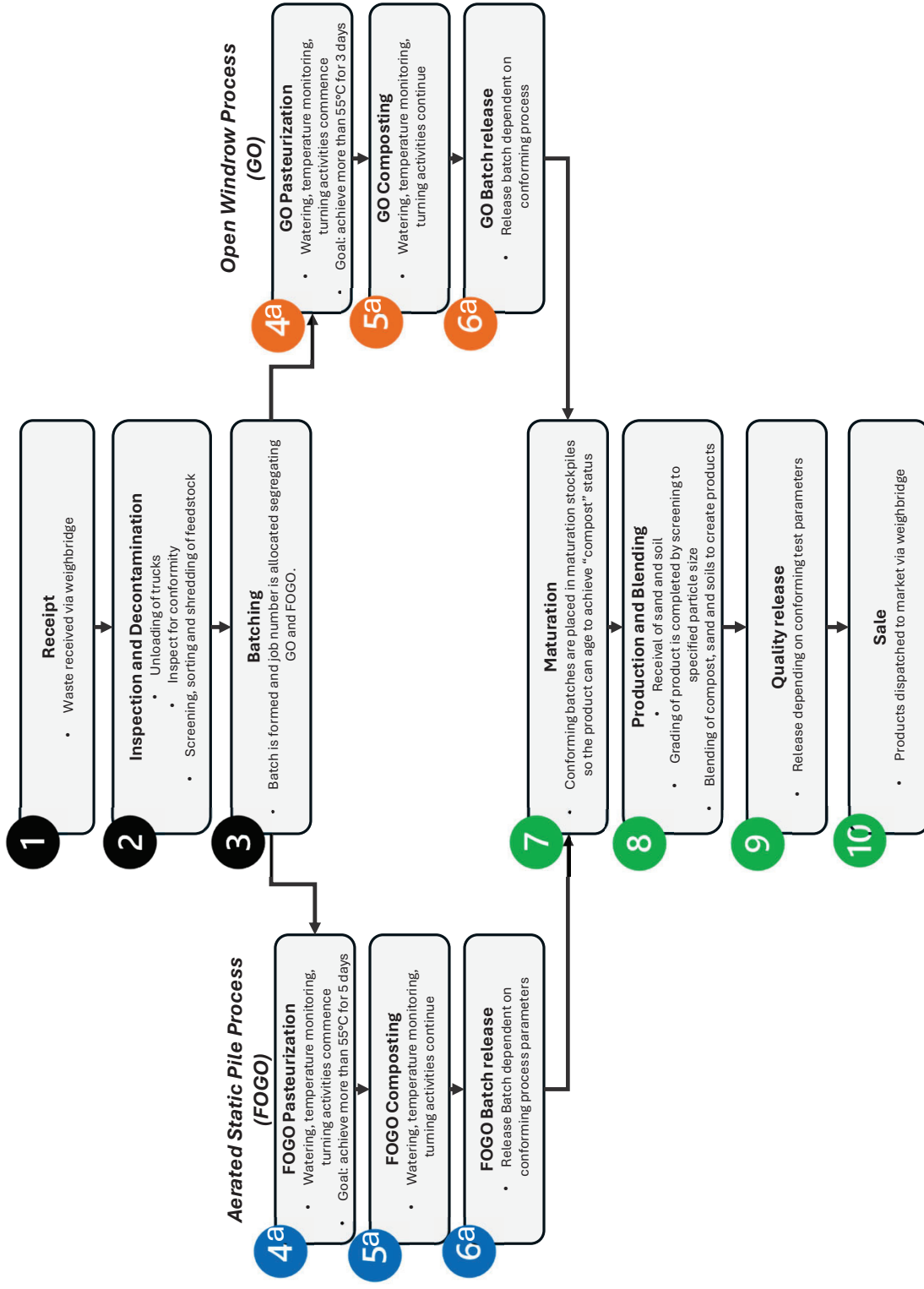


Appendix B

CMF Process Flow Diagram





Appendix C

Landowner's consent

Owner's consent for making an SDA application or request under Part 6 of the *State Development and Public Works Organisation Act 1971*

PART 1: Company owner's consent

I, Charles Emery

Director of the company mentioned below

and I, Krish Karimbil, Director

Of SOILCO Infrastructure Queensland Pty Ltd
ACN: 658 320 793

as owner of the premises identified as follows:

260 Mitchell Road, Bromelton, QLD, 4285, Lot 4 RP85497

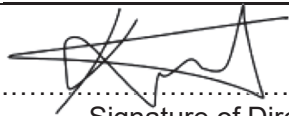
consent to the making of an SDA application or request under Part 6 of the *State Development and Public Works Organisation Act 1971* by:

SOILCO Pty Ltd

on the premises described above for:

State Development Area Material Change of Use – Special Industry

Company name and ACN..... SOILCO Infrastructure Queensland Pty Ltd ACN: 658 320 793



.....
Signature of Director

.....
12/09/24

.....
Date



.....
Signature of Director/Secretary

.....
12/09/24

.....
Date

Appendix D

SDA Code Compliance

Appendix D SDA Code Compliance

Overall objectives for development in the Bromelton SDA

An assessment of the Project against the overall objectives for development within the Bromelton SDA is provided in Table 1.

Table 1 *Assessment Against the Overall Objectives of the Bromelton SDA*

Strategic Vision	Proposal Response
Development within the Bromelton SDA will:	
a. be consistent with the strategic vision for the Bromelton SDA and the development precinct	Complies The CMF Project involves the development of an organic industry and will support the vision for Bromelton to become a major industrial area. The Bromelton CMF Project aligns with objectives in the Queensland Government Queensland Organics Strategy 2022–2032 by reducing the amount of organic waste going to landfill and it will offer economic and social benefits through employment and local business opportunities in South-East Queensland.
b. ensure the integrity and long-term functionality of the Bromelton SDA is maintained and protected from land uses and activities that may be incompatible with, or adversely affect, the continued use of the Bromelton SDA for industrial development of regional, State and national significance	Complies The Project will not impact upon the continued operation and future development of existing industrial activities, rural activities or extractive resources within the Bromelton SDA. The Project is located on freehold land that is currently not burdened by any easements. The Project will not adversely affect the continued use of the Bromelton SDA for industrial development of regional, State and national significance. The Bromelton site was selected by SOILCO as the location for the CMF due to its strategic advantages and suitability across multiple criteria. Located in South-East Queensland, the site is ideally positioned within appropriate distances from existing and proposed facilities in the SOILCO network. The layout of the Bromelton site allows for the proposed processing and storage areas to be consolidated on a single pad. The CMF can be positioned away from the main thoroughfare, Beaudesert Boonah Road, with the front of the site available for future development and growth opportunities such as for commercial or industrial spaces. The subject site is considered to be appropriate for the proposed CMF for the following reasons: – The CMF requires reliable power resources and significant water for its operation. It is located close to Energex infrastructure and there is space to accommodate a freshwater dam. – The CMF needs to be within close proximity to a State-controlled road and via Mitchell Road can connect to the State controlled road. SOILCO is addressing separate approvals with TMR to upgrade the Beaudesert-Boonah Road / Mitchell Road intersection and the 800m section of Mitchell Road. In addition, Mitchell Road will be upgraded to facilitate the access to the subject site. Scenic Rim Regional Council have determined that the road is to be upgraded to a class 4B – rural collector road and this entails an 8m formation and 7m carriageway. SOILCO has secured a separate development approval for constructing or interfering with a road from Scenic Rim Regional Council for the upgrade of Mitchell Road. – The CMF needs to be setback from sensitive receptors and being located within SDA precinct is appropriately setback from sensitive receptors. The nearest residential receiver is over 1400 m away. – The CMF is located within an area that has limited environmental values.
c. avoid new sensitive land uses and other incompatible land uses which could restrict the ability to establish and operate industrial development within the Bromelton SDA	Complies The CMF is setback from sensitive land uses as outlined below: – The CMF is located more than 1400 m from the nearest residential premise along Beaudesert Boonah Road, Bromelton. – The CMF footprint within Lot 4 on Plan RP85497 is located within an area classified as supporting non-remnant vegetation. – The CMF is located within an area that has limited environmental values. The Project is a CMF which aligns with the land uses supported within the Bromelton SDA.
d. maximise the efficient use of	Complies

Strategic Vision	Proposal Response
land, and existing and planned infrastructure	The Project maximises the efficient use of land, and existing and planned infrastructure. In developing the layout, SOILCO considered the site conditions, existing infrastructure, current industry best practices, and SOILCO's experience at its existing facilities. The proposed development will be connected to the road network via Mitchell Road and this has been approved by Scenic Rim Regional Council. A new crossover on Mitchell Road at the site's northern frontage will be constructed, Mitchell Road will be upgraded to a class 4B – rural collector road and will accommodate B-Double traffic. The Beaudesert-Boonah Road / Mitchell Road intersection will also be upgraded to provide for safe and efficient access for traffic from the CMF. The CMF will have a 30ML water harvesting storage, an on-site wastewater treatment system, and a stormwater management system. Power supply to the CMF will be via a transformer from existing infrastructure on Beaudesert Boonah Road along Mitchell Road to CMF site. An application has been submitted to Energex for electricity supply to the site (reference: CX24BEA1117829Q).
e. minimise adverse impacts on infrastructure and infrastructure corridors	Complies The CMF Project area will not result in adverse impacts on infrastructure or infrastructure corridors as there are no major infrastructure corridors intersecting the Project area. Details about infrastructure required to service the CMF is outlined above.
f. support the safe and efficient function and operation of existing and planned transport infrastructure	Complies The Beaudesert-Boonah Road / Mitchell Road intersection and the 800m section of Mitchell Road will be upgraded to provide for safe and efficient access to and from the CMF Project area. The Traffic Impact Assessment developed for the Project determined that the Project will not impact the road link capacity of Beaudesert Boonah Road and no material delay impact is expected as a result of the introduction of the construction traffic. Refer to Appendix I and J for the Traffic Impact Assessment during the Construction and Operational phases respectively.
g. include site specific stormwater and wastewater controls to avoid potential adverse impacts on the water quality of receiving waters and water assets	Complies Wastewater A Site and Soil Evaluation Report has been completed for the CMF and an on-site wastewater treatment and effluent disposal will be adopted for the CMF. An advanced secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system will be installed at CMF. The peak daily design volume for the entire site is 4.4 Equivalent persons – 600l/day – loads from staff. The Wastewater treatment system will be located at the northern end of the Project area near the office and amenities area. It will include a land application area and irrigation systems that will distribute wastewater into the topsoil layers to provide in-soil treatment of the remaining effluent residuals as well as provide nutrient uptake and evapotranspiration by grass. The design and calculations developed for the wastewater treatment plant can be seen in Appendix U. Stormwater The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in the pasteurisation stage of the CMF process. The best-practice for composting sites and the ERA53(s) Model Operating Conditions (MOC) nominate (WT3) that leachate needs to be directed to stormwater treatment and retention measures and that these measures must have the capacity to retain runoff for a 24- hour rainfall event up to an unspecified site-specific Annual Exceedance Probability (AEP). It is noted that there is precedent for other sites for an Average Recurrence Interval (ARI) of 10 years and that this is consistent with the NSW guideline Environmental Guidelines, Composting and Related Organics Processing Facilities, NSW DEC 2003. Therefore, containment of the 10-year 24 hour event (152 mm) was taken as the initial minimum sizing and identified to be approximately 17 ML

Strategic Vision	Proposal Response
	assuming 100% runoff. However, it was identified based on preliminary water balance of the site that the site would be most sensitive to longer durations of regular rainfall rather than a shorter intense storm. Therefore, approximately twice (i.e. 30ML) the volume of the minimum sizing was adopted. This, based on water balance calculations considering a 6 month period in which 900 mm of rainfall occurs. This rainfall was selected as approximately the depth within a 6 month period that is exceeded once every 10 years on average based on historical rainfall records. The water balance calculations indicated that this period could be managed with disposal via early phase reuse. The required disposal estimated approximately on average 150% of the typical conditions average demand/disposal rates supplied by SOILCO. In consultation with SOILCO this was considered to be achievable on the basis that the typical operational demand estimates are based on water demands during average and dryer times, not volumes that can be disposed of during periods of excess water. As part of the CMF the following is proposed: – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process. – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m² of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. – Provision of a 30 ML harvesting storage to the west of the operational area. – Truck water tanker delivery during dry periods to meet water supply needs. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines. – The CMF will be setback 25 m from flow paths, other than the harvesting storage The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and groundwater on-site during operation and maintenance to minimise impacts on ecology and water quality. In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding should be provided. During the construction phase, ESCP will be developed and implemented to manage erosion and sediment. A Stormwater Management Plan has been developed for the Project and is provided at Appendix N.
h. protect, and where possible, enhance the values of water supply catchments and key water supply infrastructure to ensure a safe and secure water supply	Complies The CMF Project area is located within the Water supply buffer area and the Water resource catchments and pre-lodgement advice has been received from Seqwater and considered in the design of the CMF. As discussed above, there will be no direct discharge of runoff to the surrounding environment as leachate ponds will be incorporated into the design. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period. The CMF will have hardstand area to prevent runoff entering into the groundwater. SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. The proposed freshwater storage dam will be lined to limit seepage. The CMF will have a designated leachate management system, as per the QLD ERA 53 Organic material processing guidelines. The proposed leachate ponds will be fully lined with either: – 600 mm thick recompacted clay with a permeability of less than 10⁻⁹ m/s; or – A high-density polyethylene geomembrane liner with a minimum thickness of 1.5 mm. Seepage will be detected through installation of spears around the dam. Hardstand areas at the CMF are to be constructed with a low-permeability base that prevents leachate from seeping into underlying soils and groundwater.

Strategic Vision	Proposal Response
i. manage the risks associated with natural hazards, to protect people and property	Complies Several technical reports have been developed to assess the CMF project's impact on the environment, people and property. Risks and mitigations measures to minimise the risk's severity have been included in each report. A summary of all the risks and mitigation measures can be found on Section 5 of the SDA Town Planning Report. Key mitigation measures include: – The operational CMF footprint is outside the 1% AEP flood impact for the identified flow paths adjacent to the site in accordance with Seqwater (2017) guidelines and the Scenic Rim Hazard Overlay Code – A Bushfire hazard assessment has been completed for the Project and environmental controls are outlined in Table 5.4. – A landslide stability assessment has been developed for the proposed development. The assessment was based on a review of available published geological information and a walk-over survey by a geotechnical engineer. The previous geotechnical investigation found no signs of groundwater or seepage were recorded in previous investigated boreholes. The site walkover observations indicated site drainage to be generally poor to fair. Erosion was noted around the creek located north of the site. The maximum slope fall is approximately 25 - 30%. Aside from the previously noted creek bed, there were no signs of water ponding and instability noted at the site. The creek banks and areas of cut to fill should be checked by a geotechnical engineer at time of construction to verify stability to mitigate landslide risk. The proposed site also has a low landslide susceptibility rating. – SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. – The proposed freshwater storage dam will be lined to limit seepage. – The facility will have a designated leachate management system, as per the QLD ERA 53 Organic material processing guidelines. The proposed leachate ponds will be fully lined with either: • 600 mm thick recompacted clay with a permeability of less than 10⁻⁹ m/s; or • A high-density polyethylene geomembrane liner with a minimum thickness of 1.5 mm. Seepage will be detected through installation of spears around the dam. Hardstand areas at the CMF are to be constructed with a low-permeability base that prevents leachate from seeping into underlying soils and groundwater. Please refer to the following technical reports for more information: – Environmental Management Plan – Appendix K – Stormwater Management Plan and Flood assessment – Appendix N – Bushfire Hazard Assessment – Appendix Q – Slope Stability Report – Appendix S
j. avoid adverse impacts on environmental, cultural heritage and community values, or minimise and mitigate impacts where they can't be reasonably avoided	Complies The CMF has been designed to be setback as far as possible from sensitive receptors and from environmental values. An ecological assessment has been undertaken for the Project and determined that construction of the Project will result in a significant impact to the koala which is a Matter of State Environmental Significance. However, the clearing of the koala trees within mapped core habitat area (Mitchell Road section) is exempted development under Schedule 10, Part 10 of the <i>Planning Regulation 2017</i>, and does not trigger assessable development. Therefore, environmental offsets are not triggered by the Project under state legislation. The CMF is located on previously cleared land. There are some planted trees and landscaping, including along Mitchell Road. During the construction phase the contractor will develop and implement the following plans: – CEMP – outlining the actions for potential impacts and mitigations of environmental factors with the CMF. – ESCP developed in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats.

Strategic Vision	Proposal Response
	The entirety of the site is mapped as a Category 5 risk under the ACH Act <i>Duty of Care Guidelines</i>. The likelihood of other values being uncovered during construction are significantly high, therefore several mitigation measures have been included in the Cultural Heritage Report available in Appendix R. A cultural heritage management plan or cultural heritage agreement will be developed with traditional owners. A summary of the prescribed environmental matters associated with the subject site and Mitchell Road are discussed below: Waterway providing for fish passage – Mapped over subject site. DAF confirmed that ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. DAF considered ACT1 to constitute a waterway as defined under the Fisheries Act 1994 and any waterway barrier works within this waterway require authorisation. The proposed works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included. Endangered or of concern regional ecosystems – Category B sections are mapped over Mitchell Road reserve and will be impacted by vegetation clearing activities. However, vegetation clearing is being undertaken in accordance with the Accepted Development Vegetation Clearing Code – Clearing for Infrastructure Regional ecosystems within the defined distance of a watercourse – This matter is mapped over the subject site and alignment with the DAF waterways. The two water features are classified as stream order 1 and will be impacted by the CMF. Connectivity - The extent of clearing within the Project area is unlikely to create a substantial barrier or restrict fauna movement. The Project is located in a landscape that has already been highly fragmented from historical clearing and agriculture. The existing state of the site in which the composting facility is proposed on is historical agricultural land in which a majority of the habitat has already been degraded. Habitat fragmentation can isolate populations by causing barriers to local fauna movement. The quality of persisting habitats can be substantially degraded by edge effects associated with increased exposure to light, noise, run-off, sedimentation, erosion and weed and pest infestation. The Project footprint contains the unsealed Mitchell Road to the north, and is bordered by Beaudesert Boonah Road to the north-east, and a railway line to the east. Given the observed evidence of infrastructure maintenance (vegetation trimming, mowing, etc.) and impacts associated with infrastructure operation (compacted tracks), habitat within the Project area currently experiences fragmentation from the historical vegetation clearing in the surrounding landscape. Additionally, vegetation within the Project area occurs largely as non-remnant, with only patches of regrowth and remnant vegetation on the Project area boundaries including in the south-west and north along Mitchell Road. Given the above, it is considered that no patches of remnant vegetation will become directly isolated as a result of the proposed works. Essential habitat – is mapped over the Category B sections of Mitchell Road reserve and will be impacted by vegetation clearing activities. The short-beaked echidna (<i>Tachyglossus aculeatus</i>) has the potential to occur in subject site and a significant impact assessment determined that the Project is unlikely to have a significant residual impact on this species. White-throated needletail, Grey-headed flying fox, Yellow bellied glider and Greater glider have the potential to occur in subject site and a significant impact assessment determined that the Project is unlikely to have a significant residual impact on this species. The clearing within the essential habitat area is not expected to exceed the clearing limits as outlined in the Significant Residual Impact Guideline (for MSES and prescribed activities assessable under SPA). Protected wildlife habitat – Core koala habitat mapped within Mitchell Road and will be cleared as part of the road upgrade. The clearing of core koala habitat within an SDA is exempted development and therefore does not trigger assessable development. Core koala habitat is mapped on Lot 4, but will not be impacted. In accordance with Bromelton SDA assessment criteria 2.5.11 (5): Offsets maybe required if residual significant impacts to MSES or MNES caused by the development cannot be avoided. Further information about the significant assessment completed for the Project is included section 8.1.2.5 of Appendix G: Terrestrial Ecological Assessment Report.
k. be located, designed and constructed in	Complies The Project has been located, designed and constructed in accordance with the current best practice principles, as discussed in Section 4.

