Development Application

Cimitiere Plains Solar Farm

Volume 1

22/11/24

This document has been prepared by Envoca on behalf of Sun Spot 9 Pty Ltd.

Revision	Date issued	Approved by	Date approved	Revision type
1	22/11/24	Daryl Brown	22/11/24	Issued to Sun Spot 9

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Name of project:	Cimitiere Plains Solar Farm

Daryl Brown, the primary author of this document holds a Bachelor of Rural Science (Hons I) and a PhD (in an agricultural field). He has also worked as an agronomist in Tasmania and is therefore qualified to write the section of this document on agricultural impacts.

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Executive Summary

Sunspot 9 Pty Ltd is seeking development approval to establish a 288 MW solar farm on private land, 5 km northeast of George Town, Tasmania. The solar farm will be connected to the TasNetworks George Town substation by 6 kilometres of double circuit transmission line on poles.

The solar farm will be situated on approximately 454 Ha of rural land that is currently used for dryland agriculture, predominantly grazing. Not all of this area will be used for the solar farm. The land along Cimitiere Creek will not be developed with panels as well as land that is too steep or has environmental constraints including Aboriginal heritage sites and a small area of threatened vegetation community.

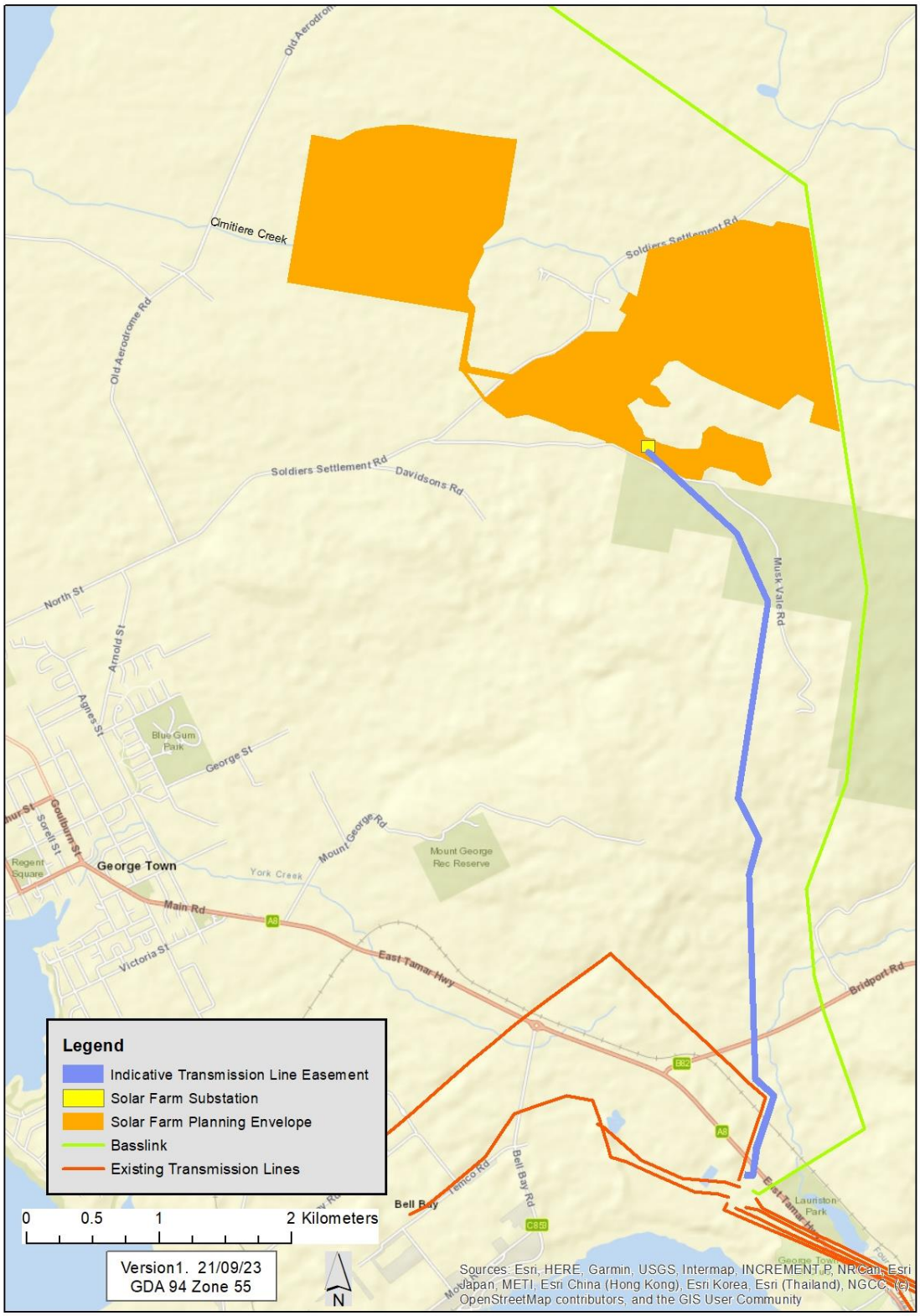
The proposed infrastructure includes:

- Photovoltaic (PV) solar panels mounted on single axis tracker frames,
- Inverters to transform the direct current (DC) from the solar panels to alternating current (AC),
- On site substation and control room,
- Security fence around the panels and the substation,
- Internal access tracks,
- Electrical cables, and
- Site office and parking

The transmission line will traverse approximately 5 km of forest (and regenerating forest) and 1 km of cleared land that is currently used for recreation and as part of the buffer area for the Bell Bay aluminium smelter. Poles will support two circuits that will operate at a voltage of 110 kV. The easement for the transmission line will be 50 m wide.

The location of the proposed solar farm and the indicative transmission line route is shown in Figure A.

Figure A. Location of the Cimitiere Plains Solar Farm and associated transmission line



The objectives of the project are as follows:

- To produce renewable electricity at a competitive price and sell that product into the National Electricity Market (NEM).
- To produce electricity with low carbon emissions.
- To minimise impacts on the environment and the local community.
- Provide renewable energy to support local industrial development.
- Contribute to the Tasmanian goal to achieve 200% renewable energy by 2040.

The Cimitiere Plains Solar Farm will make a substantial contribution to meeting the Tasmanian Renewable Energy Target (TRET) with annual production of approximately 620 GWh per year or 5.9% of the TRET. This amount of energy is sufficient to power approximately 100,000 homes.

Solar farms are currently one of the cheapest forms of new generation in the grid (Lazard, 2023). Tasmania is in the very fortunate position that it has hydro-electric capacity to firm variable renewable energy sources. Solar energy in Tasmania is complementary to the existing hydro generation as it produces most of its energy over the summer months when inflows into hydro catchments are typically lower.

The solar farm will be able to bring these benefits to Tasmania with minimal impact on the environment and surrounding communities. The solar farm and associated transmission line have been located and designed such that:

- There will be no impact on threatened communities.
- There is only one known threatened flora species in the planning envelope which will be avoided.
- All known Aboriginal heritage sites will be avoided.
- The landscape and visual impacts from private and public viewpoints have been assessed as 'low' once mitigation measures have been implemented.
- The noise assessment has determined that noise emissions from the project would satisfy the operational noise goals at all identified receivers for a typical worst case daylight operational scenario.

Site location and land tenure

The solar farm site is located on predominantly cleared agricultural land within the valley of Cimitiere Creek approximately 5 km northeast of George Town, Tasmania. One array is on the western side of Soldier Settlement Road and another array on the eastern side. All these titles are privately owned by one landholder.

The transmission line is approximately 6 km long. The first 5 km are forest or regenerating forest and the last 1 km is cleared land that is part of the buffer zone for Bell Bay Aluminium (BBA). The transmission line traverses a number of titles. From the solar farm substation, it crosses Musk Vale Road then enters Crown Land (Future Potential Production Forest). South of the Crown Land, the transmission line passes through two private titles of land in hilly terrain that have historically been used for timber harvesting. The line then enters land owned by Bell Bay Aluminium that forms part of the buffer zone. It crosses Bridport Road, the railway and East Tamar Highway before entering the George

Town Substation. For the last 900m prior to the George Town substation, the proposed line runs parallel to an existing TasNetworks line that supplies Timberlink Australia.

Subdivision

The planning envelope for the solar farm will be leased from the land owner. As such, Sun Spot 9 is not seeking approval for subdivision, and subdivision relevant performance criteria are not addressed in this development application.

Layout and project infrastructure

An indicative layout of the main infrastructure is shown in Figure B. Approximately 600,000 panels will be installed, depending on the type of panels that are available at the time of procurement. The panels will be installed in rows that are aligned north-south. The panels are attached to a long boom (torque tube) that rotates enabling the panels to track the sun from east to west during the day. This mounting design is known as single axis tracking (refer to Figure C). This type of tracking system is used to maximise the yield from the panels relative to a system where the panels are fixed.

The distance between the rows of panels is between 5 to 9 metres. There is adequate room between the rows to drive vehicles in order to maintain the panels. Tractors and equipment will also be able to access the rows to maintain the pasture, spray weeds etc.

The posts (or piles) that support the single axis tracking system will be driven into the ground to a depth of up to 4 m (normally less) depending on expected wind loads and final design. There is normally no excavation of the footing and no use of concrete.

DC cabling will connect the panels to the power conversion units (PCU). The cabling will be attached to the underside of the panels and the mounting system then eventually an underground cable to the PCU. At the PCU, electricity is converted from direct current (DC) to alternating current (AC) at 33 kV. The PCU contains inverters, a transformer to step up the voltage to 33 kV, switching gear, control systems, protection and other components. The solar farm will have approximately 84 PCUs dispersed throughout the PV panel areas.

A 33 kV internal electricity network will be used to collect the power from the power conversion units to the solar farm substation. All cabling on the site will be a minimum of 600 mm below the soil surface and installed in accordance with relevant Australian standards.

A substation will be constructed on the south-eastern side of the solar farm near Musk Vale Road as shown in Figure B. The area for the substation is approximately 50 m by 50 m. The substation broadly comprises the following elements:

- Switch rooms and a control room that receive power from the PCUs via the internal electricity network.
- Two transformers that will convert the voltage from 33 KV to 110 KV.
- Other infrastructure for switching, metering and protection.
- Infrastructure for protecting the substation from lightning strikes. This is typically tall narrow poles around the outside of the substation that conduct the lightning safely.
- A security fence around the perimeter of the substation.

Australian Standards require that a security fence be constructed around the substation and the solar arrays. The fence will be approximately 2.0 m high.

A control building (or operation and maintenance building) will be constructed for staff who are operating the solar farm. The building will contain office space, a kitchenette and toilets. The location of the control building is shown in Figure B.

A number of internal gravel roads will be constructed to allow access to the site during construction and maintenance. There will be three access points off Soldier Settlement Road (SSR1, SSR2 and SSR3) and one access points off Musk Vale Road (MVR1). An indicative layout of the roads is shown in Figure B.

Temporary construction facilities will consist of site offices, toilets, crib huts and car parking. Given the size of the site and the number of construction workers, it is anticipated that there will be 2 or 3 temporary construction compounds. A number of temporary construction laydown areas will be utilized for construction activities and storage of materials and machinery.

A double circuit transmission line will connect the solar farm substation to the George Town substation. The transmission line will be a pole line energized at 110 kV. The typical height of the poles will be 33 m with a maximum height of approximately 38 m. The poles will be constructed of galvanized steel or concrete. The galvanising will be dulled to reduce the visual impact of the new poles.

The transmission line will be built within the planning envelope shown in Figure D. The 50 m wide easement will be cleared of trees and shrubs that are taller than 3 m or likely to grow taller than 3 m. Access tracks will be constructed along the easement to provide access to every pole location. At each pole, there will be two hardstanding areas. These are used during construction and for maintenance by cranes and elevated work platforms. These hardstands would typically be 15 m long and 10 m wide.

Figure B. Indicative layout of infrastructure

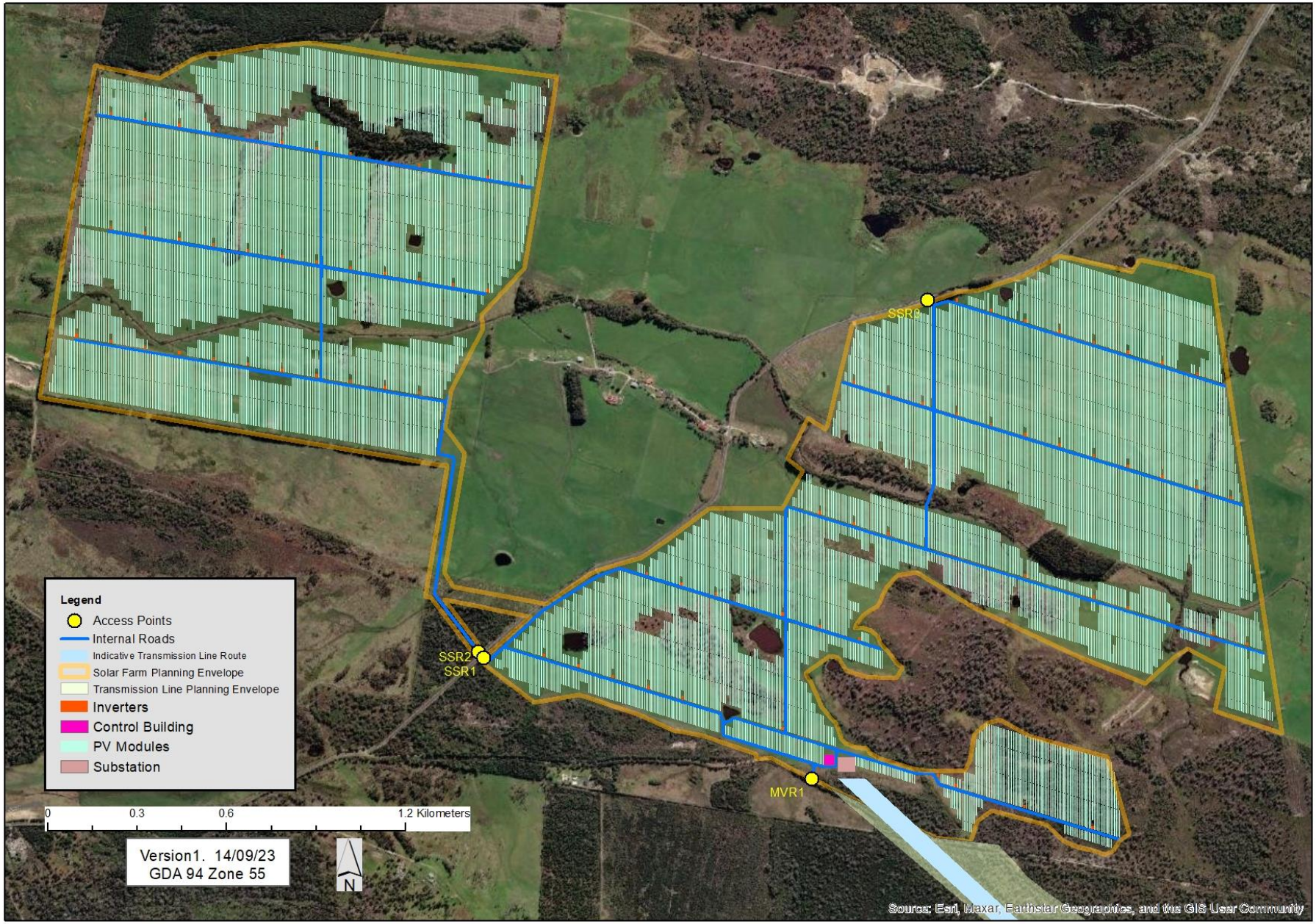


Figure C. Single access tracking system

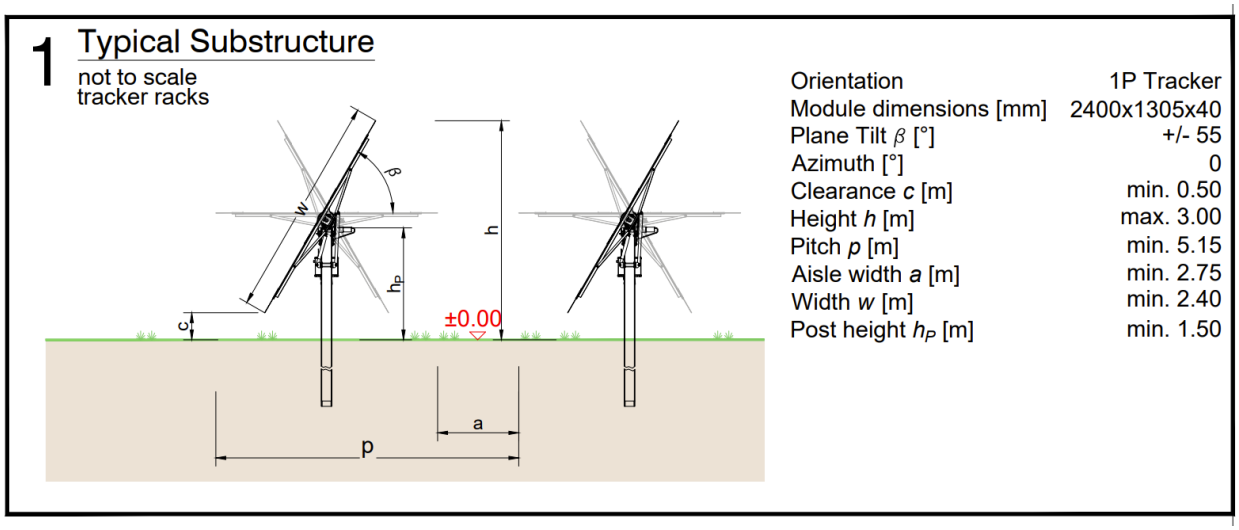
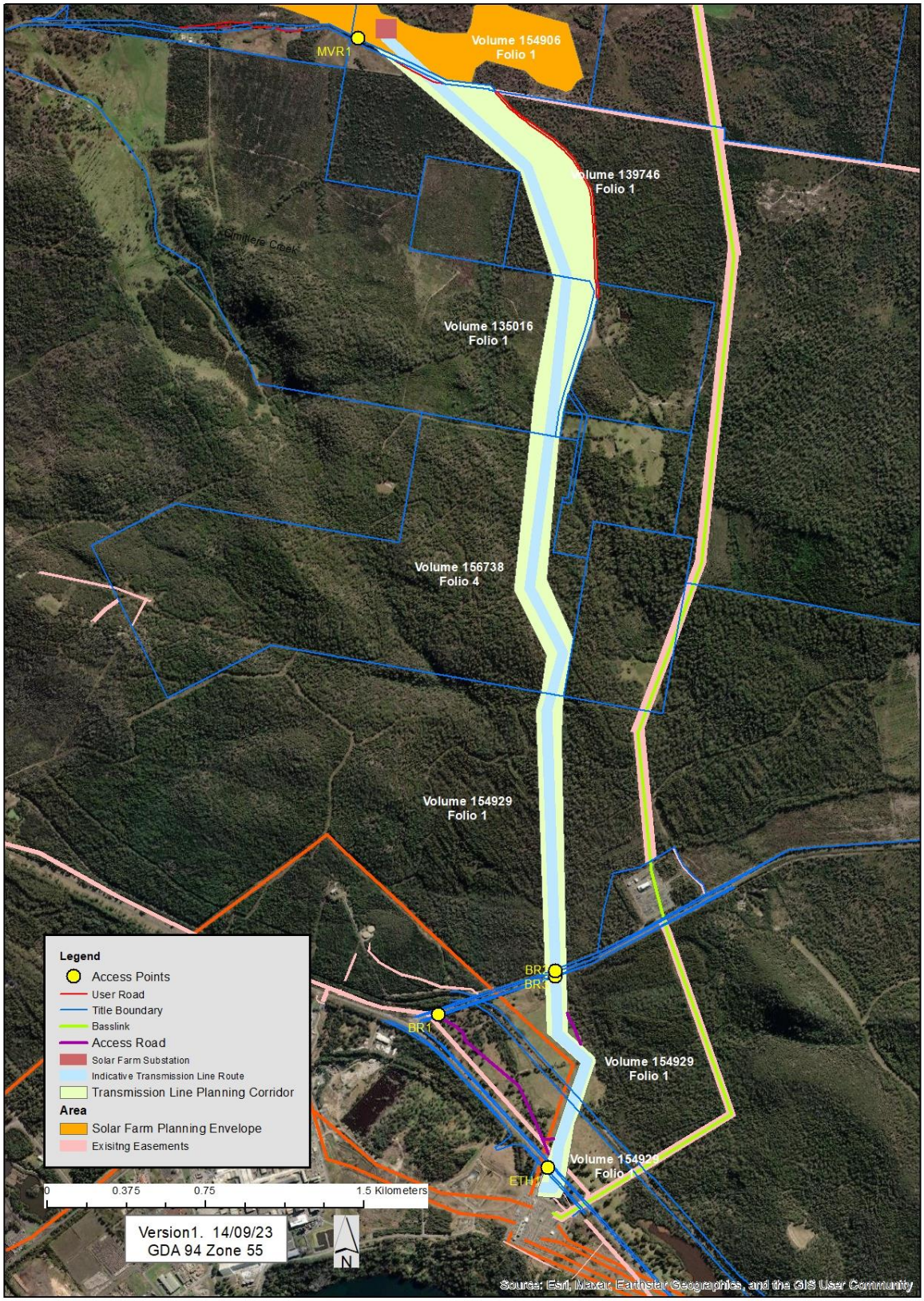


Figure D. Location of transmission line planning corridor



Construction Activities

Construction activities are expected to take approximately 12 to 18 months and require a peak workforce of up to 300 people for part of this time. For the solar farm, construction will involve the following activities:

- Native vegetation (trees and shrubs) that are in the solar PV footprint will be cleared,
- Establishment of vegetation screens,
- Construction of the perimeter security fence,
- Establishment of the temporary construction compounds and the construction laydown areas,
- Construction of the site access points and internal roads,
- Driving the posts into the ground up to 4 m,
- Attaching the mounting system,
- Attaching panels to the mounting system,
- Installing DC cabling to the PCUs,
- Installing the PCUs on concrete footings,
- Installing earthing systems, and
- Trenching of 33 kV cables from the PCUs to the substation.

The substation and transmission line works will progress in parallel with the construction of the main PV plant. Construction of the transmission line will include:

- Excavation work and preparation of the hardstand areas for the substation.
- Logging of any commercially viable timber within the easement.
- Clearing and burning the remaining timber and shrubs that are likely to grow taller than 3m.
- Construction of access tracks and hard standing areas.
- Installation of substation components
- Excavation and construction of pole footings
- Erection of poles using cranes
- Stringing conductors

Operations

The solar farm has an operational design life of approximately 35 years. During this time, it is possible that the PV modules and ancillary equipment may be upgraded or repowered, depending on the commercial viability at the time. This repowering of the Site will extend the lifespan of the project. The completed solar farm will operate with approximately 10 permanent staff. Not all of these people would be required on site each day.

In addition to the operation of the solar farm, the property will continue to support a productive agricultural enterprise. After construction has been finalised, the land will be reinstated to productive pasture. The landholder will continue to graze sheep beneath the panels. A protocol will be developed to ensure that the two activities of solar farm and sheep grazing can operate safely and without any risk to equipment, the livestock or the environment.

Decommissioning

At the end of its operational life, the solar farm will be decommissioned. The connection to the electricity grid would be disconnected, and all the solar farm components removed. The Site will then be rehabilitated and returned to agricultural use. Some of the internal access roads may stay in place depending on the landholder's requirements. The main components such as the solar PV modules and the mounting systems will be recycled. Where components cannot be recycled, they will be disposed at an approved waste management facility.

Planning

The Cimitiere Plains Solar Farm proposal is within the George Town Municipal Area and therefore subject to the George Town Local Provision Schedule and State Planning Provisions (SPP). The solar farm is within the Agriculture Zone. Facilities for electricity generation (a solar farm) and facilities for transmitting power are defined as Utilities. Utilities in the Agriculture Zone are a Discretionary Use or Development. The primary purpose of the Agriculture Zone is to provide for the use or development of land for agricultural use. Sheep grazing will be able to continue within the solar farm when the project is operational. While there has been limited research on the impacts of solar farms on agricultural productivity, it is expected that the percentage reduction in productivity will range from 0 to 30% (that is, at least 70% of productivity will be maintained).

The transmission line and associated access tracks traverse the following planning zones:

- Agriculture
- Rural
- General Industrial
- Utilities, and
- Open Space

Transmission lines with a voltage of 110 kV or lower are deemed to be Minor Utilities. A Minor Utility in the Agriculture Zone, Rural Zone, Utilities Zone, General Industrial Zone and Open Space Zone is classified as No Permit Required Use or Development. However, the transmission line does not comply with each applicable standard and the planning envelope is subject to codes and therefore a planning permit is required.

Community and stakeholder engagement

Broad consultation has been conducted with the community and other stakeholders. The objectives of this consultation process have been:

- To inform stakeholders about the rationale for the project, what it will look like, how it will be developed and what impact it might have on them,
- To understand from the stakeholders their interest in the project and how it may affect them,
- Provide an opportunity for stakeholders to give feedback which can then be fed back into the design and other management measures,
- To let stakeholders know about the planning process, and
- To collect information about the local environment that will inform the development of the project.

Two community consultation events have been held for the general public. The first was held at the York Cove Holiday Hotel Conference Room (near The Crazy Duck restaurant) on 17th and 18th of March 2023. This event was advertised by posting a 2-page newsletter to all addresses in the George Town post code and Beechford. Posters providing information on the project were on display and two members of the project team were available to discuss the project. Approximately 60 people attended over the two days. The attendees were very interested in finding out about the project and the response was overwhelmingly positive. Attendees were invited to fill out a community feedback form for the project. Twelve people filled out the form.

The second community consultation session was held at the George Town Markets on Saturday 13th May 2023. This event was advertised on the local community radio station, Tamar FM, for two weeks prior to the event. There was also significant through traffic as everyone attending the market had to pass our display. Most people were positive about the project but the level of engagement was not as high as the sessions held at the York Cove Holiday Hotel. Two people filled out the community feedback form.

Of those that filled out the community feedback form, 79% responded that they felt very positive about the proposed project and 21% said that they felt positive. None responded that they felt neutral, negative or very negative about the project.

A community consultation session was also held in Beechford on the Friday 12th May 2023. The session was dominated by one individual who was very strongly opposed to the project. The stated reasons for his concerns included, but are not necessarily limited to, the following:

- Significant reduction in agricultural production as a result of the project.
- A reduction in agricultural inputs into the land.
- Inability to drive equipment between the rows of panels.
- The power produced is not “base-load” power and therefore has no value.
- Visual impact.
- Inadequate labour resources in the area to build the solar farm.
- Inadequate accommodation for the construction labour force.

Another person expressed concern regards the visual impact from Soldiers Settlement Rd and as a result, the project has committed to establishing a vegetation screen along section of Soldiers Settlement Road on the eastern side. Other community members were able to ask some questions and were appreciative of the opportunity to discuss the project.

Neighbouring landholders have also been consulted. There are 5 residences within a kilometre of the solar farm. . Two of the residents were broadly supportive of the project and the others didn’t explicitly express how they felt about the project. Some residents had concerns relating to the following matters:

- The impact of traffic on the surface of Soldiers Settlement Rd and how this would be managed, and
- The likely visual impact.

For the two residences concerned about visual impact (R1 and R3), a photomontage was prepared to show what they would see from their house. R3 will not be able to see the solar farm due to screening by vegetation. R1 will be able to see the solar farm from their residence although the main views from

the house are to the north-west, not towards the solar farm. Mitigation of visual impact at R1 is described in the visual chapter. Resident's concerns regarding the road conditions and traffic have been taken into account in the commitments listed in the traffic chapter.

In addition to the impacted landholders, surrounding residents and the broader community, consultations have been held with:

- The Aboriginal community
- George Town airport
- George Town Chamber of Commerce
- Bell Bay Advanced Manufacturing Zone
- Basslink
- Zinfra/Palisade
- Environmental protection authority
- George Town Council
- State Growth (Roads/Traffic)
- TasRail
- TasNetworks
- Renewables, Climate and Future Industries Tasmania
- Office of the Economic Regulator
- Minister for Energy and Renewables
- Property Services (to seek permission to conduct surveys)
- Aboriginal Heritage Tasmania
- Civil Aviation Safety Authority
- Tippogoree Hills Mountain Bike Park (George Town Council)

Aboriginal cultural heritage

An Aboriginal heritage assessment for the project has been conducted by CHMA Pty Ltd and Senior Aboriginal Heritage Officer, Vernon Graham. The assessment was conducted in accordance with the *Aboriginal Heritage Act 1975* and the associated *Aboriginal Heritage Standards and Procedures (June 2018).* The assessment included:

- a search of the Aboriginal Heritage Register (AHR)
- field surveys
- sub-surface investigations at one site
- report preparation, and
- consultation with the Aboriginal community

Four sites were within the proposed solar farm footprint. Of the sites, one is an artefact scatter, with the other three sites were classified as isolated artefacts. No new sites were found within the transmission line planning envelope. An existing site (recorded in the AHR) is within the transmission line planning envelope, but right on the edge of the envelope in a location that will not be disturbed.

All of these sites within the planning envelope will be avoided by the development. The artefact scatter on the solar farm is in a relatively wet area next to a dam. There will be no panels built within 5 m of this site. Prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 5m radial buffer applied. The barricading will remain in place for the duration of construction.

For all these isolated artefacts, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 2 m radial buffer applied. The barricading will remain in place for the duration of construction.

Historic heritage

A historic heritage assessment for the project has been conducted by CHMA Pty Ltd and Senior Aboriginal Heritage Officer, Vernon Graham. The historic heritage assessment involved a desktop assessments and field surveys.

No historic heritage sites, suspected features, or areas of elevated archaeological potential were identified during the field survey assessment of the study area. A search of the various historic heritage registers in shows that there are no registered historic sites or features located within or in the immediate vicinity of the Cimitiere Plains Solar Farm study area. The closest heritage-listed features are located around George Town and Low Head, around 3 to 4 km to the northwest and west of the study area.

It has been assessed that there is a very low potential for undetected historic heritage sites to occur within the study area. However, if, during the course of the proposed works, previously undetected heritage sites or objects are located, the processes outlined in the Unanticipated Discovery Plan will be followed.

Biodiversity

A biodiversity assessment for the project has been conducted by Enviro-Dynamics. Multiple surveys were conducted between November 2020 and July 2023. To select the transmission line route with the least impact, the initial surveys covered a very broad area and were focused on identifying vegetation communities, particularly threatened communities and likely habitat for threatened species. The area surveyed was a corridor approximately 1.5 km wide with Basslink as the eastern boundary.

Once the information on threatened communities (and Aboriginal heritage) had been obtained, the transmission line planning corridor was refined in consultation with landholders and taking into account impacts on visual amenity. Subsequent surveys were timed to target those threatened species that were likely to occur in the planning corridor. The presence of threatened communities, particularly two area of *Eucalyptus ovata* forest and woodland either side of Bridport Road had a significant influence on the route selection for the transmission line.

One threatened flora species (*Gratiola pubescens*) was found within the transmission line planning corridor. This low growing perennial herb covering an area of approximately 4 m^2 was recorded within a small boggy area. These plants will not be impacted by the project. An exclusion zone will be established to prevent any accidental damage. This species thrives on disturbance, and any works

occurring nearby will have no negative impact on the long-term survival of the species. No threatened species found within the solar farm footprint.

No threatened fauna species listed under the *Threatened Species Protection Act 1995* (TSPA) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) were recorded during the study. As no evidence of threatened fauna or significant habitat was found during the preliminary surveys, targeted surveys using acoustic monitors, camera traps or spotlighting are not warranted.

There is wedge-tailed eagle (*Aquila audax* subsp. *fleayi*) habitat within the study area indicated by the presence to of 2 known nest sites within 1 km. This species is listed as threatened under the TSPA and EPBCA. Tasmanian wedge-tailed eagles are sensitive to disturbance, particularly during the breeding season. Eagle management in Tasmania focuses on limiting the proximity and timing of disturbance around known nest sites. One eagle nest is within 500 m of the transmission line planning corridor. There is the potential for impact if works are carried out within the breeding season and the nest is active. A nest activity assessment will be carried out within October of the year the works are to occur to determine if the nest is active.

There are two small areas of listed threatened vegetation community that exists within the planning envelope; *Melaleuca ericifolia* swamp forest (NME) and *Eucalyptus ovata* forest and woodland (DOV). Both of these vegetation communities will not be impacted by the development. Impacts on vegetation communities that are not threatened are provided in Table A.

Table A. Impact of the project on native vegetation communities

TASVEG Community	Area (Ha) within the planning envelope	Area (ha) anticipated to be impacted	Total area in Tasmania (Ha)	Total area reserved (Ha)
Eucalyptus amygdalina coastal forest (DAC)	53	17	149,800	79,800
Eucalyptus amygdalina forest on dolerite (DAD)	26	10	156,100	47,700
Pteridium esculentum fernland (FPF)	15	4	unknown	unknown
Lowland grassland complex (GCL)	3	<1	69,100	3,300
Lowland grassy sedgeland (GSL)	5	<1	6,700	500
Bursaria – Acacia woodland (NBA)	2	<1	18,600	2,600
Wet heathland (SHW)	1	<1	26,300	16,200

Visual

A landscape and visual impact assessment (LVIA) for the project has been conducted by Moir Landscape Architecture. Potentially sensitive receptors are shown in Figure E. Those residences that could possibly

see the proposed development if vegetation and other screening is ignored are listed in Table B. The table also describes what the residents are anticipated to see once the solar farm is constructed.

The solar farm will be visible from Soldiers Settlement Rd, Old Aerodrome Rd and Musk Vale Rd. The transmission line will be visible from Musk Vale Rd, Bridport Road and the East Tamar Highway. To mitigate the views from Soldiers Settlement Rd, a single row of screening trees to a height of 4m will be planted along the eastern side of Soldier Settlement Rd. A viewpoint analysis was conducted at a number of points along these roads as well as the Mount George Lookout. The results of the analysis is provided in Table C.

Figure E. Potentially sensitive receptors

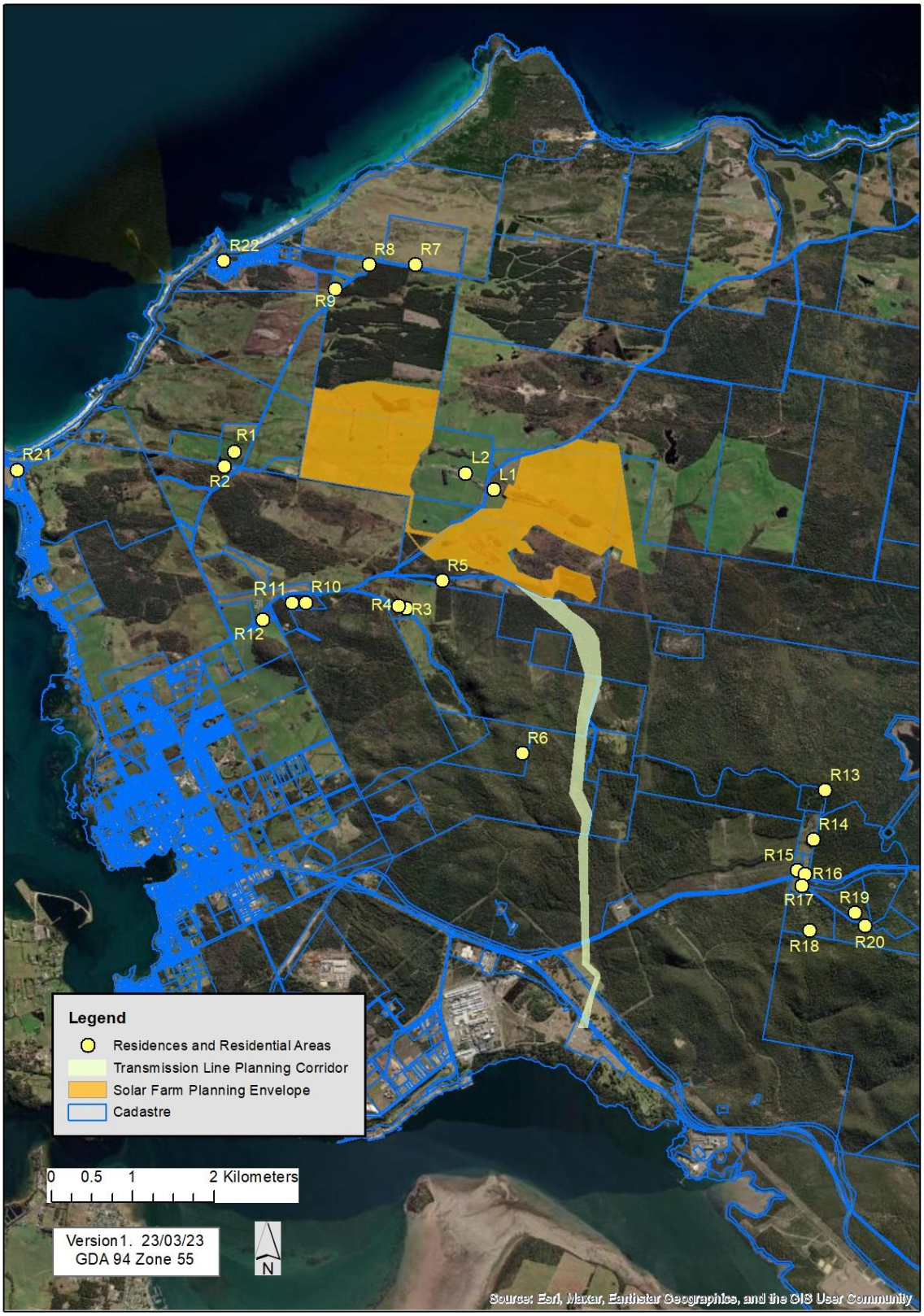


Table B. Visual impact on surrounding residences

Residence	Visual impact	Visual impact rating after mitigation
R1	The house is positioned such that the main living areas look out to the northwest over the Tamar River and Bass Strait. Two bedrooms at the rear of the house look back towards the solar farm. A row of trees will be planted along the driveway to screen views from the bedrooms.	Low
R2	A localised rise is located to the northeast and a shed, chook shed and tank located to the east. These elements are likely to contain views toward the Project in these directions. Due to a combination of these factors and vegetation the project is likely to be partially visible	Low
R3,R4,R5,R6	Existing vegetation prevents views to the solar farm and transmission line.	Nil
R9	Existing vegetation prevents views to the solar farm	Nil
R13, R14, R17	These residences may or may not be able to see a section of the transmission line from their residence depending on vegetation surrounding the house. These houses are at least 2.6 km from the line. The proposed transmission line will be behind the Basslink Interconnector in their view.	Nil or Low
R15, R16	Existing vegetation prevents views to the transmission line.	Nil
R18,R19,R20	These residences may have a view to the solar farm at a distance of 5 km. They houses may also have some views to a section of the transmission line at a distance of greater than 2.6 km. The proposed transmission line will be behind the Basslink Interconnector in their view.	Low

Table C. Public viewpoint visual impact summary

Viewpoint	Location	Visual sensitivity	Visual magnitude	Potential visual impact	Impact with mitigation
VP01	Bridport Road. (Transline)	Low	Low	Low	NA
VP02	Bridport Road. (Transline)	Low	Low	Low	NA
VP03	Mount George Lookout	High	Nil	Nil	NA
VP04	Soldiers Settlement Road	Low	Nil	Nil	NA
VP05	Soldiers Settlement Road	Low	High	Moderate	Low
VP06	Soldiers Settlement Road	Low	High	Moderate	Low
VP07	Soldiers Settlement Road	Low	High	Moderate	Low
VP08	Soldiers Settlement Road	Low	Moderate	Moderate-Low	Low
VP09	Musk Vale Road	Low	Nil	Nil	NA
VP10	Musk Vale Road	Low	Low	Low	NA
VP11	Musk Vale Road	Low	Nil	Nil	NA
VP12	Intersection of Soldiers Settlement Road and Musk Vale Road	Low	Nil	Nil	NA
VP13	Intersection of Soldiers Settlement Road and Davidsons Road	Low	Nil	Nil	NA
VP14	Old Aerodrome Road	Low	Nil	Nil	NA
VP15	Old Aerodrome Road	Low	Nil	Nil	NA
VP16	Old Aerodrome Road	Low	Low	Low	NA
VP17	Old Aerodrome Road	Low	Low	Low	NA
VP18	East Tamar Hwy (Transline)	Low	Low	Low	NA

Glint and glare

An assessment of glint and glare from the solar farm has been undertaken by Pager Power who have undertaken over 1,100 glint and glare and the studies worldwide. No significant impacts are predicted on surrounding road safety and residential amenity. Mitigation is not recommended.

Noise

In a solar farm, noise is generated primarily by the inverters in the PCUs. A relatively small amount of noise is also generated by the electric motors that drive the single axis trackers. The inverters generate noise during the day when they are under load and produce significantly less noise at night. Similarly, the tracking motors do not operate from dusk to dawn.

Noise will also be generated during the construction of the solar farm, both at the site and along the transport route. All significant noise generating construction activities will be limited to the following construction hours:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 6 pm
- Sunday and Public Holidays 10 am to 6 pm

A noise impact assessment for the project has been conducted by Muller Acoustic Consulting. The predicted noise levels for all residences surrounding the solar were well below the noise goals for operation (40 dB LAeq(15min)) and construction (50 dB LAeq(15min)) when modelled under the worst-case meteorological conditions.

Traffic

Construction of the Cimitiere Plains Solar Farm will require the transportation of a large amount of equipment and materials. There will also be traffic generated by the construction workforce that will reside in George Town, Launceston and surrounding areas. During operation, there will be very limited traffic consisting primarily of maintenance staff and contractors travelling in light vehicles. Approximate traffic numbers during construction are provided in Table D. These figures are based on the worst-case assumption that the peak of activity for the different components of the solar farm (panels, transmission line and substation) all occur at the same time. The majority of traffic will access the site from the south along the East Tamar Highway / North Street / Soldiers Settlement Rd. Truck and Dogs delivering sand and road base material may originate from north of the site and travel south along Soldiers Settlement Road. Some construction vehicles will use Bridport Road to access the southern section of the transmission line.

Table D. Traffic generation during construction

Vehicle Type	Average Construction Period		Peak Construction Period	
	Daily (vpd)	Peak Hour (vph)	Daily (vpd)	Peak Hour (vph)
Light Vehicle	207	94	246	115
Shuttle Bus	14	7	20	10
Rigid Vehicles	16	6	24	8
Articulated Vehicles	98	14	164	26
Total	**335**	**120**	**454**	**159**

Vpd = vehicles per day; Vph = vehicles per hour.

Measures that will be used to mitigate the impacts of construction traffic are:

- Prior to construction, a pre-condition survey of North Street and Soldiers Settlement Road will be undertaken, in consultation with Council. During construction these roads will be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm will be rectified. At the end of construction, a post- condition survey will be undertaken and the necessary works made to ensure these roads are left in a condition that is consistent with the condition at the start of construction.

- Construction traffic will not use the section of Musk Vale Rd from Soldiers Settlement Road to MVR1 unless required for OSOM vehicles or some other special purpose.
- Construction vehicles travelling through George Town will only use East Tamar Highway / Goulburn St / Low Head Rd and North Street. Construction traffic will not use Agnes St and Arnold Street unless required for OSOM vehicles or some other special purpose.
- The section of Musk Vale Road to the southeast of MVR1 will be upgraded with a combination of passing bays and road widening to 5.5 metres where necessary.
- A construction traffic management plan will be prepared prior to construction. It will include the following elements and commitments:
    - All loading and unloading of vehicles will occur within the site. No street or roads will be used for material storage at any time.
    - All vehicles will enter and exit the site in a forward direction.
    - Establishment of a Driver Code of Conduct including using only the designated transport routes.
    - Induction process for vehicle operators and regular toolbox meetings.
    - Neighbours of the solar farm be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
    - A complaint resolution procedure.
- Shuttle buses that will be provided to reduce the need for private vehicle use.
- The North Street intersection with East Tamar Highway will be upgraded to better accommodate 19.0m semi-trailer vehicles.

Flood

WMAwater were contracted to develop hydrologic and hydraulic models for the Cimitiere Creek catchment and to model existing flood conditions for a 1% AEP flood event. All sensitive equipment such as the PCUs and substation equipment will be constructed so that they are above 1% AEP event flood height. Solar panels will be excluded from areas where the hydraulic hazard is level H4 (unsafe for people and vehicles) or greater. The panels are mounted on posts that are typically 1.4 m above ground level. During a flood event the single axis tracking system can be set so that the panels are in a horizontal position and thus providing approximately 1.4m of clearance between the panels and the ground.

Where the security fence crosses the Cimitiere Creek, the fence shall be design to let water flow freely in the event of a flood.

Agriculture

The solar farm is within the Agriculture Zone. The site of the solar farm is currently used for grazing sheep and cattle. The paddocks have been sown to improved pastures. Fodder crops are occasionally grown for livestock as part of a pasture renovation program. The mapped land capability classes within the solar farm site range from 4 to 6. There is no prime agricultural land within the site.

The grazing of sheep will continue within the solar farm once construction has been completed and will play an important role in keeping the pasture from growing too high. Cattle will need to be excluded

farm the solar farm as they will damage the panels. Tractors are able to drive between the rows to conduct normal maintenance activities such as weed control, slashing, fertilising or refurbishment of pastures.

The panels do not cover all of the area within the solar farm perimeter. There are 454 Ha withing the area defined as the Cimitiere Plains Solar Farm. Of this area, approximately 162 Ha is directly covered by panels, 6.5 Ha will be covered by internal access roads and 1.5 Ha will be covered by the substations, PCUs, switch rooms and the control room.

Pasture continues to grow under the panels as can be seen in Figure C. Further research is required to determine the impacts of solar panels on grazing production. Preliminary research such as the trials described in the Development Application are indicating that if there is a drop in production, it is likely to be relatively small and unlikely to exceed 30%. This corresponds to much of the anecdotal evidence within the industry.

There are also some benefits of hosting solar farms including:

- Annual lease payments which provide substantial income irrespective of the weather or commodity prices. This income can be used to increase inputs into the solar farm area or the remainder of the property.
- The security fence around the solar farm will keep out grazing native animals and in areas where wild dogs are a problem the security fence provides protection to sheep.
- During extended dry periods, dew forms on the solar panels at night when they are positioned horizontal to the ground. In the morning, when the solar panels tilt to the east, the dew runs off onto the same point each day. This supports a strip of grass growth on the eastern edge of the panels. During the most recent drought in Australia, many graziers observed that they had more feed under the solar panels and were able to have significantly less supplementary feeding than in neighbouring paddocks.

Hazardous materials

During operation, it is not anticipated that there will be any hazardous materials stored on site. During construction, some diesel may be stored on site for refuelling equipment. Diesel is a Class 4 hazardous substance.

The following mitigation measures will be implemented to mitigate the risk of hazardous materials:

- The quantity of diesel stored on site will be less than 100,000 L.
- The storage of diesel on site will comply with *AS1940 The storage and handling of flammable and combustible liquids* and will not be stored with other flammable liquids
- Any hydrocarbons stored on site will be in bunded containers.

Electrical hazards and electric and magnetic fields

Potential electrical hazards include electrocution and exposure to arc flash. Electric and magnetic fields (EMF) exist whenever electric current flows. Electric fields are produced through electric charge and can be shielded by common materials such as wood and metal (WHO, 2007). Magnetic fields are produced through the flow of electric charge (current) and can easily pass through common materials. Both fields are strongest at the source and decrease in magnitude with distance.

The following steps will be taken to limit the risk of exposure to electrical hazards and EMF.

- The solar farm and substation will be enclosed by a security fence.
- All electrical equipment will be designed, constructed and implemented according to relevant international and Australian standards and best codes of practice.

Considering that the EMF levels associated with the infrastructure are below the ICNIRP reference levels and that EMF attenuates with distance, the risk of human health being impacted by exposure to EMF is very low.

Bushfire

The site for the solar farm and transmission line is classified as a bushfire prone area. During site construction and operations, the following are potential ignition sources:

- Earth moving equipment;
- Vehicles;
- Power tools (such as welders, grinders);
- Mowers and slashers; and
- Accidental ignitions (such as discarded cigarettes).

The solar panels are non-reflective and present no risk of ignitions from concentrated solar energy. Ignitions from other PV equipment is theoretically possible from electrical faults such as arc faults, short circuits, ground faults and reverse currents.

Transmission lines are very unlikely to start a fire relative to distribution lines for the following reasons:

- Transmission lines are subject to a significantly higher standard of monitoring and inspection and as such are much less likely to have a fault that could result in a fire.
- Transmission lines have highly sophisticated protection systems that instantly detect faults and can shut the line down if required. Distribution lines have comparatively very basic protection systems.

The following mitigation measures will be implemented to reduce the risk of bushfires.

- A 10 metre asset protection zone (APZ) will be established around the perimeter of all PV arrays and the substation. Grass within the APZ will be kept at a height of less than 100 mm during the fire permit season. Leaf material and other debris will be removed.
- Visual screens will be planted using species suitable for the environment that have low fire spotting characteristics (such as smooth bark or evergreen species) and are not high flammability species.
- During the fire permit season, pastures within the solar farm will be maintained with minimal fuel load (<150 mm grass height).
- During construction while the fire permit season is in place, a range of measures will be implemented to control the risk of fire ignitions.
- Prior to operation, a bushfire management plan will be prepared.

- To minimise the risk of grass fire ignitions, all operations on the Site involving vehicles and slashers or other works that could start a fire will cease while the GFDI is or forecast to be 35 or greater.
- An Emergency Response Plan (ERP) will be prepared for the solar farm.
- Two 20,000 litre tanks will be installed for firefighting purposes.

Contents

Figures

Tables

Abbreviations

AC	Alternating current
AEP	Annual exceedance probability
AHT	Aboriginal Heritage Tasmania
ARPANSA	The Australian Radiation and Nuclear Safety Agency
CASA	Civil Aviation Safety Authority
DA	Development Application
DC	Direct current
DPIPWE	Department of Primary Industries Parks Water and Environment
DSG	Department of State Growth
ELF	Extremely Low Frequency
EMF	Electric and magnetic fields
EPBC	*Environment Protection and Biodiversity Conservation Act 1999*
EPA	Environment Protection Authority
GFDI	Grassland Fire Danger Index
ICNIRP	International Commission on Non-Ionizing Radiation Protection
kV	Kilovolt
LUPA	*Land Use Planning and Approvals Act 1993*
MW	Megawatt
NEM	National Electricity Market
NVA	Natural Values Atlas
OPGW	Optical ground wire
OSOM	Over size over mass
PCU	Power conversion unit
PV	Photovoltaics
TSPA	*Threatened Species Protection Act 1995*
WHO	World Health Organization
WMP	Waste management plan

1 Introduction

1.1 Overview of the project

Sunspot 9 Pty Ltd is seeking development approval to establish a 288 MW solar farm on private land, 5 km northeast of George Town, Tasmania. The solar farm will be connected to the TasNetworks George Town substation by 6 kilometres of double circuit transmission line on poles.

The solar farm will be situated on approximately 454 Ha of rural land that is currently used for dryland agriculture, predominantly grazing. Not all of this area will be used for the solar farm. The land along Cimitiere Creek will not be developed with panels as well as land that is too steep or has environmental constraints including Aboriginal heritage sites and a small area of threatened vegetation community.

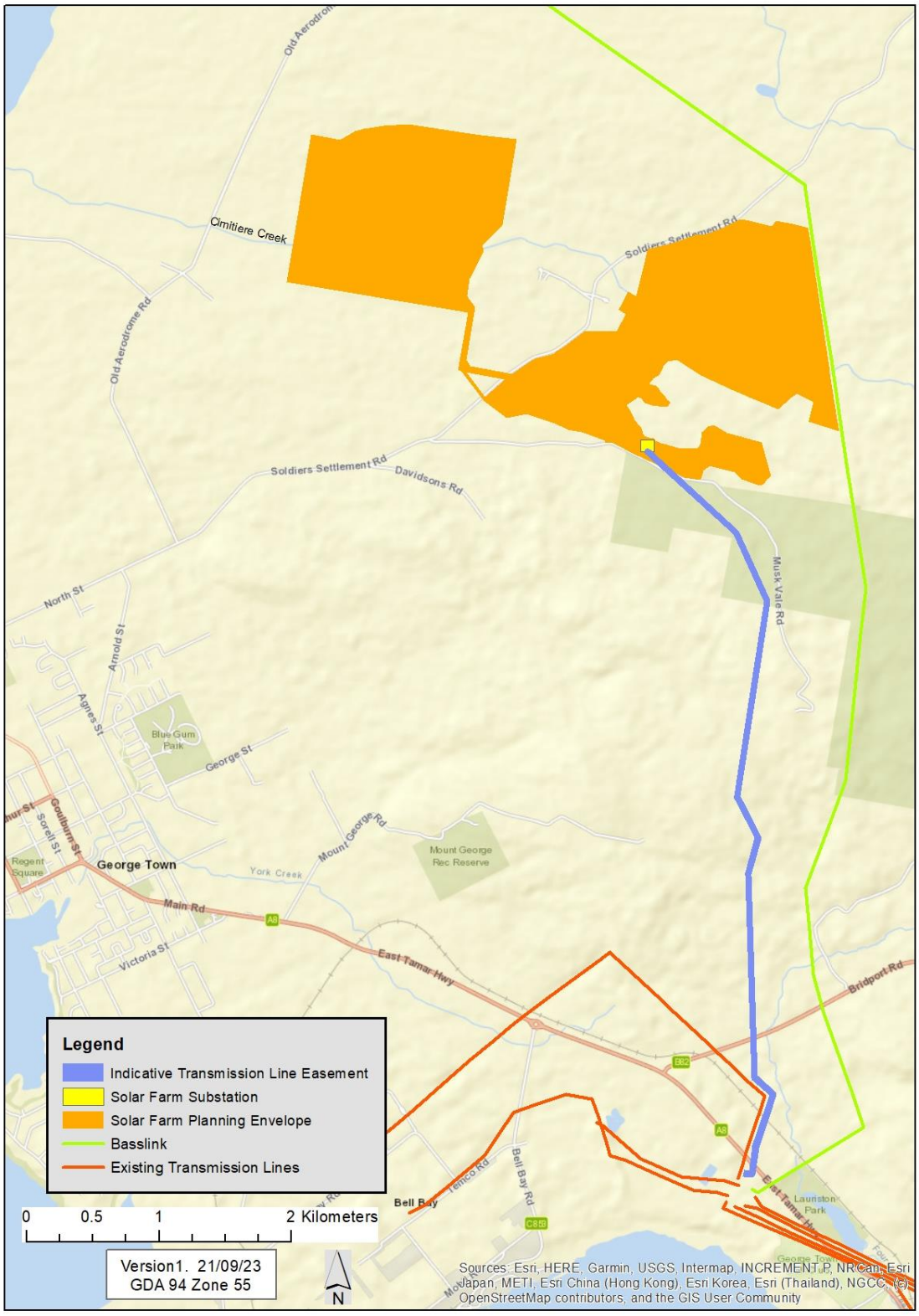
The proposed infrastructure includes:

- Photovoltaic (PV) solar panels mounted on single axis tracker frames,
- Inverters to transform the direct current (DC) from the solar panels to alternating current (AC),
- On site substation and control room,
- Security fence around the panels and the substation,
- Internal access tracks,
- Electrical cables, and
- Site office and parking

The transmission line will traverse approximately 5 km of forest (and regenerating forest) and 1 km of cleared land that is currently used for recreation and as part of the buffer area for the Bell Bay aluminium smelter. Poles will support two circuits that will operate at a voltage of 110 kV. The easement for the transmission line will be 50 m wide.

Figure 1 shows the location of the proposed solar farm and the indicative transmission line route.

Figure 1. Location of the Cimitiere Plains Solar Farm and associated transmission line.



1.2 The proponent

The proponent of the project is Sunspot 9 Pty Ltd which is a fully owned subsidiary of ib vogt GmbH. Established in 2002, ib vogt GmbH specialises in the development, design, financing, operation and maintenance of solar power plants. The company is based in Berlin, Germany and has offices in the UK, Netherlands, Spain, France, Poland, Egypt, USA, Australia, India, Singapore, Philippines, Pakistan as well as joint ventures in more than 20 countries. They currently employ more than 700 people globally and are preparing for a major expansion in coming years.

