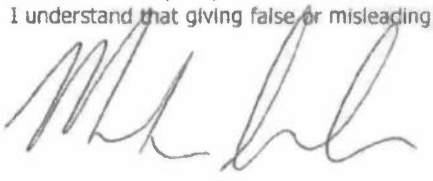
Signature:  **Date**: 22 Dec 16

Declaration by the person proposing to take the action: I Nui Harris, the person proposing to take the action, consent to the proposed designation of Fairway Coal Pty Ltd as proponent for the purposes of the action described in this referral.

Signature:  **Date**: 22 Dec 16

9.3 Person preparing the referral information (if different from section 9.1)

Name:	Mark Imber
Title:	Managing Principal Environmental Services
Organisation:	CDM Smith Pty Ltd
ACN / ABN:	88 152 082 936
Postal address:	Level 4, 51 Alfred Street, Fortitude Valley
Telephone:	0418 660 915
Email:	imberms@cdmsmith.com
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**: 22 Dec 16

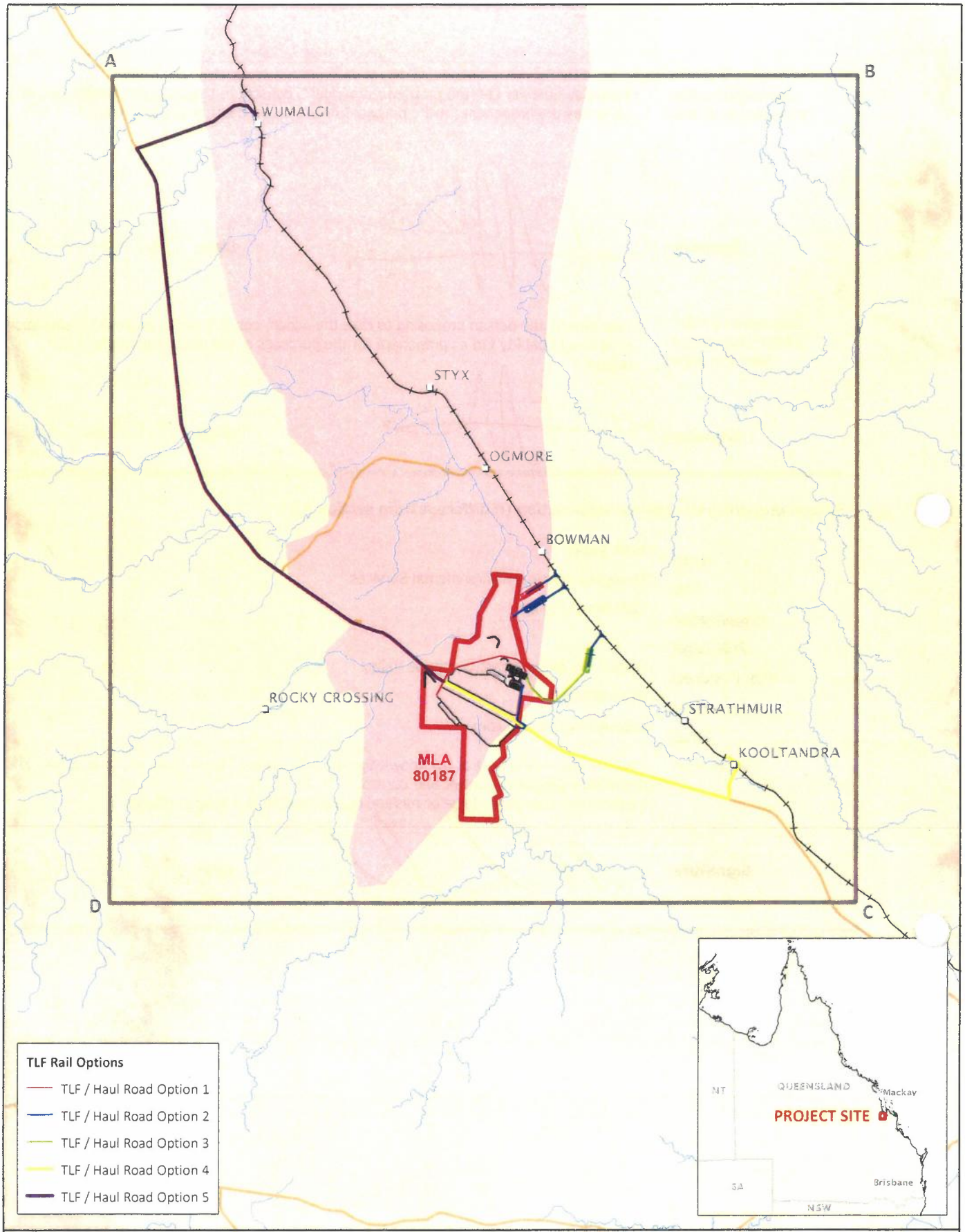
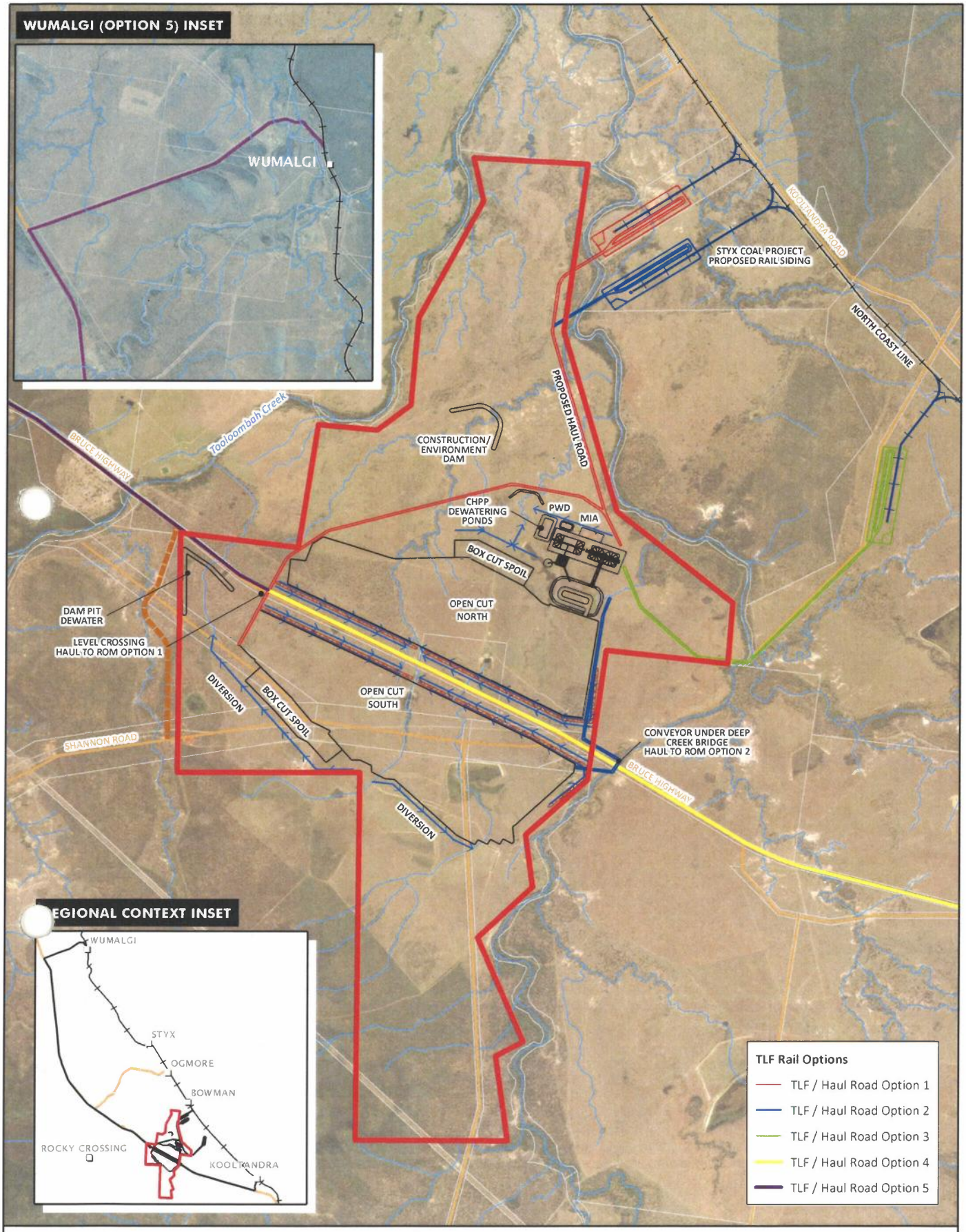