Strategic Vision	Proposal Response
accordance with best practice principles	SOILCO has been an established manufacturer of compost, mulch and soil blends in Australia since 1985, with four current licensed and operating facilities in New South Wales and a strong distribution network in agricultural and urban markets in Australia. SOILCO's mission is to transform organic resources into the world's best products to regenerate and enhance the health and productivity of soil and to maximise our contribution to clean energy and sustainable communities. SOILCO is a circular economy pioneer that believes the circular economy designs out waste and pollution, keeps resources circulating at their highest values, and regenerates natural systems.
I. be located and designed to avoid impacts on the ongoing operation of quarries within key resource areas and their haulage routes	Complies The Project will not impact on the ongoing operation of quarries within key resource areas and their haulage routes as it does not impact on key resource areas. The Project will have direct access to the road network via Mitchell Road.

Special Industry Precinct

The preferred development intent for the Special Industry Precinct and its relation to the Project is described in Table 2. The Project area is wholly within this precinct.

Table 2 Special Industry Precinct - Preferred Development Intent Assessment

Strategic Vision	Proposal Response
a. This precinct is to accommodate the development of high impact and special industries which require separation from incompatible uses due to the potential for offsite impacts	Complies The Project involves the development of a compost manufacturing facility which is considered to be defined as 'special industry' under the Bromelton SDA Development Scheme. The CMF is setback from sensitive land uses as outlined below: – The CMF is located more than 1400 m from the nearest residential premises along Beaudesert Boonah Road Bromelton – The CMF footprint within Lot 4 on Plan RP85497 is located within an area classified as supporting non-remnant vegetation – The CMF is located within an area that has limited environmental values.
b. The precinct will generally accommodate development which: (i) may be difficult to locate in conventional industrial estates (ii) may require separation from residential land, sensitive and/or incompatible land uses (iii) are of a nature and scale to benefit from, and make efficient use of, well serviced, unconstrained industrial land.	Complies Refer to the response above.
c. Development does not compromise the long-term functionality of the Bromelton SDA or sterilise land allocated for special or high impact industry.	Complies The Project will not impact upon the long-term functionality of existing or future developed industrial activities, rural activities or extractive resources within the Bromelton SDA. The Project is not considered to sterilise land for the following reasons: – Leachate dams will be fully lined. – The proposed freshwater storage dam will be lined to limit seepage.

Strategic Vision	Proposal Response
	– Hardstands area will be incorporated in the CMF footprint. – SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. – There will be no direct discharge of runoff to the surrounding environment.
d. Development does not result in emissions that would compromise the ability to develop other parts of the SDA for their intended purpose	Complies The Bromelton CMF Project has the potential to result in noise, dust and air emissions and the following environmental controls will be implemented by the Project to reduce adverse impacts to the surround environment: – A construction dust protocol will be prepared detailing management measures including a method for recording dust complaints and monitoring requirements. Further mitigation measures are outlined in Table 5.5. and in Appendix L. – Section 6.4.2 of the EMP (in Appendix K) outlines the environmental controls for air, including odour to be adopted for the CMF. Cumulative odour impacts with the nearby Bush's Proteins has also been considered but is considered to be negligible. – Table 5.6 outlines the mitigation measures to manage noise emissions during the construction phase and these will be included in an CEMP. – Table 5.10 outlines the mitigation measures to manage noise emissions during the operational phase and these will be included in an OEMP. – Section 6.4.3 of the EMP (in Appendix K) outlined the environmental controls to be adopted for the CMF.
e. Defined uses which are generally considered to meet the precinct intent include high impact industry and special industry.	Complies The Project involves the development of a compost manufacturing facility which is defined as a special industry.

SDA-wide assessment criteria

Table 3 provides an assessment of the Project against the SDA wide assessment criteria provided in the Bromelton SDA Development Scheme.

Table 3 SDA Wide Assessment Criteria Assessment

Strategic Vision	Proposal Response
2.5.1 Services	
1. Development maximises the use and minimises the costs for infrastructure associated with telecommunications, transport, water, wastewater, recycled water and energy.	Complies The Project maximises the efficient use of land and minimises the costs for infrastructure. In developing the layout, SOILCO considered the site conditions, current industry best practices, and SOILCO's experience at its existing facilities. Transport and Road Infrastructure The proposed development will have access via a new crossover on Mitchell Road at the site's northern frontage. The Beaudesert-Boonah Road / Mitchell Road intersection and the 800m section of Mitchell Road will be upgraded to provide for safe and efficient access to and from the site. Mitchell Road will be upgraded to facilitate the access to the subject site. Scenic Rim Regional Council have determined that Mitchell Road will need to be upgraded to a class 4B – rural collector road and this entails an 8m formation and 7m carriageway. The proposed upgrade to Mitchell Road will accommodate B-Double traffic. SOILCO has secured a separate road permit from Scenic Rim Regional Council for the upgrade of Mitchell Road. Water, wastewater, recycled water The CMF will consist of a 30ML water harvesting storage to provide water for the operation of the CMF. There will be an on-site wastewater treatment system to treat and manage wastewater. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period. Leachate will only be reused in pasteurisation stage of the CMF process. The best-practice for composting sites and the ERA53(s) Model Operating Conditions (MOC) nominate (WT3) that leachate needs to be directed to stormwater treatment and retention measures and that these measures must have the capacity to retain runoff for a 24- hour rainfall event up to an unspecified site-specific Annual Exceedance Probability (AEP). It is noted that there is precedent for other sites for an Average Recurrence Interval (ARI) of 10 years and that this is consistent with the NSW guideline Environmental Guidelines, Composting and Related Organics Processing Facilities, NSW DEC 2003. Therefore, containment of the 10-year 24 hour event (152 mm) was taken as the initial minimum sizing and identified to be approximately 17 ML assuming 100% runoff. However, it was identified based on preliminary water balance of the site that the site would be most sensitive to longer durations of regular rainfall rather than a shorter intense storm. Therefore, approximately twice (i.e. 30ML) the volume of the minimum sizing was adopted. This, based on water balance calculations considering a 6 month period in which 900 mm of rainfall occurs. This rainfall was selected as approximately the depth within a 6 month

Strategic Vision	Proposal Response
	period that is exceeded once every 10 years on average based on historical rainfall records. The water balance calculations indicated that this period could be managed with disposal via early phase reuse. The required disposal estimated approximately on average 150% of the typical conditions average demand/disposal rates supplied by SOILCO. In consultation with SOILCO this was considered to be achievable on the basis that the typical operational demand estimates are based on water demands during average and dryer times, not volumes that can be disposed of during periods of excess water. The following is proposed to manage stormwater: – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process. – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m² of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. Refer to Section 4.3 in the Report for more information. A Site and Soil Evaluation Report (Appendix U) has been completed for the CMF and an on-site wastewater treatment and the effluent disposal will be adopted for the CMF. An advanced secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system will be installed at CMF. The peak daily design volume for the entire site is 4.4 Equivalent persons – 600l/day – loads from staff. The Wastewater treatment system will be located at the northern end of the Project area near the office and amenities area. It will include a land application area and irrigation systems will distribute wastewater into the topsoil layers to provide in-soil treatment of the remaining effluent residuals as well as provide nutrient uptake an evapotranspiration by grass. The design and calculations developed for the wastewater treatment plant can be seen in Appendix U. Energy/telecommunications Power supply to CMF will be via a transformer from existing infrastructure on Beaudesert Boonah Road along Mitchell Road to CMF site. An application has been submitted to Energex for electricity supply to the site (reference: CX24BEA1117829Q), No gas supply is proposed at the CMF.
2. Development plans for and addresses the impacts of the development on existing and future planned telecommunications, transport, water, wastewater, recycled water and energy networks	Complies The CMF Project area will not result in adverse impacts on infrastructure or infrastructure corridors as there a no major infrastructure corridor intersecting the Project area. Details about infrastructure required to service the CMF is outlined above. Regarding energy and telecommunications, a report has been produced to assess the proposed infrastructure. Refer to Appendix T.

Strategic Vision	Proposal Response
3. Development is adequately serviced by telecommunications, transport, water, wastewater, recycled water and energy networks as relevant.	Complies Refer to the response to Item 1 above.
4. Development is to avoid or minimise adverse impacts on existing or proposed state or local government services.	Complies The Project will not adversely impact existing or proposed state or local government services. Details of the infrastructure proposed at CMF are outlined in the response to Item 1 above. Refer to Section 3.3 of the Twon Planning Report for further details on existing and planned infrastructure and utilities relevant to the Project.
5. Development is located, designed and constructed to avoid or mitigate potential flood damage, ensure no net worsening, avoid risks to public safety, and not adversely impact on transport and service infrastructure.	Complies A flood assessment was prepared to understand the flood hazard for 63.2%, 50%, 20%, 10%, 2%, 1% and 0.2% annual exceedance probability (AEP). It was found that the CMF is outside the flood extent=: – In the upper tributaries across the southern extent of the Project area, for the 1% AEP storm, the lateral flood extents are shown to be topographically constrained, with minimal bank storage of flood waters. Peak flood depths were modelled up to 1.18 m within the tributary and generally less than 0.4 m in the bank areas. – The topography flattens slightly in the northern portion of the Project lot. In the 1% AEP flood event, the lateral extent of the flood waters in this area extends from the north and occur out of stream bank areas. With flood depths were predominantly less than 0.2 – 0.4 m. – Outside of the Project area, at the confluence of the tributaries across the site, in stream peak flood depths of up to 1.5 m were modelled. The report determined that several in-built management measures, as well as additional measures will need to be implemented during the operational stage. The measures include appropriate separation of water types, provision of 30 ML of leachate storage, provision of a 30 ML harvesting storage to minimise reliance on tinkering, and provision of an erosion and sediment control plan. Refer to Appendix N for further details on the Stormwater Management Plan.
2.5.2 Transport	
1. Increased traffic arising from development is either able to be accommodated within existing road networks, or works are undertaken to minimise adverse impacts on existing and future infrastructure networks.	Complies A Traffic Impact Assessment (Appendix I) has been developed for the Mithcell Road / Beaudesert Boonah Road intersection against the forecast traffic during the peak construction period in 2025 and 2026, confirming that the proposed development will not negatively impact the operation and safety of the state-controlled road. A Pavement Impact Assessment will be lodged at a later date after detailed design phase has been completed.
2. Development is established to take advantage of proximity to appropriate transport routes and does not adversely impact on the safe and efficient functioning of the Sydney-Brisbane Rail corridor as well as integrated rail and road transport routes.	Complies The Project's location has been strategically selected based on its close proximity to a State-controlled road and via Mitchell Road can connect to the State controlled road. SOILCO is addressing separate approvals with TMR to upgrade the Beaudesert-Boonah Road / Mitchell Road intersection and the 800m section of Mitchell Road In addition, Mitchell Road will be upgraded to facilitate the access to the subject site. Scenic Rim Regional Council have determined that the road is to be upgraded to a class 4B – rural collector road and this entails an 8m formation and 7m carriageway. SOILCO has secured a separate

Strategic Vision	Proposal Response
	development approval for operational works from Scenic Rim Regional Council for the upgrade of Mitchell Road. There is no impact on the Sydney-Brisbane Rail corridor as the Project will not require the use of the Interstate Line and is not considered to impeded on other uses accessing the rail network.
3. Local road networks within the Bromelton SDA are to be designed to accommodate the proposed vehicle type and predicted traffic volumes associated with the development and the precinct/s.	Complies The CMF will utilise a new intersection between Mitchell Road and the state-controlled road of Beaudesert Boonah Road to access the site. The Mitchell Road / Beaudesert-Boonah Road intersection and 800m section of the Mitchell Road will be upgraded to facilitate the access to the site. A separate approval is being addressed with TMR and Scenic Rim Regional Council for these works. A Traffic Impact Assessment has been developed for the proposed intersection against the forecast traffic during the peak construction period in 2025 and 2026, confirming that the proposed development will not negatively impact the operation and safety of the state-controlled road.
4. The establishment and operation of existing and planned transport infrastructure is not compromised.	Complies A Traffic Impact Assessment has been developed for the construction phase of the project. Construction traffic is not expected to impact the road link capacity of Beaudesert Boonah Road, with acceptable levels of service expected for traffic in both construction years (2025-2026). Refer to Appendix I for the Traffic Impact Assessment for the Construction Phase. A Traffic Impact Assessment has been developed for the operational phase of the project. During the facility's operation, the Beaudesert-Boonah Road / Mitchell Road intersection will theoretically operate below capacity during the opening year (2026) and 10-year design horizon in all peak periods for a priority-controlled intersection. The maximum delay recorded at the intersection in the 2036 design scenario is approximately 27 seconds, well below DTMR's safety threshold. Additionally, the road link capacity assessment indicates that Beaudesert-Boonah Road will operate well below the operational capacity of a two-way, two-lane corridor with the inclusion of development traffic. Refer to Appendix J for the Operational Phase Traffic Impact Assessment report.
5. Sufficient car parking, vehicular manoeuvring and off-street loading/unloading facilities, which are adaptable to a variety of uses, are provided within the development site.	Complies The CMF footprint has been designed to accommodate carparking for visitors and staff. There are 20 staff car parking spaces, 2 space carparks and 1 disabled carpark. There will be 4 truck parking areas. Refer to the General Arrangement Overall Layout Drawing in Appendix A. The CMF has been designed to have sufficient vehicular manoeuvring for a B-Double. Refer to the vehicle turning paths layout drawing in Appendix A. The CMF will be connected to Mitchell Road and Mitchell Road will be upgraded as part of the Project to safely accommodate B-Doubles.
6. Development is designed to facilitate safe and efficient vehicular ingress and egress and does not unduly impact on the safe and efficient operation of external roads, rail, transport infrastructure or services.	Complies The CMF has been designed to have sufficient vehicular manoeuvring for a B-Double. Refer to the vehicle turning paths layout drawing in Appendix A.

Strategic Vision	Proposal Response
	The CMF will be connected to Mithcell Road and Mitchell Road will be upgraded as part of the Project to safely accommodate B-Doubles. A road safety impact assessment has been carried out to determine if there is likely to be any significant change to the level of road safety risk on the surrounding road network attributable to the Project. The safety of motorists is not expected to worsen due to the introduction of construction traffic. While some safety issues have been identified within the study area, the risks associated with these are not expected to significantly worsen (change in overall risk rating) due to the additional trips generated by the construction stage of the proposed development. Refer to Appendix I for the Traffic Impact Assessment during Construction Phase. The risk assessment indicates that there is an increase in risk score associated with the development traffic, however this is largely due to the fact that there are no turn movements currently occurring at the intersection. The proposed form of the intersection will provide sufficient capacity and therefore, no mitigation measures are deemed necessary. Refer to Appendix J for further details regarding the traffic impact during the CMF's operation phase. A Pavement Impact Assessment will be lodged at a later date after detailed design phase has been completed.
7. Rail spurs and sidings are designed in accordance with appropriate design standards.	Not applicable The CMF Project will not impact rail infrastructure and does not involve rail infrastructure.
2.5.3 Character and amenity	
1. Visual impacts of development are minimised through building design, materials and landscaping when viewed from a significant publicly accessible viewpoint such as major roads.	Complies A Visual Impact Assessment has been developed for the project. Visual impacts of the Project are anticipated to be moderate-low to negligible as overall the site is well-screened by intervening landform and vegetation. Mitigation recommendations to minimise the visual impact of the project include: – Project design contemplates that form, material, finishes and colours are high quality and aligned with the rural surroundings. – Landscape preservation using plant screening along the site boundaries and avoiding clearing of trees. – Minimise visual impacts of signage considering colours, sizes and location. – Ensure general tidiness, minimise impacts from lighting and ensure visible elements such as equipment or storage areas are located away from key views. Refer to Appendix M for the Visual Impact Assessment Report.
2.5.4 Emissions	
1. Development is designed to avoid or minimise: (a) adverse impacts from air, noise and other emissions that will affect the health and safety, wellbeing and amenity of communities and individuals and (b) conflicts arising from (but not limited to), spray drift, odour, noise, dust, light spill, smoke or ash emissions with sensitive and/or incompatible land uses.	Complies Dust emissions Construction and operation of the Bromleton CMF Project has the potential to increase dust emission through trucks and other vehicles travelling on unpaved roads and other sources associated with materials handling onsite, wind erosion for unpaved surfaces and materials stockpiles. Other activities with the potential to cause dust impacts during the construction phase include site establishment,