Ib vogt has developed and constructed 7 solar farms in NSW and Victoria as listed below:

- Kerang 36 MW
- Carisbrook 87 MW
- Dunedoo 67 MW
- Sebastopol 110 MW
- Yanco 75 MW
- Williamsdale 11 MW (construction only)
- Wunghnu 90 MW

Addresses for Sunspot 9 Pty Ltd are:

Registered:
c/- Moore Australia (WA) Pty Ltd
Level 15 Exchange Tower
2 The Esplanade
Perth 6000 WA

Office address:
c/- WorkClub
2 Locomotive Street
South Eveleigh 2015 NSW.

The ABN of Sunspot 9 Pty Ltd is 41 633 210 090.

1.3 Project objectives

The objectives of the project are as follows:

- To produce renewable electricity at a competitive price and sell that product into the National Electricity Market (NEM).
- To produce electricity with low carbon emissions.
- To minimise impacts on the environment and the local community.
- Provide renewable energy to support local industrial development.
- Contribute to the Tasmanian goal to achieve 200% renewable energy by 2040.

2 Project justification

Tasmania has legislated target to reach 200 per cent renewable electricity generation by 2040 known as the Tasmanian Renewable Energy Target (TRET). More specifically it requires that 200 per cent of the 2020 baseline generation of 10,500 GWh per year, be delivered through renewable sources by 2040.

To prioritise and coordinate future development and investment in renewable energy, the Tasmanian Government implemented the Renewable Energy Coordination Framework in 2022. The Framework sets out several critical actions which, once completed, will be integral to the renewable energy expansion and load growth required to achieve TRET and deliver shared benefits to Tasmanians. In the Framework, the Minister for Energy and Renewables makes the following statements:

- The TRET is one of the most ambitious statutory renewable energy targets globally: to double our renewable generation to 200 per cent of our current needs by 2040. This means more clean, reliable and affordable renewable energy for businesses and consumers.
- The need for more renewable energy has never been more important, with the National Energy Market (NEM) undergoing significant transformation to replace coal powered generation, together with industry and Government commitments to achieve emissions reduction.
- Tasmania, as the nation's renewable energy powerhouse, is well positioned to support this transition to a more renewable and sustainable energy future.
- Building and promoting this renewable advantage through the way we deliver our targets will benefit our existing industry. It will help support new industry attraction, including a renewable hydrogen industry and advanced manufacturing, to our State.

The Cimitiere Plains Solar Farm will make a substantial contribution to meeting the TRET with annual production of approximately 620 GWh per year or 5.9% of the TRET. Solar farms are currently one of the cheapest forms of new generation in the grid (Lazard, 2023). Variable renewable energy such as solar needs to be firmed by either flexible gas, hydro, pumped hydro, batteries or other forms of energy storage. The economics of renewables firmed by these other energy sources is such that renewables are now the main source of new electricity being developed and purchased in the NEM. Tasmania is in the very fortunate position that it has hydro-electric capacity to firm variable renewable energy sources. Solar energy in Tasmania is complementary to the existing hydro generation as it produces most of its energy over the summer months when inflows into hydro catchments are typically lower.

The project will generate significant economic activity during the 18-month construction period creating demand for labour and goods and services in the region. This economic benefit will be felt in George Town, but also in surrounding areas such as Launceston.

The solar farm will be able to bring these benefits to Tasmania with minimal impact on the environment and surrounding communities. The solar farm and associated transmission line have been located and designed such that:

- There will be no impact on threatened communities.
- There is only one known threatened flora species in the planning envelope which will be avoided.
- All known Aboriginal heritage sites will be avoided.

- The landscape and visual impacts from private and public viewpoints have been assessed as ‘low’ once mitigation measures have been implemented.
- The noise assessment has determined that noise emissions from the project would satisfy the operational noise goals at all identified receivers for a typical worst case daylight operational scenario.

3 Project description

3.1 Site location and land tenure

3.1.1 Solar farm

The solar farm site is located on predominantly cleared agricultural land within the valley of Cimitiere Creek approximately 5 km northeast of George Town, Tasmania. One array is on the western side of Soldier Settlement Road and another array on the eastern side. An overview of the site location is provided in Figure 1. A more detailed map of the solar farm is shown in Figure 2. The titles subject to development for the solar farm site are listed below:

- Volume 43381 Folio 1
- Volume 107403 Folio 1
- Volume 43382 Folio 1
- Volume 154906 Folio 1
- Volume 154910 Folio 1
- Volume 104543 Folio 3

All these titles are privately owned by one landholder. The solar farm will also occupy a section of unmade road reserve (CID 1352617) that runs parallel to Soldiers Settlement Road (refer to Figure 2). This Crown Land is managed by Property Services.

In addition to the titles listed above, the cables from the western array will cross underneath Soldier Settlement Road at the point labelled in Figure 2. Where the cables cross Soldiers Settlement Rd, the road is within a “user road”.

Access points will also need to be constructed or upgraded at the access points shown in Figure 2.

Please note that in this development application, where a figure refers to a “Title Boundary”, this boundary has been determined by a surveyor using information obtained from the Land Titles Office. The estimated accuracy of these boundaries is +\-2m. This information was only obtained for titles intersecting with the planning envelope and hence does not show neighbouring titles. Where a figure refers to Cadastre, this information has been obtained from The List and has been used where it was thought important or useful to show neighbouring titles. The “Cadastre data” is not as accurate as the “Title Boundary” data.

The planning envelope for the solar farm will be leased from the land owner. As such, Sun Spot 9 is not seeking approval for subdivision, and subdivision relevant performance criteria are not addressed in this development application.

3.1.2 Transmission line

The titles subject to development for the transmission line are listed in Table 1. The location of the planning envelope within these titles is shown in Figure 3 and Figure 4. The planning envelope includes

some existing tracks/roads marked as “Access Road” in these figures. One of these is the access road to the Tippogoree Hills mountain bike trails car park. It is considered very unlikely that any works will be needed to upgrade this road as it has only recently been constructed and is in very good condition.

Table 1. Titles subject to development for the transmission line.

Volume	Folio	CID	Tenure / Description
154906	1	1316904	Freehold Title. Private landholder. Part of the solar farm.
NA	NA	1315964	George Town Council. Musk Vale Road. Road reserve.
139746	1	1457410	Crown Land. Future Potential Production Forest. Managed by Property Services
135016	1	1315913	Freehold Title. Private landholder.
NA	NA	841868	Crown Land. Road reserve.
156738	4	1365875	Freehold Title. Private landholder.
154929	1	1367011	Freehold Title. Private landholder. This title is on the north and south side of Bridport Road and on both sides of the railway.
86544	3	1189550	Crown Land. Acquired road. Managed by State Growth. Narrow title on the north and side of Bridport Road.
NA	NA	1189737	Road casement. Bridport Road. Managed by State Growth
86544	1	1189551	Crown Land. Acquired road. Managed by State Growth. Narrow title on the south side of Bridport Road.
11369	23	1189614	Crown Land. State Rail Network. Managed by TasRail.
30617	4	1189542	Crown Land. Acquired road. Managed by State Growth. Narrow title on the east side of the East Tamar Highway.
251653	1	1262710	Crown Land. Acquired road. East Tamar Highway. Managed by State Growth.
30617	8	1189540	Crown Land. Acquired road. Managed by State Growth. Narrow title on the west side of the East Tamar Highway.
154928	1	1189649	Freehold Title. Authority Land. TasNetworks. George Town substation.

Note: Titles are in order from north to south along the transmission line route.

The transmission line planning envelope does encompass two areas of “User Road Easement” for Musk Vale Road within the Crown Land – Future Potential Production Forest (Volume 139746 Folio 1).

3.1.3 Intersection widening

The intersection of North Street and Low Head Road (East Tamar Hwy) will need to be widened on the northern side to enable 19m semi-trailers to turn without leaving their lane. The area that requires widening is shown in Figure 5. The works will be entirely within the road reserve.

3.1.4 Extension of George Town substation

There are currently no spare 110 kV bays at the George Town substation to connect the proposed transmission line. To connect the transmission line, a new bay will need to be built. TasNetworks proposes to extend the substation and construct more than one new bay to provide for the Cimitiere Plains Solar Farm and other projects under development in the area.

Figure 2. Location of the Cimitiere Plains Solar Farm with title boundaries.

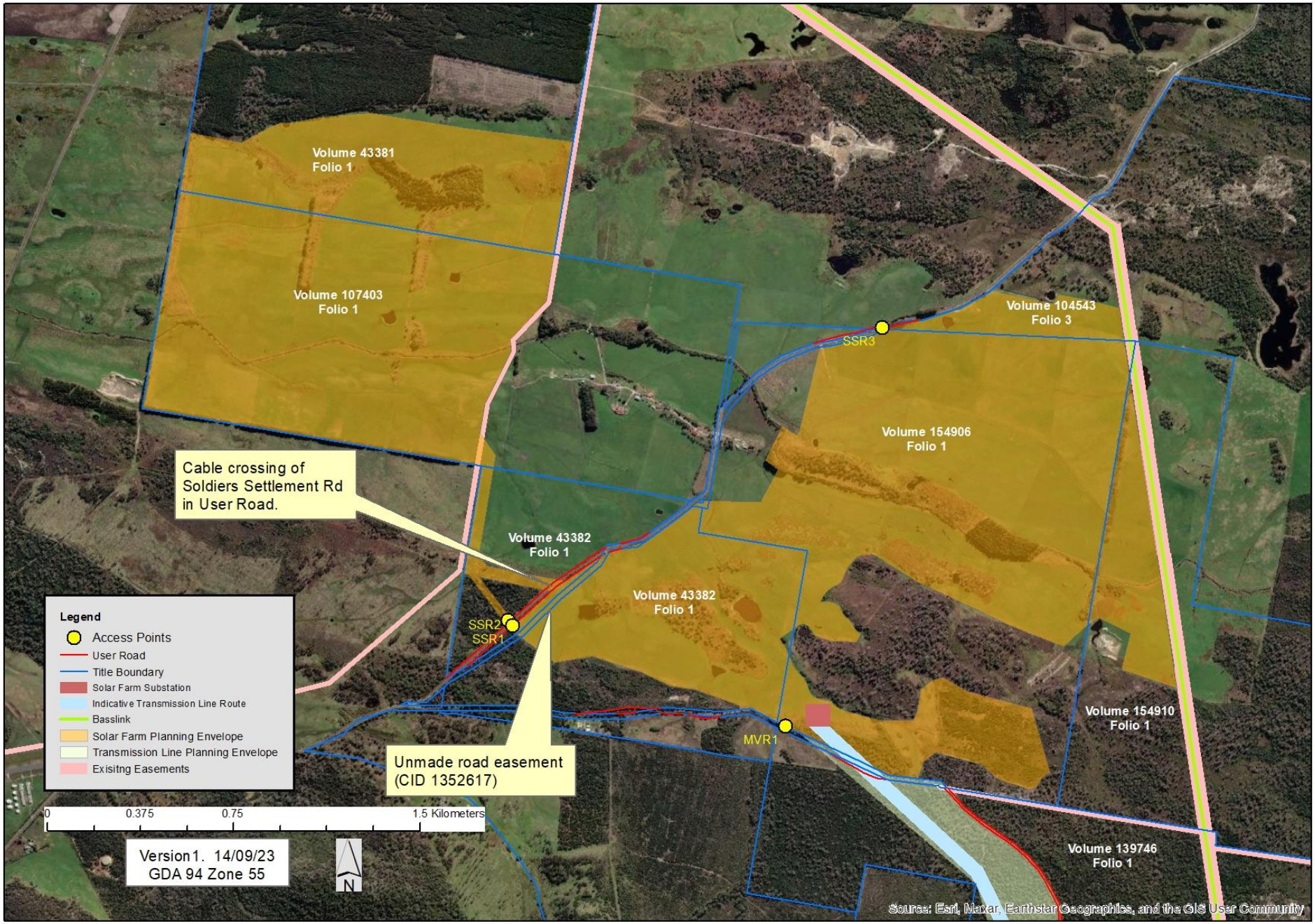


Figure 3. Location of transmission line planning corridor showing cadastral boundaries

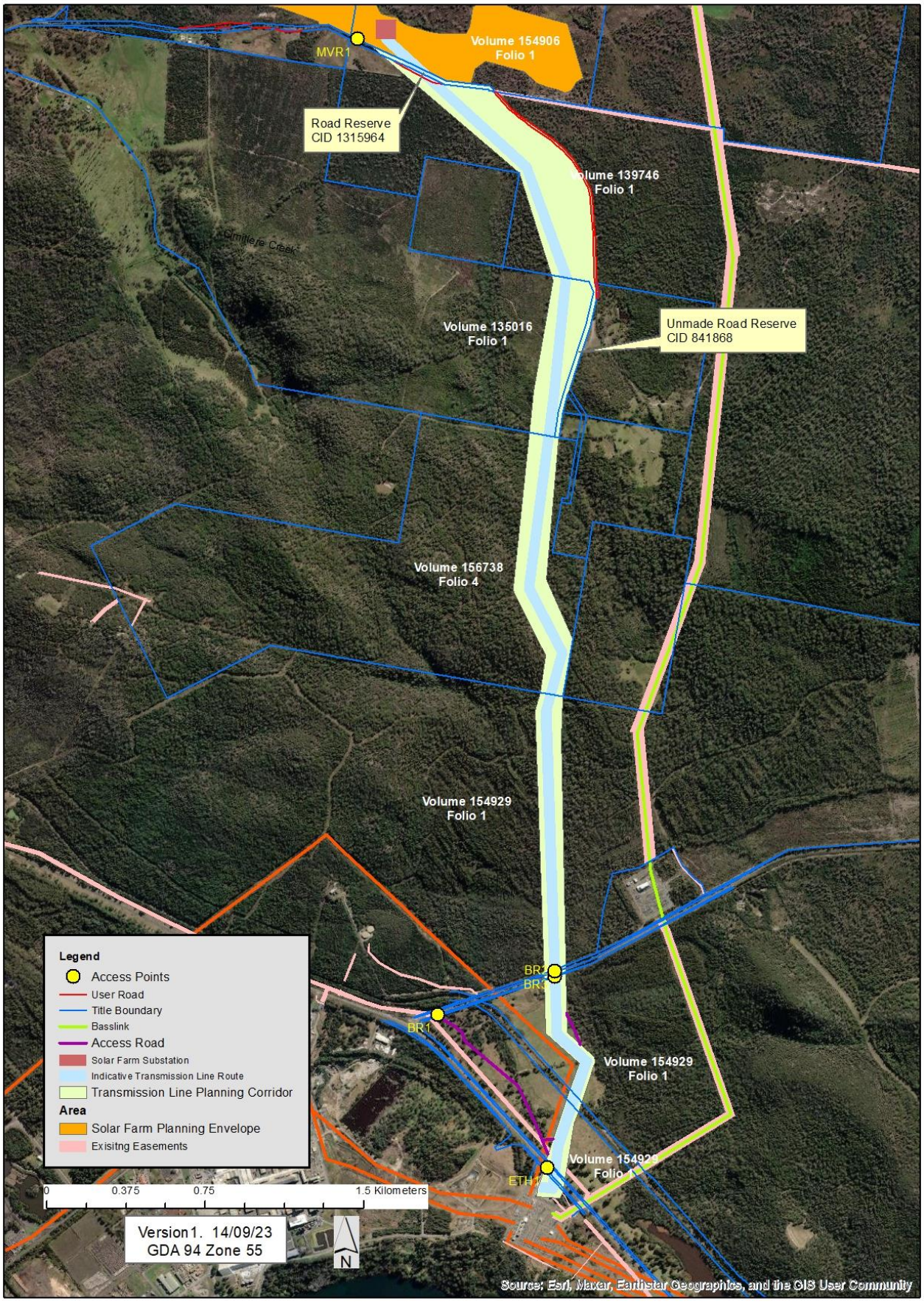


Figure 4..Southern section of transmission line planning corridor showing cadastral boundaries

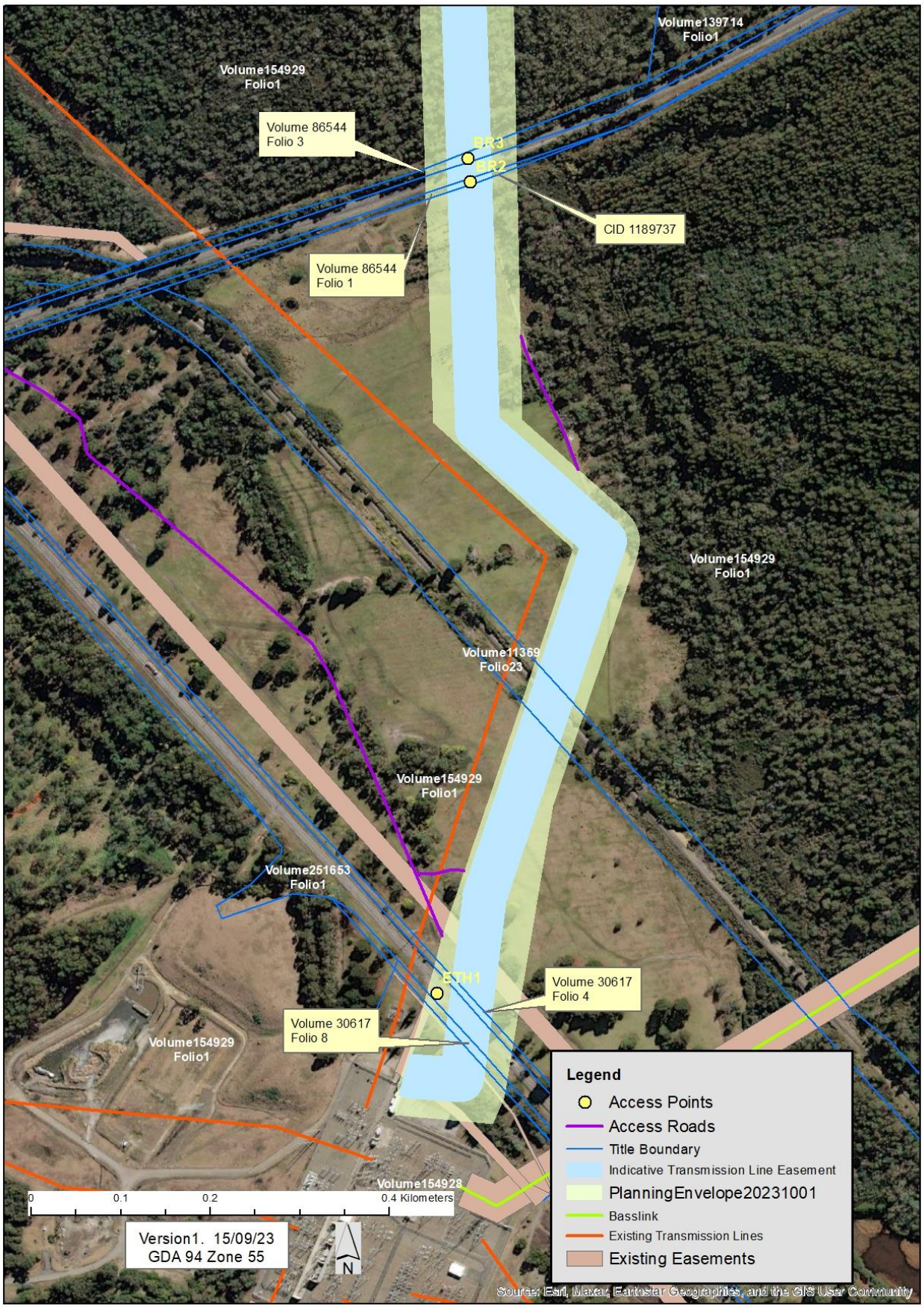
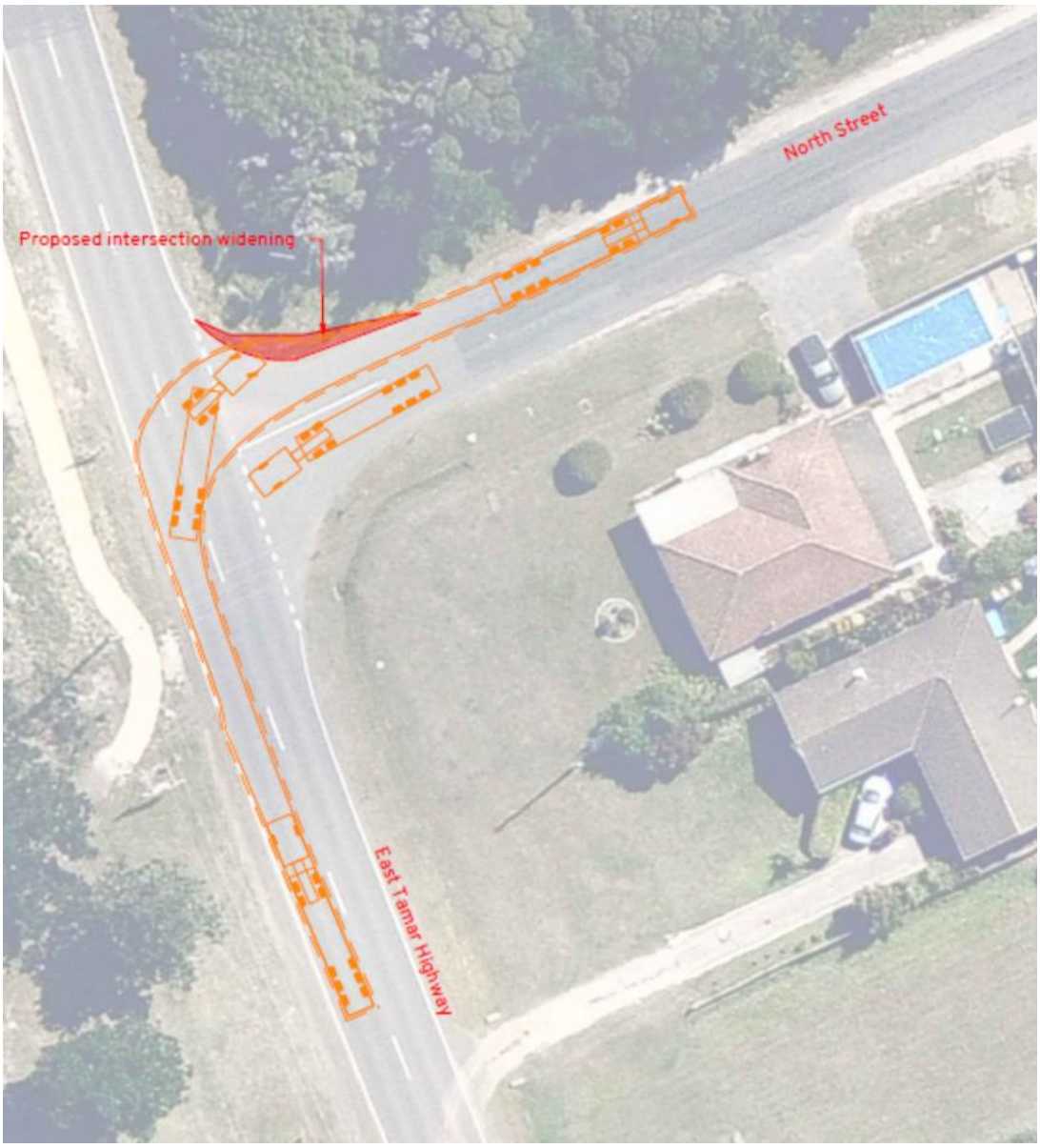


Figure 5. Proposed intersection widening

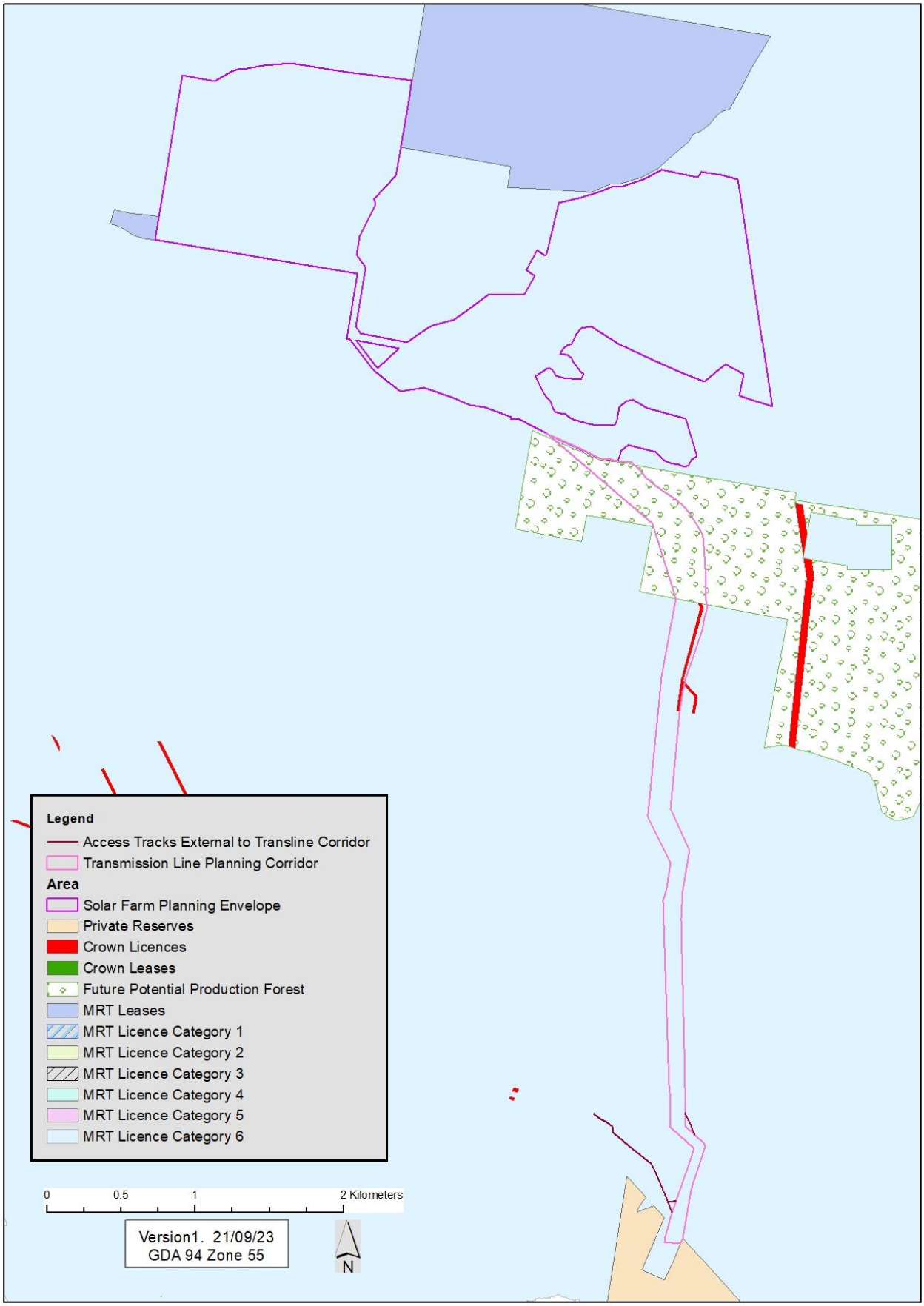


3.1.5 Licences, leases, private reserves and FPPF.

Mineral Resources Tasmania (MRT) licences and leases, Crown licences and leases, private reserves and future potential production forest (FPPF) is shown in Figure 6. The Crown land (Volume 139746 Folio 1) at the northern end of the transmission line is FPPF. A Crown licence exists within an unmade road reserve (CID 841868) that serves as an extension of Musk Vale Road. The project is likely to upgrade the track that is in the road reserve for access to the transmission line. There is also a MRT Exploration Licence Category 6 (geothermal substance) that covers the whole planning envelope for the project and surrounding areas. This licence is held by Devil Resources Limited and covers an area of some 2001 square kilometres.

The solar farm planning envelope is adjacent to two MRT mining leases as shown in Figure 6. The transmission line planning envelope is adjacent to (but not within) a private reserve (private sanctuary) at the very southern end as it approached the connection point.

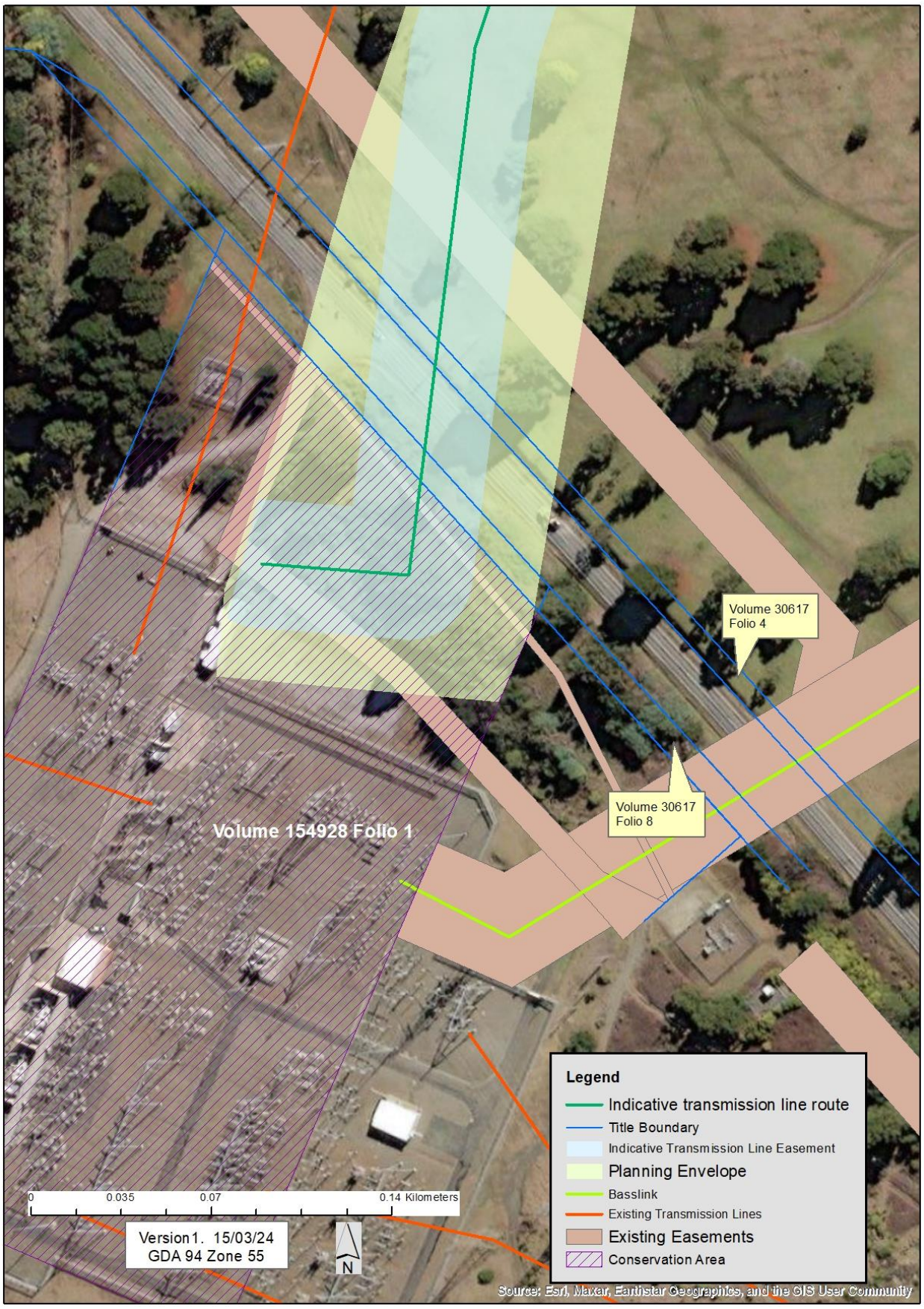
Figure 6. MRT licences and leases, Crown licences and leases, private reserves and Future Potential Production Forest.



3.1.6 Reserves

A small conservation area exists at the very southern end of the transmission line planning corridor at the connection point with the George Town substation as shown in Figure 7. The conservation area sits entirely within the title owned by TasNetworks (Volume 154928 Folio 1). The reserve was created in 1938 and is 5.92 Ha, of which, approximately 4.4 Ha is occupied by the substation. It is not known what values, if any, are conserved by the reserve. Field surveys described later in this document did not record any values. The reserve is under the authority of TasNetworks. The equivalent of a Reserve Activity Assessment application has been provided to TasNetworks.

Figure 7. Conservation area at the George Town substation



3.2 Site description

3.2.1 Solar farm

The solar farm site located in the relatively flat valley of Cimitiere Creek and is predominantly on land that has been cleared for grazing enterprises (refer to Figure 9). Section 6.3 provides information on the vegetation at the site. As shown in Figure 33, there are also some areas of native vegetation and some pine plantation that is in poor condition. Much of the native vegetation on the site has been degraded through grazing activities. An example of a patch of *Eucalyptus amygdalina* coastal forest and woodland is shown in Figure 8.

Figure 8. A patch of Eucalyptus amygdalina coastal forest and woodland

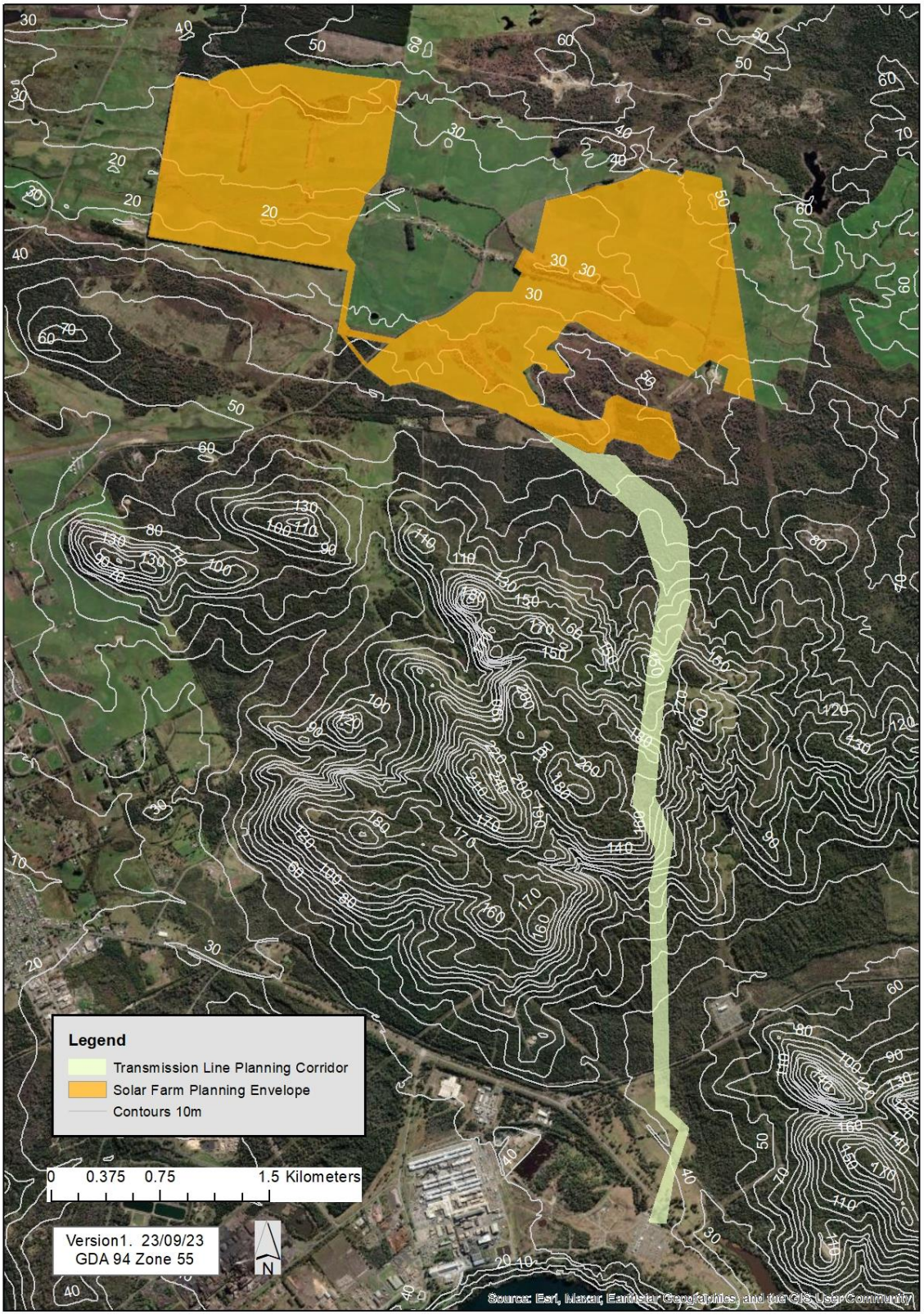
Figure 9. Typical grazing land on the solar farm site

Cimitiere Creek flows through the planning envelope of the solar farm. On the eastern side of Soldiers Settlement Road, there is both native and exotic vegetation along the waterway. None of this vegetation will be cleared for the development of the solar farm. On the western side of Soldiers Settlement Road, most of the vegetation has been removed as shown in Figure 10.

Figure 10. Cimitiere Creek

The topography of the solar farm is shown in Figure 11. The elevation of the solar farm ranges from 16m AHD in the west of the site to 56m AHD in the southeast. Land close to the creek is relatively flat with typical slopes of 1 to 2%. Further away from the creek there is undulating country with slopes up to 12%. Some of these steeper slopes are too steep for single axis tracking systems and will not be developed as shown in Figure 13, but will remain available for continued grazing.

Figure 11. Topography of the solar farm and transmission line planning corridor



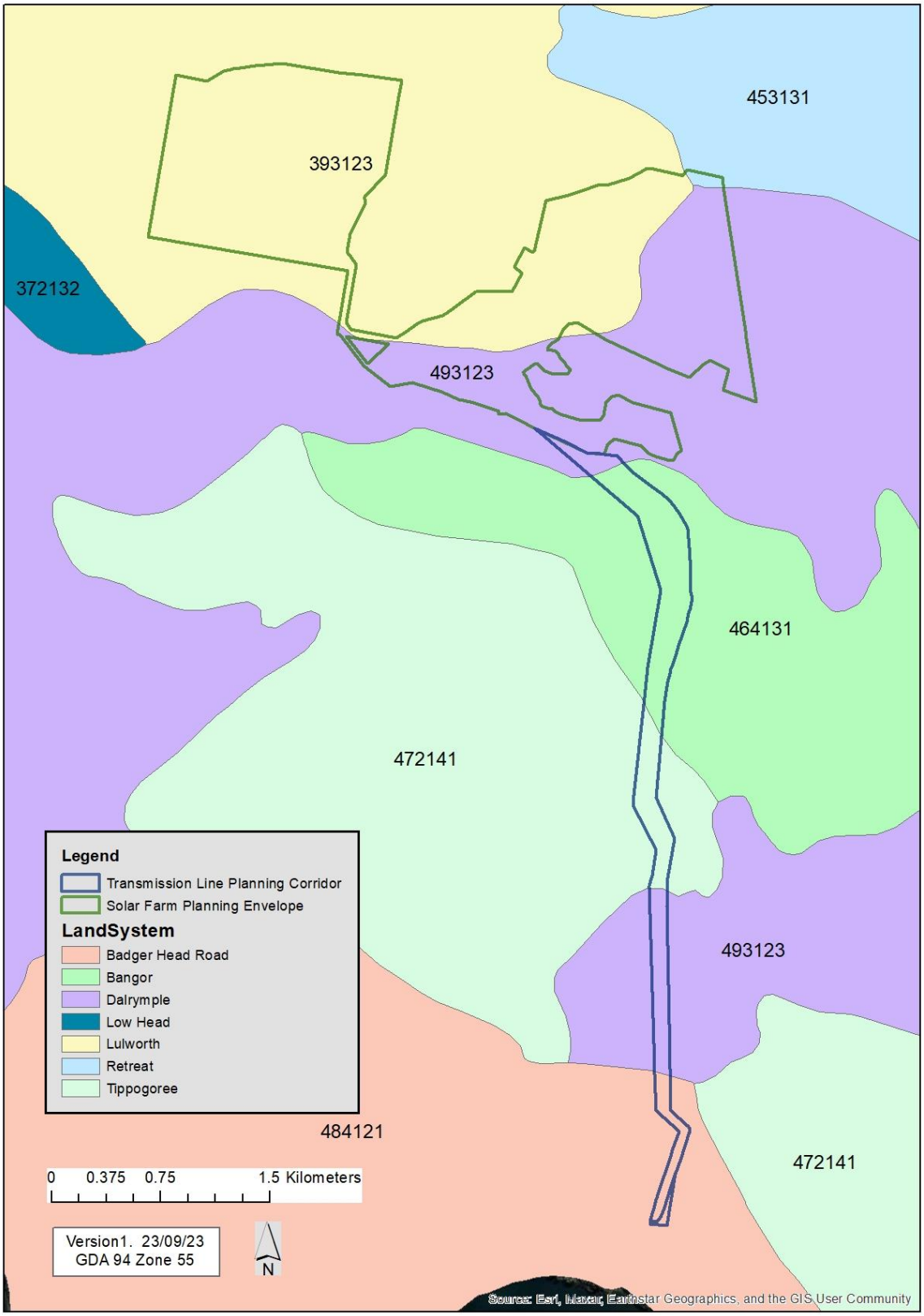
How the solar farm is classified according to Land Systems of Tasmania (Pinkard 1980) is shown in Figure 12. The majority of the solar farm is in the Lulworth land system. The southeastern portion of the solar farm is in the Dalrymple land system. A summary of the characteristics of these land systems is provided in Table 2

Table 2. Characteristics of the Land Systems for the solar farm

Component	Lulworth	Dalrymple
Geology	Quaternary sands and clays	Quaternary fluviatile sands, clays and gravels
Landform	Old coastal dunes and plains	Undulating plains
Position	Plains	Mid terrace and lower terrace
Soil	Pale brown sand soil, uniform texture, iron-organic B horizon	Mottled brown. Gradational soil on mid terrace. Clay soil with uniform texture on lower terrace.
Surface texture	Loamy sand	Clay loam (mid) to light clay (lower).
Permeability	Moderate	Moderate (mid) to low (lower)
Av. Soil Depth (m)	> 2.0	>1.2
Hazards	Low wind erosion	Low sheet erosion

Source: Pinkard (1980)

Figure 12. Land Systems of Tasmania (Pinkard 1980) classification



3.2.2 Transmission line

The transmission line planning corridor is approximately 6 km long of which 5 km is through native forest and the southernmost section is 1 km of cleared land. A more detailed description of the vegetation is provided in Section 6.3 and Appendix F. The topography of the transmission line is shown in Figure 11. The transmission line traverses steep and rocky hills to the east of Mount George. It has an elevation at the solar farm substation of 46m AHD, then climbs to an elevation of 182m before descending to 44 m at the George Town substation. The steepest slopes on the route are approximately 20%.

How the transmission line corridor is classified according to Land Systems of Tasmania (Pinkard 1980) is shown in Figure 12. The line passes through the Dalrymple, Bangor, Tippogoree and Badger Head Road systems. A summary of the characteristics of these land systems is provided in Table 3.

Table 3. Characteristics of the Land Systems for the transmission line.

Component	Dalrymple	Bangor	Tippogoree	Badger Head Rd
Geology	Quaternary fluviatile sands, clays and gravels	Permian mudstones and siltstones	Jurassic dolerite and related rocks	Tertiary gravels, sands and clays
Landform	Undulating plains	Low gently rolling hills	Hills	Gently undulating plains
Position	Mid terrace to high terrace	Mid to upper slopes	Mid slopes, crests and upper slopes	Upper marine bench and upper plain
Soil	Brown gradational soil in the mid terrace to grey sand soil in the high terrace.	Duplex soils (mid slope) to clay soil with uniform texture on upper slopes	Gradational soils	Gravelly brown or grey duplex soils
Surface texture	Clay loam (mid) to sandy loam (high).	Sandy loam (mid) to light clay (upper)	Gravelly clay loam	Sandy loam
Permeability	Moderate (mid) to high (high)	Moderate	Moderate	Moderate
Av. Soil Depth (m)	>1.2	1 to 2 m	0.5 to 0.8 m	1 to 2 m
Hazards	Low sheet erosion (mid). Low to moderate wind erosion in the higher terraces.	Land slips and moderate sheet erosion for upper.	Severe sheet erosion	Low to moderate gully and rill erosion

Source: Pinkard (1980)

3.3 Project infrastructure

The project involves the construction and operation of a photovoltaic (PV) electricity generation facility (or solar farm). The solar farm consists of the following elements:

- Photovoltaic modules and mounting frames,
- Power conversion units (inverters),
- 33 kV collector network of underground cables,
- Solar farm substation (110/33 kV) including switch room and control room,
- Security fence,
- Operations and maintenance buildings,
- Temporary construction facilities,
- 2 x 20,0000 L water tanks for firefighting,
- Internal roads,
- Access points off public roads,
- 110 kV double circuit transmission line and associated access tracks

An indicative layout of the main infrastructure is shown in Figure 13 and Figure 14. An A3 version of the layout is provided in Appendix O. This layout is based on a preliminary design and is subject to change (within the confines of the planning envelope). The location of the substation will not change significantly. More detailed information on each of these aspects is provided below.

Figure 13. Indicative layout of infrastructure

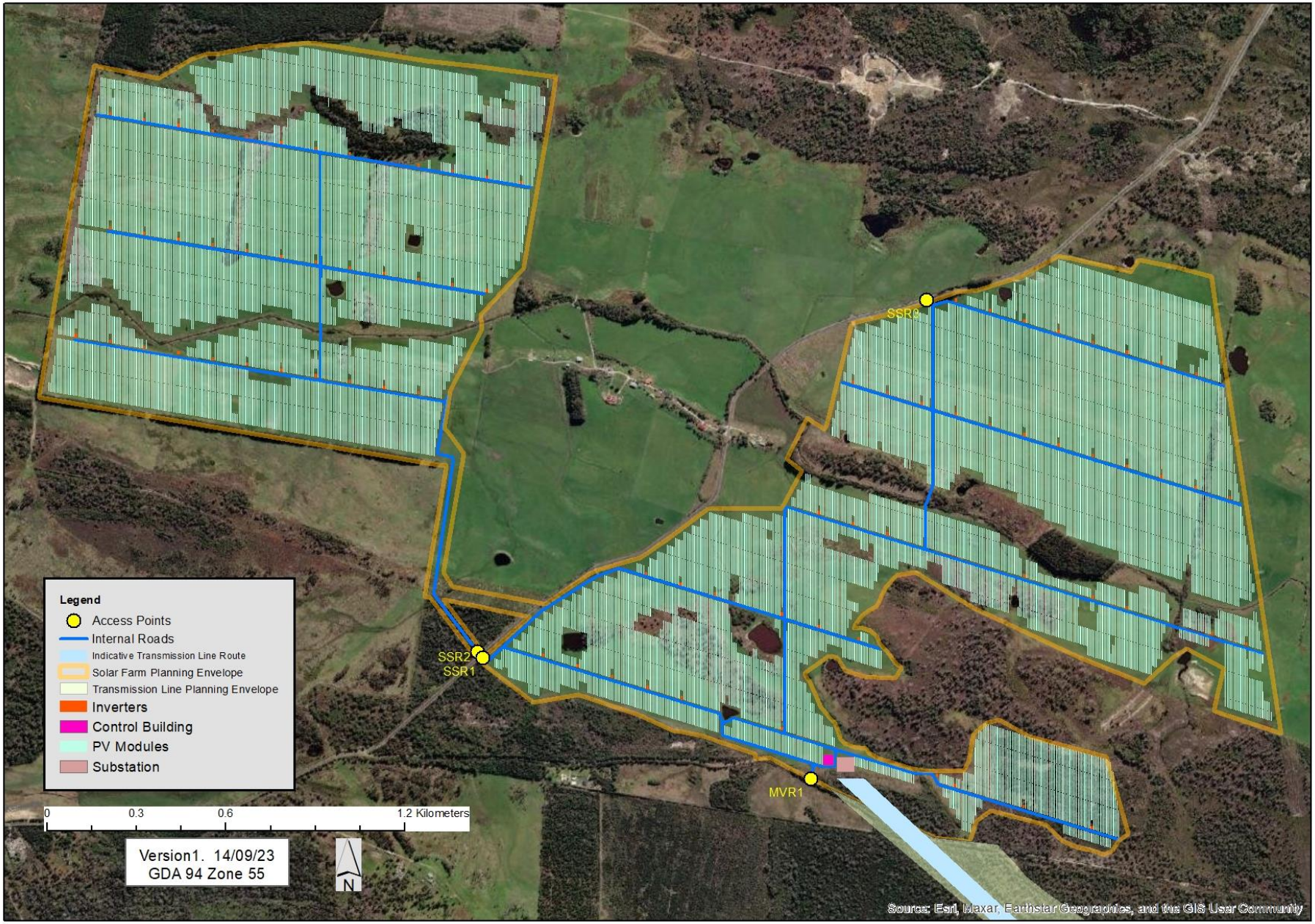
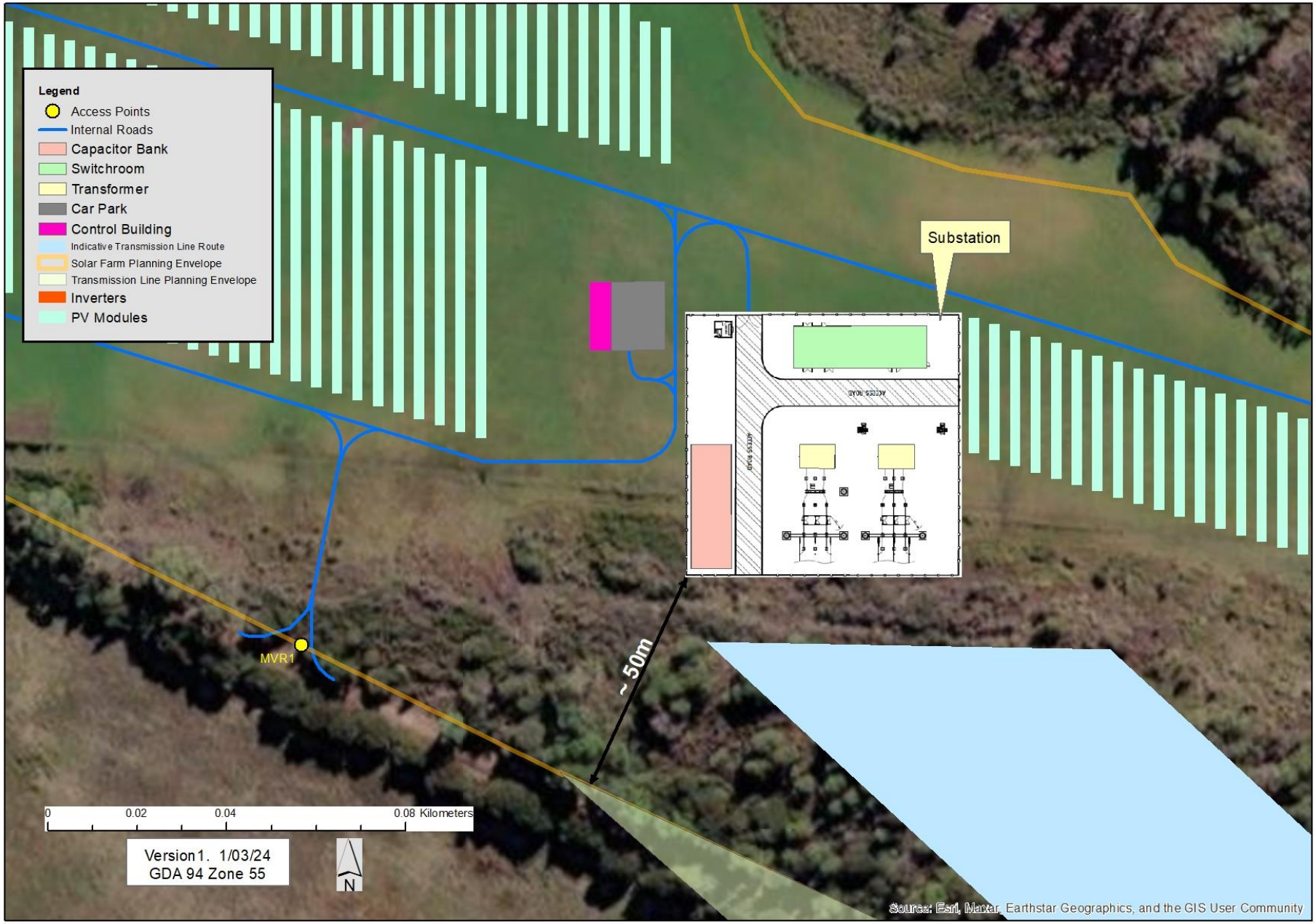


Figure 14. Indicative layout of the substation and control building



3.3.1 Photovoltaic modules and mounting frames

Approximately 600,000 panels will be installed, depending on the type of panels that are available at the time of procurement. The panels will be installed in rows that are aligned north-south. The panels are attached to a long boom (torque tube) that rotates enabling the panels to track the sun from east to west during the day. This mounting design is known as single axis tracking. This type of tracking system is used to maximise the yield from the panels relative to a system where the panels are fixed.

The typical configuration for a single axis tracking system is shown in Figure 15 and Figure 16. The illustrative design used for this development application has been based on single axis tracking with a single panel in portrait. The height for this configuration is approximately 3.0 m.

Figure 15. Diagram of typical single axis tracking system (one panel in portrait)

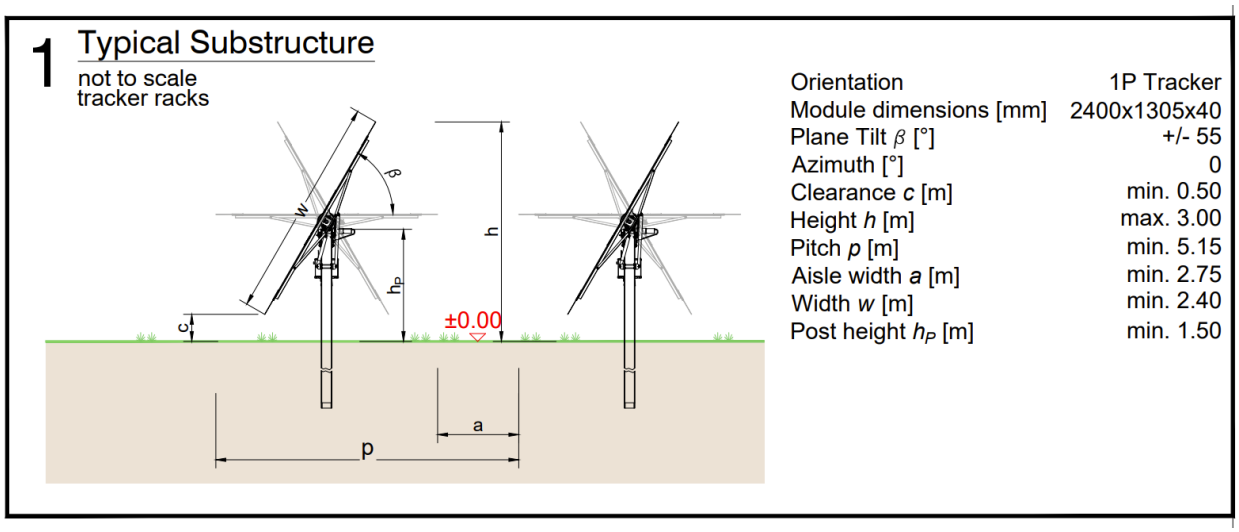


Figure 16. Image of single access tracking system.

The distance between the rows of panels is between 5 to 9 metres depending on final design and the mounting system used. There is adequate room between the rows to drive vehicles in order to maintain the panels. Tractors and equipment will also be able to access the rows to maintain the pasture, spray weeds etc.

The posts (or piles) that support the single axis tracking system will be driven into the ground to a depth of up to 4 m depending on expected wind loads and final design. There is normally no excavation of the footing and no use of concrete. There are small electric motors that slowly rotate the torque tube over the duration of the day so that the panels are always facing the sun.

3.3.2 Power conversion units

DC cabling will connect the panels to the power conversion units (PCU). The cabling will be attached to the underside of the panels and the mounting system then eventually an underground cable to the PCU.

At the PCU, electricity is converted from direct current (DC) to alternating current (AC) at 33 kV. The PCU contains inverters, a transformer to step up the voltage to 33 kV, switching gear, control systems,

protection and other components. The solar farm will have approximately 84 PCUs dispersed throughout the PV panel areas. The power conversion unit that will be used on the solar farm is shown in Figure 17.

