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Tramway Road BESS

Agricultural Impact Assessment

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Eku Energy

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Tramway Road BESS

Background

Eku Energy proposes to develop a utility Battery Energy Storage System (BESS) on the western side of Tramway road, Hazelwood North Victoria. The Project Site is best described as part of the land parcel 2\PS700402, which is a 19 hectare title that is part of a commercial farming operation between Tramway Road and Monash Way, Hazelwood North. The proposed Project Site for the BESS will occupy between 4 and 5 hectares of the land parcel.

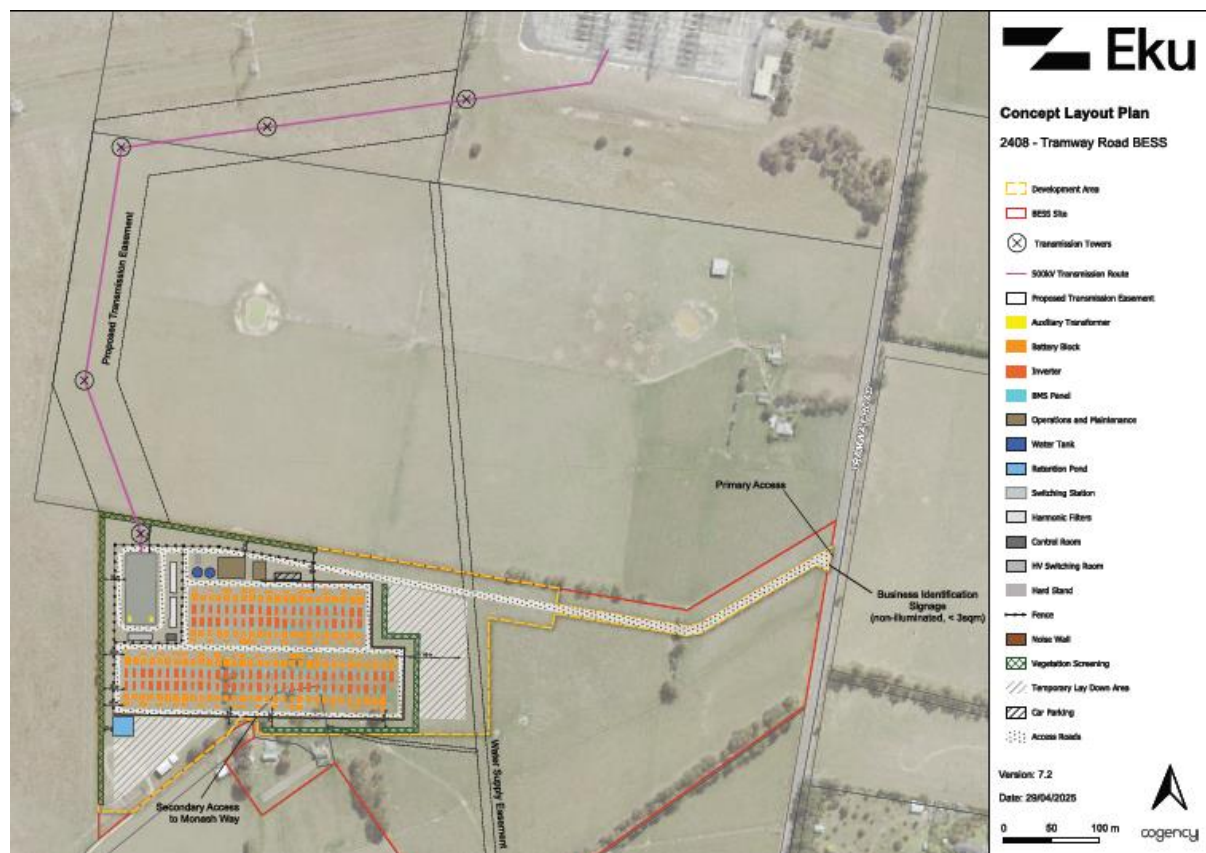
An easement for electrical connection will be established across the land parcel immediately adjacent to the north, which is best described as 1\PS700402. This will provide the connectivity between the proposed BESS and the Hazelwood substation to the north. We have been instructed that this 32 hectare land parcel has been permanently removed from agricultural use and no longer has an agricultural function¹. As such the easement pathway is not part of this impact assessment.