Strategic Vision	Proposal Response
	earthworks, road works and intersection works, and general construction works. A construction dust protocol will be prepared detailing management measures including a method for recording dust complaints and monitoring requirements. Further mitigation measures are outlined in Appendix L. Odour emissions The operational phase of the Bromelton CMF Project has the potential to cause odour impacts as a result of composting processes. Cumulative odour impacts with the nearby Bush's Proteins has also been considered but is negligible. An Odour Management Plan will be developed for the CMF which will include identification of all odour sources and measures to avoid the generation and minimisation of odours. Further mitigation measures are included Section 6.4.2 of the EMP (in Appendix K) outlines the environmental controls for air, including odour to be adopted by the CMF to manage emissions from the CMF. Airborne particle emissions To protect public and worker health from bioaerosols, the CMF will implement a range of prevention and mitigation strategies. These measures include minimising the frequency of turning open windrows and using water to suppress dust generation. Additionally, specific measures to manage odour-related issues are outlined in section 5.3.2 of the Town Planning Report. The composting process incorporates two key elements to minimise human exposure to microorganisms. First, the process includes pasteurisation to control the microbial transformation of organic materials. Second, the facility's design ensures effective material flow management by placing the FOGO handling processes within an enclosed building. This setup reduces wind exposure while maintaining proper ventilation to ensure worker safety. The building is strategically located in the northern part of the site, downwind from prevailing southern winds. Finally, workers will be provided with personal protective equipment (PPE) and trained on its proper use and safe handling practices for organic material. These training programs and PPE usage are designed to further minimise exposure to microorganisms and bioaerosols. Noise A Noise Impact Assessment (Appendix O) has been developed for the CMF project, indicating that noise levels during the construction and operation of the Bromelton CMF Project are expected to comply with the established noise criteria at all identified receivers. Although compliance is expected, the application of reasonable and feasible mitigation measures at the source is considered best practice and should be implemented. This includes avoidance of work involving noise at times when it is most likely to cause environmental nuisance, such as night-time, Sundays and public holidays. Equipment should be switched off when not in use and machinery and equipment should be chosen that has lower noise emissions. Please refer to Appendix O for additional best practice management measures. Section 6.4.3 of the EMP (in Appendix K) outlines the environmental controls for noise to be adopted by the CMF.
2. Development supports the achievement of the relevant acoustic and air quality objectives of the Environmental Protection (Noise) Policy 2008 and the Environmental Protection (Air) Policy 2008.	Complies Noise A Noise Impact Assessment (Appendix O) has been developed for the CMF project and determined that the

Strategic Vision	Proposal Response
	results from the construction noise assessment conducted indicate that construction works are expected to comply with the established noise criteria. The results from the operational noise assessment conducted indicates that the CMF will comply with the established noise criteria during the day period. During its operations from 6am to 7am, which fall under the morning shoulder period, the predicted noise level of the site is close to the established noise criteria (within 2 dB) at two (2) receivers (R02 and R03). Further investigation of the noise contributions at these receivers indicate that the dominant noise contributors are the dump trucks, loaders and shredder. The use of these noise contributors will be restricted during the 6am to 7am period. A full suite of mitigation measures to address noise emissions is included in Section 5 of the Town Planning Report. Air An air quality assessment (Appendix L) has been completed for the CMF project. It determined that air quality impacts from the proposed CMF are not expected to cause significant environmental impacts and are predicted to comply with the assessed air quality criteria at all nearby (within 2 km of site) sensitive receptors. A full suite of mitigation measures to address noise emissions is included in Section 5 of the Town Planning Report.
3. Development with high levels of emissions is to, in accordance with current best practice, avoid adverse impacts on the cumulative air quality¹ of the Bromelton air shed.	Not applicable The CMF project does not have high levels of emissions.
2.5.5 Natural hazards – flooding	
1. Development, in accordance with current best practice, is to: (a) achieve an appropriate level of flood immunity and (b) not adversely affect existing flow rates, flood heights or cause or contribute to other flooding impacts on upstream, downstream or adjacent properties. This includes potential impacts from changes to stormwater flows and local flooding.	Complies A flood assessment was prepared to understand the flood hazard for 63.2%, 50%, 20%, 10%, 2%, 1% and 0.2% annual exceedance probability (AEP). It was found that: – In the upper tributaries across the southern extent of the Project lot, for the 1% AEP storm, the lateral flood extents are shown to be topographically constrained, with minimal bank storage of flood waters. Peak flood depths were modelled up to 1.18 m within the tributary and generally less than 0.4 m in the bank areas. – The topography flattens slightly in the northern portion of the Project lot. In the 1% AEP flood event, the lateral extent of the flood waters in this area extends from the north and occur out of stream bank areas. With flood depths were predominantly less than 0.2 – 0.4 m. – Outside of the Project area, at the confluence of the tributaries across the site, in stream peak flood depths of up to 1.5 m were modelled. As a result, the CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. Several in-built management measures, as well as additional measures will be implemented during the operational stage. Refer to Appendix N for further details on the Stormwater management plan.
2. The risk of, and the adverse impacts from, flooding are avoided, minimised or mitigated to protect people and property, and enhance the community's resilience to flooding.	Complies The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. The CMF Project will include several in-built management measures, as well as additional measures to be

Strategic Vision	Proposal Response
	implemented during the operational stage, summarised in the Stormwater Management Plan (Appendix N).
3. Development maintains the safety of noxious and hazardous materials and chemicals manufactured or stored in bulk during flood events.	Complies The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. Storage of oils and lubricants for the maintenance of plant and machinery will be located within a covered, concreted floor, bunded area within the workshop and maintenance shed. A Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction. A hazardous Material and Waste Management Plan will be developed and implemented by the operator to describe how generated wastes are handled, stored, recycled and disposed of in accordance with applicable legislative and contractual requirements during operation of the facility. Please refer to Appendix A for 3D views and Design plans, Appendix K for the Environmental Management Plan and Appendix N for the Stormwater Management Plan and Flood Assessment.
2.5.6 Natural hazards – other	
1. Development, in accordance with current best practice: (a) identifies relevant natural hazards that may impact upon the development (b) appropriately manages risk associated with the identified hazards and (c) avoids increasing the severity of the natural hazard.	Complies Several technical reports have been developed to assess the CMF project's impact on the environment. Risks and mitigations measures to minimise the risk's severity have been included in each report. A summary of all the risks and mitigation measures can be found on Section 5 of the SDA Town Planning Report. Key mitigation measures include: – The operational CMF footprint is outside the 1% AEP flood impact for the identified flow paths adjacent to the site in accordance with Seqwater (2017) guidelines and the Scenic Rim Hazard Overlay Code – A Bushfire hazard assessment has been completed for the Project and environmental controls are outlined in Table 5.4. – A landslide stability assessment has been developed for the proposed development. The assessment was based on a review of available published geological information and a walk-over survey by a geotechnical engineer. The previous geotechnical investigation found no signs of groundwater or seepage were recorded in previous investigated boreholes. The site walkover observations indicated site drainage to be generally poor to fair. Erosion was noted around the creek located north of the site. The maximum slope fall is approximately 25 - 30%. Aside from the previously noted creek bed, there were no signs of water ponding and instability noted at the site. The creek banks and areas of cut to fill should be checked by a geotechnical engineer at time of construction to verify stability to mitigate landslide risk. The proposed site also has a low landslide susceptibility rating. – SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility.

Strategic Vision	Proposal Response
	– The proposed freshwater storage dam will be lined to limit seepage. – The facility will have a designated leachate management system, as per the QLD ERA 53 Organic material processing guidelines. The proposed leachate ponds will be fully lined with either: – 600 mm thick recompacted clay with a permeability of less than 10-9 m/s; or – A high-density polyethylene geomembrane liner with a minimum thickness of 1.5 mm. Seepage will be detected through installation of spears around the dam. Hardstand areas at the CMF are to be constructed with a low-permeability base that prevents leachate from seeping into underlying soils and groundwater. Please refer to the following technical reports for more information: – Environmental management plan Appendix K – Stormwater management plan and Flood assessment Appendix N – Bushfire hazard assessment Appendix Q – Slope stability report Appendix S.
2. Development within the sunny day failure extent of the Bromelton Offstream Storage is designed and sited to be compatible with the risk to public safety and property associated with a failure of the facility. <i>Note: Further details on the Bromelton Offstream Storage facility, including mapping and information on the level of risk are available in the Bromelton Dam Emergency Action Plan.</i>	Not applicable The Project is not located within the sunny day failure extent of the Bromelton Offstream Storage facility.
2.5.7 Contaminated land	
1. Development on land likely to be contaminated or recorded on the Environmental Management Register or Contaminated Land Register does not adversely impact on human health or the environment by exposure, management, or movement of contaminants.	Not applicable The Project area has been historically used for grazing activities without any register of industrial activities, therefore it is unlikely to have any land contamination. The Project area is not located on the EMR or CLR.
2. Where required, develop a strategy to manage any existing contamination and the potential for additional contamination such that human health and the environment are not adversely affected.	Complies There is no existing contamination to be managed within the Project area. SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. The proposed freshwater storage dam will be lined to limit seepage. The facility will have a designated leachate management system, as per the QLD ERA 53 Organic material processing guidelines. The proposed leachate ponds will be fully lined with either: – 600 mm thick recompacted clay with a permeability of less than 10-9 m/s; or – A high-density polyethylene geomembrane liner with a minimum thickness of 1.5 mm. Seepage will be detected through installation of spears around the dam. Hardstand areas at the CMF are to be constructed with a low-permeability base that prevents leachate from seeping into underlying soils and groundwater.

Strategic Vision	Proposal Response
2.5.8 Water quality	
1. Development, consistent with the Environmental Protection (Water) Policy 2009, avoids potential adverse impacts on the environmental values and water quality objectives of receiving waters, arising from: (a) altered stormwater quality or flow (b) wastewater (other than contaminated stormwater and sewage) and (c) the creation or expansion of non-tidal artificial waterways.	Complies The CMF has been designed to be consistent with the Environmental Protection (Water) Policy 2009, avoids potential adverse impacts on the environmental values by including the following in the design of the CMF: – A Site and Soil Evaluation Report has been completed for the CMF and an on-site wastewater treatment and the effluent disposal will be adopted for the CMF. An advanced secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system will be installed at CMF. The peak daily design volume for the entire site is 4.4 Equivalent persons – 600l/day – loads from staff. - The Wastewater treatment system will be located at the northern end of the Project area near the office and amenities area. It will include a land application area and irrigation systems will distribute wastewater into the topsoil layers to provide in-soil treatment of the remaining effluent residuals as well as provide nutrient uptake an evapotranspiration by grass. – The design and calculations developed for the wastewater treatment plant can be seen in Appendix U. – The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. – There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period. Leachate will only be reused in pasteurisation stage of the CMF process. – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m2 of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. – Provision of a 30 ML harvesting storage to the west of the operational area. – Truck water tanker delivery during dry periods to meet water supply needs. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with SEQWater (2017) guidelines. – The CMF will be setback 25m from flow paths, other than the harvesting storage – The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and

Strategic Vision	Proposal Response
	groundwater on-site during operation and maintenance to minimise impacts on ecology and water quality. – In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding should be provided. – During the construction phase, ESCP will be developed and implemented to manage erosion and sediment. – A Stormwater Management Plan has been developed for the Project and is provided at Appendix N.
2. Development protects the ecological and hydraulic function of water assets within and adjacent to the Bromelton SDA.	Complies The Project protects the ecological and hydraulic function of water assets within and adjacent to the Bromelton SDA by adopting the measures outlined in the response 1 above.
3. Development incorporates current best practice integrated water cycle management strategies and integrates water sensitive urban design principles.	Complies The CMF layout design have been defined following best practices and feedback from regulatory authorities. It includes: - Appropriate separation of water types in accordance with best practice for composting sites and the ERA53(s) Model Operating Conditions (MOC). - Provision of 30 ML of leachate storage sized in exceedance of the 24-hour event supported by the MOC, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period. - Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines. - Estimation of water demands by SOILCO and confirmation that during dry periods they can be sourced via road tankering. Provision of a 30ML harvesting storage to minimise reliance on tankering. - Location of the operational site outside the 1% AEP flood impact for the identified flow paths adjacent to the site in accordance with Seqwater (2017) guidelines and the Scenic Rim Hazard Overlay Code (refer to 2.5.3). - Containment of the leachate catchment offsetting the impact of increasing imperviousness on peak discharge rates. - Separation distances from identified flow paths consistent with the understood intent of the Seqwater (2017) guidelines. - Provision of an erosion and sediment control plan, based on relevant regulatory requirements, to be updated and confirmed during detailed design. An assessment against the Seqwater development guidelines water quality management in drinking water catchment has been completed for the project and is included in Appendix F and addressed in Appendix P.
2.5.9 Energy and water efficiency	
1. Where practicable, building, site design and layout maximises energy efficiency, having regard to: (a) building orientation and passive solar design (b) natural lighting opportunities (c) maximising cross ventilation	Complies The CMF layout has been designed to maximise energy efficiency, locating the component that will need power supply close to the existing transformer.

Strategic Vision	Proposal Response
(d) provision of sun shading devices at north, west and east facing windows and doors and (e) landscaping treatments to the western side of the building.	Solar energy systems and rainwater harvesting tanks will be installed in the offices, the workshop and the revival buildings. The offices building will have covered external awnings providing shade and improving the building's energy efficiency. The revival building will fully enclose only two of the walls, which will positively contribute to the natural ventilation of the area. Similarly, the workshop building will be partially enclosed, being naturally ventilated. Existing vegetation will be retained on site where possible. Refer to Appendix A for the Development plans and 3D views images.
2. The use of reticulated water supply is minimised through the use of alternative water supply sources, including: (a) rain water harvesting and (b) recycled water sources.	Complies The CMF will harvest rainwater and will recycle the leachate in the pasteurisation phase of the composting process. CMF will include a 30 ML harvesting storage dam to service the CMF. Refer to Appendix N.
2.5.10 Climate change	
1. Development minimises its emission of greenhouse gases and demonstrates how it will adapt to projected climate change conditions.	Complies Scope 1, 2 and 3 greenhouse gas emissions have been identified for the CMF project, and a greenhouse gas emissions assessment will be conducted during the detailed design phase. The project contemplates the following adaptations to climate change: - Site Office: The amenities would use a pump out tank or irrigation system, solar electricity, and potable water infrastructure via ultraviolet filters on water tanks. - Receival building and decontamination area: Solar power system on roof and rainwater collection tanks. Natural light will be provided by polycarbonate roof sections and the building will be fitted with LED high bay lights. - Passive open windrow composting area (turned aeration): Several water supply connections from leachate dams and the fresh water supply will be positioned around the area for irrigation of the piles. - Workshop: construction with solar system on roof and rainwater collection tanks. - Use of SCADA system to ensure optimal composting conditions on ASP and decontamination lines. - The CMF has been designated to be above the 1% AEP flood level. - Having leachate system to accommodate a 24-hour rainfall event up to unspecified site specific Annual Exceedance Probability.
2.5.11 Climate change	
1. Environmental values, cultural heritage values and community values of the site on which the development is undertaken and immediate surrounds are identified and protected, consistent with current best practice. <i>Note: Duty of Care Guidelines under Section 28 of the Aboriginal Cultural Heritage Act 2003 should be considered a minimum requirement of all development.</i>	Complies The CMF is not considered to adversely impact on environmental values, cultural heritage values and community values for the reasons outlined below: - The CMF has been designed to be setback as far possible from sensitive receptors and from environmental values. - A Noise Impact Assessment (Appendix O) has been developed for the CMF project and determined that the results from the construction noise assessment

Strategic Vision	Proposal Response
	conducted indicate that construction works are expected to comply with the established noise criteria. – The results from the operational noise assessment conducted indicates that the CMF will comply with the established noise criteria during the day period. – An air quality assessment (Appendix L) has been completed for the CMF project. It determined that air quality impacts from the proposed CMF are not expected to cause significant environmental impacts and are predicted to comply with the assessed air quality criteria at all nearby (within 2 km of site) sensitive receptors. – The CMF has is located on previously cleared land. There are some planted trees and landscaping, including along Mitchell Road. – During the construction phase the contactor will develop and implement the following plan: – EMP(C). The EMP(C) will outline the actions for potential impacts and mitigations of environmental factors with the CMF. – An Erosion and Sediment Control Plan (ESCP) in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) will be implemented. – A suite of mitigation measures have been included in Section 5 of the Town Planning Report. – A cultural heritage management agreement will be developed with the traditional owners to manage risk to cultural heritage values.
2. Development is designed to avoid the clearing of regulated vegetation. Where avoidance is not possible, minimise clearing to: (a) avoid land degradation (b) avoid the loss of biodiversity and (c) maintain ecological processes.	Complies The project footprint within Lot 4 RP85497 for the CMF will require the clearing of 21 ha of Category X vegetation. The clearing of within the CMF Project area does not trigger approvals as the clearing of Category X area on freehold land is exempt development as outlined under Part 2, Schedule 21 of the Planning Regulation 2017. The project footprint within Mitchell Road will require the clearing of: – 0.5 ha of Category B Endangered and Of Concern regional ecosystems. – 0.2 ha of Category X (non-remnant) vegetation. The clearing within the Mitchell Road Reserve will be limited to 10 m wide and meets the clearing limits in Section 4.3 in Accepted Development Vegetation Clearing Code - Clearing for Infrastructure.
3. Development is designed and sited to: (a) minimise impacts on matters of local and state environmental significance (b) maintain ecological connectivity and avoid fragmentation of matters of local and State environmental significance (c) avoid or minimise impacts to the movement of fish (fish passage) along waterways.	Complies The Project is proposed in an area of previously cleared land utilised for agricultural activities, with occasional trees and very low scattered regrowth. The Project area only supports cleared, ephemeral drainage lines and there are no watercourses, wetlands or permanent water sources present. A Terrestrial Ecology Assessment has been developed for the Project and section 7 and 8 presents the findings of the significant impact assessment for MSES and outlines the mitigation measures to be adopted by the Project to reduce impacts on environmental matters, ecological connectivity and fragmentation. Refer Appendix G. An Aquatic Ecology Assessment has been prepared for the Project.