Figure 1
Project location and referral study area



N

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Scale @ A4 1:50,000
Date: 14/12/16
Drawn: APS

Legend

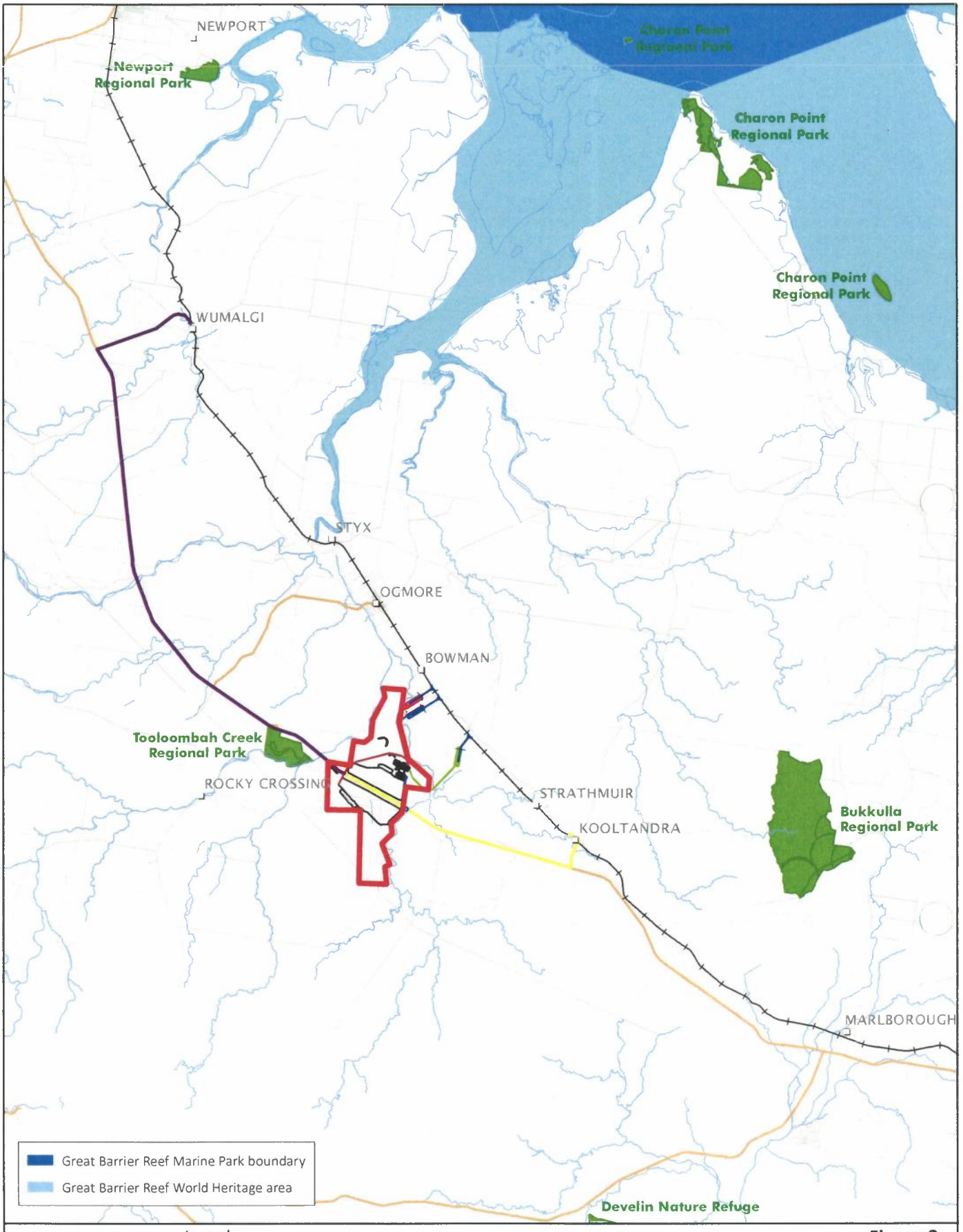
- Styx Coal Project Mining Lease Application Area
- Proposed Mine Infrastructure
- Proposed Rail Siding
- Proposed Surface Drain
- Proposed Road Diversion
- North Coast Rail Line
- Main road
- Cadastral boundary
- Watercourse

