

13 June 2013

Reference No. 127613050-009-L-Rev0

Mr James Tregurtha
Assistant Secretary
Environment Assessment Branch
Department of Sustainability, Environment, Water, Population and Communities
GPO Box 787
CANBERRA ACT 2601

EPBC REFERENCE: 2013/6769

RESPONSE TO REQUEST FOR ADDITIONAL INFORMATION – LANGLOH COAL MINE (TAS)

Dear Mr Tregurtha

On behalf of Indicoal Mining Australia Pty Ltd (Indicoal), Golder Associates Pty Ltd (Golder) submitted a referral for the Langloh Coal Project to the Department of Sustainability, Environment, Water, Population and Communities (SEWPaC) under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) on 4 March 2013. On 3 April 2013, SEWPaC requested additional information in relation to the Langloh Coal Project (the project) to assist in their determination of whether the project may be a 'Controlled Action' or not. Outlined herein is Indicoal's response to the information requested by SEWPaC.

The SEWPaC request for additional information focused on issues related to infrastructure and project components, transport, site specific flora and fauna information and surface water and groundwater resources. Golder has prepared this response, on behalf of Indicoal, on the basis of existing data from the following sources:

- Infrastructure and project components
 - *Concept Mine Study: Langloh Deposit, Hamilton, Tasmania* (Golder, 2012).
- Transport
 - *Concept Mine Study: Langloh Deposit, Hamilton, Tasmania* (Golder, 2012).
 - Tasmanian road data and vehicle and traffic notices
 - Tasmanian Ports Strategy & Vision (Tasports, 2011)
- Site specific flora and fauna information
 - Natural Values Atlas.
 - EPBC Act Protected Matters Search.
- Surface water and groundwater resources
 - Previous groundwater studies at the neighbouring Kimbolton Mine provided by Indicoal to Golder.
 - The Tasmania government registered groundwater bore database.



- *Concept Mine Study: Langloh Deposit, Hamilton, Tasmania* (Golder, 2012).
- Hydrogeological aquifer maps from the Department of Primary Industries, Parks, Water and Environment.
- Australian National Water Commission Regional Water Resource Assessment for Groundwater Management Unit.

At this stage of the approval process it has not been considered viable to undertake fieldworks, or field surveys, as it is anticipated these may form part of later assessments in the approvals process, when the viability of the project is better understood.

1.0 INFRASTRUCTURE AND PROJECT COMPONENTS

1.1 Water Supply

Water requirements for the project have not yet been determined. The potential source of water has also not been determined, but may include one or more of the following options:

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

Surface water, whether purchased from existing users or through obtaining a new licence, is likely to be accessed from Meadowbank Lake. A pipeline will be required from the mine site to the lake, approximately one km south of the site.

1.2 Electricity Supply

The Tarraleah-New Norfolk (West) 110 kV line traverses the site and electricity for the project is proposed to be sourced from this line.

It is anticipated that this will require the construction of a substation near the project. The location of the substation has not yet been determined.

2.0 TRANSPORT

2.1 Export Options

As detailed in the EPBC Referral, Indicoal is currently investigating transport options for the project. Investigations include negotiating with Tasports in relation to existing port options and other potential port and jetty developments in Tasmania.

Two export options are currently being investigated as part of the project planning. The first is to export product from the existing Bell Bay Port, approximately 285 km northwest of the mine. Tasports are planning to expand this port facility, having secured \$5M of Commonwealth funding for a new freight terminal in early May 2013 (ABC, 2013). Tasports will be the proponent of any port upgrade and would be responsible for any required approvals associated with the expansion of the existing facility.

The second export option being investigated is for product to be barged down the Derwent River to a mid-sea transshipment vehicle, or a geared vessel. Indicoal is considering the use of existing jetty and barge infrastructure, as well as the new jetty and barge infrastructure being proposed on the Derwent River. New jetty options are not proposed to be developed by Indicoal, rather a commercial arrangement entered into between the owner/operator of the infrastructure. Any approvals required for the development of new jetties would be the responsibility of the owner/operator of the infrastructure.