The proposed BESS will comprise

- a 300 MW/1200 MWh utility scale BESS using Lithium battery technology,
- switching station and associated infrastructure, and
- underground transmission to the Hazelwood Terminal Station

The proposed layout of the BESS and its location within the land parcel is shown in **Figure 1**. An aerial image of the property has been included in **Figure 2**.

Figure 1. Proposed BESS layout



¹ Email from Dinan McMahon, Cogency, December 6, 2024

Figure 2. Aerial Image of property with property boundaries in red. Proposed area for BESS outlined in white.



The land parcel is located within the Farming Zone of the Latrobe City Planning Scheme and subject to the planning provisions of the Farming Zone. The stated objectives of the Farming Zone are:

- To implement the Municipal Planning Strategy and the Planning Policy Framework.
- To provide for the use of land for agriculture.
- To encourage the retention of productive agricultural land.
- To ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture.
- To encourage the retention of employment and population to support rural communities.
- To encourage use and development of land based on comprehensive and sustainable land management practices and infrastructure provision.
- To provide for the use and development of land for the specific purposes identified in a schedule to this zone.

Specific parts of the land parcel are subject to three overlays, these being:

- A State Resource Overlay SRO1 which applies to all but the southern corner of the property and includes the BESS site,
- A Bushfire Management Overlay (BMO) which applies to the western side of the property and does not impinge upon the BESS site, and
- An Environmental Significance Overlay (EMO 1) which applies to the southern section of the property and does not impinge upon the BESS site.

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The State Resources Overlay SRO1 has been created to protect the coal resources of the Latrobe Valley. This is to provide a secure long term energy source for base load power generation in Victoria, as well as providing unique opportunities for other related significant developments.

The construction of 300MW/1200MWh is a Utility Installation and is listed as a use requiring a permit in Section 2 of the Farming Zone of the Latrobe City Planning Scheme. The proposal will include necessary earthworks for the facility and construction work associated with the installation. The Planning Scheme provides decision guidelines for construction works and earthworks in clause 37.06 which include, among others:

General Issues

- *The capability of the land to accommodate the proposed use or development, including the disposal of effluent.*
- *Whether the site is suitable for the use or development and whether the proposal is compatible with adjoining and nearby land uses.*

Agricultural issues and the impacts from non-agricultural uses

- *Whether the use or development will adversely affect soil quality or permanently remove land from agricultural production.*
- *The potential for the use or development to limit the operation and expansion of adjoining and nearby agricultural uses.*
- *The agricultural qualities of the land, such as soil quality, access to water and access to rural infrastructure*

This Agricultural Impact Assessment has been prepared to respond to these issues and provide the decision making authority with relevant information pertaining to agriculture.

Climate

Climate records from the Bureau of Meteorology weather station at Latrobe Valley Airport (Site number 085280) are presented in 1 below. This climate station is some 9 km north of the Project Site at the closest point and is representative of the prevailing climate for the Project Site. Average annual rainfall from these records is 737 mm per annum and the rainfall is fairly evenly distributed throughout the year. Winter temperatures are cool to cold, and frost occurs regularly each year during the months of May to September and occasionally outside these months in both April and October. The lowest minimum temperatures in dryer than average winters approach -5°C. Summer temperatures are variable with some summers having no days above 35°C, but other summers having one or more clusters of extreme temperatures with several days above 35°C. The hottest day on record was 46°C on 7th February 2009.

Daily rainfall data show occasional very heavy falls of rainfall up to 50 mm or more in a 24 hour period. The highest fall on record was 70mm on the 12th April, 2011 and the second highest fall was 62 mm on the 6th January 1991. Heavy falls are more common in the summer and early autumn period than during winter months.

The climatic data can be used to assess the growing season for dryland pasture and cropping. Late autumn, winter and spring rainfall for the Project Site would normally be adequate to support evapotranspiration losses from pasture and annual crops, but the average December rainfall and all the months from January until mid April are below estimated pasture requirements for evapotranspiration. The normal growing season would thus extend for about 7 months from mid April to mid December, assuming some carry forward of soil moisture into December each year from the

previous month. The pasture plants and crops that are able to grow and persist with this growing season have to be adapted to a 7 month growing and able to withstand long dry periods.