Figure 17. Power conversion unit (Source:SMA)

3.3.3 Internal electricity network

A 33 kV internal electricity network will be used to collect the power from the power conversion units to the solar farm substation. All cabling on the site will be a minimum of 600 mm below the soil surface and installed in accordance with relevant Australian standards. The 33 kV cable will be surrounded by sand at the bottom of the trench which helps protect the cable as well as facilitating heat dissipation. Trenches will be dug such that the topsoil is kept separate from the subsoil and replaced at the top once the cable is laid.

If it is deemed that trenching the cable through Cimitiere Creek will cause too much disturbance or impacts on water quality, the project intends to horizontally direct drill the cable under the creek. If for some unforeseen circumstances this is not possible, the crossing of Cimitiere Creek may be by a short section of overhead line.

3.3.4 Substation

A substation will be constructed on the south-eastern side of the solar farm near Musk Vale Road as shown in Figure 13 and Figure 14. The substation broadly comprises the following elements:

- Switch rooms that receive power from the PCUs via the internal electricity network.
- A capacitor bank.
- Two transformers that will convert the voltage from 33 KV to 110 KV.
- Other infrastructure for switching, metering and protection.
- Two connection bays to the new transmission line.
- Infrastructure for protecting the substation from lightning strikes. This is typically tall narrow poles around the outside of the substation that conduct the lightning safely.
- A security fence around the perimeter of the substation.

A preliminary substation general arrangement is shown in Figure 18 and is also provided in Appendix O. The area for the substation is approximately 60 m by 60 m. The substation will have alarms and security systems that are activated when somebody enters the substation compound.

3.3.5 Control building

The control building (or operation and maintenance building) will be constructed for staff who are operating the solar farm. The building will contain office space, a kitchenette and toilets. The location of the control building is shown in Figure 13 and Figure 14. A general plan of the control building is shown in Figure 19 and is also provided in Appendix O.

Figure 18. Preliminary substation general arrangement

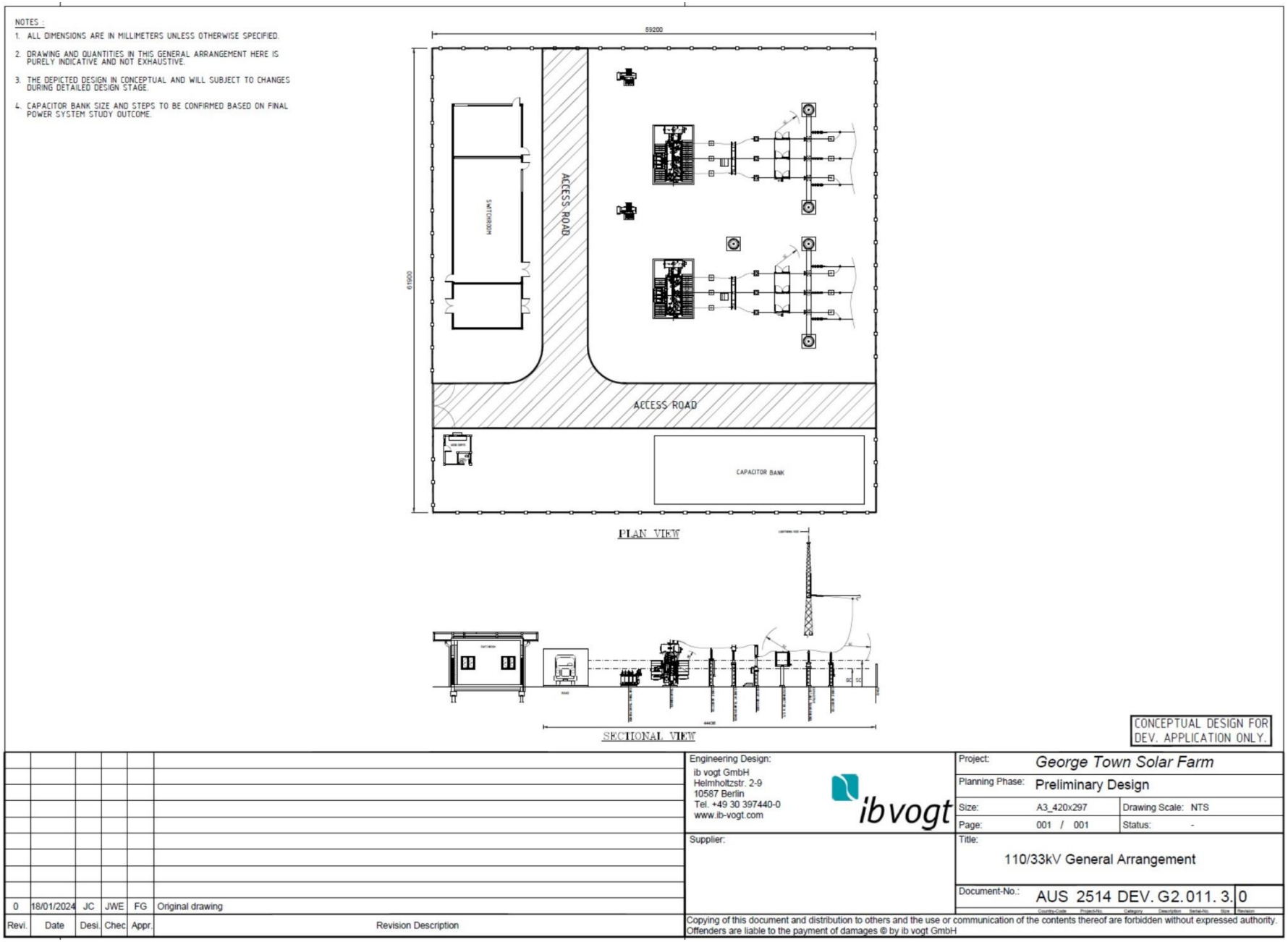
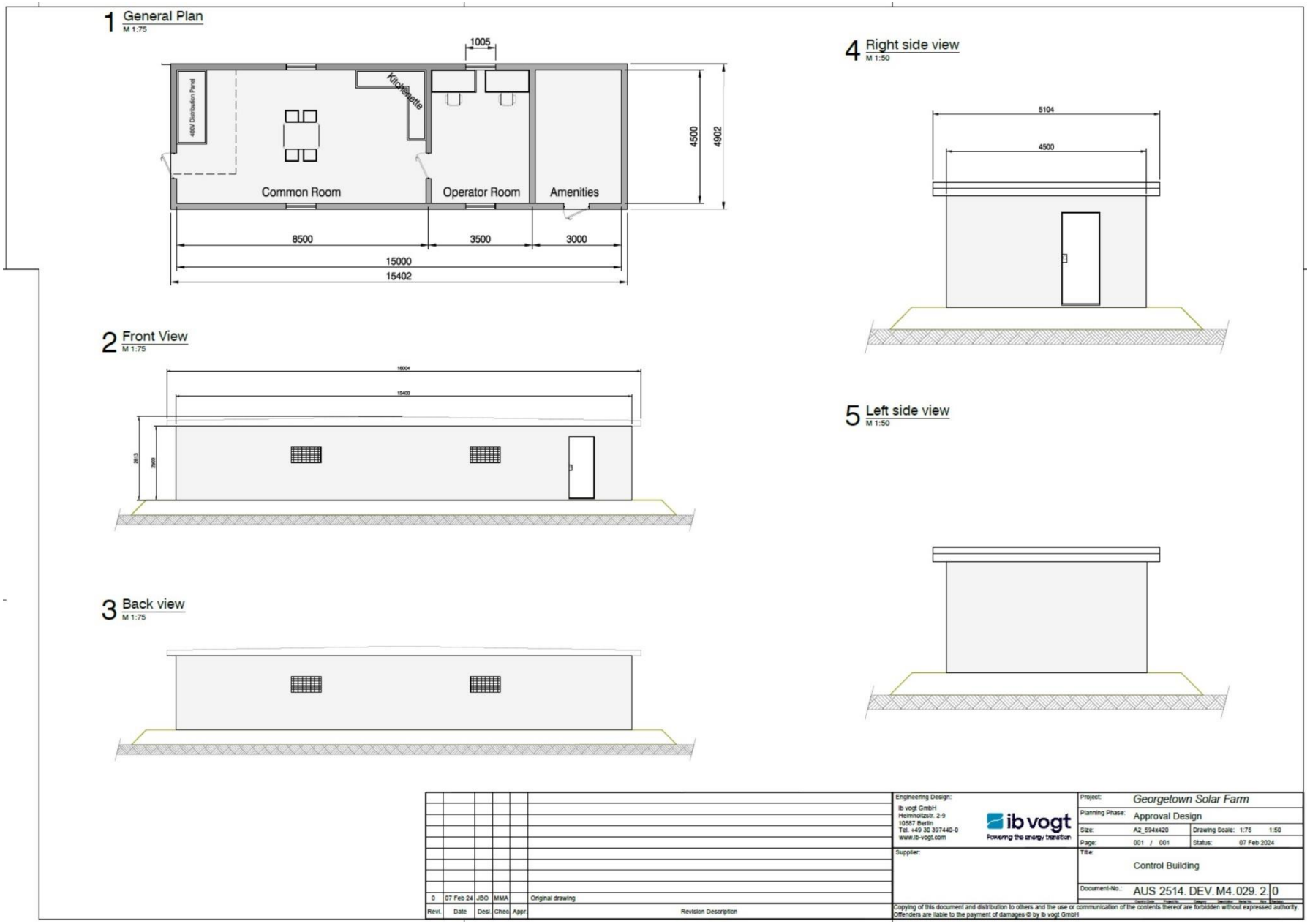


Figure 19. General plan of the control building



3.3.6 Security fence

Australian Standards require that a security fence similar to that shown in Figure 20 be constructed around the substation and the solar arrays. The fence will be approximately 2.0 m high. Where the fence crosses a waterline, the fence may need to be modified to enable the free flow of water past the fence. For safety reasons, the substation will be fenced separately to the rest of the plant to restrict access to these high voltage areas.

Figure 20. Security fence

3.3.7 Access points

There will be three access points off Soldier Settlement Road (SSR1, SSR2 and SSR3) and one access points off Musk Vale Road (MVR1). The location of these access points is shown in Figure 13. Access points will be designed to cater for the size and number of vehicles using the access point during construction. Access points will be such that vehicles can get completely off the road before needing to open a gate.

3.3.8 Internal roads

A number of internal gravel roads will be constructed to allow access to the site during construction and maintenance. An indicative layout of the roads is shown in Figure 13.

3.3.9 Temporary construction facilities

Temporary construction facilities will consist of site offices, toilets, crib huts and car parking. Given the size of the site and the number of construction workers, it is anticipated that there will be 2 or 3 temporary construction compounds. The toilets will have a holding tank that will be pumped out as required. Water for the toilets and drinking water will be transported to the site.

A number of temporary construction laydown areas will be utilized for construction activities and storage of materials and machinery.

All temporary construction facilities will be removed at the end of construction. Hard standing areas will be pulled up and sown to pasture.

3.3.10 Water tanks

There will be two 20,000L water tanks installed for the purpose of water supply for firefighting. The tanks will be fire resistant. It is anticipated that the tanks will be installed near to pipes that are feeding stockwater troughs so that the tanks are able to self-fill. The final location of the tanks will be determined in consultation with the landholder and the Tas Fire Service once it is known where the stockwater pipes will be located.

3.3.11 Transmission line

A double circuit transmission line will connect the solar farm substation to the George Town substation. The transmission line will be a pole line energized at 110 kV. An optical ground wire (OPGW) will be installed at the topmost position of the transmission line. This wire has the dual purpose of protection against lightning strikes and communications. The total length of the transmission line is approximately 6 km.

The typical height of the poles will be 33 m with a maximum height of approximately 38 m. The poles will be constructed of galvanized steel or concrete. The galvanising will be dulled to reduce the visual impact of the new poles. An example of how the poles will appear is shown in Figure 21. An indicative pole arrangement is provided in Figure 22.

The transmission line will be built within the planning envelope shown in Figure 3. The easement shown in Figure 3 is indicative only. The 50 m wide easement will be cleared of trees and shrubs that are taller than 3 m or likely to grow taller than 3 m, in compliance with relevant Australian Standards or TasNetworks easement terms as applicable.

Access tracks will be constructed along the easement to provide access to every pole location. At each pole, there will be two hardstanding areas. These are used during construction and for maintenance by cranes and elevated work platforms. These hardstands would typically be 15 m long and 10 m wide.

3.3.11.1 Access tracks

The location of access tracks will be determined during the design phase. The section of Musk Vale Road south of the access point MRV1 (refer to Figure 13) will be used to access the transmission line from the north. Musk Vale Road from Soldiers Settlement to MRV1 will not be used by construction

traffic to minimise the impact on a residence that is close to the road. Construction traffic will get to MRV1 from SSR1 via an internal road on the solar farm.

Musk Vale Road will need to be upgraded to carry construction traffic. More information is provided on this in Section 6.7. Musk Vale Road will be upgraded through the Crown Land – Future Potential Production Forest (CID 1457410) and in the road reserve (CID 1315913) that is south of the Crown Land. In both these sections, a road currently exists which provides access to nearby parcels of land but it is in very poor condition.

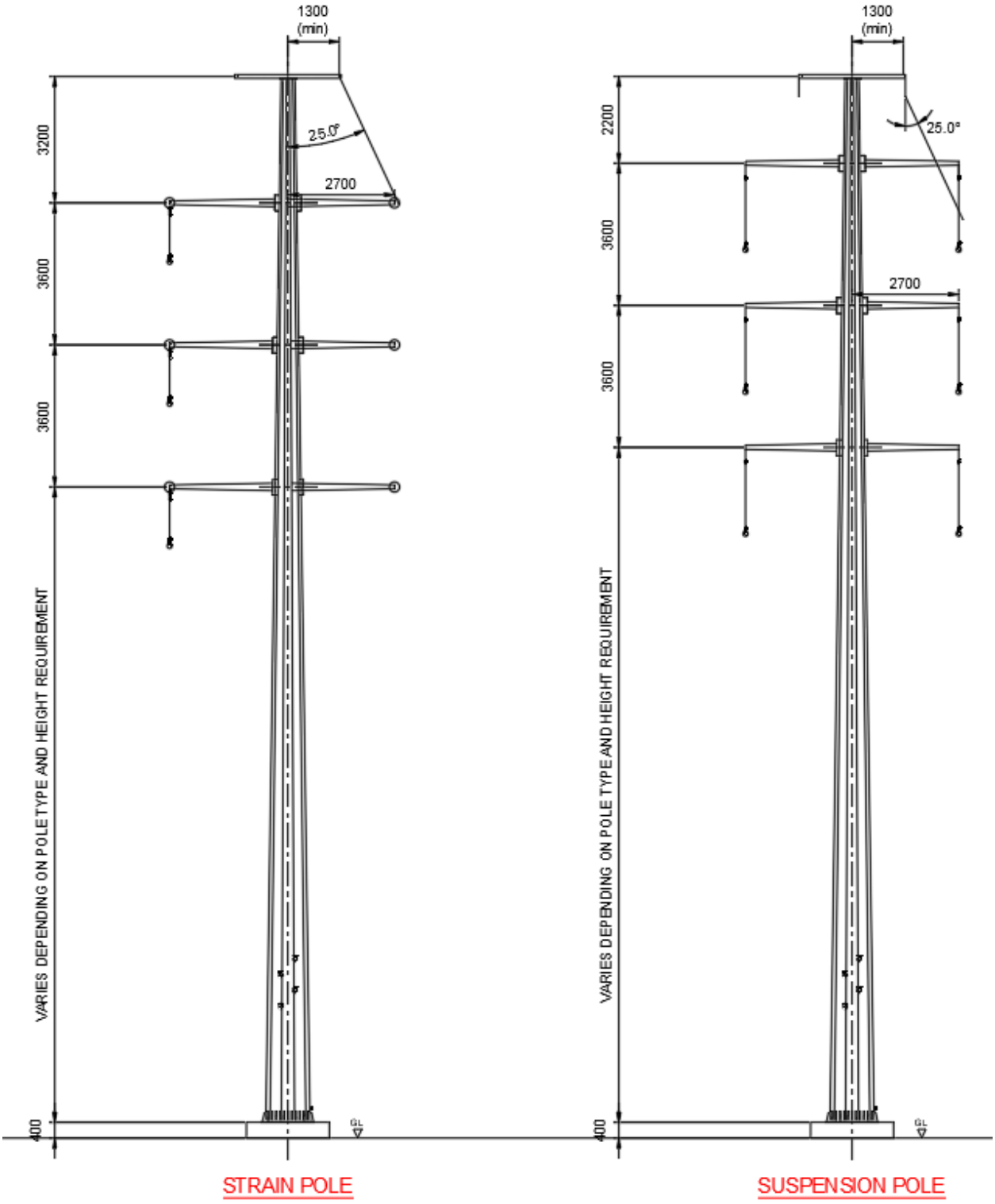
Where the transmission line runs parallel to Musk Vale Rd, it is most likely that spur roads will be built off Musk Vale Road to the pole locations. There are a number of existing tracks in this area and these should be used where possible to limit the extent of clearing and disturbance required. South of Musk Vale Rd, the access track will most likely be within the cleared easement. There may be existing access tracks within the planning envelope that can be utilized. The access track will run all the way through to Bridport Road at BR3 (refer to Figure 4).

The section of transmission line from Bridport Road to the railway will be accessed from BR2. For the section of the transmission line between the railway and the east Tamar Highway, access will be by the existing road to the Tippogoree Hills mountain bike trails.

Figure 21. Typical double circuit pole transmission line

Note: In this image the line has only been strung on one side. The proposed transmission line will be strung on both sides.

Figure 22. Indicative pole arrangement



3.4 Construction activities

Construction activities are expected to take approximately 12 to 18 months and require a peak workforce of up to 300 people for part of this time. The construction activities are described below.

3.4.1 Site preparation

The solar farm site is predominantly cleared agricultural land and relatively flat, so minimal site preparation will be required. Site establishment will include the following activities:

- Internal fences that are not required will be removed.
- Native vegetation (trees and shrubs) that are in the solar PV footprint will be cleared
- Establishment of vegetation screens.
- Construction of the perimeter security fence.
- Establishment of the temporary construction compounds and the construction laydown areas.
- Construction of the site access points and internal roads.
- Excavation work and preparation of the hardstand areas for the substation.

For the transmission line, site preparation will include:

- Logging of any commercially viable timber within the easement.
- Clearing and burning the remaining timber and shrubs that are likely to grow taller than 3m.
- Construction of access tracks and hard standing areas.

This phase of construction will use standard earthmoving equipment such as bulldozers, graders, trucks, skidders, front end loaders, roller compactors, trenchers, excavators and cranes. A water truck will be used as needed to manage dust and maintain air quality.

3.4.2 Installation

Following site preparation, installation will commence which is typically as follows:

- Driving the posts into the ground up to 4 m,
- Attaching the mounting system,
- Attaching panels to the mounting system,
- Installing DC cabling to the PCUs,
- Installing the PCUs on concrete footings,
- Installing earthing systems, and
- Trenching of 33 kV cables from the PCUs to the substation

The substation and transmission line works will progress in parallel with the construction of the main PV plant to ensure the substation is ready to receive power when the PV plant is completed.

Construction of the transmission line will include:

- Excavation and construction of pole footings
- Erection of poles using cranes
- Stringing conductors

The installation phase will utilize equipment such as pile drivers, forklifts, welders, oxy acetylene, trench diggers, excavators, tilt tray trucks, water trucks, elevated work platforms, flatbed trucks, cranes and hand tools.

3.4.3 Commissioning

Following installation of the equipment, commissioning of the system can commence. This phase includes making terminations, testing, calibration and troubleshooting.

3.4.4 Operations

The solar farm has an operational design life of approximately 35 years. During this time, it is possible that the PV modules and ancillary equipment may be upgraded or repowered, depending on the commercial viability at the time. This repowering of the Site will extend the lifespan of the project. Any upgrading and repowering would involve removal of existing equipment, recycling the panels and installing the latest technology on the existing support infrastructure. Recommissioning would then occur.

The completed solar farm will operate with approximately 10 permanent staff. Not all of these people would be required on site each day. Monitoring systems installed at the farm will notify an off-site location of any performance issues, and operators will respond to any irregular issues.

A routine maintenance program will be established which will conduct regular maintenance activities including:

- Equipment and systems inspection and maintenance,
- Fence, internal access and site office management,
- Vegetation management to maintain minimal fuel loads during the fire season,
- Weed management,
- Inverter replacement when required,
- Solar PV module washing, as needed,
- Security monitoring, and
- Communications with stakeholders as required.

Some of the maintenance activities will require specialist technicians that will travel to the site to conduct the works. Other activities, such as maintenance of the security fence or spraying of weeds, might be contracted to local businesses.

In addition to the operation of the solar farm, the property will continue to support a productive agricultural enterprise. After construction has been finalised, the land will be reinstated to productive pasture. The landholder will continue to graze sheep beneath the panels. A protocol will be developed to ensure that the two activities of solar farm and sheep grazing can operate safely and without any risk to equipment, the livestock or the environment. More information on the impact of agricultural productivity can be found in Section 6.9.

3.4.5 Decommissioning

At the end of its operational life, the solar farm will be decommissioned. The connection to the electricity grid would be disconnected, and all the solar farm components removed. The Site will then be

rehabilitated and returned to agricultural use. Some of the internal access roads may stay in place depending on the landholder's requirements.

Decommissioning of the solar farm will require a similar amount of labour and vehicle movements as the construction process. Wherever possible, the components of the solar farm will be reused or recycled. The main components such as the solar PV modules and the mounting systems will be recycled. Where components cannot be recycled, they will be disposed at an approved waste management facility.

4 Planning

The Cimitiere Plains Solar Farm proposal is within the George Town Municipal Area and therefore subject to the George Town Local Provision Schedule and State Planning Provisions (SPP). This document forms part of an application to the George Town Council for a planning permit under the *Land Use Planning and Approvals Act 1993* (LUPAA).

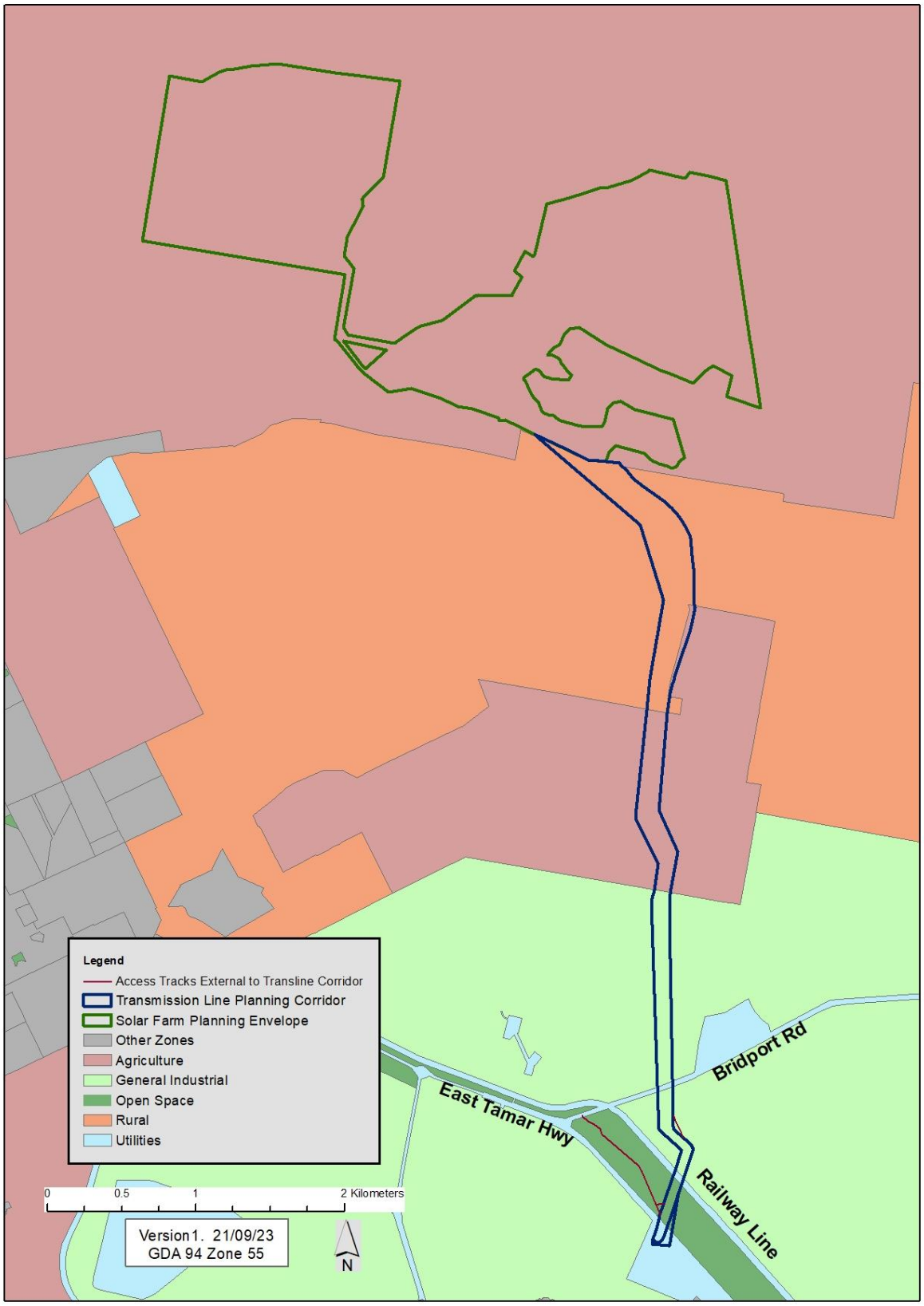
4.1 Planning zones and uses

4.1.1 Solar farm

The solar farm is within the Agriculture Zone as shown in Figure 23. Facilities for electricity generation (a solar farm) and facilities for transmitting power are defined as Utilities under Section 6.2 of the SPP. Utilities in the Agriculture Zone are defined as Discretionary Use or Development. For Discretionary Use or Development, the planning authority has a discretion to refuse or permit a use or development if:

a) the use is within a Use Class specified in the applicable Use Table as being a use which is Discretionary;
b) the use or development relies on a Performance Criterion to demonstrate compliance with an applicable standard; or
c) it is Discretionary under any other provision of this planning scheme.

Figure 23. Planning zones



4.1.1.1 Agriculture Zone

As described in the SPP, the purpose of the Agriculture Zone is:

- To provide for the use or development of land for agricultural use.
- To protect land for the use or development of agricultural use by minimising:
    - conflict with or interference from non-agricultural uses;
    - non-agricultural use or development that precludes the return of the land to agricultural use; and
    - use of land for non-agricultural use in irrigation districts.
- To provide for use or development that supports the use of the land for agricultural use.

Within the solar farm site, the land capability class is 4, 5 5+6, 6 and 6+5 (refer to Figure 55). There is no prime agricultural land. The current land use is predominantly the grazing of sheep and some cattle. Sheep grazing will continue once the solar farm is constructed. It is anticipated that with good management, the decline in agricultural productivity will be minimal. While there has been limited research on the impacts of solar farms on agricultural productivity, it is expected that the percentage reduction in productivity will range from 0 to 30% (that is, at least 70% of productivity will be maintained). More detailed information on the impacts on agricultural productivity can be found in Section 6.9. When the agricultural productivity of the land is combined with the value of the energy production from the solar panels, the overall production per hectare will be significantly increased with financial benefits for both the landholder and the broader community (refer to Section 6.11). The long-term sustainability of the land will not be compromised and the land can be returned to its original form once the solar farm is decommissioned and all equipment is removed. The development will also have minimal impact on environmental values (refer to Section 6) and impacts on landscape values are confined to a relatively small number of viewing points (refer to Section 6.4).

How the project addresses the performance criteria specified in section 26.3.1 of the planning scheme is provided in Table 4. How the project addresses the performance criteria specified in section 26.4.1 of the planning scheme (building height) is provided in Table 5. With respect to section 21.4.2 of the planning scheme (setbacks), the substation and control building will be set back more than 5m from the title boundary. Solar panels will also be set back more than 5m from the title boundary as there will be a 10m asset protection zone surrounding the solar farm infrastructure.

Table 4. How the project addresses the performance criteria of the Agriculture Zone

Performance Criteria	Response
P1 A use listed as Discretionary, excluding Residential or Resource Development, must be required to locate on the site, for operational or security reasons or the need to contain or minimise impacts arising from the operation such as noise, dust, hours of operation or traffic movements, having regard to: (a) access to a specific naturally occurring resource on the site or on land in the vicinity of the site; (b) access to infrastructure only available on the site or on land in the vicinity of the site; (c) access to a product or material related to an agricultural use; (d) service or support for an agricultural use on the site or on land in the vicinity of the site; (e) the diversification or value adding of an agricultural use on the site or in the vicinity of the site; and (f) provision of essential Emergency Services or Utilities.	Large solar farms are Utilities that require a large area of relatively flat land preferably with some separation to residences and other sensitive receptors. These operational requirements are most likely to be found within the Agricultural Zone. Land that is suitable for grazing, but not well suited for cropping is best suited for solar as the grazing can continue with minimal impact on productivity. Land that is close to a strong connection point in the grid is preferable as it reduces the length of the transmission line. This reduces the cost to the project, but also reduces impacts on the community more broadly including visual impacts and impacts on landholders and land use. The Cimitiere Plains solar farm is located on flat land that is well suited to grazing but is not good cropping land. It is also located relatively close to a major connection point in Tasmania being the George Town substation. The site also has the benefit that it is a large site with very few surrounding residences that have a view to the site (refer to Section 6.4) and no residences in close proximity that may be impacted by noise.
P2 A use listed as Discretionary, excluding Residential, must minimise the conversion of agricultural land to non-agricultural use, having regard to: (a) the area of land being converted to non-agricultural use; (b) whether the use precludes the land from being returned to an agricultural use; (c) whether the use confines or restrains existing or potential agricultural use on the site or adjoining sites.	Only a relatively small area of non-prime agricultural land will be converted to non-agricultural use within the Agriculture Zone. This includes the internal access roads (approximately 16 km), the substation (approximately 0.25 Ha), the control building (approximately 0.1 Ha) and the area under the PCUs. The remaining land within the solar farm site will continue to make a significant contribution to the rural economy through sheep grazing enterprises once the solar farm is constructed. It is anticipated that with good management, the decline in agricultural productivity will be minimal (refer to Section 6.9). The long-term sustainability of the land will not be compromised. The land can be returned to its original form once the solar farm is decommissioned and all equipment is removed. Those access roads that the landholder does not need can be removed and reinstated as pasture.

Performance Criteria	Response
P3 A use listed as Discretionary, excluding Residential, located on prime agricultural land must: (a) be for Extractive Industry, Resource Development or Utilities, provided that: (i) the area of land converted to the use is minimised; (ii) adverse impacts on the surrounding agricultural use are minimised; and (iii) the site is reasonably required for operational efficiency; or (b) be for a use that demonstrates a significant benefit to the region, having regard to the social, environmental and economic costs and benefits of the proposed use.	Not applicable. The project is not located on prime agricultural land.
P4 A Residential use listed as Discretionary must: (a) be required as part of an agricultural use, having regard to: (i) the scale of the agricultural use; (ii) the complexity of the agricultural use; (iii) the operational requirements of the agricultural use; (iv) the requirement for the occupier of the dwelling to attend to the agricultural use; and (v) proximity of the dwelling to the agricultural use; or (b) be located on a site that: (i) is not capable of supporting an agricultural use; (ii) is not capable of being included with other agricultural land (regardless of ownership) for agricultural use; and (iii) does not confine or restrain agricultural use on adjoining properties.	Not applicable.

Table 5. How the project addresses building height within the Agriculture Zone

Performance Criteria	Response
P1 Building height must be necessary for the operation of the use and not cause an unreasonable impact on adjoining properties, having regard to: (a) the proposed height of the building; (b) the topography of the site; (c) the bulk and form of the building; (d) separation from existing use on adjoining properties; (e) the nature of the existing uses on adjoining properties; and (f) any buffers created by natural or other features.	Parts of the substation and transmission line are likely to be above 12m. Structures such as the substation gantry and lightning conductor poles would typically exceed 12m. There may also be a transmission line pole within the solar farm area and this will be greater than 12m. The typical height of the transmission poles would range from 33m to approximately 38m. These heights for the substation gantry and transmission line poles are required to maintain minimum clearances for high voltage conductors. Lightning conductor poles also need to be sufficiently high to adequately protect the substation infrastructure. The neighbouring land to the south of the substation is Crown Land – Future Potential Production Forest. The substation structures described above will not unreasonably impact on this adjoining property. As described in Section 6.4, the closest residences to the substation and the start of the transmission line are R3 and R5 (refer to Figure 28). It has been assessed that due to intervening vegetation (which is relatively close to the house in the cases of R5), these residences won't be able to see the substation or transmission line.

4.1.2 Transmission line

Transmission lines with a voltage of 110 kV or lower are deemed to be Minor Utilities (refer to Section 3.1 of the SPP).

The transmission line and associated access tracks traverse the following planning zones (refer to Figure 23):

- Agriculture
- Rural
- General Industrial
- Utilities, and
- Open Space

A Minor Utility in the Agriculture Zone, Rural Zone, Utilities Zone, General Industrial Zone and Open Space Zone is classified as No Permit Required Use or Development.

A permit is not required to commence or carry out a use or development if:

a) the use is within a Use Class specified in the applicable Use Table as being a use for which no permit is required;
b) the use or development complies with each applicable standard and does not rely on any Performance Criteria to comply with each applicable standard;
c) the use or development is not Discretionary under any other provision of this planning scheme;
d) the use or development is not Prohibited under any other provision of this planning scheme; and
e) a permit for such use and development is not required by a code.

The transmission line does not comply with each applicable standard and the planning envelope is subject to codes and therefore a planning permit is required. How the project addresses the performance criteria in each zone is provided below. Information on these codes is provided in Section 4.2.

4.1.2.1 Agriculture Zone

The length of the transmission line passing through the Agriculture Zone is approximately 1.25 km. The total area that will be required for the easement is 6.25 Ha. The mapped land capability class is predominantly class 6 with a small area of class 5. The land has been used in the past for forestry. Forestry will not be compatible with the easement after the initial clearance. How the transmission line addresses the performance requirements for the agriculture zone is provided in Table 6, Table 7 and Table 8.

Table 6. How the project addresses the Discretionary use performance criteria of the Agriculture Zone.

Performance Criteria	Response
P1 A use listed as Discretionary, excluding Residential or Resource Development, must be required to locate on the site, for operational or security reasons or the need to contain or minimise impacts arising from the operation such as noise, dust, hours of operation or traffic movements, having regard to: (a) access to a specific naturally occurring resource on the site or on land in the vicinity of the site; (b) access to infrastructure only available on the site or on land in the vicinity of the site; (c) access to a product or material related to an agricultural use; (d) service or support for an agricultural use on the site or on land in the vicinity of the site; (e) the diversification or value adding of an agricultural use on the site or in the vicinity of the site; and (f) provision of essential Emergency Services or Utilities.	The operation of the solar farm requires the transmission line as the connection to the George Town substation. The potential route for the transmission line is constrained between Basslink in the east and George Town in the west. The route for the transmission line has been developed taking environmental and social factors into consideration. The route selected has low potential for agricultural production (land capability class 6) and is really only suitable for forestry.

P2 A use listed as Discretionary, excluding Residential, must minimise the conversion of agricultural land to non-agricultural use, having regard to: (a) the area of land being converted to non-agricultural use; (b) whether the use precludes the land from being returned to an agricultural use; (c) whether the use confines or restrains existing or potential agricultural use on the site or adjoining sites.	Approximately 6.25 Ha of land in the easement will be unavailable for forestry. When the transmission line is decommissioned, the land can return to its original use. The use of the land for the easement does not constrain agricultural use on adjoining land.
P3 A use listed as Discretionary, excluding Residential, located on prime agricultural land must: (a) be for Extractive Industry, Resource Development or Utilities, provided that: (i) the area of land converted to the use is minimised; (ii) adverse impacts on the surrounding agricultural use are minimised; and (iii) the site is reasonably required for operational efficiency; or (b) be for a use that demonstrates a significant benefit to the region, having regard to the social, environmental and economic costs and benefits of the proposed use.	Not applicable. The project is not located on prime agricultural land.
P4 A Residential use listed as Discretionary must: (a) be required as part of an agricultural use, having regard to: (i) the scale of the agricultural use; (ii) the complexity of the agricultural use; (iii) the operational requirements of the agricultural use; (iv) the requirement for the occupier of the dwelling to attend to the agricultural use; and (v) proximity of the dwelling to the agricultural use; or (b) be located on a site that: (i) is not capable of supporting an agricultural use; (ii) is not capable of being included with other agricultural land (regardless of ownership) for agricultural use; and (iii) does not confine or restrain agricultural use on adjoining properties.	Not applicable.

Table 7. How the project addresses building height performance criteria within the Agriculture Zone

Performance Criteria	Response
P1 Building height must be necessary for the operation of the use and not cause an unreasonable impact on adjoining properties, having regard to: (a) the proposed height of the building; (b) the topography of the site; (c) the bulk and form of the building; (d) separation from existing use on adjoining properties; (e) the nature of the existing uses on adjoining properties; and (f) any buffers created by natural or other features.	The typical height of the transmission poles would range from 33m to approximately 38m. These heights are required to maintain minimum clearances for high voltage conductors. There are no existing residences close to this section of the transmission line that are likely to have their views adversely impacted (refer to Section 6.4). Trees on either side of the transmission line easement will partially screen the transmission line. The closest house is 600 m to the west, but trees surrounding the house will screen views to the transmission line. The adjoining land to the north is private land that is used for forestry. To the east are two small private titles. One serves as a buffer zone to the Basslink inverter station. The other private landholder has been consulted and is generally in favour of the project. The adjoining land to the south forms part of the buffer zone for the Bell Bay Aluminium Smelter.

Table 8. How the project addresses setbacks performance criteria within the Agriculture Zone

Performance Criteria	Response
P1 Buildings must be sited to provide adequate vehicle access and not cause an unreasonable impact on existing use on adjoining properties, having regard to: (a) the bulk and form of the building; (b) the nature of existing use on the adjoining properties; (c) separation from existing use on the adjoining properties; and (d) any buffers created by natural or other features.	The design of the transmission line has not been completed and as such, the exact pole placements are not known. However, poles will only ever be within 5m of another property where the transmission line is passing into that property. The poles will always be at least 25 m from all other neighbouring properties.
P2 Buildings for a sensitive use must be sited so as not to conflict or interfere with an agricultural use, having regard to: (a) the size, shape and topography of the site;	Not applicable

(b) the prevailing setbacks of any existing buildings for sensitive uses on adjoining properties; (c) the location of existing buildings on the site; (d) the existing and potential use of adjoining properties; (e) any proposed attenuation measures; and (f) any buffers created by natural or other features.	

4.1.2.2 Rural Zone

The length of the transmission line passing through the Rural Zone is approximately 2.06 km. The total area that will be required for the easement is 10.3 Ha. Part of this area is Crown Land – Future Potential Production Forest. The remainder is private land that has recently been logged. Forestry will not be compatible with the easement after the initial clearance. How the transmission line addresses the performance requirements for the agriculture zone is provided in Table 9 and Table 10.

Table 9. How the project addresses the Discretionary use performance criteria of the Rural Zone

Performance Criteria	Response
P1 A use listed as Discretionary, excluding Residential, must require a rural location for operational reasons, having regard to: (a) the nature, scale and intensity of the use; (b) the importance or significance of the proposed use for the local community; (c) whether the use supports an existing agricultural use; (d) whether the use requires close proximity to infrastructure or natural resources; and (e) whether the use requires separation from other uses to minimise impacts.	The operation of the solar farm requires the transmission line as the connection to the George Town substation. The potential route for the transmission line is constrained between Basslink in the east and George Town in the west. The route for the transmission line has been developed taking environmental and social factors into consideration. The project will have a significant benefit to the local community and Tasmania more generally by providing an additional supply of cost-effective renewable energy to the network.
P2 A use listed as Discretionary must not confine or restrain existing use on adjoining properties, having regard to: (a) the location of the proposed use; (b) the nature, scale and intensity of the use; (c) the likelihood and nature of any adverse impacts on adjoining uses; (d) whether the proposed use is required to support a use for security or operational reasons; and (e) any off site impacts from adjoining uses.	The only likely potential impact on neighbouring properties is visual impact. An assessment of landscape and visual impacts for the transmission line is provided in Section 6.4. Where the transmission line passes through the Rural Zone, there are two smaller lots in close proximity to the planning envelope that currently do not have a residence on them, however they may be developed at some stage in the future. Potential views to the transmission line if a residence were to be built would be very dependant on the location and orientation of the house, but views are likely to be at least partially screened by surrounding forest vegetation.

P3 A use listed as Discretionary, located on agricultural land, must minimise conversion of agricultural land to non-agricultural use and be compatible with agricultural use, having regard to: (a) the nature, scale and intensity of the use; (b) the local or regional significance of the agricultural land; and (c) whether agricultural use on adjoining properties will be confined or restrained.	The land in the rural zone is not currently being used for agriculture.
P4 A use listed as Discretionary, excluding Residential, must be appropriate for a rural location, having regard to: (a) the nature, scale and intensity of the proposed use; (b) whether the use will compromise or distort the activity centre hierarchy; (c) whether the use could reasonably be located on land zoned for that purpose; (d) the capacity of the local road network to accommodate the traffic generated by the use; and (e) whether the use requires a rural location to minimise impacts from the use, such as noise, dust and lighting.	Transmission lines are best located away from residences and where visual impacts are minimised. The proposed route achieves both of these objectives. The transmission poles are tall but the surrounding forest is of a similar scale and will provide some screening of the poles. The transmission line will only generate traffic during the construction period. It has been assessed that there will be no adverse impacts on the level of service of the local road network.

Table 10. How the project addresses building height performance criteria within the Rural Zone

Performance Criteria	**Response**
P1 Building height must be necessary for the operation of the use and not cause an unreasonable impact on adjoining properties, having regard to: (a) the proposed height of the building; (b) the bulk and form of the building; (c) the separation from existing uses on adjoining properties; and (d) any buffers created by natural or other features.	The typical height of the transmission poles would range from 33m to approximately 38m. These heights are required to maintain minimum clearances for high voltage conductors. The surrounding forest is of a comparable scale and will provide a buffer to surround uses. There are no existing residences close to this section of the transmission line that are likely to have their views adversely impacted (refer to Section 6.4). Trees on either side of the transmission line easement will partially screen the transmission line. The closest house is 700 m to the southwest, but trees surrounding this house will completely screen views to the transmission line.

For setbacks within the Rural Zone, please refer to the information provided in Table 8 for the Agriculture Zone as the Performance Criteria and responses are the same for both zones.

4.1.2.3 General Industrial Zone

The length of the transmission line passing through the General Industrial Zone is approximately 1.94 km. The total area that will be required for the easement is 9.7 Ha. This area is owned by Bell Bay Aluminium and forms part of the buffer area for the aluminium smelter. To the north of Bridport road is forested and to the south of Bridport Road is cleared land. How the transmission line addresses the performance requirements for the agriculture zone is provided in Table 11, Table 12 and Table 13.

Table 11. How the project addresses the Discretionary use performance criteria of the General Industrial Zone

Performance Criteria	Response
P1 A use listed as Discretionary must not compromise the use or development of surrounding properties for industrial activities that may have impacts on adjacent uses, having regard to: (a) the characteristics of the site; (b) the size and scale of the proposed use; and (c) the functions of the industrial area.	Surrounding industrial activities include the Bell Bay Aluminium Smelter and the Basslink Inverter Station (although this use is classed as Utility). The transmission line will have no impact on these industrial activities.

Table 12. How the project addresses building height performance criteria within the General Industrial Zone

Performance Criteria	Response
P1 Building height must be necessary for the operation of the use and not cause an unreasonable impact on adjoining properties, having regard to: (a) the bulk and form of the building; (b) separation from existing use on adjoining properties; and (c) any buffers created by natural or other features.	The Acceptable Solution for building height in the General Industrial Zone is that building height must not be more than 20m. The typical height of the transmission poles would range from 33m to approximately 38m. These heights are required to maintain minimum clearances for the high voltage conductors. The poles are tall but slender and therefore do not have the bulk of a normal building. North of Bridport Road, the surrounding forest is of a comparable scale and will provide a buffer to surround uses. There are no existing residences close to this section of the transmission line that are likely to have their views adversely impacted (refer to Section 6.4). The only adjoining property in proximity to the transmission line in this Zone is the Basslink

	Inverter Station which is also high voltage electrical equipment.

Table 13. How the project addresses Landscaping Performance Criteria within the General Industrial Zone

Performance Criteria	Response
P1 If a building is setback from a road, landscaping treatment must be provided along the frontage of the site, having regard to: (a) the width of the setback; (b) the width of the frontage; (c) the topography of the site; (d) existing vegetation on the site; (e) the location, type and growth of the proposed vegetation; and (f) any relevant local area objectives contained within the relevant Local Provisions Schedule	Poles will be set back at least 10m from the frontage to Bridport Road. Where there are trees in the easement that are taller than 3 m or have the potential to grow taller than 3m, these trees will be removed. This ensures that adequate clearances are maintained to the transmission line conductors.

The Acceptable Solutions for Setback in the General Industrial Zone is:

A1

Buildings must have setback from a frontage of:

a) *not less than 10m;*
b) *not less than existing buildings on the site; or*
c) *not more or less than the maximum and minimum setbacks of the buildings on adjoining properties*

The poles will be set back at least 10 m from the frontage to Bridport Road and therefore, the Project complies with the Acceptable Solutions for Setback in the General Industrial Zone.

4.1.2.4 Open Space Zone

The length of the transmission line passing through the Open Space Zone is approximately 320 m. The total area that will be required for the easement is 1.6 Ha. This area is private land owned by Bell Bay Aluminium and is known as Lauriston Park. The car park for the Tippogoree Hills mountain bike trails is within the planning envelope. How the transmission line addresses the requirements for the Open Space Zone is provided in Table 14 and Table 15.

Table 14. How the project addresses the Discretionary use Acceptable Solutions or Performance Criteria of the Open Space Zone

Performance Criteria	Response
P1 Hours of operation for a use listed as Discretionary, excluding Emergency Services or Visitor Accommodation, must not cause an unreasonable loss of amenity to adjacent sensitive uses having regard to: (a) the timing, duration or extent of vehicle movements; and (b) noise, lighting or other emissions	There are no known sensitive receptors within 2.5 km of the transmission line where it passes through the Open Space Zone. High voltage transmission lines can emit very low-level noise through the carona effect. This will not cause any loss of amenity to surrounding sensitive uses.
A2 Flood lighting of Sports and Recreation facilities within 50m of a General Residential Zone, Inner Residential Zone or Low Density Residential Zone must not operate between 11.00pm and 7.00am.	There will be no flood lighting involved with the transmission line.

Table 15. How the project addresses the Building Height, Setback and Siting Acceptable Solutions or Performance Criteria of the Open Space Zone

Performance Criteria	Response
P1 Building height must not cause an unreasonable loss of amenity to adjacent properties, having regard to: (a) the topography of the site; (b) the height, bulk and form of existing buildings on the site and adjacent properties; (c) the bulk and form of proposed buildings; (d) the requirements of the proposed use; (e) sunlight to private open space and windows of habitable rooms of dwellings on adjoining properties; (f) the privacy of the private open space and windows of habitable rooms of dwellings on adjoining properties; and (g) any overshadowing of adjacent public places.	As previously discussed, the height of the poles are required to maintain minimum clearances for the high voltage conductors. The poles are tall but slender and therefore do not have the bulk of a normal building. Transmisson lines are a common feature in the surrounding landscape as a number of lines converge on the George Town substation. Existing structures close to the proposed transmission line include a 110 kV pole transmission line approximately 50m to the north and the Basslink Interconnector which is about 300 m to the south. Because of the slender nature of the pole, overshadowing of public places is negligible. The proposed transmission line will be close to the trail head for the Tippogoree Hills mountain bike trails. While riders will unload and load their bikes near the proposed line, the “open-space” experience for the riders is when they are on the trails. The main trails are in the forested Tippogoree Hills to the east of the transmission line and views from the trails to the transmission line will be screened by the surrounding forest.

A2 Buildings must have a setback from a frontage of: (a) not less than 5m; or (b) not more or less than the maximum and minimum setbacks of the buildings on adjoining properties, whichever is the lesser.	The transmission line poles will be set back at least 5m from the frontage onto the East Tamar Highway. Therefore, the development meets the Acceptable Solution.
A3 Buildings must have a setback from side and rear boundaries adjoining a General Residential Zone, Inner Residential Zone or Low Density Residential Zone not less than: (a) 3m; or (b) half the wall height of the building, whichever is the greater.	Not applicable
A4 Air extraction, pumping, refrigeration systems, compressors or generators must be separated a distance of not less than 10m from a General Residential Zone, Inner Residential Zone or Low Density Residential Zone1.	Not applicable

4.1.2.5 Utilities Zone

The transmission line is in the Utilities Zone where it crosses Bridport Road, the railway line and the East Tamar Highway. It is also in the Utilities Zone as it enters the George Town substation.

The transmission line complies with all the Acceptable Solutions in Table 26.3.1 (All uses) of the State Planning Provisions. How the transmission line addresses the other requirements for the Utilities Zone is provided in Table 16, Table 17 and Table 18.

Table 16. How the project addresses the Discretionary Uses Performance Criteria of the Utilities Zone

Performance Criteria	**Response**
P1 A use listed as Discretionary must not compromise or restrict the operations of an existing or proposed utility, having regard to: (a) the compatibility of the utility and the proposed use; (b) the location of the proposed use in relation to the utility, or any proposed utility; (c) existing land uses on the site; and (d) any proposed or existing buffers or mitigation measures.	The transmission line will comply with statutory clearance requirements over the roads and railway line. The design of the transmission line as it enters the George Town substation is being developed in conjunction with TasNetworks so as not to restrict the current or future functionality of the substation.

Table 17. How the project addresses the Building Height Performance Criteria of the Utilities Zone

Performance Criteria	Response
P1 Building height must: (a) be necessary for the operation of the use and not cause unreasonable impact on adjoining properties, having regard to: (i) the bulk and form of the building; (ii) separation from existing buildings on adjoining properties; and (iii) any buffers created by natural or other features; and (b) not unreasonably impact on the visual character of the area, having regard to: (i) the topography of the site; (ii) any existing vegetation; and (iii) visibility from adjoining roads and public open space.	The height of the poles are required to maintain minimum clearances for the high voltage conductors. There are no existing buildings on adjoining properties that will be adversely impacted. The closest building on an adjoining property to the transmission line in the Utilities Zone is the Basslink Inverter Station. The transmission line does not unreasonably impact the visual character of the area as described in more detail in Section 6.4 and Appendix G.
A2 Building height, excluding a structure such as a tower, pole or similar: (a) within 10m of an adjoining property in a General Residential Zone, Low Density Residential Zone or Rural Living Zone, must be not more than 8.5m; or (b) within 10m of an adjoining property in an Inner Residential Zone, must be not more than 9.5m.	Not applicable

Table 18. How the project addresses the Setbacks Acceptable Solutions of the Utilities Zone

Performance Criteria	Response
A1 Buildings, excluding a structure such as a tower, pole or similar, must have a setback from all boundaries of not less than: (a) 5m; or (b) an existing building on the lot.	Within the TasNetworks title, the tower or pole will have a setback of more than 5m from the boundary. In the Utilities Zones for Bridport Road, East Tamar Highway and the railway, there will be no poles withing the Utilities Zone.
A2 Air extraction, refrigeration systems, compressors or generators must be separated a distance of not less than 10m from a General Residential Zone, Inner Residential Zone, Low Density Residential Zone and Rural Living Zone1.	Not applicable

The tables relating to Fencing (26.4.3) and Outdoor storage areas (26.4.4) do not apply to this project.

4.2 Planning codes

The planning codes that are mapped within the project planning envelope include:

- Natural Assets Code
- Scenic Protection Code
- Electricity Transmission Infrastructure Protection Code
- Bushfire Prone Areas Code
- Landslip Hazard Code
- Safeguarding of Airports Code
- Sign Code

These codes are addressed below.

4.2.1 Natural assets code

The location of the waterway overlay and priority vegetation overlay is shown in Figure 24. The waterway overlay occurs throughout the solar farm and transmission line planning corridor. The priority vegetation area is confined to two titles on the transmission line route:

- Crown Land (Volume 139746 Folio 1) which is Future Potential Production Forest.
- Private land (Volume 135016 Folio 1) which has recently been logged.

How the project addresses the performance criteria for the waterway overlay is provided in Table 19, and priority vegetation areas in Table 20.

Figure 24 Natural Assets Code

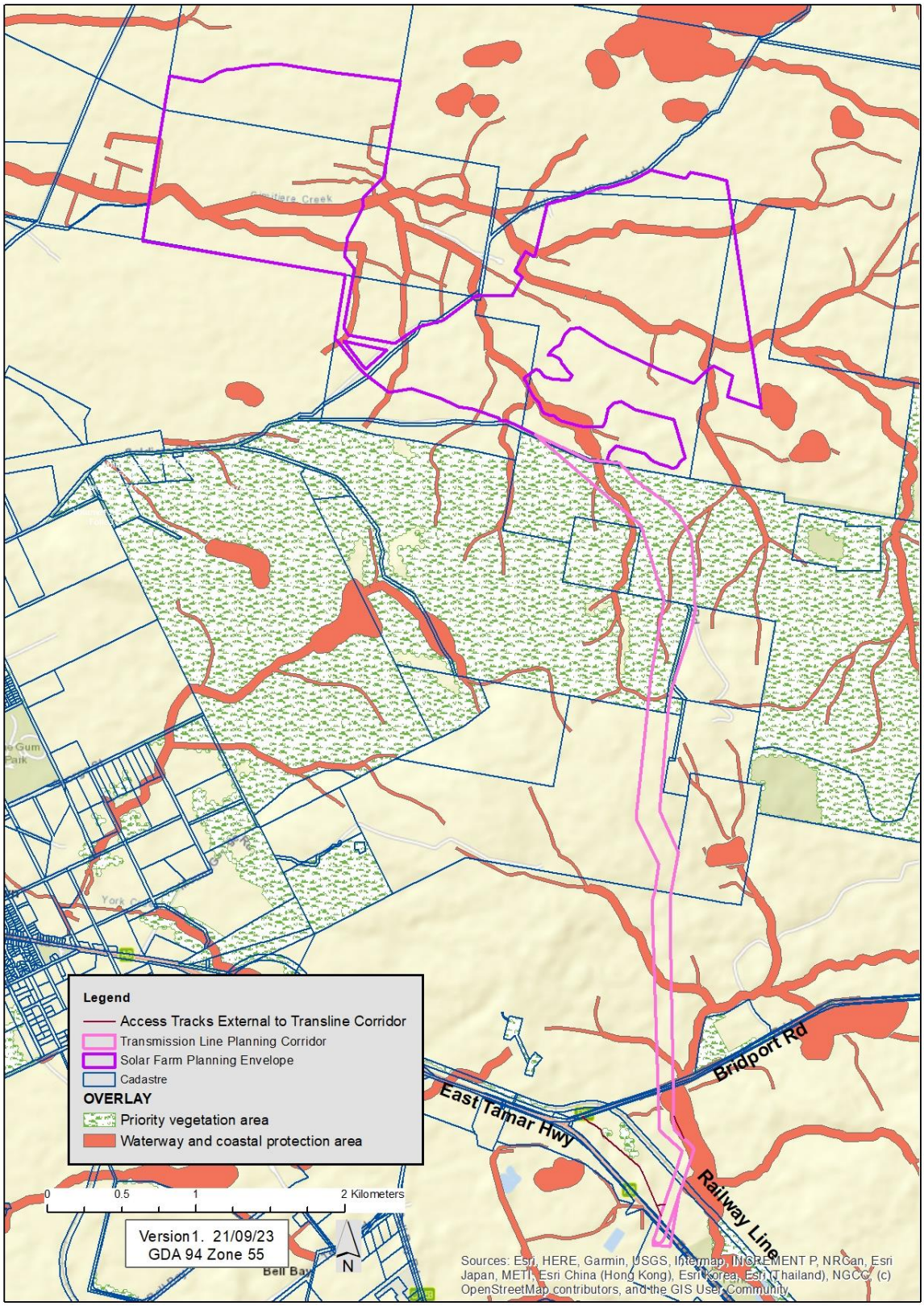


Table 19. How the project addresses the performance criteria of the waterway overlay.