2.2 Transport Options

Road Transport

Transport of ore from the mine to either Bell Bay or a jetty for transshipment will require the coal to be trucked from the mine to New Norfolk via the Lyell Highway. From New Norfolk, the transport route would divert depending on the export option chosen. For Bell Bay, the following road transport routes are currently being investigated:

- From New Norfolk to Bridgewater via the Boyer Road.
- From Bridgewater to Launceston via the Midland Highway.
- From Launceston to Bell Bay via the East Tamar Highway.

The proposed transport route from the mine site to Bell Bay is approximately 285 km.

If mid-sea transshipment is chosen as the export option, the road transport route will depend upon where the product is loaded on to a barge. If existing infrastructure is used, product would be transported from New Norfolk via the Boyer Road to an existing barge loading facility on the Derwent River near Boyer. The proposed road transport route from the mine to the existing barge loading facility is approximately 48 km.

All roads within the proposed road transport routes are included within a designated heavy vehicle route and are approved for use by B-doubles. The proposed transport routes are a combination of State and National/State highways. While all roads within the road transport route are approved for heavy vehicles, no assessment has been made on the existing capacity of the roads or the requirement for any intersection upgrades.

Road and Rail Combination

TasRail operate a narrow gauge rail system that is currently undergoing redevelopment. If product is to be exported via Bell Bay, it is possible to utilise a combination of road and rail. The road and rail combination would require product coal to be transported via road to an existing rail loading facility near Boyer, following the same proposed transport route as that used for mid-sea transshipment. The existing rail system is capable of carrying a 16 t axle load. The rail distance from Boyer to Bell Bay is approximately 250 km.

An alternative rail loading facility is located near Brighton and is part of an Intermodal Freight Hub. If product were to be trucked to this facility, the road transport route would be approximately 66 km and would be along the Lyell Highway and Boyer Road.

3.0 SITE SPECIFIC FLORA AND FAUNA INFORMATION

A desktop flora and fauna assessment has been conducted for the project area to support the preparation of a Notice of Intent to the Tasmanian Environment Protection Authority (EPA) and the EPBC referral. No site specific flora and fauna survey has been undertaken at this preliminary stage of project development. The project area has previously been cleared for grazing purposes and, based on the desktop assessment, was considered to be of low risk for providing suitable habitat for threatened species. No flora or fauna assessment, desktop or site survey, has been undertaken for the transport route.

The desktop flora and fauna assessment identified the following two flora species (Curtis' colobanth (*Colobanthus curtisiae*) and matted flax-lilly (*Dianella amoena*)) and four fauna species (wedge-tailed eagle (*Aquila audax fleayi*), masked owl (*Tyto novaehollandiae castanops*), eastern barred bandicoot (*Perameles gunnii gunnii*) and tasmanian devil (*Sarcophilus harrisii*)). The desktop assessment concluded that proposed activities at the mine site were unlikely to have a significant impact on any of these species.

The proposed transport routes were not considered as part of this desktop assessment. While a detailed traffic and road impact assessment has not yet been undertaken, as all roads within the proposed transport routes are designated for heavy vehicles, it has been assumed that limited (if any) road upgrades will be required. As such, clearing roadside vegetation (which can provide of important habitat for some species) is unlikely.

Vehicle collisions have the potential to be a major threat to the tasmanian devil, especially as tasmanian devils frequently favour food sources such as carcasses on roads. It has been assumed that the project would operate one 12 hour shift per day, six days per week. Product transport would not occur between sunset and sunrise, reducing the risk of vehicle collision with Tasmanian devils.

It is anticipated that detailed field-based flora and fauna assessments may form part of the scope of later assessments in the approvals process.

4.0 SURFACE AND GROUNDWATER RESOURCES

The information provided below has been developed from a desktop review of a variety of information sources listed in the introduction to this response. It is anticipated that detailed field-based assessments of groundwater resources may form part of later assessments in the approvals process.

4.1 Groundwater Management Unit

The Langloh Project site is located in the Tasmanian Unincorporated Area - Central South East Groundwater Management Unit (ID TAS_GW_T16) (NWC, 2005).

No cap has been placed on groundwater usage / abstraction in this groundwater management unit at the time of accessing data.