Table 1. Climatic Averages from Bureau of Meteorology at Latrobe Valley Airport

	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec
Mean Max Temp. °C	27	27	25	21	17	14	14	15	17	20	22	25
Mean Min. Temp. °C	13	13	11	9	6	4	4	4	6	8	10	11
Mean Rainfall mm	51	43	48	57	55	65	63	68	75	70	75	65
Decile 5 median rainfall mm	44	33	42	52	53	60	63	61	68	65	70	58
Mean number of days of rain ≥ 1 mm	6	6	7	8	9	10	11	12	12	10	9	8
Mean 9am temperature °C	18	17	15	13	10	8	7	9	11	13	15	16
Mean 9am relative humidity %	73	79	82	85	89	90	89	85	80	74	76	72
Mean 3pm temperature °C	25	25	23	19	16	13	12	14	15	18	20	22
Mean 3pm relative humidity %	46	46	48	55	64	68	67	61	59	56	54	49

Landform and Underlying lithology

The Project Site is all located within the Westbury 2 Land System of Aldrich et al². The landscape is best understood in terms of the processes that formed it. Originally part of a Tertiary (early Pleistocene) land surface that consisted of extensive alluvial fans and terraces that covered much of the Latrobe Valley, most of the original landscape has since been extensively modified by the various rivers that actively cross through the valley and carve out new and alternative routes. Over time these rivers have carted most of this landscape away. But there are substantial disconnected remnants of this landscape, the surface of which has been reworked with new creeks and streams. Where these Tertiary deposits are extensive and the relief is mild Aldrich et al. identified and delineated these areas as either the Westbury 1 (slightly drier) or the Westbury 2 (slightly wetter) land system.

At the Project Site, surface reworking has formed a gently sloping hillcrest, mostly with slopes below 4%. The underlying lithology is likely to be unconsolidated sandy clay and there appears to be reasonable level of uniformity across the site. The Project Site is located on a broad crest, with balance of the land parcel sloping gently to the south and partly to the east.

Soils

Adopting the terminology of the Australian Soil Classification (Isbell 2002)³, the soils of the Westbury 2 Land System are mostly Yellow and Brown Sodosols. In descriptive terms, the classification means that these soils have a sharply contrasting texture between the surface soil (usually a sandy clay loam)

² Aldrick JM et al, 1992, *A Study of the Land in the Catchment of the Gippsland Lakes*, TC-17 Department of Conservation and Natural Resources

³Isbell RF, 2002 *The Australian Soil Classification, Revised Edition* CSIRO Publishing.

and the subsoil (usually a medium clay), a yellow or brown colour to the subsoil, often mottled and with quite a deal of variation in the depth of the surface horizons above the clay. The surface soil normally has a well structured A1 horizon to about 15 or 20 cm depth and then an apedal (no natural soil structure) A2 horizon to between 35 and 65 cm depth.

The soil profile of soils on the Project Site was examined to a 80 cm depth with the aid of a hand held soil auger. Each soil horizon was logged and described; the description of the soil profile is provided as Figure 3. The soil was considered to be moderately well drained but to have poor structural stability overall and likely to lose structure with regular cultivation. Observation of the surrounding pasture and its vigour indicate low inherent fertility, but these soils respond very well to fertilizer and can become quite productive with right inputs.

Figure 3 *Soil Profile description. Soil examined from with the Project Site*

0 cm	A1 horizon Fine sandy loam Strong crumb structure 10YR 3/1 Very dark brown
	Diffuse boundary to:
12 cm	A2 horizon Fine sandy loam Weak crumb structure 10YR3/2 Dark greyish brown
	Gradual boundary to:
55 cm	B1 horizon Clay loam Moderate blocky structure 10YR4/3
	Hole terminated at 80 cm. No auger refusal
	B2 horizon not examined Light clay Moderate blocky structure



Current Land Use

The land parcel that contains the Project Site is part of a cattle grazing enterprise that extends across several land parcels, some of which are leased and some of which are in the ownership of the current operator. The land is used for grazing cattle and is subdivided into a number of paddocks for the purpose of stock management and grazing rotation.