Performance Criteria	Response
P1.1 Buildings and works within a waterway and coastal protection area must avoid or minimise adverse impacts on natural assets, having regard to: (a) impacts caused by erosion, siltation, sedimentation and runoff; (b) impacts on riparian or littoral vegetation; (c) maintaining natural streambank and streambed condition, where it exists; (d) impacts on in-stream natural habitat, such as fallen logs, bank overhangs, rocks and trailing vegetation; (e) the need to avoid significantly impeding natural flow and drainage; (f) the need to maintain fish passage, where known to exist; (g) the need to avoid land filling of wetlands; (h) the need to group new facilities with existing facilities, where reasonably practical; (i) minimising cut and fill; (j) building design that responds to the particular size, shape, contours or slope of the land; (k) minimising impacts on coastal processes, including sand movement and wave action; (l) minimising the need for future works for the protection of natural assets, infrastructure and property; (m) the environmental best practice guidelines in the *Wetlands and Waterways Works Manual*; and (n) the guidelines in the *Tasmanian Coastal Works Manual*.	The main waterway within the development envelope is Cimitiere Creek. The creek and riparian vegetation will not form part of the panel array as shown in Figure 13. The internal roads will need to cross Cimitiere Creek. Electrical cables (33 KV) will also need to cross the creek. These stream crossings and any other waterway crossing on the project will be constructed in accordance with the *Wetlands and Waterways Works Manual* and the *Forest Practices Code 2020*. Where possible, construction will occur when flows are low (ie summer and autumn). If the cables cannot be trenched across Cimitiere Creek with acceptable impacts, the cables will be horizontally direct drilled under the creek or a short section of overhead line will be used (this is not the preferred option). Another area approximately 450m northwest of the substation that consists of a farm dam in a waterway and native vegetation will not be impacted by the development. This area also includes one Aboriginal heritage site. All remaining waterways within the solar farm envelope are ephemeral and have been incorporated into the surrounding paddock and sown to pasture. An erosion and sediment control plan (ESCP) will be developed as part of the construction environmental management plan (CEMP) for the project to mitigate the risk of sediment leaving the site and impacting on waterways. The plan will be made in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004). Given the large area over which construction activities will be conducted, measures should focus on limiting disturbance to vegetation cover wherever possible and re-establishing vegetation cover progressively and as soon as possible.

P1.2 Buildings and works within the spatial extent of tidal waters must be for a use that relies upon a coastal location to fulfil its purpose, having regard to: (a) the need to access a specific resource in a coastal location; (b) the need to operate a marine farming shore facility; (c) the need to access infrastructure available in a coastal location; (d) the need to service a marine or coastal related activity; (e) provision of essential utility or marine infrastructure; or (f) provisions of open space or for marine-related educational, research, or recreational facilities.	Not applicable
P2.1 Buildings and works within a future coastal refugia area must allow for natural coastal processes to continue to occur and avoid or minimise adverse impacts on natural assets, having regard to: (a) allowing for the landward transgression of sand dunes and the landward colonisation of wetlands, saltmarshes and other coastal habitats from adjacent areas; (b) avoiding the creation of barriers or drainage networks that would prevent future tidal inundation; (c) allowing the coastal processes of sand deposition or erosion to continue to occur; (d) the need to group new facilities with existing facilities, where reasonably practical; (e) the impacts on native vegetation; (f) minimising cut and fill; (g) building design that responds to the particular size, shape, contours or slope of the land; (h) the impacts of sea-level rise on natural coastal processes and coastal habitat; (i) the environmental best practice guidelines in the *Wetlands and Waterways Works Manual*; and (j) the guidelines in the *Tasmanian Coastal Works Manual*.	Not applicable
P2.2 Buildings and works within a future coastal refugia area must be for a use that relies upon a	Not applicable

coastal location to fulfil its purpose, having regard to: (a) the need to access a specific resource in a coastal location; (b) the need to operate a marine farming shore facility; (c) the need to access infrastructure available in a coastal location; (d) the need to service a marine or coastal related activity; (e) provision of essential utility or marine infrastructure; and (f) provision of open space or for marine-related educational, research, or recreational facilities.	
P3 Development within a waterway and coastal protection area or a future coastal refugia area involving a new stormwater point discharge into a watercourse, wetland or lake must avoid or minimise adverse impacts on natural assets, having regard to: (a) the need to minimise impacts on water quality; and (b) the need to mitigate and manage any impacts likely to arise from erosion, sedimentation or runoff.	Construction of access/maintenance roads for the solar farm and transmission line have the potential to change how surface water runoff enters drainage lines. Roads will be constructed in accordance with the *Forest Practices Code 2020*. As discussed for P1.1, an erosion and sediment control plan (ESCP) will be developed as part of the construction environmental management plan (CEMP) for the project.
P4.1 Dredging or reclamation within a waterway and coastal protection area or a future coastal refugia area must minimise adverse impacts on natural coastal processes and natural assets, having regard to: (a) impacts caused by erosion, siltation, sedimentation and runoff; (b) impacts on riparian or littoral vegetation; (c) the need to avoid land filling of wetlands; (d) impacts on sand movement and wave action; and (e) the potential for increased risk to inundation of adjacent land.	Not applicable
P4.2 Dredging or reclamation within a waterway and coastal protection area or a future coastal refugia area must be necessary: (a) to continue an existing use or development on adjacent land; or (b) for a use which relies upon a coastal location to fulfil its purpose, having regard to:	Not applicable

(i) the need to access a specific resource in a coastal location; (ii) the need to operate a marine farming shore facility; (iii) the need to access infrastructure available in a coastal location; (iv) the need to service a marine or coastal related activity; (v) provision of essential utility or marine infrastructure; and (vi) provision of open space or for marine-related educational, research, or recreational facilities.	
P5 Coastal protection works or watercourse erosion or inundation protection works within a waterway and coastal protection area or a future coastal refugia area must be designed by a suitably qualified person and minimise adverse impacts on natural coastal processes, having regard to: (a) impacts on sand movement and wave action; and (b) the potential for increased risk of inundation to adjacent land.	Not applicable

Table 20. How the project addresses the performance criteria of the priority vegetation overlay

Performance Criteria	Response
P1.1 Clearance of native vegetation within a priority vegetation area must be for: (a) an existing use on the site, provided any clearance is contained within the minimum area necessary to be cleared to provide adequate bushfire protection, as recommended by the Tasmania Fire Service or an accredited person; (b) buildings and works associated with the construction of a single dwelling or an associated outbuilding; (c) subdivision in the General Residential Zone or Low Density Residential Zone; (d) use or development that will result in significant long term social and economic benefits and there is no feasible alternative location or design; (e) clearance of native vegetation where it is demonstrated that on-going pre-existing management cannot ensure the survival of the priority vegetation and there is little potential for long-term persistence; or (f) the clearance of native vegetation that is of limited scale relative to the extent of priority vegetation on the site.	A detailed survey of the transmission line corridor has been conducted by Enviro-dynamics and their report has been provided in Appendix F. The report found no threatened communities or threatened species in the area where the planning corridor intersects with the priority vegetation area. Where this intersection occurs on private land (Volume 135016 Folio 1), the land has recently been logged. A number of potential routes were investigated for the transmission line corridor as discussed in Section 6.3. This involved several surveys to identify the location of high value communities and species. The proposed route has been selected as it minimises impacts on biodiversity and the visual landscape whilst not adversely impacting landholders. The route for the transmission line is constrained between Basslink to the east and George Town to the west. The mapped priority vegetation area extends from the outskirts of George Town across to the Basslink Interconnector. There is no feasible option for the proposed transmission line to go around the priority vegetation. The Cimitiere Plains Solar Farm will result in significant long term social and economic benefits. These benefits are discussed in detail in Sections 2 and 6.11.
P1.2 Clearance of native vegetation within a priority vegetation area must minimise adverse impacts on priority vegetation, having regard to: (a) the design and location of buildings and works and any constraints such as topography or land hazards; (b) any particular requirements for the buildings and works; (c) minimising impacts resulting from bushfire hazard management measures through siting and fire-resistant design of habitable buildings; (d) any mitigation measures implemented to minimise the residual impacts on priority vegetation; (e) any on-site biodiversity offsets; and (f) any existing cleared areas on the site.	As described for P1.1, the transmission line has been located to minimise impacts on priority vegetation, particularly listed threatened communities and listed species. Tall vegetation will be removed from the easement, and remaining vegetation will be kept at a height of less than 3 m in compliance with relevant Australian Standards or TasNetworks easement terms as applicable. Vegetation impacts for the transmission line will be confined to the 50 m wide easement, access tracks and hardstanding areas. Access tracks will make use of existing tracks where practicable to minimise impacts on vegetation.

4.2.2 Scenic protection code

The location of the scenic protection area overlay and the scenic road corridor overlay is shown in Figure 25. The transmission line planning envelope passes through the Mount George and George Town Sugarloaf scenic protection area and the East Tamar Highway scenic road corridor.

How the project addresses the performance criteria for scenic protection areas is provided in Table 21 and scenic road corridors in Table 22.

Figure 25. Scenic Protection Code

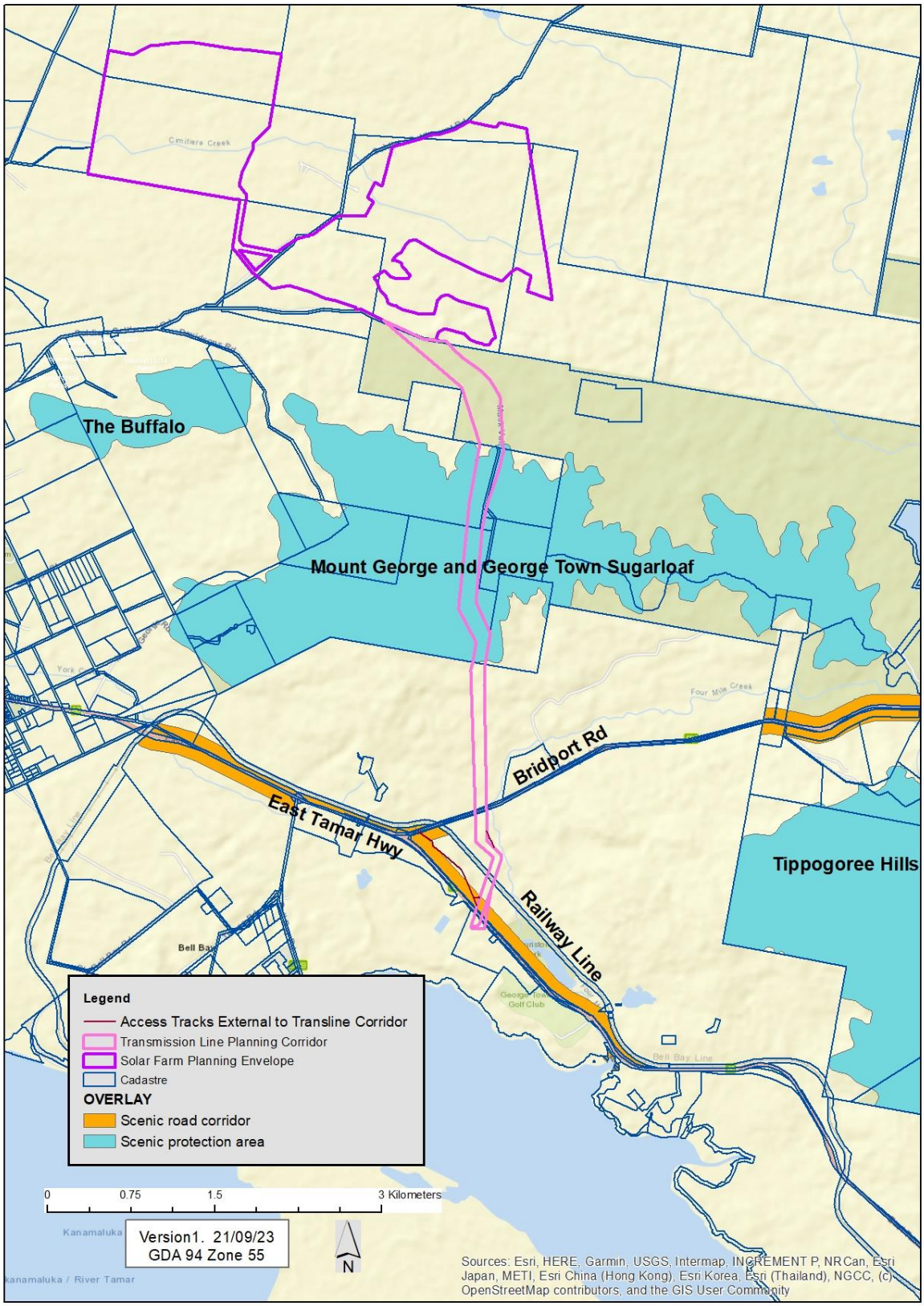


Table 21. How the project addresses the performance criteria of the scenic protection area overlay

Performance Criteria	Response
P1.1 Destruction of vegetation within a scenic protection area must not cause an unreasonable impact on the scenic value of a scenic protection area, having regard to: (a) the nature of the vegetation to be removed; (b) the area of vegetation to be removed; (c) the topography of the site; (d) any visual impact on a skyline; (e) the nature of the reduction of the scenic value; and (f) the purpose of any management objectives identified in the relevant Local Provisions Schedule. P1.2 Buildings or works within a scenic protection area must not cause an unreasonable reduction of the scenic value of a scenic protection area, having regard to: (a) the topography of the site; (b) the location of, and materials used in construction of, driveways or access tracks; (c) proposed reflectance and colour of external finishes; (d) design and proposed location of the buildings or works; (e) the extent of any cut or fill required; (f) any visual impact on a skyline; (g) any existing or proposed screening; and (h) the purpose of any management objectives identified in the relevant Local Provisions Schedule.	A landscape and visual impact assessment (LVIA) of the project has been conducted by Moir Landscape Architects and is provided in Appendix G. Their evaluation of the potential impact of the project on scenic protection areas is provided in Section 8.5 of the LVIA. The transmission line passes through Mount George and George Town Sugarloaf scenic protection area, but stays relatively low in the landscape. Consideration has been given to minimising the impact on this scenic protection area through careful alignment of the transmission line planning corridor. This is discussed in detail in Section 6.4.4. The objective of the route selection process was to minimise the impact of the transmission line and easement when viewed from Bridport Road, Lauriston Park or the Tippogoree Hills. It will be possible to view some of the transmission poles for a short stretch of Bridport Road and East Tamar Highway however, transmission towers and other existing infrastructure are already an existing feature in these locations and it is likely that the transmission lines will blend into the landscape and not be obtrusive. Clearing will be minimised to the area required for the easement (50 m) and for access track should the access track need to be outside the easement.

Table 22. How the project addresses the performance criteria of the scenic road corridor overlay

Performance Criteria	Response
P1 Destruction of exotic trees with a height more than 10m, native vegetation, or hedgerows within a scenic road corridor must not cause an unreasonable reduction of the scenic value of the road corridor, having regard to: (a) the nature, extent and location of the exotic trees, native vegetation and hedgerows; and (b) the purpose of any management objectives identified in the relevant Local Provisions Schedule. P2 Buildings or works within a scenic road corridor must not cause an unreasonable reduction of the scenic value of the road corridor, having regard to: (a) the topography of the site; (b) proposed reflectance and colour of external finishes; (c) design and proposed location of the buildings or works; (d) the extent of any cut or fill required; (e) any existing or proposed screening; (f) the impact on views from the road; and (g) the purpose of any management objectives identified in the relevant Local Provisions Schedule.	A landscape and visual impact assessment (LVIA) of the project has been conducted by Moir Landscape Architects and is provided in Appendix G. Their evaluation of the potential impact of the project on the East Tamar Highway scenic road corridor is provided in Section 8.5 of the LVIA. Where the transmission line planning envelope intersects with the mapped scenic road corridor represents an area of approximately 1.2 Ha. Within this area are approximately 9 trees being a mixture of exotic species (pines) and natives. The width of the planning envelope at this point varies from 105 m to 130 m. The cleared easement is only required to be 50m wide. The number of trees that will need to be cleared for the easement will not be known until the final design is completed. The topography of the area is very gently undulating and the East Tamar Highway is slightly lower than the land to the east. There is no cut or fill proposed for the construction of the transmission line in this area. The transmission line crosses the East Tamar Highway at close to right angles which will help to limit the amount of time the transmission line is visible as motorists drive along the road. It will be possible to view some of the transmission poles for a short stretch of the East Tamar Highway however, transmission towers and other existing infrastructure are already an existing feature in the location and it is likely that the transmission lines will blend into the landscape and not be obtrusive. Pole locations will be set back from the road as much as reasonably practicable. If galvanised poles are used for the transmission line the galvanising will be treated to “dull” the reflectivity of the poles.

4.2.3 Electricity transmission infrastructure protection code

Use or development of electricity transmission infrastructure is exempt from this code as per clauses C4.4.1 (a) and C4.4.1 (d) of the SPP. These clauses are listed below:

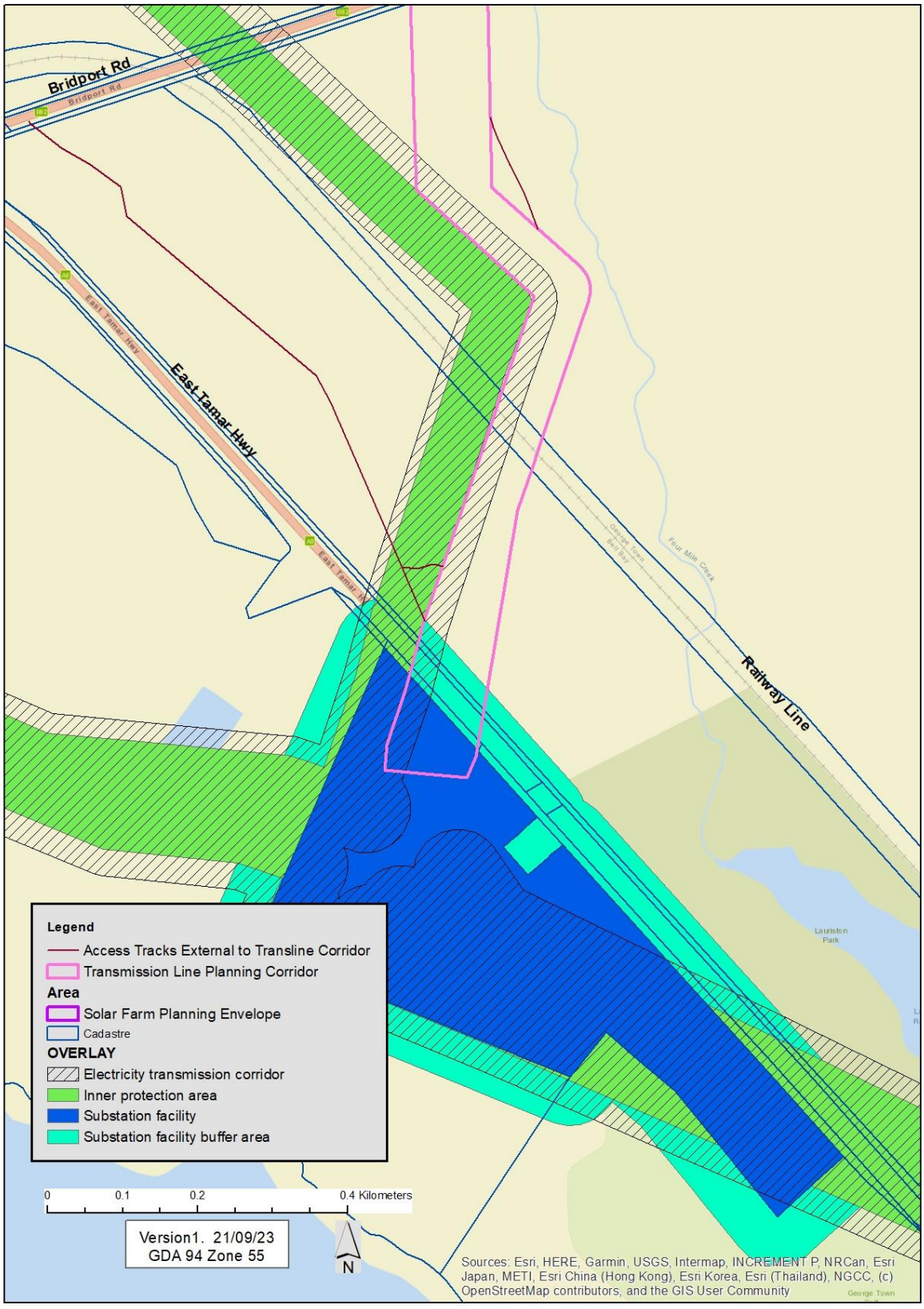
The following use or development is exempt from this code:
(a) buildings or works, or a sensitive use within an electricity transmission corridor, but not within an inner protection area or registered electricity easement for:

(i) alterations or extensions to an existing building provided it does not increase the site coverage by more than 150m2 from that existing at the effective date;
(ii) a non-habitable building provided the site coverage is not more than 150m2 from that existing at the effective date; or
(iii) minor utilities;

(d) use or development of electricity transmission infrastructure;

The transmission line planning envelope is not within the inner protection area or registered electricity easement as shown in Figure 26.

Figure 26. Electricity transmission infrastructure protection code



4.2.4 Bushfire prone areas code

The Bushfire-Prone Areas Code covers the entire planning envelope for the project however it only applies to vulnerable use or hazardous use. The project is neither a vulnerable use or hazardous use.

4.2.5 Landslip hazard code

The transmission line planning corridor traverses areas mapped as low landslip hazard and medium landslip hazard as shown in Figure 27. A Landslide Risk Assessment was conducted by Tasman Geotechnics and is available in Appendix N. The risk to property is assessed to be Very Low to Low. The assessed risk to life was not considered to be credible as the development in the landslip hazard zone does not include any habitable structures.

In order to ensure the proposed development does not change the risk profile above Low for the site, several recommendations were made for development within the Landslide Hazards Bands. These recommendations are listed below and form part of the mitigation measures for the project.

- Transmission line towers should be positioned and spaced in a manner which avoids placement of towers within the Landslide Hazard Bands. This should be possible given that the width of the Low and Medium Landslide Hazard Bands within the proposed envelope are less than the typical 250-300m spacing of the towers.
- If the placement of transmission line towers is unable to avoid the Landslide Hazard Bands, then a subsurface investigation (boreholes and/or test pits) should be conducted to assess the subsurface conditions and provide recommendations for footing design.
- Permanent excavations other than for footings (e.g., access roads) should not exceed 1m vertical height unless retained by an engineer designed retention system. Retaining walls should be designed for sloping backfill, surcharge loading and resist at-rest earth pressures. Retaining walls should also include subsoil drainage.
- Cut slopes and fill batters should be sloped at a maximum of 1V:3H (~18°). All batter faces should be protected against erosion (eg, by vegetation, mulch, or erosion mats). Steeper slopes will need to be retained by an engineer designed retention system.
- Runoff should be diverted away from the proposed transmission line towers via table drains and directed towards natural drainage gullies.
- Where possible, vegetation should be maintained on the slopes to prevent erosion of surface soils. Trees and shrubs taller than 3m (or likely to grow taller than 3m) in height are proposed to be removed within the transmission line corridor. Within the Landslide Hazard Bands, these trees and shrubs should be cut with the stumps and roots left in place and all other vegetation should be left undisturbed.
- The transmission line owner will maintain drains, vegetation cover and retaining structures.
- Good hillside construction practices should be followed as described in the document Geoguide LR8 - Hillside Construction Practice (refer to Appendix N).

How the project addresses the performance criteria for the Landslip Hazard Code is provided in Table 23.

Figure 27. Landslip Hazard Code

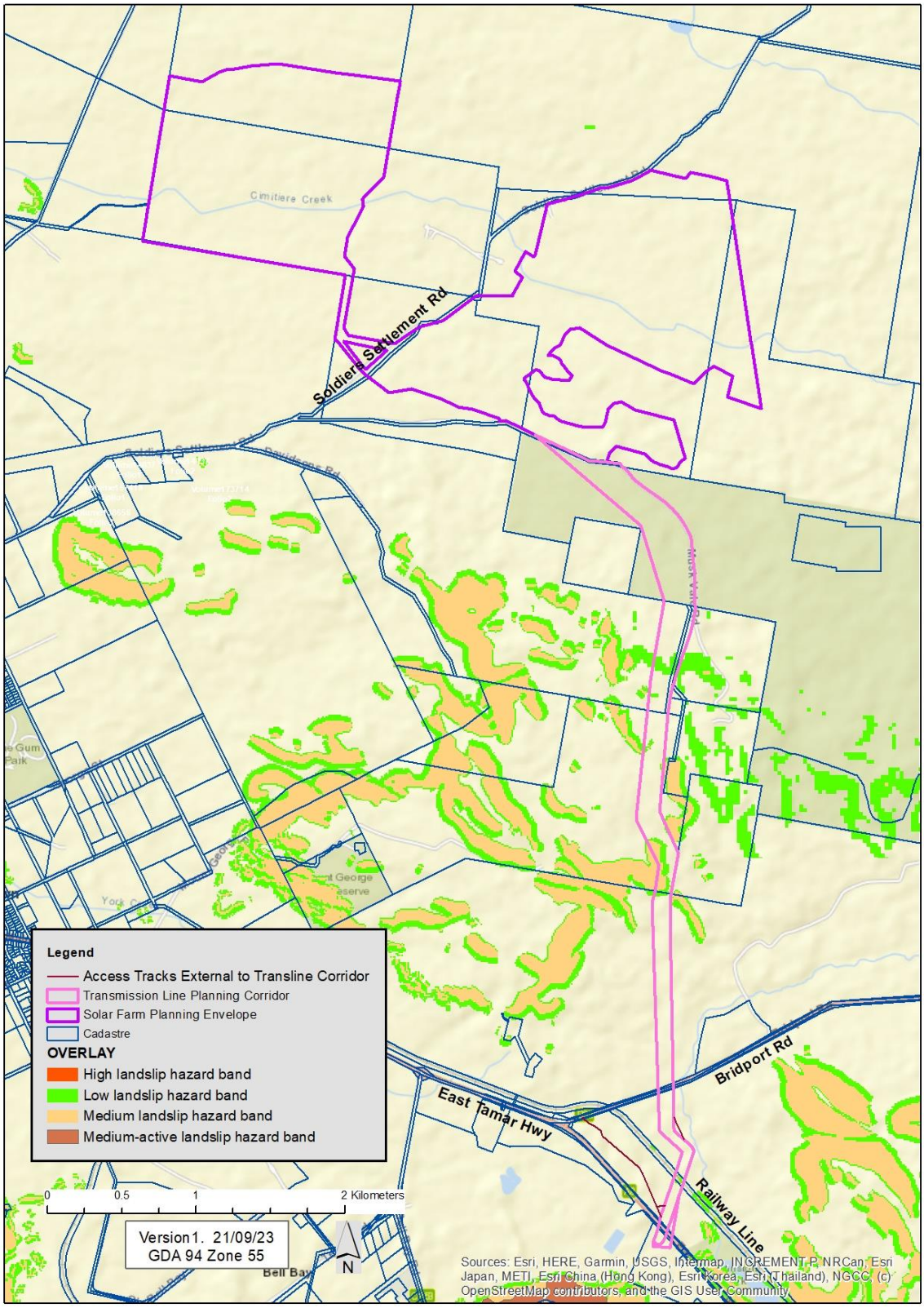


Table 23. How the project addresses the performance criteria of the landslip hazard code

Performance Criteria	Response
P1.1 Building and works within a landslip hazard area must minimise the likelihood of triggering a landslip event and achieve and maintain a tolerable risk from landslip, having regard to: (a) the type, form, scale and intended duration of the development; (b) whether any increase in the level of risk from a landslip requires any specific hazard reduction or protection measures; (c) any advice from a State authority, regulated entity or a council; and (d) the advice contained in a landslip hazard report.	It is likely that most building works (towers) can avoid the landslip hazard areas. If works need to occur within the landslip hazard areas, the landslide risk assessment (Appendix N) found that the risk to property is assessed to be Very Low to Low. The assessed risk to life was not considered to be credible as the development in the landslip hazard zone does not include any habitable structures. Specific mitigation measures have been listed in Table 25.
P1.2 A landslip hazard report also demonstrates that the buildings and works do not cause or contribute to landslip on the site, on adjacent land or public infrastructure.	The landslide risk report assessed that a deep-seated landslide (the type that could potentially impact adjacent land) to be Barely Credible. The risk of a small to medium scale landslide (up to 3m deep) was assessed to have a Low risk profile. Mitigation measures were recommended to ensure the proposed development does not change the risk profile above Low.
P1.3 If landslip reduction or protection measures are required beyond the boundary of the site the consent in writing of the owner of that land must be provided for that land to be managed in accordance with the specific hazard reduction or protection measures.	There is no requirement for mitigation measures beyond the proposed planning envelope.

4.2.6 Safeguarding of Airports Code

The Airport Obstacle Limitation Area overlay covers the entire planning envelope for the project. The minimum AHD height specified for the site of the development is 675.36 m. The highest structure of the project will have an approximate elevation of 220m AHD. This structure is a transmission line pole that occurs in an Airport Obstacle Limitation Area where the AHD height specified is 1069.2 m AHD. Therefore, all structures forming part of the project are well below the AHD height specified in the code and the project is exempt from the code under section C16.4.1 of the SPP which is provided below.

The following use or development is exempt from this code:
(a) development that is not more than the AHD height specified for the site of the development in the relevant airport obstacle limitation area.

4.2.7 Signs Code

There are three types of signs that may be used as part of the development:

- Building site sign
- Internal signs
- Ground base signs at access points to the solar farm

4.2.7.1 Building site signs

These signs are defined in the SPP as "*an impermanent sign which identifies architects, engineers, builders or contractors involved with construction on the premises, the name of the building or development, the intended purpose of the building or development or the expected completion date"*.

Building site signs are exempt signs (refer to Table C1.4 of the SPP) provided they are only displayed during construction works.

4.2.7.2 Internal signs

There may be a number of signs within the solar farm required to assist in the safe operation of the site. These signs will not be or will not be intended to be seen from outside the site and therefore are exempt from the Signs Code under section C1.4.2 of the SPP

4.2.7.3 Ground base signs

There may be ground base signs erected at access points to the solar farm. These signs will provide limited information to people involved in the operation of the solar farm such as people delivering goods and services. Ground base signs are described in the SPP as "*a freestanding sign permanently attached to the ground on its own supportive structure, but not including a pole/pylon sign or a blade sign"*. The ground base signs erected at the access points will meet the following Sign Standards as specified in Table C1.6 of the SPP.

> *Ground base signs must:*
>
> *(a) be limited to 1 ground base sign for each 20m of frontage or part thereof;*
>
> *(b) not be higher than 2.4m above the ground; and*
>
> *(c) have a supportive structure that does not project above the sign face, unless it forms a feature or is incorporated in the sign design.*

By meeting the Sign Standards for ground base signs, the signs will satisfy the applicable Acceptable Solution for Design and Siting of Signs (refer to Section C1.6.1 of the SPP) which are:

> *A1*
>
> *A sign must:*
>
> *(a) be located within the applicable zone for the relevant sign type set out in Table C1.6; and*
>
> *(b) meet the sign standards for the relevant sign type set out in Table C1.6,*
>
> *excluding for the following sign types, for which there is no Acceptable Solution:*
>
> *(i) roof sign;*

(ii) sky sign; and

(iii) billboard.

4.2.8 Parking and Sustainable Transport Code

4.2.8.1 Use Standards

Under Table C2.1 of the SPP, there is no requirement for car or bicycle parking for Utilities. Therefore, the project will meet the Acceptable Solutions for C2.5.1 (Car parking numbers), C2.5.2 (Bicycle parking numbers) and C2.5.3 (Motorcycle parking numbers) of the SPP. C2.5.4 of the SPP (Loading Bays) is not applicable as the floor area of the control building will not exceed 1000 m^2.

4.2.8.2 Development Standards for Buildings and Works

The construction of any permanent parking areas will comply with the Acceptable Solutions as provided in C2.6.1 of the SPP. These requirements are listed below:

A1

All parking, access ways, manoeuvring and circulation spaces must:

(a) be constructed with a durable all weather pavement;

(b) be drained to the public stormwater system, or contain stormwater on the site; and

(c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.

The design and layout of any permanent parking areas will comply with the Acceptable Solutions as provided in C2.6.2 of the SPP. These requirements are listed below:

A1.1

Parking, access ways, manoeuvring and circulation spaces must either:

(a) comply with the following:

(i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6;

(ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces;

(iii) have an access width not less than the requirements in Table C2.2;

(iv) have car parking space dimensions which satisfy the requirements in Table C2.3;

(v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces;

(vi) have a vertical clearance of not less than 2.1m above the parking surface level; and

(vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or

(b) comply with Australian Standard AS 2890- Parking facilities, Parts 1-6.

A1.2

Parking spaces provided for use by persons with a disability must satisfy the following:

(a) be located as close as practicable to the main entry point to the building;

(b) be incorporated into the overall car park design; and

(c) be designed and constructed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities.

How the project addresses the applicable performance criteria for the Number of Accesses for Vehicles (refer to C2.6.3 of the SPP) is provided in Table 24. There are two titles where there is more than one access for each frontage. A title on the solar farm (Volume 43382 Folio 1) has 2 access points off Soldiers Settlement Rd (SSR1 SSR2). A title traversed by the transmission line (Volume 154929 Folio 1) has 3 access points off Bridport Rd, one of which (BR1) is an existing access point.

Table 24. How the project addresses the applicable performance criteria for the Number of Accesses for Vehicles

Performance Criteria	Response
P1 The number of accesses for each frontage must be minimised, having regard to: (a) any loss of on-street parking; and (b) pedestrian safety and amenity; (c) traffic safety; (d) residential amenity on adjoining land; and (e) the impact on the streetscape.	Bridport Road and Soldiers Settlement Road do not have allocated parking sites along the street and there is little or no demand for parking. Very few pedestrians would use these road and the access points will not impact amenity. Traffic safety for the access points has been addressed in the Traffic Impact Assessment (refer to appendix K). There is no adjoining land that will be able to see the access points and the access points will have minimal impact on the streetscape.

Sections C2.6.4, C2.6.5, C2.6.6, C2.6.7, C2.6.8 and C2.7 of the SPP are not applicable to the Project.

4.2.9 Road and Railway Assets Code

During construction, the Project will result in increase traffic on the road network, but will not impact railway assets. Transport routes, traffic numbers and the likely impact of traffic for the construction and operation of the Project are provided in the Traffic Impact Assessment in Appendix K. These findings are summarised in Section 6.7. How the project addresses the Performance Criteria for C3.5.1 – Traffic generation at a vehicle crossing, level crossing or new junction is addressed in the Traffic Impact Assessment.

4.3 Summary of mitigation measures

A summary of mitigation measures from the planning section that are not covered elsewhere in the development application is provided in Table 25. Mitigation measures for landslip only apply for areas mapped as having landslip risk (refer to Figure 27).

Table 25. A summary of mitigation measures from the planning section

Reference	Mitigation Measure
P1	Cimitiere Creek and associated riparian vegetation will not form part of the panel array as shown in Figure 13.
P2	Waterway crossing on the project will be constructed in accordance with the *Wetlands and Waterways Works Manual* and the *Forest Practices Code 2020*. Where possible, construction will occur when flows are low (ie summer and autumn).
P3	If the cables cannot be trenched across Cimitiere Creek with acceptable impacts, the cables will be horizontally direct drilled under the creek or a short section of overhead line will be used (this is not the preferred option).
P4	An erosion and sediment control plan (ESCP) will be developed as part of the construction environmental management plan (CEMP) for the project. The measure implemented will be in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004). Given the large area over which construction activities will be conducted, measures should focus on limiting disturbance to vegetation cover wherever possible and re-establishing vegetation cover progressively and as soon as possible.
P5	Roads will be constructed in accordance with the *Forest Practices Code 2020*.
P6	The ground base signs erected at the access points will meet the following Sign Standards as specified in Table C1.6 of the SPP. *Ground base signs must:* *(a) be limited to 1 ground base sign for each 20m of frontage or part thereof;* *(b) not be higher than 2.4m above the ground; and* *(c) have a supportive structure that does not project above the sign face, unless it forms a feature or is incorporated in the sign design.*
P7	The construction of any permanent parking areas will comply with the following requirements: *All parking, access ways, manoeuvring and circulation spaces must:* *(a) be constructed with a durable all weather pavement;* *(b) be drained to the public stormwater system, or contain stormwater on the site; and* *(c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.*
P8	The design and layout of any permanent parking areas will comply with the following requirements: *Parking, access ways, manoeuvring and circulation spaces must either:* *(a) comply with the following:*

	(i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6; *(ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces;* *(iii) have an access width not less than the requirements in Table C2.2;* *(iv) have car parking space dimensions which satisfy the requirements in Table C2.3;* *(v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces;* *(vi) have a vertical clearance of not less than 2.1m above the parking surface level; and* *(vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or* *(b) comply with Australian Standard AS 2890- Parking facilities, Parts 1-6.* *Parking spaces provided for use by persons with a disability must satisfy the following:* *(a) be located as close as practicable to the main entry point to the building;* *(b) be incorporated into the overall car park design; and* *(c) be designed and constructed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities.*
P9	Where possible, transmission line towers will be positioned to avoid areas mapped as having landslip hazard.
P10	If the placement of transmission line towers is unable to avoid areas mapped as having landslip hazard, a subsurface investigation (boreholes and/or test pits) wil be conducted to assess the subsurface conditions and provide recommendations for footing design.
P11	Permanent excavations other than for footings (e.g., access roads) should not exceed 1m vertical height unless retained by an engineer designed retention system. Retaining walls should be designed for sloping backfill, surcharge loading and resist at-rest earth pressures. Retaining walls should also include subsoil drainage.
P12	Cut slopes and fill batters should be sloped at a maximum of 1V:3H (~18°). All batter faces should be protected against erosion (eg, by vegetation, mulch, or erosion mats). Steeper slopes will need to be retained by an engineer designed retention system.
P13	Runoff should be diverted away from the proposed transmission line towers via table drains and directed towards natural drainage gullies.

P14	Where possible, vegetation should be maintained on the slopes to prevent erosion of surface soils. Trees and shrubs taller than 3m (or likely to grow taller than 3m) in height are proposed to be removed within the transmission line corridor. Within the mapped landslip hazard areas, these trees and shrubs should be cut with the stumps and roots left in place and all other vegetation should be left undisturbed.
P15	Diversion drains, vegetation cover and retaining structures will be maintained.
P16	Good hillside construction practices should be followed as described in the document Geoguide LR8 - Hillside Construction Practice (refer to Appendix N).

5 Community and stakeholder engagement

5.1 Introduction

Sun Spot 9 appreciates that early consultation with a wide range of stakeholders is important and valuable for the project to identify and respond to any concerns and to set the scene for an open, responsive and transparent process with interested stakeholders. Broad consultation has been conducted with the community and other stakeholders. The objectives of this consultation process have been:

- To inform stakeholders about the rationale for the project, what it will look like, how it will be developed and what impact it might have on them,
- To understand from the stakeholders their interest in the project and how it may affect them,
- Provide an opportunity for stakeholders to give feedback which can then be fed back into the design and other management measures,
- To let stakeholders know about the planning process, and
- To collect information about the local environment that will inform the development of the project.

5.2 Stakeholders

Stakeholders in the project include:

- Directly Impacted Landholders
    - Private landholders
    - State Growth (Bridport Rd and East Tamar Hwy)
    - TasRail
    - George Town Council (Soldiers Settlement Rd and Musk Vale Rd)
    - Crown Land / Property Services
    - TasNetworks
- Community
    - Neighbouring landholders to the solar farm
    - Neighbouring landholders to the transmission line
    - Landholders along the transport route
    - The community of Beechford (users of Soldiers Settlement Rd)
    - The Aboriginal community
    - The George Town airport
    - The general public
- Government Authorities
    - George Town Council
    - Tippogoree Hills Mountain Bike Park (George Town Council)
    - Environmental Protection Authority
    - State Growth (Roads/Traffic)
    - Renewables, Climate and Future Industries Tasmania
    - Civil Aviation Safety Authority (CASA)
- Business
    - TasNetworks

- George Town Chamber of Commerce
- Bell Bay Advanced Manufacturing Zone
- Local suppliers

5.3 Community

The following sections describe the consultation process for the community including neighbouring landholders, the Aboriginal community, the general public, the community of Beechford and the George Town airport.

5.3.1 Neighbouring landholders

The residential landholders that are closest to the Site are shown in Figure 28. Those residences that may be impacted by the project, were initially contact by the project in September 2022. These included R1, R2, R3, R4 and R5. Two of the residents were broadly supportive of the project and another two didn't explicitly express how they felt about the project. Some residents had concerns relating to the following matters:

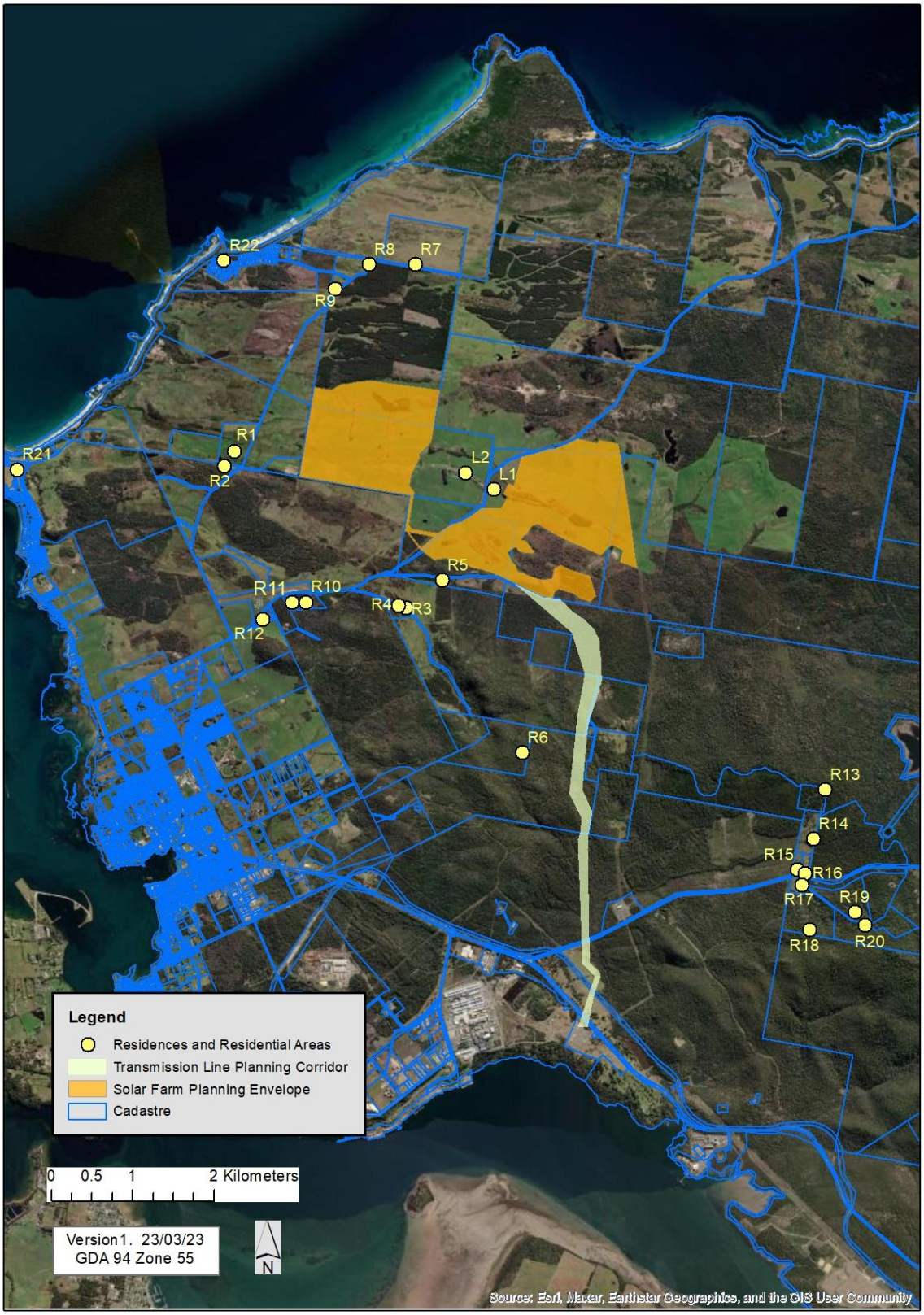
- The impact of traffic on the surface of Soldiers Settlement Rd and how this would be managed, and
- The likely visual impact.

For the two residences concerned about visual impact (R1 and R3), a photomontage was prepared to show what they would see from their house. R3 will not be able to see the solar farm due to screening by vegetation. R1 will be able to see the solar farm from their residence although the main views from the house are to the north-west, not towards the solar farm. Mitigation of visual impact at R1 is described in the visual chapter. Resident's concerns regarding the road conditions and traffic have been taken into account in the commitments listed in the traffic chapter.

Project staff have also tried to make contact with the owner of residence R6, but have not been successful to date. In addition to surrounding residences, contact has also been made with surrounding landholders that do not have residences. The titles with the following property identification number (PID) were contacted; 9297836,2705004,6467234, 2275462 and 2275470.

A brief conversation was held with the owner of the residence on the corner of North Street and the East Tamar Highway to let them know that if the project went ahead, some minor works would be required at the intersection. The landholder did not express any concerns about the proposed works.

Figure 28 Potentially sensitive receptors



5.3.2 General public

Two community consultation events have been held for the general public. The first was held at the York Cove Holiday Hotel Conference Room (near The Crazy Duck restaurant) on 17th and 18th of March 2023. This event was advertised by posting a 2-page newsletter (refer to Appendix A) to all addresses in the George Town post code and Beechford. Posters providing information on the project were on display and two members of the project team were available to discuss the project. Approximately 60 people attended over the two days. The attendees were very interested in finding out about the project and the response was overwhelmingly positive. Attendees were invited to fill out a community feedback form for the project (refer to Appendix B). Twelve people filled out the form.

The second community consultation session was held at the George Town Markets on Saturday 13th May 2023. This event was advertised on the local community radio station, Tamar FM, for two weeks prior to the event. There was also significant through traffic as everyone attending the market had to pass our display. Numerous people had a quick look at the posters as they passed the stall and asked a couple of questions. A few people (approximately 10) took greater interest in the presentation. Two people filled out the community feedback form. Most people were positive about the project but the level of engagement was not as high as the sessions held at the York Cove Holiday Hotel.

The information from the multiple-choice section of the completed forms (14 in total) has been summarised in Table 26. The written responses from the community feedback forms is provided in Table 27.

Figure 29. Community consultation session held at the George Town markets

Table 26. Responses to multiple choice questions on the community feedback form

Survey question	Possible answers to select from	Number of responses	Percentage of people selecting this answer
Q1. Which best describes where you live?	Less than 1 kilometre from the proposed project	0	0
	Between 1 and 2 kilometres from the proposed project	0	0
	Between 2 and 3 kilometres from the proposed project	2	14
	Between 3 and 4 kilometres from the proposed project	2	14
	Between 4 and 5 kilometres from the proposed project	3	21
	More than 5 kilometres from the proposed project	7	50
	Not within the George Town post code.	0	0
	No response	0	0
Survey question	**Possible answers to select from**	**Number of responses**	**Percentage of people selecting this answer**
Q2. Did you find the session informative?	Very informative	13	93
	Informative	1	7
	Somewhat informative	0	0
	Not informative	0	0
	No response	0	0
Survey question	**Possible answers to select from**	**Number of responses**	**Percentage of people selecting this answer**
Q3. Did you find out all the information you were looking for?	Yes	14	100
	Mostly	0	0
	No	0	0
	No response	0	0
Survey question	**Possible answers to select from**	**Number of responses**	**Percentage of people selecting this answer**
Q4. Now that you have attended a community consultation session, how do you feel about	Very positive	11	79
	Positive	3	21
	Neutral	0	0
	Negative	0	0
	Very negative	0	0
	No response	0	0

the proposed project?			
Survey question	**Possible answers to select from**	**Number of responses**	**Percentage of people selecting this answer**
Q5. If you have concerns about the project, what are those concerns? Circle as many as you like and add more information below if you wish.	Visual	0	
	Traffic	1	7
	Noise	0	
	Biodiversity	0	
	Aboriginal cultural heritage	0	
	Impacts on land use	3	21
	Impacts on land values	0	
	Other	1	7
	No response	9	64
Survey question	**Possible answers to select from**	**Number of responses**	**Percentage of people selecting this answer**
Q6. What do you think are the main positives about the project? Circle as many as you like and add more information below if you wish.	Renewable energy generation	14	100
	Construction and operation employment opportunities	11	79
	Provision of clean, cheap energy to maintain existing industries and attract new industries	12	86
	Economic stimulus to the local community (provision of accommodation, food and services to workers)	8	57
	Diversification of land use / income streams	5	36
	Other (please comment below).	0	0
	No response	0	0

Numbers may not add up to 100% due to rounding or, for some questions, respondents were able to select more than one response.

Note: In question 5, three people selected a single concern. Of these three people, two have said that they are very positive about the project and the third said they were positive about the project.

Table 27..Written responses in the community feedback form

Question	Responses
Q3. Did you find out all the information you were looking for? 1. Yes 2. Mostly 3. No If you didn't find out all the information you were looking for, what information was missing? Write you answer in the space below.	Nobody added any additional information
Q5. If you have concerns about the project, what are those concerns? Circle as many as you like and add more information below if you wish.	One person selected "Other" and wrote: "Ownership once project phase completed". Three people wrote "No concerns" or similar.
Q6. What do you think are the main positives about the project? Circle as many as you like and add more information below if you wish.	One person wrote: "Enhancing the George Town area – financially, employment and future development projects".
Q7. Is there anything else you would like to let us know?	There were four responses to this question: 1. Would it be possible to obtain funding to help support projects at Beechford ie. Boardwalk from bridge to beach or walking tracks??? 2. Excellent information session. Thank you. 3. Information provided on many aspects of the proposed installation. Your Reps. Darrel and Thomas very helpful and conversed in a language anyone could understand. Thank you. 4. George Town is the oldest town in Australia.

5.3.3 Beechford community

A community consultation session was also held at "The Hub" in Beechford on the Friday 12th May. The event was advertised on Beechford's Facebook site and consisted of a presentation with questions. The session was dominated by one individual who was very strongly opposed to the project. The stated reasons for his concerns included, but are not necessarily limited to, the following:

- Significant reduction in agricultural production as a result of the project.
- A reduction in agricultural inputs into the land.
- Inability to drive equipment between the rows of panels.
- The power produced is not "base-load" power and therefore has no value.
- Visual impact.
- Inadequate labour resources in the area to build the solar farm.
- Inadequate accommodation for the construction labour force.

Another person expressed concern regards the visual impact from Soldiers Settlement Rd and as a result, the project has committed to establishing a vegetation screen along section of Soldiers Settlement Road on the eastern side.

Other community members were able to ask some questions and were appreciative of the opportunity to discuss the project.

5.3.4 Aboriginal community

Consultation with the Aboriginal community was conducted by Vernon Graham who was the Aboriginal Heritage Officer for the Aboriginal Heritage Assessment. More information on the consultation can be found in Appendix C. The Aboriginal Heritage Assessment was provided to Aboriginal Heritage Tasmania for their assessment. The subsequent record of advice from Aboriginal Heritage Tasmania is provided in Appendix P.

5.3.5 George Town airport

Several phone conversations were held with the president of the George Town airport regarding the project. Information was provided on the location of infrastructure and the airport was informed of the community consultation sessions so that members could attend if they wished to do so.

5.3.6 Website

A website has been developed for the project (www.cimitiereplainssolarfarm.com.au) and has been online since May 2023.

5.4 Businesses and business groups

A meeting was held with the President of the George Town Chamber of Commerce in March 2023 to discuss the proposed solar farm. The President was very positive about the project and later gave an interview on ABC Radio Northern Tasmania.

A presentation was also provided to members of the Bell Bay Advanced Manufacturing Zone in July 2023.

Discussion have been held with Basslink. They have not expressed any issues with the location of the solar farm or the transmission line. Discussions have also been held with Zinfra/Palisade regarding the natural gas pipeline.

5.5 Government authorities

The following government authorities have been contacted regarding the project:

- Environmental protection authority
- George Town Council
- State Growth (Roads/Traffic)
- TasNetworks
- Renewables, Climate and Future Industries Tasmania
- Office of the Economic Regulator
- Minister for Energy and Renewables
- Property Services (to seek permission to conduct surveys)
- Aboriginal Heritage Tasmania

The Civil Aviation Safety Authority (CASA) has also been contacted in relation to glint and glare. Information on these communications is provided in Section 6.5.

The George Town Council has been contacted in relation to the project on several occasions to provide information on the project and to seek information from the Council. The Council was also consulted as the developer of the Tippogoree Hills mountain bike park. The route of the transmission line has been selected to minimise the impact on the trails. During the design phase, the Council will be consulted regarding pole locations and measures to limit impacts during the construction phase.

5.6 Directly impacted landholders

The titles on which the solar farm will be located are owned by the one landholder. Sun Spot 9 has an option for a long term lease of this land. The land on which the transmission line is proposed is owned by private landholders and government authorities. There has been ongoing consultation with all these landholders particularly in relation to the route of the transmission line. The government authorities include the Department of State Growth (Bridport Rd and the East Tamar Highway), TasRail, the George Town Council (Soldiers Settlement Rd and Musk Vale Rd), Property Services (Volume 139746 Folio 1 and unmade road casements) and TasNetworks (Volume 154928 Folio 1). These government authorities have provided consent for the development application to be lodged. There are three private landholders on the transmission line. Whilst consent is not required from private landholders, extensive consultation has been held with these landholders.

6 Environmental impact assessment

6.1 Aboriginal cultural heritage

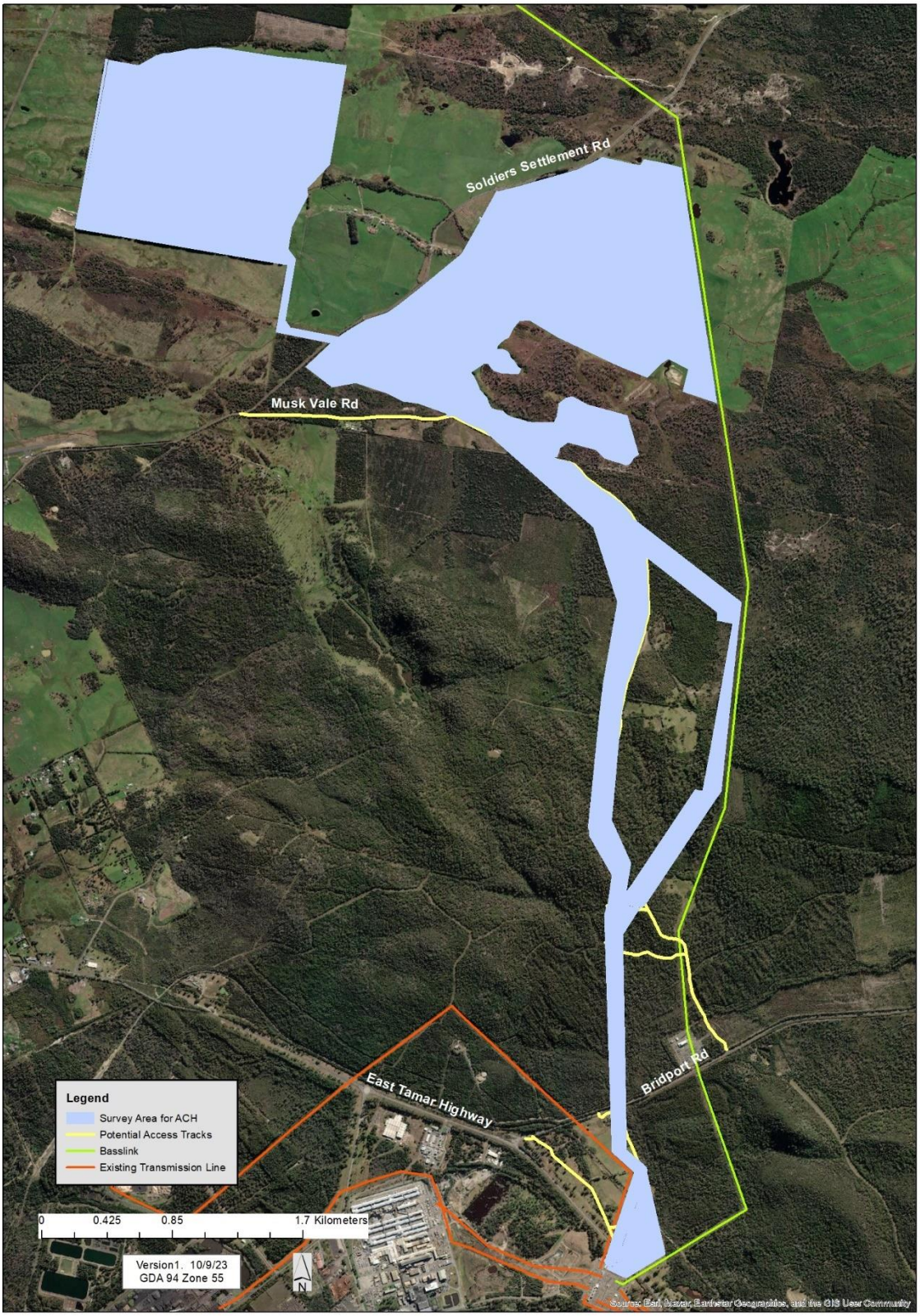
6.1.1 Overview

An Aboriginal heritage assessment for the project has been conducted by CHMA Pty Ltd and Senior Aboriginal Heritage Officer, Vernon Graham. The assessment was conducted in accordance with the *Aboriginal Heritage Act 1975* and the associated *Aboriginal Heritage Standards and Procedures (June 2018).* A comprehensive report on the assessment is provided in Appendix C. After this report had been prepared, an additional area of land in Lauriston Park was surveyed for the transmission line as it approached the George Town substation. This additional survey work was reported in an Addendum with is provided in Appendix D. The assessment reports were provided to Aboriginal Heritage Tasmania who subsequently provided their Record of Advice (AHA601) which is provided in Appendix P.

