REFERRAL OF A PROJECT FOR A DECISION ON THE NEED FOR ASSESSMENT UNDER THE *ENVIRONMENT EFFECTS ACT 1978*

REFERRAL FORM

Preamble

The *Environment Effects Act 1978* provides that where proposed works may have a significant effect on the environment, either a proponent or a decision-maker may refer these works (or project) to the Minister for Planning for advice as to whether an Environment Effects Statement (EES) is required.

This Referral Form is designed to assist the provision of relevant information in accordance with the *Ministerial Guidelines for Assessment of Environmental Effects* (Seventh Edition, 2006), in particular by proponents. Where a decision-maker is referring a project, they should complete a Referral Form to the best of their ability, recognising that further information may need to be obtained from the proponent.

It will generally be useful for a proponent to discuss the preparation of a Referral with the Department of Sustainability and Environment (DSE) before submitting the Referral.

If a proponent believes that effective measures to address environmental risks are available, sufficient information could be provided in the Referral to substantiate this view. In contrast, if a proponent considers that further detailed environmental studies will be needed as part of project investigations, a more general description of potential effects and possible mitigation measures in the Referral may suffice.

In completing a Referral Form, the following should occur:

- Mark relevant boxes by changing a font colour of the 'cross' to black and provide additional information and explanation where requested.
- At least a brief response should be provided for each item in the Referral Form, with a more detailed response provided where the item is of particular relevance. Cross-references to sections or pages in supporting documents should also be provided. Information need only be provided once in the Referral Form, although relevant cross-referencing should be included.
- Responses should and honestly reflect the potential for adverse environmental effects. A Referral will be accepted for processing once DSE is satisfied that it has been completed appropriately.
- Potentially significant effects should be described in sufficient detail for a reasonable conclusion to be drawn whether the project could pose a significant risk to those assets. Responses should document:
    - a brief description of potential changes or risks to environmental assets resulting from the project
    - available information on the likelihood and significance of such changes
    - the sources and accuracy of this information, and associated uncertainties.
- Any attachments, maps, supporting reports, etc. should be provided in a secure folder with the Referral Form.

- A CD or DVD copy of all documents will be needed, especially if the size of electronic documents may cause email difficulties. Individual documents should not exceed 2MB.
- A completed form would normally be between 15 and 30 pages in length.
- The form should be completed in MS Word and not handwritten.

The party referring a project should submit a covering letter to the Minister for Planning together with a completed Referral Form, attaching supporting reports and other information that may be relevant. This should be sent to:

Postal address

Minister for Planning
PO Box 500
EAST MELBOURNE VIC 3002

Couriers

Minister for Planning
Level 17, 8 Nicholson Street
EAST MELBOURNE VIC 3002

Submission of an electronic copy of the Referral via email to ees.referrals@dse.vic.gov.au is encouraged, at the same time as and in addition to the hardcopy submitted to the Minister. This will assist the timely processing of a referral.

PART 1 PROPONENT DETAILS, PROJECT DESCRIPTION & LOCATION

1. Information on proponent and person making Referral

Name of Proponent:	TRUenergy-Yallourn Energy Pty Ltd
Authorised person for proponent: **Position:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	Ron Mether Manager Mining TRUenergy-Yallourn PO Box 444, Moe, VIC 3825 Ron.Mether@truenergy.com.au Landline: +61 3 5128 2353, Mobile: 0418567284 +61 3 5136 1067
Person who prepared Referral: **Position:** **Organisation:** **Postal address:** **Email address:** **Phone number:** **Facsimile number:**	David Crawford Manager Infrastructure and Development TRUenergy-Yallourn PO Box 444, Moe, VIC 3825 David.Crawford@truenergy.com.au Landline: +61 3 5136 1040, Mobile: 0419 201 994 +61 3 51361067
Available industry & environmental expertise: (areas of 'in-house' expertise & consultancy firms engaged for project)	TRUenergy-Yallourn has staff with extensive relevant experience in mine planning, construction, operation and environmental management. The following consultants have assisted Yallourn Energy with this referral: ▪ Maunsell Australia Pty Ltd – Planning and approvals ▪ Indigenous Design Land Management (IDLM) – Flora and Fauna impact assessment ▪ Bassett Acoustics – Noise impact assessment ▪ Consulting Air Pollution Modelling & Meteorology – Air quality impact assessment

2. Project – brief outline

Project title: Yallourn Coal Field Re-alignment Project
Project location: (describe location with AMG coordinates and attach A4/A3 map(s) showing project site or investigation area, as well as its regional and local context) The Yallourn W Power Station and adjacent coal mine is located north-west of Morwell in the Latrobe Valley, approximately 150 km east of Melbourne. Development of the Maryvale Coal Field was approved by an EES and Supplementary EES (SEES) process in 2002. TRUenergy-Yallourn now proposes to modify the previously approved mine alignment. The Re-alignment Area is adjacent to the eastern boundary of the current Maryvale Coal Field and covers an area of approximately 95.6 ha. To satisfy this section of the referral four points along the corridor have been chosen: A, B, C and D provided in the table below. The Re-alignment Area is shown in Attachment A1.

Table 1: Yallourn Coal Field Re-alignment Project Area

Location point	Latitude			Longitude		
	Degrees	Minutes	Seconds	Degrees	Minutes	Seconds
A	-38°	11'	36"	140°	23'	30"
B	-38°	12'	15"	146°	23'	48"
C	-38°	12'	12"	146°	23'	35"
D	-38°	11'	45"	146°	29'	39"

The project area is contained within the existing mining licence boundary No. 5003 and is located within Latrobe City.

Short project description (few sentences)**:**

The **Yallourn Coal Field Re-alignment Project,** is a proposal to modify to the previously approved Yallourn Coal Field Development Project. TRUenergy-Yallourn proposes to re-align the Yallourn Coal Field Development Project mine shape along the eastern boundary of the Maryvale Coal Field to facilitate more efficient excavation of brown coal (by reducing overburden quantities excavated to gain access to the coal resource) to fuel the Yallourn W power station. No additional coal removal is proposed over that approved under the SEES.

The proposed Re-alignment Area is located within the boundaries of the current Mining Licence held by TRUenergy-Yallourn.

3. Project description

Aim/objectives of the project (what is its purpose / intended to achieve?):

The key objectives of the project are to:

- Maintain a reliable and cost effective coal supply to the Yallourn Power Station for its projected life to 2032.
- Minimise the amount of overburden removal required to extract coal within the mine boundary. .
- Implement the most economic mining method and mine sequencing programme to ensure the cost-effective provision of coal in a competitive national electricity market.
- Reduce greenhouse gas emissions as a result of the reduced overburden removal.

Background/rationale of project (describe the context / basis for the proposal, eg. for siting):

TRUenergy – Yallourn owns and operates the Yallourn W Power Station and the adjacent brown coal mine in the LaTrobe Valley, Gippsland, Victoria, located approximately 150 km east of Melbourne. The station supplies approximately 22% of Victoria's electricity needs and 8% nationally with electricity generation at Yallourn dating back to 1921. Attachment A2 provides the layout of the power station and mine. TRUenergy-Yallourn jointly operates the mine in an alliance with Roche Thiess Linfox (RTL) Joint Venture. The development of the Maryvale Coal Field is necessary to sustain the fuel source for the Yallourn Power Station for its projected life to 2032.

In 1999 the **Maryvale Project Environment Effects Statement (EES)** was approved for development of the Maryvale Coal Field at Yallourn. (This EES was required primarily as a result of the Morwell River Diversion). Upon approval of the project, Yallourn Energy put the River Diversion Project to tender in order to find a private sector contractor to undertake the works. This process revealed that another development option was possible, one that resulted in substantial monetary savings and significant environmental and social benefits. This new development was named the **Yallourn Coal Field Development Project.**

In 2000, the Minister for Planning and Environment requested that a Supplementary EES be prepared in order to outline the variations due to the Yallourn Coal Field Development Project. The project was also referred to the Commonwealth under the *Environment Protection and Biodiversity Conservation Act* 1999 (EPBC Act) as there were potential impacts on a species of national significance (*Eucalyptus strzeleckii*). In 2001, the Commonwealth Minister determined that the Yallourn Coal Field Development Project was not a controlled action and did not require Commonwealth approval under the EPBC Act.

The Supplementary EES for the Yallourn Coal Field Development Project was exhibited from 7 July 2001 to 7 August 2001 and nine submissions were received. Subsequent discussions between the Department of Infrastructure, Yallourn Energy and the submitters resolved all issues raised in the submissions. Accordingly, there was no need to appoint an Independent Panel to review the Project. On the 25th March 2002 the Minister for Energy and Resources approved the development.

The approved Yallourn Coal Field Development is situated on hilly terrain which increases the quantity of overburden that has to be removed to extract the coal resource. In East Field Mine the overburden thickness ranges from 15m to around 22m (with some limited sections up to 45m). However, in Maryvale Field the thickness of the overburden increases to 48 metres due to the hilly terrain.

In the **Yallourn Coal Field Re-alignment** (the project currently being referred) the Maryvale Field footprint has been re-aligned to move the eastern boundary into a valley which reduces the total overburden quantity to be removed by approximately 16 Mm^3. This re-alignment will avoid in excess of 36,000 t of greenhouse gas emissions that would have resulted from the excavation and transport of this material by truck and shovel. It will also eliminate both the noise and dust emissions associated with the removal of this overburden. The re-alignment also places the southern mine boundary further away from the residential area of Morwell City.

The Maryvale footprint has been re-aligned to move the eastern boundary into a valley to reduce the total overburden quantity to be removed by approximately 16 Mm^3. No additional coal removal is proposed over that approved under the SEES.

The Maryvale Project, Yallourn Coal Field Development Project and the proposed '**Yallourn Coal Field Re-Alignment**' are shown on Attachment B.

Main components of the project (nature, siting & approx. dimensions; attach A4/A3 plan(s) of site layout if available):

There are three main project components:

- A re-alignment of the mine shape to run to the south east excavating the upper reaches of the Morwell West Drain thus minimising overburden quantities in Maryvale Coal Field.
- Coal and overburden systems to be located on the western batters of Maryvale Field with overburden placement in the base of East Field which was an outcome of the Supplementary EES in 2001.
- Conveyor embankment and formation across East Field adjacent to Morwell River Diversion for coal and overburden conveyors (similar in concept to the approved plan).

See Attachment A3.

Ancillary components of the project (eg. upgraded access roads, new high-pressure gas pipeline; off-site resource processing):

The mine infrastructure will not differ significantly from the approved Yallourn Coal Field Development Project and current East Field operations.

The Maryvale Field Mine will contain working faces for the excavation of coal and overburden. The predominant method of resource transport will be conveyors to the raw coal bunker. There will be a series of access roads within the Mine and there will be water reticulation system for dust suppression and fire fighting.

Key construction activities:

The key construction activities will not differ significantly from the approved Yallourn Coal Field Development Project. The main construction activities include provision of civil infrastructure (e.g. roads, embankments and ramps) and footing installations; mechanical, structural, and electrical installation of conveyors; installation of high voltage (HV) reticulation; and fire services reticulation.

Key operational activities:

The key operational activities will not differ significantly from the approved Yallourn Coal Field Development Project, except that the total quantity of overburden excavation will be reduced.

It is proposed to mine the Re-alignment Area using open-cut mining consistent with mining practices currently operating in the neighbouring East Field Mine. During operation coal would be transported by conveyor to the raw coal bunker near the power station. As with current operations, coal recovery would be conducted 24 hours per day, 7 days per week, 365 days per year to guarantee a reliable supply of electricity to the State of Victoria.

Key decommissioning activities (if applicable):

The final rehabilitation plan for the Mine will not differ in principle from the approved Yallourn Coal Field Development Project. The work plan drawings (approved on 18 January 2002 as part of the SEES) allow for permanent side batters of 1:1. This would not change under the re-alignment.

The Rehabilitation Master Plan (RMP) for the project adopts the final concept of flooding the mine to form a large lake with interconnection to the local river systems. The depth of the lake will depend on water availability at the end of the project.

The final project concept plan incorporates the following features:

- Conservation and wildlife values;
- Wetland themes;
- Grazing/forestry capability in the perimeter area;
- Industrial/commercial park capability in the perimeter area; and
- Heritage themes associated with past use.

A five year Rolling Rehabilitation Program and an Annual Rehabilitation Plan provide the framework for ongoing activities as well as an opportunity to adjust the program as required. The RMP contains staged rehabilitation plans that have been developed at 5 to 10 year intervals to link the current rehabilitation status with the final lake concept.

Is the project an element or stage in a larger project?

☒ No ☐ Yes If yes, please describe: the overall project strategy for delivery of all stages and components; the concept design for the overall project; and the intended scheduling of the design and development of project stages).

The development of the Maryvale Coal Field has been previously approved as part of the Yallourn Coal Field Development Project. This referral focuses on the modification of the Yallourn Coal Field Development Project to re-align the mine shape at the eastern boundary of the Maryvale Field. This referral is therefore a stand-alone approval for the modification of a previously approved project.

Is the project related to any other past, current or mooted proposals in the region?

☐ No ☒ Yes If yes, please identify related proposals.

As stated above the development of the Maryvale Coal Field was previously approved as part of the **Maryvale Project** and then as part of the **Yallourn Coal Field Development Project.** This referral focuses on the modification of the **Yallourn Coal Field Development Project** to re-align the Maryvale Mine shape at the eastern boundary of the Maryvale Field.

4. Project alternatives

Brief description of key alternatives considered to date (eg. locational, scale or design alternatives. If relevant, attach A4/A3 plans):

TRUenergy-Yallourn recently undertook a Value Management Study to review the strategic options for development of the Maryvale Coal Field in order to identify an optimal solution for coal extraction to 2032. There is an urgency to identify and finalise the optimum development of Maryvale Coal Field as the project has components with a significant lead time and the transition into Maryvale is within the five year business plan.

The Value Management Study identified and assessed seven options for developing the Maryvale Coal Field including the preferred option described in this Referral (Option 7). Options 1-6 and the 'do nothing' case are discussed below.

Do Nothing
The 'do nothing' case would be to continue with the approved mine shape. The approved mine shape has identified financial, technical and environmental shortcomings.

The 'do nothing' option is more costly to implement than currently budgeted. This is mainly due to the quantity of overburden required to be removed. Additional costs will be incurred to duplicate power and water lines and to sterilise six months of coal under necessary ramps. (Coal that is sterilised cannot to be removed). Major overburden removal is also required before coal production can start which results in a higher coal supply reliability risk.

There is also a technical complexity in transitioning to the new field with regard to pivot moves, which results in:
- more track shifts;
- potential timing issues; and, again
- potential risk to coal supply reliability.

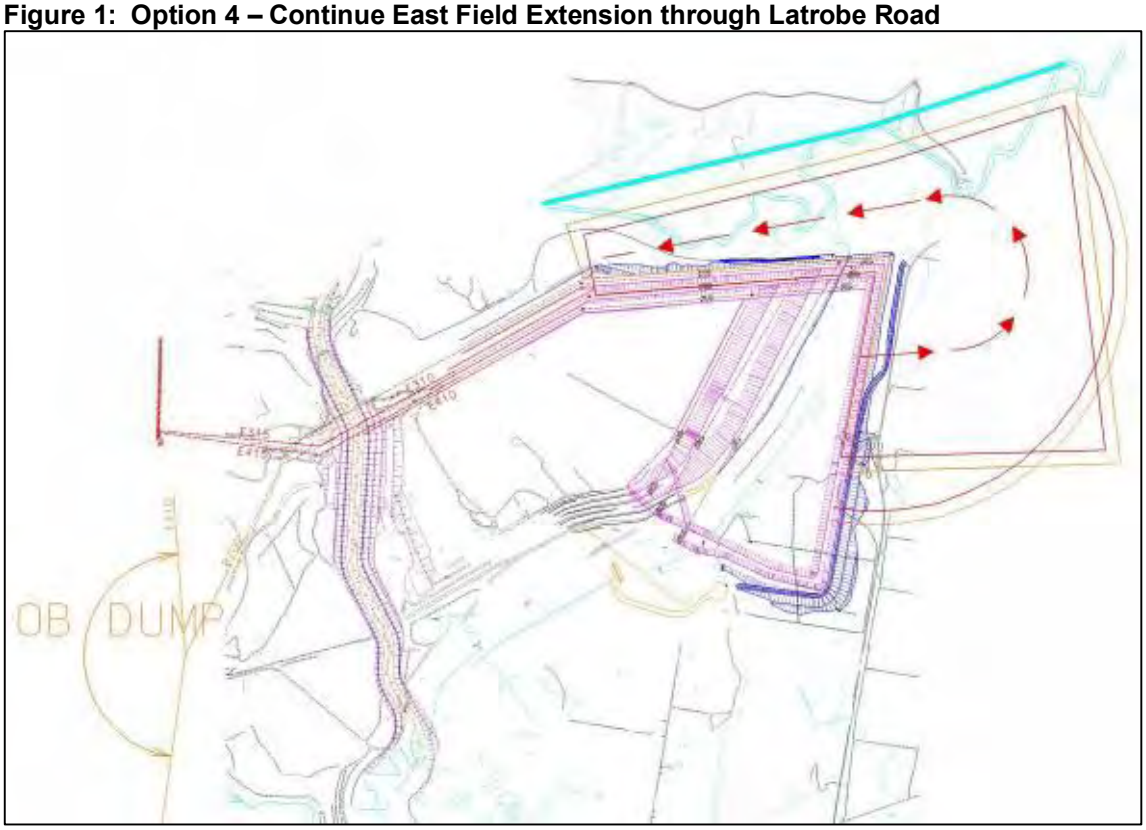
Environmentally, the 'do nothing' case would result in:
- An additional removal of 16 Mm^3 of overburden.
- An excess of 36,000 t of greenhouse gas emissions, mainly as a result of the excavation and transport of the overburden by truck and shovel.
- Additional noise and dust impacts associated with the additional overburden removal.
- A mine pit shape that is located closer to Morwell.

Environmental benefits that would be accrued by the re-alignment would also not be achieved such as the relocation of the Morwell West Drain, which has environmental benefits as well as visual amenity benefits for the public.

Options 1-3
Options 1-3 have the same footprint as the approved Yallourn Coal Field Development and review different methods to mine in order to optimise extraction. These options would not result in any less overburden removal and, as a result, were not carried forward.

Option 4
Option 4 investigated excavation continuing through the East Field Extension through Latrobe Road, and then pivoting north through Latrobe River, this option extends beyond the current licence boundary. Overburden would be placed within the Township Field, (see Figure 1).