Figure 2
Project infrastructure layout

DATA SOURCE
QLD Spatial Catalogue (QSpatial), 2016

CDM Smith

BRUGGEMANNGD B:\BES150160 Styx Coal\GIS\DATA\MXD\FINAL\BES150160 01 R1 mine layout.mxd 12/14/2016



Legend

- Styx Coal Project Mining Lease Application Area
- Proposed mine infrastructure
- Cadastral boundary
- North Coast Rail Line
- Main road
- Watercourse
- Proposed Rail Siding

TLF Rail Options

- TLF / Haul Road Option 1
- TLF / Haul Road Option 2
- TLF / Haul Road Option 3
- TLF / Haul Road Option 4
- TLF / Haul Road Option 5

N

0 2.5 5 km

Scale @ A4 1:250,000
Date: 14/12/16
Drawn: Gayle B.

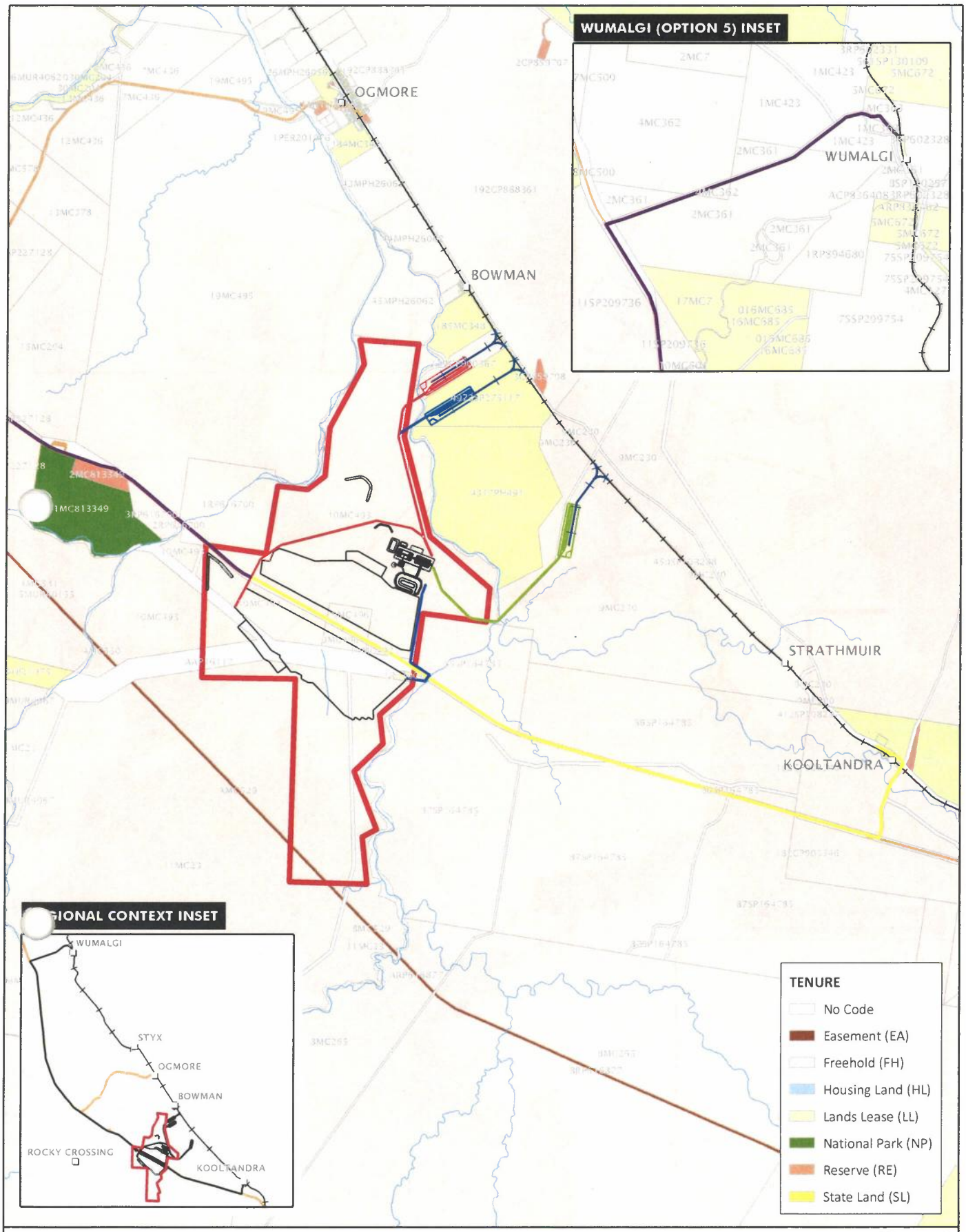
Figure 3

Great Barrier Reef World Heritage Area and Marine Park boundaries