6.1.2 Existing environment

The Aboriginal heritage assessment commenced prior to the finalisation of the planning corridor for the transmission line and helped to inform the location of the transmission line corridor and associated access tracks. The study area covered two potential route options for the transmission line and a number of existing access tracks as shown in Figure 30.

Figure 30. Survey area for Aboriginal cultural heritage assessment



6.1.2.1 Methodology

The assessment took place in several stages as summarised below:

Stage 1. Background work. In December 2021 Aboriginal Heritage Tasmania (AHT) were contacted regards the project and a search request of the Aboriginal Heritage Register was submitted.

Stage 2. Field work. A field survey was undertaken by Shay Hannah (CHMA archaeologist), Vernon Graham (Senior Aboriginal Heritage Officer) and Kieran Graham (Trainee Aboriginal Heritage Officer), over a period of six days (31/8/2022 to 9/9/2022). An additional day was conducted on the 30/6/23 on the southern end of the transmission line. Any Aboriginal site identified were recorded by the team.

Stage 3. Sub-surface investigation. As part of Stage 2, one location was identified for sub-surface investigation in the form of a test pitting program. This location surrounded the site AH14118, an artefact scatter found in Stage 2. The area was assess as having an elevated potential for sub-surface Aboriginal cultural heritage deposits to be present.

Stage 4. Report preparation and consultation. The report on the assessment was prepared by Stuart Huys and Shay Hannah, in consultation with Vernon Graham. The final draft report was provided to AHT for review and comment along with all site spatial data files. A copy of the report has been provided to Vernon Graham, to assist in the Aboriginal community consultation process. The report was sent out to a range of Tasmanian Aboriginal organisations for review and comment.

6.1.2.2 Survey results

The location of Aboriginal heritage sites in and around the survey area are shown in Figure 31. These sites include previously known sites from the Aboriginal Heritage Register search and sites found during the survey. Five new sites were found during the surveys. Four of these sites were within the proposed solar farm footprint. One new site, an isolated artefact (AH14260), was found in the survey area for the transmission line routes. Of the sites within the solar farm planning envelope, one of these sites is an artefact scatter (AH14118), with the other three sites were classified as isolated artefacts (AH14120, AH14121 and AH14122). Information on the sites is provided in Table 28.

Figure 31. Known sites within and surrounding the survey area.

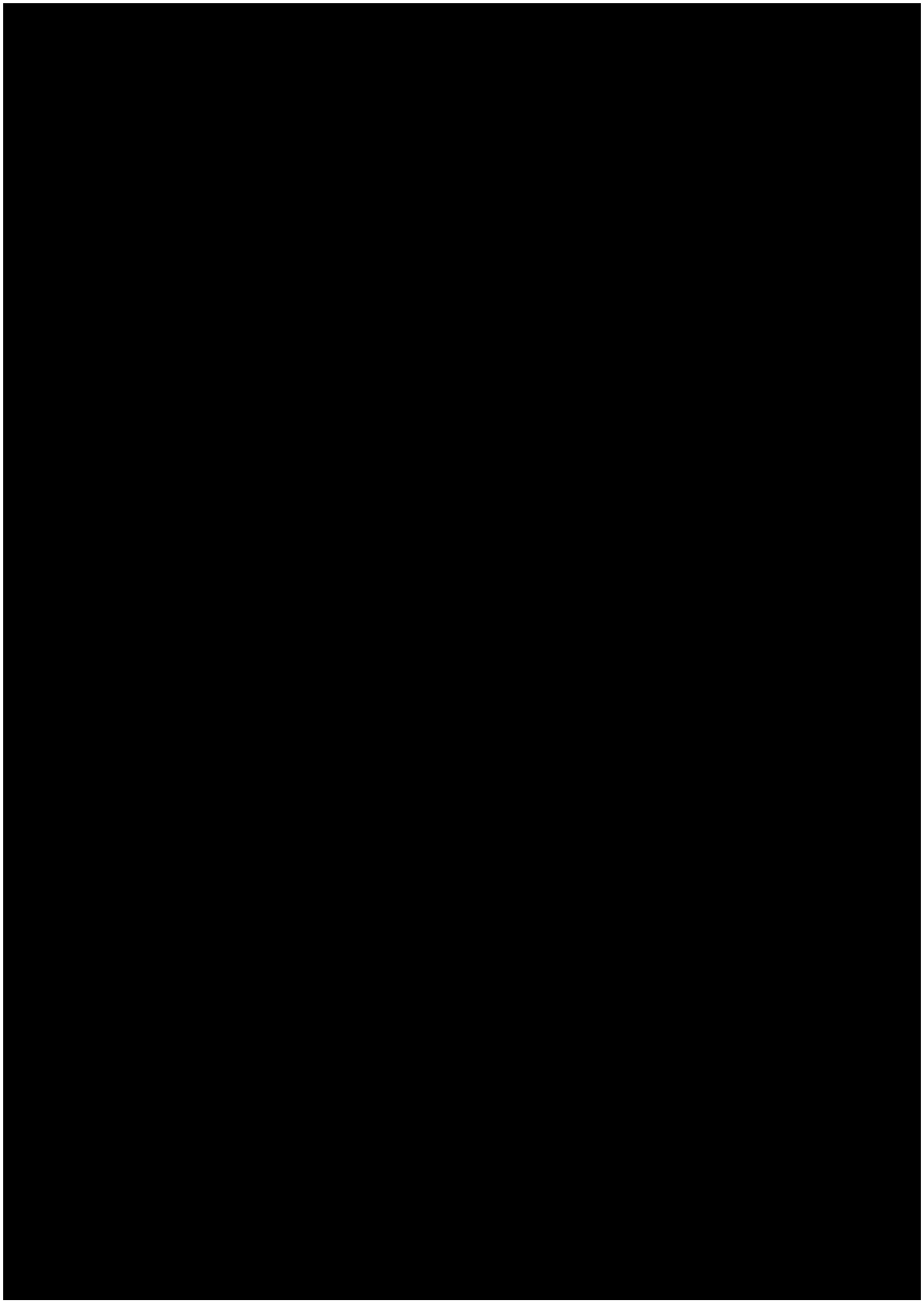


Table 28. Details of new Aboriginal heritage sites found during the surveys.

Site Name	Grid Reference	Site Type	Description
AH14118	[redacted]	Artefact scatter	Five white quartz flakes and a white quartz scraper are located on 5° slopes on both sides of a drainage ditch associated with an adjacent dam. The site has a low to medium potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14120	[redacted]	Isolated Artefact	A broken quartzite flake located on an erosion scald (bull pit) on a 5° slope amongst pasture land facing Cimitiere Creek which is 288m north. The site has a very low to low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed
AH14121	[redacted]	Isolated Artefact	A white quartz flake, located on an access track located 253m south of Cimitiere Creek. Immediately bordered by native vegetation. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14122	[redacted]	Isolated Artefact	A white quartz flake located on the 15° slope of a light grey sandy soil pile associated with the construction of a nearby dam 200m south of Cimitiere Creek. The site has a low to very low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.
AH14260	[redacted]	Isolated Artefact	One white quartz crystal flake located on a >5° slope on a cleared section above a drainage ditch. The site has a very low to low potential for additional surface or sub-surface artefacts to be present. This site has been heavily disturbed.

Coordinate system for grid references is GDA94 MGA Zone 55.

These five sites were assessed for their significance and allocated a rating. A five-tiered rating system has been adopted for the significance assessment; low, low-medium, medium, medium-high and high. The significance ratings for these sites are shown in Table 29.

Table 29. Significance ratings for new Aboriginal heritage sites found during the surveys.

Site Number	Site Type	Scientific Significance	Aesthetic Significance	Historic Significance	Social Significance
AH14118	Artefact scatter	Low-Medium	Low	N/A	Medium-High
AH14120	Isolated artefact	Low	Low	N/A	Medium-High
AH14121	Isolated artefact	Low	Low	N/A	Medium-High
AH14122	Isolated artefact	Low	Low	N/A	Medium-High
AH14260	Isolated artefact	Low	Low	N/A	Medium-High

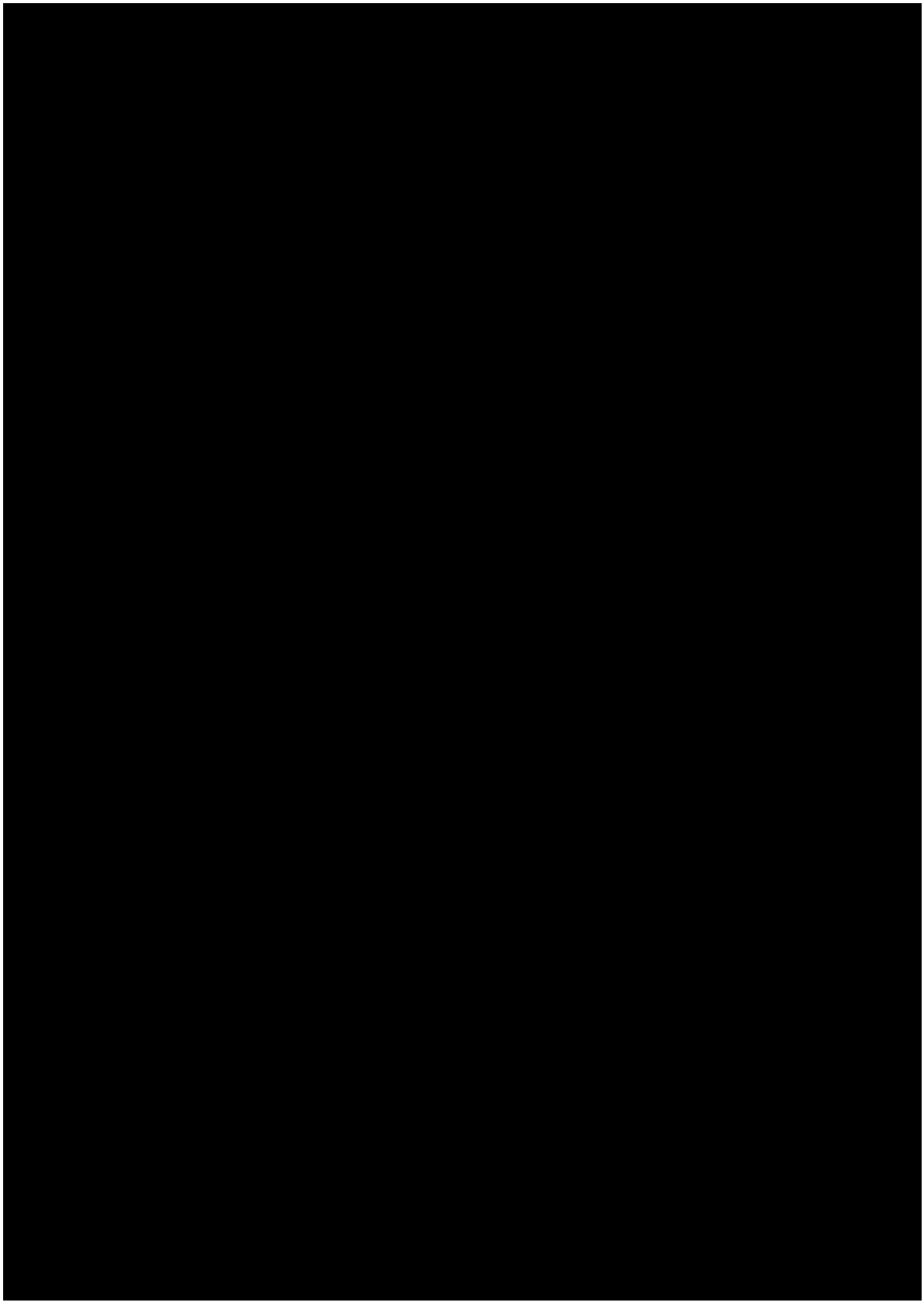
6.1.3 Assessment of impacts

The proposed planning envelope for the solar farm and transmission line is shown in Figure 32 including the proposed access tracks that are outside the envelope defined by the polygon. In defining this proposed planning envelope, some tracks that were originally going to be used for access to the transmission line have been excluded as there were sites very close to the tracks. These sites were found in previous surveys and were recorded in the Aboriginal Heritage Register. Some of these sites could not be found again during the surveys for this assessment. Given the uncertainty over the location of the site, it was determined that the best course of action was to find alternative access routes.

There are four sites within the solar farm and one site within the transmission line corridor that had been found in previous studies (AH10399). All of these sites will be avoided by the development. The artefact scatter (AH14118) is in a relatively wet area next to a dam. There will be no panels built within 5 m of this site. Prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 5m radial buffer applied. The barricading will remain in place for the duration of construction.

Two of the isolated artefacts (AH14121 and AH14122) are on the very edge of the planning envelope. The third isolated artefact (AH14120) is within the western array. Site AH10399 is also an isolated artefact and is the only known site in the planning corridor for the transmission line. This artefact is very close to the railway and there will be no poles constructed in this area. For all these isolated artefacts, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 2 m radial buffer applied. The barricading will remain in place for the duration of construction.

Figure 32. Aboriginal heritage sites within the proposed planning envelope



6.1.4 Mitigation measures

The mitigation measures for the protection of Aboriginal heritage sites are as follows:

- The location of all Aboriginal heritage sites within the planning envelope and AH14260 are to be plotted on the design plans for the Cimitiere Plains Solar Farm Project.
- For site AH14118, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 5m buffer applied to the polygon formed by the grid references supplied in Table 4 of the Aboriginal Heritage Assessment (Appendix C). The barricading will remain in place for the duration of construction.
- For sites AH14120, AH14121, AH14122 and AH10399, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 2m radial buffer applied. The barricading will remain in place for the duration of construction.
- Construction contractors will be informed of the location of all sites within the planning envelope and AH14260 and informed that these sites are not to be impacted.
- No soil disturbance works are to be carried out within the site boundaries, or within the barricaded zone of the site.
- Barricading will be removed on completion of construction works.
- If, during the course of the proposed works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Appendix C). A copy of the Unanticipated Discovery Plan will be kept on site during all ground disturbance and construction work. All construction personnel will be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

6.1.5 Summary of mitigation measures

A summary of the mitigation measures for Aboriginal cultural heritage is provided in Table 30.

Table 30. Summary of the mitigation measures for Aboriginal cultural heritage

Reference	Mitigation Measure
ACH1	The location of all Aboriginal heritage sites within the planning envelope and AH14260 are to be plotted on the design plans for the Cimitiere Plains Solar Farm Project.
ACH2	For site AH14118, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 5m radial buffer applied to the polygon formed by the grid references supplied in Table 4 of the Aboriginal Heritage Assessment (Appendix C). The barricading will remain in place for the duration of construction.
ACH3	For sites AH14120, AH14121, AH14122 and AH10399, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 2m radial buffer applied. The barricading will remain in place for the duration of construction.
ACH4	Construction contractors will be informed of the location of all sites within the planning envelope and AH14260 and informed that these sites are not to be impacted.
ACH5	No soil disturbance works are to be carried out within the site boundaries, or within the barricaded zone of the site.
ACH6	Barricading will be removed on completion of construction works.
ACH7	If, during the course of the proposed works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Appendix C). A copy of the Unanticipated Discovery Plan will be kept on site during all ground disturbance and construction work. All construction personnel will be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

6.2 Historic heritage

6.2.1 Overview

A historic heritage assessment for the project has been conducted by CHMA Pty Ltd and Senior Aboriginal Heritage Officer, Vernon Graham. A detailed report on the assessment is provided in Appendix E.

6.2.2 Existing environment

6.2.2.1 Methodology

The historic heritage assessment involved a desktop assessments and field surveys. Prior to the commencement of fieldwork, searches were conducted of a number of historic registers and databases in order to determine the extent of historic sites and features in the vicinity of the study area. Agency databases searched included:

- The Australian Heritage Database (AHD)
- Tasmanian Heritage Register (THR)
- The Register of the National Estate (RNE)
- Australian Heritage Places Inventory (AHPI)
- The National Trust (NT)
- The Tasmanian Planning Scheme
- George Town Interim Planning Scheme 2013

Detailed historical research was also undertaken to understand the historical context of the area, its growth and development from early pioneer settlement and previous investigations in the area. Resources were utilised from:

- National Library of Australia
- Trove online collections
- Tasmanian Archives
- LINC Tasmania

The field survey was undertaken by Shay Hannah (CHMA archaeologist), Vernon Graham (Senior Aboriginal Heritage Officer) and Kierrin Graham (Heritage Field Assistant). The first survey was over a period of 6 days from 31/8/22 to the 9/9/22. A second survey at the southern end of the transmission line was conducted on the 30/6/23.

The survey area was the same as that for Aboriginal cultural heritage which is shown in Figure 30.

6.2.2.2 Survey results and archaeological potential

No historic heritage sites, suspected features, or areas of elevated archaeological potential were identified during the field survey assessment of the study area. A search of the various historic heritage registers in shows that there are no registered historic sites or features located within or in the immediate vicinity of the Cimitiere Plains Solar Farm study area. The closest heritage-listed features are located around George Town and Low Head, around 3 to 4 km to the northwest and west of the study area.

The search of the historic land title records shows that shows that the study area was part of many land grants throughout the nineteenth century. The archival evidence shows that there were a few houses

constructed within some sections of the study area during this early occupation period. However, the majority of the structures shown on maps from the era are classified as huts and barns, with stockyards also mentioned. Indeed, given the variable terrain encompassed within the study area, it is assessed as being unlikely that many other dwellings were established here. Despite this, the archaeological signature of this level of historic pastoral occupation is likely to be minimal.

6.2.3 Assessment of impacts

Based on the survey findings, the absence of registered historic sites and the low potential for undetected historic heritage sites to be present, the Cimitiere Plains Solar Farm study area was assessed as being of low historic heritage sensitivity. The consulting archaeologist advised that there is a very low possibility that the proposed development will have any impact on historic heritage values.

6.2.4 Mitigation measures

It has been assessed that there is a very low potential for undetected historic heritage sites to occur within the study area. However, if, during the course of the proposed works, previously undetected heritage sites or objects are located, the processes outlined in the Unanticipated Discovery Plan will be followed (see Section 8 of Appendix E).

6.2.5 Summary of mitigation measures

A summary of the mitigation measures for historic heritage is provided in Table 31.

Table 31. Summary of the mitigation measures for historic heritage

Reference	Mitigation Measure
HH1	If, during the course of the proposed works, previously undetected heritage sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Section 8 of Appendix E)

6.3 Biodiversity

6.3.1 Overview

A natural values assessment for the project has been conducted by Enviro-Dynamics. Multiple surveys were conducted between November 2020 and July 2023. To select the transmission line route with the least impact, the initial surveys covered a very broad area and were focused on identifying vegetation communities, particularly threatened communities and likely habitat for threatened species. The area surveyed was a corridor approximately 1.5 km wide with Basslink as the eastern boundary.

Once the information on threatened communities (and Aboriginal heritage) had been obtained, the transmission line planning corridor was refined in consultation with landholders and taking into account impacts on visual amenity. Subsequent surveys were timed to target those threatened species that were likely to occur in the planning corridor. The presence of threatened communities, particularly two area of *Eucalyptus ovata* forest and woodland either side of Bridport Road had a significant influence on the route selection for the transmission line. More information on the route selection for the transmission line is provided in Section 7.

The natural values assessment provided by Enviro-Dynamics only addresses the planning envelope for the solar farm and the transmission line. The report is provided in Appendix F. Figures used in this section have been sourced from the Enviro-Dynamics report.

6.3.2 Existing environment

6.3.2.1 Vegetation communities

Eight native and seven modified vegetation communities were mapped within the study area. These communities are shown in Figure 33, Figure 34 and Figure 35.

The native vegetation communities present within the study area include:

- DAC - *Eucalyptus amygdalina* coastal forest and woodland
- DAD - *Eucalyptus amygdalina* forest and woodland on dolerite
- DOV - *Eucalyptus ovata* forest and woodland **, ǂ
- GCL - Lowland grassland complex
- GSL - Lowland grassy sedgeland
- NBA - *Acacia-Bursaria* woodland and scrub
- NME – *Melaleuca ericifolia* swamp forest **
- SHW – Wet heathland

** Denotes vegetation communities listed as threatened under the *Nature Conservation Act 2005.*

ǂ Has potential to correspond to a threatened vegetation community listed under the *Environmental Protection and Biodiversity Conservation Act 1999*, if thresholds are met.

Modified vegetation communities include:

- FAG - Agriculture land
- FPE - Permanent easements
- FPF – *Pteridium esculentum* fernland
- FPH – Hardwood plantations for silviculture
- FPS – Softwood plantations for silviculture
- FRG - Regenerating cleared land
- FUM - Extra-urban miscellaneous

A detailed description of each community can be found in Appendix F.

Figure 33. Vegetation communities within the solar farm planning envelope

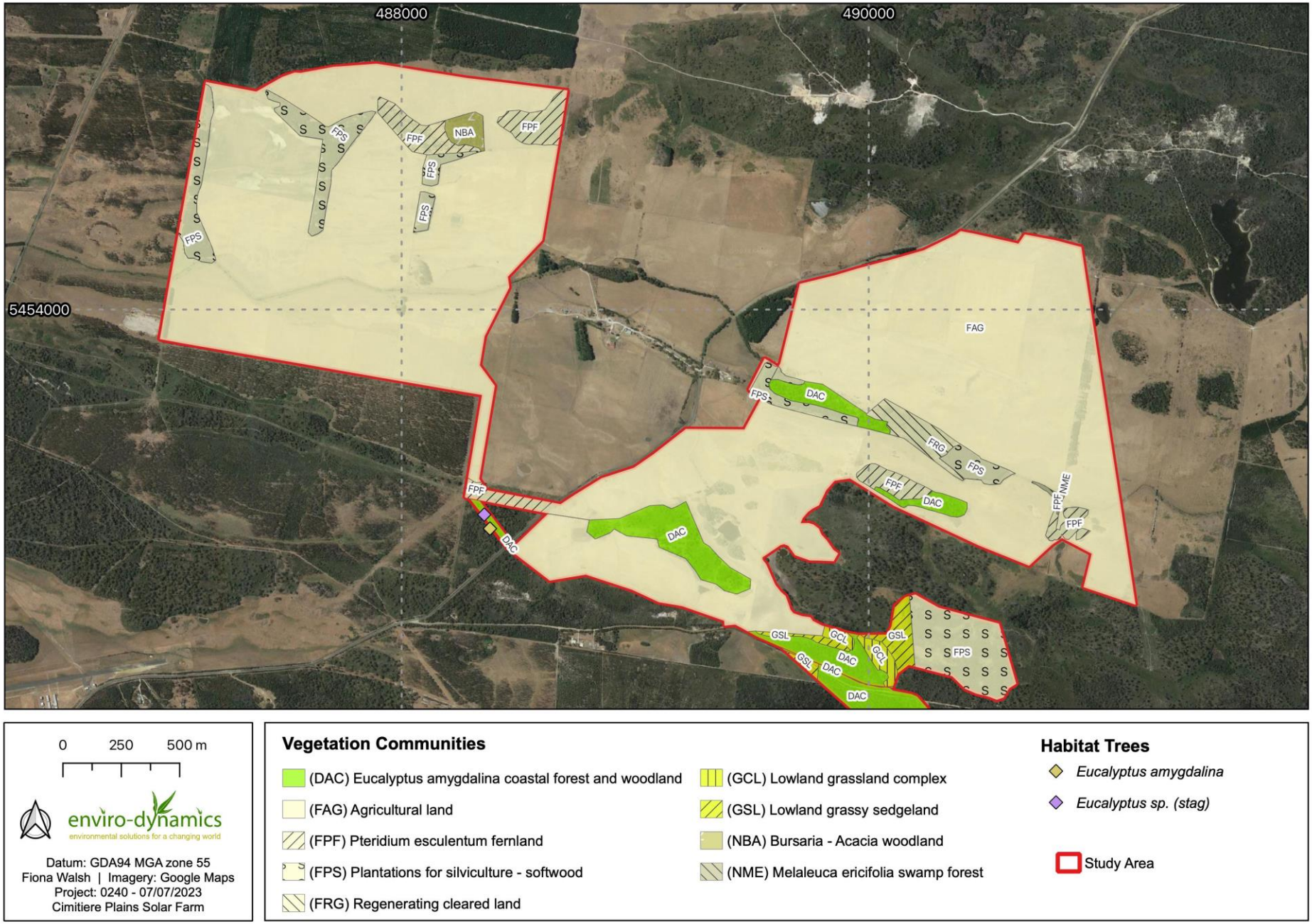


Figure 34. Vegetation communities within the northern section of the transmission line

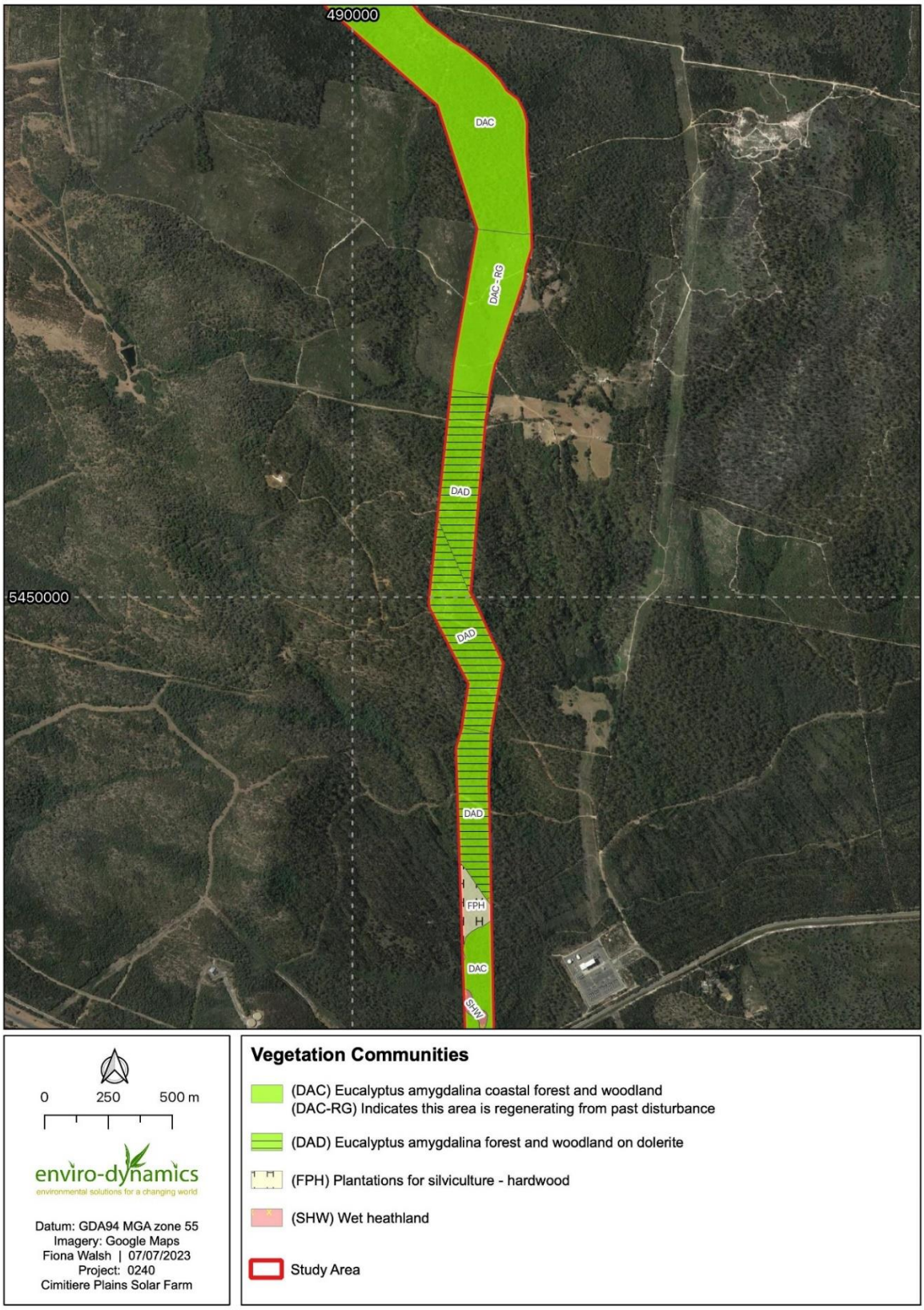


Figure 35. Vegetation communities within the southern section of the transmission line

6.3.2.2 Threatened flora

A search of the Natural Values Atlas (NVA, 2023) revealed a number of threatened flora species had been recorded within 5 km of the site, four of which have been found within 500 m of the proposed development area. These species are provided in Table 32.

Table 32. Threatened flora previously recorded within 5 km of the site.

Species	Status TSPA	Status EPBCA	Records within 500 m	Records between 500 m and 5 km
Acacia ulicifolia Juniper wattle	Rare	Not listed	1	26
Caladenia patersonii Patersons spider-orchid	Vulnerable	Not listed	1	30
Craspedia paludicola	Rare (unofficial)	Not listed	1	4
Veronica plebeia Trailing speedwell	Rare	Not listed	1	17
Aphelia gracilis Slender fanwort	Rare	Not listed	0	53
Aphelia pumilio Dwarf fanwort	Rare	Not listed	0	28
Phyllangium distylis Tiny mitrewort	Rare	Not listed	0	21
Phyllangium divergens wiry mitrewort	Vulnerable	Not listed	0	10
Pimelea flava subsp. flava Yellow riceflower	Rare	Not listed	0	750
Stylidium beaugleholei Blushing triggerplant	Rare	Not listed	0	3
Stylidium despectum Small triggerplant	Rare	Not listed	0	48
Stylidium perpusillum Tiny triggerplant	Rare	Not listed	0	3

TSPA (Threatened Species Protection Act 1995), EPBCA (Environment Protection and Biodiversity Conservation Act 1999)

Extensive preliminary surveys were conducted in the broader area to help inform the location for the proposed development, as well as targeted spring surveys for threatened flora species known from NVA observations which had suitable habitat. During these surveys one threated flora species was found within the planning envelope and several threatened flora species were identified outside of the planning envelope (and therefore will not be impacted). These recordings are shown in Figure 38 and Figure 39 together with the threatened flora records from the Natural Values Atlas.

The species within the planning envelope was *Gratiola pubescens* (refer to Figure 36). One small patch approximately 4 m^2 was recorded within a small boggy area in the proposed transmission corridor (E

490354 N 5449969). The area appeared to have been disturbed in the past and was quite wet with a reasonably thick cover of low growing scrub. *Gratiola pubescens* is an erect to procumbent perennial herb that flowers in late spring and summer. It is listed as rare under the *Threatened Species Protection Act 1995*. There were no threatened species found within the solar farm footprint.

Figure 36. Gratiola pubescens from within the proposed transmission line

Figure 37. Flowering Gratiola pubescens

Figure 38. Threatened flora records within and near the solar farm planning envelope

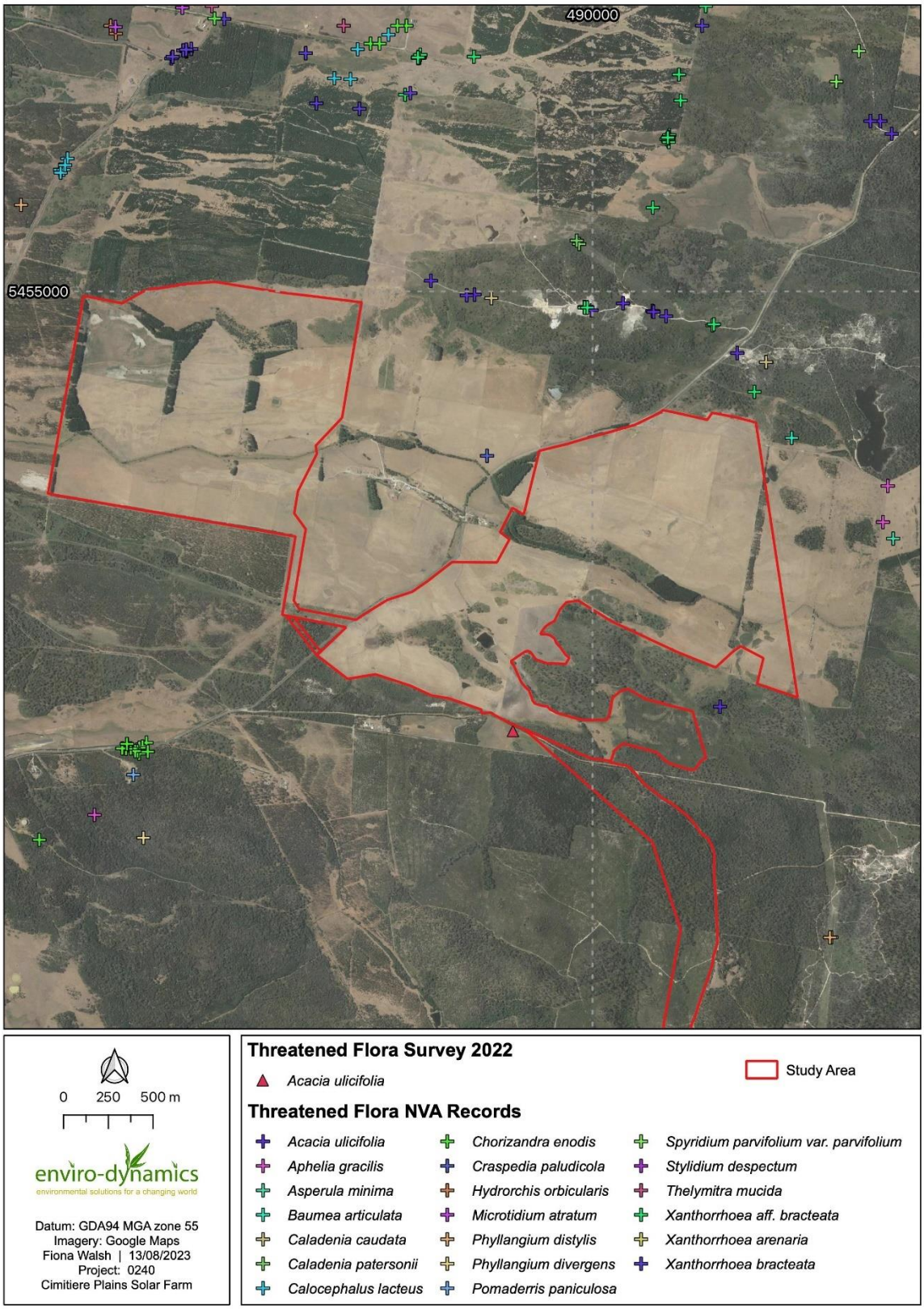
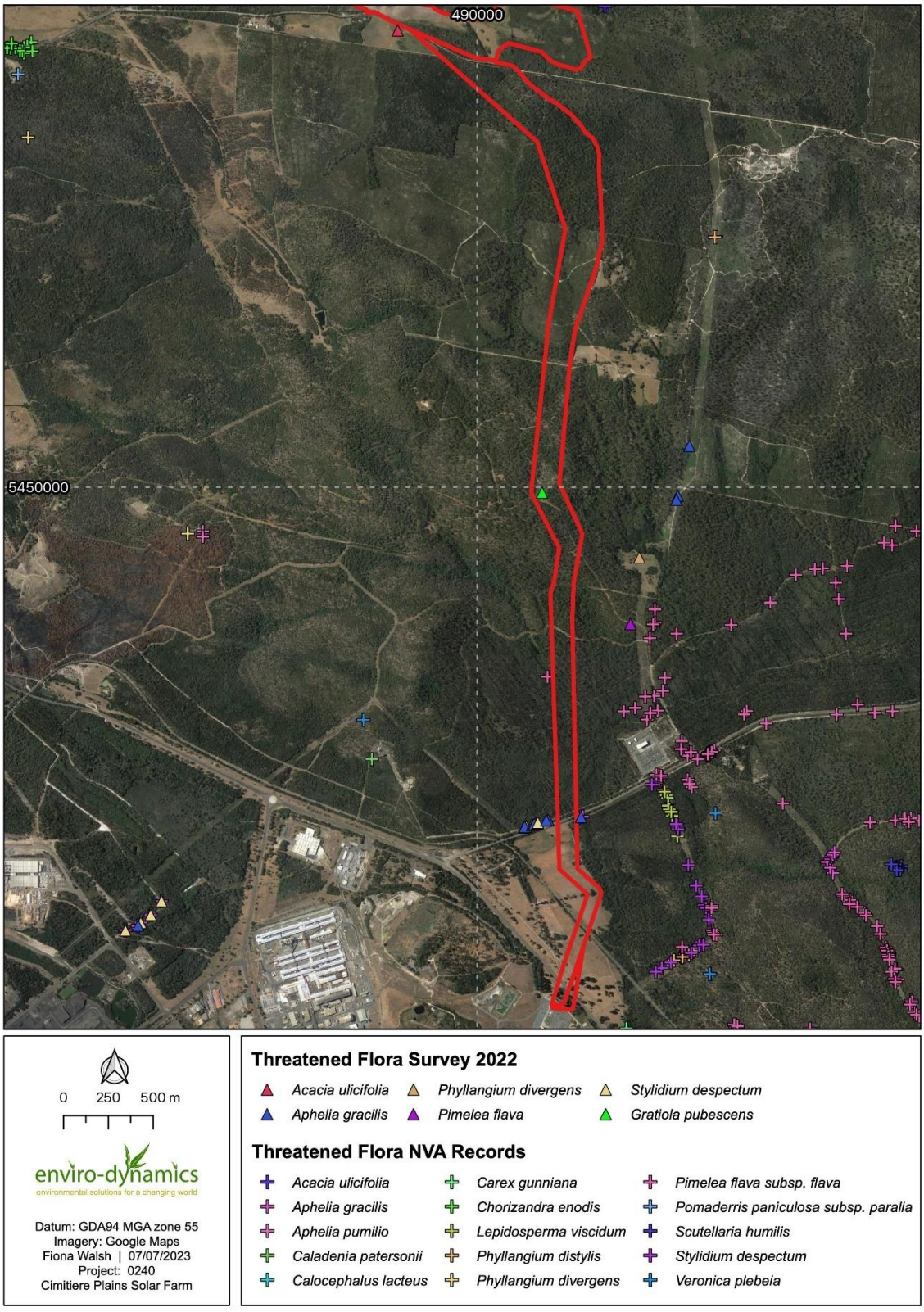


Figure 39. Threatened flora records within and near the transmission line planning envelope



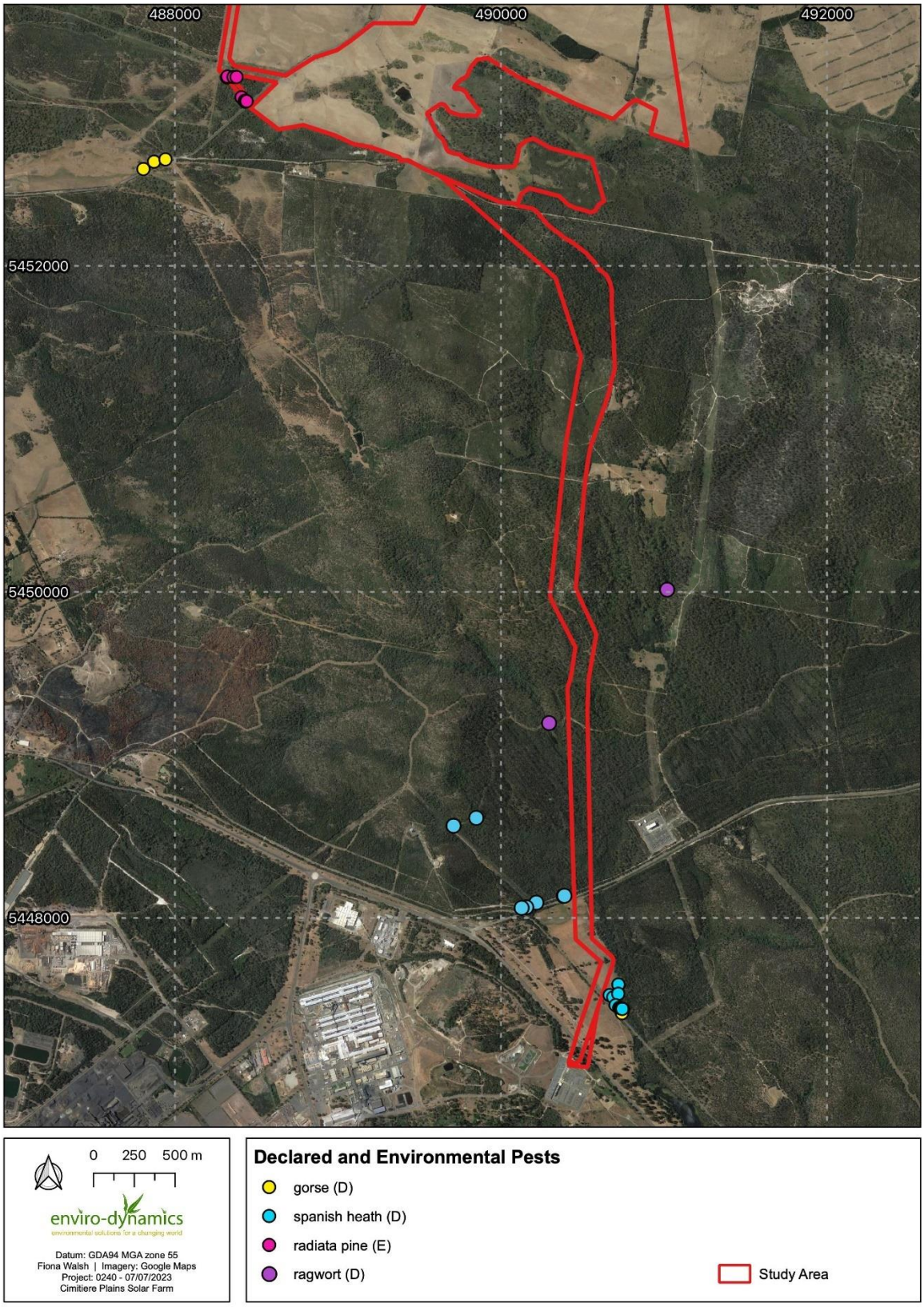
6.3.2.3 Habitat trees

One stag was recorded during the field surveys which has potential to contain hollows (Figure 33). This was found in the north in an area mapped as *Eucalyptus amygdalina* coastal forest (DAC). Due to the nature of the vegetation, there may be other large trees with hollows within the *Eucalyptus amygdalina* on dolerite (DAD) which have not been identified.

6.3.2.4 Weeds

A range of introduced species were recorded within the study area. None of these species are listed as declared pests under the Biosecurity Act 2019. Radiata pine (*Pinus radiata*) wildlings were recorded in one small section in the north of the site growing in an area of native vegetation (refer to Figure 40). This species is considered to be an environmental weed as it germinates readily within the areas surrounding plantations. Although there are no legislative requirements to eradicate or control this species, it is recommended that they be removed.

Figure 40. Weeds located within and surrounding the study area



6.3.2.5 Threatened fauna

No threatened fauna species listed under the *Threatened Species Protection Act 1995* (TSPA) or the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC) were recorded during the study. A search of the Natural Values Atlas revealed that several threatened fauna species had been recorded within 5 km of the site. These are listed in Table 33. As no evidence of threatened fauna or significant habitat was found during the preliminary surveys, targeted surveys using acoustic monitors, camera traps or spotlighting are not warranted.

Table 33. Threatened fauna records within 5 km

Species	Status TSPA	Status EPBCA	Records within 500 m	Records between 500 m and 5 km
Eagle sp.	Endangered	Endangered	1	3
Perameles gunnii Eastern barred bandicoot		Vulnerable	1	0
Sarcophilus harrisii Tasmanian devil	Endangered	Endangered	3	0
Aquila audax subsp. fleayi Wedge-tailed eagle	Endangered	Endangered	0	37
Dasyurus maculatus subsp. *maculatus* Spotted-tailed quoll	Rare	Vulnerable	0	20
Dasyurus viverrinus Eastern quoll	Endangered	Endangered	0	3
Haliaeetus leucogaster White-belled sea-eagle	Vulnerable		0	15
Hirundapus caudacutus White-throated needletail		Vulnerable	0	2
Lathamus discolor Swift parrot	Endangered	Critically Endangered	0	3
Limnodynastes peronii Striped marsh frog	Endangered		0	2
Litoria raniformis Green and gold frog	Vulnerable	Vulnerable	0	37
Tyto novaehollandiae castanops Tasmanian masked owl	Endangered		0	1

TSPA (Threatened Species Protection Act 1995), EPBCA (Environment Protection and Biodiversity Conservation Act

6.3.2.6 Threatened fauna habitat

There is wedge-tailed eagle (*Aquila audax* subsp. *fleayi*) habitat within the study area indicated by the presence to of 2 known nest sites within 1 km (refer to Figure 41). This species is listed as endangered under the TSPA and EPBCA. Tasmanian wedge-tailed eagles are sensitive to disturbance, particularly

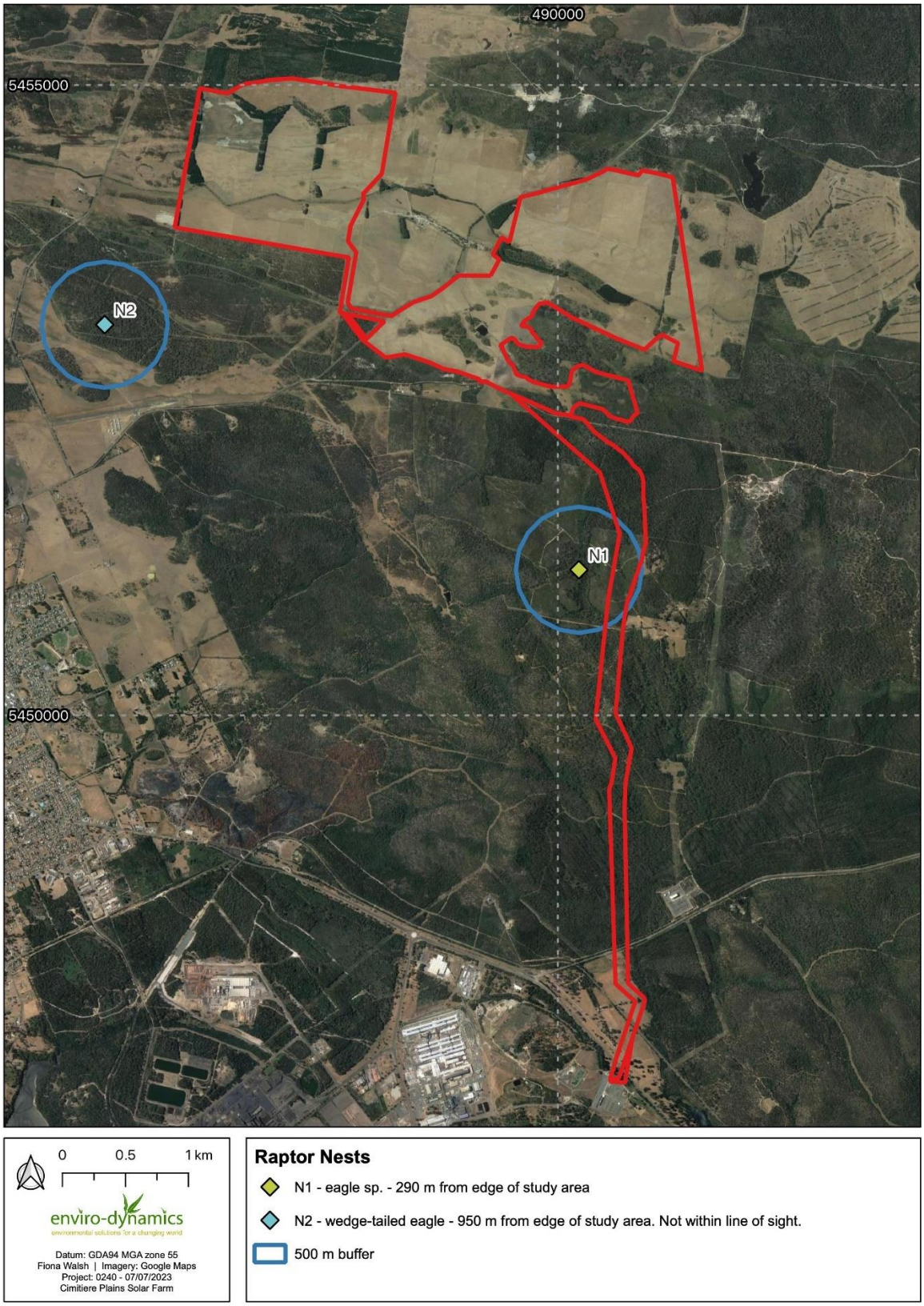
during the breeding season. Eagle management in Tasmania focuses on limiting the proximity and timing of disturbance around known nest sites.

One of the nests is located 290 m west of the transmission line (N1) with the other 950 m southwest of the solar farm (N2). N2 is within 1 km of the study area, however, is not in line of sight. N1 is within 500 m of the transmission line planning corridor.

There are historical records in the NVA (2009) of the eastern barred bandicoot within 500 m of the site. There is suitable habitat in the north, however this species is highly adaptable to modified landscapes and there would be no impacts to the long-term survival of the species.

The Tasmanian devil has also been recorded within 500m of the planning envelope. No suitable denning habitat was observed in the planning envelope, but the species may move through the site.

Figure 41. Raptor nests within the vicinity of the study area



6.3.3 Assessment of impacts

6.3.3.1 Vegetation communities

There are two small areas of listed threatened vegetation community that exists within the planning envelope; *Melaleuca ericifolia* swamp forest (NME) and *Eucalyptus ovata* forest and woodland (DOV). Both of these vegetation communities will not be impacted by the development. The impact of the project on remaining communities is provided in Table 34. The area was calculated using a 50 m easement (for a 110 kV line) on the transmission line alignment that is currently thought to be the preferred alignment. Total hectares of the communities in Tasmania and in reserves is taken from Tasmanian Reserve Estate report as of 30th June 2020. The area of DAC that will be cleared within the solar farm (9 Ha) is in a degraded condition and is currently subject to grazing by sheep and cattle.

Table 34. Impact of the project on native vegetation communities.

TASVEG Community	Area (Ha) within the planning envelope	Area (ha) anticipated to be impacted	Total area in Tasmania (Ha)	Total area reserved (Ha)
Eucalyptus amygdalina coastal forest (DAC)	53	17	149,800	79,800
Eucalyptus amygdalina forest on dolerite (DAD)	26	10	156,100	47,700
Pteridium esculentum fernland (FPF)	15	5	unknown	unknown
Lowland grassland complex (GCL)	3	<1	69,100	3,300
Lowland grassy sedgeland (GSL)	5	1	6,700	500
Bursaria – Acacia woodland (NBA)	2	<1	18,600	2,600
Wet heathland (SHW)	1	<1	26,300	16,200

Note: Impact figures in this table differ slightly from those in Appendix F where they were calculated based on a 60m easement for a 220 kV line. Since the finalisation of the Natural Values Assessment, the proponent has decided not to pursue the option of the larger 220 kV line.

6.3.3.2 Threatened flora

The small patch of *Gratiola pubescens* in the transmission line planning corridor will not be impacted. An exclusion zone will be established to prevent any accidental damage. This species thrives on disturbance, and any works occurring nearby will have no negative impact on the long-term survival of the species.

No other threatened flora species were found within the study area.

6.3.3.3 Threatened fauna

The eagle nest N1 is within 500 m of the transmission line planning corridor. There is the potential for impact if works are carried out within the breeding season and the nest is active. If works are planned to take place within breeding season (July to January inclusive) a nest activity assessment will be carried out in October of that year to determine if the nest is active. No works, including vehicle traffic, will

occur within the eagle nest buffer zone between 1st July and the completion of the nest activity assessment in October.
The ongoing maintenance of the transmission line may pose a risk of disturbing breeding eagles. Mitigation measures for eagles and other threatened fauna are described further in Section 6.3.4.

6.3.3.4 Weeds and diseases

While no declared weeds were found within the planning envelope, there are declared and environmental weeds in the surrounding area and there is potential to bring weeds and diseases onto the site on equipment, particularly earthmoving equipment. Mitigation measures are described further in Section 6.3.4.

6.3.4 Mitigation measures

The following mitigations measures will be implemented to mitigate impacts on biodiversity:

- The *Melaleuca ericifolia* swamp forest (NME) within the solar farm will not be impacted by the development. Fencing or signage will be installed so that inadvertent damage cannot occur.
- The *Eucalyptus ovata* forest (DOV) within the transmission line planning corridor will not be impacted by the development. Fencing or signage will be installed so that inadvertent damage cannot occur.
- The small area of *Gratiola pubescens* in the transmission line planning corridor will not be impacted by the development. An exclusion zone (fencing and signage) will be established around these plants.
- An eagle nest survey will be conducted prior to construction if determined necessary in consultation with NRE. If any new eagle nests are detected within 500 m or 1 km line of sight of the development proposal, an assessment of potential impacts of works on these nests will be undertaken.
- If works, including vehicle movements, are planned to take place within 500m of an eagle nest (or 1 km line of sight) during the breeding season (July to January inclusive), a nest activity assessment shall be carried out between mid-Oct and the end of December (see FPA Eagle Tech Note 1). Nest activity checks may only be performed by suitably qualified and experienced persons as approved by NRE Tasmania. No works will be permitted between 1st July and the nest activity assessment in October within 500m of the eagle nest (or 1 km line of sight). If the nest is found to be inactive in any given year by an eagle nest activity assessment, then works can take place within the eagle residency period. If nest activity is confirmed, no works are permitted within 1000 m if there is line of sight, or within 500 m if there is no line of sight during the breeding season. Alternatively, if works are proposed within the active nest eagle residency period, then a works program should be submitted for approval to the Conservation Assessments Section (Department of Natural Resources and Environment).
- The routine maintenance of easements and infrastructure that is within 500 m or 1000 m line of sight of known eagle nests (as per Natural Values Atlas records) will be undertaken outside the eagle residency period. Similarly, overhead line inspections using helicopters or drones will be conducted outside the eagle residency period (July to January inclusive). If drones are to be used to inspect poles/conductors within 3 km of an eagle nest, this work should only be performed in accordance with the FPA Eagle Tech Note 1 which includes guidelines for conducting unmanned aerial vehicle (UAV) work near eagle nests.
- Large habitat trees will be retained where practicable.

- If any dens are identified during construction, all work within 50 m will cease immediately. A qualified ecologist will be consulted in regard to management of the den before works resume.
- Weed and disease hygiene will be undertaken in accordance with the document *Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania* (DPIPWE, Stewart and Askey-Doran, 2015).
- Vegetation clearance for the transmission line will be restricted to the easement and required access tracks. Clearance and disturbance of vegetation will be minimised as much as possible.
- Sand, gravel or any other similar material will be from a source that is weed and disease free.
- Works within waterways will follow guidelines in the NRE Wetlands and Waterways Works Manual.