4.2 Registered Groundwater Users

A search of the Tasmanian Government groundwater bore database identified existing groundwater users in the vicinity of the Project site, and hydrogeological and bore information. Results of the 3 km and 8 km radius search are included in Attachment A.

Groundwater bore (ID 2631) is located closest to the Langloh Project site. A total of ten bores are located within three kilometres of the site including one abandoned bore (Bore 17213) (refer to Table 2 below).

- Eight bores are installed in Triassic formation:
 - Bore yield ranging from 0.13 L/s to 3.15 L/s (data from seven bores)
 - Bore depth ranging from 15.2 m to 60 m.
 - Static water level (SWL) ranging from 4.6 m to 10.7 m (data from two bores).
- Two bores are installed in Jurassic Dolerite formation. Bore yield and depth values are only available for bore 17218:
 - Bore yield of 1.89 L/s
 - Bore depth 60 m.

Water quality data is very limited with only one total dissolved solids (TDS) value for bore 19025 (TDS of 890 mg/L).

Table 1: Results of the 3 km Search of Groundwater Bore Database

Bore ID	Easting	Northing	Drilled Date	Depth^	Initial Yield+	SWL^	Main aquifer geology	Operating status
2601	483313	5290383	12/06/1962	29	0.13		Triassic	Unknown
2611	486540	5288620	08/06/1956	15.2	0.06		Triassic	functioning
2631*	484415	5288265	05/08/1965	12.2	0.51		Triassic	ND
17208	486882	5288620	08/04/1998	61	3.13	10.7	Triassic	functioning
17209	486314	5288634	15/04/1998	53.4	3.13	4.6	Triassic	functioning

Bore ID	Easting	Northing	Drilled Date	Depth^	Initial Yield+	SWL^	Main aquifer geology	Operating status
17213	486392	5288955	18/02/1997	51	ND		Triassic	abandoned
17214	486392	5288975	18/02/1997	39	3.15		Triassic	functioning
17218	486314	5288109	16/01/1998	60	1.89		Jurassic Dolerite	functioning
19022	486623	5288329	15/01/1998	30	1.01		Triassic	functioning
19025	485930	5287950	ND	ND	ND		Jurassic Dolerite	ND

*Bore 2631 is closest to the Langloh Project site

+Yield unit is not shown in the groundwater bore record. Assume unit is L/s

^Units of Depth and SWL are not shown in the groundwater bore record. Assume unit is metre below ground level (mbgl).

SWL: static water level

ND: no data

4.3 Geology

The geology information presented in this section is extracted from Golder (2012) Concept Mining Study report.

The Tasmanian coal deposits, lie predominantly within the late Triassic coal measures. A lithic sandstone sequence interbedded with mudstone, claystone, coal and minor tuff exists across the central area of the state. This sequence was intruded by dolerite during the mid-Jurassic.

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

Figure 1 shows the typical stratigraphy over the Langloh Deposit. The overburden thickness isopachs are shown in Figure 2.