Figure 1: Option 4 – Continue East Field Extension through Latrobe Road



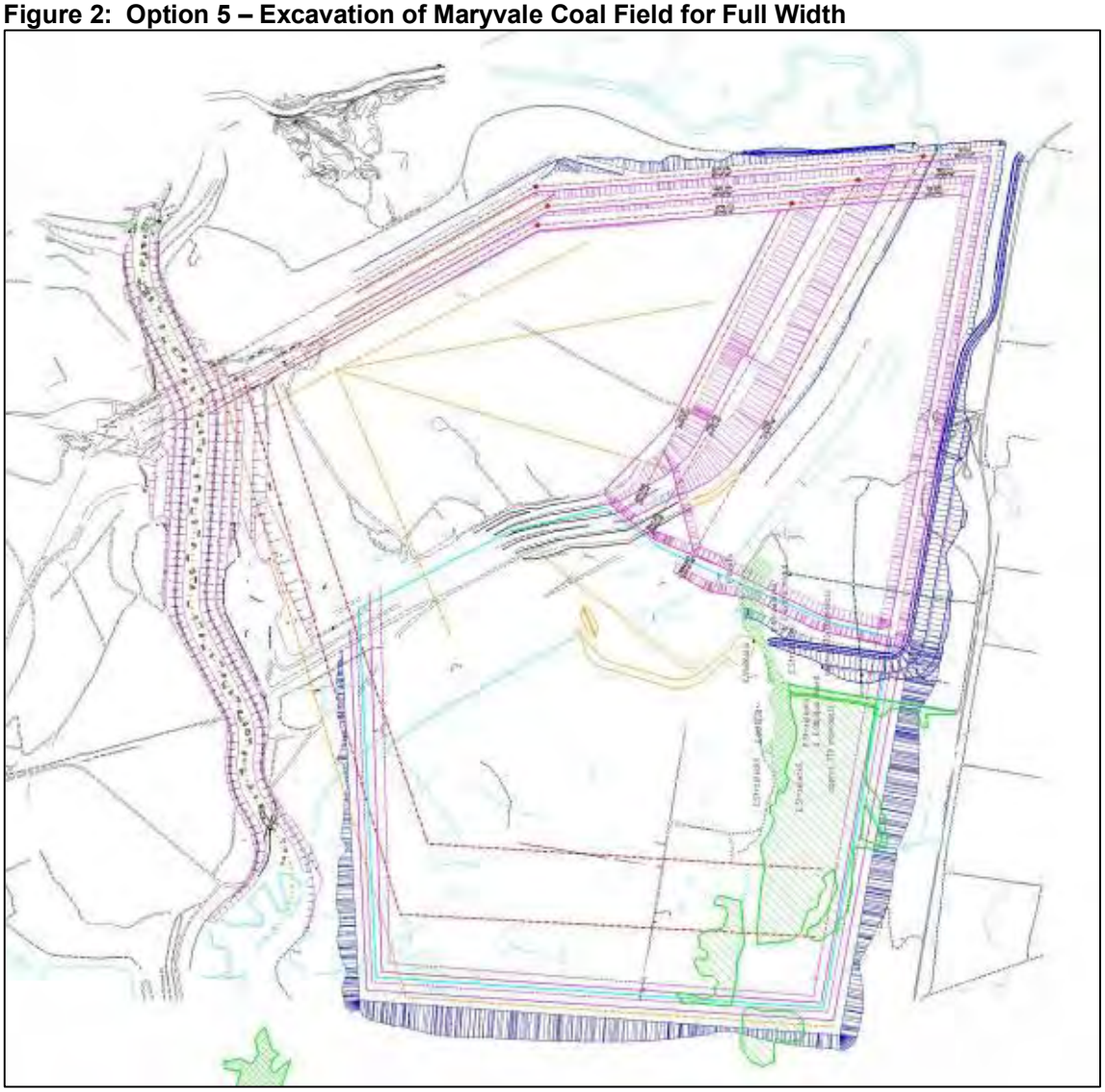
This mine shape would minimise removal of overburden and largely utilise existing infrastructure. However, there are several major issues with this mine shape, which resulted in it not being carried forward. These are:

- Insufficient coal supply to 2032
- Close to a major fault
- Would require a Latrobe River diversion
- Would require a new mining licence
- Quality of the coal is uncertain

Option 5

Option 5 investigated excavation of Maryvale Coal Field to the full width (Morwell River to Latrobe Road). In this option, coal and overburden systems would be located on the western batters of Maryvale Field, see Figure 2.

Figure 2: Option 5 – Excavation of Maryvale Coal Field for Full Width



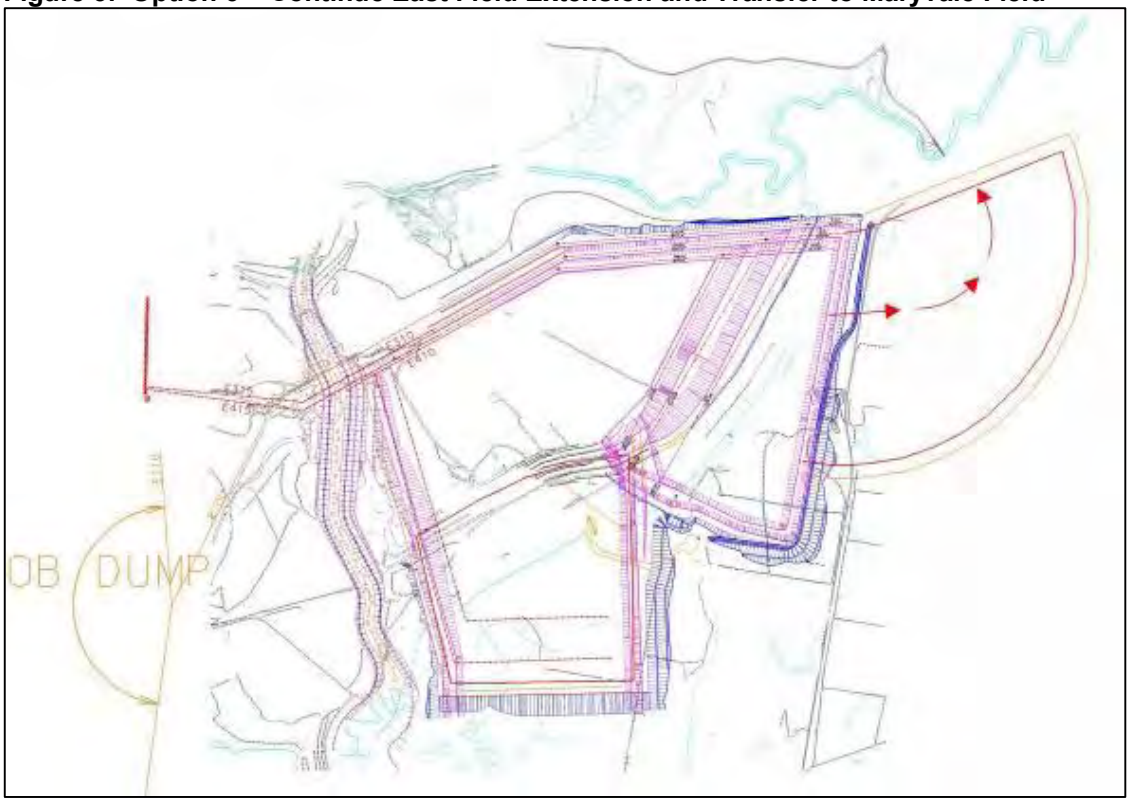
This mine shape would provide large savings in overburden removal (22 Million bcm), the dumping area would have sufficient capacity, the quality of the coal is good, more coal would be available for excavation and there would be reduced noise and dust for Latrobe Road which would minimise the impacts on Morwell township. Operational benefits include continuation of East Field Extension during start up, reduced truck/shovel requirements and use of long face conveyors which would result in less track shifts.

The main issue with this mine shape is the removal of a large area of native vegetation, including National and State significant species. This mine shape was not considered further as a result of these environmental impacts. However, Option 7, the subject of this Referral, was identified as a potential mine shape that would result in protecting at least two-thirds of this vegetation and is a subset of Option 5.

Option 6

Option 6 investigated continuing East Field Extension and then pivoting into North of Tyers Field which has a high coal to overburden ratio. Following completion of Tyers, operations would be transferred to the southern batters of East Field and Maryvale Coal Field would be excavated, see Figure 3.

Figure 3: Option 6 – Continue East Field Extension and Transfer to Maryvale Field



This mine shape would provide delays in capital expenditure. There would be a possible reduction in total overburden quantity, as it would be an extension to the current mining operation and would use the existing layout effectively.

As with Option 4, Option 6 is not practical at this stage as it extends beyond the current Mining Licence boundary. In addition, other weaknesses with this mine shape include the need for a levee on the Latrobe River flood plain, potential issues with coal quality and the need for relocation of Latrobe Road.

Brief description of key alternatives to be further investigated (if known)**:**

Not applicable

5. Proposed exclusions

Statement of reasons for the proposed exclusion of any ancillary activities or further project stages from the scope of the project for assessment:

Not applicable

6. Project implementation

Implementing organisation (ultimately responsible for project, ie. not contractor)**:**

TRUenergy-Yallourn

Implementation timeframe:

Overburden excavation will begin at Maryvale Mine in early 2012 with coal excavation to commence in the middle of 2012 and the mine will cease in 2032.

Proposed staging (if applicable):

See above.

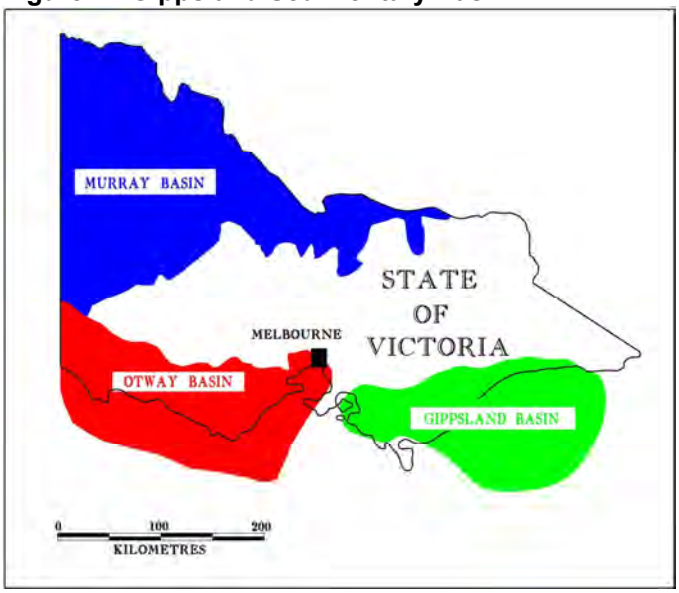
7. Description of proposed site or area of investigation

Has a preferred site for the project been selected?
☐ No ☒ Yes If no, please describe area for investigation.
If yes, please describe the preferred site in the next items (if practicable).
General description of preferred site, (including aspects such as topography/landform, soil types/degradation, drainage/ waterways, native/exotic vegetation cover, physical features, built structures, road frontages; attach ground-level photographs of site, as well as A4/A3 aerial/satellite image(s) and/or map(s) of site & surrounds, showing project footprint):

Topography/landform
The site comprises flat to gently rolling terrain. There is a small valley through which the Morwell West Drain flows.

Geological Setting and Soil types
Yallourn Mine is located in the Latrobe Valley. The Latrobe Valley forms the onshore portion of the Gippsland Sedimentary Basin. The Basin stretches from Darnum in the west and passes into the Latrobe Valley (from Yallourn to Sale) before reaching the coast between Gelliondale and Orbost (shaded green in Figure 4). The eastern portion of the basin stretches into Bass Strait and includes the oil and gas reserves which are extracted from this area.

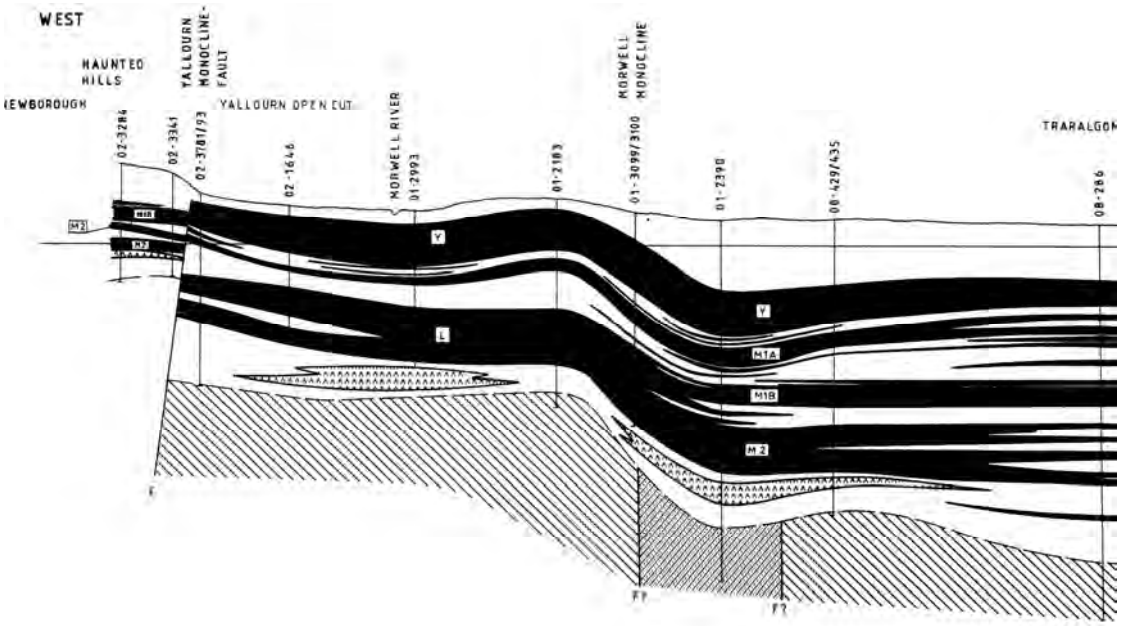
Figure 4: Gippsland Sedimentary Basin



The Maryvale Coal Field development provides access to Yallourn Seam Coal. The Yallourn Seam Coal is located beneath the Haunted Hill Formation in the north and the Terrace Alluvium in the south of the site. The seam is 10-50m below ground surface and is covered with an overburden of predominately gravels, sands and clays. The sands immediately above the seam are saturated with water. The seam itself ranges from 40 to 90 metres thick.

Figure 5 is a schematic representing the east west section through the Maryvale Field. In general the Haunted Hill Formation consists of sandy material, predominately comprised of clayey sand, with lesser less frequent clayey sands, underlain by water bearing basal sands. Beneath the Yallourn Coal Seam are further layers of sands, clays and coals.

Figure 5: East-West Section Through Maryvale Field



Degradation / Previous Land Uses
Brown coal deposits in the Latrobe Valley have been mined for over 80 years through open-cut mining. The land uses within the proposed excavation alignment include cleared grazing land and an expended quarry. The Old Melbourne Road traverses the southern end of the site. The site has had a history of significant disturbance including clearing and hydrological modifications.

Drainage and Waterways
The Morwell River diversion is built across the outworked area of the Mine and is constructed on an internal overburden dump and coal dyke.

The Morwell West Drain runs onto TRUenergy-Yallourn property and runs in a north east direction through a gully and currently flows to the Morwell River via the old Morwell River Diversion. This temporary diversion will remain in place until the commencement of Maryvale Mine at which time the Morwell West Drain will be built into the batters of East Field Extension and then flow into the Latrobe River.

It is planned to divert the Morwell West Drain to the southern end of Maryvale across land owned by TRUenergy-Yallourn, and covered by Mining Licences 5216 and 5304. The relocated drain would deliver waste water flows from Morwell West to a wet land area near the Gippsland Railway line as part of the Morwell River catchment, (see Attachment G). There would be a significant environmental improvement as additional water flows would enter the Gippsland Railway Wetland area.

The Latrobe River is situated on the northern side of the mining operation. The Morwell River runs into the Latrobe River at the confluence with the Morwell River Diversion earthworks. The undisturbed northern portion of the Morwell West Drain, with catchment from the surrounding hills on

the eastern side, will flow into the Latrobe River near Thoms Bridge. The water will be diverted around the drain built into the East Field extension batters. This concept is consistent with the proposal approved as part of the Morwell River Diversion works in the Maryvale Coal Field Development EES (1999).

The Morwell West Drain (diversion to the South) will be aligned to follow the pathway of the previously approved Morwell River Diversion and detailed design will occur in consultation with the West Gippsland Catchment Management Authority and interested landowners. These alignment works would be required by 2016.

Native and exotic vegetation cover
Vegetation investigations undertaken by IDLM (2008) identified a number of Ecological Vegetation Classes (EVCs) in the project area including: Plains Grassy Forest, Plains Grassy Woodland, Riparian Forest, Swampy Riparian Complex and Swamp Scrub (see Section 8 for further details.

Physical features
The Mining Licence area comprises gently rolling terrain with a mixture of open paddocks, variously sized stands of eucalypt forests, a sand and gravel pit, a treed area of State significance (which will be retained) and the Morwell West Drain which runs across open paddocks and then through a gully where it makes its way to the Morwell River. Public roads within the site are currently going through a process of closure and being fenced off.

The site is bounded to the west by the natural alignment of the Morwell River; Latrobe Road bounds the site to the East, and Morwell development lies to the south of the site. To the north, the Maryvale Coal Field is bounded by current mining operations in East Field and the East Field Extension.

There are a few residences within the Licence area which are owned and leased by TRUenergy-Yallourn.

Site area (if known): 95.6 ha

Route length (for linear infrastructure) Not Applicable

Current land use and development:

See physical features (above)

Description of local setting (eg. adjoining land uses, road access, infrastructure, proximity to residences & urban centres):

The proposed excavation alignment site is bound, to the north and west, by the East Field mining area and the adjoining Maryvale Field. respectively. Grazing land borders the south and the east of the site with the Latrobe Road located to the east. The Old Melbourne Road traverses the southern end of the site. A pine plantation of approximately 65 ha is located to the north of the site. The closet urban zoned land is approximately 750 m from the Mining Licence Boundary; however, there are a number of dwellings in closer proximity (but not within 100 m) to the mine site including dwellings on the east side of Latrobe Road.

Planning context (eg. strategic planning, zoning & overlays, management plans):

Zoning and Overlays associated with the local planning schemes are provided in Attachment C. Under the provisions of the La Trobe Planning Scheme, the Yallourn Mine site and areas to the east extending as far as Morwell – Maryvale Road are included in a Special Use Zone 1 (SUZ1)– Brown Coal. The purpose of this zone is:

- *To provide for brown coal mining and associated uses*
- *To provide for electricity generation and associated uses*
- *To provide for interim and non-urban uses which protect brown coal resources and to discourage the use or development of land incompatible with future brown coal mining and industry*

(Latrobe Planning Scheme)

The use of land within this zone for mining is permitted without the need for a planning permit provided that it is at least 1,000 m from specified zones and uses.

Other zones in close proximity to the site are:

- Farm Zone (FZ) immediately south of the mine;

- Public Park and Recreation Zone (PPRZ) located to the southwest of the site;
- Public Conservation and Resource Zone (PCRZ) located approximately 2 km north of the site;
- Road Zone 1 (RDZ1) located to the east of the mine (La Trobe Road); and
- Residential 1 Zone (R1Z) associated with the township of Morwell is located approximately 1.2 km away from the site.

There are three overlays that apply to land within the Yallourn Mine Licence boundary. These are the Heritage Overlay (HO), Land Subject to Inundation Overlay (LSIO) and Wildfire Management Overlay.

The HO is located approximately 4 km to the north east of the proposed Re-alignment Area and should not be affected by the new alignment. The LSIO has been applied to the west of the proposed excavation alignment at the end of the Old Melbourne Road along the Morwell River. The Wildfire Management Overlay crosses directly over the proposed re-alignment site.

In addition an Environmental Significance Overlay 1 (ESO1) urban buffer applies to the rural land to the south and south east of the new alignment area located between the Yallourn Mining Licence boundary and the township of Morwell. The purpose of this overlay is to:

- *Provide for mutual protection of urban amenity and coal resource development and the continued social and economic productive use of land;and*
- *Provide for development which is compatible within a buffer area including reservations and for services ancillary to a Brown Coal Open Cut outside the buffer area.*

(Latrobe Planning Scheme)

Local government area(s):

The project area is located within the local government boundaries of Latrobe City.

8. Existing environment

Overview of key environmental assets/sensitivities in project area and vicinity (cf. general description of project site/study area under section 7)**:**

Although the area has a history of significant disturbance with clearing and hydrological modifications over the years, and part of the site was used for quarrying, it contains habitat for a wide diversity of indigenous flora and fauna.

The Re-alignment Area is part of a greater patch of remnant vegetation of more than 45 ha and is the largest patch of remnant vegetation within a 5 km radius. The Re-alignment Area includes the following assets/sensitivities:

- Endangered and Vulnerable Ecological Vegetation Classes including;
  - Plains Grassy Forest (Vulnerable) – 18.5 ha,
  - Plains Grassy Woodland (Endangered) – 1.6 ha,
  - Riparian Forest (Vulnerable) – 1.0 ha,
  - Swampy Riparian Complex (Endangered) – 1.8 ha, and
  - Swamp Scrub (Endangered) – 0.5 ha.
- Habitat for (and existing populations of) rare and threatened species including *Cardimine teniufolia* and *Eucalyptus strzeleckii*. Please see section 12 for further detail.

9. Land availability and control

Is the proposal on, or partly on, Crown land?

☒ No ☒ Yes If yes, please provide details.

The proposed excavation re-alignment is within the boundaries of Yallourn Energy's Mining Licence 5003 and does not include any Crown land, apart from roads, which will be transferred to TRUenergy-Yallourn prior to mining.

Current land tenure (provide plan, if practicable):

All the land is owned by TRUenergy – Yallourn except for the Government Road reserves within the boundaries of the site (i.e. Old Melbourne Road, Maxwell Morrisons Road and Toners Lane). These public roads are currently closed to the public.

Intended land tenure (tenure over or access to project land):
As above
Other interests in affected land (eg. easements, native title claims):
As above, the Government Road Reserves within the boundaries of the site are currently in the process of being closed to the public.