6.3.4.1 Summary of mitigation measures

A summary of the mitigation measures for biodiversity is provided in Table 35.

Table 35. Summary of mitigation measures for biodiversity

Reference	Mitigation Measure
B1	The *Melaleuca ericifolia* swamp forest (NME) within the solar farm will not be impacted by the development. Fencing or signage will be installed so that inadvertent damage cannot occur.
B2	The *Eucalyptus ovata* forest (DOV) within the transmission line planning corridor will not be impacted by the development. Fencing or signage will be installed so that inadvertent damage cannot occur.
B3	The small area of *Gratiola pubescens* in the transmission line planning corridor will not be impacted by the development. An exclusion zone (fencing and signage) will be established around these plants.
B4	An eagle nest survey will be conducted prior to construction if determined necessary in consultation with NRE. If any new eagle nests are detected within 500 m or 1 km line of sight of the development proposal, an assessment of potential impacts of works on these nests will be undertaken.
B5	If works, including vehicle movements, are planned to take place within 500m of an eagle nest (or 1 km line of sight) during the breeding season (July to January inclusive), a nest activity assessment shall be carried out between mid-Oct and the end of December (see FPA Eagle Tech Note 1). Nest activity checks may only be performed by suitably qualified and experienced persons as approved by NRE Tasmania. No works will be permitted between 1st July and the nest activity assessment in October within 500m of the eagle nest (or 1 km line of sight). If the nest is found to be inactive in any given year by an eagle nest activity assessment, then works can take place within the eagle residency period. If nest activity is confirmed, no works are permitted within 1000 m if there is line of sight, or within 500 m if there is no line of sight during the breeding season. Alternatively, if works are proposed within the active nest eagle residency period, then a works program should be submitted for approval to the Conservation Assessments Section (Department of Natural Resources and Environment).
B6	The routine maintenance of easements and infrastructure that is within 500 m or 1000 m line of sight of known eagle nests (as per Natural Values Atlas records) will

	be undertaken outside the eagle residency period. Similarly, overhead line inspections using helicopters or drones will be conducted outside the eagle residency period (July to January inclusive). If drones are to be used to inspect poles/conductors within 3 km of an eagle nest, this work should only be performed in accordance with the FPA Eagle Tech Note 1 which includes guidelines for conducting unmanned aerial vehicle (UAV) work near eagle nests.
B7	Large habitat trees will be retained where practicable.
B8	If any dens are identified during construction, all work within 50 m will cease immediately. A qualified ecologist will be consulted in regard to management of the den before works resume.
B9	Weed and disease hygiene will be undertaken in accordance with the document *Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania* (DPIPWE, Stewart and Askey-Doran, 2015).
B10	Vegetation clearance for the transmission line will be restricted to the easement and required access tracks. Clearance and disturbance of vegetation will be minimised as much as possible.
B11	Sand, gravel or any other similar material will be from a source that is weed and disease free.
B12	Works within waterways will follow guidelines in the NRE Wetlands and Waterways Works Manual.

6.4 Visual

6.4.1 Overview

A landscape and visual impact assessment (LVIA) for the project has been conducted by Moir Landscape Architecture. The purpose of the report is to provide a comprehensive assessment of visibility and potential visual impacts associated with the project on the landscape character, landscape amenity and any scenic vistas. A complete description of the methodology and findings can be found in Appendix G.

6.4.2 Existing environment

6.4.2.1 George Town Local Provisions Schedule

Under the George Town LPS, the Scenic Protection Code C8.0 recognises and protects landscapes that are identified as important for their scenic values. The following Scenic Protection Areas and Scenic Road Corridors are either intersected by the transmission line corridor or are located in close proximity to the project (refer to Figure 25) and must be considered when defining the scenic quality and visual impact. An evaluation of the project against these management objectives is provided in Section 6.4.3.4.

GEO-C8.1.1 Tippogoree Hills

Scenic values associated with this Scenic Protection Area include the prominent vegetated hilltops which appear in a natural state with minimal development and extensive coverage of native vegetation. The Tippogoree Hills are a prominent natural feature when viewed from the Batman Highway heading east, Bridport Road, East Tamar Highway and Dalrymple Road.

GEO-C8.1.2 Mount George and George Town Sugarloaf

Scenic values associated with this Scenic Protection Area include the prominent vegetated hilltops with minimal alterations that are extensively covered in native vegetation and form a prominent feature when viewed from Bridport Road and East Tamar Highway. These hills also form a scenic backdrop to George Town.

GEO-C8.1.3 The Buffalo

The scenic values associated with this Scenic Protection Area are the prominent vegetated hilltops with minimal alterations that are extensively covered in native vegetation and form a prominent feature when viewed from Soldiers Settlement Road and George Town.

GEO-C8.2.1 East Tamar Highway

Scenic values described for this overlay highlights the visual amenity provided by the native vegetation along the highway corridor combined with views across open farmland to the Tamar River and distant hills.

6.4.2.2 Existing landscape character

Land within the solar farm site is relatively flat to gently undulating which has been cleared for grazing. There are isolated pockets of native vegetation and plantations in places and scattered vegetation along fence lines and aligning Soldiers Settlement Road. A map of the vegetation in the area is provided in Figure 33 and Figure 34.

Cimitiere Creek runs generally east-west through the solar farm. There is both native vegetation and plantation growing along the creek on the eastern side of Soldier Settlement Rd. The land including and directly adjoining the creek line will remain undeveloped as part of the project.

Land surrounding the solar farm becomes increasingly undulating then hilly, particularly to the south where The Buffalo, George Town Sugarloaf and Mount George are key features. These features are covered in native vegetation.

The high voltage DC Basslink Interconnector runs adjacent to the eastern edge of the solar farm. The interconnector connects to the Basslink Inverter Station on Bridport Rd, then through to the George Town substation on the East Tamar Highway. Infrastructure associated with the Basslink Interconnector and other transmission lines that connect to the George Town Substation are an existing feature within the visual catchment when travelling through the area, particularly along the East Tamar Highway and Bridport Road.

To the west of the study area are the settlements of George Town and Low Head and to the south of these settlements is the Bell Bay industrial precinct including the George Town substation.

There are two areas of mountain bike trails close to the southern end of the proposed transmission line. The George Town Mountain Bike Trails are located on the southwestern facing slopes of Mount George. It is anticipated that the transmission line will not be visible from most of these trails. The Tippogoree Hills Mountain Bike Trails is located within the Tippogoree Hills. The trail head and car park are within Lauriston Park. The planning corridor for the transmission line passes over the car park.

Mount George Lookout is located to the west of the transmission line corridor. It is the highest point in the surrounding landscape, and is generally orientated to the west, north-west and allows for views of the mouth of the river and the Bass Strait. The solar farm and the transmission line will not be visible from the lookout.

6.4.3 Assessment of impacts

6.4.3.1 Residential dwellings able to see the solar farm

A zone of visual impact (ZVI) assessment was conducted for the solar farm. This assessment assumes that all vegetation and structures of any kind have been removed from the surrounding landscape and looks at which houses could possibly see the solar farm based on topography alone. The results of this assessment are shown in Figure 42 and summarised in Table 36.

Table 36. Summary of ZVI results for residential dwellings

Percentage of the solar farm that is visible from the residential dwelling	Residential dwelling
1 to 25	R6, R9
25 to 50	R1, R2, R5, R18, R19
50 to 75	
75 to 100	R3, R4, R20

Note: Does not include associated dwellings.

When existing vegetation is taken into account, the only houses anticipated to have a view to the solar farm are R1, R2, and potentially R18, R19 and R20. These residences are discussed in more detail below.

Residences R18, R19 and R20. These houses are approximately 5 km from the nearest point of the solar farm and at this distance it is anticipated that the solar farm will be hard to distinguish. R18 may have some trees that are screening views in the direction of the solar farm. Vegetation surrounding the solar farm will also reduce the visibility of the panels from that indicated by the ZVI. These three houses may also have some views to a section of the transmission line (discussed further in the section below). The closest house to the transmission line is R18 at 2.6 km. Given the distance to the transmission line and the solar farm, the visual impact for these houses has been assessed as 'low'.

Residence R1. This house sits on top a small hill on the western side of Old Aerodrome Rd. The house is positioned such that the main living areas look out to the northwest over the Tamar River and Bass Strait. Two bedrooms at the rear of the house look back towards the solar farm. The distance to the solar farm is 840 m. A photomontage of the view to the solar farm is provided in Appendix G. Without mitigation, the house was assessed as being subject to 'moderate' visual impact. After consultation with the landholder, it has been agreed that a line of trees will be planted along the top section of their driveway which will screen views to the solar farm from the house. With this mitigation in place, the house was assessed as being subject to 'low' visual impact.

Residence R2. This house is located on a north facing slope on the western side of Old Aerodrome Rd. A localised rise is located to the northeast and a shed, chook shed and tank located to the east. These elements are likely to contain views toward the Project in these directions. Due to a combination of these factors and vegetation the project is likely to be partially visible. Although views are likely to be available, they are likely to occupy a small portion of views. Consequently, the dwelling visual impact rating for this house was 'low'.

6.4.3.2 Residential dwellings able to see the transmission line

Houses that could potentially see a section of the transmission line if there was no surrounding vegetation include R3, R4, R5, R6 and R13 to R20. Given the location of existing vegetation, R3, R4, R5 and R6 won't be able to see the transmission line. It is anticipated that R15 and R16 will also not be able to see the transmission line from their house due to a combination of screening vegetation and other buildings. Residences R13, R14 and R17 to R20 may be able to see sections of the transmission line depending on the location of vegetation around their house. Any views to the proposed transmission line will be through the existing Basslink Interconnector. The distance of these houses to the transmission line varies from 2.6 km to 3.3 km. Given the distance from the houses to the proposed transmission line, the dwelling visual impact rating was assessed as 'low'.

6.4.3.3 Public viewpoints

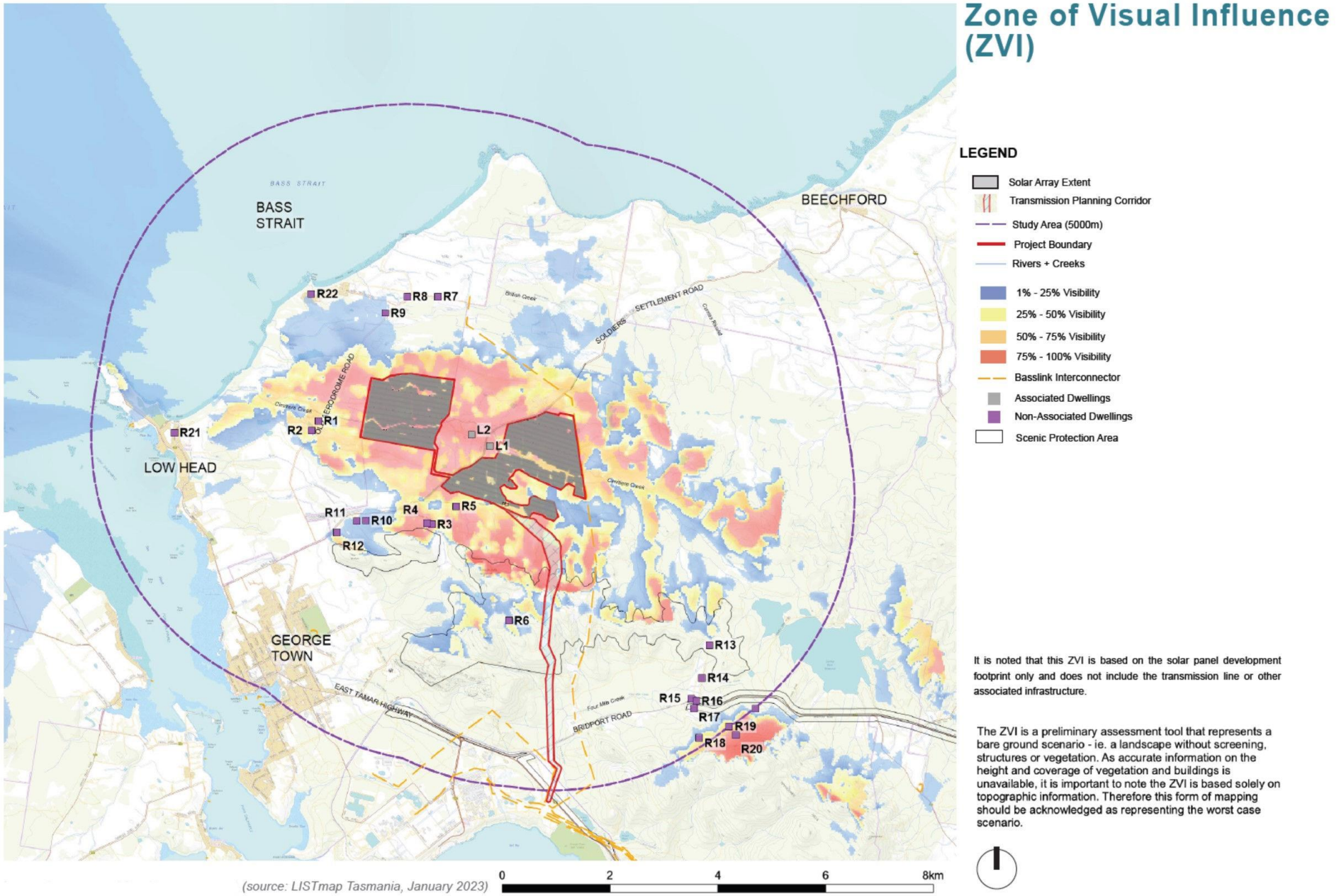
A viewpoint analysis was conducted for the project on the existing landscape character and visual amenity by selecting prominent public viewpoints. The location of these viewpoints is shown in Figure 43. A total of 18 viewpoints from publicly accessible areas were selected to be representative of the range of views within the study area. The visual sensitivity and visual magnitude of each viewpoint have been assessed which, when combined, results in an overall visual impact for the viewpoint. The results of the assessment are provided in Table 37 and give the potential visual impact both without mitigation and with mitigation (where applicable). Detailed information on each of the viewpoint assessments is provided in Appendix G.

The two main areas where the solar farm is visible are from Soldier Settlement Road and Old Aerodrome Road in the section where they pass through the Cimitiere Creek valley. The assessed visual impact for points along Soldier Settlement Rd is higher than that for Old Aerodrome Road due to the proximity of the panels on the eastern side of the Road. A single row of screening trees to a height of 4m will be planted along the eastern side of Soldier Settlement Rd as shown in Figure 45. Once planted and established, this screen will reduce the visual impact to Low. Photomontages are available in Appendix X for viewpoints VP06(PM01), VP08(PM02) and VP16(PM03).

Table 37. Public viewpoint visual impact summary

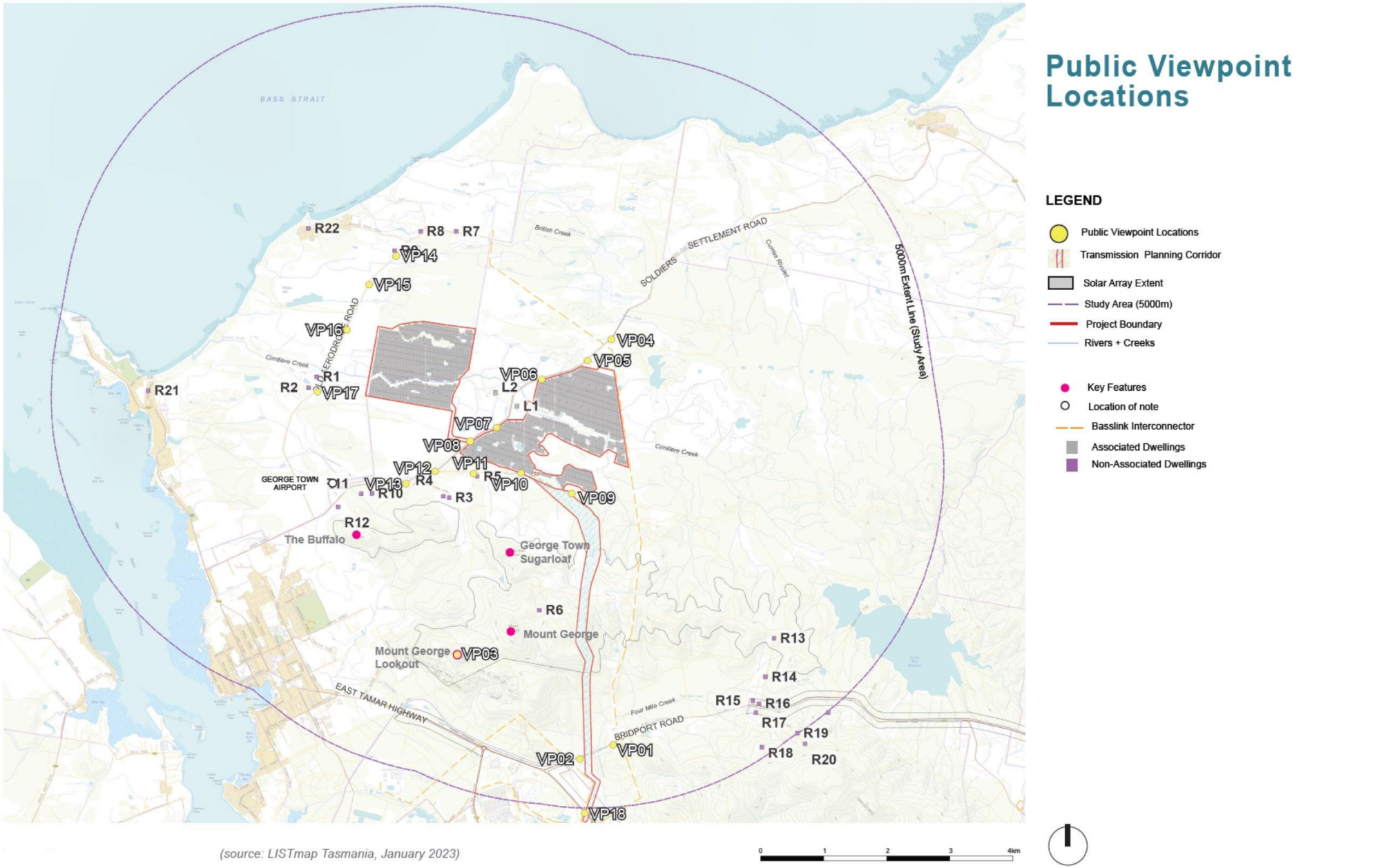
Viewpoint	Location	Visual sensitivity	Visual magnitude	Potential visual impact	Impact with mitigation
VP01	Bridport Road. (Transline)	Low	Low	Low	NA
VP02	Bridport Road. (Transline)	Low	Low	Low	NA
VP03	Mount George Lookout	High	Nil	Nil	NA
VP04	Soldiers Settlement Road	Low	Nil	Nil	NA
VP05	Soldiers Settlement Road	Low	High	Moderate	Low
VP06	Soldiers Settlement Road	Low	High	Moderate	Low
VP07	Soldiers Settlement Road	Low	High	Moderate	Low
VP08	Soldiers Settlement Road	Low	Moderate	Moderate-Low	Low
VP09	Musk Vale Road	Low	Nil	Nil	NA
VP10	Musk Vale Road	Low	Low	Low	NA
VP11	Musk Vale Road	Low	Nil	Nil	NA
VP12	Intersection of Soldiers Settlement Road and Musk Vale Road	Low	Nil	Nil	NA
VP13	Intersection of Soldiers Settlement Road and Davidsons Road	Low	Nil	Nil	NA
VP14	Old Aerodrome Road	Low	Nil	Nil	NA
VP15	Old Aerodrome Road	Low	Nil	Nil	NA
VP16	Old Aerodrome Road	Low	Low	Low	NA
VP17	Old Aerodrome Road	Low	Low	Low	NA
VP18	East Tamar Hwy (Transline)	Low	Low	Low	NA

Figure 42. Zone of visual impact for the solar farm.



Sourced from Moir Landscape Architecture

Figure 43. Public viewpoint assessment locations



(source: LISTmap Tasmania, January 2023)

6.4.3.4 Potential impacts on Scenic Protection Areas and Scenic Road Corridors

Table 38 provides an evaluation of the project against the management objectives of the scenic protection areas and scenic road corridors.

Table 38. Evaluation of the project against the management objectives of the scenic protection areas and scenic road corridors

Code	Location	Management Objectives	Evaluation
GEO-C8.1.1	Tippogoree Hills	(a) To avoid significant landscape change on skylines, hilltops, ridgelines and hill faces when viewed from the Batman Highway heading east, Bridport Road, East Tamar Highway and Dalrymple Road. (b) To locate and design development to blend with the landscape and not be obtrusive. (c) To minimise the removal of native vegetation.	The transmission line route selected avoids the Tippogoree Hills. South of the Bridport Road, the transmission line is co-located with the transmission line TL470 (the Starwood line) which is also a pole line. There will be minimal clearance of vegetation in this area as the line traverses though an open paddock with scattered paddock trees. Habitat trees and threatened communities have been avoided. The transmission line crosses both Bridport Road and the East Tamar Highway at close to right angles which helps to limit the amount of time the transmission line is visible as motorists drive along the road.
GEO-C8.1.2	Mount George and George Town Sugarloaf	a) To avoid significant landscape change on skylines, hilltops, ridgelines and hill faces when viewed from the Bridport Road and East Tamar Highway and George Town. (b) To locate and design development to blend with the landscape and not be obtrusive. (c) To minimise the removal of native vegetation.	The transmission line passes through this scenic protection area, but stays relatively low in the landscape. Consideration has been given to minimising the impact on this scenic protection area through careful alignment of the transmission line planning corridor. This is discussed in detail in section 6.4.4. The objective of the route selection process was to minimise the impact of the transmission line and easement when viewed from Bridport Road, Lauriston Park or the Tippogoree Hills. It will be possible to view some of the transmission poles for a short stretch of Bridport Road and East Tamar Highway however, transmission towers and other existing infrastructure are already an existing feature in these locations and it is likely that the transmission lines will blend into the landscape and not be obtrusive. Clearing will be minimised to the area required for the easement (50 m) and for access track should the access track need to be outside the easement.
GEO-C8.1.3	The Buffalo	(a) To avoid significant landscape change on skylines, hilltops, ridgelines and hill faces when viewed from Soldiers Settlement Road and George Town.	There will be no project infrastructure within this scenic protection area. Views to the Buffalo from Soldiers Settlement Road will include the solar array for those sections of the road through the Cimitiere Creek valley where the panels are in close proximity to the road. This will be mitigated by the planting of a tree screen as described in section 6.4.4.

		(b) To locate and design development to blend with the landscape and not be obtrusive. (c) To minimise the removal of native vegetation.	
GEO-C8.2.1	East Tamar Highway	(a) To minimise the removal of native vegetation. (b) To provide native vegetation screening for any large industrial type developments adjacent to the road. (c) To avoid the need for vegetation clearance adjacent to the highway by setting development back from the road.	The transmission line crosses the East Tamar Highway at close to right angles which helps to limit the amount of time the transmission line is visible as motorists drive along the road. It will be possible to view some of the transmission poles for a short stretch of the East Tamar Highway however, transmission towers and other existing infrastructure are already an existing feature in the location and it is likely that the transmission lines will blend into the landscape and not be obtrusive. Clearing will be minimised to the area required for the easement (50 m) and for access track should the access track need to be outside the easement. Pole locations will be set back from the road as much as practicable.

6.4.4 Mitigation measures

Measures to mitigate the landscape and visual impact of the solar farm and transmission line are described below.

6.4.4.1 Substation location

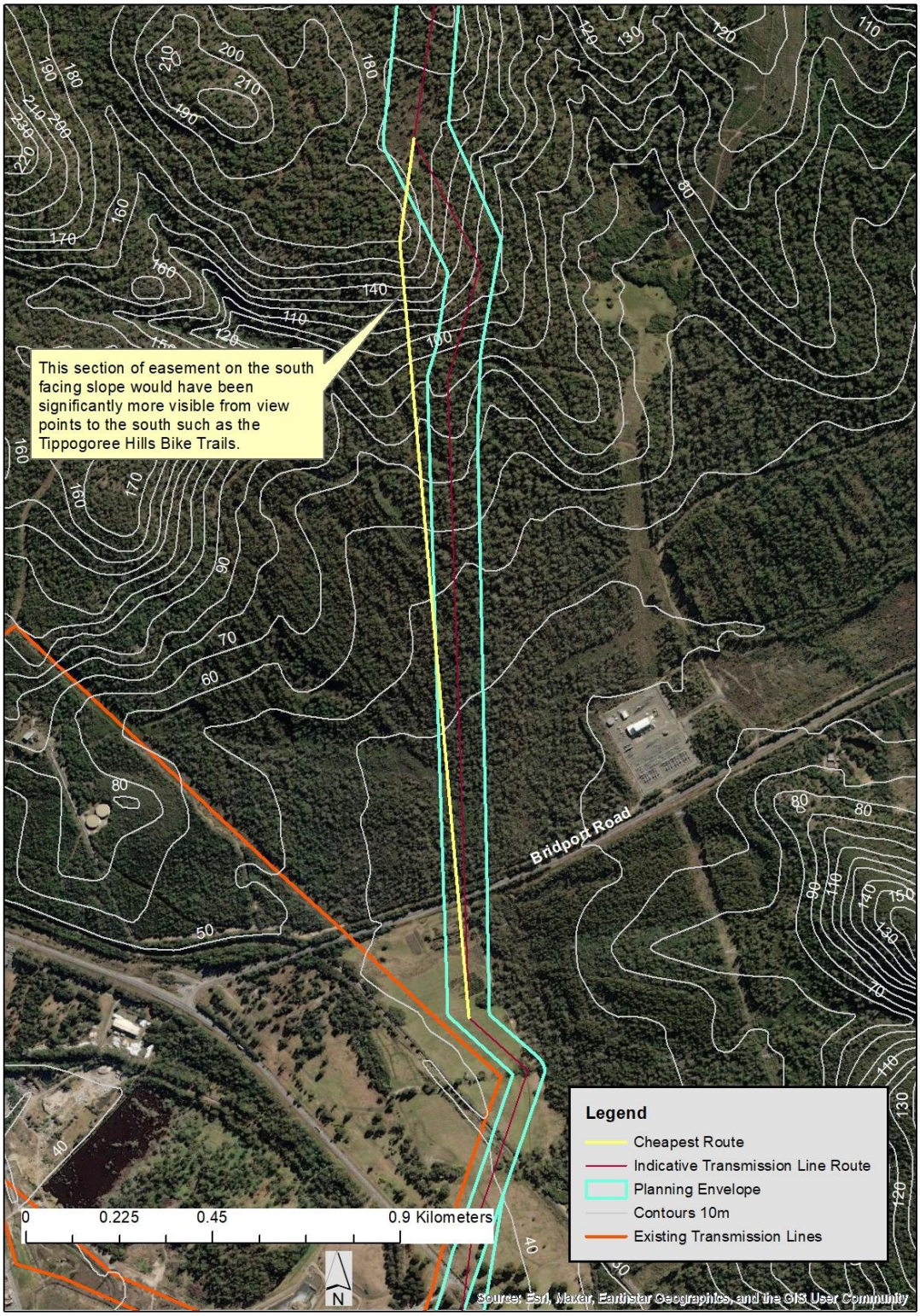
The location of the substation was chosen to minimise visual impact. Having the substation in the far southeast corner of the project meant that the substation was not visible from Soldiers Settlement Road and the transmission line did not cross Soldier Settlement Road. The start of the transmission line is approximately 1 km from the nearest point on Soldiers Settlement Road.

6.4.4.2 Transmission line route selection

Approximately 1500m north of Bridport Road, a dogleg has been placed in the transmission line to mitigate the visual impact from Bridport Road and any other viewing points to the south. Typically, the preferred design from an engineering/cost perspective would be for the transmission line to extend to the edge of the escarpment. The easement would then run directly from that point to Bridport Rd (as shown by the yellow line in Figure 44). An observer standing on Bridport Road (or from Lauriston Park), could look north along the corridor and see the cleared easement running directly up the escarpment. By installing two additional turn poles and creating the dogleg, the following benefits have been achieved:

- There will not be a pole silhouetted on the skyline.
- There will not be a cleared easement running directly up the escarpment that will be visible from Bridport Road or the Tippogoree Hill trail head.
- The southern turn pole in the dogleg will restrict the view along the easement before the easement starts to climb.
- Where the transmission line climbs the escarpment is at least partially screen behind a ridgeline with which it runs parallel.
- The dogleg means that if the line is visible from a residence or other viewing point (Tippogoree Hills Trails), it is likely that they will only be able to see a short section of the easement.

Figure 44. Transmission line design to minimise visual impact.



6.4.4.3 Vegetation screening

Vegetation screening will be planted along Soldier Settlement Rd as shown in Figure 45 to help screen views to the solar farm where the panels are in close proximity to the road. This will be a single line of trees planted at relatively close density to a height of 4m. A single line of trees has been chosen so that grass and other vegetation on either side of the trees can be easily managed to prevent accumulation of flammable material. Where existing vegetation already exists, this vegetation will be retained and the gaps filled with a single line of trees.

A vegetation screen will also be planted at residence R1 as shown in Figure 46. This will be a single line of trees along the driveway that will eventually grow to a height of 6 m or more. These trees and the trees along Soldiers Settlement Rd will be planted as soon as the season permits once construction has commenced. They will be watered and maintained until they are fully established. Trees that die will be replaced.

Figure 45. Location of vegetation screening along Soldiers Settlement Road

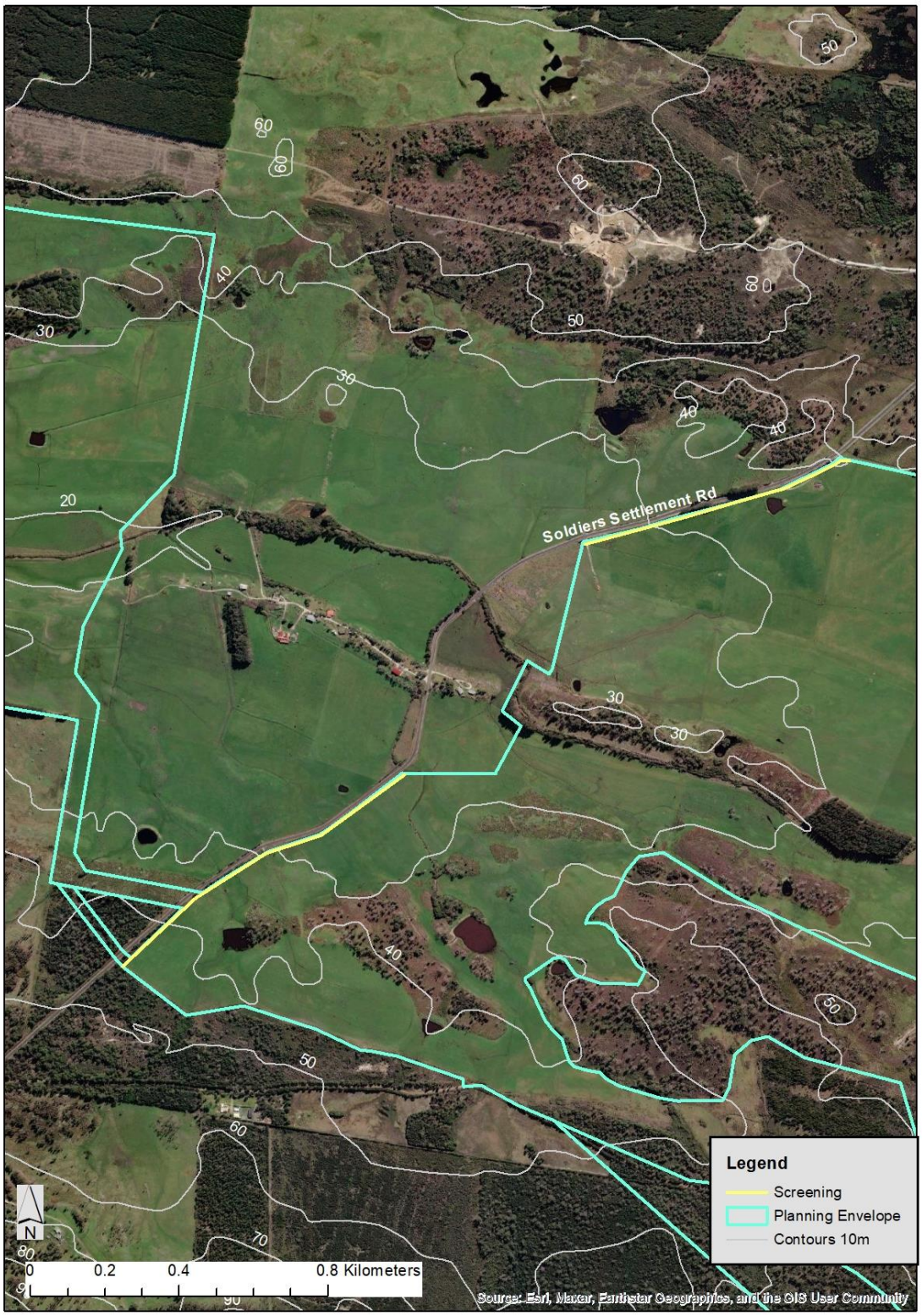


Figure 46. Location of vegetation screening at Residence R1

6.4.4.4 Pole location and reflectivity

Pole locations will be set back from the East Tamar Highway and Bridport Road as much as reasonably practicable. If galvanised poles are used for the transmission line the galvanising will be treated to "dull" the reflectivity of the poles.

6.4.4.5 Summary of mitigation measures

A summary of the mitigation measures for landscape and visual impact is provided in Table 39.

Table 39. Summary of mitigation measures for landscape and visual impact

Reference	Mitigation Measure
V1	Vegetation screening will be planted along Soldier Settlement Rd as shown in Figure 45 to help screen views to the solar farm where the panels are in close proximity to the road. This will be a single line of trees planted at relatively close density to a height of 4m.
V2	A vegetation screen will also be planted at residence R1 as shown in Figure 46. This will be a single line of trees along the driveway that will eventually grow to a height of 6 m or more.
V3	Vegetation screens will be planted as soon as the season permits once construction has commenced. They will be watered and maintained until they are fully established. Trees that die will be replaced.
V4	If galvanised poles are used for the transmission line the galvanising will be treated to “dull” the reflectivity of the poles.
V5	Pole locations will be set back from the East Tamar Highway and Bridport Road as much as reasonably practicable.

6.5 Glint and glare

6.5.1 Overview

Glint and glare can be defined as follows:

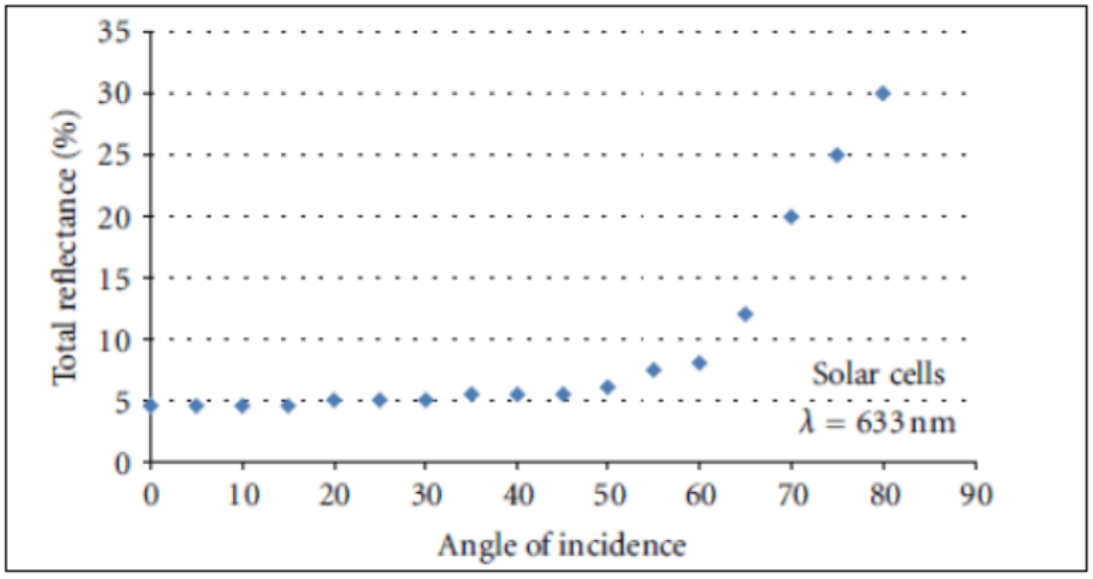
- Glint – a momentary flash of bright light typically received by moving receptors or from moving reflectors.
- Glare – a continuous source of bright light typically received by static receptors or from large reflective surfaces.

The term 'solar reflection' can be used to refer to both reflection types.

Solar panels are designed to absorb the sun's energy and directly convert it to electricity. The total reflectance (%) from solar panels varies from approximately 5% to 30% depending on the angle of incidence to the sun (refer to Figure 47). Total reflectance for solar panels remains below 10% in the range from 0 to 60 degrees angle of incidence.

When solar panels are used on tracking systems such as single axis tracking, for most of the day, the panels face towards the sun and consequently the incidence angle and total reflectance will be very low (approximately 5%). This level of reflectance compares very favourably with other surfaces as shown in Table 40. Even when the angle of incidence to the solar panel is around 80 degrees, the reflected energy percentage is similar to bare soil and less than vegetation. An important comparison in this table is the reflectivity compared to water which will produce a reflection of very similar intensity when compared to that from a solar panel (although panels have the advantage in that they can track the sun and thereby reduce the angle of incidence, whereas a water body cannot).

Figure 47. Total reflectance from solar panels (%) when compared to the angle of incidence



(Source: Riley and Olson 2011)

Table 40. Relative reflectivity of various surfaces

Surface	Approximate Percentage of Light Reflected
Snow	80
White concrete	77
Bare aluminium	74
Vegetation	50
Bare soil	30
Wood shingle	17
Water	5
Solar panels	5
Black asphalt	2

Source: (FAA 2018).

6.5.1.1 Solar panel backtracking

The likelihood of reflectance occurring increases early in the morning and late in the evening as a result of a management measure known as solar panel backtracking. This means that early in the morning and late in the evening, the panels will not be directed exactly towards the sun, as the loss from shading of the panels (caused by facing the sun directly when the sun is low in the horizon), would be greater than the loss from lowering the panels to a less direct angle in order to avoid the shading. This is shown in Figure 48. Later in the day, the panels can be directed towards the Sun without any shading issues as shown in Figure 49. Shading not only causes a loss of productivity but also has adverse impact on power quality.

Figure 48. Shading considerations

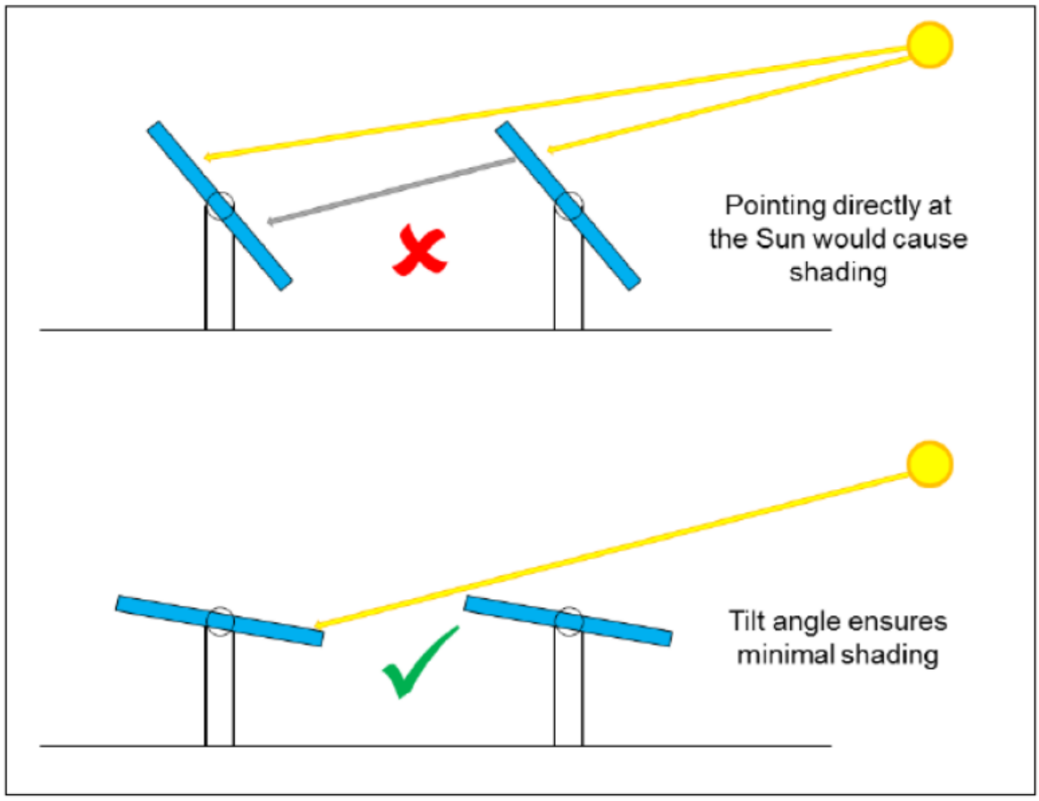
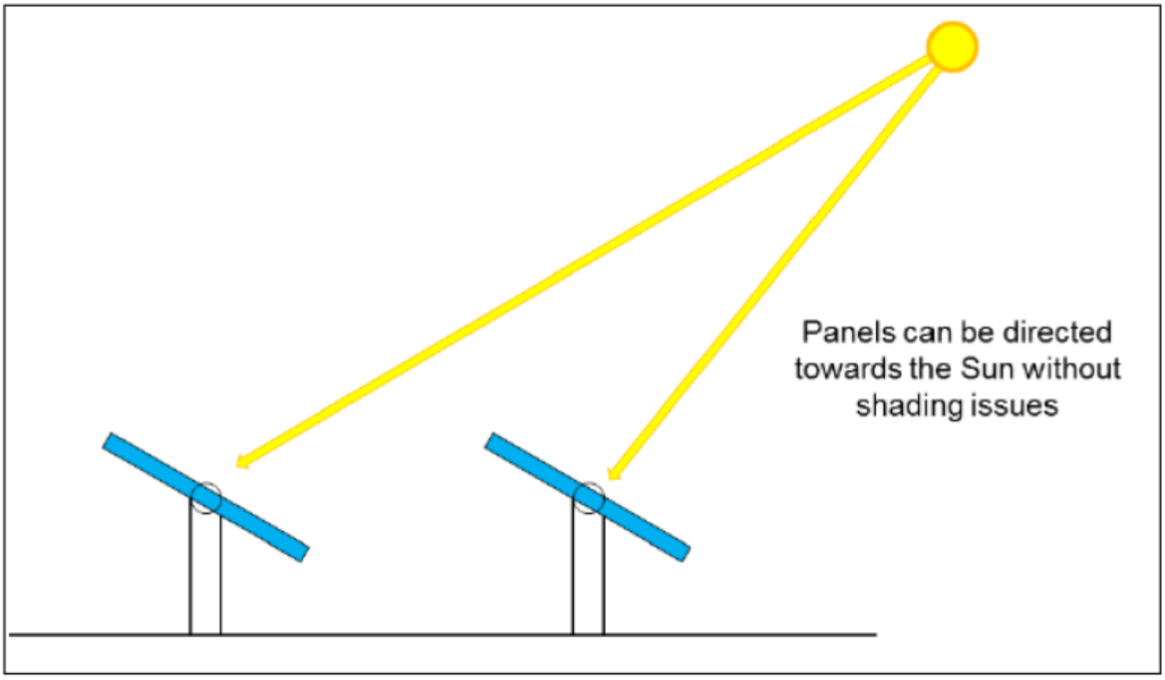


Figure 49. Panel alignment at high solar angles



6.5.2 Assessment of impacts

An assessment of glint and glare from the solar farm has been undertaken by Pager Power and is provided in Appendix H. Pager Power has undertaken over 1,100 glint and glare and the studies have included assessment of civil and military aerodromes, railway infrastructure and other ground-based receptors including roads and dwellings.

6.5.2.1 Methodology

The methodology for a glint and glare assessments is as follows:

- Identify receptors in the area surrounding the solar development.
- Consider direct solar reflections from the solar development towards the identified receptors by undertaking geometric calculations and intensity calculations where required.
- Consider the visibility of the panels from the receptor's location. If the panels are not visible from the receptor then no reflection can occur.
- Based on the results of the geometric calculations, determine whether a reflection can occur, and if so, at what time it will occur.
- Assess the glare intensity if applicable.
- Consider both the solar reflection from the solar development and the location of the direct sunlight with respect to the receptor's position.
- Consider the solar reflection with respect to the published studies and guidance.
- Determine whether a significant detrimental impact is expected.

The result is a chart that states whether a reflection can occur, the duration and the panels that can produce the solar reflection towards the receptor.

The model used to determine the level of glare is called the Solar Glare Hazard Analysis Tool (SGHAT) which is owned by Forge Solar. It should be noted that this model overestimates the level of glare produced by backtracking operations. The model utilises a simplified model of backtracking which assumes panels instantaneously revert to the resting angle (horizontal to the ground) whenever the sun is outside the rotation range. This is not what occurs in practice where panels gradually revert to the resting angle.

6.5.2.2 Impacts on roads

The modelling has shown that solar reflections are geometrically possible (ie. assumes the complete absence of vegetation in the landscape) towards a 1.3km section and a 1.1km section of Soldiers Settlement Road (refer to Figure 50). No significant impacts are predicted on any of the modelled road sections, because where solar reflections are geometrically possible, there are significant mitigating factors such as:

- Solar reflections are geometrically possible from panels outside of a road user's primary horizontal field of view (50 degrees either side of the direction of travel);
- Significant screening such that views of reflecting panels are not expected to be possible in practice;
- Screening such that reflections will be filtered and only marginal/fleeting views of reflecting panels are expected to be possible;
- Reflections coinciding with direct sunlight;

- Significant clearance distance between road user and closest reflecting panel.

Figure 50. Sections of Soldiers Settlement road (shown in orange) from which solar reflections are geometrically possible.

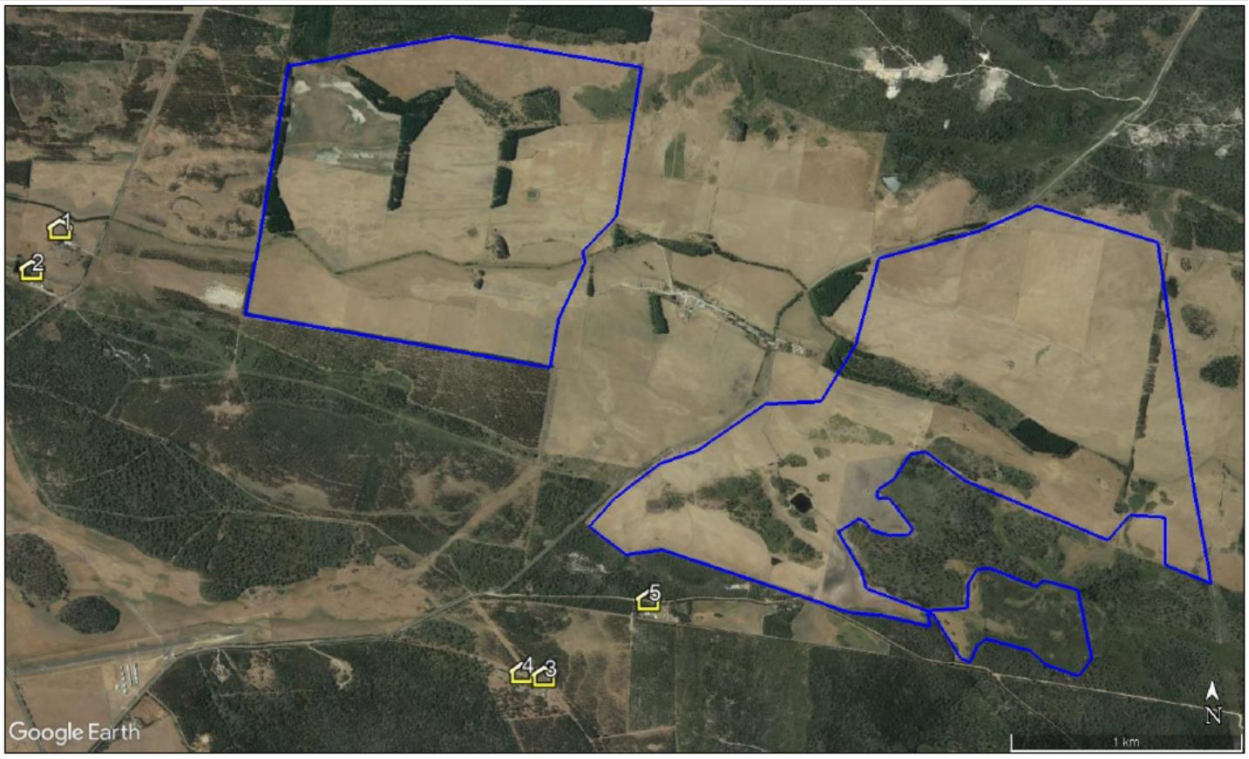
6.5.2.3 Impacts on dwellings

The modelling has shown that solar reflections are geometrically possible towards five dwelling locations (refer to Figure 51.

No significant impacts are predicted on the assessed dwellings, because where solar reflections are geometrically possible, there are significant mitigating factors such as:

- Significant screening such that views of reflecting panels are not expected to be possible in practice;
- Screening such that reflections will be filtered and only marginal views of reflecting panels are expected to be possible;
- Reflections coinciding with direct sunlight;
- Significant clearance distance between dwelling observer and closest reflecting panel.

Figure 51. Dwellings towards which solar reflections are geometrically possible.



6.5.2.4 Impacts on George Town airport

The Civil Aviation Safety Authority (CASA) were consulted with regards to the proposed development. Their response was as follows:

"As we currently do not have any guidance material of our own at this point in time, CASA applies the United States FAA guidelines with regard to solar panel installations near or on airports. They recently updated their guidance to state that the glare from solar panels is insufficient to be a hazard to aircraft on approach or departure from an airport. Their primary focus is now on solar installations near airports with Air Traffic Control Towers (ATCT). Glare from solar panels can prevent the air traffic controllers from seeing aircraft in the circuit area at the airport which can result in a hazardous situation. Airservices controlled ATCT are usually limited to the larger airports such as Hobart and Launceston etc.

As Georgetown does not have an Air Traffic Control Tower, CASA does not consider the solar installation near Georgetown Airport, as proposed in your email below to be a hazard to aircraft operations and we have no objection to the proposal as presented."

A copy of the email is provided in Appendix I.

6.5.3 Mitigation measures

The mitigation measures for glint and glare is the vegetation screening that has previously been described in Section 6.4.4.3 and summarised in Section 6.4.4.5. That is:

- Vegetation screening will be planted along Soldier Settlement Rd as shown in Figure 45 to help screen views to the solar farm where the panels are in close proximity to the road. This will be a single line of trees planted at relatively close density to a height of 4m.
- A vegetation screen will also be planted at residence R1 as shown in Figure 46. This will be a single line of trees along the driveway that will eventually grow to a height of 6 m or more.

6.6 Noise

6.6.1 Overview

In a solar farm, noise is generated primarily by the inverters in the PCUs. A relatively small amount of noise is also generated by the electric motors that drive the single axis trackers. The inverters generate noise during the day when they are under load and produce significantly less noise at night. Similarly, the tracking motors do not operate from dusk to dawn.

Noise will also be generated during the construction of the solar farm, both at the site and along the transport route. All significant noise generating construction activities will be limited to the following construction hours:

- Monday to Friday 7 am to 6 pm
- Saturday 8 am to 6 pm
- Sunday and Public Holidays 10 am to 6 pm

These hours of use have been adopted from the Tasmanian EPA Noise Regulations for mobile machinery, forklift trucks and industrial motor vehicles.

Where low intensity construction activities are required to be undertaken outside standard construction hours, such as cabling, minor assembly, use of hand tools etc, they will be managed such that they are not audible at any residential receivers.

A noise impact assessment for the project has been conducted by Muller Acoustic Consulting and details of the assessment can be found in Appendix J. The assessment was conducted in accordance with the following regulations, policies, standards and guidelines:

- *Environmental Management and Pollution Control (Noise) Regulations 2016*.
- Tasmanian Department of Environment, Parks, Heritage and the Arts – *Environmental Protection Policy (Noise)*, May 2009.
- World Health Organisation publication, *Guidelines for Community Noise* (Berglund B, Lindvall T and Schwela D H, 1999).
- Tasmanian Department of State Growth (DSG), *Tasmanian State Road Traffic Noise Management Guidelines 2015*.
- Australian Standard AS 1055:2018 - *Acoustics - Description and measurement of environmental noise - General Procedures.*
- Australian Standard AS 2436:2010 - *Guide to noise and vibration control on construction, demolition and maintenance sites.*
- International Standard ISO 9613:1996 - *Acoustics - Attenuation of sound during propagation outdoors*. British Standards Institution BS 7385: Part 2-1993 (BS7385.2:1993) - *Evaluation and Measurement for Vibration in Buildings — Part 2 – Guide to Damage Levels from Groundborne Vibration, 1993*.

6.6.2 Existing environment

6.6.2.1 Potentially sensitive receivers

Potentially sensitive receivers that may be affected by noise from construction and operation of the solar farm are shown in Table 41 and Figure 28. The residences labelled L1 and L2 are residences that are associated with the project and have not been included in the assessment. The closest house to the development is R5 on Musk Vale Rd which is approximately 260m from the solar farm boundary. The points R21 and R22 were used to represent the communities of Low Head and Bellbouy Beach respectively.

Table 41. Potentially sensitive receivers

Receiver	Description	Receiver Type	Coordinates (GDA94/MGA55)	
			Easting	Northing
L01	382 Soldiers Settlement Road	Project Related	489371	5453709
L02	381 Soldiers Settlement Road	Project Related	489026	5453917
R01	259 Old Aerodrome Road	Rural Residential	489371	5453709
R02	229 Old Aerodrome Road	Rural Residential	489026	5453917
R03	160 Soldiers Settlement Road	Rural Residential	486183	5454173
R04	160 Soldiers Settlement Road	Rural Residential	486058	5453999
R05	70 Musk Vale Road	Rural Residential	488290	5452257
R06	Unknown Address	Rural Residential	488199	5452279
R07	599 Old Aerodrome Road	Rural Residential	488738	5452592
R08	549 Old Aerodrome Road	Rural Residential	489724	5450470
R09	489 Old Aerodrome Road	Rural Residential	488404	5456479
R10	106 Soldiers Settlement Road	Rural Residential	487836	5456480
R11	90 Soldiers Settlement Road	Rural Residential	487425	5456176
R12	40 Soldiers Settlement Road	Rural Residential	487064	5452325
R13	6524 Bridport Road	Rural Residential	486894	5452320
R14	6538 Bridport Road	Rural Residential	486525	5452108
R15	6542 Bridport Road	Rural Residential	493445	5450020
R16	6528 Bridport Road	Rural Residential	493308	5449409
R17	6533 Bridport Road	Rural Residential	493107	5449029
R18	10 Aitkins Road	Rural Residential	493204	5448982
R19	9 Aitkins Road	Rural Residential	493159	5448839
R20	11 Aitkins Road	Rural Residential	493253	5448295
R21	Low Head	Residential	483505	5453954
R22	BelBouy Beach	Residential	468051	5456528

Note 1: Project related receivers not included in assessment.

6.6.3 Assessment of impacts

6.6.3.1 Noise policy and guidelines

There are currently no specific operational noise criteria for solar farms in Tasmania. A noise goal of 40 dB(A) outside a sensitive receptor has been adopted for the operation of the solar farm. A noise level of

40 dB(A) outside a house is equivalent to 30 dB(A) inside a bedroom with the outside window open. This noise goal has been derived from two sources:

1. The Environment Management and Pollution (Noise) Regulations 2016 (the 'Noise Regulations') prescribes noise limits to industry on a case-by-case basis. However, there is a general provision that a person must not operated fixed equipment from 10 pm to 7 am if the equipment emits a noise that is greater than 40 dB(A)(at a sensitive resident). During the day (7 am to 10 pm), a higher level of 45 dB(A) is prescribed, however, in late spring and summer, the solar farm will be operating at some level prior to 7am and hence the 40 dB(A) limit is relevant.
2. The Environment Protection Policy (Noise) 2009 (EPP-Noise) refers to World Health Organisation (WHO) publication *Guidelines for Community Noise* (Berglund B, Lindvall T and Schwela D H, 1999) for suitable noise indicator levels. To prevent sleep disturbance at night time, the guidelines recommend a noise limit of 30 dB(A) inside a bedroom or 45 dB(A) outside a bedroom with the window open. For consistency with the Noise regulations a more conservative level of 40 dB(A) outside the bedroom has been adopted.