Strategic Vision	Proposal Response
	Two green low risk waterway barrier works waterways traverse the Project area (referred to as ACT1 and ACT2 and shown in Figure 1.2). The waterways details include: – ACT1 – traverses outside of the proposed facility location. – ACT2 – traverses through the centre of the CMF. The two waterways (ACT1 and ACT2) are not considered to be suitable for fish passage or provide fish habitat for the following reasons: – The waterways provide no connectivity and fish passage to upstream areas. – The waterways do not provide suitable fish habitat features and there were evidence of fauna species within ACT1 and/or ACT2. – There is no evidence of aquatic species recorded in waterways ACT1 and ACT2. – ACT1 and ACT2 have reasonably poor water quality. – No fish passage occurs due to absence of defined bed and banks, minimal flow and depth, no habitat features present and no upstream habitat. ACT 1 and ACT 2 are considered to be drainage depressions that carry overland flow water during and immediately after rainfall events; and flows for only a short duration after a rainfall event, regardless of the frequency of flow events; and does not have enough continuing flow to create a riverine environment. The waterways ACT1 and ACT2 do not meet <i>Fisheries Act 1994</i> definition of a waterway and are not considered to provide fish passage. Pre-lodgement advice received from DAF (refer to Section 7 of the Report) and DAF confirmed that ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. DAF noted that ACT1 has a shallower gradient that allows for fish movement, defined bed and banks and shows evidence of fish habitats. DAF considered ACT1 to constitute a waterway as defined under the <i>Fisheries Act 1994</i> and any waterway barrier works within this waterway require authorisation. The proposed works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included. SOILCO would like DAF to reassess waterway ACT1, as based on the aquatic assessment (refer to Appendix G) based on the information presented above.
4. Where the development requires a buffer to mitigate the environmental impacts of the development, that buffer must be accommodated within the development site. Note: Examples of buffers for (4) above, may be a vegetated screen to mitigate the visual impacts of a large industrial facility from a public road; or retaining additional vegetation around a protected flora species; or buffer to the curtilage of a listed cultural heritage site.	Complies The Project does not require a buffer to mitigate environmental impacts, as it is located in an area previously altered by grazing activities. However, mitigation measures have been contemplated to minimise the environmental impacts identified in the technical reports. A Visual Impact Assessment has been developed for the project. Visual impacts of the Project are anticipated to be moderate-low to negligible as overall the site is well-screened by intervening landform and vegetation. No additional landscaping is proposed around the CMF. Existing vegetation within Lot 4 will be retained where possible.
5. Development avoids significant adverse environmental impacts on matters of national or State significance, or where significant impacts	Complies The Project footprint is proposed in an area that contains some eucalypt woodland, however, primarily contains

Strategic Vision	Proposal Response
cannot be reasonably avoided they are minimised. Any residual significant adverse impacts are offset in accordance with the relevant commonwealth or Queensland environmental offset framework.	previously cleared land utilised for agricultural activities, with occasional trees and very low scattered regrowth. The Project footprint also supports cleared, ephemeral drainage lines and there are no watercourses, wetlands or permanent water sources present. A summary of the prescribed environmental matters associated with the subject site and Mitchell Road are discussed below: Waterway providing for fish passage – Mapped over subject site. DAF confirmed that ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. DAF considered ACT1 to constitute a waterway as defined under the Fisheries Act 1994 and any waterway barrier works within this waterway require authorisation. The proposed works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included. Endangered or of concern regional ecosystems – Category B sections are mapped over Mitchell Road reserve and will be impacted by vegetation clearing activities. However, vegetation clearing is being undertaken in accordance with the Accepted Development Vegetation Clearing Code – Clearing for Infrastructure Regional ecosystems within the defined distance of a watercourse – This matter is mapped over the subject site and alignment with the DAF waterways. The two water features are classified as stream order 1 and will be impacted by the CMF. Connectivity - The extent of clearing within the Project area is unlikely to create a substantial barrier or restrict fauna movement. The Project is located in a landscape that has already been highly fragmented from historical clearing and agriculture. The existing state of the site in which the composting facility is proposed on is historical agricultural land in which a majority of the habitat has already been degraded. Habitat fragmentation can isolate populations by causing barriers to local fauna movement. The quality of persisting habitats can be substantially degraded by edge effects associated with increased exposure to light, noise, run-off, sedimentation, erosion and weed and pest infestation. The Project footprint contains the unsealed Mitchell Road to the north, and is bordered by Beaudesert Boonah Road to the north-east, and a railway line to the east. Given the observed evidence of infrastructure maintenance (vegetation trimming, mowing, etc.) and impacts associated with infrastructure operation (compacted tracks), habitat within the Project area currently experiences fragmentation from the historical vegetation clearing in the surrounding landscape. Additionally, vegetation within the Project area occurs largely as non-remnant, with only patches of regrowth and remnant vegetation on the Project area boundaries including in the south-west and north along Mitchell Road. Given the above, it is considered that no patches of remnant vegetation will become directly isolated as a result of the proposed works. Essential habitat – is mapped over the Category B sections of Mitchell Road reserve and will be impacted by vegetation clearing activities. The short-beaked echidna (<i>Tachyglossus aculeatus</i>) has the potential to occur in subject site and a significant impact assessment determined that the Project is unlikely to have a significant

Strategic Vision	Proposal Response
	residual impact on this species. White-throated needletail, Grey-headed flying fox, Yellow bellied glider and Greater glider have the potential to occur in subject site and a significant impact assessment determined that the Project is unlikely to have a significant residual impact on this species. The clearing within the essential habitat area is not expected to exceed the clearing limits as outlined in the Significant Residual Impact Guideline (for MSES and prescribed activities assessable under SPA). Protected wildlife habitat – Core koala habitat mapped within Mitchell Road and will be cleared as part of the road upgrade. The clearing of core koala habitat within an SDA is exempted development and therefore does not trigger assessable development. Core koala habitat is mapped on Lot 4, but will not be impacted. In accordance with Bromelton SDA assessment criteria 2.5.11 (5): Offsets maybe required if residual significant impacts to MSES or MNES caused by the development cannot be avoided. Further information about the significant assessment completed for the Project is included section 8.1.2.5 of Appendix G: Terrestrial Ecological Assessment Report.
6. The ecological values associated with the Logan River, Allan Creek and Sandy Creek shall be protected and enhanced.	Complies An aquatic ecology assessment has been completed for the CMF Project. Refer to Section 3.4 for description of the aquatic ecological values. Logan Creek, Allan Creek and Sandy Creek will not be impacted by the CMF. There will be no direct discharge of runoff to the surrounding environment as leachate ponds will be incorporated into the design. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. The CMF will have hardstand area to prevent runoff entering into the groundwater. SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. The proposed freshwater storage dam will be lined to limit seepage. The facility will have a designated leachate management system, as per the QLD ERA 53 Organic material processing guidelines. The proposed leachate ponds will be fully lined with either: – 600 mm thick recompacted clay with a permeability of less than 10⁻⁹ m/s; or – A high-density polyethylene geomembrane liner with a minimum thickness of 1.5 mm. Seepage will be detected through installation of spears around the dam. Hardstand areas at the CMF are to be constructed with a low-permeability base that prevents leachate from seeping into underlying soils and groundwater. During the construction phase an CEMP and erosion and sediment control plan will be implemented.

Strategic Vision	Proposal Response
2.5.12 Built form	
1. The scale and character of built form is consistent with surrounding areas and the preferred land use intent of the precinct.	Complies The Project has been designed to be of a scale and character of built form that is consistent with industrial development in the surrounding areas. The Project involves the development of a compost manufacturing facility (special industry) which is considered to be in line with the preferred land use intent of the Special Industry precinct. A Visual Impact Assessment has been developed for the Project and is provided in Appendix M. Refer to the design drawings in Appendix A.
2. Development incorporates high quality urban design treatments to help integrate the building into the surrounding environment.	Complies The Project incorporates high quality urban design treatments to help integrate the building into the surrounding environment. Refer to the design drawings in Appendix A.
3. Development contributes to a high standard of amenity.	Complies The Project contributes to a high standard of amenity. In developing the Project, SOILCO considered the site conditions, current industry best practices, and SOILCO's experience at its existing facilities. A Visual Impact Assessment has been developed for the project. Visual impacts of the Project are anticipated to be moderate-low to negligible as overall the site is well-screened by intervening landform and vegetation. No additional landscaping is proposed around the CMF. Existing vegetation within Lot 4 will be retained where possible. Additional screen planting using shrubs and trees is proposed along Mitchell Road, to assist in preserving the landscape character of surrounding farmlands whilst minimising views from Beaudesert Boonah Road. Endemic native species are to be used wherever possible. Refer to Appendix M for the Visual Impact Assessment Report, and Appendix G for the Terrestrial Ecology Assessment.
4. Development must be designed and built in accordance with current best practice.	Complies The Project contributes to a high standard of amenity. In developing the Project, SOILCO considered the site conditions, current industry best practices, and SOILCO's experience at its existing facilities.
2.5.13 Other government matters	
1. Development is to demonstrate consistency with other relevant legislative requirements that may be required for the development to proceed and operate and to the extent practicable, be consistent with regional plans, the State Planning Policy and the State Development Assessment Provisions where the State interests articulated by these instruments are likely to be affected by the development.	Complies A summary of other relevant legislative requirements has been included in Section 6 of the Town Planning report.
2. Development is to avoid or minimise adverse impacts on existing or proposed state or local infrastructure.	Complies The Project maximises the efficient use of land and minimises the costs for infrastructure. In developing the layout, SOILCO considered the site conditions, current industry best practices, and SOILCO's experience at its existing facilities. Transport and Road Infrastructure

Strategic Vision	Proposal Response
	The proposed development will have access via a new crossover on Mitchell Road at the site's northern frontage. The Beaudesert-Boonah Road / Mitchell Road intersection and the 800m section of Mitchell Road will be upgraded to provide for safe and efficient access to and from the site. Mitchell Road will be upgraded to facilitate the access to the subject site. Scenic Rim Regional Council have determined that Mitchell Road will need to be upgraded to a class 4B – rural collector road and this entails an 8m formation and 7m carriageway. The proposed upgrade to Mitchell Road will accommodate B-Double traffic. SOILCO has secured a separate road permit from Scenic Rim Regional Council for the upgrade of Mitchell Road. Water, wastewater, recycled water The CMF will consist of a 30ML water harvesting storage to provide water for the operation of the CMF. There will be an on-site wastewater treatment system to treat and manage wastewater. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process. The best-practice for composting sites and the ERA53(s) Model Operating Conditions (MOC) nominate (WT3) that leachate needs to be directed to stormwater treatment and retention measures and that these measures must have the capacity to retain runoff for a 24- hour rainfall event up to an unspecified site-specific Annual Exceedance Probability (AEP). It is noted that there is precedent for other sites for an Average Recurrence Interval (ARI) of 10 years and that this is consistent with the NSW guideline Environmental Guidelines, Composting and Related Organics Processing Facilities, NSW DEC 2003. Therefore, containment of the 10-year 24 hour event (152 mm) was taken as the initial minimum sizing and identified to be approximately 17 ML assuming 100% runoff. However, it was identified based on preliminary water balance of the site that the site would be most sensitive to longer durations of regular rainfall rather than a shorter intense storm. Therefore, approximately twice (i.e. 30ML) the volume of the minimum sizing was adopted. This, based on water balance calculations considering a 6 month period in which 900 mm of rainfall occurs. This rainfall was selected as approximately the depth within a 6 month period that is exceeded once every 10 years on average based on historical rainfall records. The water balance calculations indicated that this period could be managed with disposal via early phase reuse. The required disposal estimated approximately on average 150% of the typical conditions average demand/disposal rates supplied by SOILCO. In consultation with SOILCO this was considered to be achievable on the basis that the typical operational demand estimates are based on water demands during average and dryer times, not volumes that can be disposed of during periods of excess water. The following is proposed to manage stormwater: – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in

Strategic Vision		Proposal Response						
		contact with organic material used in the composting process. – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m2 of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. Refer to Section 4.3 in the Report for more information. Energy/telecommunications Power supply to CMF will be via a transformer from existing infrastructure on Beaudesert Boonah Road along Mitchell Road to CMF site. An application has been submitted to Energex for electricity supply to the site (reference: CX24BEA1117829Q), No gas supply is proposed at the CMF.						
2.5.14 Landscaping								
1. Development provides landscaping that: (a) minimises the visual impacts of the development (b) incorporates at least 50% local species and (c) is low maintenance.		Complies A Visual Impact Assessment has been developed for the Project. Visual impacts of the Project are anticipated to be moderate-low to negligible as overall the site is well-screened by intervening landform and vegetation. No additional landscaping is proposed around the CMF. Existing vegetation within Lot 4 will be retained where possible. Additional screen planting using shrubs and trees is proposed along Mitchell Road, to assist in preserving the landscape character of surrounding farmlands whilst minimising views from Beaudesert Boonah Road. Endemic native species are to be used wherever possible. Refer to Appendix M for the Visual Impact Assessment Report, and Appendix G for the Terrestrial Ecology Assessment.						
2.5.15 Engineering standards								
1. Development is to be designed and constructed in accordance with the relevant engineering standards (and any subsequent revisions to the relevant standards) stated in Table 7 below. Alternative, innovative solutions that demonstrate compliance with the relevant standards are encouraged. <i>Relevant engineering standards</i> <table><tr><th></th><th></th></tr><tr><td>Sewer and water</td><td> – Standards of the relevant water and sewerage service provider (e.g. Queensland Urban Utilities) – SEQ Water Supply and Sewerage Design and Construction Code </td></tr><tr><td>Water quality</td><td> – Development Guidelines for Water Quality Management in Drinking Water Catchments 2012 </td></tr></table>				Sewer and water	– Standards of the relevant water and sewerage service provider (e.g. Queensland Urban Utilities) – SEQ Water Supply and Sewerage Design and Construction Code	Water quality	– Development Guidelines for Water Quality Management in Drinking Water Catchments 2012	Complies The Project has been designed in accordance with the relevant legislation and engineering standards and best practices. - Wastewater: AS/NZS1547:2012, On-Site Domestic Wastewater Management and the Queensland Plumbing and Wastewater Code. - Water management: - o Water sourcing: <i>Water Plan (Logan Basin) 2007</i> (the Water Plan) - o Operational phase water quality management: ERA 53 (a) Model operating conditions, Seqwater Development Guidelines for Water Quality Management in Drinking Water Catchments (SEQ Water 2017), Scenic Rim Planning Scheme (SRRC 2020) - o Construction phase water quality management: Seqwater Development Guidelines for Water Quality Management in Drinking Water Catchments (SEQ Water 2017), State Planning Policy (2017) – Appendix 2 – Stormwater management design
Sewer and water	– Standards of the relevant water and sewerage service provider (e.g. Queensland Urban Utilities) – SEQ Water Supply and Sewerage Design and Construction Code							
Water quality	– Development Guidelines for Water Quality Management in Drinking Water Catchments 2012							

Strategic Vision		Proposal Response
Stormwater quantity	– Water sensitive urban design: Design objectives for urban stormwater management – Environmental Protection Policy (Water) – Water Sensitive Urban Design Technical Design Guidelines for South East Queensland – Construction and Establishment Guidelines, Swales, Bioretention Systems and Wetlands – Healthy Waterways - Water Sensitive Urban Design Technical Design Guidelines for South East Queensland – Concept Design Guidelines for Water Sensitive Urban Design – Standard Drawings for Water Sensitive Urban Design	objectives, Procedural guide, releases to waters from land development sites and construction sites 2500 m² and greater (DES 2019), 2.4.4 Best Practice Erosion and Sediment Control (IECA 2008 and 2018), Scenic Rim Planning Scheme ○ Flooding: NSW Flood Risk Management Manual 2023 (formerly the NSW Floodplain Development Manual 2005), Australian Rainfall and Runoff (ARR, 2019), Scenic Rim Planning Scheme (2020) - Flood Hazard Overlay Code ○ Waterways and separation distances: Seqwater (2017) guidelines, Scenic Rim Planning Scheme (2020) – Environmental Significance Overlay Code A Pavement Impact Assessment will be lodged at a later date after detailed design phase has been completed.
Stormwater quality	– Queensland Urban Drainage Manual (QUDM) – Australian Rainfall and Runoff - where referenced by QUDM	
Roads (major)	– DTMR's Road Planning and Design Manual – DTMR's Pavement Design Manual – DTMR's Bridge Design Manual – QUDM - Chapter 7 – DTMR's Drainage Design Manual – Manual of Uniform Traffic Control Devices – DTMR's Guide to Pavement Markings – Australian Standard AS1158 (Street Lighting) – Complete Streets Manual 2010 (Section 17: Industrial Streets)	
Roads (minor)	Relevant local government construction standards	
Rail	DTMR's Guide to Development in a Transport Environment - Rail	
Site access	Relevant local government design and construction standards	
Footpaths and cycle paths	Local government standards for construction Austroads - Guide to Road Design Part 6A: Pedestrian and Cyclist Paths	
Filling	AS3798 - Guidelines on Earthworks for Commercial and Residential Developments	

Appendix E

State Code Compliance

State code 25: Development in South East Queensland koala habitat areas

Guideline: State Development Assessment Provisions State Code 25: Development in South East Queensland koala habitat areas provides direction on how to address this code.

Table 25.1: Development and relevant provisions of the code

Aspect of Development	Relevant provisions
Material change of use, operational work, building work and plumbing or drainage work	Table 25.2
Reconfiguring a lot	Table 25.3

Table 25.2 Material change of use, operational work, building work and plumbing or drainage work

Performance outcomes	Response
PO1 Development supports connectivity between highly connected patches of mapped koala habitat areas.	Complies The CMF construction and operational footprint are located outside of the core koala habitat area. Part of Mitchell Road Reserve are intersected by core koala habitat area and clearing of trees within the mapped area will be required. A terrestrial ecology assessment report was completed for the project. Suitable habitat for the koala was confirmed within the Project area. Foraging habitat occurs in the Mitchell Road reserve, in the form of eucalypt woodland. Habitat in this location is somewhat isolated, with marginal connectivity to larger areas of suitable habitat in the broader landscape. There is also a very small portion of eucalypt woodland on the south-west corner of the Project footprint, which also supports foraging for the koala and is connected to larger, contiguous corridors of remnant habitat. These areas contain canopy species known to be locally important koala habitat trees or ancillary habitat trees. A total of 0.95 ha of suitable foraging habitat occurs within the Project footprint. There is also suitable dispersal habitat within the Project in areas of historically cleared and disturbed pasture grassland containing isolated trees. The CMF Project will result in a direct loss of 21.13 ha of predicted critical habitat for the koala. However, the Project disturbance is non-linear and confined to the footprint of the facility. Dispersal pathways and foraging habitat occur in surrounding areas and the facility will not represent a barrier to movement that will fragment existing

	population(s). Therefore, it is unlikely that the Project will result in the fragmentation of an existing population. Refer to the Appendix G Terrestrial Ecology Assessment.
PO2 Development supports safe koala movement by preventing fragmentation of patches of mapped koala habitat areas.	Complies Only two small portions of the Project area where the project is being developed has been identified as koala's habitat, one on the South-west area and one near the Mitchell Road intersection with the Beaudesert – Boonah Road. The South-west portion will not be directly impacted by the CMF footprint, as it is outside the CMF boundaries. The CMF Project will result in a direct loss of 21.13 ha of predicted critical habitat for the koala. However, the Project disturbance is non-linear and confined to the footprint of the facility. Dispersal pathways and foraging habitat occur in surrounding areas and the facility will not represent a barrier to movement that will fragment existing population(s). Therefore, it is unlikely that the Project will result in the fragmentation of an existing population. Connectivity between highly connected patches of mapped koala habitats will be maintained to the east and west of the CMF. The Project footprint is generally cleared or supports isolated patches of habitat. While the Project footprint may support dispersal, it would not be considered as a necessary corridor to facilitate movement. Higher-quality habitat and important movement corridors occur in the broader area. And the Project will not impact these areas. Refer to the Appendix G Terrestrial Ecology Assessment.
PO3 Development within a mapped koala habitat area is undertaken in a way that prevents the risk of injury or death of koalas.	Complies – The clearing of vegetation along Mitchell Road upgrade within the mapped core koala habitat area will be undertaken in accordance with the following: • Restrict vegetation clearing to the minimal area required to enable safe construction, operation and maintenance of the Project. • Ensure that vegetation clearing boundaries are established with appropriate signage at regular intervals using visible and physical markings. High visibility tape, barricade webbing or similar should be utilised. Ensure that all contractors are aware of these boundaries. • Engage suitably qualified and experienced fauna spotter/catchers to undertake pre-clearance surveys immediately prior to clearing and supervise all clearing activities associated with construction. This will involve searching and clearing tree hollows, habitat trees and fallen logs prior to clearing and relocating resident fauna to the nearest suitable, safe habitat outside the clearing footprint. • Pre-clearance surveys to mark the locations of all potential breeding places for wildlife (i.e. hollows, nests, burrows etc), disturbance of which is to be avoided as possible. These will target areas with potential to support breeding habitat for conservation significant species and breeding places identified within this report. • If a koala is encountered within the Project area, the individual must not be relocated and should be left to self-disperse on their own accord (wherever possible).