10. Required approvals

State and Commonwealth approvals required for project components (if known):

Strzelecki Gums (vulnerable under the EPBC Act) will be impacted by the re-alignment. The project is currently being referred to the Commonwealth to determine whether the project is a controlled action.

Mining in Victoria is controlled by the *Mineral Resources (Sustainable Development) Act* 1990 which is administered by the Department of Primary Industries. This act requires two stages of approval:

- Mining Licence
- Authority to Commence Work or Variation to Approved Work Plan

The area is within the Mining Licence No. 5003 for Yallourn Mine, therefore no further mining licence needs to be obtained for the mining operation or works associated with the *Mineral Resources Development Act* 1990. However a Work Plan approval for changed mine alignment is required.

Discussions with Department of Planning and Community Development and Department of Primary Industries have highlighted the ability to manage the Yallourn Coal Field Re-alignment Project approvals under Section 42A of the *Mineral Resources (Sustainable Development) Act* 1990 which allows work variations to proceed without a planning permit in some instances.

Section 42A applies if:

> *(a) a licensee proposes to vary an approved work plan that was approved in respect of work for which an Environment Effects Statement was prepared and assessed under section 42(7); and*
>
> *(b) a permit is required to be obtained under a planning scheme for the new work that it is proposed to do*.

With respect to item (a); an Environment Effects Statement and a Supplementary Environment Effects Statement have previously been approved (in 1999 and 2002, respectively) for mining the Maryvale Coal Field.

With respect to item (b); a permit is required to be obtained under the Latrobe Planning Scheme as the top of the excavation will be less than 1000 m from a residential zone (Schedule 1 to the Special Use Zone – Section 2). The excavation will be 882 m from a residential zone at its closest point. It should be noted that this is a 101 m improvement on the currently approved mine alignment which is 783 m from a residential zone at its closest point.

Therefore, Section 42A applies. Section 42A, then goes on to say that:

The licensee is not required to obtain a permit for that work if—

> *(a) the Minister, after consultation with the Minister administering the Environment Effects Act 1978, is satisfied that the new work will not cause any significant additional environmental impacts; and*
>
> *(b) the Minister approves the variation*

If the Minister is not so satisfied, the licensee is still not required to obtain a permit for that work if—

> *(a) the Minister administering the Environment Effects Act 1978 directs that a report be prepared on the additional environmental impacts that the new work may have; and*
>
> *(b) the report is made available for public inspection and comment for at least 28 days; and*

(c) after considering any comments made during that period, that Minister submits an assessment of the report to the Minister; and

(d) the variation, in the form that it is approved by the Minister, substantially complies with any requirements recommended by that assessment.

The Yallourn Coal Field Re-alignment Project has been discussed with the Department of Sustainability and Environment (with respect to vegetation offset requirements), Department of Planning and Community Development (with respect to approvals requirements), Department of Primary Industries (with respect to Work Plan requirements), West Gippsland Catchment Management Authority (with respect to Morwell West Drain re-alignment plans) and Latrobe City Council (with respect to the entire re-alignment). Discussions have focused on technical issues that require resolution.

The Work Plan Variation is currently being drafted in consultation with the Department of Primary Industries and is due to be submitted for comment in Mid-June 2008.

The work plan includes the following information:

1. A description of the proposed works, including details of the potential environmental impacts and the measures proposed for their control or mitigation.
2. If specific sites have been identified for drilling or other earthworks, a map showing the general location of those works, including any details regarding the cutting of tracks or roads.
3. A description of the proposed rehabilitation of any areas subject to surface disturbance including re-vegetation proposals and, where relevant, proposals for the removal of plant and equipment.
4. A description of the proposed arrangements for consultation with landowners, Crown land managers and local councils.
5. Information about the proposed methods of monitoring, auditing and reporting impacts on the environment.
6. An occupational health and safety plan that demonstrates, as far as is practicable, that the works are designed and will be operated to be safe and without risks to health.

If the Work Plan is approved vegetation removal would be exempt from the need for a planning permit under Section 52.17 of the Latrobe Shire Planning Scheme.

The proposal will also impact on the current Yallourn Mine Conservation Management Plan (YMCMP). Impacts proposed on the current YMCMP are required to be offset under the current Victorian Native Vegetation Framework. An assessment to review the validity and the potential for offsetting vegetation proposed for removal within TRUenergy-Yallourn lease land has been undertaken. This assessment examined the following:

- Conservation significance of vegetation proposed for removal;
- Offsets required under the Victorian Native Vegetation Framework for vegetation loss proposed on Conservation Significance;
- Vegetation available for offsets within TRUenergy-Yallourn land; and
- Recommendations and further information required.

The assessment is summarised within this Referral. Full details of the assessment can be found in *Ecological Assessment, Yallourn Coal Field Development Maryvale Field Eastern Extension* (IDLM 2008), the report has been provided in support of this Referral.

Have any applications for approval been lodged?

☐ No ☒ Yes If yes, please provide details.

An EPBC Referral has been drafted and will be submitted to the Commonwealth at the same time as this EES Referral.

Approval agency consultation (agencies with whom the proposal has been discussed):

As stated above, this proposal has been discussed with Department of Sustainability and Environment, Department of Planning and Community Development, Department of Primary Industries, West Gippsland Catchment Management Authority and Latrobe City Council.

Other agencies consulted:
Information has been provided to the Environmental Review Committee which includes representation from the following agencies: Latrobe City Council, Environment Protection Authority, Gunai Kurnai Native Title people, West Gippsland Catchment Management Authority, Department of Primary Industries, Department of Infrastructure, Department of Sustainability and Environment, and Advance Morwell.

PART 2 POTENTIAL ENVIRONMENTAL EFFECTS

11. Potentially significant environmental effects

Overview of potentially significant environmental effects (identify key potential effects and comment on their significance and likelihood, as well as key uncertainties):

Potentially significant environmental effects are as follows:

- Loss of biodiversity as a result of removal of vegetation - rare and threatened species have been identified within the potential mining footprint.
- Loss of fauna habitat as a result of removal of vegetation - vegetation removal will reduce the area of habitat available for a wide range of fauna. It will also isolate remaining vegetation in the medium term until proposed revegetation is established.
- Loss of the following EVCs
    - 18.5 ha of Plains Grassy Forest (Vulnerable)
    - 1.6 ha of Plains Grassy Woodland (Endangered)
    - 1.0 ha of Riparian Forest (Vulnerable)
    - 1.8 ha of Swampy Riparian Complex (Endangered), and
    - 0.5 ha of Swamp Scrub (Endangered)

- Loss of some rare and threatened species, including *Cardimine teniufolia* and *Eucalyptus strzeleckii,* through removal of vegetation.
- Potential impact on *Cardimine teniufolia* and *Eucalyptus strzeleckii* through replacement of the Morwell West Drain, which may result in reduced water flow to various areas. IDLM conclude that this reduction will not result in an impact on the long term viability of these species, particularly *Eucalyptus strzeleckii*.

Habitat fragmentation is not considered significant as the remaining vegetation will continue to be consolidated in one continuous block.

It is likely that mining disturbance will increase the potential for weed invasion in the short term. However, existing weed control programs have significantly reduced weed threats at the Mine and these programs will continue within the re-aligned mine area.

12. Native vegetation, flora and fauna

Native vegetation

Is any native vegetation likely to be cleared or otherwise affected by the project?

☐ NYD ☐ No ☒ Yes If yes, answer the following questions and attach details.

What investigation of native vegetation in the project area has been done? (briefly describe)
IDLM have undertaken a detailed investigation of native vegetation that may be affected by the proposed mine re-alignment. A summary of this work is provided in this section (for full details refer to *Ecological Assessment, Yallourn Coal Field Development Maryvale Field Eastern Extension* (IDLM, May 2008)).

The IDLM investigation began with a broad assessment of the condition of the vegetation on site and the categorisation of areas as either greater than or less than 25% cover of native understorey vegetation. Following field consultation with DSE officers (Traralgon) the appropriate extant ecological vegetation classes (EVCs) and habitat zones were assigned to all areas where native understorey vegetation cover exceeded 25% (i.e. remnant 'patches' of vegetation) (Attachment D1). Vegetation quality assessments were undertaken within each of the identified 13 habitat zones.

A scattered tree assessment was undertaken in areas where the native understorey cover was less than 25% (Attachment D2).

What is the maximum area of native vegetation that may need to be cleared?

☐ NYD ☒ Estimated area 23.4 ha

An estimated area of 23.4 ha of remnant patch vegetation (i.e. where greater than 25% of understorey cover is native vegetation) would be cleared under the re-alignment, and 147 scattered trees would also be removed.

How much of this clearing would be authorised under a Forest Management Plan or Fire Protection Plan?

☒ N/A …….. approx. percent (if applicable)

Which Ecological Vegetation Classes may be affected? (if not authorised as above)

☐ NYD ☒ Preliminary/detailed assessment completed. If assessed, please list.

The EVC's, their conservation significance and the areas lost are listed below:

- 18.5 ha of Plains Grassy Forest (Vulnerable)
- 1.6 ha of Plains Grassy Woodland (Endangered)
- 1.0 ha of Riparian Forest (Vulnerable)
- 1.8 ha of Swampy Riparian Complex (Endangered),
- 0.5 ha of Swamp Scrub (Endangered)

Have potential vegetation offsets been identified as yet?

☐ NYD ☒ Yes If yes, please briefly describe.

The necessary vegetation offsets required to meet the net gain target associated with the Re-alignment have been identified within TRUenergy-Yallourn's lease land. This section is separated into two sections – loss identification and offset sites. Each of these sections address the following areas of loss and offset:

- Remnant Patches
- Large Trees in Patches
- Scattered Trees
- Loss of YMCMP Offset Patches (offsetting the offsets). This is required because some of the area to be removed was designated as an offset site in 2005.

12.1 Loss Identification

12.1.1 Remnant Patches

Within remnant patches of vegetation (i.e. where understorey cover of greater than 25%) 13 separate habitat zones were identified, spread across the five assigned EVCs. Attachment D1 shows the location of these habitat zones. It should be noted that offsets are not required for the expended quarry area (Jeffries Quarry), nor where 'degraded treeless vegetation' has been identified. However, at the request of DSE, TRUenergy-Yallourn has agreed to supply offsets for the degraded treeless vegetation. This is described in Section 2.2.4.

Table 2 provides a summary of losses in terms of habitat area (calculated in accordance with the *Native Vegetation Framework* (DNRE 2002)) that would occur within the 13 remnant patches.

Table 2: Summary of Losses and Offset Sites

Habitat Zone	EVC	EVC Conservation Significance	Area (ha)	Habitat Score	Hab/ha	Overall Conservation Significance	Multiplier	Net Gain Target
PGF 1	Plains Grassy Forest	Vulnerable	3.47	0.2	0.69	MEDIUM	1	0.69
PGF 2	Plains Grassy Forest	Vulnerable	5.68	0.49	2.78	HIGH	1.5	4.17
PGF 3	Plains Grassy Forest	Vulnerable	1.05	0.41	0.43	HIGH	1.5	0.65
PGF 4	Plains Grassy Forest	Vulnerable	0.60	0.41	0.25	HIGH	1.5	0.37
PGF 5	Plains Grassy Forest	Vulnerable	0.44	0.65	0.29	VERY HIGH	2	0.57
PGF 6	Plains Grassy Forest	Vulnerable	7.21	0.49	3.53	HIGH	1.5	5.30
PGW 1	Plains Grassy Woodland	Endangered	1.61	0.38	0.61	HIGH	1.5	0.92
RF 1	Riparian Forest	Vulnerable	1.02	0.5	0.51	VERY HIGH	2	1.02
SRC 1	Swampy Riparian Complex	Endangered	0.17	0.46	0.08	VERY HIGH	2	0.16
SRC 2	Swampy Riparian Complex	Endangered	1.09	0.57	0.62	VERY HIGH	2	1.24
SRC 3	Swampy Riparian Complex	Endangered	0.20	0.45	0.09	VERY HIGH	2	0.18
SRC 4	Swampy Riparian Complex	Endangered	0.32	0.34	0.11	VERY HIGH	2	0.22
SS 1	Swamp Scrub	Endangered	0.50	0.28	0.14	HIGH	1.5	0.21
			23.4		**10.13**			**15.70**

12.1.2 Large 'Old' Trees Within Remnant Patches

Within remnant patches of vegetation (i.e. where native understorey cover is greater than 25%), all very large and large trees were identified. Each tree identified was tagged and its diameter at breast height was measured. Each tree was assigned the conservation significance of the patch in which it occured. Table 3 details the number of very large and large trees required for removal in each of the identified habitat zones.

One hundred and seventy large 'old' trees are proposed for removal within remnant patches of vegetation. Species include *Eucalyptus angophoroides* (Apple Box), *Eucalyptus obliqua* (Messmate), *Eucalyptus ovata* (Swamp Gum), *Eucalyptus radiata* (Narrow-leaf Peppermint), *Eucalyptus rubida* (Candlebark) *Eucalyptus strzeleckii* (Strzeleckii Gum) and *Eucalyptus viminalis* (Manna Gum). The offset requirements for the loss of these trees are described as protection and recruitment offsets. A total of 748 large 'old' trees are required to be protected and 3,740 are required to be recruited.

Table 3: Summary of Very Large and Large Tree Losses Within Patches

Habitat Zone	Habitat Zone Conservation Significance	Tree Size	Number	Protection Multiplier	TOTAL PROTECTION	Recruitment Multiplier	TOTAL RECRUITMENT
PGF 1	High	VL	3	4	12	20	60
		L	21	4	84	20	420
PGF 2	High	VL	31	4	124	20	620
		L	69	4	276	20	1380
PGF 3	High	VL	4	4	16	20	80
		L	11	4	44	20	220
PGF 4	High	VL					
		L	1	4	4	20	20
PGF 5	Very High	VL	1	8	8	40	40
		L	9	8	72	40	360
PGF 6	High	VL					0
		L	9	4	36	20	180
PGW 1	High	VL					
		L	4	4	16	20	80
RF	Very High	VL	1	8	8	40	40
		L	1	8	8	40	40
SRC 2	Very High	VL					
		L	1	8	8	40	40
SRC 3	Very High	VL	1	8	8	40	40
		L	1	8	8	40	40
SRC 4	Very High	VL					
		L	2	8	16	40	80
TOTAL			**170**		**748**		**3740**

12.1.3 Scattered Trees

A scattered tree assessment was undertaken within areas deemed to have a native understorey cover of less than 25%. Each tree was identified and tagged and its diameter at breast height was measured. In accordance with DSE's *Guide for assessment of referred planning permit applications* (2007) the method use to determine conservation significance depended on the size of each tree. The assessment found that of the 147 scattered trees that require removal, 25 have been identified as very large, 47 as large, 25 as medium and 50 as small.

Attachment D2 details the location of scattered trees that require removal. Species include *Acacia delbata* (Silver Wattle) *Acacia mearnsii* (Black Wattle), *Eucalyptus angophoroides* (Apple Box), *Eucalyptus obliqua* (Messmate), *Eucalyptus ovata* (Swamp Gum), *Eucalyptus radiata* (Narrow-leaf Peppermint), *Eucalyptus rubida* (Candlebark) and *Eucalyptus viminalis* (Manna Gum). Table 4 details the number of trees proposed for removal and assigned conservation significance. The offset requirements for the loss of these trees are detailed as protection and recruitment offsets. A total of 179 trees are required to be protected and 1,644 are required to be recruited.

Table 4: Summary of Scattered trees proposed removal and offset requirements

Overall Conservation Significance	Conservation Significance based on BSC	Conservation Significance based on threatened species	Conservation Significance based on other site attributes	SIZE	EVC	NO	Protection Multiplier	PROTECTION	Recruitment Multiplier	RECRUITMENT
HIGH	HIGH	LOW	LOW	VL	PGW	1	4	4	20	20
				L	PGW	2	4	8	20	40
				M	PGW	4	2	8	10	40
MEDIUM	MEDIUM	LOW	LOW	VL	PGF	24	2	48	10	240
				L	PGF	43	2	86	10	430
					RF	2	2	4	10	20
				M	PGF	21	1	21	5	105
LOW	LOW	LOW	LOW	SMALL	PGF	36			*	623
				SMALL	PGW	14			*	126
					TOTAL	147		**179**		**1644**

* Refer to Appendix 3.4.4 of the Port Phillip and Western Port - Native Vegetation Plan - Replacement ratios for individual trees smaller than medium old trees with normal and slow growth rates.

12.1.4 Loss of YMCMP Offset Patches (offsetting the offsets)

Some removal of vegetation will occur at offsets sites that were approved under the YMCMP (2005). The loss of the offset gain required under the YMCMP will be offset elsewhere in the project area (see Section 12.2.3). Table 5 details the YMCMP blocks that are affected and the total area of offset required to replace lost offsets from the approved YMCMP.

.

Table 5: YMCMP Blocks proposed for removal

YMCMP Block	Total Area	Offset Gain required under YMCMP	% block removed	% Offset Gain required to offset
4	2.5	0.18	4%	0.01
7	12.5	1.75	61%	1.07
8	2	0.2	100%	0.2
9	6	1.14	100%	1.14
10	4.6	0.55	100%	0.55
12	8.6	1.64	100%	1.64
38	8.4	1.51	53%	0.8
39	2	0.3	73%	0.22
			TOTAL hab/ha loss	**5.63**

12.2 Offset Sites

12.2.1 Remnant Patches

The offset sites required to meet the necessary net gain target have been identified within TRUenergy-Yallourn lease land. Attachment D3 shows the location of these offset sites. Within these sites there are 24 ha of habitat available. The offsets would be allocated in the following manner:

- 15.7 Hab/ha allocated to meeting the net gain target for the re-alignment
- 4.6 Hab/ha towards gains already allocated under the approved YMCMP 2005
- 2.7 Hab/ha are unallocated (not necessary for meeting net gain targets).

Table 6: Gain Allocation

Offset Site	Gains Available	Gain allocated for YMCMP 2005	Gain Allocated for Re-alignment	Gain unallocated
CMP Block 28	4.49	2.51	1.98	0
CMP Block 34	12.36	1.06	8.75	2.55
CMP Block 37	4.64	1.04	3.51	0.09
Addition to Block 37 (2007)	0.23	NA	0.23	0
Block 41 (2007)	0.4	NA	0.40	0
Block 42 (2007)	0.88	NA	0.83	0.05
Total	23	4.61	15.7	2.69

In accordance with *Victoria's Native Vegetation Management, A Framework for Action* (DNRE 2002) gains allocated for the re-alignment in the above table meet the EVC and quality objectives associated with the loss site.

12.2.2 Scattered Trees and Large 'Old' Trees Within Remnant Patches

Protection offsets for the loss of scattered trees and large trees in patches have been identified throughout TRUenergy-Yallourn lease land. Overall 927 trees are required to be protected and an overview of proposed tree protection sites are provided in Attachment D4 and a description is provided below.

TRUenergy-Yallourn's management commitments to ensure the protection of the trees:

- Fence trees at least twice the diameter of the canopy
- Remove threats such as grazing, burning and soil disturbance
- Retain fallen timber

- Control declared noxious and high threat weeds
- Encourage natural regeneration of indigenous species.

The species to be protected include *E. angophoroides*, *E. fulgens* (rare in Victoria), *E. obliqua*, *E. ovata*, *E. radiata*, *E. rubida, E. strzeleckii* (vulnerable in Victoria and Australia) and E. viminalis (Manna Gum).

The sites for scattered tree protection offsets are described in the following section, including the identified benefits of protecting the sites and the land tenure details.

North and South of the Latrobe River.
- Benefits: The ability to secure a significant population of *E. strzeleckii* along the Latrobe River corridor; the provision of a secure habitat to species such as the Wedge Tail Eagles that are nesting within the patch; enhancement of remnant patches of highly significant Riparian Forest vegetation communities; ability to secure a patch of greater than 50 ha surrounding the Latrobe River environs.
- The land tenure is a combination of Crown Land and TRUenergy-Yallourn Lease Land.

Surrounding the Morwell River south of the river diversion and north of existing CMP block 28 and 29.
- Benefits: the ability to secure a significant population of *E. strzeleckii* along the Morwell River corridor; expansion of *E. strzeleckii* protection that is currently present in existing CMP blocks; expansion on Sea Eagle habitat; enhancement of Riparian Forest vegetation communities.
- The land tenure is a combination of Crown Land and TRUenergy-Yallourn Lease Land.