DATA SOURCE
QLD Department of Environment and Heritage Protection, 2016;
QLD Spatial Catalogue (QSpatial), 2016

CDM Smith

BRUGGEMANNGD B:\BES150160 Styx Coal\GIS\DATA\MXD\FINAL\BES150160-01 R1 environmentally sensitive area-Cat A.mxd 12/14/2016



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Date: 14/12/16
Drawn: Gayle B.

Legend

- Styx Coal Project Mining Lease Application Area
- North Coast Rail Line
- Main road
- Watercourse
- Proposed Rail Siding

TLF Rail Options

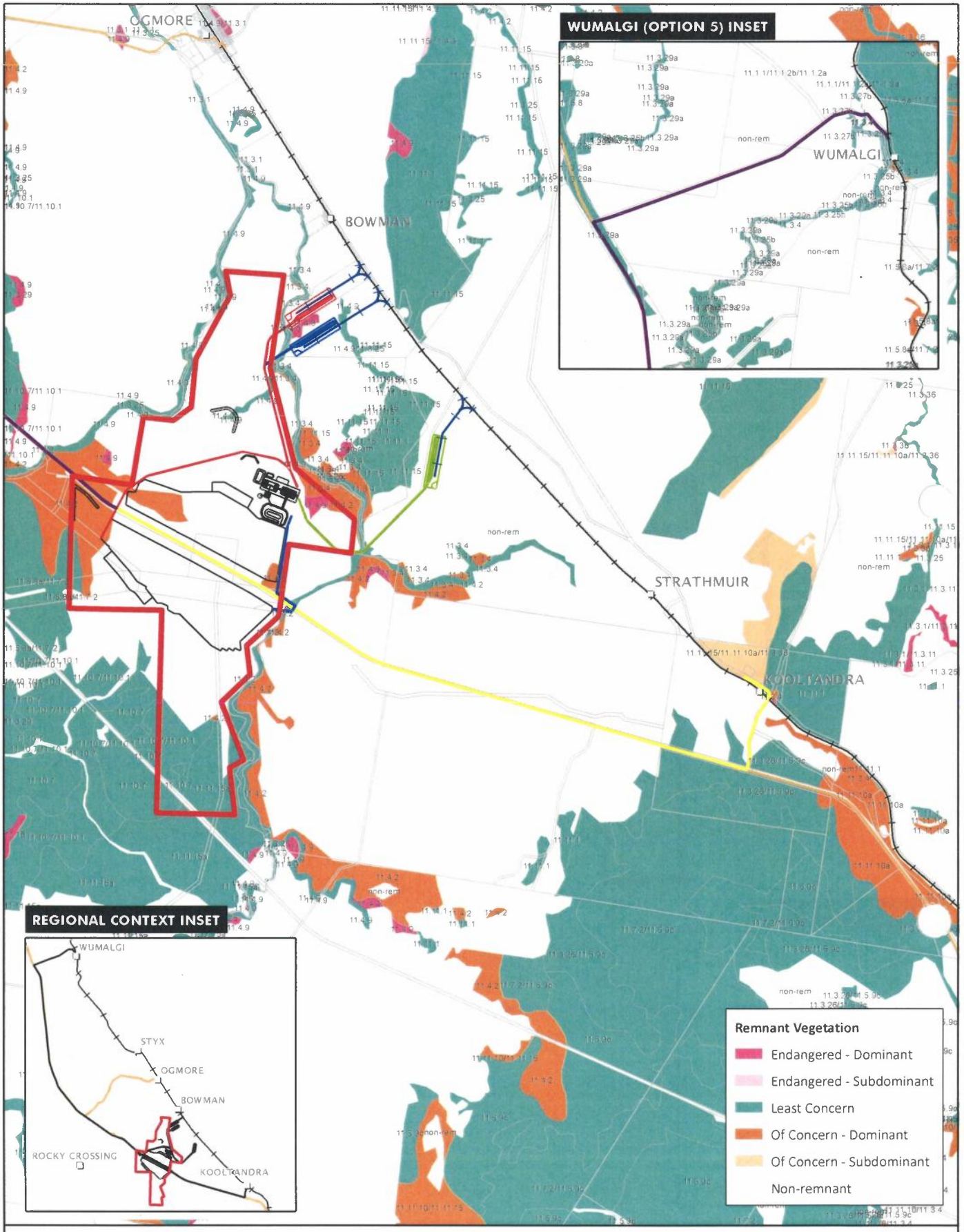
- TLF / Haul Road Option 1
- TLF / Haul Road Option 2
- TLF / Haul Road Option 3
- TLF / Haul Road Option 4
- TLF / Haul Road Option 5