The land parcel that contains the Project site is fully cleared of indigenous vegetation. There is one shelter belt of eucalypt species at the eastern end of the parcel which appear to have been planted.

Other trees on this land parcel are all exotic and include cypress, pines and a seedling European ash tree.

The pasture is semi-improved and comprises perennial ryegrass, soft brome, fog grass, flatweed, barley grass and clover species. Fertility appears to be moderately low.

Farm Infrastructure

The farm accessed by a gravelled all-weather laneway that comes off Monash Way. The farm comprises that land parcel where the proposed Project Site is located and several leasehold blocks on adjacent properties.

The land parcel that comprises the Project site is subdivided into nine separate paddocks, each with its own reticulated water supply to a stock trough. Water is supplied by connection to potable water from Gippsland Water. Paddock subdivisional fencing is mostly five barbed wires supported by timber posts at around 10 metre intervals. Electric outrigger wires have been added to this structure along property boundaries.

A set of stockyards with loading and unloading ramps and with holding and forcing pens is located near the farm access laneway.

A farm shed is also located near the farm access laneway and in close proximity to the stockyards. The shed is used for the storage of mobile farm plant and machinery, and for storage of farm supplies.

Agricultural Land Quality

While currently used for grazing purposes, this land is good quality agricultural land and is suitable for both grazing and broadacre cropping. The soils are naturally well drained, have deep surface soils, and have good soil structure. With reasonable care to avoid excessively wet or excessively dry conditions, these soils can be cultivated regularly and the productivity for broadacre cropping is usually at a very acceptable level.

However these soils are not exceptionally productive and the land could not be considered to be high quality agricultural land or strategically significant agricultural land. There is no specific niche for this land within current regional production. The soils are productive but not forgiving if cultivated too often or cultivated when soil moisture levels were not ideal. If the soil structure is lost through poor management, it will take many years to recover. This is in contrast to the highly regarded Ferrosol soils of Thorpdale and Mirboo North, where loss of soil structure is only temporary due to the soils' ability to reform structural units through one or two wetting and drying cycles.

Moreover, this soil type combined with gentle slopes and good natural drainage is moderately common through West Gippsland. Aldrich et al² estimated a total area of 361 km², 36,000 hectares of this land type in West Gippsland. To the north and west of Moe the main land use in the Westbury 2 land system is dairying, while south of Traralgon broadacre cropping is common. Grazing beef cattle is also common but is usually not the highest and best use from an agricultural perspective.

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Residual Agricultural Land

The dedication of between 4 and 5 hectares of the land parcel 2\PS700402 to the proposed BESS will leave a residual grazing parcel of around 14 to 15 hectares. In the past 2\PS700402 has been managed together with leasehold land to the west and a further parcel of land to the south. The grazing across the combined parcels has been operated as a single farming entity.

As a combined farming entity, this grazing operation is a commercial grazing unit. It is not of sufficient scale to provide a full income to the operator but is of sufficient scale where the net income can be part of an overall family income from different sources. There are many such beef cattle operations throughout Gippsland; operations where the income is supplemental to a family's overall income from different sources. The residual land in this scenario remains as a viable agricultural unit.

It is relevant to consider whether the residual land would be a viable farming unit if the leasehold land to the west and the other parcel of land to the south were no longer available for grazing. This would leave a single parcel of grazing land of just 14 to 15 hectares. It is relevant that there is an existing shed and stockyards on the property, secure reticulated water supply with stock troughs, and that the property has good quality fencing dividing the grazing area into a number of paddocks. Such a property would potentially be attractive as a turn out block for grazing young stock or dry cows for dairy farm. It may also be attractive for beef breeder who seeks a property spatially separated from the home property for turning out weaned calves.

A further option for the residual land would be to convert it to a broadacre cropping property. The soil are suitable for cropping. The conversion would involve removal of most of the subdivisional fencing and enlarging some of the gateways for machinery access. Broadacre cropping would provide similar or possibly slightly better net income when compared with the beef cattle grazing option. An area of 14 to 15 hectares as single block is a suitable size management unit for broadacre cropping.