It is relevant to note that the noise goal is based on limits aimed at avoiding sleep disturbance at night. This is a conservative approach as the solar farm generally does not operate at night or operates at a low capacity in the case of early mornings in the late spring and summer.

For construction activities, a noise goal of 50 dB(A) outside a sensitive receptor has been adopted. As construction noise is of a temporary nature during the daytime (for up to 18 months), this goal was based on the WHO publication *Guidelines for Community Noise* which recommends a limit of 50 dB(A) measured at an outdoor living area to prevent moderate annoyance during the daytime and evening.

Traffic noise criteria were taken from the Tasmanian State Road Traffic Noise Management Guidelines 2015. The target level of 68 dB LA10(18hr) specified in the guidelines is a commonly used target in Australia.

6.6.3.2 Modelling methodology

Predicted noise emissions from the project were quantified using a computer model (iNoise, Version 2022). The model incorporated a three-dimensional digital terrain map giving all relevant topographic information used in the modelling process. Additionally, the model uses relevant noise source data, ground type, attenuation from barrier or buildings and atmospheric information to predict noise levels at the nearest potentially affected receivers.

Construction noise emissions were modelled for the following activities:

- Earthworks for the construction of roads and compounds,
- Earthworks for trenching of cables,
- Piling of panel supports, and
- Assembly of panels.

It was assumed that each of these construction activities would occur simultaneously at up to four locations across the site. Although this scenario is very unlikely to occur, it provides a conservative 'worst case' assessment of construction noise emissions for the project.

During operations, noise emissions are primarily associated with the PCUs which will have maximum noise levels during the day when the solar farm is at peak production. These noise emissions can be influenced by weather conditions. The modelling used worst case meteorological conditions to provide for a conservative assessment of emissions.

Traffic noise levels were calculated at an offset of 15m along the transport route including North Road, Musk Vale Road, Bridport Road and East Tamar Highway (Goulburn St and Low Head Road) to represent a worst case conservative scenario. For sensitive receivers on Soldier Settlement Rd, noise levels were calculated on an offset of 50m as houses along this road are set back at least 50m.

6.6.3.3 Assessment results

Predicted noise levels for construction at each of the potentially sensitive receptors is provided in Table 42. The predicted noise level at each of the residences is below that of the construction noise goal (50 dB LAeq (15min)).

Predicted noise levels during the operation of the solar farm at each of the potentially sensitive receptors is provided in Table 43. The predicted noise level at each of the residences is below that of the operation noise goal (35 dB LAeq (15min)).

Predicted noise levels for road traffic during construction is provided in Table 44. Predicted levels are well below the traffic noise criteria of 68 dB LAeq(18hr).

A qualitative assessment of potential vibration impacts has been completed. Due to the nature of the works proposed and distances to potential vibration sensitive receivers, vibration impacts from the project would be negligible.

In summary, the noise assessment has found that noise levels for construction and operation were below the noise goals even under worst case weather conditions and construction scenarios.

Table 42. Predicted construction noise levels

Receiver	Description/Address	Predicted Noise Level Range dB LAeq(15min)[1]	Highest Predicted Noise Level dB LAeq(15min)	Noise Goal dB LAeq(15min)	Noise Goal Achieved
R01	259 Old Aerodrome Road	<20 - 34	34	50	✓
R02	229 Old Aerodrome Road	<20 - 31	31	50	✓
R03	160 Soldiers Settlement Road	27 - 38	38	50	✓
R04	160 Soldiers Settlement Road	<20 - 34	34	50	✓
R05	70 Musk Vale Road	36 - 48	48	50	✓
R06	Unknown Address	<20 - 20	20	50	✓
R07	599 Old Aerodrome Road	<20 - 26	26	50	✓
R08	549 Old Aerodrome Road	<20 - 27	27	50	✓
R09	489 Old Aerodrome Road	20 - 30	30	50	✓
R10	106 Soldiers Settlement Road	<20 - 26	26	50	✓
R11	90 Soldiers Settlement Road	<20 - 26	26	50	✓
R12	40 Soldiers Settlement Road	<20 - 24	24	50	✓
R13	6524 Bridport Road	<20	<20	50	✓
R14	6538 Bridport Road	<20	<20	50	✓
R15	6542 Bridport Road	<20	<20	50	✓
R16	6528 Bridport Road	<20	<20	50	✓
R17	6533 Bridport Road	<20	<20	50	✓
R18	10 Aitkins Road	<20	<20	50	✓
R19	9 Aitkins Road	<20	<20	50	✓
R20	11 Aitkins Road	<20	<20	50	✓
R21	Low Head	<20	<20	50	✓
R22	Bellbouy Beach	<20	<20	50	✓

Table 43. Predicted operational noise levels

Receiver	Description/Address	Predicted Noise Level dB LAeq(15min)	Noise Goal dB LAeq(15min) Day/Eve/Night[1]	Noise Goal Achieved
R01	259 Old Aerodrome Road	<30	40	✓
R02	229 Old Aerodrome Road	<30	40	✓
R03	160 Soldiers Settlement Road	<30	40	✓
R04	160 Soldiers Settlement Road	<30	40	✓
R05	70 Musk Vale Road	32	40	✓
R06	Unknown Address	<30	40	✓
R07	599 Old Aerodrome Road	<30	40	✓
R08	549 Old Aerodrome Road	<30	40	✓
R09	489 Old Aerodrome Road	<30	40	✓
R10	106 Soldiers Settlement Road	<30	40	✓
R11	90 Soldiers Settlement Road	<30	40	✓
R12	40 Soldiers Settlement Road	<30	40	✓
R13	6524 Bridport Road	<30	40	✓
R14	6538 Bridport Road	<30	40	✓
R15	6542 Bridport Road	<30	40	✓
R16	6528 Bridport Road	<30	40	✓
R17	6533 Bridport Road	<30	40	✓
R18	10 Aitkins Road	<30	40	✓
R19	9 Aitkins Road	<30	40	✓
R20	11 Aitkins Road	<30	40	✓
R21	Low Head	<30	40	✓
R22	Bellbouy Beach	<30	40	✓

Table 44. Predicted noise levels for construction traffic

Road Name	Offset Distance to Receiver	Predicted Noise Level	Traffic Noise Criteria	Compliance Achieved
Musk Vale Road North Road Bridport Road East Tamar Highway	15m	50dB LAeq(18hr)	68dB LAeq(18hr)	✓
Soldiers Settlement Road	50m	42dB LAeq(18hr)	68dB LAeq(18hr)	✓

6.6.4 Mitigation measures

Noise emissions for construction, operation and construction traffic are below the relevant noise goals at all receivers. Nonetheless, the following mitigation measures will be implemented during construction:

- All significant noise generating construction activities will be limited to the following construction hours.
  - Monday to Friday 7 am to 6 pm
  - Saturday 8 am to 6 pm
  - Sunday and Public Holidays 10 am to 6 pm
- Where low intensity construction activities are required to be undertaken outside standard construction hours, such as cabling (not trenching), minor assembly, use of hand tools etc, they will be managed such that they are not audible at any residential receivers.
- A construction noise management protocol will be developed to minimise noise emissions, manage out of hours (minor) works and to respond to potential concerns from the community.
- Plant will be operated in a conservative manner (no over-revving) and shutdown when not in use.
- Where practicable, the simultaneous use of noisy machinery will be minimised, particularly in the vicinity of R05.
- Broadband reverse alarms will be used in lieu of the traditional high frequency type reverse alarms.
- to minimise road traffic noise:
  - schedule heavy vehicle deliveries to avoid bunching of vehicles which may cause short term elevated noise levels;
  - where feasible use minibuses or similar to transport construction personnel to and from the site to avoid excessive noise from light vehicle movements.
- Construction traffic will not use the section of Musk Vale Road between the junction with Soldier Settlement Rd and access point MVR1. Any exception to this must be approved in writing by the site environmental officer.

- Training and education will be provided to construction workers so they are aware of the location of noise sensitive receivers and are cognisant of any noise generating activities.
- Signage will be placed at the three main entrances to the solar farm advising truck drivers of their requirement to minimise noise both on and off-site.
- Residences that may be impacted by construction noise will be notified of upcoming noise generating works, its duration and nature and the complaint procedure.

6.6.5 Summary of mitigation measures

A summary of mitigation measures for noise is provided in Table 45.

Table 45. Summary of mitigation measures for noise

Reference	Mitigation Measure
N1	All significant noise generating construction activities will be limited to the following construction hours. • Monday to Friday 7 am to 6 pm • Saturday 8 am to 6 pm • Sunday and Public Holidays 10 am to 6 pm
N2	Where low intensity construction activities are required to be undertaken outside standard construction hours, such as cabling (not trenching), minor assembly, use of hand tools etc, they will be managed such that they are not audible at any residential receivers.
N3	A construction noise management protocol will be developed to minimise noise emissions, manage out of hours (minor) works and to respond to potential concerns from the community.
N4	Plant will be operated in a conservative manner (no over-revving) and shutdown when not in use.
N5	Where practicable, the simultaneous use of noisy machinery will be minimised, particularly in the vicinity of R05.
N6	Broadband reverse alarms will be used in lieu of the traditional high frequency type reverse alarms.
N7	To minimise road traffic noise: • schedule heavy vehicle deliveries to avoid bunching of vehicles which may cause short term elevated noise levels; • where feasible use minibuses or similar to transport construction personnel to and from the site to avoid excessive noise from light vehicle movements.
N8	Construction traffic will not use the section of Musk Vale Road between the junction with Soldier Settlement Rd and access point MVR1. Any exception to this must be approved in writing by the site environmental officer.
N9	Training and education will be provided to construction workers so they are aware of the location of noise sensitive receivers and are cognisant of any noise generating activities.
N10	Signage will be placed at the three main entrances to the solar farm advising truck drivers of their requirement to minimise noise both on and off-site.

6.7 Traffic

6.7.1 Overview

Construction of the Cimitiere Plains Solar Farm will require the transportation of a large amount of equipment and materials including:

- Photovoltaic panels,
- Mounting frames,
- Power conversion units,
- Cables and conductors,
- Fencing material,
- Transformer,
- Substation components,
- Transmission line poles,
- Sand for cables, and
- Road base for roads and hard standing areas.

It is anticipated that much of the equipment will be bought in through the container terminal at Bell Bay and some will also come through Devonport or Burnie ports. Where practicable, road base material and sand will be source locally to reduce traffic. There are existing quarries to the north of the project site that may be able to provide suitable material.

There will also be traffic generated by the construction workforce that will reside in George Town, Launceston and surrounding areas.

During operation, there will be very limited traffic consisting primarily of maintenance staff and contractors travelling in light vehicles.

Traffic consultants Amber Organisation Pty Ltd have undertaken a traffic impact assessment (TIA) to assess the construction and operational impacts of the project and to assess the proposed access locations. This report be found in Appendix K and covers the following matters:

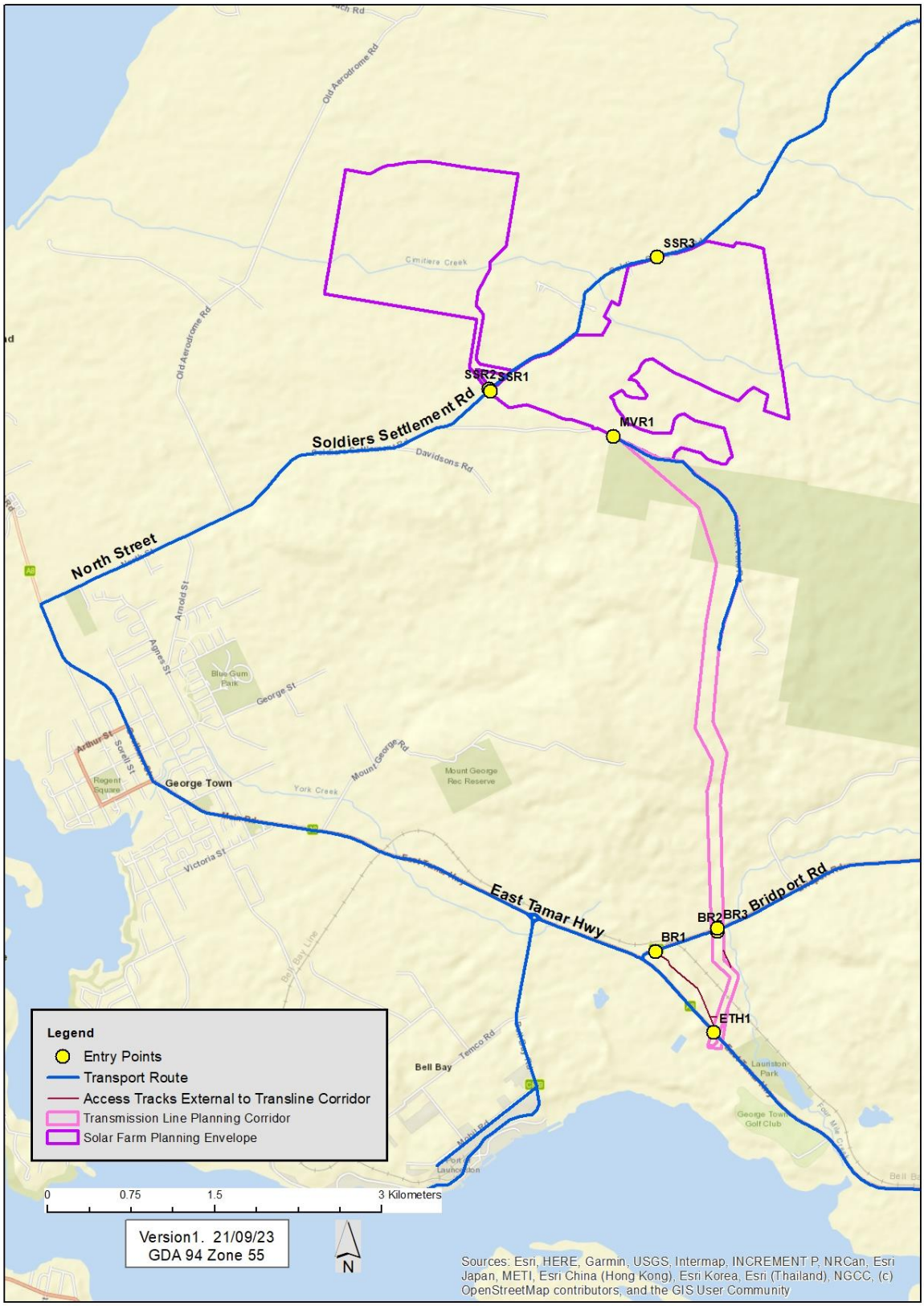
- Light and heavy vehicle traffic volumes and proposed transport routes,
- Potential traffic impacts of the project on road network function and safety,
- The capacity of the existing road network to accommodate the type and volume of traffic generated,
- Mitigation measures, and
- Access points and how these connect to the existing road network.

6.7.2 Existing environment

6.7.2.1 Transport route and road network

The proposed transport route in the George Town vicinity is shown in Figure 52. Transport routes from Devonport and Burnie are shown in Appendix K.

Figure 52. Transport routes in the George Town vicinity



The East Tamar Highway is a Category 1 State Road under the management of the Department of State Growth and is the main link between Launceston and George Town.

Bridport Road is a Category 2 State Road managed by the Department of State Growth. Near the site it has a two-way carriageway width of approximately 6.2 metres with unsealed shoulders provided on both sides and a wide vegetation envelope. Bridport Road adopts the default speed limit of 100km/h.

North Street and Soldiers Settlement Road are local roads management by George Town Council. They are sealed with two-way carriageway between 5.0 and 6.0 metres wide. These roads adopt the default speed limit of 100km/h.

Musk Vale Road is a minor local road that is unsealed and in moderate condition with some rutting and potholes throughout. It has a carriageway width of approximately 4.0 metres with narrow shoulders and overgrown vegetation on the roadside. Although Musk Vale Road adopts the default speed limit of 100km/h, it is more suited to low-speed travel.

6.7.2.2 Existing traffic volumes

Traffic data from the Department of State Growth for the East Tamar Highway and Bridport Rd is provided in Table 46.

Table 46. Traffic volumes for State roads.

Road	Years	Vehicles Per Day	Heavy Vehicle %
East Tamar Highway	2019, 2021	5,669	17
Bridport Road	2019, 2021	1,318	29

Source: Department of State Growth – Tasmanian Traffic Data

There is no traffic data available for Soldiers Settlement Road or Musk Vale Road. These roads are estimated to have low vehicle volumes less than 300 and 20 vehicles per day, respectively.

6.7.3 Assessment of impacts

6.7.3.1 Traffic generation during construction

Construction of the solar farm is anticipated to take 12 to 18 months with a peak construction period of around 5 months. The workforce during the peak period will be around 300 people. Construction traffic can be divided into the following categories:

- Light vehicles transporting the workforce
- Heavy vehicles including:
    - Shuttle buses that will be provided to reduce the need for private vehicle use;
    - Rigid Trucks to deliver raw materials and smaller plant;
    - Truck and Dog vehicles would be used to transport earthwork material to site; and
    - Articulated Vehicles (19.0m semi-trailers) would be used to transport larger plant.

There will also be a limited number of over size over mass (OSOM) vehicles to carry the substation transformer and the switchroom.

Traffic generated during construction is shown in Table 47. During peak construction the site could generate up to 246 light and 208 heavy vehicle movements per day. A vehicle movement is classified as

a vehicle travelling in one direction (i.e. a truck accessing the site would generate one movement towards the site and one movement away from the site when it departs). These figures are based on the worst-case assumption that the peak of activity for the different components of the solar farm (panels, transmission line and substation) all occur at the same time.

Table 47. Traffic generation during construction.

Vehicle Type	**Average Construction Period**		**Peak Construction Period**	
	Daily (vpd)	**Peak Hour (vph)**	**Daily (vpd)**	**Peak Hour (vph)**
Light Vehicle	207	94	246	115
Shuttle Bus	14	7	20	10
Rigid Vehicles	16	6	24	8
Articulated Vehicles	98	14	164	26
Total	**335**	**120**	**454**	**159**

Vpd = vehicles per day; Vph = vehicles per hour.

The distribution of construction traffic is covered in detail in Appendix K. The majority of traffic will access the site from the south along the East Tamar Highway / North Street / Soldiers Settlement Rd. Truck and Dogs delivering sand and road base material are likely to originate from north of the site and travel south along Soldiers Settlement Road. Some construction vehicles will use Bridport Road to access the southern section of the transmission line.

6.7.3.2 Level of service assessment

An assessment has been made on the impact of construction traffic on the level of service of roads along the transport route. Level of service is a qualitative measure used to describe the operating conditions of a section of road from A (free flow conditions) to F (forced flow with stop start operation, long queues and delays). At the time of peak construction, the level of service for the transport route during the morning peak hour are shown in Table 48.

Table 48. Peak hour level of service

Road Name	Critical lane traffic volume during morning peak hour of the peak construction period					
	Existing traffic	Project traffic	Total traffic	Total % heavy vehicles	Existing level of service	Construction period level of service
East Tamar Highway	835*	123	958	18	B	C
Bridport Road	198*	16	214	29	A	A
North Street / Soldiers Settlement Road	45*	107	152	22	A	A

* AM Peak hour traffic estimated as 15% of AADT

Austroads Guide to Traffic Management Part 3: Traffic Studies and Analysis states that Level of Service C is in the zone of stable flow, but most drivers are restricted to some extent in their freedom to select their desired speed and to manoeuvre within the traffic stream. It also suggests that ideally rural roads should not exceed service volumes at Level of Service C. Accordingly, during the peak of construction East Tamar Highway is expected to operate with acceptable conditions during the morning peak hour.

The level of service for Bridport Road, North Street and Soldiers Settlement Road is not impacted by construction traffic.

6.7.3.3 Traffic generation during operation

It is anticipated that the solar farm will be operated by approximately 10 staff. It is likely that not all of the staff will be based at the solar farm. During normal operation, traffic numbers are expected to be less than 20 vehicle movements per day which would result in negligible change tot eh traffic environment.

Over the lifetime of the solar farm, there will be periods where panels and equipment will need to be replaced and this will cause additional traffic depending on the scope of the works. However, these activities will be less intense than the initial construction effort and consequently, as shown in Table 48, the transport route will continue to operate at an acceptable level of service.

6.7.3.4 Site access

The proposed site access locations are shown in Figure 52 and in more detail in Figure 2 and Figure 4. There are 3 access locations off Soldiers Settlement Road (SSR1, SSR2 and SSR3) and 3 access locations off Bridport Road (BR1, BR2 and BR3). There is also an access location on Musk Vale Road (MVR1). Construction traffic will not use the section of Musk Vale Rd from Soldiers Settlement Road to MVR1. Instead, they will use an internal road from SSR1 to travel to MVR1. They will then be able to enter on to Musk Vale Road at MVR1 where they can continue along Musk Vale Road to the southeast for the purpose of constructing the transmission line. This will eliminate construction traffic travelling past the residence R05.

The access location at BR1 is the existing track that provides access to the mountain bike park. Access locations BR2 an BR3 are within the planning corridor for the transmission line.

All of the access locations are designed to accommodate 19 metre semi-trailers and have been assessed for sites distances (refer to Appendix K).

6.7.3.5 Transport route from Burnie and Devonport

It is anticipated that most of the container freight delivered to the solar farm will come through Bell Bay, but some may also come from Devonport or Burnie. Vehicles from Burnie or Devonport will use the Bass Highway and East Tamar Highway to travel to site. Some vehicles may also use Frankford Road (B71) in conjunction with the Bass Highway and East Tamar Highway.

6.7.3.6 Intersection assessment

An intersection assessment has been conducted of the local road network required to access the site. The North Street intersection with East Tamar Highway will be upgraded to better accommodate 19.0m semi-trailer vehicles.

6.7.3.7 Musk Vale Road

During peak construction, Musk Vale Road is expected to accommodate up to an additional 95 vehicle movements per day, resulting in a total of up to 115 vehicles movements per day. Unsealed roads would typically be considered for sealing when they accommodate between 200 and 500 vehicle movements per day. Musk Vale Road will be upgraded with a combination of passing bays and road widening to 5.5 metres where necessary (blind corners) to suitably accommodate construction vehicle traffic. Treatments will be determined by onsite investigations prior-to construction.

6.7.4 Mitigation measures

6.7.4.1 Road pavement

Prior to construction, a pre-condition survey of North Street and Soldiers Settlement Road will be undertaken, in consultation with Council. During construction these roads will be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm will be rectified. At the end of construction, a post- condition survey will be undertaken and the necessary works made to ensure these roads are left in a condition that is consistent with the condition at the start of construction.

6.7.4.2 Transport route

Construction traffic will not use the section of Musk Vale Rd from Soldiers Settlement Road to MVR1 unless required for OSOM vehicles or some other special purpose. The section of Musk Vale Road to the southeast of MVR1 will be upgraded with a combination of passing bays and road widening to 5.5 metres where necessary.

Construction vehicles travelling through George Town will only use East Tamar Highway / Goulburn St / Low Head Rd and North Street. Construction traffic will not use Agnes St and Arnold Street unless required for OSOM vehicles or some other special purpose.

6.7.4.3 Construction traffic management plan

A construction traffic management plan will be prepared prior to construction. It will include the following elements and commitments:

- All loading and unloading of vehicles will occur within the site. No street or roads will be used for material storage at any time.
- All vehicles will enter and exit the site in a forward direction.
- Establishment of a Driver Code of Conduct including using only the designated transport routes.
- Induction process for vehicle operators and regular toolbox meetings.
- Neighbours of the solar farm be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access.
- A complaint resolution procedure.

6.7.4.4 Other mitigation measures

- Shuttle buses that will be provided to reduce the need for private vehicle use.
- The North Street intersection with East Tamar Highway will be upgraded to better accommodate 19.0m semi-trailer vehicles.

6.7.5 Summary of mitigation measures

A summary of mitigation measures for traffic is provided in Table 49.

Table 49. Summary of mitigation measures for traffic

Reference	Mitigation Measure
T1	Prior to construction, a pre-condition survey of North Street and Soldiers Settlement Road will be undertaken, in consultation with Council. During construction these roads will be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm will be rectified. At the end of construction, a post- condition survey will be undertaken and the necessary works made to ensure these roads are left in a condition that is consistent with the condition at the start of construction.
T2	Construction traffic will not use the section of Musk Vale Rd from Soldiers Settlement Road to MVR1 unless required for OSOM vehicles or some other special purpose.
T3	Construction traffic will use the transport routes shown in Figure 52. Construction vehicles travelling through George Town will only use East Tamar Highway / Goulburn St / Low Head Rd and North Street. Construction traffic will not use Agnes St and Arnold Street unless required for OSOM vehicles or some other special purpose.
T4	The section of Musk Vale Road to the southeast of MVR1 will be upgraded with a combination of passing bays and road widening to 5.5 metres where necessary.
T5	A construction traffic management plan will be prepared prior to construction. It will include the following elements and commitments: • All loading and unloading of vehicles will occur within the site. No street or roads will be used for material storage at any time. • All vehicles will enter and exit the site in a forward direction. • Establishment of a Driver Code of Conduct including using only the designated transport routes. • Induction process for vehicle operators and regular toolbox meetings. • Neighbours of the solar farm be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access. • A complaint resolution procedure.
T6	Shuttle buses that will be provided to reduce the need for private vehicle use.
T7	The North Street intersection with East Tamar Highway will be upgraded to better accommodate 19.0m semi-trailer vehicles.

6.8 Flooding

6.8.1 Overview

Floods can have in impact on solar farm infrastructure, particularly sensitive electrical equipment such as the power conversion units and the substation infrastructure. Significant flooding such as a 1% annual exceedance probability (AEP) event are therefore taken into account in the layout of a solar farm.

6.8.2 Existing environment

Cimitiere Creek flows through the proposed solar farm site from east to west. Its catchment area above the solar farm is approximately 27 km^2. WMAwater were contracted to develop hydrologic and hydraulic models for the Cimitiere Creek catchment and to model existing flood conditions for a 1% AEP flood event. The report is provided in Appendix L and shows maps for:

- Peak flood depth and level contours
- Peak flood velocity
- Hydraulic hazard, and
- Hydraulic categorisation.

Maps for peak flood depth and hydraulic hazard are shown below in Figure 53 and Figure 54 respectively.

Figure 53. Flood depth for 1% AEP event

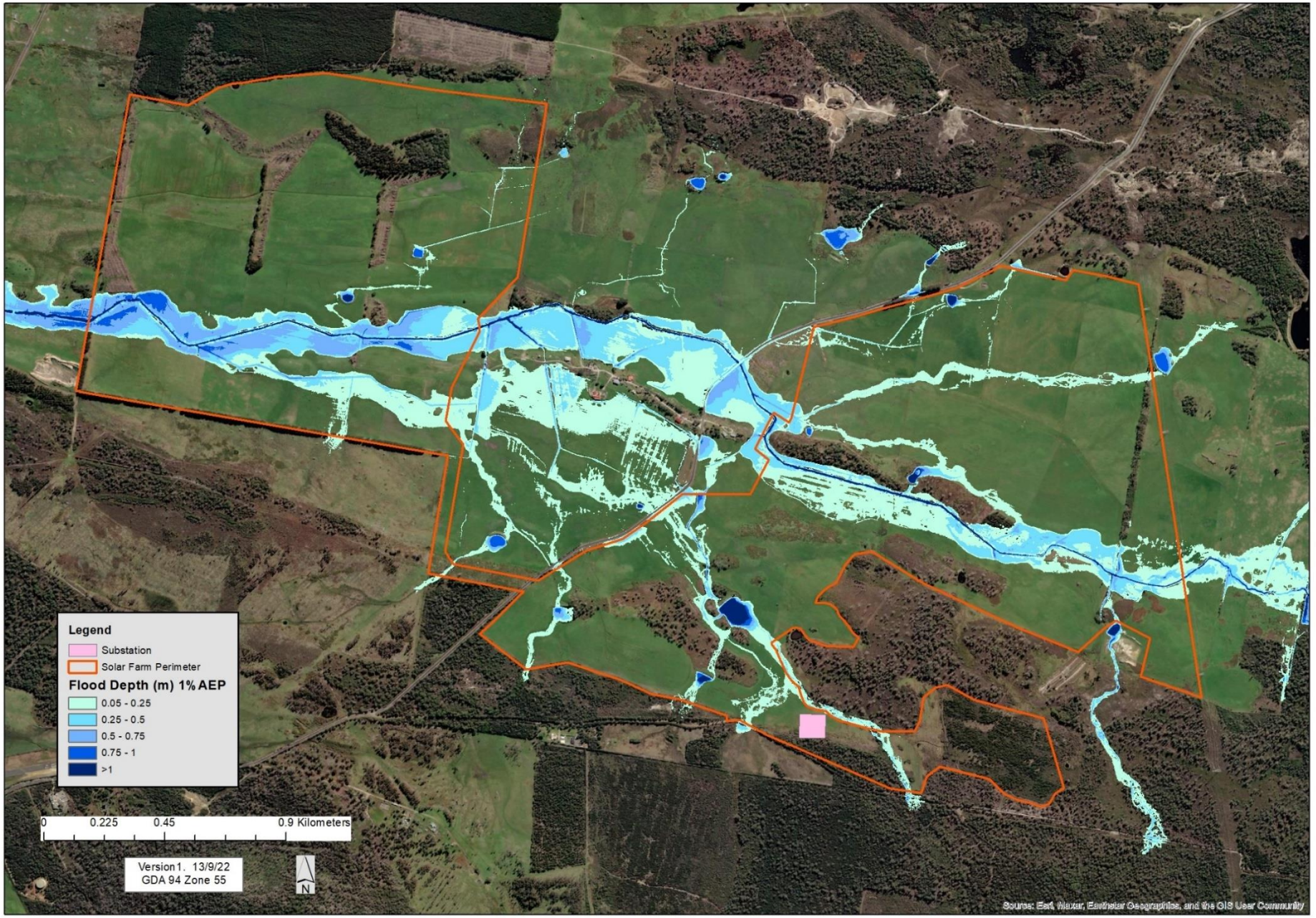
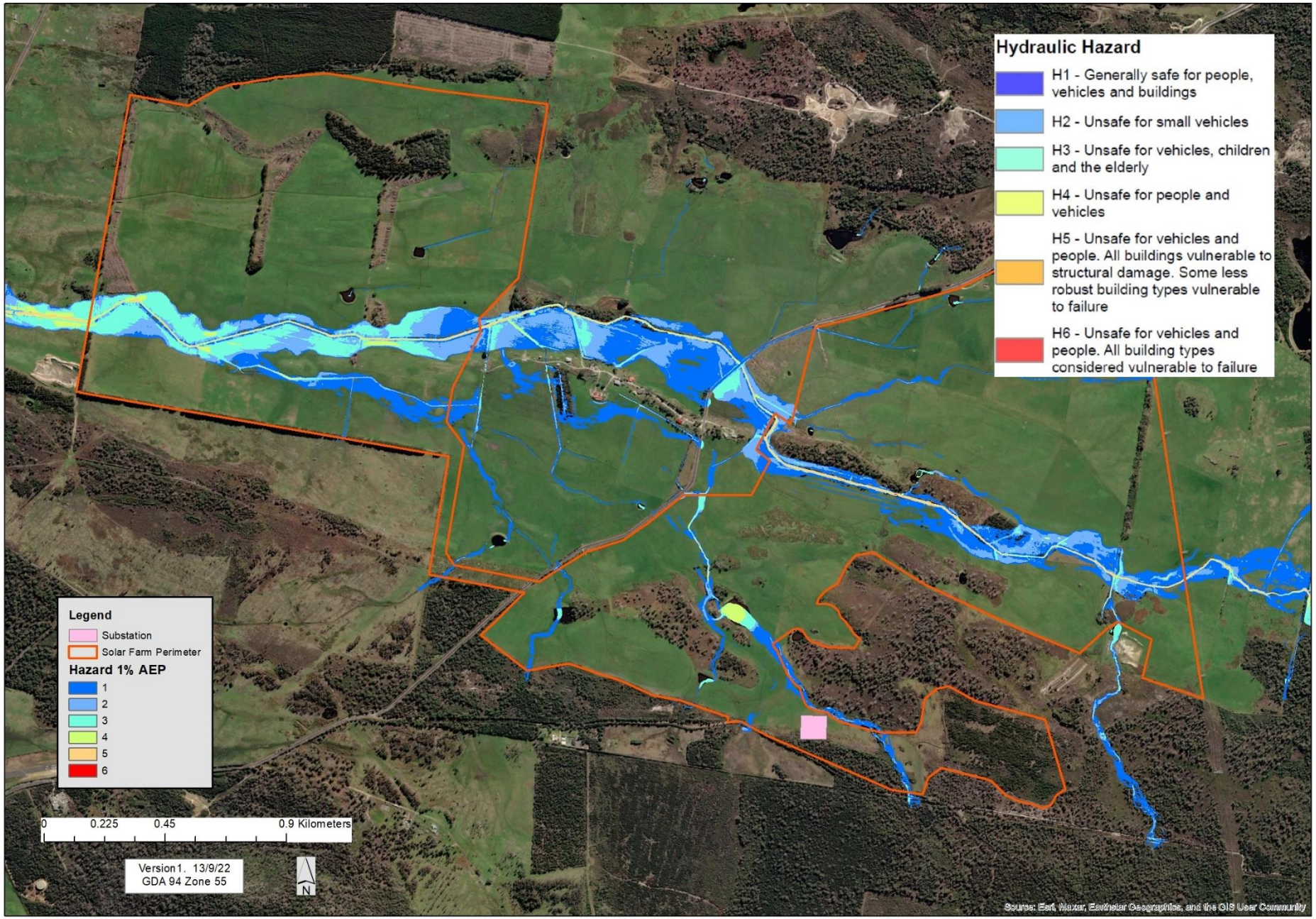


Figure 54. Hydraulic hazard for 1% AEP event



6.8.3 Assessment of impacts

The solar farm will be designed such that infrastructure will not be impacted by a 1% AEP event. Please refer to mitigation measures for more information. The solar farm will also not impact the flow or level of flood waters. Within the solar array, there is only one post every 40m^2 of land (approximately). Therefore, the density of posts is not sufficient to cause water to bank up and increase water depths. There will be two road crossings of Cimitiere Creek. These will be designed not to adversely affect water flows.

6.8.4 Mitigation measures

All sensitive equipment such as the PCUs and substation equipment will be constructed so that they are above 1% AEP event flood height. Solar panels will be excluded from areas where the hydraulic hazard is level H4 (unsafe for people and vehicles) or greater. The panels are mounted on posts that are typically 1.4 m above ground level. During a flood event the single axis tracking system can be set so that the panels are in a horizontal position and thus providing approximately 1.4m of clearance between the panels and the ground.

Where the security fence crosses the Cimitiere Creek, the fence shall be design to let water flow freely in the event of a flood.

6.8.5 Summary of mitigation measures

A summary of the mitigation measures that will be implemented for flood are listed in Table 50.

Table 50. Summary of mitigation measures for flood

Reference	Mitigation Measure
F1	All sensitive equipment such as the PCUs and substation equipment will be constructed so that they are above 1% AEP event flood height.
F2	Solar panels will be excluded from areas where the hydraulic hazard is level H4 (unsafe for people and vehicles) or greater.
F3	Where the security fence crosses the Cimitiere Creek, the fence shall be design to let water flow freely in the event of a flood.

6.9 Agriculture

6.9.1 Overview

The solar farm is within the Agriculture Zone. As described in the SPP, the purpose of the Agriculture Zone is:

- *To provide for the use or development of land for agricultural use.*
- *To protect land for the use or development of agricultural use by minimising:*
  - *conflict with or interference from non-agricultural uses;*
  - *non-agricultural use or development that precludes the return of the land to agricultural use; and*
  - *use of land for non-agricultural use in irrigation districts.*
- *To provide for use or development that supports the use of the land for agricultural use.*

Whilst solar farms can restrict the types of agricultural enterprises conducted on the land, sheep grazing can continue. This section discusses the likely impacts of the solar farm on agricultural productivity.

6.9.2 Existing environment

The site of the solar farm is currently used for grazing sheep and cattle. The paddocks have been sown to improved pastures. Fodder crops are occasionally grown for livestock as part of a pasture renovation program. A small area of land east of the substation has been planted to a radiata pine plantation that has not been successful.

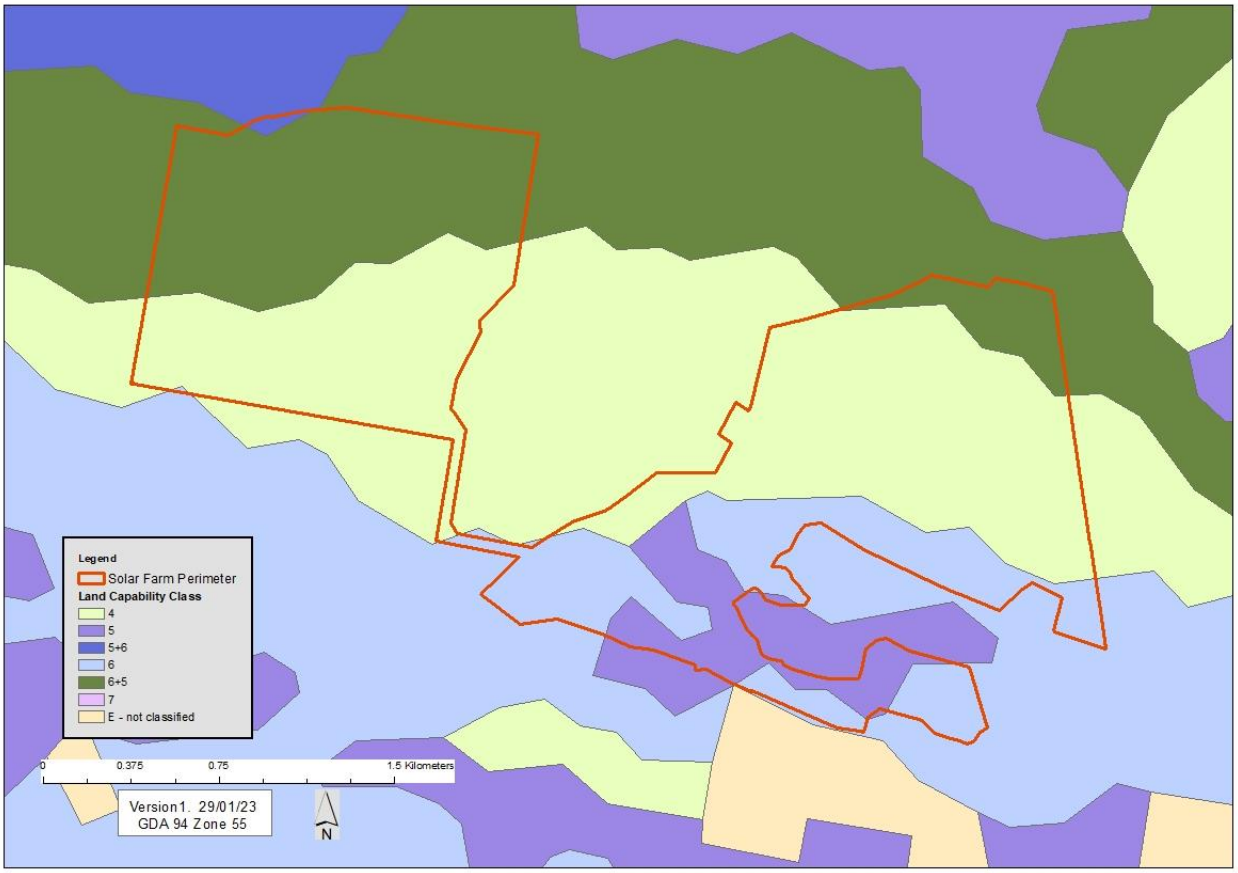
The mapped land capability class within the solar farm site is shown in Figure 55. The area of each class of land is summarised in Table 51. Most of the land is suited to grazing and about 218 hectares of class 4 land is also suited to occasional grazing of a restricted range of crops. There is no prime agricultural land (Class 1, 2 or 3) within the site.

The transmission line planning corridor does not pass through any land that is currently used for agriculture. South of the Bridport Road, the corridor does pass through class 4 land that is suitable for grazing, but this landforms part of the Bell Bay Aluminium buffer area and has been used for recreation.

Table 51. Land capability classes with the solar farm perimeter.

Land Capability Class	Description	Area (Ha)
4	Land well suited to grazing but which is limited to occasional cropping or a very restricted range of crops	218
5	Land unsuited to cropping and with slight to moderate limitations to pastoral use	32
5+6	At least 60% Land unsuited to cropping and with slight to moderate limitations to pastoral use, up to 40% Land well suited to grazing but which is limited to occasional cropping or a very restricted range of crops	1
6	Land marginally suited to grazing due to severe limitations	82
6+5	At least 60% Land marginally suited to grazing due to severe limitations, up to 40% Land unsuited to cropping and with slight to moderate limitations to pastoral use	120

Figure 55. Land capability class of the solar farm



6.9.3 Assessment of impacts

The grazing of sheep will continue within the solar farm once construction has been completed and will play an important role in keeping the pasture from growing too high. Cattle will need to be excluded farm the solar farm as they will damage the panels. Tractors are able to drive between the rows to conduct normal maintenance activities such as weed control, slashing, fertilising or refurbishment of pastures.

The panels do not cover all of the area within the solar farm perimeter. There are 454 Ha withing the area defined as the Cimitiere Plains Solar Farm. When the creek and small area of threatened community are excluded from the footprint the total area is approximately 432 Ha. Of this area, approximately 162 Ha is directly covered by panels, 6.5 Ha will be covered by internal access roads and 1.5 Ha will be covered by the substations, PCUs, switch rooms and the control room.

Pasture continues to grow under the panels as can be seen in Figure 16. There is limited research on the impacts of shading from solar panels on agricultural output, particularly in an Australian context. Impacts are likely to change depending on climatic conditions, the type of mounting systems and other factors. A study was conducted in 2019 and 2020 into pasture production and lamb growth under solar panels at Oregon State University in Corvallis Oregon (Andrew, 2021). Corvallis has a latitude of 44.5° N

whereas George Town has a latitude of 41° S. Corvallis is hotter in the summer and colder in the winter. It receives more rainfall in winter and less rainfall in summer than George Town (refer to Appendix M).

Lambs were grazed either under fixed panels (not single axis tracking) or in an open paddock in a randomised block design. Pasture dry matter production was measured for fully shaded, partially shaded and open paddock treatments. Liveweight gain of the lambs and were measured per head (g/day) and per hectare (kg/Ha/day).

On average, pasture production was 9 to 33% less for the solar panel treatment than open pastures. However, this decrease in pasture dry matter production did not result in a decrease in liveweight gain of the lambs or liveweight gain per hectare. There was no significant difference in liveweight gain per hectare for the two treatments as shown in Figure 56. The research did not provide any evidence why the decrease in dry matter production did not translate to a decrease in liveweight gain per hectare. Another finding of interest in the research was that while fully shaded areas produced less pasture dry matter than open pastures, there was no significant difference between partially shaded areas and open pastures.

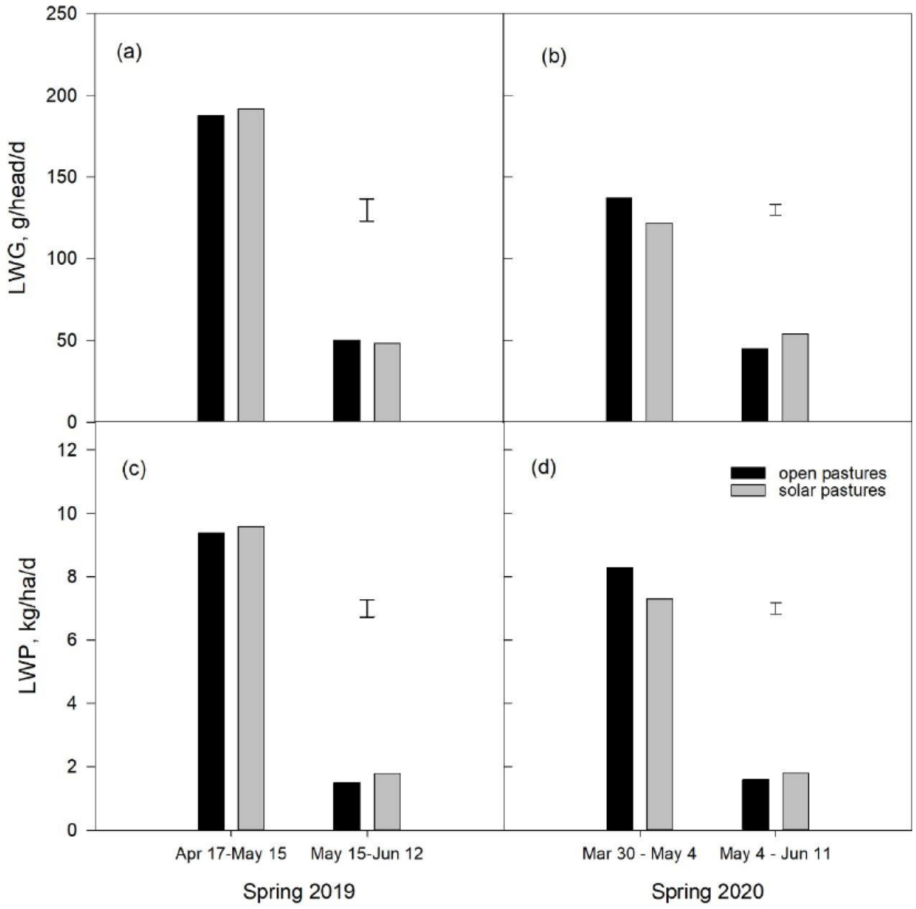
In addition to this research, there have been trials conducted at the Parkes Solar Farm by the NSW Department of Primary Industries. There has not yet been published reports of this trial, however, media reports quoting the grazier at the solar farm suggest that addition of the panels has increased the value of their farming operations. Sheep on the solar farm are better than the sheep under normal farming conditions. The recent sheering of 250 wether hoggets that had been grazing in the paddock with solar panels since last year resulted in the longest and the best yielding wool that the grazier had ever grown in his lifetime. The full article can be found at https://reneweconomy.com.au/solar-and-sheep-the-future-of-regional-australia-and-the-key-to-better-quality-wool/

Further research is required to determine the impacts of solar panels on grazing production. Preliminary research such as the trials described above are indicating that if there is a drop in production, it is likely to be relatively small and unlikely to exceed 30%. This corresponds to much of the anecdotal evidence within the industry.

There are also some benefits of hosting solar farms including:

- Annual lease payments which provide substantial income irrespective of the weather or commodity prices. This income can be used to increase inputs into the solar farm area or the remainder of the property.
- The security fence around the solar farm will keep out grazing native animals and in areas where wild dogs are a problem the security fence provides protection to sheep.
- During extended dry periods, dew forms on the solar panels at night when they are positioned horizontal to the ground. In the morning, when the solar panels tilt to the east, the dew runs off onto the same point each day. This supports a strip of grass growth on the eastern edge of the panels. During the most recent drought in Australia, many graziers observed that they had more feed under the solar panels and were able to have significantly less supplementary feeding than in neighbouring paddocks.

Figure 56. Liveweight gains (LWG, g/head/d; Fig. a, b) and liveweight production (LWP, kg/ha/d; Fig. c, d) of lambs grazing under solar panels and open pastures in spring 2019 and 2020.



6.9.4 Mitigation measures

The following measures have, or will be, taken into account to mitigate impacts on agricultural productivity:

- **Site selection.** Impacts on agriculture were an important factor in the site selection process. When considering sites, Sun Spot 9 Pty Ltd gave strong preference to land that is generally suitable for grazing but not well suited to cropping.
- **Mounting system.** The single axis tracking system that is to be used at Cimitiere Plains has less impact on agriculture than fixed tilt systems. Fixed tilt systems have more supporting structures which can make management of the land more difficult. The single axis tracking system will not use arms between rows that are part of the tracking system and block access to the row.
- **Progressive rehabilitation.** As soon as construction has been fully completed in a section of the solar farm, that area will be rehabilitated so that sheep grazing can recommence.
- **Weed controlled.** Declared weeds will be controlled for the life of the project.

- **Decommissioning.** When the solar farm is decommissioned, all the infrastructure is removed and the land can be returned to the same state as prior to the construction of the solar farm.

6.9.5 Summary of mitigation measures

A summary of the mitigation measures for agriculture is provided in Table 52.

Table 52. Summary of mitigation measures for agriculture

Reference	Mitigation Measure
A1	The area of the solar farm will continue to be used for agriculture, predominantly sheep grazing.
A2	A single axis tracking system will be utilised. The single axis tracking system will not use arms between rows that are part of the tracking system and block access to the row.
A3	There will be progressive rehabilitation. As soon as construction has been fully completed in a section of the solar farm, that area will be rehabilitated so that sheep grazing can recommence.
A4	Declared weeds will be controlled for the life of the project.
A5	When the solar farm is decommissioned, all the infrastructure is removed and the land can be returned to the same state as prior to the construction of the solar farm.

6.10 Hazards and risks

6.10.1 Overview

A hazard is defined as something that has the potential to harm the environment or people. A hazard will have an associated risk which is the possibility that the hazard will cause harm. The potential hazards associated with the proposal are:

- the storage and handling of hazardous materials,
- electrical hazards including the exposure to voltage or arc flash,
- electromagnetic fields,
- bushfires,
- potential acid sulfate soils, and
- flooding.

Hazardous materials, electrical hazards, electromagnetic fields, bushfires and potential acid sulfate soils are addressed in this section, and flooding is addressed in Section 6.8.

6.10.2 Hazardous materials

During operation, it is not anticipated that there will be any hazardous materials stored on site. Transformer oil will be present in the main HV transformers and in the transformers in the PCU's. Transformer oil is not a hazardous material it typically has a flashpoint above 140°C. To be classified a hazardous material, hydrocarbons need to have a flashpoint below 93°C. The HV transformer at the substation will have an oil containment system should there be an oil leak from the transformer.

During construction, some diesel may be stored on site for refuelling equipment. Diesel is a Class 4 hazardous substance. The amount stored on site will be less than the manifest quantity of 100,000L. The storage of diesel on site will comply with *AS1940 The storage and handling of flammable and combustible liquids* and will not be stored with other flammable liquids.

There may also be small quantities of petrol and oils stored on site during construction. Any hydrocarbons stored on site will be in bunded containers.

6.10.2.1 Hazardous materials risk mitigation measures

The following mitigation measures will be implemented to mitigate the risk of hazardous materials:

- The HV transformer at the substation will have an oil containment system.
- The quantity of diesel stored on site will be less than 100,000 L.
- The storage of diesel on site will comply with *AS1940 The storage and handling of flammable and combustible liquids* and will not be stored with other flammable liquids
- Any hydrocarbons stored on site will be in bunded containers.

6.10.3 Electrical hazards

Potential electrical hazards include electrocution and exposure to arc flash. The general public will not have access to the solar farm as the site will be enclosed by a security fence. The solar farm substation will also be enclosed by a security fence. Those authorised to access and work at the solar farm will be

appropriately trained/qualified and will be required to complete an induction process. All electrical equipment will be designed and installed in accordance with relevant Australian Standards.

6.10.3.1 Electrical hazards risk mitigation measures

The following mitigation measures will be implemented to mitigate the risk of electrical hazards:

- The solar farm and substation will be enclosed by a security fence.
- All electrical equipment will be designed, constructed and implemented according to relevant international and Australian standards and best codes of practice.

6.10.4 Electric and magnetic fields

Electric and magnetic fields (EMF) exist whenever electric current flows. Electric fields are produced through electric charge and can be shielded by common materials such as wood and metal (WHO, 2007). Magnetic fields are produced through the flow of electric charge (current) and can easily pass through common materials. Both fields are strongest at the source and decrease in magnitude with distance.

The frequency of electrical generation, distribution and use in Australia is 50 Hz which is within the Extremely Low Frequency (ELF) range of 0 – 3000 Hz. ELF EMF can be measured to determine the degree of exposure to a source. Electric fields are measured in volts per metre (V/m) and magnetic field is measured in amperes per metre (A/m) and expressed in terms of magnetic flux density measured in units of Tesla (ARPANSA, 2019a).

6.10.4.1 Potential risks of ELF EMF

People can be exposed to EMF from power lines, electrical wires and common appliances. The Australian Radiation and Nuclear Safety Agency (ARPANSA) states that "the scientific evidence does not establish that exposure to the electric and magnetic fields found around the home, the office or near powerlines causes health effects." (ARPANSA, 2019b)

In 2005 the World Health Organisation (WHO) assessed the risks to health that might exist from exposure to ELF electric and magnetic fields. It concluded that "*there are no substantive health issues related to ELF electric fields at levels generally encountered by members of the public.*" (WHO, 2007). They also came to the following conclusions related to the effects of ELF magnetic radiation;

- Short term effects of external ELF magnetic fields at very high field strengths, cause nerve and muscle stimulation and changes in nerve cell excitability in the central nervous system.
- There is not strong enough evidence to consider ELF magnetic fields a cause of childhood leukaemia.
- Scientific evidence supporting an association between ELF magnetic field exposure and health effects of other childhood cancers, cancers in adults, depression, suicide, reproductive dysfunction, developmental disorders, immunological modifications, neurobehavioural effects and neurodegenerative disease is much weaker than for childhood leukaemia.
- Scientific evidence suggests that there is no causal link with cardiovascular disease or breast cancer.

The International Commission on Non-Ionizing Radiation Protection (ICNIRP) has issued Guidelines for Limiting Exposure to Time Varying Electric and Magnetic Fields (up to 100kHz) which are aimed at preventing the established health effects resulting from exposure to ELF EMF. There are separate reference levels for general public and occupational exposure since the level and control of exposure to these groups will vary. The general public comprises individuals of all ages and of varying health status and which have varied degrees of susceptibility to EMF exposure. They are also not expected to be aware of their exposure or take precautions to limit the effect. Occupational exposure occurs to adults in their workplace who are generally exposed to EMF under known conditions and are trained to be aware of potential risk and to take appropriate precautions. Therefore, the guidelines are more stringent for public exposure compared to occupational exposure (ICNIRP, 1998). The ICNIRP reference levels for EMF at 50Hz are provided in Table 53.

Table 53. ICNIRP reference levels for EMF at 50Hz

Exposure	Electric Field (kV/m)	Magnetic Field (μT)
General Public	5	200
Occupational	10	1000

6.10.4.2 Potential sources of EMF

EMF may be emitted from the following infrastructure components on Site:

1. Solar Panels
2. PCUs
3. 33kV underground cables
4. Overhead transmission line.
5. Substation

A study was conducted to characterise the EMF between the frequencies of 0 Hz and 3 GHz at two solar farms operated by Southern California Edison Company in Porterville, CA and San Bernardino, CA. The static magnetic fields were very small compared to the ICNIRP levels. The highest magnetic fields were measured adjacent to transformers and inverters. The magnetic fields measured complied in every case with ICNIRP occupational exposure limits. The electric fields measured were negligible compared to ICNIRP levels (Tell et al, 2015).

With the exception of the overhead transmission line, the general public will not be exposed to EMF from the solar farm as they will not have access to the solar farm. The solar farm will be enclosed by a security fence and only authorised people will be able to enter.

The potential EMF levels from different infrastructure is discussed in the following sections.

6.10.4.3 33kV underground cables

Underground cables do not emit external electric fields. A typical 33 kV underground cable will produce a maximum magnetic field of approximately 1 μT at one metre above ground level. The magnetic field will be indistinguishable from the background magnetic field at distances greater than 20 metres away from the source (National Grid: EMF Information, 2019). These values are below the reference levels.

6.10.4.4 Overhead transmission line

The magnetic field exposure near high voltage power lines depends on the amount of current carried by the power line and the distance from the power line. For distances greater than 50 metres from a high voltage power line the magnetic field is not expected to be higher than typical magnetic fields found in the home from electrical wires and appliances (ARPANSA, 2019b).