DATA SOURCE
QLD Department of Environment and Heritage Protection, 2016;
QLD Spatial Catalogue (QSpatial), 2016

CDM Smith

Figure 4
Land tenure

BRUGGEMANNGD B:\BES150160 Styx Coal\GIS\DATA\MXD\FINAL\BES150160 01 R1 land tenure.mxd 12/14/2016



N

0 1 2 km

Scale @ A4 1:90,000
Date: 14/12/16
Drawn: Gayle B.

Legend

- Styx Coal Project Mining Lease Application Area
- Proposed mine infrastructure
- Proposed Rail Siding
- Cadastral boundary
- North Coast Rail Line
- Main road

TLF Rail Options

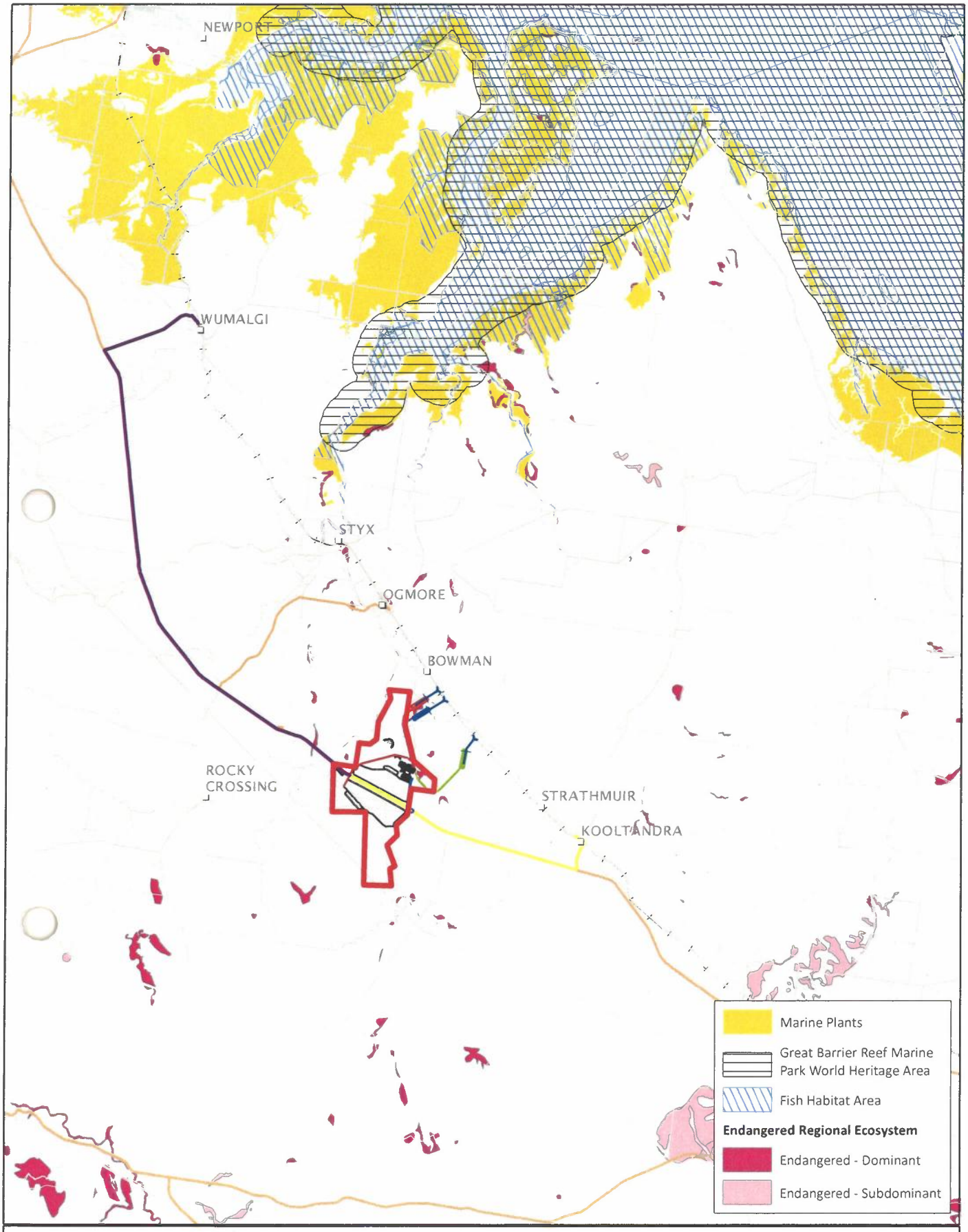
- TLF / Haul Road Option 1
- TLF / Haul Road Option 2
- TLF / Haul Road Option 3
- TLF / Haul Road Option 4
- TLF / Haul Road Option 5

Figure 5
Remnant vegetation

DATA SOURCE
QLD Department of Environment and Heritage Protection, 2016;
QLD Spatial Catalogue (QSpatial), 2016

CDM Smith

BRUGGEMANNGD B:\BES150160 Styx Coal\GIS\DATA\MXD\FINAL\BES150160 01 R1 remnant vegetation.mxd 12/14/2016



Legend

- Styx Coal Project Mining Lease Application Area
- Proposed mine infrastructure
- Cadastral boundary
- Main road
- North Coast Rail Line
- Watercourse
- Proposed Rail Siding

TLF Rail Options

- TLF / Haul Road Option 1
- TLF / Haul Road Option 2
- TLF / Haul Road Option 3
- TLF / Haul Road Option 4
- TLF / Haul Road Option 5

N

0 2.5 5 km

Scale @ A4 1:250,000
Date: 14/12/16
Drawn: Gayle B.

Figure 6

Fish habitat areas

DATA SOURCE
QLD Department of Environment and Heritage Protection, 2016;
QLD Spatial Catalogue (QSpatial), 2016