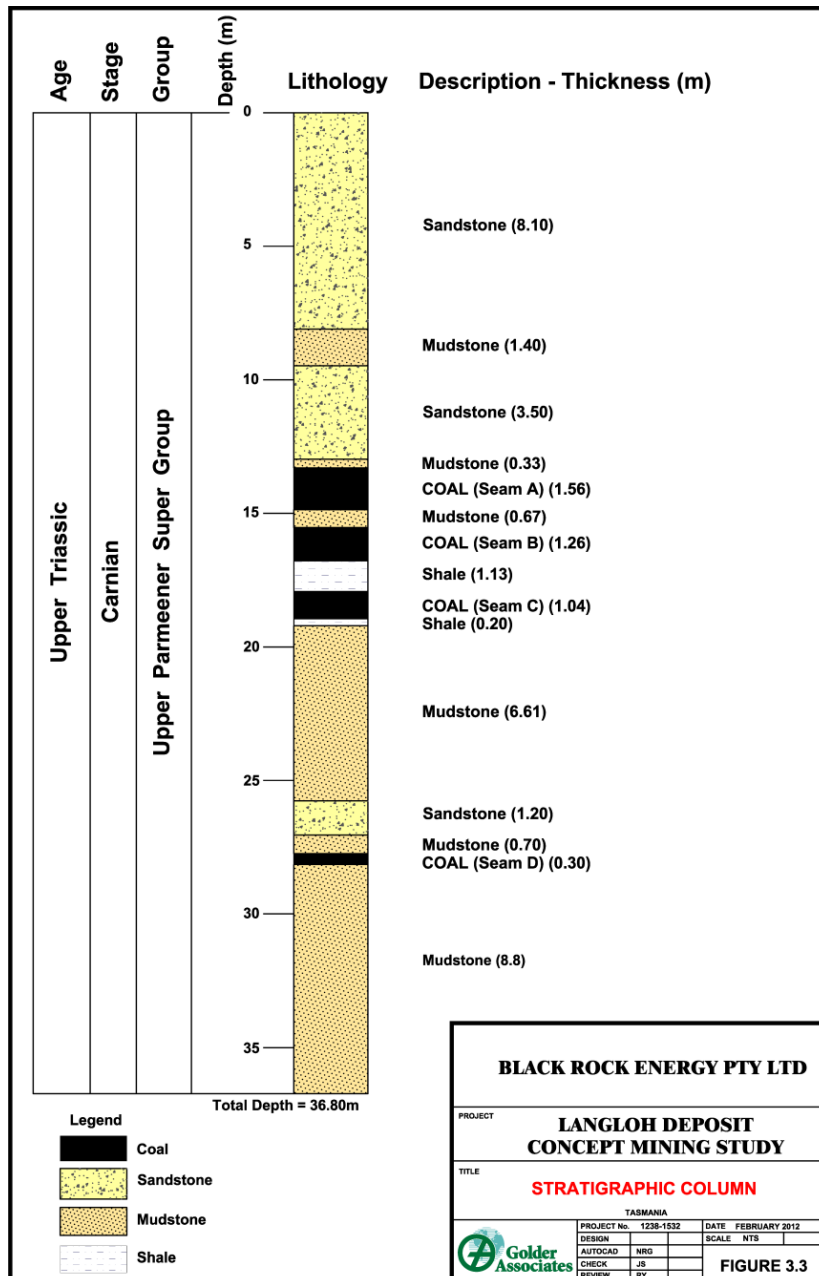


Figure 1: A typical stratigraphy over the Langloh Deposit (Golder, 2012)