Surrounding proposed 'remnant patch' offset block 41.
- Benefits: the expansion and improvement of corridors of vegetation that link to proposed offset block 41; linkage of drainage lines and Latrobe River environs that supports highly significant vegetation communities.
- Land Tenure: TRUenergy-Yallourn Lease Land.

Surrounding proposed 'remnant patch' offset block 42
- Benefit: Expansion and improvement of the corridors of vegetation that link to proposed offset block 42.
- Land Tenure: TRUenergy-Yallourn Lease Land.

Surrounding existing CMP Block 34
- Benefit: Expansion of patch size; creation of habitat linkage corridors; improvement in quality of patches of vegetation that contain large trees.
- Land Tenure: TRUenergy-Yallourn Lease Land.

Surrounding existing CMP Block 33a and 33b
- Benefit: Expansion of patch size; creation of habitat linkage corridors; improvement of quality in patches of vegetation that contain large trees.
- Land Tenure: TRUenergy-Yallourn Lease Land.

Yallourn North – Surrounding existing CMP block 37
- Benefit: Expansion of patch size; creation of habitat linkage corridors; improvement of quality in patches of vegetation that contain large trees.
- Land Tenure: TRUenergy-Yallourn Lease Land.

Savagers Track Overburden Dump and Eastern Road, Yallourn
- Benefit: Conservation of patch of remnant vegetation; improvement of quality in remnant vegetation patch.
- Land Tenure: TRUenergy-Yallourn Lease Land.

Two important environmental corridors exist within TRUenergy-Yallourn lease land: the Latrobe River and the Morwell River. The tree protection and recruitment site within the Yallourn River and Morwell Rivers provides the missing link to the overall protection of *E. strzeleckii* within these two important corridors. Attachment D6 details the locations of existing managed sites that contain *E. strzeleckii* managed by TRUenergy-Yallourn and International Power Hazelwood. Also detailed are the new sites that include both remnant patch protection, tree protection and recruitment

offsets which again aid in the protection of *E. strzeleckii* within these corridors.

12.2.3 Recruitment

The total number of recruited plants required to account for the loss of scattered trees as well as large 'old' trees within remnant patches totals 5,384. Four areas have been identified as sites to undertake the necessary planting to satisfy offset targets (shown in Attachment D7). These areas include:

ZONE 1 Latrobe River
- Benefits: Expand on large tree protection sites; add to the existing population of *E. strzeleckii*; improve the Latrobe River corridor; increase diversity within the Latrobe River environs.

ZONE 2 Morwell River
- Benefits: Expand on large tree protection sites; add to the existing population of *E. strzeleckii*; improve the Morwell River corridor; expand and improve the link to existing CMP blocks; increase habitat for the Sea Eagle.

ZONE 3 Surrounding the remaining vegetation within the MWD
- Benefits: Provide physical protection from the new mine boundary to the remaining population of *E. strzeleckii* and environs within the MWD; increase patch size of existing remnant vegetation; revegetate existing quarry site.

ZONE 4 Surrounding the remaining vegetation within CMP blocks 5 and 7
- Benefits: increase patch size of existing CMP blocks 5 and 7; prevent the loss of overall patch size for fauna species that use remnant vegetation.

Table 7 details the species proposed for planting within the four identified zones. These species have been developed to best represent the appropriate EVCs of the area as well as the species composition of surrounding patches of remnant vegetation. Recruitment gains can also be achieved by promoting natural regeneration. Zones 3 & 4 are considered to hold good potential for natural regeneration of canopy species due to the close proximity to and the density of mature tree populations. Natural regeneration within these zones would be best achieved by controlling grazing threats from rabbits and stock and controlling competition from weed species. The estimated rate of regeneration (in terms of individuals recruited), assuming the above management actions are undertaken, is displayed in Table 7.

Table 7 Proposed Recruitment Numbers

ZONE	*Species Name*	Common Name	Number to be planted	Estimated natural regeneration
ZONE 1 Latrobe River	*Acacia delbata*	Silver Wattle	250	0
	Eucalyptus strzeleckii	Strzelecki Gum	1000	0
	Eucayptus viminalis	Manna Gum	350	0
	Hymenanthera dentata	Tree violet	250	0
	Pomaderris aspera	Hazel Pomaderis	300	0
		TOTAL	**2150**	
ZONE 2 Morwell River	*Acacia delbata*	Silver Wattle	514	0
	Eucalyptus strzeleckii	Strzeleckii Gum	1000	0
	Melaleuca ericofolia	Swamp Paperbark	620	0
		TOTAL	**2134**	
ZONE 3 Jefferies Quarry	*Acacia melanoxylon*	Blackwood	50	0
	Eucalyptus obliqua	Messmate	35	55
	Eucalyptus strzeleckii	Strzeleckii Gum	40	120
		TOTAL	**300**	
ZONE 4 Above Block 5	*Acacia mearnsii*	Black Wattle	150	0
	Acacia melanoxylon	Blackwood	150	0
	Eucalyptus obliqua	Messmate	40	160
	Eucalyptus radiata	Narrow leaf Peppermint	40	160
	Eucalyptus rubida	Candlebark	20	80
		TOTAL	**800**	
		TOTAL NUMBERS	**5384**	

12.2.3 Offsetting the Offsets (Accounting for the Loss of YMCMP Offsets)
To account for the loss of existing offset blocks that formed a part of the 2005 YMCMP, it is proposed that YMCMP blocks that are not proposed for mining be assigned an enhanced level of security. This could be achieved by an Agreement under Section 69 of the *Conservation Forests and Lands Act* 1972. Table 8 details the proposed YMCMP vegetation blocks that are to be assigned an increased level of security. A security gain is calculated as 10% of the habitat score assigned under the YMCMP. The total gain is calculated as 7.27 Hab/ha (5.63 Hab/ha was required under Section 12.1.4 which gives an additional bonus of 1.64 Hab/ha). Under this proposal 129 ha of remnant vegetation would be secured. Attachment D8 shows the blocks to be secured.

Table 8 YMCMP proposed to achieve Security Gain

YMCMP Block	Total Area	YMCMP Hab Score	Available Security Gain (ha)	Total Security Available
28	35.9	0.6	0.06	2.154
34	35.56	0.67	0.067	2.38
33a	16.3	0.22	0.022	0.358
33b	4.7	0.4	0.04	0.188
35	11.9	0.57	0.057	0.678
36	4.14	0.4	0.04	0.165
37	20.67	0.65	0.065	1.349
			TOTAL Hab/ha Gain	**7.27**

12.2.4 Other Offsets
DSE South Gippsland has requested that areas of Degraded Treeless Vegetation (DTV), where the native understorey cover is greater than 25%, should be offset. They have suggested that understorey planting could be an appropriate offset measure, with the area to be planted out calculated by multiplying the loss area by 25%. Under the Re-alignment, 7.4 ha of DTV with a native understorey cover greater than 25% would be lost which under DSE's suggestion would require an understorey planting of 1.85 ha to be undertaken.

TRUenergy-Yallourn proposes this offset be located within the Stage 1 Wetland (CMP Block G, see Attachment D9). Since 2001, 3.6 ha of Stage 1 Wetland has been planted and maintained by TRUenergy-Yallourn. Of these plantings 0.5 ha have already been allocated as offsets associated with the Morwell Field and Game Club. This would leave 3.1 hectares of planting eligible to be allocated towards offsetting DTV vegetation (understorey cover greater than 25%) that would be lost under the Re-alignment. Offset management commitments that would be required include the continued maintenance of this planting to minimum standards set in DSE's Revegetation Planting Standards (2006). The age of plantings within areas of Stage 1 Wetland varies between one and seven years. Maintenance in each area should continue until the planting is at least 10 years of age.

In terms of vegetation community likeness the planting within Stage 1 Wetland is considered to be an appropriate offset as the loss and gain sites are both low lying swampy environments. The species for the Stage 1 Wetland plantings were chosen to best represent the Swamp Scrub and Swampy Riparian Complex EVC's. The DTV within the Morwell West Drain was identified as being most closely resembling the Swampy Riparian Complex EVCs.

Other information/comments? (eg. accuracy of information)

Flora and fauna

What investigations of flora and fauna in the project area have been done?
(provide overview here and attach details of method and results of any surveys for the project & describe their accuracy)

FLORA
IDLM have undertaken a detailed investigation of native vegetation to be affected by the proposed mine re-alignment (see above).

FAUNA
Fauna consultant Peter Homan undertook a full fauna assessment of various blocks in the YCMP between the 19/03/2007 and 29/03/2007. Survey methods used included Elliot trapping, cage trapping, funnel trapping, harp trapping, stagwatching, spotlighting, bird observation and listening. This assessment included several areas contiguous, or within the footprint of the re-alignment.

In November 2007 TRUenergy-Yallourn commissioned the Amphibian Research Centre to assess the presence and abundance of frog species within wetlands situated in their lease land. Three survey points were located along the Morwell West Drain in areas existing within the proposed Re-alignment Area.

Previously to 2007, detailed fauna assessments were undertaken in 1998 and 2001 by Biosis Research Pty Ltd as part of the EES and SEES investigations.

The information from these investigations is summarised in the following sections. (For detailed information, refer to Section 3.3 of the IDLM Report (May 2008).)

Have any threatened or migratory species or listed communities been recorded from the local area?

☒ NYD ☒ No ☒ Yes If yes, please:

- List species/communities recorded in recent surveys and/or past observations.
- Indicate which of these have been recorded from the project site or nearby.

Flora

Table 9: Database and literature search for flora species recorded within a 5 km radius of the study area

Scientific Name	Common Name	Status*	Other Database Listings**	Source#
Caladenia fragrantissima subsp. orientalis	Eastern Spider-orchid	E,f	e	DSE
Cardamine tenuifolia>	Slender Bitter-cress		k	DSE,MK
Cyathea cunninghamii	Slender Tree-fern	f	v	DSE
Desmodium varians	Slender Tick-trefoil		k	DSE
Eucalyptus fulgens	Green Scentbark		r	DSE,MK
Eucalyptus strzeleckii>	Strzelecki Gum	V	v	DSE,MK,EPBC
Eucalyptus yarraensis	Yarra Gum		r	DSE
Marsilea mutica	Smooth Nardoo		r	DSE
Platysace ericoides	Heath Platysace		r	DSE
Amphibromus fluitans	River Swamp Wallaby-grass	V		EPBC
Prasophyllum frenchii	Maroon Leek-orchid, Slaty Leek-orchid, Stout Leek-orchid, French's Leek-orchid	E,f	e	EPBC
Thelymitra epipactoides	Metallic Sun-orchid	E,f	e	EPBC

>Species recorded within the footprint of the Re-alignment

*Status

E Endangered in Australia (EPBC)
V Vulnerable in Australia (EPBC)
K Poorly known in Australia (EPBC)
f Listed under the Flora and Fauna Guarantee Act

**Other database listings

e Endangered in Victoria (VROTS)
v Vulnerable in Victoria (VROTS)
r Rare in Victoria (VROTS)
k Poorly known in Victoria (VROTS)

Source

DSE: Viridans Database Search through Just a Minute Victorian Animals and Plants, (DSE, 2007)
Mk: Identified in 'Flora and Fauna Assessment of the Maryvale Field Development' (Mueck et al 1998) as recorded in the Maryvale Field environs.
EPBC: EPBC Protected Matters Search

Table 10: Database and literature search for fauna species recorded within a 5km radius of the study area

Scientific Name **Common Name**	Status*	Other Database Listings**	Source#	Habitat Assessment
Anas rhynchotis Australasian Shoveler		v	DSE	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Ardea alba Great Egret, White Egret	f	v	DSE, YC, EPBC	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Aythya australis Hardhead		v	DSE	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Biziura lobata Musk Duck		v	DSE	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.

Scientific Name **Common Name**	**Status***	**Other Database Listings****	**Source#**	**Habitat Assessment**
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll	E,f	e	EPBC	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Galaxiella pusilla Dwarf Galaxias	V		MK, EPBC	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Gallinago hardwickii Latham's Snipe		n	EPBC - Migratory:	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Haliaeetus leucogaster White-bellied Sea-Eagle	f	v	EPBC - Migratory	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Heleioporus australiacus Giant Burrowing Frog	V,f	v	EPBC	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Isoodon obesulus obesulus Southern Brown Bandicoot	E	n	EPBC	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Lathamus discolor Swift Parrot	E,f	e	EPBC	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Litoria reniformis Growling Grass Frog	V,f	e	MK, EPBC	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Melanodryas cucullata Petroicidae Hooded Robin	f	n	DSE	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Ninox connivens Barking Owl	f	r	NS	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Ninox strenua Powerful Owl	f	r	NS	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.

Scientific Name **Common Name**	**Status***	**Other Database Listings****	**Source#**	**Habitat Assessment**
Oxyura australis Blue-billed Duck	f	v	DSE	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Phascogale tapoatafa Brush-tailed Phascogale	f	v	DSE	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Potorous tridactylus tridactylus Long-nosed Potoroo (SE mainland)	V,f	e	EPBC	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Prototroctes maraena Australian Grayling	V,f	v	EPBC, DSE	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Pseudomys fumeus Konoom, Smoky Mouse	E,f	e	EPBC	Species not recorded in assessment area. Assessment area provides some habitat requirements for the species; however, proposed mine re-alignment unlikely to impact on population in the region.
Pteropus poliocephalus Grey-headed Flying-fox	V,f	v	EPBC	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Rostratula australis Australian Painted Snipe	V		EPBC	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.
Xanthomyza phrygia Regent Honeyeater	E,f	c	EPBC	Species not recorded in assessment area. Assessment area does not clearly meet any of the habitat requirements.

*Status

E Endangered in Australia (EPBC)
V Vulnerable in Australia (EPBC)
K Poorly known in Australia (EPBC)
f Listed under the Flora and Fauna Guarantee Act

**Other database listings

e Endangered in Victoria (VROTS)
v Vulnerable in Victoria (VROTS)
r Rare in Victoria (VROTS)
k Poorly known in Victoria (VROTS)
c Critically endangered in Victoria (VROTS)
n Near threatened in Victoria (VROTS)

Source

DSE: Viridans Database Search through Just a Minute Victorian Animals and Plants, (DSE, 2007)
MK: Identified in 'Flora and Fauna Assessment of the Maryvale Field Development' (Mueck et al 1998) as recorded in the Maryvale Field environs.
YC: Identified in 'Flora and Fauna Assessment of Yallourn Coal Field Development (Yugovic et al, 2001) as recorded in local area.
NS: Identified in 'Vertebrate Fauna of the Gippsland Lakes Catchment. Occasional Paper Series Number 1' (Norris et al 1983) as recorded in local area.
EPBC: EPBC Protected Matters Search

If known, what threatening processes affecting these species or communities may be exacerbated by the project? (eg. loss or fragmentation of habitats) Please describe briefly.
See below

Are any threatened or migratory species, other species of conservation significance or listed communities potentially affected by the project?

☒ NYD ☒ No ☒ Yes If yes, please:

- List these species/communities:
- Indicate which species or communities could be subject to a major or extensive impact (including the loss of a genetically important population of a species listed or nominated for listing) Comment on likelihood of effects and associated uncertainties, if practicable.

Flora

Table 11 summarises the rare and threatened flora identified within areas that would be affected by the proposed development.

Table 11: Rare and threatened flora identified within development footprint

Species Name	Status	Other Database Listings	Habitat zones identified within (See Attachment D1)
Eucalyptus Strzeleckii	V	v	SRC 1 SRC 2, SRC 3, SRC 4, RF1
Cardamine tenuifolia		k	SRC 2
V - Vulnerable in Australia (DEH 2006) v - Vulnerable in Victoria (DSE 2005) k - Poorly known in Victoria (DSE 2005)			

Eucalyptus strzeleckii

Biosis Research Pty Ltd was commissioned by Yallourn Energy prior to the Yallourn SEES to undertake a vegetation survey and assess the effect of the proposed variation of the Maryvale Project on Strzeleckii Gums. Biosis Research concluded that the Morwell River Site (which was to be removed under the approved Maryvale EES) was of national significance due to the presence of the largest known population of Strzeleckii Gums in Australia. This area, which was preserved as a result of the SEES, has formed the basis of TRUenergy-Yallourn's Conservation Management Plan. In addition, over the last 10 years TRUenergy-Yallourn has propagated and planted over 6,000 Strzeleckii Gums within its Mining Licence Area

A total of 519 *Eucalyptus strzeleckii* (Strzelecki Gum) individuals would require removal under the mine re-alignment. Of these, 480 are classified as 'small', 36 as 'medium' and 3 as 'large' (in accordance with EVC benchmark classifications for tree size). A large proportion of the population occurs within the Morwell West Drain (MWD) environs with a small patch located above Jefferies Quarry. Trees predominantly occur within the Swampy Riparian Complex and Riparian Forest EVCs with four outliers occurring in a 'patch' of Plains Grassy Forest EVC.

A significant number of individuals (115), classified as 'small', were found to have regenerated along the quarry batter to the west of the MWD. Vigorous recruitment of the species was found to be occurring along the quarry batter with an abundance of seedling's and sapling's observed.

All individuals (except those occurring on the quarry batter) are located within 'remnant patches' of vegetation, with no *E. strzeleckii* individuals occurring as 'scattered trees'. The vegetation within the drain environs is generally of high quality; however evidence of past disturbance associated with quarry activities is apparent in the *E. strzeleckii* population as a large proportion appear to have been pushed over and partially uprooted. The majority of affected individuals have survived and now display varying degrees of regeneration. While not as vigorous as along the quarry batter, the population within the drain environs displays adequate signs of regeneration with at least two recruitment cohorts observed.

Attachment D5 shows the distribution of *E. strzeleckii* across the broad assessment area as well as the broader MWD environs. *E. strzeleckii* populations identified within Habitat Zones SRC 1, SRC 2, SRC 3, SRC 4, RF 1 and PGF 5 occur within the best 50% of habitat for the species. IDLM have identified 1,607 *E. strzeleckii* within TRUenergy-Yallourn CMP blocks (outside the MWD Environs). While an extensive survey has not been undertaken, IDLM have identified a further 180 individuals occurring across TRUenergy's lease land.

As a part of the avoid and minimise process the population of *E. strzeleckii* within the Morwell West Drain was considered. Kevin Rule (2007) describes that

"the best undisturbed stands of the species I have observed established along the lower end of the drain just south of the Yallourn open cut mine".

This does not imply that these trees are not the result of regeneration occurring several decades ago. Most of the trees are of similar age and apparently mature (estimated 50 – 80 years old). The section of the valley floor in which they grow appears undisturbed and free of weeds, unlike other areas along the drain where more depauperate trees and saplings occur. Avoiding this

section of *E. strzeleckii* was an important factor in the decision making process of avoiding and minimising impacts. A total of 698 *E. strzeleckii* individuals within the MWD would remain under this proposal. Of these 647 are classified as 'small', 35 as 'medium', and 16 as 'large' (in accordance with EVC benchmark classifications for large trees).

The offset target number for the loss of large *E. strzeleckii* within the patches of vegetation has been included in Table 3. This table provides offsets for the loss of large trees in patches of vegetation. Twenty four large trees need to be protected and 120 need to be recruited for the loss of the 3 large *E. strzeleckii* under this proposal.

TRUenergy-Yallourn's commitment to *E. strzeleckii* within TRUenergy-Yallourn's lease land in both protection of remnants and the revegetation programs further demonstrates how they contribute to the long term existence of this species. Protection of remnants has been and is proposed for new sites to include weed control and removal of grazing pressures. TRUenergy-Yallourn is additionally implementing a yearly observation of the population of *E. strzeleckii* within the Morwell West Drain undertaken by Kevin Rule.

Protection of the remaining population within the MWD and inclusion of new protected remnants of *E. strzeleckii* along the Latrobe and Morwell River will aid future protection of the remaining population of *E. strzeleckii* within in the Gippsland Plain Bioregion. As for *E. strzeleckii*, the reduced flow resulting from the relocation of the MWD is not expected to affect the long term sustainability of this species.

Further information on the local *E. strzeleckii* populations and an assessment of the significance of the removal of 519 species within the Morwell West Drain is provided in Attachment H. A brief biography of Kevin Rules' Eucalyptus expertise is also included in Attachment H.