	- Fauna within the Project area will be encouraged to self-disperse when the works take place. Disturbances associated with construction of the facility (i.e. increased noise and human presence) are anticipated to encourage species occurring within the Project area to self-disperse. - If injuries occur, the fauna spotter/catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably-qualified to undertake treatment/euthanasia themselves). Prior to clearing for construction, formalise arrangements with local veterinary services to treat and care for injured animals. - Inspect trenches, excavations and machinery daily for the presence of trapped fauna. - Rehabilitate and revegetate temporary construction areas as soon as possible after the completion of construction. - An CEMP will be implemented during the construction phase (refer to Appendix J).
PO4 Development does not compromise safe koala movement through impediments that restrict movements between highly connected patches of mapped koala habitat areas.	Complies The CMF Project will result in a direct loss of 21.13 ha of predicted critical habitat for the koala. However, the Project disturbance is non-linear and confined to the footprint of the facility. Dispersal pathways and foraging habitat occur in surrounding areas and the facility will not represent a barrier to movement that will fragment existing population(s). Therefore, it is unlikely that the Project will result in the fragmentation of an existing population. Connectivity between highly connected patches of mapped koala habitats will be maintained to the east and west of the CMF. The Project footprint is generally cleared or supports isolated patches of habitat. While the Project footprint may support dispersal, it would not be considered as a necessary corridor to facilitate movement. Higher-quality habitat and important movement corridors occur in the broader area. And the Project will not impact these areas. Refer to the Appendix G Terrestrial Ecology Assessment. Complies There are areas of essential habitat mapped within the Project area. Five MSES are either likely to occur or potential to occur in the Project area. Of these five, four MSES are also listed as MNES (white-throated needletail, koala, yellow-bellied glider and greater glider). Likely to occur - White-throated needletail – 21.15 ha of suitable habitat - Koala - 0.95 ha of suitable foraging habitat and 20.18 ha of suitable dispersal habitat - Grey-headed flying-fox - 1.17 ha of suitable foraging habitat Potential to occur - Yellow bellied glider (south-eastern) -1.0 ha of marginally suitable habitat
PO5 Development is designed and sited to: - avoid impacts on matters of state environmental significance; or - minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and - provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance. Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the <u>Brisbane Port LUP precinct plan</u>.	Complies Development is designed and sited to: - avoid impacts on matters of state environmental significance; or - minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and - provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance.

	- Greater glider (southern and central) -1.0 ha of marginally suitable habitat - Short-beaked echidna – 21.15 ha of suitable general habitat. Significant residual impact is unlikely for: white-throated needletail, grey-headed flying-fox, greater glider (southern and central), yellow-bellied glider (south-eastern), short-beaked echidna. Substantial avoidance has been achieved by locating proposed infrastructure footprints in areas of existing disturbance. Mitigation measures are likely to be effective in substantially reducing the extent and magnitude of impact on terrestrial ecological values through the construction and operation phases of the Project. The Project's impact on the koala was considered likely to be a significant residual impact based on the significant residual impact assessment. However, the clearing of the koala trees within mapped core habitat area (Mitchell Road section) is exempted development under Schedule 10, Part 10 of the <i>Planning Regulation 2017</i>, and does not trigger assessable development. Therefore, State environmental offsets are not triggered by the Project. SOILCO are address matters of national environmental significance separately via an EPBC Act Referral. Refer to the Appendix G Terrestrial Ecology Assessment.
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Table 25.3 Reconfiguring a lot

Performance outcomes		Response
PO6 Development supports connectivity between highly connected patches of mapped koala habitat areas .		Not applicable – The Project does involve reconfiguration of the lot.
PO7 Interfering with koala habitat as a result of the development does not compromise safe koala movement by preventing fragmentation of patches of mapped koala habitat areas .		Not applicable – The Project does involve reconfiguration of the lot.
PO8 Interfering with koala habitat as a result of the development supports connectivity between highly connected patches of mapped koala habitat areas .		Not applicable – The Project does involve reconfiguration of the lot.
PO9 Development supports safe koala movement by preventing fragmentation of patches of mapped koala habitat areas .		Not applicable – The Project does involve reconfiguration of the lot.
PO10 Development within a mapped koala habitat area is undertaken in a way that prevents the risk of injury or death of koalas.		Not applicable – The Project does involve reconfiguration of the lot.
PO11 Development is designed and sited to: - avoid impacts on matters of state environmental significance; or - minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and - provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development		Not applicable – The Project does involve reconfiguration of the lot.

Performance outcomes	Response
results in an acceptable significant residual impact on a matter of state environmental significance. Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the <u>Brisbane Port LUP precinct plan</u>.	

State code 18: Constructing or raising waterway barrier works in fish habitats

State Development Assessment Provisions guideline - State Code 18: Constructing or raising waterway barrier works in fish habitats. This guideline provides direction on how to address State Code 11 below.

Table 18.1 Operational work

Performance outcomes		Acceptable outcomes	Response
All development - Impacts on waterway			
PO1 Waterway barrier works do not result in adverse impacts on waterways.		No acceptable outcome is prescribed.	Complies – As part of the CMF Project the following works are proposed within low risk waterways. Two green low risk waterway barrier works waterways traverse the Project area (referred to as ACT1 and ACT2). The waterways details include: – ACT1 – traverses outside of the proposed facility location. – ACT2 – traverses through the centre of the CMF. The two waterways (ACT1 and ACT2) are not considered to be suitable for fish passage or provide fish habitat. Pre-lodgement advice received from Department of Agriculture and Fisheries (DAF) and DAF confirmed that only ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. The CMF footprint is proposed over ACT2. SOILCO would like DAF to reassess waterway ACT1, as based on the aquatic assessment (refer to Appendix G). Refer to Section 1.6.2 in the Town Planning Report.

Performance outcomes	Acceptable outcomes	Response
		A freshwater dam proposed at the headwater of ACT1. DAF noted that provided the proposed dam includes a spillway and is designed in accordance with the Accepted Development Requirements, a development approval for operational works for constructing waterway barrier works would not be triggered. SOILCO would like DAF to reassess waterway ACT1, as based on the aquatic assessment (refer to Appendix G) based on the information presented above. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts. According to the Aquatic Ecology Assessment completed for the Project, there are no aquatic MSES within the Project area and therefore no significant impact assessments were required. During the construction phase the contractor will develop and implement the following plan along with the mitigation measures outlined in Section 4. CEMP – outlining the actions for potential impacts and mitigations of environmental factors with the CMF. Erosion and sediment control plan (ESCP) developed in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats. Refer to Appendix A.
P02 Development is designed, constructed and maintained to avoid and minimise impacts on matters of state environmental significance .	No acceptable outcome is prescribed.	Complies – Refer to the response in PO1. There are no aquatic MSES within the Project area and therefore no significant impact assessments

State Development Assessment Provisions v3.0

State code 18: Constructing or raising waterway barrier works in fish habitats

Performance outcomes	Acceptable outcomes	Response
		were required. During the construction phase, the contractor will develop and implement the mitigation measures outlined in Section 4, a CEMP and ESCP. CEMP – outlining the actions for potential impacts and mitigations of environmental factors with the CMF. ESCP developed in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats. Refer to Appendix G for the Aquatic Ecology Assessment Report.
P03 Where development impacts on matters of state environmental significance, development mitigates impacts and provides an offset for any acceptable significant residual impact on matters of state environmental significance. Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1 Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan.	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The location of the proposed dam on ACT1 is not considered to result in significant impacts to the waterway, where DAF agrees that is it not a fish passage waterway.
All development in general		
P04 Aspects of development are only permitted within a waterway where there is a functional requirement and the development cannot be feasibly located elsewhere. Ancillary elements are to be located outside of the waterway .	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The location of the proposed dam on ACT1 is considered to be an appropriate location, as the dam will collect water from the natural drainage path.
P05 For the life of the barrier, adequate fish passage must be provided and maintained at all waterway barrier works through: fish way(s) that adequately provide for the movement of fish; or - the movement of fish is adequately provided for in another way.	<i>For all crossings:</i> AO5.1 Hydraulic conditions (depth, velocities and turbulence) from the downstream to the upstream limit of the structure allow for fish passage of all fish attempting to move through the crossing at all flows up to the drownout of the structure. AND	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts.

Performance outcomes	Acceptable outcomes	Response
	AO5.2 For the life of the crossing, the relative levels of: 1. a bed level crossing or a culvert invert; 2. bed erosion protection; 3. apron scour protection; and 4. the waterway bed are maintained to avoid drops in elevation at their joins. AND AO5.3 The crossing and associated erosion protection structures are installed at no steeper gradient than the waterway bed gradient. AND AO5.4 The crossing and associated erosion protection structures are roughened throughout to approximately simulate natural bed conditions. AND AO5.5 Design and maintenance measures are in place for the life of the crossing to keep crossings clear of blockages through a regular inspection program in order to retain fish passage through the crossing. AND <i>For waterway crossings other than bridges and culverts:</i> AO5.6 The crossing is built at or below bed level so that the surface of the crossing is no higher than the stream bed at the site.	

Performance outcomes	Acceptable outcomes	Response
	AND AO5.7 The lowest point of the crossing is installed at the level of the lowest point of the natural waterway bed (pre-construction), within the footprint of the proposed crossing. AND AO5.8 There is a height difference between the lowest point of the crossing and the edges of the low flow section of the crossing so that water is channelled into the low flow section of the crossing. AND AO5.9 The level of the remainder of the crossing is no higher than the lowest point of the natural waterway bed outside of the low flow channel. AND <i>For bridges:</i> AO5.10 Bridge support piles are not constructed within the low-flow channel and do not constrict the edges of the low-flow channel, and the number of piles within the waterway are minimised. AND AO5.11 Bridge abutments and bank revetment works do not extend into the waterway beyond the toes of the banks. AND	

Performance outcomes	Acceptable outcomes	Response
	AO5.12 Suitable fish habitats are maintained within the low-flow channel. AND <i>For culverts:</i> AO5.13 Culverts are only installed where the site conditions do not allow for a bridge. AND AO5.14 The combined width of the culvert cell apertures is equal to 100 percent of the main channel width. AND AO5.15 The base of the culvert incorporates a low flow channel consistent with the natural low flow channel and: 1. is buried a minimum of 300 millimetres to allow bed material to deposit and reform the natural bed on top of the culvert base; or 2. the base of the culvert is the waterway bed; or 3. the base of the culvert cell and any instream scour protection within the waterway is roughened throughout to approximately simulate natural bed conditions. AND AO5.16 The outermost culvert cells incorporate roughening elements such as baffles on their bankside sidewalls. AND	

Performance outcomes	Acceptable outcomes	Response
	AO5.17 Roughening elements are installed on the upstream wingwalls on both banks to the height of the upstream obvert or the full height of the wingwall. AND AO5.18 Roughening elements provide a contiguous lower velocity zone (no greater than 0.3 metres/second) for at least 100 millimetres width from the wall through the length of the culvert and wingwalls. AND AO5.19 Culvert alignment to the waterway flow minimises water turbulence. AND AO5.20 There is sufficient light at the entrance to and through the culvert so that fish are not discouraged by a sudden darkness. AND AO5.21 The depth of cover above the culvert is as low as structurally possible, except where culverts have an average recurrence interval (ARI) greater than 50 years. AND AO5.22 For culvert crossings designed with a flood immunity ARI greater than 50 years, fish passage is provided up to culvert capacity.	

Performance outcomes	Acceptable outcomes <i>For all other development no acceptable outcome is prescribed.</i>	Response
PO6 Waterway barrier works are designed, constructed, operated and maintained to provide lateral and longitudinal fish passage for all members of the fish community.	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts.
PO7 The development is designed and operated so that all components of waterway barrier works and pathways of potential fish movement provide for safe fish passage. Stepped spillways are not acceptable.	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts.
PO8 The drownout characteristics of the waterway barrier works are designed and constructed to not result in adverse impacts to fish passage.	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway.

Performance outcomes	Acceptable outcomes	Response
		Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for constructing waterway barrier works for new culverts.
PO9 Development does not result in adverse impacts to fisheries resources .	No acceptable outcome is prescribed.	Complies – The Project is not considered to result in adverse impact to fisheries resources. Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for constructing waterway barrier works for new culverts.
PO10 The design, construction and maintenance of the development does not result in non-essential hardening or unnatural modification of the main channel of the waterway .	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for constructing waterway barrier works for new culverts.
PO11 The development retains natural fish habitat and features such as shade, pools, riffles, rock outcrops and boulders, wherever possible.	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway.

Performance outcomes	Acceptable outcomes	Response
		Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts. The proposed development will retain natural fish habitat features.
PO12 The design, construction and maintenance of the development does not result in straightening of meandering waterways .	No acceptable outcome is prescribed.	Not applicable – The CMF Project will not result in the straightening of meandering waterways.
PO13 Where channels are to be significantly modified, the design and construction of the development replicates natural waterways and habitat features.	No acceptable outcome is prescribed.	Complies – The CMF Project will not result in the modification of existing channels.
PO14 Where waterway barrier works will modify water levels or flow characteristics of the waterway , existing up and downstream structures are upgraded to provide adequate fish passage in accordance with the new levels or flow characteristics.	No acceptable outcome is prescribed.	Complies – The Project is not considered to adversely impact on the water levels of flow characteristics downstream of the CMF. Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts.
PO15 The development is designed, constructed and maintained to provide water exchange sufficient to maintain or improve water quality and flow conditions on which fisheries resources depend.	No acceptable outcome is prescribed.	Complies – The Project is not considered to modify water exchange. Fish habitat downstream of the CMF is considered to remain unaffected. Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in

Performance outcomes	Acceptable outcomes	Response
		accordance with the Accepted Development Requirements for new culverts.
PO16 Development likely to cause drainage or disturbance to acid sulfate soils, prevents the release of contaminants and impacts on fisheries resources and fish habitats .	No acceptable outcome is prescribed.	Not applicable - Acid sulphate soils are not considered to be present within the Project area due to the Project area being located above 20m AHD. Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts.
PO17 The development is designed, constructed and maintained to not result in adverse impacts to beds, banks and vegetation adjacent to the permanent development footprint.	No acceptable outcome is prescribed.	Complies - Refer to the response in PO1. The proposed dam on ACT1 is not considered to be a waterway barrier, where DAF agrees that is it not a fish passage waterway. Waterway barrier works waterways intersect Mitchell Road and new culverts are proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts. Where existing low risk waterways are impacted by the proposed development the waterways will be restated to natural conditions. Any natural stream bed materials (e.g. cobbles, rocks, gravel, silt) that are removed for construction works will be reused where possible.
PO18 After completion of works, disturbed areas of the bed and banks of the waterway outside the permanent development footprint are returned to their original profile and stabilised to promote regeneration of natural fish habitats .	No acceptable outcome is prescribed.	Complies – Where existing low risk waterways are impacted by the proposed development the waterways will be restated to natural conditions. Any natural stream bed materials (e.g. cobbles, rocks, gravel, silt) that are removed for construction works will be reused where possible.

Performance outcomes	Acceptable outcomes	Response
PO19 The development is designed and constructed to maintain or restore the natural substrate of the waterway bed.	No acceptable outcome is prescribed.	Complies – Where the existing low risk waterways are impacted by the proposed development the waterways will be restated to natural conditions. Any natural stream bed materials (e.g. cobbles, rocks, gravel, silt) that are removed for construction works will be reused where appropriate to reinstate the natural stream bed.
PO20 Development does not adversely impact on community access to tidal land and waterways .	No acceptable outcome is prescribed.	Not applicable – The proposed development is not located in proximity to tidal land. The CMF is located on private freehold land and community access is currently limited to Lot 4.
PO21 Development does not adversely impact on community access to fisheries resources and fish habitats including recreational and indigenous fishing access.	No acceptable outcome is prescribed.	Not applicable - The proposed development is not within an area where there is community access to fisheries resources and fish habitats, including recreational and Indigenous fishing access. The proposed development is located on freehold private land and will not adversely impact on community access to fisheries resources and fish habitats in other areas of the catchment.
PO22 Development does not adversely impact on commercial fishing access and linkages between a commercial fishery and infrastructure, services and facilities.	No acceptable outcome is prescribed.	Not applicable - Commercial fishing does not occur within or in proximity to the proposed project location. Consequently, adverse impacts on commercial fishery access and linkages are not expected to occur.
Development involving fish ways		
PO23 Having regard to the hydrology of the site and fish movement characteristics, the fish way is capable of operating, and will operate: - for as long as the waterway barrier work is in position; and - whenever there are inflows into the impoundment or waterway, release out of the impoundment and during overtopping events; and - when the impoundment is above dead storage level.	No acceptable outcome is prescribed.	Not applicable

Performance outcomes	Acceptable outcomes	Response
PO24 The development is designed, constructed and maintained to ensure the hydrology allows for fish movement for the life of the waterway barrier works .	No acceptable outcome is prescribed.	Not applicable
PO25 Fish ways are designed, constructed and maintained to not adversely impact on fish and fish movement.	No acceptable outcome is prescribed.	Not applicable
PO26 Fish ways are designed, constructed and operated to direct release water through the fish way as a priority over the outlet works.	No acceptable outcome is prescribed.	Not applicable
PO27 Fish ways are designed, constructed and operated to ensure flows and releases of water do not result in adverse impacts to fish or fish passage .	No acceptable outcome is prescribed.	Not applicable
PO28 The development is designed, constructed and operated to ensure fishway operational issues are promptly rectified for the life of the fishway including: 1. all components are designed to be durable, reliable and adequately protected from damage during high flow and flood events 2. all components can be replaced; and 3. a contingency plan ensures provision of alternate adequate fish passage during the fish way re-instatement process.	No acceptable outcome is prescribed.	Not applicable
PO29 The development is designed to allow for installation of monitoring equipment and to allow access for monitoring and maintenance.	No acceptable outcome is prescribed.	Not applicable
PO30 Fish ways are designed, constructed and operated to source water supply from surface water or equivalent water quality.	No acceptable outcome is prescribed.	Not applicable
PO31 Tailwater control structures are designed, constructed and maintained to allow for fish passage .	No acceptable outcome is prescribed.	Not applicable
Development involving floodgates		

Performance outcomes	Acceptable outcomes	Response
PO32 The design, construction and operation of a floodgate does not result in adverse impacts on fish, fish passage or fish habitat .	No acceptable outcome is prescribed.	Not applicable
PO33 Floodgates are designed, constructed and maintained to ensure the invert is at bed level.	No acceptable outcome is prescribed.	Not applicable
Temporary waterway barrier works		
PO34 The temporary waterway barrier works will exist only for a specified temporary period.	No acceptable outcome is prescribed.	Required construction within low risk waterways to be undertaken in accordance with Section 7 of the ADR Accepted development requirements for operational work that is constructing or raising waterway barrier works Date effective 1st October 2018.
PO35 The temporary waterway barrier works provides adequate fish movement	No acceptable outcome is prescribed.	Required construction within low risk waterways to be undertaken in accordance with Section 7 of the ADR Accepted development requirements for operational work that is constructing or raising waterway barrier works Date effective 1st October 2018.
PO36 The development is designed, constructed and maintained to ensure temporary barriers are removed and the bed and banks are returned to their original profile and stability.	No acceptable outcome is prescribed.	Required construction within low risk waterways to be undertaken in accordance with Section 7 of the ADR Accepted development requirements for operational work that is constructing or raising waterway barrier works Date effective 1st October 2018.
PO37 Temporary waterway barrier works are designed, constructed and maintained to allow for downstream movement during works, where required by species present.	No acceptable outcome is prescribed.	Required construction within low risk waterways to be undertaken in accordance with Section 7 of the ADR Accepted development requirements for operational work that is constructing or raising waterway barrier works Date effective 1st October 2018.
PO38 The condition and value of aquatic macrophytes and other fish habitats is maintained.	No acceptable outcome is prescribed.	Required construction within low risk waterways to be undertaken in accordance with Section 7 of the ADR Accepted development requirements for operational work that is constructing or raising waterway barrier works Date effective 1st October 2018.