Adjacent Farming Land

The adjacent agricultural land to the east, on the east side of Tramway Road, and on both sides of Bolands road is mostly used for broadacre cropping and fodder harvesting. Grazing appears to a minor land use. There is no perceived adverse impact from the proposed BESS on the continued use of this land for broadacre cropping and fodder conservation.

The adjacent agricultural land to the south and further south on the south side of Eel Creek is mostly used for grazing. There is no perceived adverse impact from the proposed BESS on the continued use of this land for grazing.

The adjacent land to the west has been used for a commercial woodlot in the past and is currently leased for grazing purposes. There is no perceived adverse impact from the proposed BESS on the continued use of this land for grazing.

Consideration of the Planning Objectives

The proposed BESS is a non agricultural use of this land and as such cannot meet the Farming Zone objectives of providing for the use of land for agriculture and encouraging the retention of productive

agricultural land. It complies with the last of the stated Farming Zone objectives of providing for the use and development of land for the specific purposes identified in a schedule to this zone.

The fourth listed objective for the Farming Zone is to ensure that non-agricultural uses, including dwellings, do not adversely affect the use of land for agriculture. The two sections above have considered this issue for the residual land in 2\PS700402 and for adjacent and nearby agricultural land in the Farming Zone and have concluded that there is no adverse impact on the use of residual, adjacent and nearby land for agriculture.

Consideration of the Decision Guidelines

The Decision Guidelines within the Farming Zone provisions of the planning scheme describe how earthworks and construction activity must meet certain criteria. In particular consideration must be given to:

- The capability of the land to accommodate the proposed use or development;
- The suitability of the site for the use or development;
- Whether the proposal is compatible with adjoining and nearby land uses.
- Whether the use or development will adversely affect soil quality or permanently remove land from agricultural production;
- The potential for the use or development to limit the operation and expansion of adjoining and nearby agricultural uses; and
- The agricultural qualities of the land, such as soil quality, access to water and access to rural infrastructure.

The technical capability and suitability of the Project Site for the proposed BESS is beyond the cope of this report, but for general construction purposes the Project Site has an undisturbed soil profile with bearing quality clay at depth. It is relevant that the examined soil profile demonstrated that the soil has quite deep A1, A2 and B1 soil horizons, and excavation to bearing clay will need to potentially be to 1 metre depth in places.

During construction, all topsoil to a depth of 50cm shall be separately removed and stockpiled for future reclamation. The topsoil shall be stored in a separate mound and not mixed with any other excavated material. After decommissioning and removal of all BESS material, the land surface shall be reformed to the original natural contour less 50 cm, and then the stockpiled topsoil spread across the site to restore the original ground surface to pre-construction height. Additional soil ameliorants and fertiliser will need to be applied at the time to ensure good establishment of plant cover (either pasture or crop).

During operation, the use of the Project Site for a utility BESS should have no detrimental impact on the soil quality. The soil is moderately well drained and the Project Site is on a gentle crest of the landscape, such that water sheds naturally to the south, east and west. The BESS will introduce a significant area of impermeable surfaces to the landscape which will enhance storm runoff, and the position of the BESS on a gentle crest will be enable the dispersion of this storm runoff in multiple directions and across a wide area, such that concentrated flows are minimised.

The compatibility of the proposed BESS with adjoining and nearby land uses and the potential for the proposed BESS to limit the operation and expansion of adjoining and nearby agricultural uses are discussed in section above. The agricultural qualities of the Project Site, including soil quality, are considered above. The proposed BESS will have no impact on the access to water and access to rural infrastructure.

Conclusions and Summary

- The Project Site comprises approximately 4 to 5 hectares of a 19 hectare parcel in Latrobe City Council Shire. The land is currently used for grazing of cattle.
- The climate of the area has a moderate average rainfall of 737 mm and a pasture growing season of about 7 months. It is well suited to grazing use.
- The landform is located within the Westbury 2 land system and is a gently sloping hillcrest.
- The soils are considered uniform across the site and classified as brown sodosols, with limited ability to regularly cultivate without some loss of soil structure. The property is suited best to grazing and broadacre cropping.
- There are no perceived detrimental impacts of the development of the BESS to the residual land or surrounding properties and farm businesses. The impacts to agricultural amenity of the region are not significant.

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