Cardamine tenuifolia
Cardamine tenuifolia (Slender Bitter-cress) individuals are consistently scattered across the Habitat Zone SRC 2. While absent from other sections of the assessment area, its presence within the MWD environs continues in areas north of the development footprint up to and including CMP Block 3. *Cardamine tenuifolia* is a perennial herb that requires moist to wet soils subject to inundation (APSM 2001). This species is not commonly observed in the Latrobe Valley and its presence in the MWD has been variable. The population observed during this assessment is greater than previously observed. While anecdotal, its increased presence in the MWD this season could be attributed to the drier than average conditions resultant from the prolonged drought conditions.

Habitat Zone SRC 2 (within which the *C. tenuifolia* population occurs) is judged to hold above average conditions for the Swampy Riparian Complex EVC within the Gippsland Plain Bioregion. SRC 2 is therefore assigned the 'best 50%' of habitat for *C. tenuifolia*.

Ecological Vegetation Classes
As identified in Table 1, Three endangered extant EVC's were identified as being present within the Re-alignment Area including Swamp Scrub (SS), Swampy Riparian Complex (SRC) and Plains Grassy Woodland (PGW). By DSE's definition an endangered EVC is one where less than 10% of its former range remains (DSE 2007). Two vulnerable extant EVC's were identified as being present within the study site including Riparian Forest (RF) and Plains Grassy Forest (PGF). DSE defines a vulnerable EVC as one where 10-30% of its pre-European extent remains. Removal of this extant vegetation further reduces the range of these EVC's.

In order to achieve offsets targets within TRUenergy-Yallourn lease land the offset sites for some habitat zones classed as high conservation significance have been up graded to areas with a higher conservation significance (in accordance with Victorian Native Vegetation Framework) as like-to-like EVC's were not able to be achieved. These include Plains Grassy Woodland and a small component of Plains Grassy Forest.

Fauna
No rare or threatened species in Victoria or Australia have been identified within the Re-alignment Area. A pair of White-bellied Sea-Eagles (*Haliaeetus leucogaster*) (vulnerable in Victoria) are known to nest in a nearby area. The re-alignment would come as close as 1 km to the known

nesting site providing a greater buffer than the approved 2002 mine alignment which was aligned as close as 300 metres to the nesting site.

Is mitigation of potential effects on indigenous flora and fauna proposed?
☒ NYD ☒ No ☒ Yes If yes, please briefly describe.

Habitat Fragmentation
Mitigation measures to reduce the habitat fragmentation impacts are as follows:
- Focus on revegetation programs to expand or link existing remnant YMCMP blocks.
- Increase security of existing YMCMP blocks to ensure protection from illegal firewood collection, clearing and entry by stock.

Loss of Biodiversity
Mitigation measures to reduce the biodiversity impacts are as follows:
- Revegetate existing cleared areas in the immediate vicinity to compensate for vegetation losses.
- Increase the area set aside for the conservation of *E. strzeleckii* through protection of remnant trees and revegetation.
- Undertake plant relocation for species that are not easily propagated and are under represented in similar YMCMP blocks.

Loss of Fauna Habitat
Mitigation measures to reduce the fauna habitat impacts are as follows:
- Revegetate and provide structural habitat such as logs and nest boxes and other faunal needs within revegetation areas.

Loss of Significant EVC's
Mitigation measures to reduce the EVC losses are as follows:
- Identify offset EVCs in line with the Victorian Native Vegetation Framework.
- Increase the conservation of existing remnant YMCMP blocks that contain Significant EVC vegetation by incorporating adjacent remnants and linking these blocks with revegetation programs.

Loss of Significant Flora Species
Mitigation measures to reduce the significant flora losses are as follows:
- Continue the current YMCMP revegetation program that includes threatened flora species.
- Replace trees pursuant to Victorian Native Vegetation Framework.

Weed Invasion
Mitigation measures to reduce weed invasion are as follows:
- Continue the current YMCMP weed control program that has already achieved a reduction of weed cover across all existing YMCMP blocks.

Other information/comments? (eg. accuracy of information)

13. Water environments

Will the project require significant volumes of fresh water (eg. > 1 Gl/yr)?
☒ NYD ☒ No ☒ Yes If yes, indicate approximate volume and likely source.

Will the project discharge waste water or runoff to water environments?
☒ NYD ☒ No ☒ Yes If yes, specify types of discharges and which environments.
Yes, water will continue to be discharged at the same volume under the existing EPA Discharge Licence.

Are any waterways, wetlands, estuaries or marine environments likely to be affected?
☒ NYD ☒ No ☒ Yes If yes, specify which water environments, answer the following questions and attach any relevant details.
See Section 7 of this referral.

Are any of these water environments likely to support threatened or migratory species?
☒ NYD ☒ No ☒ Yes If yes, specify which water environments.

No variation to what was assessed as part of the SEES.

Are any potentially affected wetlands listed under the Ramsar Convention or in 'A Directory of Important Wetlands in Australia'?

☐ NYD ☒ No ☐ Yes If yes, please specify.

There are no Ramsar wetlands within or in close proximity to the Yallourn Mine area; however the area lies within the catchment of the Gippsland Lakes which are declared Ramsar wetlands. The Gippsland Lakes are approximately 100 km east of the Yallourn Mine site.

Could the project affect streamflows?

☐ NYD ☒ No ☐ Yes If yes, briefly describe implications for streamflows.

Re-directing Morwell West Drain will direct the same quantity of water to the Gippsland Railway Wetland area. Accordingly, there will be no variation to what was assessed as part of the SEES.

Could regional groundwater resources be affected by the project?

☐ NYD ☒ No ☐ Yes If yes, describe in what way.

No variation to what was assessed as part of the SEES.

Could environmental values (beneficial uses) of water environments be affected?

☐ NYD ☒ No ☐ Yes If yes, identify waterways/water bodies and beneficial uses (as recognised by State Environment Protection Policies)

No variation to what was assessed as part of the SEES.

Could aquatic, estuarine or marine ecosystems be affected by the project?

☐ NYD ☒ No ☐ Yes If yes, describe in what way.

No variation to what was assessed as part of the SEES.

Is there a potential for extensive or major effects on the health or biodiversity of aquatic, estuarine or marine ecosystems over the long-term?

☒ No ☐ Yes If yes, please describe. Comment on likelihood of effects and associated uncertainties, if practicable.

No variation to what was assessed as part of the SEES.

Is mitigation of potential effects on water environments proposed?

☐ NYD ☒ No ☐ Yes If yes, please briefly describe.

Other information/comments? (eg. accuracy of information)

14. Landscape and soils

Landscape

Has a preliminary landscape assessment been prepared?

☒ No ☐ Yes If yes, please attach.

Is the project to be located either within or near an area that is:

- **Subject to a Landscape Significance Overlay or Environmental Significance Overlay?**
  ☐ NYD ☒ No ☐ Yes If yes, provide plan showing footprint relative to overlay.
- **Identified as of regional or State significance in a reputable study of landscape values?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.
- **Within or adjoining land reserved under the *National Parks Act 1975* ?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.
- **Within or adjoining other public land used for conservation or recreational purposes ?**
  ☐ NYD ☒ No ☐ Yes If yes, please specify.

Is any clearing vegetation or alteration of landforms likely to affect landscape values?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

The re-alignment project will have a level of visual impact that is similar to that predicted for the SEES and EES.

Is there a potential for effects on landscape values of regional or State importance?

☐ NYD ☒ No ☐ Yes Please briefly explain response.

Is mitigation of potential landscape effects proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

The SEES recommended that the final height and form of screen mounds along the eastern edge

of Maryvale Field be determined at a later date to ensure their height is sufficient to screen views into the extended Maryvale Field, while not reducing views from residences to the distant hills. This will remain the case with the re-alignment.

Attachment G includes a plan showing the Morwell West Drain Concept, provides planting lists along the Drain and interprets the view from the nearest neighbouring property.

Other information/comments? (eg. accuracy of information)

Note: A preliminary landscape assessment is a specific requirement for a referral of a wind energy facility. This should provide a description of:

- The landscape character of the site and surrounding areas including landform, vegetation types and coverage, water features, any other notable features and current land use;
- The location of nearby dwellings, townships, recreation areas, major roads, above-ground utilities, tourist routes and walking tracks;
- Views to the site and to the proposed location of wind turbines from key vantage points (including views showing existing nearby dwellings and views from major roads, walking tracks and tourist routes) sufficient to give a sense of the overall site in its setting.

Soils

Is there a potential for effects on land stability, acid sulphate soils or highly erodible soils?
☐ NYD ☒ No ☐ Yes If yes, please briefly describe.
No variation to what was assessed as part of the SEES.

Are there geotechnical hazards that may either affect the project or be affected by it?
☐ NYD ☒ No ☐ Yes If yes, please briefly describe.
No variation to what was assessed as part of the SEES.

Other information/comments? (eg. accuracy of information)

15. Social environments

Is the project likely to generate significant volumes of road traffic, during construction or operation?
☐ NYD ☒ No ☐ Yes If yes, provide estimate of traffic volume(s) if practicable.
No variation to what was assessed as part of the SEES.

Is there a potential for significant effects on the amenity of residents, due to emissions of dust or odours or changes in visual, noise or traffic conditions?
☐ NYD ☒ No ☐ Yes If yes, briefly describe the nature of the changes in amenity conditions and the possible areas affected.

Air Quality / Dust
Consulting Air Pollution Modelling & Meterology (CAMM) was engaged by TRUenergy-Yallourn to undertake an air quality impact assessment study for the Maryvale Coal Field Development Project in September 2007. The study modelled dust dispersion using the latest version of the regulatory dispersion model Ausplume. The study modelled two scenarios (season 2017/18 and season 2023/24) and compared the results against the 'Project Standards' stipulated by the Department of Human Services' and Intervention Levels administered by the *State Environment Protection Policy (SEPP) (Air Quality Management)* 2001.

The Project Standards state the following:
- 24-hour average ground level concentration (GLC) for PM_{10} of 50 µg/m^3, will not to be exceeded more than six times per year at identified residential receptors. The exceedances of the 24-hour

PM_{10} standard are to include any exceedances due to background.
- Annual average GLC for PM_{10} at the nearest residence is not to exceed 20. $\mu g/m^3$.

The relevant SEPP intervention level for PM_{10} is a 24-hour average GLC for a PM_{10} of 60 $\mu g/m^3$. The assessment found for both scenarios:
- The "Project Standards" for respirable dust as PM_{10} are predicted to be satisfied at all 'Sensitive Locations' considered for the mine operating with "normal" dust control measures; and
- The 24-hour average 'intervention level' is predicted to be satisfied at all 'Sensitive Locations' considered for the mine operating with "normal" dust control measures.

Attachment E provides the full air quality impact assessment study by CAMM.

Noise
Bassett Acoustics was commissioned by TRUenergy-Yallourn to perform an environmental noise assessment of the proposed re-alignment.

The noise sensitive receptors that are potentially most affected by noise from the proposed Maryvale Mine are located along Latrobe Road to the east of the proposed Mine. Existing background noise levels were measured at one of the potentially most noise-affected residences in the vicinity of the proposed Mine (11389 Latrobe Road). Based on the measured background noise levels, noise limits for the Mine were determined in accordance with the procedures prescribed by the EPA *Interim Guidelines for Control of Noise from Industry in Country Victoria* N3/89 and *State Environment Protection Policy (Control of Noise from Commerce, Industry and Trade) No. N-1.*

Using the above procedures, it was determined that noise emissions from the Mine must comply with a noise limit of 41 dB(A) at noise sensitive receptors. A computer noise model was developed to predict the noise levels due to the Mine at Year 2020 and Year 2024, which are expected to be the stages in the life of the Mine when the closest noise sensitive receptor would be most affected.

Noise predictions were performed for neutral atmospheric conditions (no influence on noise propagation due to wind or atmospheric temperature inversion) and for 'worst case' atmospheric conditions, where the propagation of noise from source to receiver is assisted by a moderate wind and a temperature inversion.

The results of the noise modelling showed that noise due to the Mine will comply with the environmental noise criteria, even under atmospheric conditions where noise propagation from the Mine may be enhanced. Therefore, no specific noise attenuation measures will be required to control noise emission from the Mine. However, it should be noted that for the Year 2020 scenario, noise due to the Mine is predicted to be only just compliant under the 'worst case' atmospheric conditions. The main source of noise at the worst affected receptor in Year 2020 is expected to be the Liebherr 994 Excavator used for excavation of over-height material. Sound Power Level data for this excavator was not available and was therefore estimated based on noise data for a similar excavator. As such it is recommended that the noise level of the Liebherr Excavator be confirmed prior to its use in this area of the mine, to ensure that the Sound Power Level of the excavator does not exceed the modelled Sound Power Level.

Attachment F provides the full noise impact assessment study by Bassett Acoustics.

Traffic
No variation to what was assessed as part of the SEES.

Is there a potential for exposure of a human community to health or safety hazards, due to emissions to air or water or noise or chemical hazards or associated transport?
☐ NYD ☒ No ☐ Yes If yes, briefly describe the hazards and possible implications.
As stated above dust modelling found that the Project Standards and SEPP Intervention Levels should not be exceeded.

As stated above noise modelling found that the re-alignment will comply with environmental noise criteria.

With respect to health impact there will no variation to what was assessed as part of the SEES.

Is there a potential for displacement of residences or severance of residential access to community resources due to the proposed development?

☐ NYD ☒ No ☐ Yes If yes, briefly describe potential effects.

Are non-residential land use activities likely to be displaced as a result of the project?

☐ NYD ☒ No ☐ Yes If yes, briefly describe the likely effects.

The Morwell Gun Club will relocate within an agreed timeframe.

Do any expected changes in non-residential land use activities have a potential to cause adverse effects on local residents/communities, social groups or industries?

☐ NYD ☒ No ☐ Yes If yes, briefly describe the potential effects.

Is mitigation of potential social effects proposed?

☐ NYD ☒ No ☐ Yes If yes, please briefly describe.

No variation to what was assessed as part of the SEES.

Other information/comments? (eg. accuracy of information)

Cultural heritage

Have relevant Indigenous organisations been consulted on the occurrence of Aboriginal cultural heritage within the project area?

☐ No If no, list any organisations that it is proposed to consult.

☒ Yes If yes, list the organisations so far consulted.

Organisations were contacted during the previous EES and SEES processes. Recently Gunai / Kurnai Members were informed about the re-alignment project at a regular liaison committee meeting. No issues pertaining to the re-alignment were raised.

What investigations of cultural heritage in the project area have been done?
(attach details of method and results of any surveys for the project & describe their accuracy)

As part of the Maryvale Project EES Biosis were engaged to undertake an archaeological investigation of the Maryvale coalfield. The study area (represented in Figure 6 and 7) incorporated the proposed mine re-alignment. Aboriginal and non-Aboriginal cultural heritage assessments were undertaken within the study area. Methods and results of both assessments are provided below.

Figure 6 Area of disturbance and ground survey units within study area for Aboriginal Cultural Heritage Survey (Biosis, 1998)

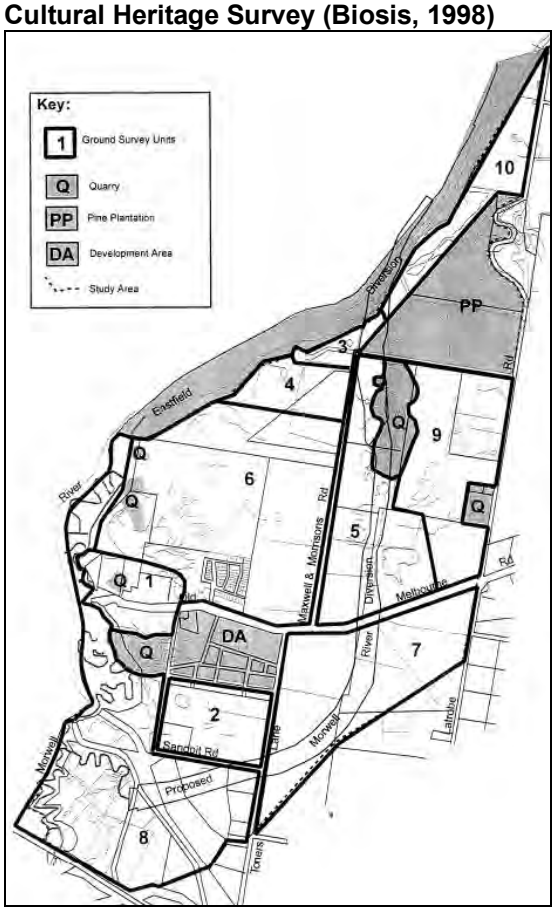
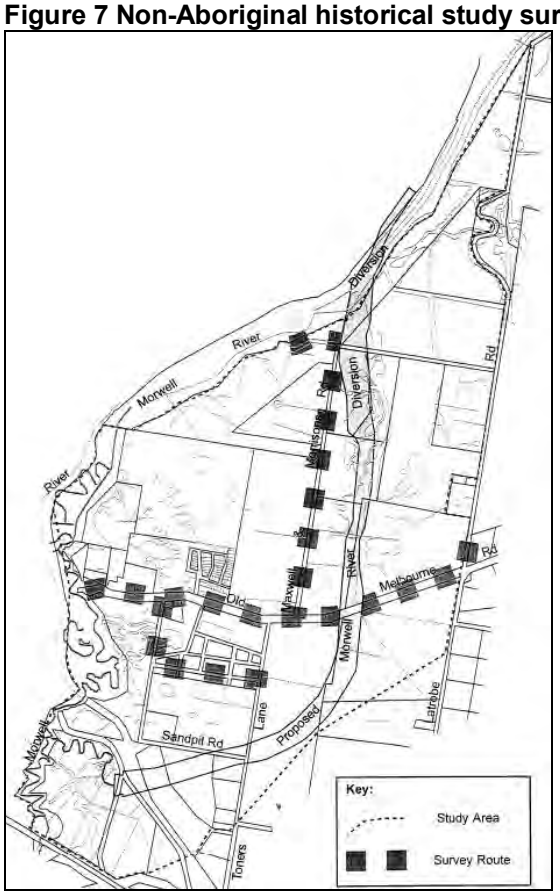


Figure 7 Non-Aboriginal historical study survey route (Biosis, 1998)



Aboriginal Cultural Heritage

The Aboriginal heritage consultants examined aerial photographs and topographic maps to devise a sampling strategy prior to conducting a ground survey. The aerial photographs provided a clearer understanding of how site locations might be influenced by the extent of ground disturbance and land clearance, ground surface visibility and landform units. The consultants also used the photographs to identify areas which had suffered little disturbance and/or contained mature native trees likely to bear Aboriginal scars. The consultants were then able to formulate a strategy for sampling areas most likely to feature common site types recorded within the La Trobe Valley region. These common site types are isolated artefacts; surface artefact scatters; and to a lesser extent, scarred trees. The survey strategy was also designed to incorporate areas where less common site types might be found, such as exposures in banks or stone sources/quarries (Biosis, 1998, pp25). The sampling areas are shown on Figure 6, Study units 5, 9 and 7 are relevant to the proposed Re-alignment Area.

Non-Aboriginal Cultural Heritage

A non-Aboriginal cultural heritage survey was carried out between 21-23 May 1998. The survey focused on the area immediately to the east of the Morwell River, on the north and south sides of the Old Melbourne Road. Figure 7 shows the study area and survey route taken.