State code 1: Development in a state-controlled road environment

State Development Assessment Provisions guideline - State Code 1: Development in a state-controlled road environment. This guideline provides direction on how to address State Code 1.

Table 1.1 Development in general

Performance outcomes		Acceptable outcomes	Response
Buildings, structures, infrastructure, services and utilities			
P01 The location of the development does not create a safety hazard for users of the state-controlled road .		AO1.1 Development is not located in a state-controlled road . AND AO1.2 Development can be maintained without requiring access to a state-controlled road . No acceptable outcome is prescribed.	The proposed CMF will be located wholly within Lot 4 on SP85497 and is setback 800 m from the State-controlled road reserve and is not considered to create a safety hazard for users of the State-controlled road. There will be no requirement to utilise the state-controlled road reserve for equipment or to conduct maintenance.
P02 The design and construction of the development does not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure .			Complies – The proposed CMF will be located on Lot 4 on SP85497 and is setback 800 m from the State-controlled road reserve. The construction of the CMF will not impact the structural integrity or physical condition of the state-controlled road.
P03 The location of the development does not obstruct road transport infrastructure or adversely impact the operating performance of the state-controlled road .		No acceptable outcome is prescribed.	Complies – Construction and operational traffic are not expected to impact the road link capacity of Beaudesert Boonah Road, with acceptable levels of service expected for traffic in both construction years and during the operation of the CMF. Refer to Appendix I for the Traffic Impact Assessment.

Performance outcomes		Acceptable outcomes	Response
P04 The location, placement, design and operation of advertising devices, visible from the state-controlled road , do not create a safety hazard for users of the state-controlled road .		No acceptable outcome is prescribed.	Complies – No advertising devices will be placed within Beadesert Boonah Road reserve. Refer to Appendix I for the Traffic Impact Assessment.
P05 The design and construction of buildings and structures does not create a safety hazard by distracting users of the state-controlled road .		AO5.1 Facades of buildings and structures fronting the state-controlled road are made of non-reflective materials. AND AO5.2 Facades of buildings and structures do not direct or reflect point light sources into the face of oncoming traffic on the state-controlled road. AND AO5.3 External lighting of buildings and structures is not directed into the face of oncoming traffic on the state-controlled road. AND AO5.4 External lighting of buildings and structures does not involve flashing or laser lights.	Complies – A Visual Impact Assessment (VIA) was completed with seven representative viewpoints selected for assessment. The outcome of the VIA determined that the visual impacts of the CMF Project to the state-controlled road is anticipated to be negligible. Overall, the proposed CMF is well-screened by intervening landform and vegetation, however, the construction of Mitchell Road would be visible from Beadesert Boonah Road. It is likely that there would be a glimpsed view of the Project from the state-controlled road. Due to the intervening vegetation, topography and distance from the Project area, direct views would be limited and transient. There will be no external lighting directed into the face of oncoming traffic on the state-controlled road and there are no flashing or laser lights in the design. Refer to Appendix L for the VIA.
P06 Road, pedestrian and bikeway bridges over a state-controlled road are designed and constructed to prevent projectiles from being thrown onto the state-controlled road .		AO6.1 Road, pedestrian and bikeway bridges over the state-controlled road include throw protection screens in accordance with section 4.11 of the Design Criteria for Bridges and Other Structures Manual, Department of Transport and Main Roads, 2020.	Complies – No road, pedestrian and bikeway bridges are proposed to be constructed over the state-controlled road as part of the CMF Project.
Landscaping			

Performance outcomes		Acceptable outcomes	Response
PO7 The location of landscaping does not create a safety hazard for users of the state-controlled road .		AO7.1 Landscaping is not located in a state-controlled road. AND AO7.2 Landscaping can be maintained without requiring access to a state-controlled road. AND AO7.3 Landscaping does not block or obscure the sight lines for vehicular access to a state-controlled road.	Complies - No landscaping is proposed within the State-controlled road. The CMF is setback 800 m from State-controlled road. The proposed CMF is well-screened by intervening landform and vegetation, and landscaping will not block or obscure the sight lines for vehicular access to a state-controlled road.
Stormwater and overland flow			
PO8 Stormwater run-off or overland flow from the development site does not create or exacerbate a safety hazard for users of the state-controlled road .		No acceptable outcome is prescribed.	Complies – There will be no direct discharge of runoff to the surrounding environment from the CMF including to the State-controlled road reserve. There will be no changes to the stormwater runoff or overland flow at the State-controlled road reserve as a result of the development. A Stormwater Management Plan has been developed for the Project and is provided at Appendix N.
PO9 Stormwater run-off or overland flow from the development site does not result in a material worsening of the operating performance of the state-controlled road or road transport infrastructure .		No acceptable outcome is prescribed.	Complies – Refer to the response in PO8.
PO10 Stormwater run-off or overland flow from the development site does not adversely impact the structural integrity or physical condition of the state-controlled road or road transport infrastructure .		No acceptable outcome is prescribed.	Complies – Refer to the response in PO8.

Performance outcomes		Acceptable outcomes	Response
PO11 Development ensures that stormwater is lawfully discharged.		AO11.1 Development does not create any new points of discharge to a state-controlled road . AND AO11.2 Development does not concentrate flows to a state-controlled road . AND AO11.3 Stormwater run-off is discharged to a lawful point of discharge . AND AO11.4 Development does not worsen the condition of an existing lawful point of discharge to the state-controlled road .	Complies – Stormwater is to be captured and reused on site. Existing lawful point of discharge will be maintained. Refer to the response in PO8.
	Flooding		
	PO12 Development does not result in a material worsening of flooding impacts within a state-controlled road .	AO12.1 For all flood events up to 1% annual exceedance probability , development results in negligible impacts (within +/- 10mm) to existing flood levels within a state-controlled road . AND AO12.2 For all flood events up to 1% annual exceedance probability , development results in negligible impacts (up to a 10% increase) to existing peak velocities within a state-controlled road . AND	Complies – Stormwater is to be captured and reused on site and will not worsen flooding impact within the State controlled road. Refer to the response in PO8 and the Stormwater Management Plan and Flood Assessment Report in Appendix N.

Performance outcomes	Acceptable outcomes	Response
	AO12.3 For all flood events up to 1% annual exceedance probability , development results in negligible impacts (up to a 10% increase) to existing time of submergence of a state-controlled road .	
Drainage Infrastructure		
PO13 Drainage infrastructure does not create a safety hazard for users in the state-controlled road .	AO13.1 Drainage infrastructure is wholly contained within the development site, except at the lawful point of discharge . AND AO13.2 Drainage infrastructure can be maintained without requiring access to a state-controlled road .	Complies – Drainage infrastructure for the CMF will be wholly contained within Lot 4 on SP85497. Refer to Section 4 of the Town Planning Report.
PO14 Drainage infrastructure associated with, or within, a state-controlled road is constructed, and designed to ensure the structural integrity and physical condition of existing drainage infrastructure and the surrounding drainage network.	No acceptable outcome is prescribed.	Not applicable – Drainage infrastructure for the CMF will be wholly contained within Lot 4 on SP85497. Refer to Section 4 of the Town Planning Report.

Table 1.2 Vehicular access, road layout and local roads

Performance outcomes	Acceptable outcomes	Response
Vehicular access to a state-controlled road or within 100 metres of a state-controlled road intersection		
PO15 The location, design and operation of a new or changed access to a state-controlled road does not compromise the safety of users of the state-controlled road .	No acceptable outcome is prescribed.	Not applicable , the CMF will not require direct access to Beaudesert Boonah Road (state-controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road).
PO16 The location, design and operation of a new or changed access does not adversely	No acceptable outcome is prescribed.	Not applicable , the CMF will not require direct access to Beaudesert Boonah Road (state-

State Development Assessment Provisions v3.0

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
impact the functional requirements of the state-controlled road .		controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road).
PO17 The location, design and operation of a new or changed access is consistent with the future intent of the state-controlled road .	No acceptable outcome is prescribed.	Not applicable , the CMF will not require direct access to Beaudesert Boonah Road (state-controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road).
PO18 New or changed access is consistent with the access for the relevant limited access road policy: 1. LAR 1 where direct access is prohibited; or 2. LAR 2 where access may be permitted, subject to assessment.	No acceptable outcome is prescribed.	Not applicable , the CMF will not require direct access to Beaudesert Boonah Road (state-controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road).
PO19 New or changed access to a local road within 100 metres of an intersection with a state-controlled road does not compromise the safety of users of the state-controlled road .	No acceptable outcome is prescribed.	Not applicable , the CMF will not require direct access to Beaudesert Boonah Road (state-controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road).
PO20 New or changed access to a local road within 100 metres of an intersection with a state-controlled road does not adversely impact on the operating performance of the intersection.	No acceptable outcome is prescribed.	Not applicable , the CMF will not require direct access to Beaudesert Boonah Road (state-controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road).
Public passenger transport and active transport PO21 Development does not compromise the safety of users of public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	Complies – The CMF Project is not considered to compromise public transport and active transport. According to the Traffic Impact Assessment (Appendix I), The CMF footprint is not within a typical 400m walking catchment of any public transport services. The nearest bus stop is approximately 7.7km from the site on Bromelton Street, Beaudesert. There are no active transport facilities in the vicinity of the CMF. Beaudesert-

Performance outcomes	Acceptable outcomes	Response
PO22 Development maintains the ability for people to access public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	Complies – The CMF Project is not considered to compromise public transport and active transport. According to the Traffic Impact Assessment (Appendix I), The CMF footprint is not within a typical 400m walking catchment of any public transport services. The nearest bus stop is approximately 7.7km from the site on Bromelton Street, Beaudesert. There are no active transport facilities in the vicinity of the CMF. Beaudesert-Boonah Road and Mitchell Road does not provide active transport facilities.
PO23 Development does not adversely impact the operating performance of public passenger transport infrastructure, public passenger services and active transport infrastructure .	No acceptable outcome is prescribed.	Complies – The CMF Project is not considered to compromise public transport and active transport. According to the Traffic Impact Assessment (Appendix I), The CMF footprint is not within a typical 400m walking catchment of any public transport services. The nearest bus stop is approximately 7.7km from the site on Bromelton Street, Beaudesert. There are no active transport facilities in the vicinity of the CMF. Beaudesert-Boonah Road and Mitchell Road does not provide active transport facilities.
PO24 Development does not adversely impact the structural integrity or physical condition of public passenger transport infrastructure and active transport infrastructure .	No acceptable outcome is prescribed.	Complies – The CMF Project is not considered to compromise public transport and active transport. According to the Traffic Impact Assessment (Appendix I), The CMF footprint is not within a typical 400m walking catchment of any public transport services. The nearest bus stop is approximately 7.7km from the site on Bromelton Street, Beaudesert. There are no active transport facilities in the vicinity of the CMF. Beaudesert-Boonah Road and Mitchell Road does not provide active transport facilities.

Table 1.3 Network impacts

Performance outcomes	Acceptable outcomes	Response
PO25 Development does not compromise the safety of users of the state-controlled road network.	No acceptable outcome is prescribed.	Complies – The CMF is located approximately 800m off the state-controlled road. The upgrades to the intersection will provide sufficient capacity for the proposed development of turn movements. Refer to Appendix I for the Traffic Impact Assessment.
PO26 Development ensures no net worsening of the operating performance of the state-controlled road network.	No acceptable outcome is prescribed.	Complies – The CMF is located approximately 800m off the state-controlled road. The upgrades to the intersection will provide sufficient capacity for the proposed development of turn movements. Refer to Appendix I for the Traffic Impact Assessment.
PO27 Traffic movements are not directed onto a state-controlled road where they can be accommodated on the local road network.	No acceptable outcome is prescribed.	Complies – The CMF will not require direct access to Beaudesert Boonah Road (state-controlled road). The CMF will be connected to the road network via Mitchell Road (a local government managed road). The intersection of Mitchell Road and Beaudesert-Boonah Road will be upgraded and formalised to facilitate access to the proposed development. A priority-controlled T-intersection will be provided with a Channelised Left (CHL) turn lane and short channelised right turn lane CHR(s) on the Beaudesert-Boonah Road approaches and a CHL turn lane on the Mitchell Road approach. Refer to Appendix I for the Traffic Impact Assessment.
PO28 Development involving haulage exceeding 10,000 tonnes per year does not adversely impact the pavement of a state-controlled road .	No acceptable outcome is prescribed.	Complies –A high level pavement impact assessment has been completed for the Project and the Project accounts for less than a 1% increase in heavy vehicle traffic. As a result, no significant impact on the state road pavements expected. Refer to Appendix I for the Traffic Impact Assessment. A detailed pavement impact assessment will be completed at the end of the detailed design phase.

State Development Assessment Provisions v3.0

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
PO29 Development does not impede delivery of planned upgrades of state-controlled roads .	No acceptable outcome is prescribed.	Complies – The CMF is located approximately 800m off the state-controlled road. The upgrades to the intersection will not impede delivery of planned upgrades. Refer to Appendix I for the Traffic Impact Assessment.
PO30 Development does not impede delivery of corridor improvements located entirely within the state-controlled road corridor .	No acceptable outcome is prescribed.	Complies – The CMF is located approximately 800m off the state-controlled road. The upgrades to the intersection will not impede delivery of corridor improvements. Refer to Appendix I for the Traffic Impact Assessment.

Table 1.4 Filling, excavation, building foundations and retaining structures

Performance outcomes	Acceptable outcomes	Response
PO31 Development does not create a safety hazard for users of the state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	Complies – The proposed CMF will not result in filling, excavation or retaining structures within a state-controlled road reserve.
PO32 Development does not adversely impact the operating performance of the state-controlled road .	No acceptable outcome is prescribed.	Complies – The proposed CMF will not result in filling, excavation or retaining structures within a state-controlled road reserve.
PO33 Development does not undermine, damage or cause subsidence of a state-controlled road .	No acceptable outcome is prescribed.	Complies – The proposed CMF will not result in filling, excavation or retaining structures within a state-controlled road reserve.
PO34 Development does not cause ground water disturbance in a state-controlled road .	No acceptable outcome is prescribed.	Complies – The proposed CMF will not result in filling, excavation or retaining structures within a state-controlled road reserve.
PO35 Excavation, boring, piling, blasting and fill compaction do not adversely impact the physical condition or structural integrity of a state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	Complies – The proposed CMF will not result in filling, excavation or retaining structures within a state-controlled road reserve.
PO36 Filling and excavation associated with the construction of new or changed access do not compromise the operation or capacity of existing	No acceptable outcome is prescribed.	Complies – The proposed CMF will not result in filling, excavation or retaining structures within a state-controlled road reserve.

Performance outcomes	Acceptable outcomes	Response
drainage infrastructure for a state-controlled road.		

Table 1.5 Environmental emissions

Statutory note: Where a **state-controlled road** is co-located in the same transport corridor as a railway, the development should instead comply with Environmental emissions in State code 2: Development in a railway environment.

Performance outcomes	Acceptable outcomes	Response
Reconfiguring a lot		
Involving the creation of 5 or fewer new residential lots adjacent to a state-controlled road or type 1 multi-modal corridor		
PO37 Development minimises free field noise intrusion from a state-controlled road .	AO37.1 Development provides a noise barrier or earth mound which is designed, sited and constructed: - to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); - in accordance with: - Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; - Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; - Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO37.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	Not applicable

State Development Assessment Provisions v3.0

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
	OR AO37.3 Development provides a solid gap-free fence or other solid gap-free structure along the full extent of the boundary closest to the state-controlled road.	
Involving the creation of 6 or more new residential lots minimises free field noise intrusion from a state-controlled road.	AO38.1 Development provides noise barrier or earth mound which is designed, sited and constructed: - to achieve the maximum free field acoustic levels in reference table 2 (item 2.1); - in accordance with: - Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; - Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; - Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO38.2 Development achieves the maximum free field acoustic levels in reference table 2 (item 2.1) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	Not applicable
Material change of use (accommodation activity)		
Ground floor level requirements adjacent to a state-controlled road or type 1 multi-modal corridor		

Performance outcomes	Acceptable outcomes	Response
PO39 Development minimises noise intrusion from a state-controlled road in private open space.	AO39.1 Development provides a noise barrier or earth mound which is designed, sited and constructed: - to achieve the maximum free field acoustic levels in reference table 2 (item 2.2) for private open space at the ground floor level; - in accordance with: - Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; - Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; - Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO39.2 Development achieves the maximum free field acoustic level in reference table 2 (item 2.2) for private open space by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	Not applicable
PO40 Development (excluding a relevant residential building or relocated building) minimises noise intrusion from a state-controlled road in habitable rooms at the facade.	AO40.1 Development (excluding a relevant residential building or relocated building) provides a noise barrier or earth mound which is designed, sited and constructed: - to achieve the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms; - in accordance with:	Not applicable.