The typical value of magnetic field measured directly underneath a high voltage transmission line at 1 metre above ground level is 1-20 µT. At the edge of the easement the magnetic field is typically and 0.2-5 µT (ARPANSA, 2019d), which is well below the reference levels. The closest residence to the transmission line is approximately 620 m from the planning corridor.

6.10.4.5 Substation

The main sources of magnetic fields in a substation are buswork, transformers, switch gear, cabling, capacitors and circuit breakers. The strongest magnetic fields at the boundary fence come from incoming and outgoing transmission lines. (Edvard, 2003). The typical measurement of magnetic field of a substation at the substation fence is measured at 1-8 µT (ARPANSA, 2019d). The electric field from a substation is buffered due to the screening effect provided by grounded steel structures used by electric bus and equipment support.

Magnetic fields at distances of 5 to 10 metres from substations and transformers are expected to be at similar levels as background levels in the home (ARPANSA, 2019b).

6.10.4.6 EMF risk mitigation measures

The following steps will be taken to limit the risk of exposure to EMF.

- The solar farm and substation will be enclosed by a security fence.
- All electrical equipment will be designed, constructed and implemented according to relevant international and Australian standards and best codes of practice.

Considering that the EMF levels associated with the infrastructure are below the ICNIRP reference levels and that EMF attenuates with distance, the risk of human health being impacted by exposure to EMF is very low.

6.10.5 Bushfire

The site for the solar farm and transmission line is classified as a bushfire prone area. The bushfire season (or fire permit season) is usually in force during the dry summer period from November to March although this varies depending on the season. For the Cimitiere Solar Farm, bushfire risk refers to the following:

- a fire starting on the solar farm threatening the solar farm and neighbouring properties, and
- a bushfire that started off site threatening the solar farm.

Most of the solar farm is agricultural land predominantly used for grazing. Pastures will carry a grass fire if grasses are cured, particularly if grass loads are heavier. Grass fire can spread very quickly in high fire danger conditions. Features such as local roads, farm tracks, plough paddocks, green creek lines, firebreaks and fully eaten out paddocks provide opportunities for stopping grass fires if the conditions are favourable.

In the near vicinity of the solar farm there is also native vegetation and softwood plantations. The transmission line passes through predominantly native forest. The cleared easement for the transmission line provides some protection from bushfires.

6.10.5.1 Potential sources of ignition with the solar farm

During site construction and operations, the following are potential ignition sources:

- Earth moving equipment;
- Vehicles;
- Power tools (such as welders, grinders);
- Mowers and slashers; and
- Accidental ignitions (such as discarded cigarettes).

The solar panels are non-reflective and present no risk of ignitions from concentrated solar energy. Ignitions from other PV equipment is theoretically possible from electrical faults such as arc faults, short circuits, ground faults and reverse currents (Allianz Risk Consulting 2012). Arcing issues are normally created from the following:

- Incorrect connecting of the inter module connectors;
- Corroded inter module connectors caused from incorrect storage of modules on site;
- Electrical connections on isolators / DC combiners; or
- Mismatch of inter module connectors causing insufficient electrical connections.

It is possible that arcs or melted components resulting from a fault could in suitable conditions ignite grass fuels and start a bushfire. However, the level of risk from faults is difficult to assess at this stage as there is little case history available.

Transmission lines are very unlikely to start a fire relative to distribution lines for the following reasons:

- Transmission lines are subject to a significantly higher standard of monitoring and inspection and as such are much less likely to have a fault that could result in a fire.
- Transmission lines have highly sophisticated protection systems that instantly detect faults and can shut the line down if required. Distribution lines have comparatively very basic protection systems.

6.10.5.2 Hazard to firefighters and public safety

Potential risks to fire-fighter safety associated with a fire burning the solar panels and associated equipment include:

- Electrocution – solar panels would be energised under any natural or artificial light conditions – isolation of DC current can only occur external to any solar array because there is no single point of disconnect internally (Backstrom and Dinni 2011);

- Safe use of water spray or foam application is only possible from the perimeter of the solar arrays and may not be able reach the furthest internal distance; and
- Inhalation of potentially toxic fumes and smoke from any plastic components such as cables (although the main structure of the panels will be glass and aluminium) or other decomposed products of the panels (Allianz Risk Consulting 2012).

The burning of materials such as the solar panel backing sheet and ethylene vinyl acetate (EVA) will produce hazardous gasses and therefore may require breathing apparatus.

6.10.5.3 Mitigation measures

Asset protection zone

A 10 metre asset protection zone (APZ) will be established around the perimeter of all PV arrays and the substations. An APZ is a fuel reduced area surrounding a build asset or structure which provides a buffer zone between the bushfire hazard and an asset. The APZ includes a defendable space within which firefighting operations can be carried out. Grass within the APZ will be kept at a height of less than 100 mm during the fire permit season. Leaf material and other debris will be removed.

APZs do not eliminate the fire risk and under adverse conditions fire may spot over, or embers travel through asset protection zones. However, they may lower fire risk it to an extent where fire control is more feasible or damage to the asset is reduced. They can assist in reducing the potential for a fire to impact the site, as well as spread from the site.

Visual screen plantings

The visual screen plantings that will be established along Soldier Settlement Road on the outside of the APZ has the potential to increase the risk of burning embers carrying across the APZ and creating the a spot fire on the other side (Cheney and Sullivan 2008). The following measures will be implemented to mitigate the risk of embers carrying into the solar farm:

- The visual screen will be planted using species suitable for the environment that have low fire spotting characteristics (such as smooth bark or evergreen species) and are not high flammability species;
- Visual screens, where practicable, will be planted as a continuous windbreak with no breaks of sufficient size to allow winds to funnel through;
- Screen plantings will be placed on the outer side of the APZ (away from the asset); and
- Routine maintenance will be conducted prior each fire season to reduce dead materials, dead plant growth and leaf litter from within the APZ.

Fuel loads

During the fire permit season, pastures within the solar farm will be maintained with minimal fuel load (<150 mm grass height).

Construction

During the fire permit season, the following measures will be implemented to control the risk of fire ignitions:

- Establish and implement a fire prevention and emergency response strategy for staff, contractors and machinery operators;
- All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g. vegetation);
- Where possible, ensure machinery is free from faults and mechanical defects;
- Drive on tracks and park in cleared areas to prevent fires starting from hot exhausts;
- Vehicles will have access to a mobile phone or UHF radio;
- A suitable firefighting appliance is present on site with at least two personnel trained in bushfire fighting;
- All heavy and light vehicles working on site will have a fire extinguisher;
- Stationary machinery or engines will have a 3m cleared area or have someone remain with the equipment while running;
- Monitor fire information and advice through TasALERT (www.alert.tas.gov.au)
- Monitor weather information and warnings from the Bureau of Meteorology.
- A hot works permitting system is in place; and
- All operations involving earth moving equipment, vehicles, slashers and hot works (e.g. grinders, welders) cease while the Grassland Fire Danger Index (GFDI) is or forecast to be 35 or greater. Refer to the Tas Fire Service Machinery Operators Table provided in Table 54

Table 54. Tasmania Fire Service Machinery Operations Table

MACHINERY OPERATIONS TABLE

The table below uses the **average wind speed (km/h)** for a range of different **temperature (°C)** and **relative humidity (RH%)** combinations to decide when machinery operations should cease.

Tasmania Fire Service

EXAMPLE: Refer to the highlighted areas on the table.

1. Temperature: 25°C.
2. Relative Humidity: 17% rounded down to 15%.
3. For this combination of Temperature and Relative Humidity operations should stop when the average wind speed goes above 33 km/h.

TEMP (°C)	5	10	15	20	25	30	40	50	60	65	RH%
15	31	35	38	40	43	45	49	53	56	58	Average Wind Speed (KPH)
20	29	33	36	38	40	43	46	50	53	55	
25	27	30	33	36	38	40	44	47	50	52	
30	25	28	31	33	35	37	41	44	47	49	
35	23	26	28	31	33	35	38	41	44	46	
40	21	24	26	28	30	32	35	39	41	43	
45	19	22	24	26	28	30	33	36	39	40	
TEMP (°C)	5	10	15	20	25	30	40	50	60	65	RH%

* These weather combinations relate to a Grassland Fire Danger Index (GFDI) of 35.

Source: Tasmania Fire Service

Operations

A bushfire management plan will be prepared that addresses the mitigation measures listed in this section (6.10.5.3). It should also include:

- storage of any flammable materials,
- training for onsite personnel,
- responses to an emergency alert being issued by fire authorities, and
- incident management and control arrangements.

To minimise the risk of grass fire ignitions, all operations on the Site involving vehicles and slashers or other works that could start a fire will cease while the GFDI is or forecast to be 35 or greater. This will require establishing an operational procedure for onsite recording of temperature, relative humidity and wind speed, as well as associated training.

Fire-fighter safety

The safety hazards for fire-fighters from PV panels and local fire-fighting capability are such that fire suppression within a solar array cannot be expected or relied upon. The exception to this would be aerial water bombing, however, these resources may not be available at short notice. Fire suppression is most likely only to be feasible from the surrounding APZ.

Given the possible toxicity of smoke from burning solar farm components, fire-fighters, operations staff and neighbours should avoid working down wind of any fire burning within the solar farm.

An Emergency Response Plan (ERP) will be prepared for the solar farm that provides the following:

- Addresses foreseeable on-site and off-site fire events;
- Clearly states work health safety risks and procedures to be followed by fire-fighters, including
    - personal protective clothing;
    - minimum level of respiratory protection;
    - minimum evacuation zone distances;
    - a safe method of shutting down and isolating the PV system (or noting if this is not possible for safe internal access);
    - any other risk control measures required to be followed by fire-fighters;
- Evacuation triggers and protocols; and
- Suppression response strategies and tactics, including aerial suppression options/management.

The operator of the solar farm will liaise with the Tasmania Fire Service and other local emergency responders to establish emergency management procedures and to determine the best places to locate copies of the ERP. The operator shall maintain engagement at appropriate intervals with Tasmania Fire Service, local volunteer fire brigades and neighbouring landholders.

Water

Two 20,000 litre tanks will be installed for firefighting purposes. The location of these tanks will be determined in consultation with the landholder and Tasmania Fire Service. It is preferable that these tanks are connected to the property's stock water supply system so that the tanks can be readily refilled.

6.10.6 Potential acid sulfate soils

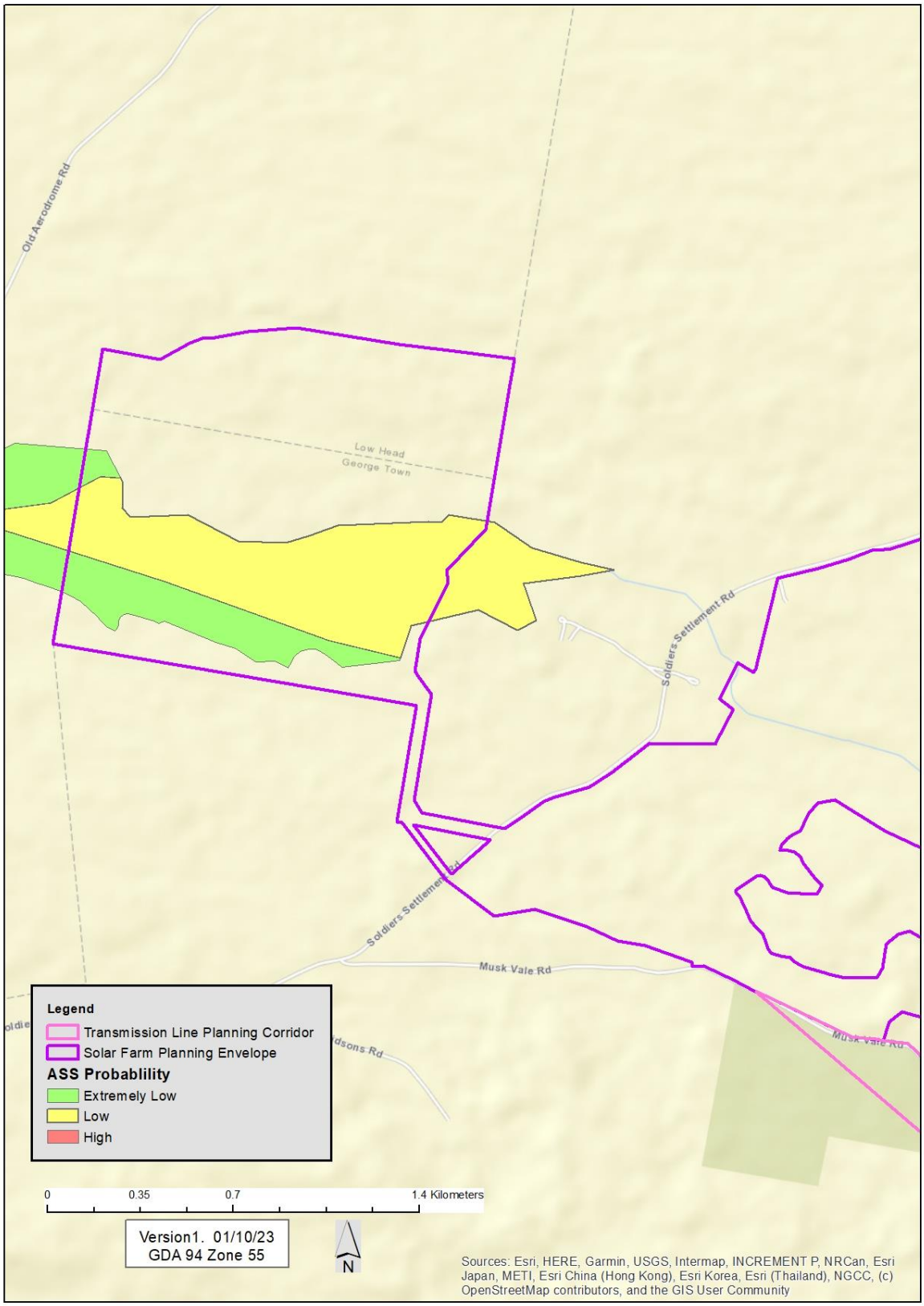
6.10.6.1 Overview

Potential acid sulfate soils (PASS) can occur along coastlines and less commonly in inland depressions. These soils contain sulfides (mostly iron sulfides) that when exposed to oxygen through drainage or excavation form sulfuric acid. In this state they are know as actual acid sulphate soils and can be very damaging to the environment, particularly waterways. Conversely, if potential acid sulfate soils remain undisturbed and in an anaerobic state, they present no hazard to the environment as PASS. Collectively, potential acid sulfate soils and actual acid sulfate soils are known as acid sulfate soils (ASS).

6.10.6.2 Existing environment

Part of the solar farm has been mapped as being low probability of ASS or very low probability of ASS (refer to Figure 57). These areas generally coincide with the area of the solar farm that is between 16 and 20m AHD. There is currently no visual evidence of acid drainage along this section of Cimitiere Creek.

Figure 57. Probability of acid sulfate soils on the solar farm.



6.10.6.3 Assessment of impacts

Development of the solar farm will not significantly impact the drainage of the area mapped as having low potential for ASS. Construction of roads may have minor impacts on surface water flows but will not impact the ground water level in the area. Excavation will be required for cables. The amount of time that excavated material will be out of the trench will be relatively short, thereby minimising the risk of oxidation of sulfides. The quantity of material excavated in any one area will also be relatively small. Therefore, if there is ASS present on site, the risk of acid drainage developing is relatively small and should be readily managed.

6.10.6.4 Mitigation measures

When cable locations are known, soil samples will be taken at the depth of the cable trench over the area mapped in Figure 57 by a suitably qualified soils professional prior to construction. If sulfides are found at a level that may cause environmental harm, an ASS management plan will be developed in accordance with the Tasmanian Acid Sulfate Soil Management Guidelines (DPIPWE 2009) prior to the commencement of trenching. Possible mitigation measures may include:

- Keeping topsoil separate from subsoils when the trench is excavated and returning material to the trench as quicky as possible.
- Liming the excavated material before returning to the trench.

6.10.7 Summary of mitigation measures for hazards and risks

A summary of the mitigation measures for hazards and risks is provided in Table 55.

Table 55. Summary of mitigation measures for hazards and risks

Reference	Mitigation Measure
HM1	The HV transformer at the substation will have an oil containment system.
HM2	The quantity of diesel stored on site will be less than 100,000 L.
HM3	The storage of diesel on site will comply with *AS1940 The storage and handling of flammable and combustible liquids* and will not be stored with other flammable liquids.
HM4	Any hydrocarbons stored on site will be in bunded containers.
EH1	The solar farm and substation will be enclosed by a security fence.
EH2	All electrical equipment will be designed, constructed and implemented according to relevant international and Australian standards and best codes of practice.
BF1	A 10 metre asset protection zone (APZ) will be established around the perimeter of all PV arrays and the substation. Grass within the APZ will be kept at a height of less than 100 mm during the fire permit season. Leaf material and other debris will be removed.
BF2	Visual screens will be planted using species suitable for the environment that have low fire spotting characteristics (such as smooth bark or evergreen species) and are not high flammability species. Visual screens, where practicable, will be planted as a continuous windbreak with no breaks of sufficient size to allow winds to funnel through. Screen plantings will be placed on the outer side of the APZ (away from the asset). Routine maintenance will be conducted prior each fire season to reduce dead materials, dead plant growth and leaf litter from within the APZ.
BF3	During the fire permit season, pastures within the solar farm will be maintained with minimal fuel load (<150 mm grass height).
BF4	During construction while the fire permit season is in place, the following measures will be implemented to control the risk of fire ignitions: • Establish and implement a fire prevention and emergency response strategy for staff, contractors and machinery operators; • All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g. vegetation); • Where possible, ensure machinery is free from faults and mechanical defects; • Drive on tracks and park in cleared areas to prevent fires starting from hot exhausts; • Vehicles will have access to a mobile phone or UHF radio; • A suitable firefighting appliance is present on site with at least two personnel trained in bushfire fighting; • All heavy and light vehicles working on site will have a fire extinguisher; • Stationary machinery or engines will have a 3m cleared area or have someone remain with the equipment while running; • Monitor fire information and advice through TasALERT (www.alert.tas.gov.au)

	• Monitor weather information and warnings from the Bureau of Meteorology. • A hot works permitting system is in place; and • All operations involving earth moving equipment, vehicles, slashers and hot works (e.g. grinders, welders) cease while the Grassland Fire Danger Index is or forecast to be 35 or greater
BF5	Prior to operation, a bushfire management plan will be prepared that addresses the mitigation measures listed in this section (6.10.5.3). It should also include: • storage of any flammable materials, • training for onsite personnel, • responses to an emergency alert being issued by fire authorities, and • incident management and control arrangements.
BF6	To minimise the risk of grass fire ignitions, all operations on the Site involving vehicles and slashers or other works that could start a fire will cease while the GFDI is or forecast to be 35 or greater.

BF7	An Emergency Response Plan (ERP) will be prepared for the solar farm that provides the following:
	• Addresses foreseeable on-site and off-site fire events;
	• Clearly states work health safety risks and procedures to be followed by fire-fighters, including:
	  ○ personal protective clothing;
	  ○ minimum level of respiratory protection;
	  ○ minimum evacuation zone distances;
	  ○ a safe method of shutting down and isolating the PV system (or noting if this is not possible for safe internal access);
	  ○ any other risk control measures required to be followed by fire-fighters;
	• Evacuation triggers and protocols; and
	• Suppression response strategies and tactics, including aerial suppression options/management.

BF8	Two 20,000 litre tanks will be installed for firefighting purposes.
ASS1	When cable locations are known, soil samples will be taken at the depth of the cable trench over the area mapped in Figure 57 by a suitably qualified soils professional prior to construction. If sulfides are found at a level that may cause environmental harm, an ASS management plan will be developed in accordance with the Tasmanian Acid Sulfate Soil Management Guidelines (DPIPWE 2009) prior to the commencement of trenching

6.11 Socio-economic

6.11.1 Overview

This section provides an assessment of the socio-economic impact of the project. The Cimitiere Plains Solar Farm is located within the George Town municipality where the main population centre is George Town (approximately 7000 people) but also includes smaller communities such as Low Head, Bellbouy Beach, Beechford, Lefroy, Lulworth, Weymouth, Bellingham and Hillwood. During construction of the solar farm, the socio-economic impact of the project is likely to reach beyond the George Town municipality to areas such as Launceston and potentially Bridport and the communities on the West Tamar. Once operational, the electricity from the project will be fed into the NEM at the George Town substation which will have socio-economic impacts both locally and more broadly.

6.11.2 Existing environment

Manufacturing is one key component of the socio-economic framework of the George Town municipality. The Bell Bay manufacturing zone, located to the south of George Town is a major employer and economic driver in the region. At the 2021 census, 18% of the workforce in the George Town municipality was employed in manufacturing. This is more than twice the national average of 7%. While this is a very high figure, the percentage of people employed in manufacturing has decline from 24% in the 2011 census. The other main employer in the municipality is the healthcare and social assistance sector which employs 13% of the working population, up from 9.7% in 2021.

Figure 58. Industry of employment - Persons aged 15 years and over.

Description	2011	2016	2021
Agriculture, forestry and fishing (%)	4.4	4.7	4.9
Mining (%)	1.4	2.2	1.9
Manufacturing (%)	24.2	19	18
Electricity, gas water and waste services (%)	2	1.8	1.6
Construction (%)	6.9	7.8	7.8
Wholesale trade (%)	2.4	2.2	2
Retail trade (%)	10.6	10.9	9
Accommodation and food services (%)	6	6	7
Transport, postal and warehousing (%)	6.6	5.4	5.1
Information media and telecommunications (%)	0.7	0.5	0.4
Financial and insurance services (%)	0.9	1.1	1
Rental, hiring and real estate services (%)	0.6	0.9	1
Professional, scientific and technical services (%)	1.8	2.1	2.7
Administrative and support services (%)	2.8	3	2.7
Public administration and safety (%)	5.3	4.5	4.1
Education and training (%)	7.4	7.4	9
Health care and social assistance (%)	9.7	11.5	13
Arts and recreation services (%)	0.6	0.9	1.3
Other services (%)	2.6	2.8	3.1
Industry of employment inadequately described or not stated (%)	3	5.3	4.1
Total persons employed aged 15 years and over (no.)	2 430	2 187	2 489

Source: Australian Bureau of Statistic Website. Accessed on 10/9/23

Some of the main employers at Bell Bay are:

- Bell Bay Aluminium (BBA), an aluminium smelter owned by Rio Tinto,
- The Tasmanian Electro Metallurgical Company (TEMCO), a manganese alloy smelter owned by the GFG Alliance, and
- Timberlink Australia which manufactures timber products.

BBA and TEMCO in particular were located at the Bell Bay site on the basis of favourable access to electricity and the deep-water port. Both sites are major users of electricity in Tasmania and consequently, the George Town substation is one of the main substations in the state with strong links to other key nodes such as Sheffield and Palmerston substations. The George Town substation is also the connection point of the Basslink Interconnector which connects the Tasmanian grid to mainland grid at the Loy Yang Power Station in Victoria.

In addition to a strong manufacturing sector, there are a number of other socio-economic characteristics where the George Town municipality differs from the mean for Tasmania and Australia. For example, the median age in George Town is 49 whereas it is 42 for Tasmania and 38 for Australia. Table 56 provides a selection of statistics from the 2021 Australian Bureau of Statistic (ABS) census. The older age of the population in the George Town municipality may confound several of these statistics such as the percentage of people living with no long-term health condition and the percentage of people over 15 participating in the labour force. Some of the main points from the data are:

- Household incomes are lower than the national average.
- The level of education is typically lower than average, but a relative high number of people obtain a Certificate Level III.
- There are fewer people participating in the labour force than the Tasmanian or national average.
- Of those participating in the labour force, 10% reported being unemployed at the time of the census which was twice the nation average.
- The percentage of people employed in occupations such as trades, technicians, labourers, machinery operators, drivers and community and personal service works was higher than the national average whereas the percentage of managers and professionals was lower.
- 70% of people had both parents born in Australia which is 25% higher than the national average.
- Five percent of the workforce is employed in aluminium smelting.
- The percentage of people who own their home outright is 10% higher than the national average.

Table 56. A selection of statistics from the 2021 census of the George Town municipality

Characteristic	Percentage of the Population		
	George Town	Tasmania	Australia
Percentage of the population below 50 years old	51.3	59.3	64.5
Percentage of the population above 50 years old	48.7	40.9	35.4
Level of highest educational attainment is Bachelor Degree level and above	10.0	21.9	26.3
Level of highest educational attainment is Certificate level III	17.8	15.0	12.6
Level of highest educational attainment is Year 10	21.8	15.9	10.0
Both parents born overseas	14.2	18.3	36.7
Both parents born in Australia	70.3	66.6	45.9
Religious affiliation – No Religion, so described	50.5	49.6	38.4
Households where a non-English language is used	4.3	9.4	24.8
People aged 15 and over who are participating in the labour force	46.7	58.2	61.1
People who reported being in the workforce but are unemployed	10.0	5.9	5.1
Occupation – Technicians and Trades Workers	16.3	13.9	12.9
Occupation – Labourers	15.7	11.3	9.0
Occupation – Community and personal service workers	13.3	13.6	11.5
Occupation –Machinery operators and drivers	12.4	6.4	6.3
Occupation – Professionals	11.8	20.0	24.0
Occupation – Managers	9.9	12.7	13.7
Occupation – Clerical and administrative workers	8.9	11.7	12.7
Industry of employment – Aluminium smelting	5.5	0.2	0.0
Industry of employment – Aged care residential services	3.2	2.7	2.1
Industry of employment – Supermarket / grocery stores	3.1	2.9	2.5
Industry of employment – Other social assistance services	2.9	3.3	2.3
No long-term health condition	47.0	54.7	60.2
Dwelling owned outright	41.6	37.1	31.0
Dwelling owned with a mortgage	27.0	33.0	35.0
Dwelling rented	27.2	26.4	30.6
Household income less than $650 per week	30.3	21.1	16.5
Household income more than $3000 per week	8.1	15.0	24.3

Source: Australian Bureau of Statistic Website. Accessed on 10/9/23

6.11.3 Assessment of impacts

6.11.3.1 Construction

Construction of the solar farm will be conducted by a large engineer, procure, construct (EPC) contractor who will have the specialist engineers and project managers to manage the project. The EPC contractor typically subcontracts many of the construction components to specialist construction contractors. This may include for example:

- Clearing the transmission line easement,
- Construction of the transmission line,
- Construction of the substation,
- Construction of the control building and temporary construction facilities,
- Civil works to construct roads, hardstands etc.
- Trenching and cable laying,
- Fencing (security fence),
- Transport,
- Security etc.

In addition to these contractors, a number of people will be employed to install the solar panels and tracker units. The peak number of contractors and employees working on site during construction will be approximately 300 people. It is likely that some of the contractors will have people who are based locally and will be able to travel from their home to the site. Others will need to find accommodation in the area. Similarly, some of those employed to work on the site will live locally (within commuting distance) and others will need to find accommodation. There is unlikely to be sufficient short-term accommodation in George Town itself, but Launceston is only 40 minutes away on a good highway and others may find accommodation in smaller centres such as Bridport.

Construction will see an increased demand for labour for both skilled workers (electricians, line workers etc) and non-skilled workers. There will also be increased demand for service industries such as accommodation, food, fuel and entertainment as well as goods such as road base, sand, machinery hire and other miscellaneous goods.

There is also potential for some negative social impacts during construction primarily in relation to traffic and potentially in relation to noise. These impacts are covered in Sections 6.7 and 6.6 respectively.

6.11.3.2 Operation

The main socio-economic benefit of the solar farm will be the supply of additional renewable energy into the grid. With the transition away from fossil fuels, more renewable energy will be required to replace fossil fuels in sectors such as manufacturing and transport. Many industries are looking to electrify their processes so that they can maintain demand for their goods and services. Additional renewable energy also has the potential to attract new industries or allow existing industries to expand.

Solar farms are currently one of the cheapest forms of new generation in the grid (Lazard, 2023). Variable renewable energy such as solar needs to be firmed by either flexible gas, hydro, pumped hydro, batteries or other forms of energy storage. The economics of renewables firmed by these other energy sources is such that renewables are now the main source of new electricity being developed and purchased in the NEM. Tasmania is in the very fortunate position that it has hydro-electric capacity to firm variable renewable energy sources. Solar energy in Tasmania complements the existing hydro generation as it produces most of its energy over the summer months when inflows into hydro catchments are typically lower.

Other socio-economic benefits during operation include:

- Employment of approximately 10 permanent staff of a range of skill levels.
- Income to the landholder for the lease of the land.
- Engagement of contractors to perform maintenance activities.

A potentially negative social impact of the operation of the solar farm is visual impact. This has been addressed in Section 6.4

6.11.4 Mitigation measures

The following measures will be undertaken to maximise the benefits and minimise any potential adverse impacts:

- Employment will be sourced from the local area where appropriate skills and expertise exist.
- The local community will be provided with information regarding the timing of the project, the opportunities for employment and the need for services from local businesses.

Please refer to the traffic, noise and visual chapters for mitigation measures relating to these topics.

6.11.4.1 Summary of mitigation measures

A summary of the mitigation measures for socio-economic is provided in Table 57.

Table 57. Summary of mitigation measures for socio-economic

Reference	Mitigation Measure
SE1	Employment will be sourced from the local area where appropriate skills and expertise exist.
SE2	The local community will be provided with information regarding the timing of the project, the opportunities for employment and the need for services from local businesses.

6.12 Waste

6.12.1 Overview

The project will produce a number of waste streams during the construction period. Very minor quantities of waste will also be generated ongoingly during the operations phase. On decommissioning of the project there will be a very large quantity of waste, much of which will be able to be recycled.

6.12.2 Types of waste generated and management measures

Waste generated by the project will be managed in accordance with the principles of the waste hierarchy:

- reduce waste production;
- recover resources; and
- dispose of waste appropriately.

Prior to construction commencing, a waste management plan (WMP) for construction will be developed. Those developing the plan will consult with the George Town Council and commercial waste management companies to explore options for waste reuse and recycling. The WMP will include:

- Measures to manage, reuse, recycle and safely dispose of waste generated by the project
- Procedures for storage, transport and disposal of waste
- Monitoring, record keeping and tracking including demonstration of lawful disposal of contaminated products, wastes or residues generated by the project.

Waste management plans, procedures and mitigation measures will be communicated to all employees and contractors during site induction, prior to commencing works at the Site.

The types of waste likely to generated during each phase of the project are listed in the tables below, together with the proposed management approach for each type.

Table 58. Wastes from construction

Waste Material	Management Measures
Plastic. Plastic wrapping and straps associated with packaging	To be disposed to landfill.
Paper and cardboard From packaging of equipment	Separated and sent to a recycling facility.
Metal Metal straps from packaging. Damaged mounting systems etc.	Separated and sent to a recycling facility.
General domestic waste Waste produced by construction staff including food waste, glass, plastics, cans, paper and cardboard.	Clearly labelled bins will be installed on-site to encourage waste separation, and general waste bins will be provided for disposal of materials that cannot be cost-effectively recycled.
Oils, fuels etc Small quantities of waste and fuels may be produced on site.	Vehicles and equipment will not be serviced on site unless it is impractical to do otherwise. Oils and fuels will be separated and disposed at a facility that is licenced to receive it.
Timber Pallets and other packaging	To be reused or recycled where possible. May require separation of treated and non-treated timbers
Trees and native vegetation Primarily in the transmission line easement but also some native vegetation on the solar farm.	Any commercial timber will be harvested where practicable. A Forest Practices Plan will be prepared (irrespective of whether there is viable quantities of commercial timber) unless the proponent of the transmission line is exempt under Section 17(6) of the *Forest Practices Act 1985*(Electricity Infrastructure – Regulation 4(l)). Logs that cannot be harvested will be stacked and burnt. A Fire Management Plan will be developed depending on the timing of the burn.
Sewage Temporary toilet facilities will require regular pumping	A certified waste contractor will be contracted to remove the waste.

Table 59. Waste from operation

Waste Material	Management Measures
PV panels Panels that are damaged or defective will need to be replaced. It is also possible that panels may be replaced during the operation of the solar farm to extend the life of the facility. This is more likely to occur toward the end of the panel's life span and if there have been significant improvements in panel technology.	Panels will be recycled.
General domestic waste Very small quantities of domestic waste will be produced by construction staff including food waste, glass, plastics, cans, paper and cardboard.	Clearly labelled bins will be installed on-site to encourage waste separation, and general waste bins will be provided for disposal of materials that cannot be cost-effectively recycled.
Sewage Toilet facilities will be provided the control building.	An onsite waste water treatment system will be installed at the control building.

Table 60. Waste from decommissioning

Waste Material	Management Measures
PV panels	Will be recycled.
Metal Metal from mounting frames, perimeter fence, cables and other equipment such as PCUs.	Will be separated into different types of metals and recycled wherever possible.

6.12.3 Summary of mitigation measures

A summary of the mitigation measures for waste is provided in Table 61.

Table 61. Summary of mitigation measures for waste

Reference	Mitigation Measure
W1	Prior to construction commencing, a waste management plan (WMP) for construction will be developed. Those developing the plan will consult with the George Town Council and commercial waste management companies to explore options for waste reuse and recycling. The WMP will include: • Measures to manage, reuse, recycle and safely dispose of waste generated by the project • Procedures for storage, transport and disposal of waste • Monitoring, record keeping and tracking including demonstration of lawful disposal of contaminated products, wastes or residues generated by the project.
W2	Waste management plans, procedures and mitigation measures will be communicated to all employees and contractors during site induction, prior to commencing works at the Site.
W3	Waste PV panels will be recycled.
W4	Waste metal from mounting frames, perimeter fence, cables and other equipment such as PCUs will be recycled wherever possible

7 Transmission line route selection

The route for the transmission line is constrained between the Basslink Interconnector to the east and George Town to the west. A number of factors have influenced the selection of the transmission line route. The main factors include:

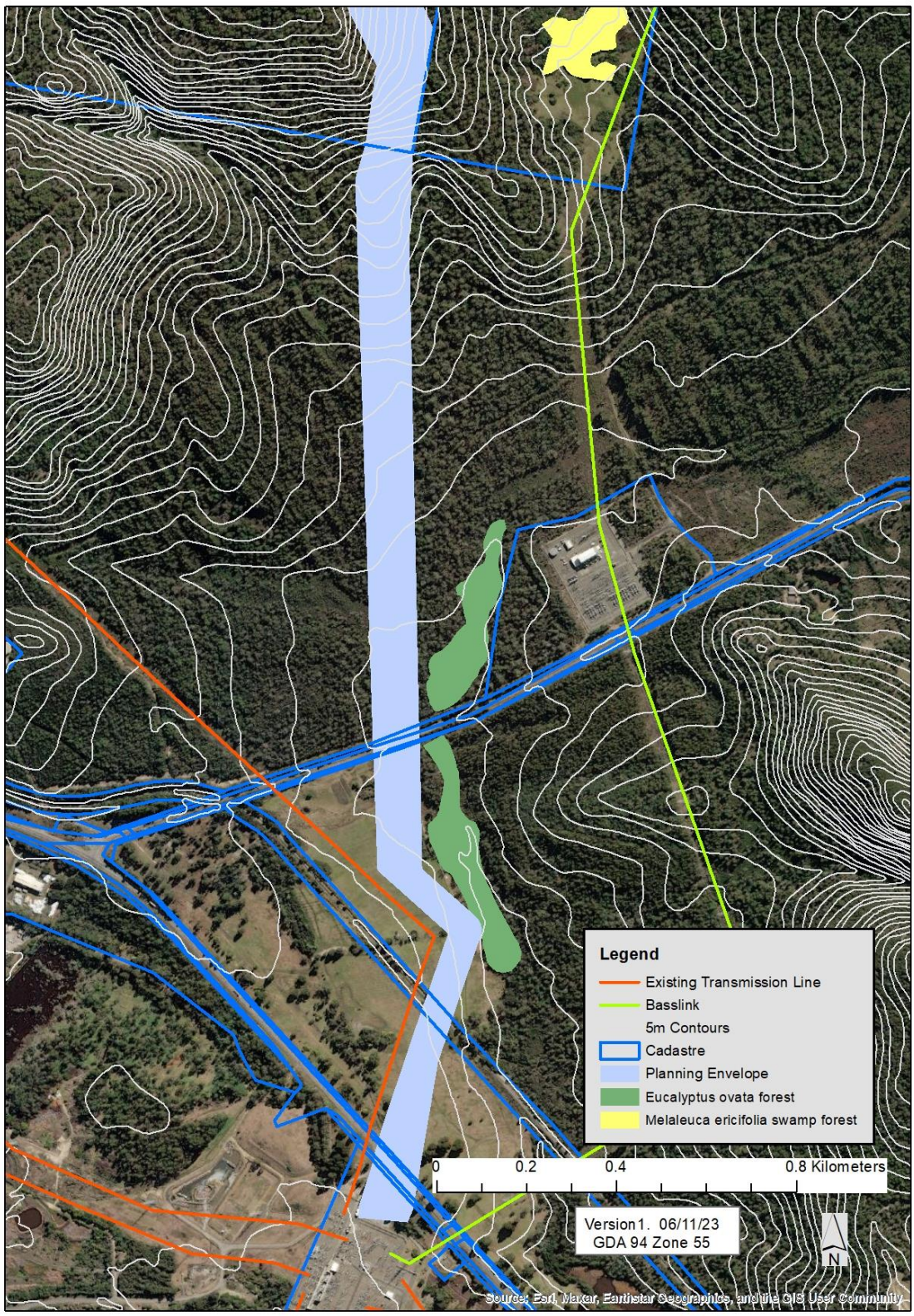
- The presence of threatened communities,
- Visual impact from residences and public viewpoints such as roads and Mt George lookout,
- The requirements of private landholders impacted by the transmission line,
- The location of threatened species, and
- Aboriginal cultural heritage.

Surveys for biodiversity and Aboriginal heritage were conducted over a broad area and a number of potential routes were assessed. An alternative route to the one assessed in this document is shown in Figure 30. This route went further to the east and ran parallel to the Basslink Interconnector for a distance of approximately 1.1 km before being forced away from the interconnector due to the presence of threatened communities. The route was investigated as impacts are often lower when infrastructure such as transmission lines run parallel in the same corridor. However, in this case the impacts were greater for the following reasons:

- The route was approximately 620m longer which would mean that an additional 3.1 Ha of vegetation would be cleared. While threatened communities could be avoided, the vegetation on this eastern route was deemed to be of better quality and more valuable than that of the final route chosen. It also made little sense to lengthen the line by 0.6 km just to run parallel to the Basslink Interconnector for 1.1 km.
- The easement for the proposed transmission line would not be able to overlap with the Basslink Interconnector easement and therefore, there is no environmental gain in terms of reducing the area of vegetation cleared.
- The eastern route would impinge on a small lifestyle block.
- The final route selected could make use of Musk Vale Road for access rather than constructing new roads.
- Part of the route selected had recently been cleared for forestry purposes.

The presence of two areas of *Eucalyptus ovata* forest and woodland (DOV) on either side of Bridport Road had a significant impact on the southern end of the transmission line route. *Eucalyptus ovata* forest and woodland is listed as a threatened vegetation community under *the Nature Conservation Act 2005* and the *Environmental Protection and Biodiversity Conservation Act 1999*. The location of this threatened community is shown in Figure 59. The combination of the Basslink Inverter Station and the *Eucalyptus ovata* forest forces the planning envelope to the west of the *Eucalyptus ovata* forest where it ultimately runs parallel to an existing 110 KV transmission line to the George Town substation.

Figure 59. Location of Eucalyptus ovata forest and woodland



8 Summary of mitigation and management measures

A summary of all mitigation and management measures is provided below:

Planning

Reference	Mitigation Measure
P1	Cimitiere Creek and associated riparian vegetation will not form part of the panel array as shown in Figure 13.
P2	Waterway crossing on the project will be constructed in accordance with the *Wetlands and Waterways Works Manual* and the *Forest Practices Code 2020*. Where possible, construction will occur when flows are low (ie summer and autumn).
P3	If the cables cannot be trenched across Cimitiere Creek with acceptable impacts, the cables will be horizontally direct drilled under the creek or a short section of overhead line will be used (this is not the preferred option).
P4	An erosion and sediment control plan (ESCP) will be developed as part of the construction environmental management plan (CEMP) for the project. The measure implemented will be in accordance with Managing Urban Stormwater: Soils & Construction (Landcom 2004). Given the large area over which construction activities will be conducted, measures should focus on limiting disturbance to vegetation cover wherever possible and re-establishing vegetation cover progressively and as soon as possible.
P5	Roads will be constructed in accordance with the *Forest Practices Code 2020*.
P6	The ground base signs erected at the access points will meet the following Sign Standards as specified in Table C1.6 of the SPP. *Ground base signs must:* *(a) be limited to 1 ground base sign for each 20m of frontage or part thereof;* *(b) not be higher than 2.4m above the ground; and* *(c) have a supportive structure that does not project above the sign face, unless it forms a feature or is incorporated in the sign design.*
P7	The construction of any permanent parking areas will comply with the following requirements: *All parking, access ways, manoeuvring and circulation spaces must:* *(a) be constructed with a durable all weather pavement;* *(b) be drained to the public stormwater system, or contain stormwater on the site; and* *(c) excluding all uses in the Rural Zone, Agriculture Zone, Landscape Conservation Zone, Environmental Management Zone, Recreation Zone and Open Space Zone, be surfaced by a spray seal, asphalt, concrete, pavers or equivalent material to restrict abrasion from traffic and minimise entry of water to the pavement.*
P8	The design and layout of any permanent parking areas will comply with the following requirements: *Parking, access ways, manoeuvring and circulation spaces must either:* *(a) comply with the following:*

	(i) have a gradient in accordance with Australian Standard AS 2890 - Parking facilities, Parts 1-6; *(ii) provide for vehicles to enter and exit the site in a forward direction where providing for more than 4 parking spaces;* *(iii) have an access width not less than the requirements in Table C2.2;* *(iv) have car parking space dimensions which satisfy the requirements in Table C2.3;* *(v) have a combined access and manoeuvring width adjacent to parking spaces not less than the requirements in Table C2.3 where there are 3 or more car parking spaces;* *(vi) have a vertical clearance of not less than 2.1m above the parking surface level; and* *(vii) excluding a single dwelling, be delineated by line marking or other clear physical means; or* *(b) comply with Australian Standard AS 2890- Parking facilities, Parts 1-6.* *Parking spaces provided for use by persons with a disability must satisfy the following:* *(a) be located as close as practicable to the main entry point to the building;* *(b) be incorporated into the overall car park design; and* *(c) be designed and constructed in accordance with Australian/New Zealand Standard AS/NZS 2890.6:2009 Parking facilities, Off-street parking for people with disabilities.*

Aboriginal cultural heritage

Reference	Mitigation Measure
ACH1	The location of all Aboriginal heritage sites within the planning envelope and AH14260 are to be plotted on the design plans for the Cimitiere Plains Solar Farm Project.
ACH2	For site AH14118, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 5m radial buffer applied. The barricading will remain in place for the duration of construction.
ACH3	For sites AH14120, AH14121, AH14122 and AH10399, prior to construction commencing, temporary high visibility protective barricading will be erected around the identified boundaries of the site with a 2m radial buffer applied. The barricading will remain in place for the duration of construction.
ACH4	Construction contractors will be informed of the location of all sites within the planning envelope and AH14260 and informed that these sites are not to be impacted.
ACH5	No soil disturbance works are to be carried out within the site boundaries, or within the barricaded zone of the site.
ACH6	Barricading will be removed on completion of construction works.
ACH7	If, during the course of the proposed works, previously undetected archaeological sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Appendix C). A copy of the Unanticipated Discovery Plan will be kept on site during all ground disturbance and construction work. All construction personnel will be made aware of the Unanticipated Discovery Plan and their obligations under the *Aboriginal Heritage Act 1975* (the Act).

Historic heritage

Reference	Mitigation Measure
HH1	If, during the course of the proposed works, previously undetected heritage sites or objects are located, the processes outlined in the Unanticipated Discovery Plan should be followed (see Section 8 of Appendix E)

Biodiversity

Reference	Mitigation Measure
B1	The *Melaleuca ericifolia* swamp forest (NME) within the solar farm will not be impacted by the development. Fencing or signage will be installed so that inadvertent damage cannot occur.
B2	The *Eucalyptus ovata* forest (DOV) within the transmission line planning corridor will not be impacted by the development. Fencing or signage will be installed so that inadvertent damage cannot occur.
B3	The small area of *Gratiola pubescens* in the transmission line planning corridor will not be impacted by the development. An exclusion zone (fencing and signage) will be established around these plants.
B4	An eagle nest survey will be conducted prior to construction if determined necessary in consultation with NRE. If any new eagle nests are detected within 500 m or 1 km line of sight of the development proposal, an assessment of potential impacts of works on these nests will be undertaken.
B5	If works, including vehicle movements, are planned to take place within 500m of an eagle nest (or 1 km line of sight) during the breeding season (July to January inclusive), a nest activity assessment shall be carried out between mid-Oct and the end of December (see FPA Eagle Tech Note 1). Nest activity checks may only be performed by suitably qualified and experienced persons as approved by NRE Tasmania. No works will be permitted between 1st July and the nest activity assessment in October within 500m of the eagle nest (or 1 km line of sight). If the nest is found to be inactive in any given year by an eagle nest activity assessment, then works can take place within the eagle residency period. If nest activity is confirmed, no works are permitted within 1000 m if there is line of sight, or within 500 m if there is no line of sight during the breeding season. Alternatively, if works are proposed within the active nest eagle residency period, then a works program should be submitted for approval to the Conservation Assessments Section (Department of Natural Resources and Environment).
B6	The routine maintenance of easements and infrastructure that is within 500 m or 1000 m line of sight of known eagle nests (as per Natural Values Atlas records) will be undertaken outside the eagle residency period. Similarly, overhead line inspections using helicopters or drones will be conducted outside the eagle residency period (July to January inclusive). If drones are to be used to inspect poles/conductors within 3 km of an eagle nest, this work should only be performed in accordance with the FPA Eagle Tech Note 1 which includes guidelines for conducting unmanned aerial vehicle (UAV) work near eagle nests.
B7	Large habitat trees will be retained where practicable.
B8	If any dens are identified during construction, all work within 50 m will cease immediately. A qualified ecologist will be consulted in regard to management of the den before works resume.
B9	Weed and disease hygiene will be undertaken in accordance with the document *Weed and Disease Planning and Hygiene Guidelines - Preventing the spread of weeds and diseases in Tasmania* (DPIPWE, Stewart and Askey-Doran, 2015).
B10	Vegetation clearance for the transmission line will be restricted to the easement and required access tracks. Clearance and disturbance of vegetation will be minimised as much as possible.

B11	Sand, gravel or any other similar material will be from a source that is weed and disease free.
B12	Works within waterways will follow guidelines in the NRE Wetlands and Waterways Works Manual.

Visual

Reference	Mitigation Measure
V1	Vegetation screening will be planted along Soldier Settlement Rd as shown in Figure 45 to help screen views to the solar farm where the panels are in close proximity to the road. This will be a single line of trees planted at relatively close density to a height of 4m.
V2	A vegetation screen will also be planted at residence R1 as shown in Figure 46. This will be a single line of trees along the driveway that will eventually grow to a height of 6 m or more.
V3	Vegetation screens will be planted as soon as the season permits once construction has commenced. They will be watered and maintained until they are fully established. Trees that die will be replaced.
V4	If galvanised poles are used for the transmission line the galvanising will be treated to “dull” the reflectivity of the poles.
V5	Pole locations will be set back from the East Tamar Highway and Bridport Road as much as reasonably practicable.

Noise

Reference	Mitigation Measure
N1	All significant noise generating construction activities will be limited to the following construction hours. • Monday to Friday 7 am to 6 pm • Saturday 8 am to 6 pm • Sunday and Public Holidays 10 am to 6 pm
N2	Where low intensity construction activities are required to be undertaken outside standard construction hours, such as cabling (not trenching), minor assembly, use of hand tools etc, they will be managed such that they are not audible at any residential receivers.
N3	A construction noise management protocol will be developed to minimise noise emissions, manage out of hours (minor) works and to respond to potential concerns from the community.
N4	Plant will be operated in a conservative manner (no over-revving) and shutdown when not in use.
N5	Where practicable, the simultaneous use of noisy machinery will be minimised, particularly in the vicinity of R05.
N6	Broadband reverse alarms will be used in lieu of the traditional high frequency type reverse alarms.
N7	To minimise road traffic noise: • schedule heavy vehicle deliveries to avoid bunching of vehicles which may cause short term elevated noise levels; • where feasible use minibuses or similar to transport construction personnel to and from the site to avoid excessive noise from light vehicle movements.
N8	Construction traffic will not use the section of Musk Vale Road between the junction with Soldier Settlement Rd and access point MVR1. Any exception to this must be approved in writing by the site environmental officer.
N9	Training and education will be provided to construction workers so they are aware of the location of noise sensitive receivers and are cognisant of any noise generating activities.
N10	Signage will be placed at the three main entrances to the solar farm advising truck drivers of their requirement to minimise noise both on and off-site.

Traffic

Reference	Mitigation Measure
T1	Prior to construction, a pre-condition survey of North Street and Soldiers Settlement Road will be undertaken, in consultation with Council. During construction these roads will be monitored and maintained to ensure continued safe use by all road users, and any faults attributed to construction of the solar farm will be rectified. At the end of construction, a post- condition survey will be undertaken and the necessary works made to ensure these roads are left in a condition that is consistent with the condition at the start of construction.
T2	Construction traffic will not use the section of Musk Vale Rd from Soldiers Settlement Road to MVR1 unless required for OSOM vehicles or some other special purpose.
T3	Construction traffic will use the transport routes shown in Figure 52. Construction vehicles travelling through George Town will only use East Tamar Highway / Goulburn St / Low Head Rd and North Street. Construction traffic will not use Agnes St and Arnold Street unless required for OSOM vehicles or some other special purpose.
T4	The section of Musk Vale Road to the southeast of MVR1 will be upgraded with a combination of passing bays and road widening to 5.5 metres where necessary.
T5	A construction traffic management plan will be prepared prior to construction. It will include the following elements and commitments: • All loading and unloading of vehicles will occur within the site. No street or roads will be used for material storage at any time. • All vehicles will enter and exit the site in a forward direction. • Establishment of a Driver Code of Conduct including using only the designated transport routes. • Induction process for vehicle operators and regular toolbox meetings. • Neighbours of the solar farm be consulted and notified regarding the timing of major deliveries which may require additional traffic control and disrupt access. • A complaint resolution procedure.
T6	Shuttle buses that will be provided to reduce the need for private vehicle use.
T7	The North Street intersection with East Tamar Highway will be upgraded to better accommodate 19.0m semi-trailer vehicles.

Flood

Reference	Mitigation Measure
F1	All sensitive equipment such as the PCUs and substation equipment will be constructed so that they are above 1% AEP event flood height.
F2	Solar panels will be excluded from areas where the hydraulic hazard is level H4 (unsafe for people and vehicles) or greater.
F3	Where the security fence crosses the Cimitiere Creek, the fence shall be design to let water flow freely in the event of a flood.

Agriculture

Reference	Mitigation Measure
A1	The area of the solar farm will continue to be used for agriculture, predominantly sheep grazing.
A2	A single axis tracking system will be utilised. The single axis tracking system will not use arms between rows that are part of the tracking system and block access to the row.
A3	There will be progressive rehabilitation. As soon as construction has been fully completed in a section of the solar farm, that area will be rehabilitated so that sheep grazing can recommence.
A4	Declared weeds will be controlled for the life of the project.
A5	When the solar farm is decommissioned, all the infrastructure is removed and the land can be returned to the same state as prior to the construction of the solar farm.

Hazards and risks

Reference	Mitigation Measure
HM1	The HV transformer at the substation will have an oil containment system.
HM2	The quantity of diesel stored on site will be less than 100,000 L.
HM3	The storage of diesel on site will comply with *AS1940 The storage and handling of flammable and combustible liquids* and will not be stored with other flammable liquids.
HM4	Any hydrocarbons stored on site will be in bunded containers.
EH1	The solar farm and substation will be enclosed by a security fence.
EH2	All electrical equipment will be designed, constructed and implemented according to relevant international and Australian standards and best codes of practice.
BF1	A 10 metre asset protection zone (APZ) will be established around the perimeter of all PV arrays and the substation. Grass within the APZ will be kept at a height of less than 100 mm during the fire permit season. Leaf material and other debris will be removed.
BF2	Visual screens will be planted using species suitable for the environment that have low fire spotting characteristics (such as smooth bark or evergreen species) and are not high flammability species. Visual screens, where practicable, will be planted as a continuous windbreak with no breaks of sufficient size to allow winds to funnel through. Screen plantings will be placed on the outer side of the APZ (away from the asset). Routine maintenance will be conducted prior each fire season to reduce dead materials, dead plant growth and leaf litter from within the APZ.
BF3	During the fire permit season, pastures within the solar farm will be maintained with minimal fuel load (<150 mm grass height).
BF4	During construction while the fire permit season is in place, the following measures will be implemented to control the risk of fire ignitions: • Establish and implement a fire prevention and emergency response strategy for staff, contractors and machinery operators;

	• All plant, vehicles and earth moving machinery are cleaned of any accumulated flammable material (e.g. vegetation); • Where possible, ensure machinery is free from faults and mechanical defects; • Drive on tracks and park in cleared areas to prevent fires starting from hot exhausts; • Vehicles will have access to a mobile phone or UHF radio; • A suitable firefighting appliance is present on site with at least two personnel trained in bushfire fighting; • All heavy and light vehicles working on site will have a fire extinguisher; • Stationary machinery or engines will have a 3m cleared area or have someone remain with the equipment while running; • Monitor fire information and advice through TasALERT (www.alert.tas.gov.au) • Monitor weather information and warnings from the Bureau of Meteorology. • A hot works permitting system is in place; and • All operations involving earth moving equipment, vehicles, slashers and hot works (e.g. grinders, welders) cease while the Grassland Fire Danger Index is or forecast to be 35 or greater

BF5	Prior to operation, a bushfire management plan will be prepared that addresses the mitigation measures listed in this section (6.10.5.3). It should also include: • storage of any flammable materials, • training for onsite personnel, • responses to an emergency alert being issued by fire authorities, and • incident management and control arrangements.
BF6	To minimise the risk of grass fire ignitions, all operations on the Site involving vehicles and slashers or other works that could start a fire will cease while the GFDI is or forecast to be 35 or greater.

BF7	An Emergency Response Plan (ERP) will be prepared for the solar farm that provides the following:
	• Addresses foreseeable on-site and off-site fire events;
	• Clearly states work health safety risks and procedures to be followed by fire-fighters, including:
	  ○ personal protective clothing;
	  ○ minimum level of respiratory protection;
	  ○ minimum evacuation zone distances;
	  ○ a safe method of shutting down and isolating the PV system (or noting if this is not possible for safe internal access);
	  ○ any other risk control measures required to be followed by fire-fighters;
	• Evacuation triggers and protocols; and
	• Suppression response strategies and tactics, including aerial suppression options/management.

BF8	Two 20,000 litre tanks will be installed for firefighting purposes.
ASS1	When cable locations are known, soil samples will be taken at the depth of the cable trench over the area mapped in Figure 57 by a suitably qualified soils professional prior to construction. If sulfides are found at a level that may cause environmental harm, an ASS management plan will be developed in accordance with the Tasmanian Acid Sulfate Soil Management Guidelines (DPIPWE 2009) prior to the commencement of trenching

Socio-economic

Reference	Mitigation Measure
SE1	Employment will be sourced from the local area where appropriate skills and expertise exist.
SE2	The local community will be provided with information regarding the timing of the project, the opportunities for employment and the need for services from local businesses.

Waste

Reference	Mitigation Measure
W1	Prior to construction commencing, a waste management plan (WMP) for construction will be developed. Those developing the plan will consult with the George Town Council and commercial waste management companies to explore options for waste reuse and recycling. The WMP will include: • Measures to manage, reuse, recycle and safely dispose of waste generated by the project • Procedures for storage, transport and disposal of waste • Monitoring, record keeping and tracking including demonstration of lawful disposal of contaminated products, wastes or residues generated by the project.
W2	Waste management plans, procedures and mitigation measures will be communicated to all employees and contractors during site induction, prior to commencing works at the Site.
W3	Waste PV panels will be recycled.
W4	Waste metal from mounting frames, perimeter fence, cables and other equipment such as PCUs will be recycled wherever possible

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