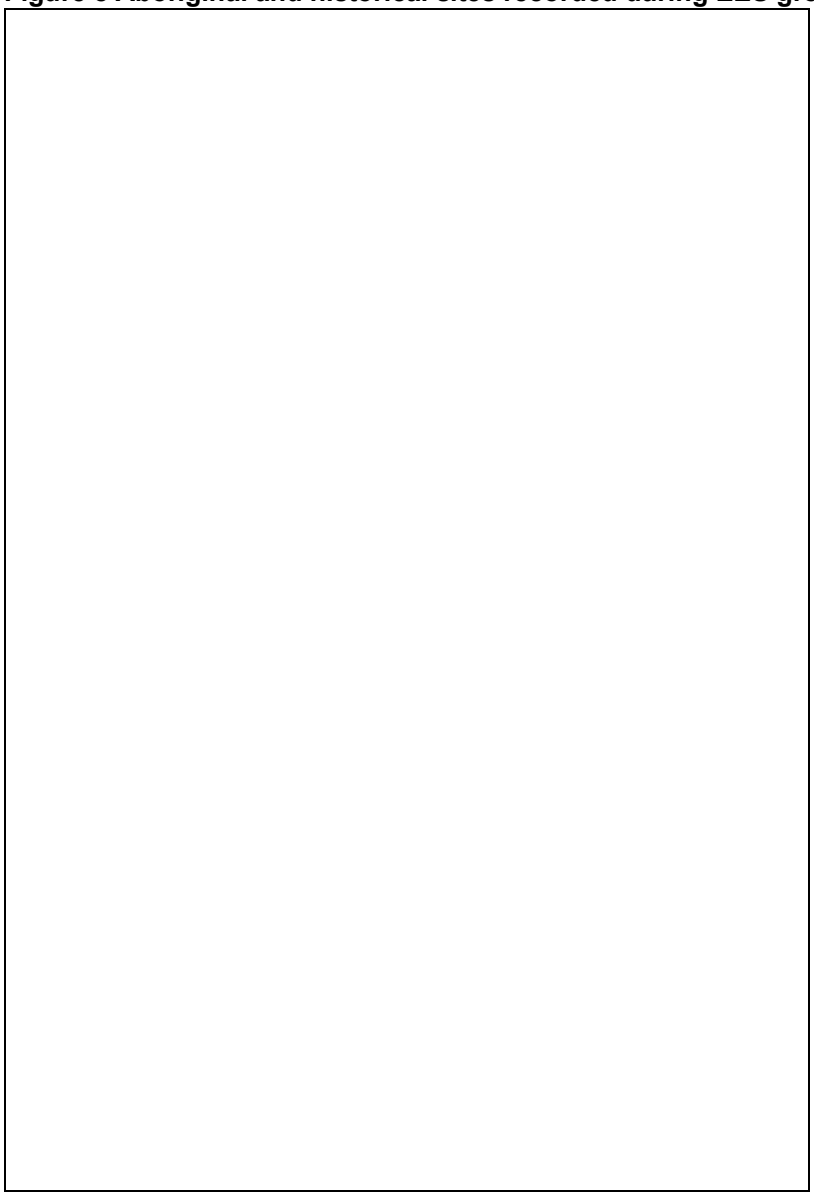
Is any Aboriginal cultural heritage known from the project area?

☒ NYD ☒ No ☒ Yes If yes, briefly describe:

- Any sites listed on the AAV Site Register
- Sites or areas of sensitivity recorded in recent surveys from the project site or nearby
- Sites or areas of sensitivity identified by representatives of Indigenous organisations

One AAV site is located within the Re-alignment Area. This site has been registered with Aboriginal Affairs Victoria and is identified as site XXXX. The isolated artefact is located on the east side of XXX Road, north of XXX(see Figure 8). The artefact was found among tree debris on the break of slope above a gully. The site consists of one isolated artefact, a fine-grained silcrete retouched flake. The artefact is not *in situ*. The artefact was found in a small exposed patch of ground, in an area of land that has been grazed with goats and has undergone large-scale land clearing (Biosis, 1998, pp25). The site is considered to be of low scientific significance (Biosis, 1998, pp42).

Figure 8 Aboriginal and historical sites recorded during EES ground survey (Biosis, 1998)



Are there any cultural heritage places listed on the Heritage Register or the Archaeological Inventory under the *Heritage Act 1995* within the project area?

☐ NYD ☒ No ☐ Yes If yes, please list.

No sites have been identified within the Re-alignment Area (see Figure 8).

Is mitigation of potential cultural heritage effects proposed?

☐ NYD ☐ No ☒ Yes If yes, please briefly describe.

TRUenergy-Yallourn has a Native Title Agreement with the Gunai Kurnai people for its mining operation. Most impacts to significant sites approved for mining have been avoided by changes made to the project during the SEES. TRUenergy-Yallourn continue to honour this agreement that has significant financial benefits to the Gunai Kurnai people until 2015.

TRUenergy-Yallourn has regular meetings with the Cultural Heritage Liaison Group under this agreement. Within the agreement is a section on cultural heritage and the management of significant artefacts. Recommendations for the management of site XXXX were made by Biosis in 1998 and are as follows

…if the isolated artefact XXXX is to be disturbed during construction of the proposed river diversion, then the ground around which it was found should be ploughed over an area of 100m^2 to check whether any further artefacts exist. These should be removed and collected before the

site is disturbed.

(page ix)

The Panel Report on the EES stated that the EES recommendations adequately covered this item.

With the Native Title Agreement the Gunai Kurnai people are represented by Native Title Services Victoria for legal and administrative purposes.

TRUenergy-Yallourn will negotiate a consent to disturb site XXXX prior to works commencing.

Other information/comments? (eg. accuracy of information)

16. Energy, wastes & greenhouse gas emissions

What are the main sources of energy that the project facility would consume/generate?

- ☒ Electricity network. If possible, estimate power requirement/output …….
- ☒ Natural gas network. If possible, estimate gas requirement/output ……...
- ☒ Generated on-site. If possible, estimate power capacity/output ……..
- ☒ Other. Please describe.

Please add any relevant additional information.

No change to what was assessed under the SEES.

What are the main forms of waste that would be generated by the project facility?

- ☒ Wastewater. Describe briefly.
- ☒ Solid chemical wastes. Describe briefly.
- ☒ Excavated material. Describe briefly.
- ☒ Other. Describe briefly.

Please provide relevant further information, including proposed management of wastes.

No change to what was assessed under the SEES.

What level of greenhouse gas emissions is expected to result directly from operation of the project facility?

- ☒ Less than 50,000 tonnes of CO_2 equivalent per annum
- ☒ Between 50,000 and 100,000 tonnes of CO_2 equivalent per annum
- ☒ Between 100,000 and 200,000 tonnes of CO_2 equivalent per annum
- ☒ More than 200,000 tonnes of CO_2 equivalent per annum

Please add any relevant additional information, including any identified mitigation options.

No additional coal removal is proposed over that approved under the SEES. However, there is scope for considerable carbon reductions due to the reduction of overburden to be removed under the re-alignment which will result in fewer vehicle movements. In comparison with the approved mine shape, this re-alignment will avoid in excess of 36,000 t of CO_2 equivalent.

17. Other environmental issues

Are there any other environmental issues arising from the proposed project?

☒ No ☒ Yes If yes, briefly describe.

18. Environmental management

What measures are currently proposed to avoid, minimise or manage the main potential adverse environmental effects? (if not already described above)

☐ Siting: Please describe briefly

☐ Design: Please describe briefly

☒ Environmental management: Please describe briefly.

TRUenergy-Yallourn has had an Environmental Management System that is certified to ISO 14001 since 1998.

In 2006, TRUenergy-Yallourn developed a five-year Environment Improvement Plan in conjunction with the independent Environment Review Committee. The Environment Improvement Plan identifies opportunities for further improvements in air, water and noise emissions, waste disposal, land revegetation and greenhouse gas reductions.
All projects identified within the Environment Improvement Plan are integrated into the Safety, Health and Environment Management Systems.

TRUenergy-Yallourn provides progress reports to the Environment Review Committee on a quarterly basis.

Within the Environmental Management System an Environmental Management Plan has been developed for the Yallourn Coal Field Development Project. This EMP will be revised to reflect the changed circumstances applying to the re-alignment. Other environmental control documents include:

- The Yallourn Mine Conservation Management Plan which details management of the vegetation offset areas.
- The Rehabilitation Master Plan which details the management of expended mining areas.

☐ Other: Please describe briefly

Add any relevant additional information.

19. Other activities

Are there any other activities in the vicinity of the proposed project that have a potential for cumulative effects?

☐ NYD ☒ No ☐ Yes If yes, briefly describe.

20. Investigation program

Study program

Have any environmental studies not referred to above been conducted for the project?

☒ No ☐ Yes If yes, please list here and attach if relevant.

Has a program for future environmental studies been developed?

☒ No ☐ Yes If yes, briefly describe.

Consultation program

Has a consultation program conducted to date for the project?

✕ No ✕ Yes If yes, outline the consultation activities and the stakeholder groups or organisations consulted.

As mentioned above, this proposal has been discussed with the Department of Sustainability and Environment (with respect to vegetation offset requirements), Department of Planning and Community Development (with respect to approvals requirements), Department of Primary Industries (with respect to Work Plan requirements), West Gippsland Catchment Management Authority (with respect to Morwell West Drain re-alignment plans) and Latrobe City Council (with respect to the entire re-alignment). Discussions have focused on technical issues that require resolution.

TRUenergy-Yallourn hosts an Environment Review Committee (ERC) which is chaired by an independent chair person and meets 3-4 times per year. The ERC includes participants from the following agencies/groups: TRUenergy-Yallourn, Yallourn Mine Alliance, community representatives, Latrobe Valley Field Naturalists, EPA, Advance Morwell Inc., DPI, DSE, DHS, Latrobe City, Gunai/Kurnai People, West Gippsland Managmeent Authority, Yallourn North Action Group and Southern Rural Water. The re-alignment has been presented to the ERC and no substantive comment has been received to date. Further updates will be provided to this group as the project progresses.

Has a program for future consultation been developed?

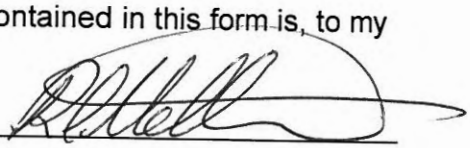
✕ NYD ✕ No ✕ Yes If yes, briefly describe.

A community consultation plan for the re-alignment has been developed as part of the Work Plan Variation (which is currently being drafted). This plan includes items such as one-on-one discussion with affected landowners, a letter to neighbouring residents describing the proposed project and the approvals process to be followed and a site inspection for interested parties. Information on the project will also be supplied on the internet with a contact person nominated for any further related discussion.

Authorised person for proponent:

I, (full name), (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

MANAGER MINING.

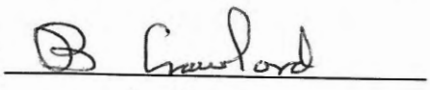
Signature 

Date 23/05/08

Person who prepared this referral:

I, (full name), (position), confirm that the information contained in this form is, to my knowledge, true and not misleading.

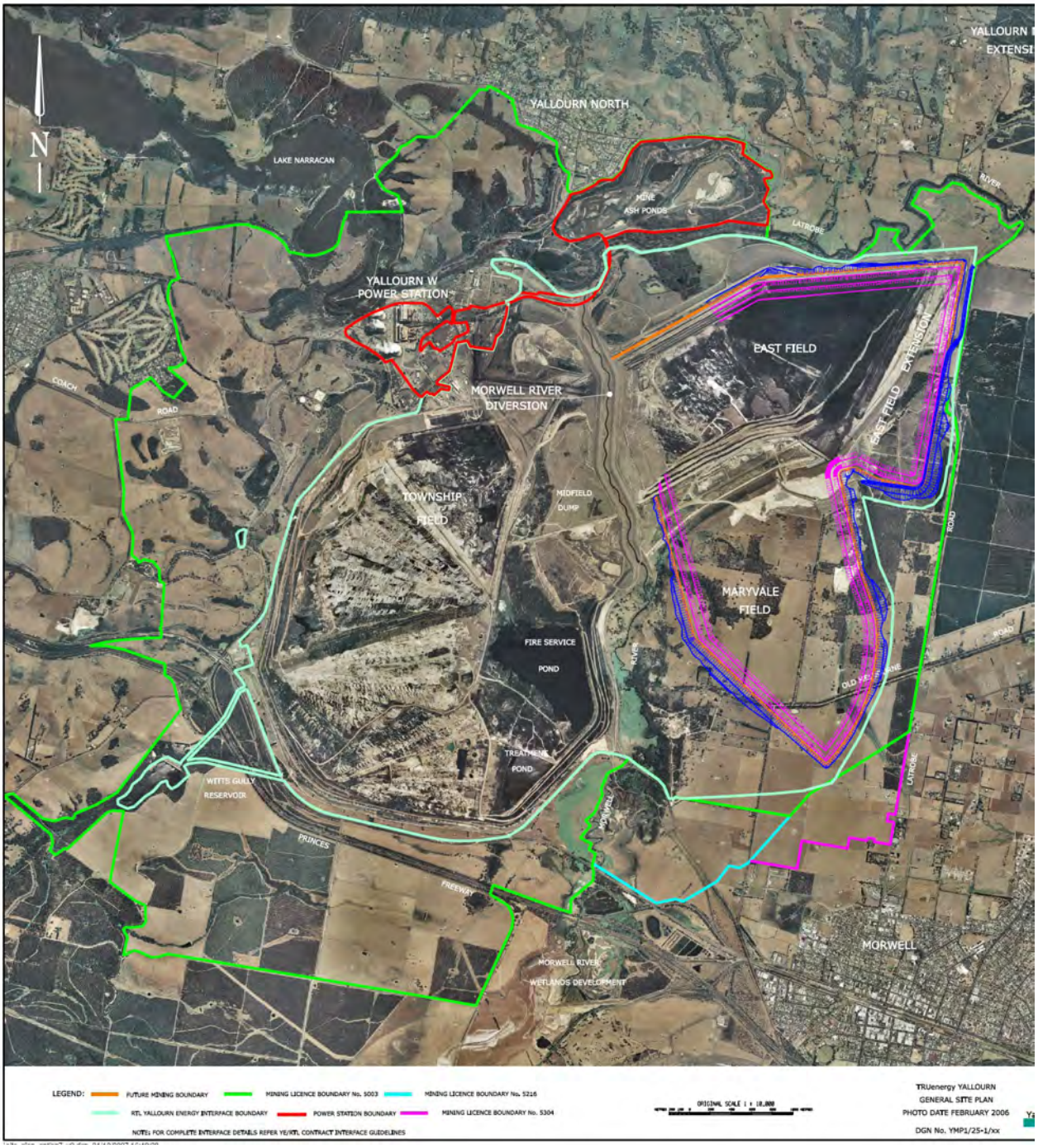
INFRASTRUCTURE & DEVELOPMENT MANAGER

Signature 

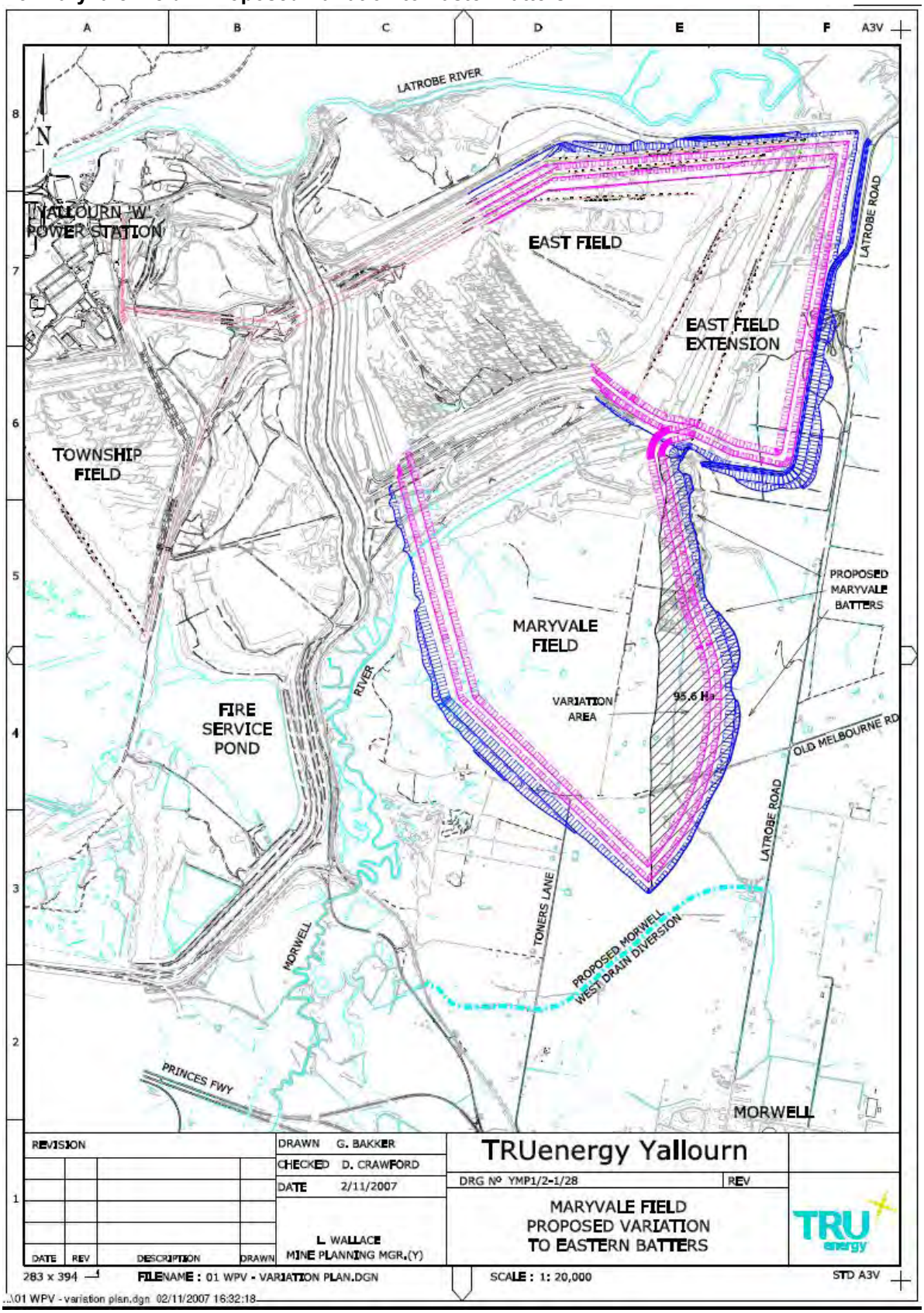
Date 23/5/08

Attachment A
A1 Re-alignment Area

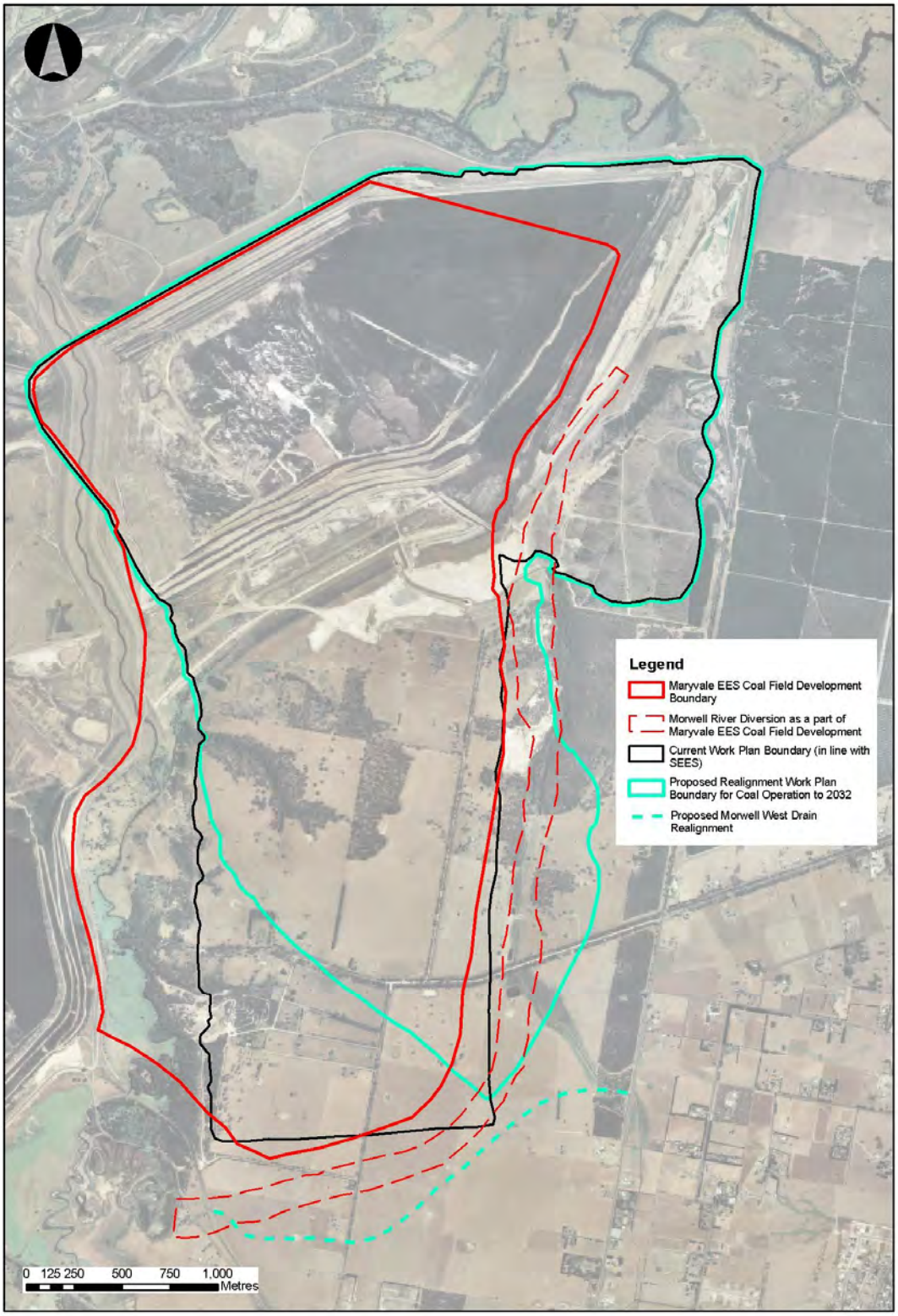
A2 Layout of Power Station and Mine with Re-alignment