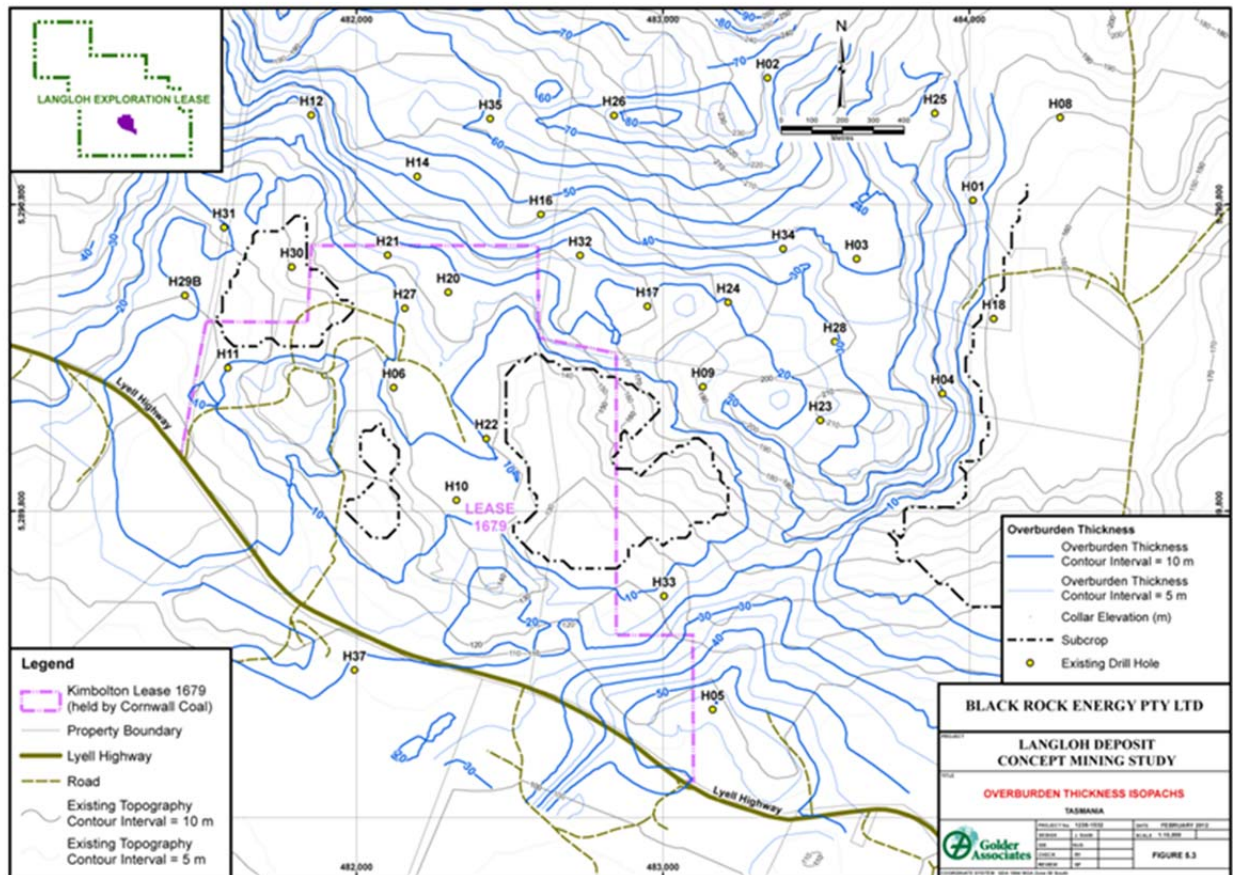


Figure 2: Overburden thickness isopachs (Golder, 2012)

4.4 Hydrogeology

Four main types of water-bearing rocks have been identified in the Hamilton area (Hughes, 1954):

- Sandstones.
- Dolerite.
- Basalt.
- Tertiary clays.

The typical stratigraphy at the Langloh Project site includes the overburden sandstone, coal seams, inter-burden mudstone and inter-burden shale units (Figure 1).

Previous groundwater studies for the adjacent Kimbolton Mine (Environmental & Technical Services Pty Ltd, 1998) indicate that:

- Sedimentary rocks above coal seams form unconfined fractured-rock aquifer.
- The water table varies from 6.0 mbgl to 10.0 mbgl and is roughly parallel to topography except for the areas near valleys (shallower water table) and hills (deeper water table).
- Annual water table fluctuations are approximately two metres.
- The coal seam is the most significant water-producing unit in the area. Groundwater seepage to the Kimbolton pit is mainly through fractures in coal seams. Coal seams exhibit a high transmissivity of

60 m²/day and a storage coefficient of approximately 1×10^{-4} . The coal seams are considered to be confined units locally.

- The mudstone and shale inter-burdens between the coal seams are considered to be impermeable.
- It was interpreted that sandstone-coal interface could be the main line of the water movement.
- Groundwater is an issue for coal mining operations at Kimbolton Mine and dewatering was required ahead of and/or during the open cut mining. The estimated dewatering rate is 12.5 kL per day or 15 ML per annum (Environmental & Technical Services Pty Ltd, 1998).
- Drawdowns during the pumping test were observed in test pits located 300 m from the pumped bores.

Groundwater Quality

Ground water quality data in the vicinity of the Langloh Project site is limited.

Registered groundwater bore 19025 is located within a three kilometre radius of the Langloh Project site. A TDS value of 890 mg/L was recorded at the bore indicating the presence of 'fresh' water at this location.

Groundwater quality data is available for three exploration bores (H20, H22 and H27) and is presented in Table 3. The TDS values varies from 875 mg/L to 2,180 mg/L and groundwater at these bores can be classified as "Fresh" to "Brackish" water type.