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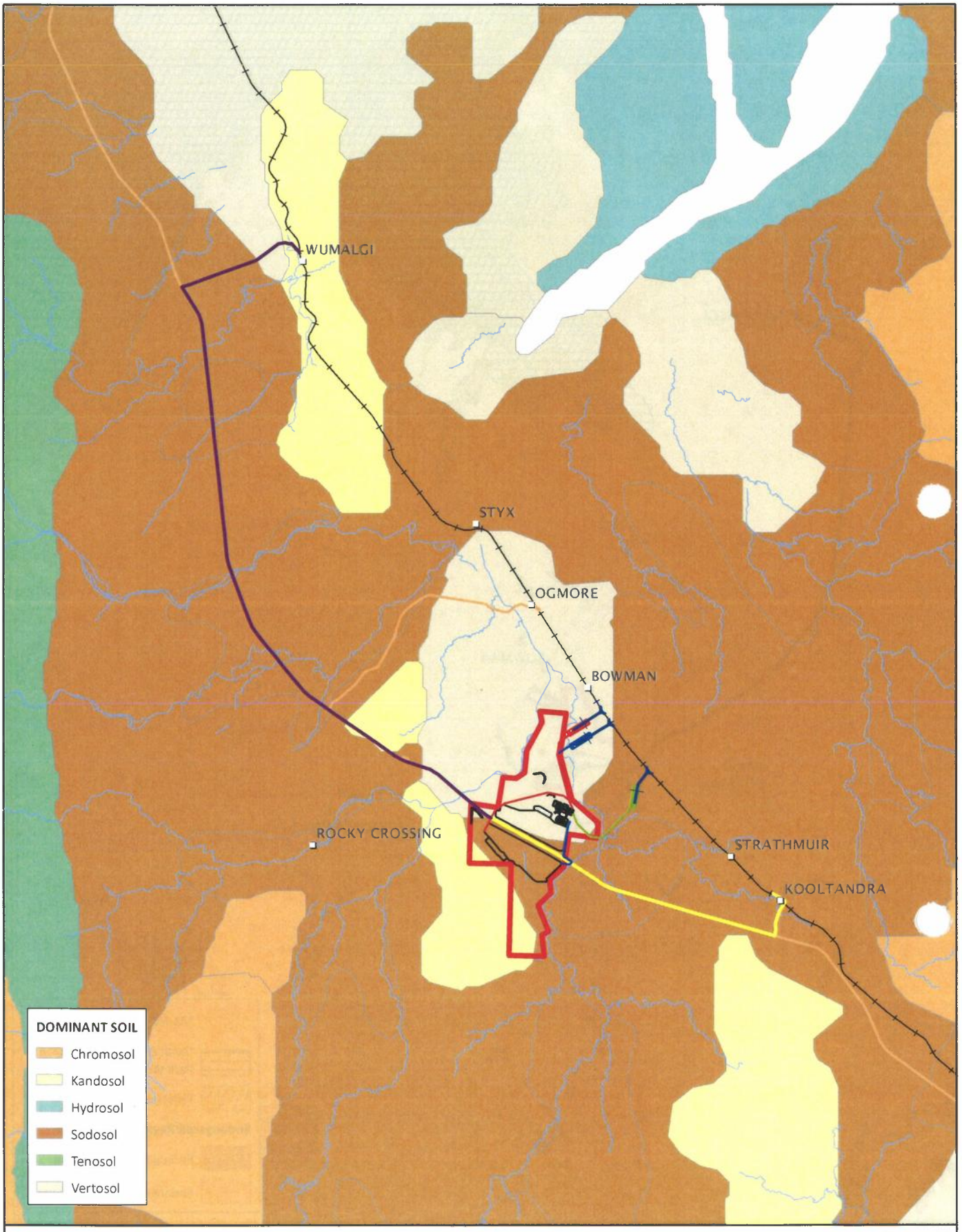

N

0 1 2 km

Scale @ A4 1:200,000
Date: 14/12/16
Drawn: Gayle B.

Legend

- Styx Coal Project Mining Lease Application Area
- Proposed mine infrastructure
- North Coast Rail Line
- Main road
- Watercourse
- Proposed Rail Siding

TLF Rail Options

- TLF / Haul Road Option 1
- TLF / Haul Road Option 2
- TLF / Haul Road Option 3
- TLF / Haul Road Option 4
- TLF / Haul Road Option 5

DATA SOURCE
QLD Department of Environment and Heritage Protection, 2016;
QLD Spatial Catalogue (QSpatial), 2016
(ASRIS) Australian Soil Resource Information System, (2016)

Figure 7
Dominant soils

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BRUGGEMANNGD S:\BES150160 Styx Coal\GIS\DATA\MXD\FINAL\BES150160 01 R1 soils.mxd 12/14/2016