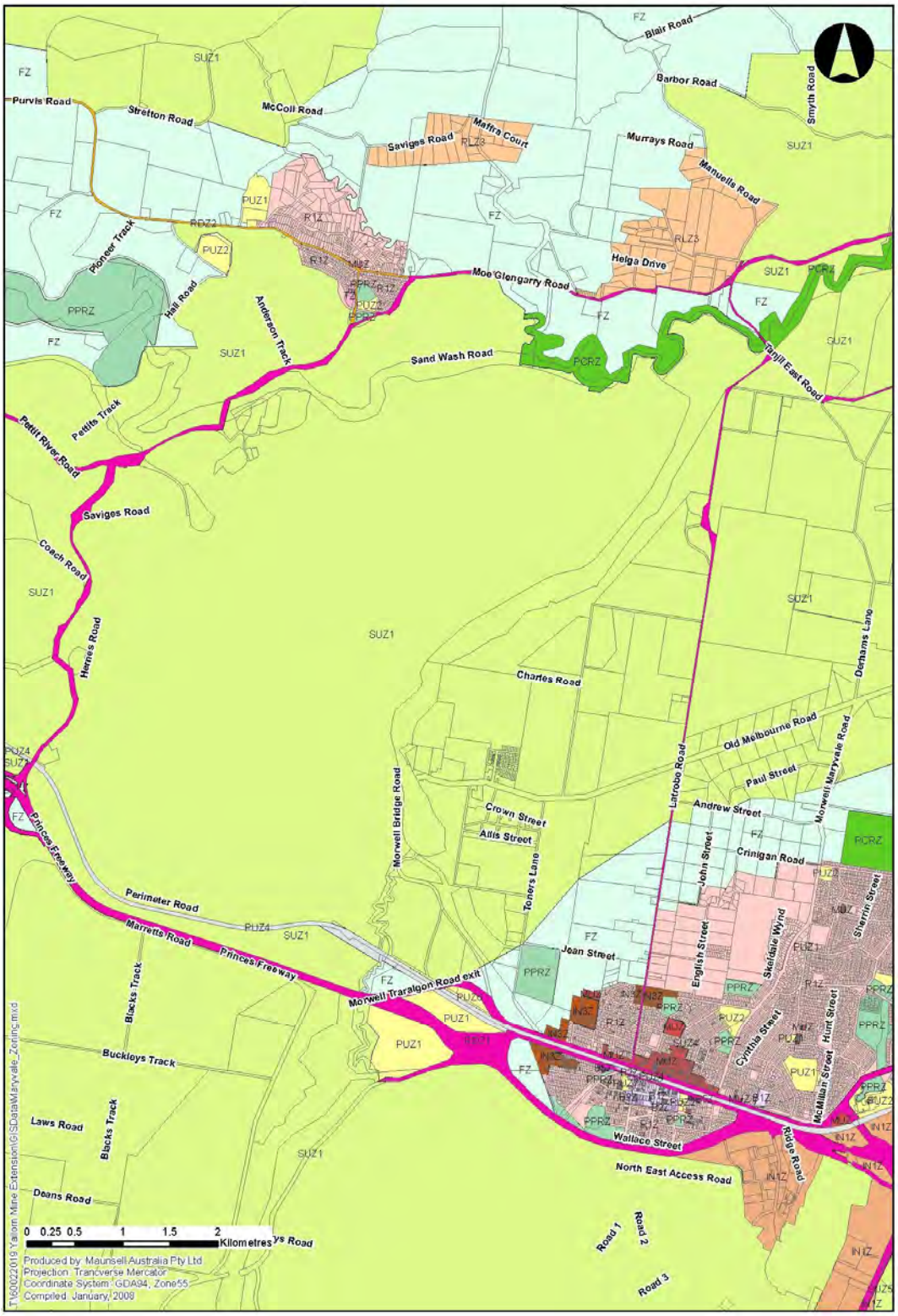
A3 Maryvale Field – Proposed Variation to Easter Batters



Attachment B
The Maryvale EES Coal Field Development Boundary, Current Work Plan Boundary and Proposed Re-alignment Boundary

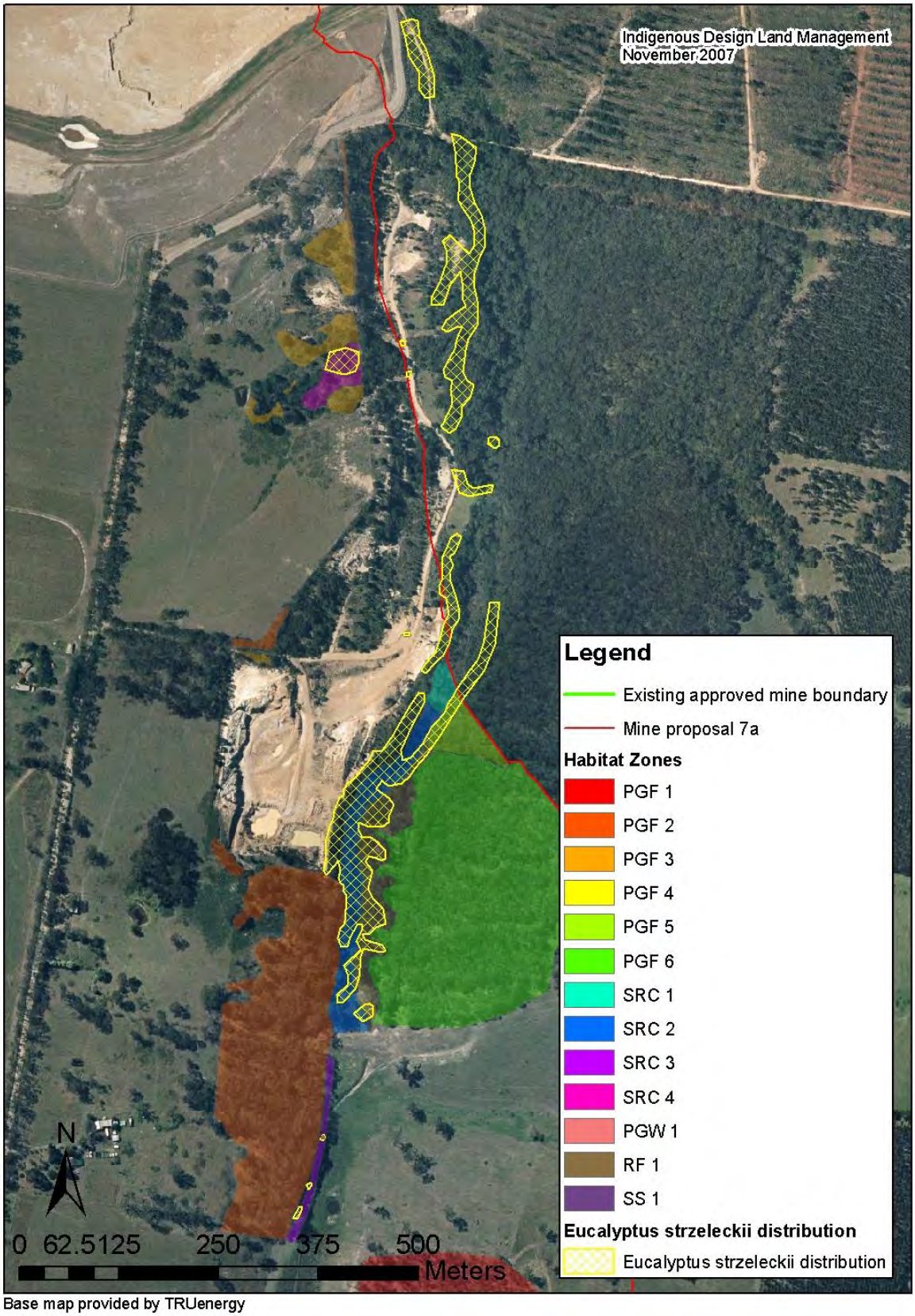


Attachment C1 - Zoning



Attachment C2 - Overlays

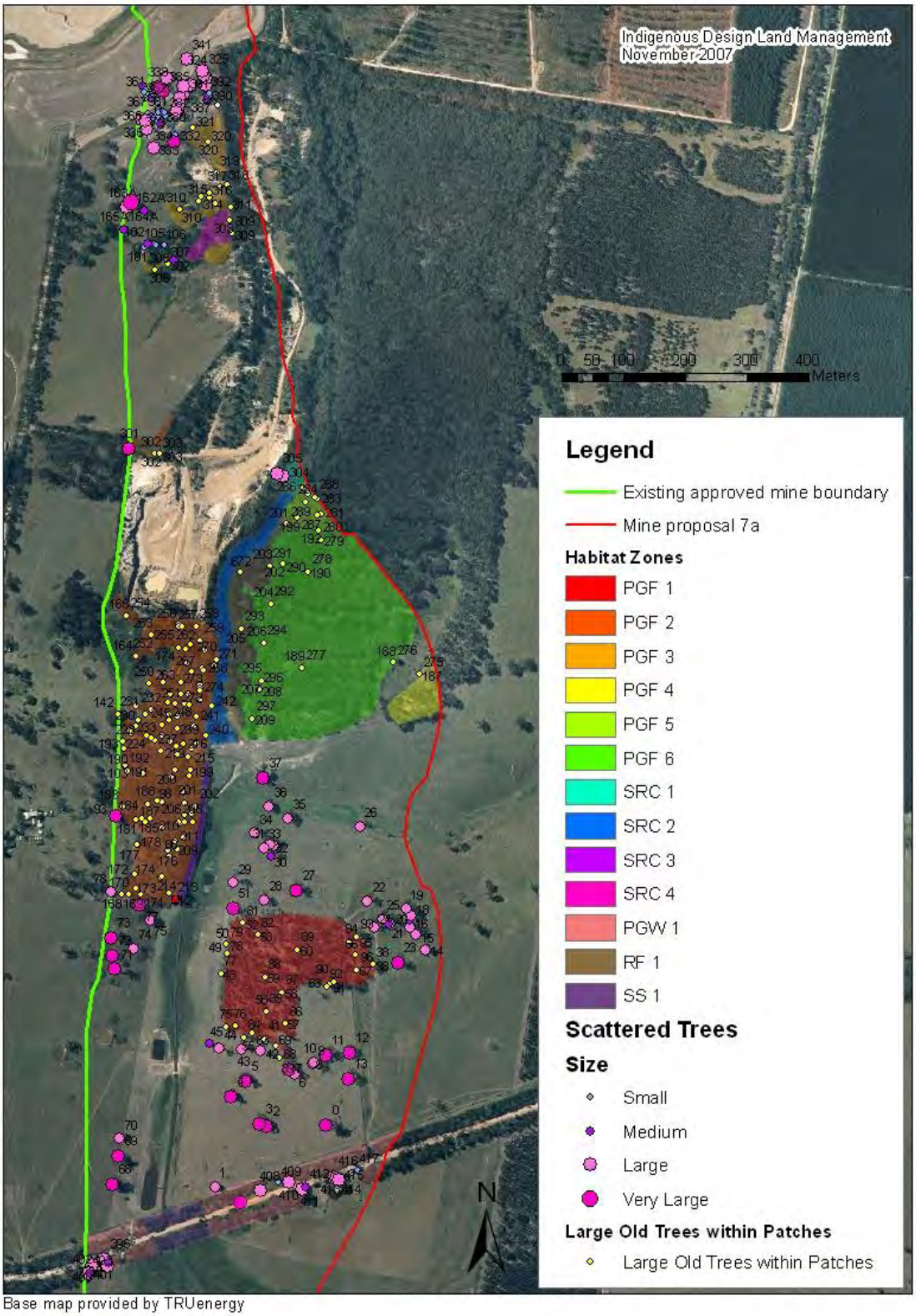
Attachment D
D1 Habitat Zones



Base map provided by TRUenergy

Note: Yallourn Coal Field Re-alignment Project is named **Mine Development Option 7a** in the IDLM report.

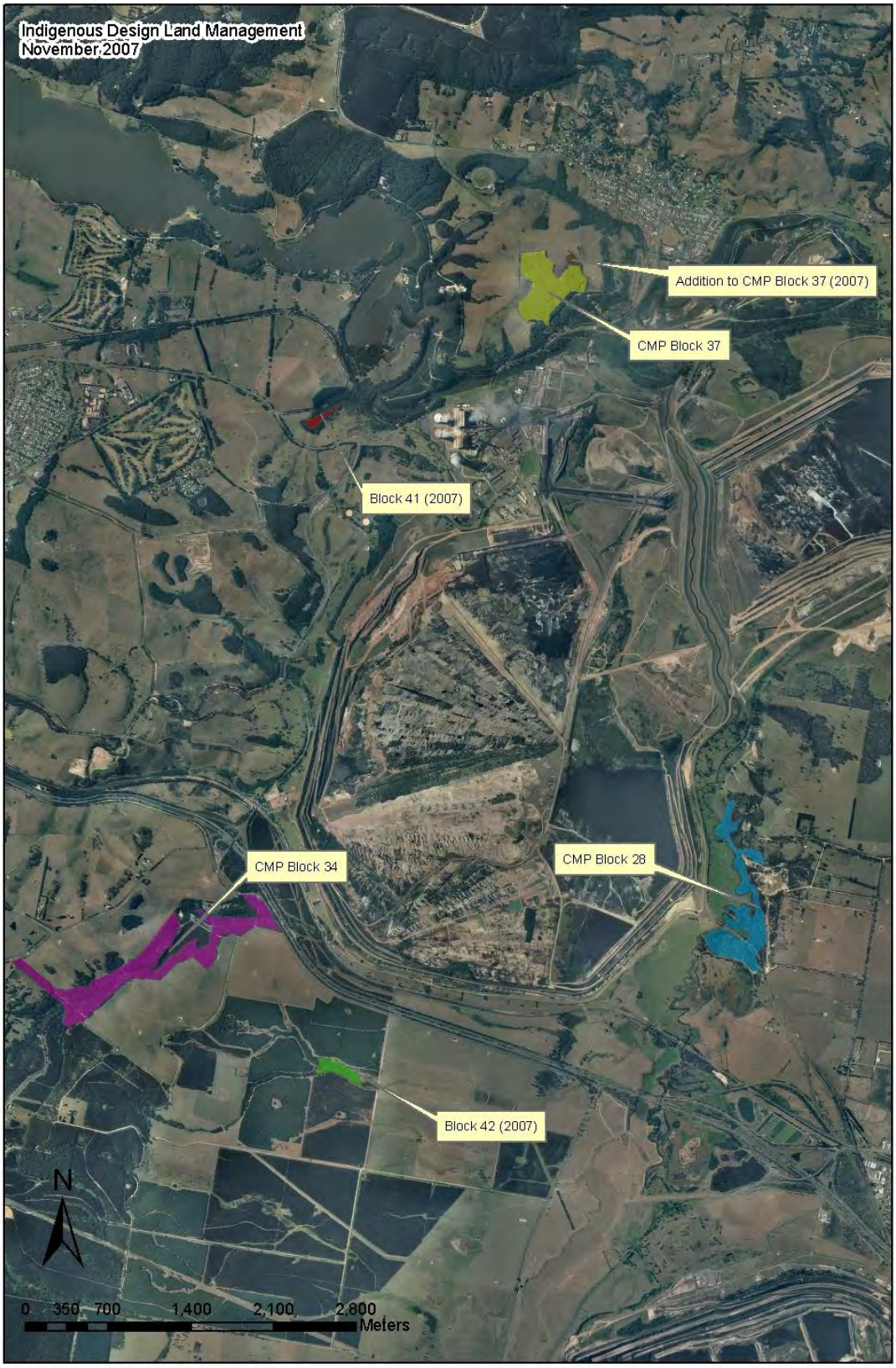
D2 Scattered Tree Distribution



Base map provided by TRUenergy

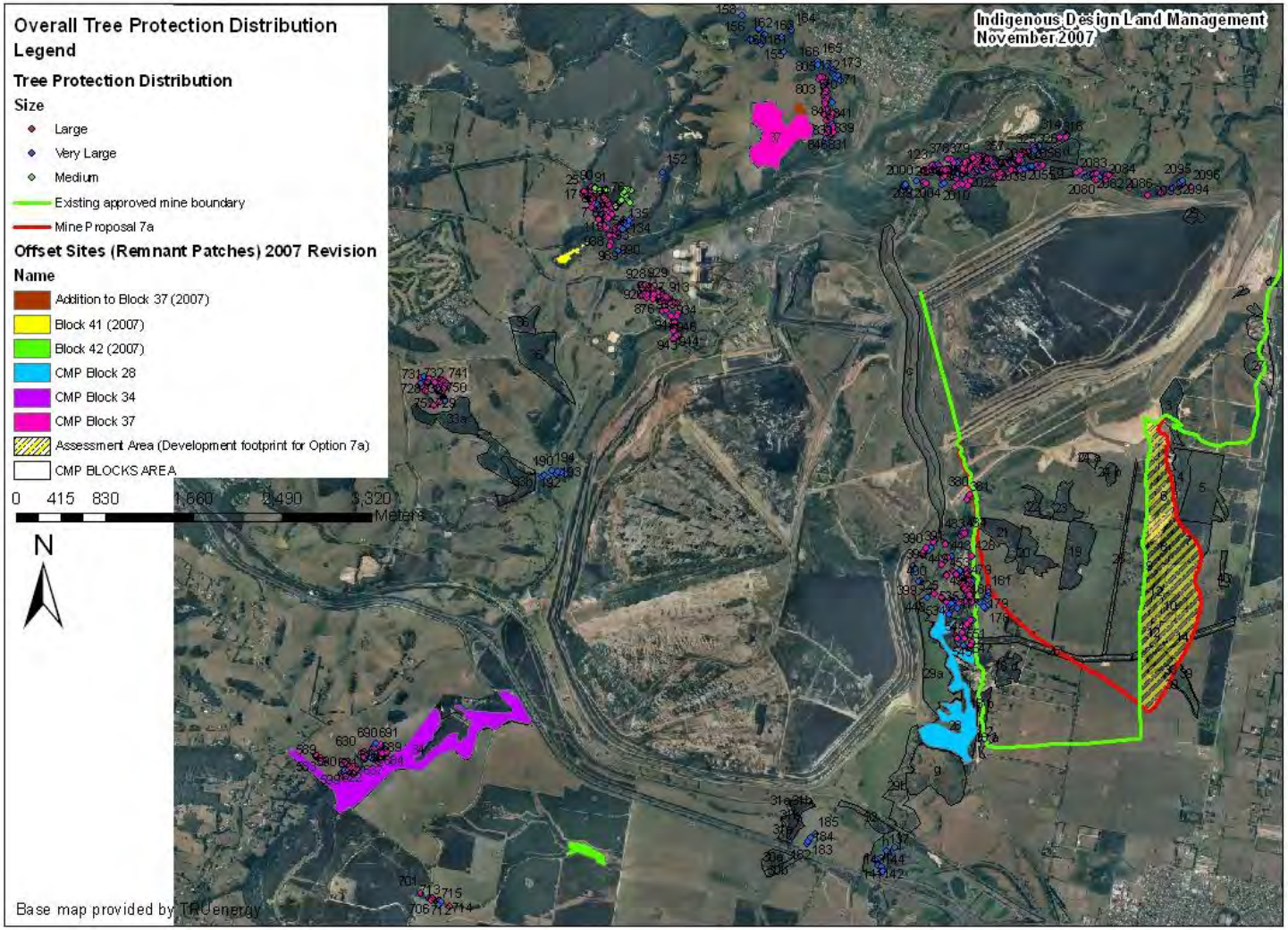
Note: Yallourn Coal Field Re-alignment Project is named **Mine Proposal 7a** in the IDLM report.