Performance outcomes	Acceptable outcomes	Response
	a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020. OR AO40.2 Development (excluding a relevant residential building or relocated building) achieves the maximum building façade acoustic level in reference table 1 (item 1.1) for habitable rooms by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	
PO41 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	Not applicable
Above ground floor level requirements (accommodation activity) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO42 Balconies, podiums, and roof decks include:	No acceptable outcome is provided.	Not applicable
- a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); - highly acoustically absorbent material treatment for the total area of the soffit above balconies, podiums, and roof decks.		

Performance outcomes	Acceptable outcomes	Response
PO43 Habitable rooms (excluding a relevant residential building or relocated building) are designed and constructed using materials to achieve the maximum internal acoustic level in reference table 3 (item 3.1).	No acceptable outcome is provided.	Not applicable
Material change of use (other uses)		
Ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO44 Development: - provides a noise barrier or earth mound that is designed, sited and constructed: - to achieve the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas; - in accordance with: - Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; - Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; - Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or - achieves the maximum free field acoustic level in reference table 2 (item 2.3) for all outdoor education areas and outdoor play areas by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	No acceptable outcome is provided.	Not applicable

Performance outcomes	Acceptable outcomes	Response
PO45 Development involving a childcare centre or educational establishment : 1. provides a noise barrier or earth mound that is designed, sited and constructed: 2. to achieve the maximum building facade acoustic level in reference table 1 (item 1.2); 3. in accordance with: a. Chapter 7 integrated noise barrier design of the Transport Noise Management Code of Practice: Volume 1 (Road Traffic Noise), Department of Transport and Main Roads, 2013; b. Technical Specification-MRTS15 Noise Fences, Transport and Main Roads, 2019; c. Technical Specification-MRTS04 General Earthworks, Transport and Main Roads, 2020; or 4. achieves the maximum building facade acoustic level in reference table 1 (item 1.2) by alternative noise attenuation measures where it is not practical to provide a noise barrier or earth mound.	No acceptable outcome is provided.	Not applicable
PO46 Development involving: 1. indoor education areas and indoor play areas ; or 2. sleeping rooms in a childcare centre ; or 3. patient care areas in a hospital achieves the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.	Not applicable
Above ground floor level requirements (childcare centre, educational establishment, hospital) adjacent to a state-controlled road or type 1 multi-modal corridor		
PO47 Development involving a childcare centre or educational establishment which have balconies, podiums or elevated outdoor play	No acceptable outcome is provided.	Not applicable

State Development Assessment Provisions v3.0

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
areas predicted to exceed the maximum free field acoustic level in reference table 2 (item 2.3) due to noise from a state-controlled road are provided with: 1. a continuous solid gap-free structure or balustrade (excluding gaps required for drainage purposes to comply with the Building Code of Australia); 2. highly acoustically absorbent material treatment for the total area of the soffit above balconies or elevated outdoor play areas. PO48 Development including: 1. indoor education areas and indoor play areas in a childcare centre or educational establishment; or 2. sleeping rooms in a childcare centre; or 3. patient care areas in a hospital located above ground level, is designed and constructed to achieve the maximum internal acoustic level in reference table 3 (items 3.2-3.4).	No acceptable outcome is provided.	Not applicable
Air, light and vibration		
PO49 Private open space, outdoor education areas and outdoor play areas are protected from air quality impacts from a state-controlled road.	AO49.1 Each dwelling or unit has access to a private open space which is shielded from a state-controlled road by a building, solid gap-free fence, or other solid gap-free structure. OR AO49.2 Each outdoor education area and outdoor play area is shielded from a state-controlled road by a building, solid gap-free fence, or other solid gap-free structure.	Not applicable

Performance outcomes	Acceptable outcomes	Response
PO50 Patient care areas within hospitals are protected from vibration impacts from a state-controlled road or type 1 multi-modal corridor .	AO50.1 Hospitals are designed and constructed to ensure vibration in the patient treatment area does not exceed a vibration dose value of $0.1\text{m/s}^{1.75}$. AND AO50.2 Hospitals are designed and constructed to ensure vibration in the ward of a patient care area does not exceed a vibration dose value of $0.4\text{m/s}^{1.75}$.	Not applicable
PO51 Development is designed and sited to ensure light from infrastructure within, and from users of, a state-controlled road or type 1 multi-modal corridor , does not: 1. intrude into buildings during night hours (10pm to 6am); 2. create unreasonable disturbance during evening hours (6pm to 10pm).	No acceptable outcomes are prescribed.	Not applicable

Table 1.6: Development in a future state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
PO52 Development does not impede delivery of a future state-controlled road .	AO52.1 Development is not located in a future state-controlled road . OR ALL OF THE FOLLOWING APPLY: AO52.2 Development does not involve filling and excavation of, or material changes to, a future state-controlled road . AND	Not applicable

State Development Assessment Provisions v3.0

State code 1: Development in a state-controlled road environment

Performance outcomes	Acceptable outcomes	Response
	AO52.3 The intensification of lots does not occur within a future state-controlled road. AND AO52.4 Development does not result in the landlocking of parcels once a future state-controlled road is delivered.	
PO53 The location and design of new or changed access does not create a safety hazard for users of a future state-controlled road .	AO53.1 Development does not include new or changed access to a future state-controlled road .	Not applicable
PO54 Filling, excavation, building foundations and retaining structures do not undermine, damage or cause subsidence of a future state-controlled road .	No acceptable outcome is prescribed.	Not applicable
PO55 Development does not result in a material worsening of stormwater, flooding, overland flow or drainage impacts in a future state-controlled road or road transport infrastructure .	No acceptable outcome is prescribed.	Not applicable
PO56 Development ensures that stormwater is lawfully discharged.	AO56.1 Development does not create any new points of discharge to a future state-controlled road. AND AO56.2 Development does not concentrate flows to a future state-controlled road. AND AO56.3 Stormwater run-off is discharged to a lawful point of discharge. AND	Not applicable

Performance outcomes	Acceptable outcomes	Response
	AO56.4 Development does not worsen the condition of an existing lawful point of discharge to the future state-controlled road .	

State Code 22: Environmentally Relevant Activities

Table 1

State Code 22 – All Development

Performance outcomes	Acceptable outcomes	Response
All ERAs		
PO1 Development is suitably located and designed to avoid or mitigate environmental harm to the acoustic environment .	AO1.1 Development meets the acoustic quality objectives for sensitive receptors identified in the Environmental Protection (Noise) Policy 2019.	COMPLIES PO1 The design of the CMF has had an integrated approach with the design team, the Proponent (SOILCO) and the technical specialists to be able to develop a design that responds to the constraints of the environment, considered relevant legislative requirements for a composting facility and has taken on feedback received from regulatory authorities. Specific measures implemented for site selection and layout include: – Site set back from closest residential sensitive receptor is 1,425 m. – The site is located within the Bromelton SDA, and is seeking a material change of use development permit for a high impact industry. This meets the strategic vision for the Bromelton SDA. – A noise impact assessment report has been completed for the proposed CMF to identify the potential noise impacts from the construction and operation activities of the proposed CMF and provide recommendations on management and mitigation of noise issues, where necessary, with the aim of achieving project specific noise goals. – SOILCO has successfully constructed and operated CMFs before, as described in Section 2.8. – Appropriate environmental controls will be implemented as per the EMP and CEMP. The report determined that all construction and operation activities are expected to comply with the established noise criteria at all sensitive receivers. The proposed CMF meets the acoustic quality objectives for sensitive receptors identified in the <i>Environmental Protection (Noise) Policy 2019</i>. A Noise Management Plan (NMP) for the site will be prepared prior to the Site being operational. The NMP would include mitigation measures to ensure that potential noise impacts are avoided and minimised as far as practicable and effectively managed.
PO2 Development is suitably located and designed to avoid or mitigate environmental harm to the air environment .	AO2.1 Development meets the air quality objectives of the Environmental Protection (Air) Policy 2019.	COMPLIES PO2 The CMF has had an integrated approach with the design team, the Proponent (SOILCO) and the technical specialists to be able to develop a design that responds to the constraints of the environment, considered relevant legislative requirements for a composting facility and has taken on feedback received from regulatory authorities. Specific measures implemented for site selection and layout include: – Site is set back more than 1.4 km from residential areas. – The site is located within the Bromelton SDA, and is seeking a material change of use development permit for a high impact industry. This meets the strategic vision for the Bromelton SDA. – The CMF has been designed to be set back from waterways. – Odour impacts have been discussed, and mitigations provided in Sections 4.2 and 4.3 of the Town Planning Report. These mitigations state that the odour will be appropriately managed during operation. – SOILCO has constructed, and operated successful CMF's before, as described in Section 2.8. – Appropriate environmental controls will be implemented as per the EMP and CEMP. A risk-based construction dust impact assessment has been undertaken and it was found that dust impacts to the surrounding receptors was negligible due to distance from the proposed works and meteorological conditions which are favourable to dust

Performance outcomes	Acceptable outcomes	Response
		dispersion, whilst not contributing to windborne dust pickup. A qualitative assessment of dust impacts during operation found the CMF will have low dust impacts. An operational odour assessment, using CALPUFF 3D modelling software was completed for the CMF. The Assessment found that the odour concentrations do not exceed the peak 99.5th percentile criterion at each of the sensitive receptors. The maximum concentration at the receptor being 0.8 Odour Units (OU). The potential for cumulative impacts was investigated through a qualitative assessment, it found that the risk of cumulative odour impacts from neighbouring commercial / industrial activity is low. The findings of the air quality and odour assessment found that the impacts of the CMF are not expected to cause significant environmental impacts of the nearby sensitive receptors. The proposed CMF meets the air quality objectives for sensitive receptors identified in the <i>Environmental Protection (Air) Policy 2019</i>.
P03 Development (other than intensive animal industry for poultry farming), is suitably located and designed to avoid or mitigate environmental harm on adjacent sensitive land uses caused by odour.	No acceptable outcome is prescribed.	COMPLIES PO3 The CMF has had an integrated approach with the design team, the Proponent (SOILCO) and the technical specialists to be able to develop a design that responds to the constraints of the environment, considered relevant legislative requirements for a composting facility and has taken on feedback received from regulatory authorities. Specific measures implemented for site selection and layout include: – Site is set back more than 1.4 km from residential areas. – The site is located within the Bromelton SDA, and is seeking a material change of use development permit for a high impact industry. This meets the strategic vision for the Bromelton SDA. – The CMF has been designed to be set back from waterways. – Odour impacts have been discussed, and mitigations provided in Sections 4.2 and 4.3 of the Town Planning Report. These mitigations state that the odour will be appropriately managed during operation. – SOILCO has constructed, and operated successful CMF's before, as described in Section 2.8. – Appropriate environmental controls will be implemented as per the EMP and CEMP. The proposed CMF is suitably located and designed to manage environmental harm to the air environment. As part of the air quality assessment in Appendix K, an odour impact assessment has been completed for the proposed CMF to identify potential odour impacts and provide recommendations to minimize odour emissions during the operations of the proposed facility. The results determined that the odour concentrations comply with the QLD 99.5th percentile odour criterion of 2.5OU at all sensitive receptors. An Odour Management Plan will be developed prior to the commencement of the facility operations to ensure potential odour impacts are avoided and minimised as far as practicable.
P04 Development is suitably located and designed to avoid or mitigate environmental harm to the receiving waters environment.	AO4.1 Development meets the management intent, water quality guidelines and objectives of the Environmental Protection (Water	COMPLIES PO4 The proposed CMF meets the water quality objectives for sensitive receptors identified in the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i>. There are no mapped matters of state environmental significance wetland values and/or wetland protection area within or adjoining the Project area. The Project is proposed in an area of previously cleared land used for agricultural activities, with occasional trees and very low scattered regrowth. The Project area only supports cleared, ephemeral drainage lines and there are no watercourses, wetlands or permanent water sources present.

Performance outcomes	Acceptable outcomes	Response
	and Wetland Biodiversity) Policy 2019.	The CMF will be setback 25m from flow paths, other than the harvesting storage dam. The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. The existing flood conditions at the Project area was characterised through development of a hydraulic flood model in TUFLOW, with peak flows for the critical durations of the waterways developed using a Watershed Bounded Network Model (WBNM) used as inputs to the TUFLOW model. The model was simulated for the 63.2%, 50%, 20%, 10%, 2%, 1% and 0.2% AEP storm events in accordance with the procedures of Australian Rainfall and Runoff. The 0.2% AEP storm event has been presented as a proxy for the future climate change 1% AEP storm event. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6-month period. Leachate will only be reused in the pasteurisation stage of the CMF process. As part of the CMF the following is proposed: – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m2 of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. – Provision of a 30 ML harvesting storage to the west of the operational area. – Truck water tanker delivery during dry periods to meet water supply needs. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines. The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and groundwater on-site during operation and maintenance to minimise impacts on ecology and water quality. Refer to Appendix I. As part of the Project a desktop groundwater assessment was completed and geotechnical investigations. The desktop assessment identified that groundwater is likely to be at depth, and recharge is likely low within the Project footprint, therefore changes in groundwater levels are not expected in the vicinity of the facility. Refer to Appendix K. In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding will be provided. During the construction phase, erosion and sediment control plan will be developed and implemented to manage erosion and sediment. Refer to Appendix A.
PO5 Development is designed to include elements which: 1. prevent or minimise the	No acceptable outcome is prescribed.	COMPLIES PO5 Workshop and fuel storage area will contain the following substances: engine oil, hydraulic oil, waste oil, degreaser, diesel, Adblue. The workshop and fuel storage are located to the north of the Project area within a hard stand area and will be bunded. They are located 100m away from drainage features. The workshop and fuel storage area will consist of the following: – Partially enclosed steel workshop building with 2-3 bays, measuring 25 m (W) x 48 m (L) x 6 m (H)

Performance outcomes	Acceptable outcomes	Response
production of hazardous contaminants and waste as by-products; or 2. contain and treat hazardous contaminants on-site rather than releasing them into the environment; and 3. provide secondary containment to prevent the accidental release of hazardous contaminants to the environment from spillage or leaks.		– Concrete floor – Bunded storage for 200 L engine oil, 200 L hydraulic oil, 1,000 L of waste oil and 2 x 15 L drums of degreaser – Above ground 34,000 L self-bunded diesel storage and dispensing tank – Above ground 5,000 L AdBlue® storage and dispensing tank located adjacent to shed. Self-bunded housing. SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. Refer to Appendix K. No release of leachate is proposed during the operation of the facility and the operational site is located outside of the 1% AEP flood impact for the identified flow paths adjacent to the site, other than two minor locations where detailed design extents would be altered as required to locate outside the flood extent.
P06 Environmentally hazardous materials located on-site are stored to avoid or minimise their release into the environment due to inundation during flood events.	No acceptable outcome is prescribed.	COMPLIES P06 Refer to the response in P05 regarding the management of chemicals at the CMF. Waste quantities, including hazardous materials, are monitored accordingly by operational staff and collection schedules are arranged as required. SOILCO will ensure that waste is managed in their operational areas in accordance with the Waste Management Plan (refer to Appendix F and the Environmental Management Plan Appendix G). During flood events, leachate storages are usually maintained empty and are expected to be contained during critical storm events. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process. Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site .

Performance outcomes	Acceptable outcomes	Response
All development – matters of state environmental significance		