Table 2: Groundwater Quality

Parameters	Values
pH	7.6 to 7.9
EC (µs/cm)	1,430 to 3,030
TDS (mg/L)	875 to 2,180
TSS (mg/L)	8 to 170
Alkalinity (mg/L)	365 to 480
Chloride (mg/L)	290 to 890
Nitrate (mg/L)	0.4 to 26
Sulphate (mg/L)	16 to 36
Calcium (mg/L)	62 to 106
Magnesium (mg/L)	35 to 127
Total Iron (mg/L)	0.34 to 5.64
Dissolved Iron (mg/L)	0.07 to 0.83
Potassium (mg/L)	2.2 to 3.5
Sodium (mg/L)	220 to 410

Notes: Information from this table was compiled from Development Proposal and Environmental Management Plan, Appendix C - Report on Groundwater for Kimbolton Coal Company (Environmental & Technical Services Pty Ltd, 1998)

4.5 Groundwater Data Assessment

Golder has identified limited information in relation to local groundwater conditions, having searched typical sources of such information from state government databases, and relevant approval documentation for the adjacent Kimbolton Mine. It appears that the detailed level of groundwater assessment being requested by the SEWPaC is more akin to the level of detail to be assessed in the Environmental Impact Assessment at a later stage.

It is envisaged that dewatering will be required for the Langloh Project. The overburden thickness within the Langloh Project site varies from approximately 20 m to 80 m as shown in Figure 2. The groundwater table in the area is fairly shallow and varies from 4.6 mbgl to 10 mbgl as indicated from the Tasmanian Government registered bore database and from data of the adjacent Kimbolton mine. When the mining excavation extends below the groundwater table, groundwater seepage will occur. Dewatering will be required ahead of

or during mining. Dewatering will cause a cone of drawdown and lower the groundwater level within areas surrounding of the open pit. The dewatering rates and extent of the drawdown at the Langloh Project site have not been estimated at this stage due to lack of site-specific data; however, a daily groundwater extraction rate of the order of 12.5 kL (15 ML per year) was estimated for the dewatering at the adjacent Kimbolton Mine (Environmental & Technical Services Pty Ltd, 1998).

It is assessed that intrusive investigation works may be required in order to satisfy all SEWPaC's requirements. Suggestions for further work for a detailed groundwater impact assessment include the following:

- Review information in relation to the mine plan and schedule, size/type of transport options and planning (i.e., road, rail, new jetty transfer facility) to scope the assessment.
- Install monitoring bores upstream and downstream of the proposed open pit. These bores can be used to:
 - monitor groundwater levels and water quality in order to establish baseline groundwater condition
 - observe seasonal variations of groundwater levels and quality; and
 - monitor any potential impact as a result of the proposed Project activities.
- Monitor the groundwater levels and groundwater quality to establish the baseline condition and to identify the seasonal variation trend.
- Conduct hydraulic tests at the newly installed monitoring bores to obtain the aquifer hydraulic conductivity data within the Project site.
- Review the aquifer/surface water connectivity information.
- Develop a site water management plan .
- Conduct a bore inventory to check the operating status of bores 2601, 2631, 19025, especially Bore #2631 which is located closest to the Langloh Project site. The current status of these bores is not shown in the groundwater bore database.
- Estimate dewatering rates, volume, duration and the zone of impact (drawdown).
- Monitor groundwater levels and water quality of registered bores within the zone of impact and assess the local groundwater sensitivities.
- Search information related to Matters of National Environmental Significance (MNES) .
- Propose management plans, mitigation measures, and monitoring plan based on the outcome of the groundwater impact assessment.

5.0 CLOSURE

Golder trust that the information provided in this response to SEWPac's request for further information is sufficient to support SEWPac's determination of the 'Controlled Action' status of the Langloh project. Should you require any additional details we would welcome the opportunity to meet with SEWPac to discuss. In this regard please contact the undersigned on 03 8862 3662 if you should have any questions, or wish to arrange a meeting.

GOLDER ASSOCIATES PTY LTD



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CC: Ms Fran Daniels (SEWPac) – via email
Mr Hari Kiran Vadlamani (Indicoal Mining) – via email
Ms Rebecca Powlett (Golder Associates) – via email

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