D3 Offset Sites



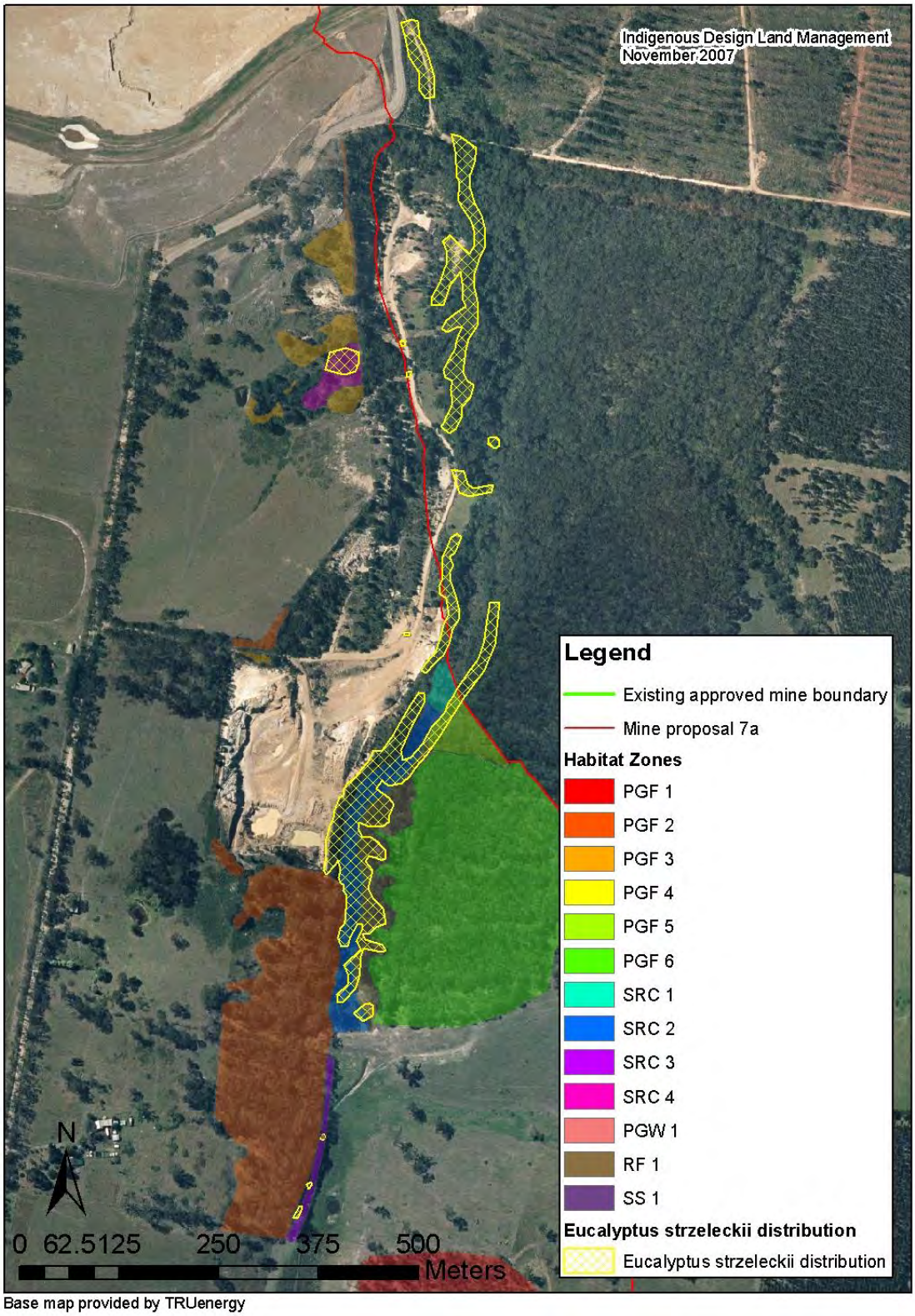
Base map provided by TRUENERGY

D4 Proposed Tree Protection Sites



Note: Yallourn Coal Field Re-alignment Project is named **Mine Proposal 7a** in the IDLM report.

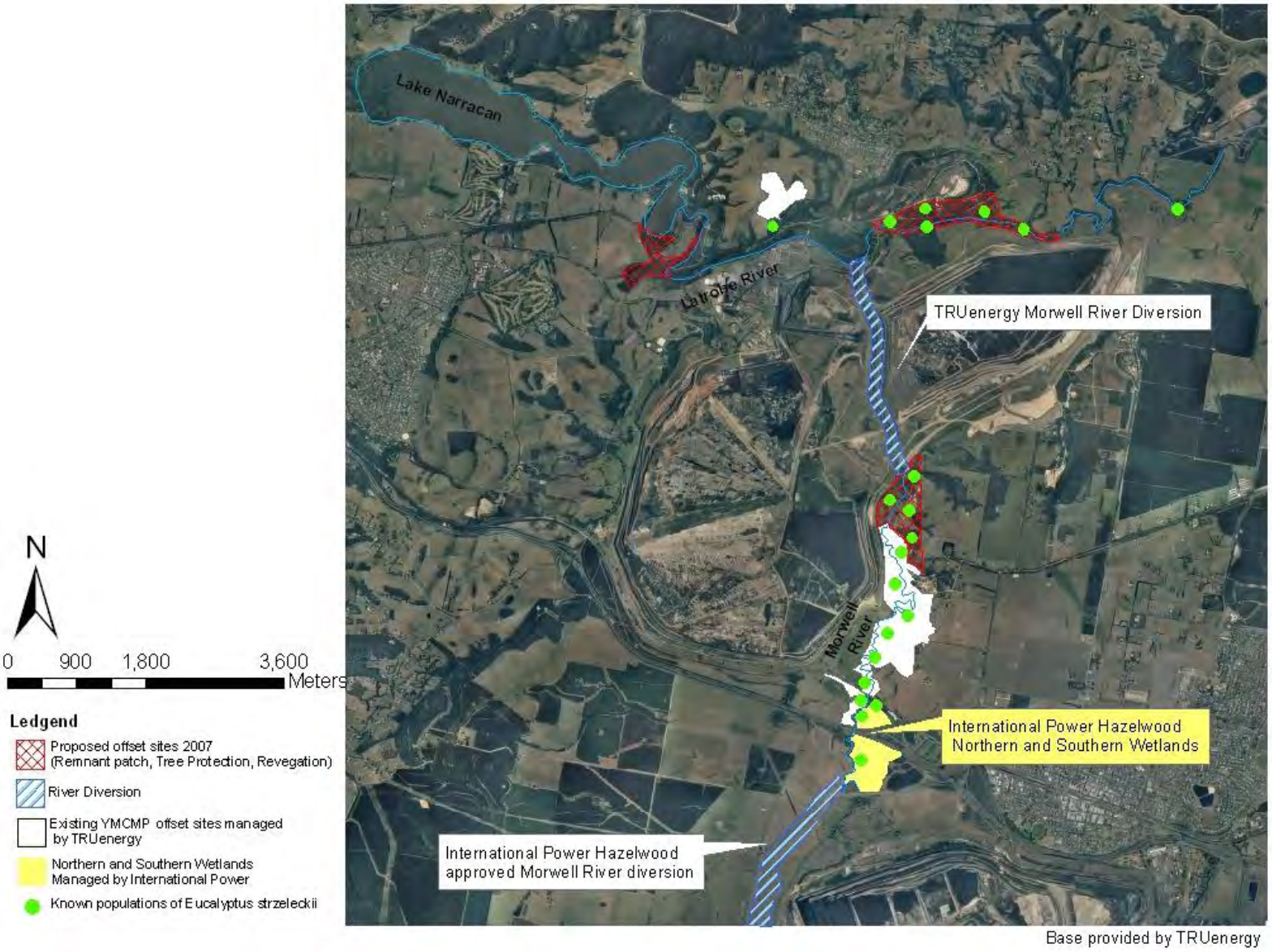
D5 *Eucalyptus strezeleckii* distribution



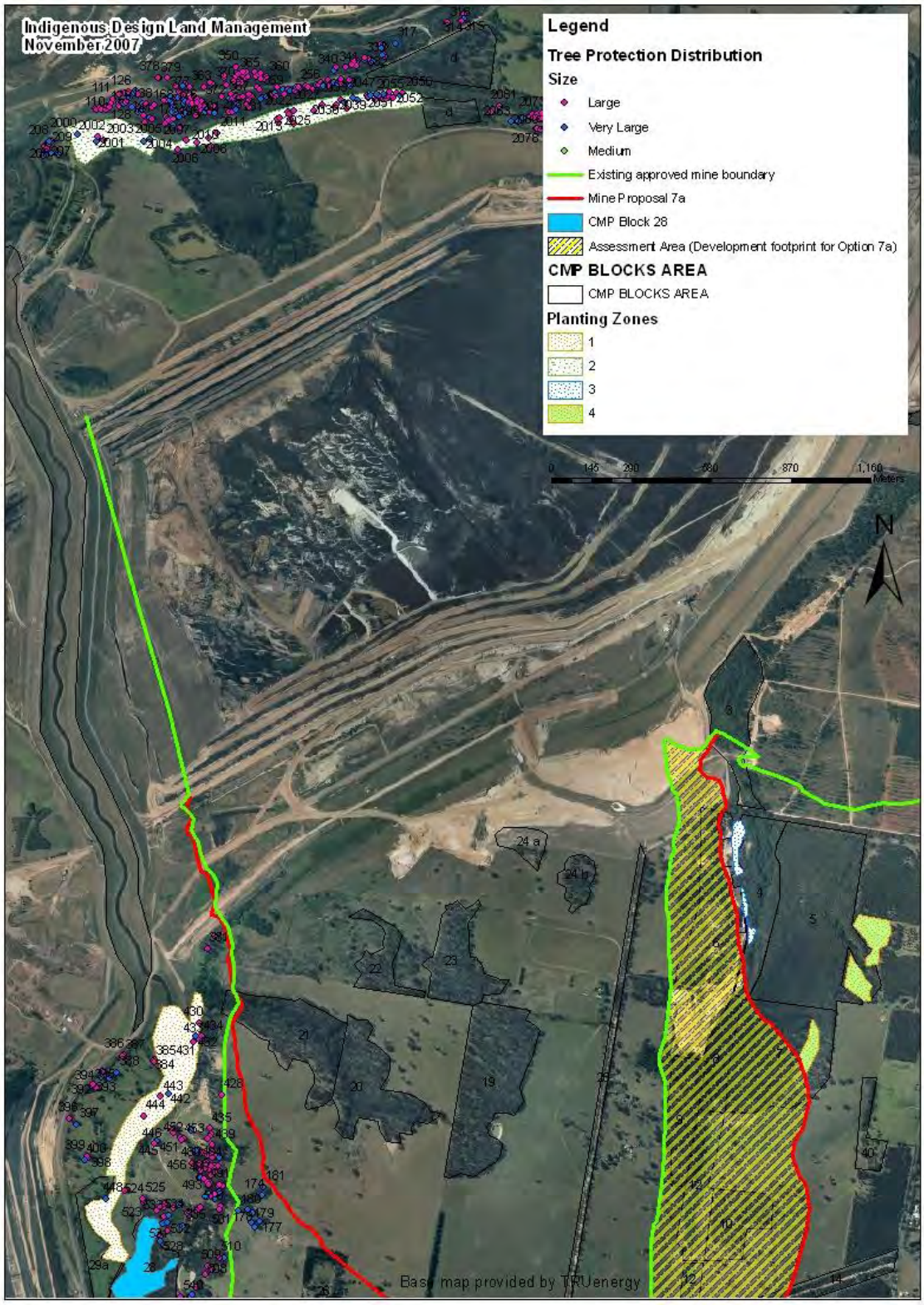
Base map provided by TRUenergy

Note: Yallourn Coal Field Re-alignment Project is named **Mine Proposal 7a** in the IDLM report.

D6 – Overall Eucalyptus Strzeleckii protection

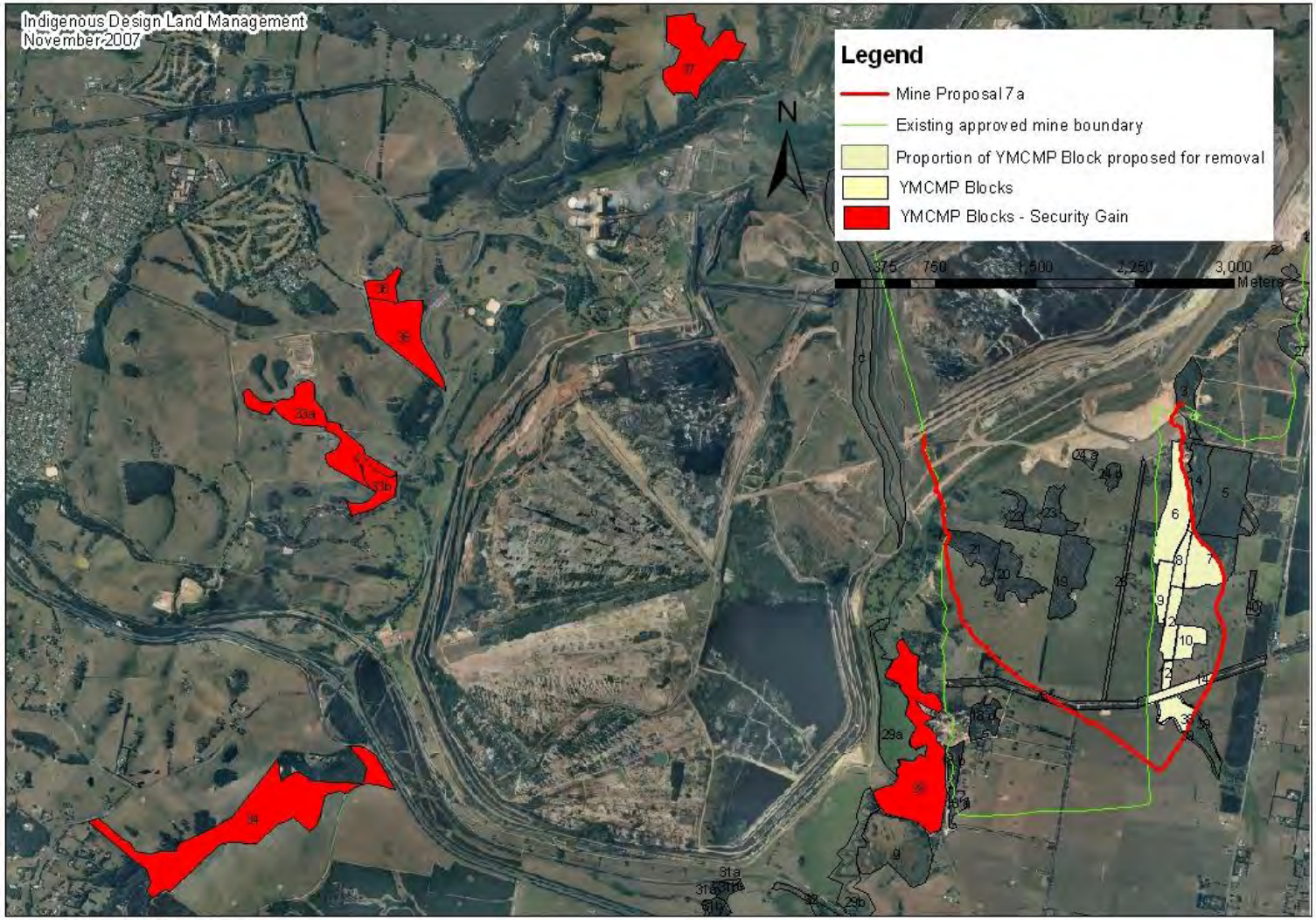


D7 – Recruitment Offset Site



Note: Yallourn Coal Field Re-alignment Project is named **Mine Proposal 7a** in the IDLM report.

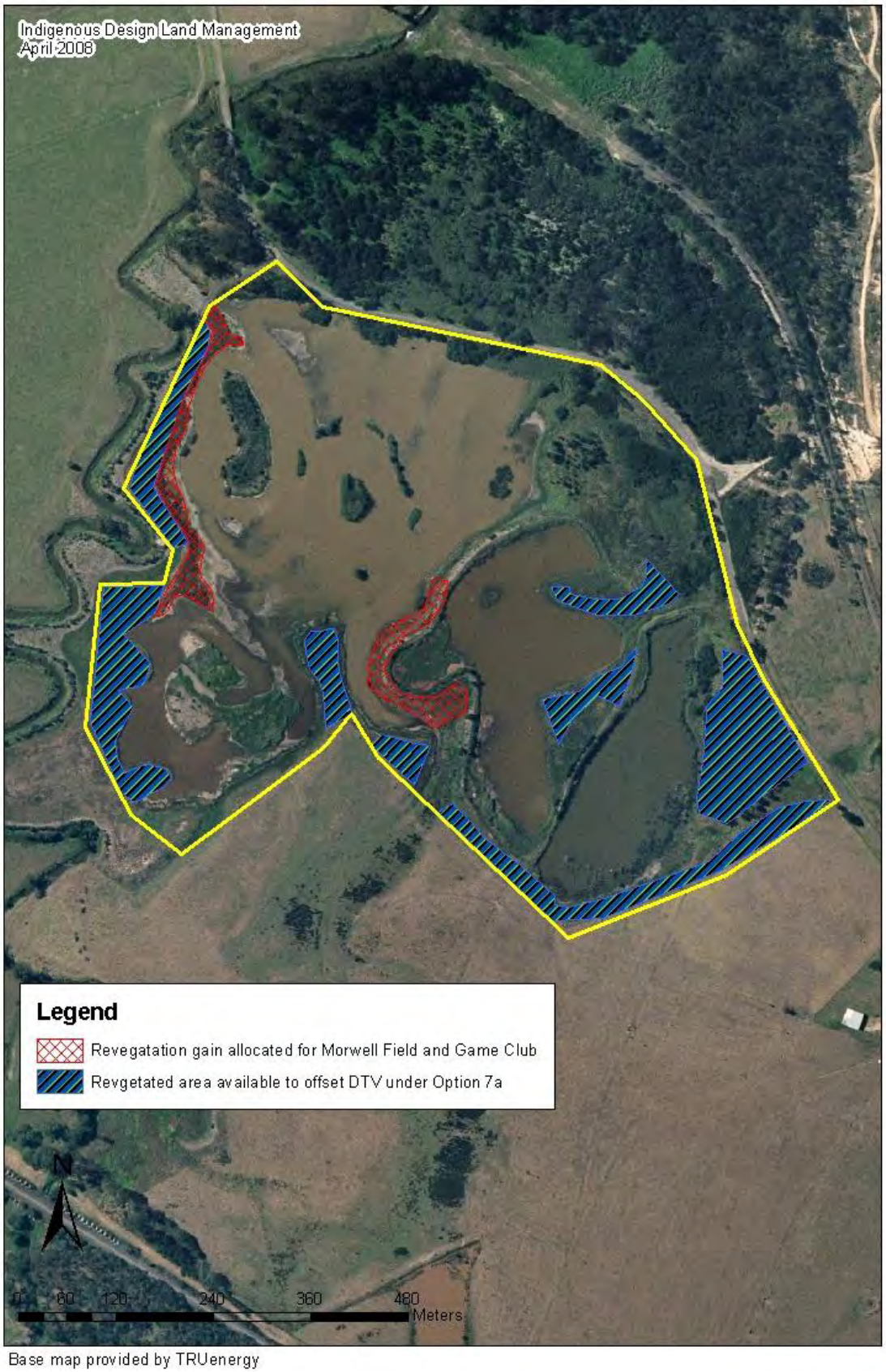
D8 – YMCMP sites to be assigned security gain for loss of YMCMP offsets under Re-alignment



Base map provided by TRUenergy

Note: Yallourn Coal Field Re-alignment Project is named **Mine Proposal 7a** in the IDLM report.

D9 – Degraded Treeless Vegetation Offset Sites



Base map provided by TRUenergy

Attachment E
Air Quality Impact Assessment

Final: May 2008

Attachment F
Noise Impact Assessment

Attachment G
Proposed Southern Deviation Concept – Morwell West Drain

Attachment H
Background notes on *Eucalyptus strzeleckii* populations and assessment of the significance of the removal of 519 species within the Morwell West Drain.