P07 Development is designed and sited to: 1. avoid impacts on matters of state environmental significance; or 2. minimise and mitigate impacts on matters of state environmental significance after demonstrating avoidance is not reasonably possible; and 3. provide an offset if, after demonstrating all reasonable avoidance, minimisation and mitigation measures are undertaken, the development results in an acceptable significant residual impact on a matter of state environmental significance. <i>Statutory note: For Brisbane core port land, an offset may only be applied to development on land identified as E1</i>	No acceptable outcome is prescribed	COMPLIES P07 The CMF has been designed to be setback as far as possible from sensitive receptors and from environmental values. Extensive ecological investigations and assessments have been undertaken for the proposed Site (refer to Appendix G). An assessment has been undertaken against the Matters of State Environmental Significance (MSES) and Matters of National Environmental Significance (MNES) that are applicable to the proposed CMF and the Significant Residual Impact Guideline. Mitigation measures have been developed to avoid and minimise impacts on MSES and MNES identified and are discussed in Section 5 of the Town Planning Report. The Project will only impact on the following matters of state environmental significance as outlined below: Regional ecosystems The project footprint within Lot 4 RP85497 for the CMF will require the clearing of 21 ha of Category X vegetation. The clearing of within the CMF Project area does not trigger approvals as the clearing of Category X area on freehold land is exempt development as outlined under Part 2, Schedule 21 of the Planning Regulation 2017. The project footprint within Mitchell Road will require the clearing of: – 0.5 ha of Category B Endangered and Of Concern regional ecosystems. – 0.2 ha of Category X (non-remnant) vegetation. The clearing within the Mitchell Road Reserve will be limited to 10 m wide and meets the clearing limits in Section 4.3 in Accepted Development Vegetation Clearing Code - Clearing for Infrastructure. Koala habitat areas The Project will impact an area on Mitchell Road that is mapped as essential habitat for the koala and within the mapped core koala habitat area. The site is not within a koala priority area. However, the clearing of the koala trees within mapped core habitat area (Mitchell Road section) is exempted development under Schedule 10, Part 10 of the Planning Regulation 2017, and does not trigger assessable development. Therefore, State environmental offsets are not triggered by the Project. Essential habitat There is essential habitat mapped within the Project area. Five MSES are either likely to occur or potential to occur in the Project area. Of these five, four MSES are also listed as MNES (white-throated needletail, koala, yellow-bellied glider and greater glider). Likely to occur – White-throated needletail – 21.15 ha of suitable habitat – Koala - 0.95 ha of suitable foraging habitat and 20.18 ha of suitable dispersal habitat – Grey-headed flying-fox - 1.17 ha of suitable foraging habitat Potential to occur – Yellow bellied glider (south-eastern) -1.0 ha of marginally suitable habitat – Greater glider (southern and central) -1.0 ha of marginally suitable habitat – Short-beaked echidna – 21.15 ha of suitable general habitat. Significant residual impact is unlikely for: white-throated needletail, grey-headed flying-fox, greater glider (southern and central), yellow-bellied glider (south-eastern), short-beaked echidna. Substantial avoidance has been achieved by locating proposed infrastructure footprints in areas of existing disturbance. Mitigation measures are likely to be effective in substantially reducing the extent and magnitude of impact on terrestrial ecological values through the construction and operation phases of the Project. Waterways
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<i>Conservation/Buffer, E2 Open Space or Buffer/Investigation in the Brisbane Port LUP precinct plan.</i>	Two green low risk waterway barrier works waterways traverse the Project area (referred to as ACT1 and ACT2). The waterways details include: – ACT1 – traverses outside of the proposed facility location. – ACT2 – traverses through the centre of the CMF. The two waterways (ACT1 and ACT2) are not considered to be suitable for fish passage or provide fish habitat. Pre-lodgement advice received from Department of Agriculture and Fisheries (DAF) and DAF confirmed that only ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. SOILCO would like DAF to reassess waterway ACT1, as based on the aquatic assessment (refer to Appendix G). Refer to Section 1.6.2 in the Town Planning Report. Waterway barrier works waterways intersect Mitchell Road and new culverts proposed along Mitchell Road as part of the road upgrade will be in accordance with the Accepted Development Requirements for new culverts. There are no aquatic MSES occur within the Project area and therefore no significant impact assessments were required. During the construction phase the contractor will develop and implement the following plan along with the mitigation measures outlined in Section 4. CEMP – outlining the actions for potential impacts and mitigations of environmental factors with the CMF. ESCP developed in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats. A summary of the prescribed environmental matters associated with the subject site and Mitchell Road are discussed below: Waterway providing for fish passage – Mapped over subject site. DAF confirmed that ACT2 appears to be a mapping anomaly. ACT2 feature does not constitute a waterway as it does not have defined bed and banks, fish habitat and it is too steep to provide adequate flow to sustain ecological processes. DAF considered ACT1 to constitute a waterway as defined under the Fisheries Act 1994 and any waterway barrier works within this waterway require authorisation. The proposed works in this waterway include a dam could be undertaken under the Accepted Development Requirements, provided a spillway in accordance with the design requirements of work type 3.1 is included. Endangered or of concern regional ecosystems – Category B sections are mapped over Mitchell Road reserve and will be impacted by vegetation clearing activities. However, vegetation clearing is being undertaken in accordance with the Accepted Development Vegetation Clearing Code – Clearing for Infrastructure Regional ecosystems within the defined distance of a watercourse – This matter is mapped over the subject site and alignment with the DAF waterways. The two water features are classified as stream order 1 and will be impacted by the CMF. Connectivity - The extent of clearing within the Project area is unlikely to create a substantial barrier or restrict fauna movement. The Project is located in a landscape that has already been highly fragmented from historical clearing and agriculture. The existing state of the site in which the composting facility is proposed on is historical agricultural land in which a majority of the habitat has already been degraded. Habitat fragmentation can isolate populations by causing barriers to local fauna movement. The quality of persisting habitats can be substantially degraded by edge effects associated with increased exposure to light, noise, run-off, sedimentation, erosion and weed and pest infestation. The Project footprint contains the unsealed Mitchell Road to the north, and is bordered by Beaudesert Boonah Road to the north-east, and a railway line to the east. Given the observed evidence of infrastructure maintenance (vegetation trimming, mowing, etc.) and impacts associated with infrastructure operation (compacted tracks), habitat within the Project area currently experiences fragmentation from the historical vegetation clearing in the surrounding landscape. Additionally, vegetation within the Project area occurs largely as non-remnant, with only patches of regrowth and remnant vegetation on the Project area boundaries including in the south-west and north along Mitchell Road. Given the above, it is considered that no patches of remnant vegetation will become directly isolated as a result of the proposed works.
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Performance outcomes	Acceptable outcomes	Response
		Essential habitat – is mapped over the Category B sections of Mitchell Road reserve and will be impacted by vegetation clearing activities. The short-beaked echidna (<i>Tachyglossus aculeatus</i>) has the potential to occur in subject site and a significant impact assessment determined that the Project is unlikely to have a significant residual impact on this species. White-throated needletail, Grey-headed flying fox, Yellow bellied glider and Greater glider have the potential to occur in subject site and a significant impact assessment determined that the Project is unlikely to have a significant residual impact on this species. The clearing within the essential habitat area is not expected to exceed the clearing limits as outlined in the Significant Residual Impact Guideline. Protected wildlife habitat – Core koala habitat mapped within Mitchell Road and will be cleared as part of the road upgrade. The clearing of core koala habitat within an SDA is exempted development and therefore does not trigger assessable development. Core koala habitat is mapped on Lot 4, but will not be impacted. In accordance with Bromelton SDA assessment criteria 2.5.11 (5): Offsets maybe required if residual significant impacts to MSES or MNES caused by the development cannot be avoided. Further information about the significant assessment completed for the Project is included section 8.1.2.5 of Appendix G: Terrestrial Ecological Assessment Report.
Intensive animal industry – poultry farming (ERA 4(2))		
PO8 Poultry farming development (where farming more than 200,000 birds) is suitably located and designed to avoid or mitigate environmental harm on adjacent sensitive land uses , caused by odour.	AO8.1 For poultry farming involving 300,000 birds or less, development meets the separation distances as determined using the S-factor methodology to: 1. a sensitive land use in a rural zone; and 2. boundary of a non-rural zone. OR AO8.2 Development meets the separation distances as determined by odour modelling using the following criteria: 3. 2.5 odour units, 99.5 percent, 1 hour average for a sensitive land	Not applicable – The construction and operation of the CMF will not involve poultry farming development.

Performance outcomes	Acceptable outcomes	Response
	use in a rural zone; 4. 1.0 odour units, 99.5 percent, 1 hour average for the boundary of a non-rural zone.	



Appendix F

Seqwater Development Guidelines Compliance

Appendix F - Seqwater Development Guidelines Compliance

Water Resource Catchment Overlay Code

Table 1 Benchmarks for assessable development

Performance outcomes	Acceptable outcomes	Compliance
Separation distances		
PO1 Development maintains an adequate separation distance and avoids areas of potential flood inundation to protect waterways or water supply sources.	AO1.1 Development complies with the separation distances and other locational criteria specified in Table 5. Note: Where another setback distance or locational criteria is identified within this code, the higher standard applies.	Complies The CMF has considered the criteria in the Seqwater (2017) guidelines as outlined below: The operational site is located outside the 1% AEP flood impact for the identified flow paths adjacent to the site, other than for two minor locations where, through detailed design, extents would be altered to locate outside the flood extent. This would also be undertaken in consideration of waterway separation distance requirements. The upgrade of Mitchell Road includes provision of appropriate flood protection and flow conveyance. The CMF is defined as the other industry use. A drainage feature classified as Stream order 1 intersects the centre of the CMF, however it has been confirmed with Department of Regional Development, Manufacturing, and Water that it is a drainage feature and Department of Agriculture and Fisheries confirmed that is not a low risk - fish passage waterway and will be remapped. There is another drainage feature classified as Stream order 1 located to the east of the CMF. The CMF will setback 25 m the drainage feature. There is another drainage feature classified as Stream order 1 located to the west of the CMF. The CMF will setback more than 25 m the drainage feature and a 30 ML harvesting storage is proposed at the beginning of the drainage feature. During the construction phase the contractor will develop and implement the following plans: – CEMP – outlining the actions for potential impacts and mitigations of environmental factors with the CMF. – ESCP developed in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats. The operational phase is not considered to impact on water supply sources for the reasons below: There will be no direct discharge of runoff to the surrounding environment. CMF will construct a 30 ML leachate storage sized in exceedance of the 24-hour event (152 mm) was taken as the initial minimum sizing and identified to be approximately 17 ML assuming 100% runoff. However, it was identified based on preliminary water balance of the site that the site would be most sensitive to longer durations of regular rainfall rather than a shorter intense storm. Therefore, approximately twice (i.e. 30ML) the volume of the minimum sizing was adopted. The stormwater harvested will be reused in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process. Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process

Performance outcomes	Acceptable outcomes	Compliance
		Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. Provision of a typical urban stormwater treatment train, including 500 m2 of bio-retention filter area and a Gross Pollutant Trap. Stormwater will be reused in the composting process within the CMF footprint. Provision of a 30 ML harvesting storage to the west of the operational area. Truck water tanker delivery during dry periods to meet water supply needs. Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines. The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and groundwater on-site during operation and maintenance to minimise impacts on ecology and water quality. In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding should be provided. During the construction phase, ESCP will be developed and implemented to manage erosion and sediment. A Stormwater Management Plan has been developed for the Project and is provided at Appendix N.
Wastewater (other than domestic wastewater)		
PO2 Development does not discharge wastewater unless demonstrated to not compromise the drinking water supply environmental values. Note: Drinking water supply environmental values are referenced within Schedule 1 of the <i>Environmental Protection Policy (Water) 2009</i>.	AO2.1 Development does not generate wastewater. OR AO2.2 If development generates wastewater, the wastewater is collected and contained on-site, and is: – lawfully disposed to sewer; – transferred off-site for treatment/disposal to an appropriately licensed facility; – reused on-site in a closed-cycle irrigation scheme, industrial processes, washing/cleaning or other purpose; or – treated to meet the drinking water supply environmental values prior to release. Note: Where development involves the release of wastewater, a Wastewater Management Plan (WWMP) is to be prepared by a suitably qualified person. Plans are to provide an assessment of all risks and associated mitigation strategies for preventing adverse impact on the quality of drinking water and may require a water quality monitoring program.	Complies Stormwater The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process. As part of the CMF the following is proposed: – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m2 of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. – Provision of a 30 ML harvesting storage to the west of the operational area.

Performance outcomes	Acceptable outcomes	Compliance
		– Truck water tanker delivery during dry periods to meet water supply needs. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines. – The CMF will be setback 25m from flow paths, other than the harvesting storage The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and groundwater on-site during operation and maintenance to minimise impacts on ecology and water quality. In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding should be provided. During the construction phase, ESCP will be developed and implemented to manage erosion and sediment. A Stormwater Management Plan has been developed for the Project and is provided at Appendix N. Wastewater A Site and Soil Evaluation Report has been completed for the CMF and an on-site wastewater treatment and the effluent disposal will be adopted for the CMF. An advanced secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system will be installed at CMF. The peak daily design volume for the entire site is 4.4 Equivalent persons – 600l/day – loads from staff. The Wastewater treatment system will be located at the northern end of the Project area near the office and amenities area. It will include a land application area and irrigation systems will distribute wastewater into the topsoil layers to provide in-soil treatment of the remaining effluent residuals as well as provide nutrient uptake an evapotranspiration by grass. The design and calculations developed for the wastewater treatment plant can be seen in Appendix U.
PO3 Where treated wastewater is irrigated to land, it will: – be confined to a dedicated area of land on-site; – be suitably located and sized; and – use irrigation practices that will not harm groundwater and on-site surface water quality. Note: Developments involving the irrigation of wastewater will need to provide a MEDLI Modelling Report demonstrating the nominated land area for wastewater irrigation is suitably located and sized to accommodate design wastewater loads, storages are suitably sized to accommodate design wastewater loads, and proposed irrigation practices will not damage water quality. It is recommended the modelling exercise incorporate scenarios based on both a 10-year and 20-year planning horizon.	No acceptable outcome is nominated.	Complies There will be no direct discharge of runoff from the CMF to the surrounding environment. CMF will consist of a 30 ML leachate storage (there will be 3 leachate ponds) sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process.

Performance outcomes	Acceptable outcomes	Compliance
Solid waste		
PO4 Solid wastes generated by the development must be managed, stored and disposed in a manner that does not adversely impact on the quality of any surface water or groundwater.	The following acceptable outcomes are applicable to intensive animal industry only. For all other development, no acceptable outcome is nominated. AO4.1 The stockpiling of waste litter, manure and other organics is undertaken as follows: – on surfaces constructed with permanent impervious underlay to prevent leaching (groundsheets will only be accepted where stockpiling is temporary); – located outside of an effluent irrigation area; – located 3m above the seasonal high-water table and away from recharge areas; – sized to accommodate the proposed disposal timeframes; – designed with run-off diversion drainage upstream to prevent uncontaminated stormwater movement into the area; – bunded to capture contaminated run-off for appropriate treatment and disposal; and – covered, desirably within a shed but otherwise with weatherproof material. AND AO4.2 The reuse of waste litter, manure and other organics as soil conditioners or fertilizers is not undertaken on-site. AND AO4.3 Composting activities are not undertaken on-site. AND AO4.4 Carcasses are not buried on-site except as required in accordance with any emergency animal disease directive by a biosecurity agency.	Complies Waste generated during the construction and operation of the CMF will be managed in accordance with the Waste Management Plan included in Appendix H. The Waste Management Plan identifies the waste streams associated with the construction and operation of the CMF and detail the operations of the Project and measures that will be implemented to safely manage waste and promote resource recovery. The Waste Management Plan has been developed to align with the requirements of the Scenic Rim Planning Scheme 2020 Scheme Section 9.3.7 – General Development Provisions Code Acceptable Outcomes AO13. Waste generated by the CMF will be captured in waste receptacles in the hard stand areas and removed from site. No waste will be placed within environmental sensitive areas. During the operational phase, all residual waste separated from organics in the sorting cabin and destined for landfill or recycling (e.g. brick, concrete, plastic, metal etc.), would be stored in appropriately sized bins and transported from the Site as required in distinct truckloads via the weighbridge and from there it would be sent to a suitably licensed facility for further processing or disposal.
Wastewater		
PO5 Wastewater treatment systems are designed, constructed and managed in ways that do not compromise the drinking water supply environmental values. Note: water supply environmental values are referenced within Schedule 1 of the Environmental Protection Policy (Water) 2009.	AO5.1 Development does not involve an on-site wastewater facility. OR AO5.2 Where the combined total peak design capacity of wastewater treatment is less than 21 Equivalent Persons (EP), the design of the system achieves a Low or Medium Risk classification in accordance with Seqwater's Land Use Risk Tool for on-site sewage facilities. OR AO5.3 Where the combined total peak design capacity of wastewater treatment is 21EP or greater, the system is located and designed in the following manner: – achieves a minimum secondary treatment standard with nutrient removal and disinfection; – on land at or above the 0.5% AEP flood event; – the hydraulic capacity of the system is five times the average dry weather flow (ADWF); – no direct discharge of sewage to a waterway or water supply source occurs, unless during a bypass event that exceeds peak hydraulic capacity and sewage is screened and disinfected before release; – where treated effluent will be used in irrigation, application is: • confined to a dedicated area of land suitably located and sized, and using irrigation practices	Complies with AO5.2 A Site and Soil Evaluation Report has been completed for the CMF and an on-site wastewater treatment and the effluent disposal will be adopted for the CMF. An advanced secondary all-waste sewage system such as the Envirocycle 10EP advanced Secondary Wastewater treatment system will be installed at CMF. The peak daily design volume for the entire site is 4.4 Equivalent persons – 600l/day – loads from staff. The Wastewater treatment system will be located at the northern end of the Project area near the office and amenities area. It will include a land application area and irrigation systems will distribute wastewater into the topsoil layers to provide in-soil treatment of the remaining effluent residuals as well as provide nutrient uptake an evapotranspiration by grass. The design and calculations developed for the wastewater treatment plant can be seen in Appendix U. The wastewater treatment system will be under 21EP. A Land Use Risk Tool (LURT) assessment has been completed for the wastewater treatment system and the unmitigated score was 4. Refer to Appendix U.

Performance outcomes	Acceptable outcomes	Compliance
	that will not adversely affect groundwater and surface water quality; and - located on land at or above the 0.5% AEP flood event; and – where the combined total peak design capacity of wastewater treatment is 1500EP or greater, and direct discharge to a waterway is the only reasonably practical disposal option, the contribution of flow from the system must be modelled over the range of reasonably expected flow events. If the proportion of flow is: <10% of the total flow, 3-log reduction bacteria and virus, and 4-log reduction protozoa, minimum pathogen log-reduction values apply; or >10% of the total flow, it must demonstrate compliance with the Australian guidelines for water recycling (Phase 2): Augmentation of drinking water supply (to be undertaken in consultation with Seqwater). Note: Developments involving the irrigation of wastewater will need to provide a MEDLI Modelling Report demonstrating the nominated land area for irrigation is suitably located and sized to accommodate design wastewater loads, storages are suitably sized to accommodate design wastewater loads and proposed irrigation practices will not result in any adverse impact on water quality. It is recommended the modelling exercise incorporate scenarios based on both a 10-year and 20-year planning horizon and incorporate a minimum of three irrigation concepts.	
Vegetation management		
PO6 Maintain the current extent of any vegetation located adjacent, or connected, to any waterway or water supply source.	AO6.1 Clearing complies with the following locational criteria: 25m setback to a stream order 1–3; 50m setback to a stream order 4 or greater; 200m setback to a full supply level of a dam, lake or reservoir or watercourse that serves as a potable water supply; - is not undertaken on land within the 1% AEP flood event; and - is not undertaken on a slope greater than 15%.	Complies The CMF complies with the following: - The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. - The CMF is defined as the other industry use. A drainage feature classified as Stream order 1 intersects the centre of the CMF, however it has been confirmed with Department of Regional Development, Manufacturing, and Water that it is a drainage feature and Department of Agriculture and Fisheries confirmed that is not a low risk - fish passage waterway and will be remapped. - There is another drainage feature classified as Stream order 1 located to the east of the CMF. The CMF will setback 25 m the drainage feature. - There is another drainage feature classified as Stream order 1 located to the west of the CMF. The CMF will setback more than 25 m the drainage feature and a 30 ML harvesting storage is proposed at the beginning of the drainage feature. - A landslide stability assessment has been developed for the proposed development. The assessment was based on a review of available published geological information and a walk-over survey by a geotechnical engineer. The previous geotechnical investigation found no signs of groundwater or seepage were recorded in previous investigated boreholes. The site walkover observations indicated site drainage to be generally poor to fair. Erosion was noted around the creek located north of the site. The maximum slope fall is approximately 25 - 30%. Aside from the previously noted creek

Performance outcomes	Acceptable outcomes	Compliance
		bed, there were no signs of water ponding and instability noted at the site. The creek banks and areas of cut to fill should be checked by a geotechnical engineer at time of construction to verify stability to mitigate landslide risk. The proposed site also has a low landslide susceptibility rating.
Stormwater quality and hydrology		
PO7 Manage stormwater at the construction phase to protect drinking water supply environmental values and facilitate the achievement of water quality objectives for receiving waters. Note: Drinking water supply environmental values are referenced within Schedule 1 of the <i>Environmental Protection Policy (Water) 2009</i>.	AO7.1 At the construction stage, an erosion and sediment control program (ESCP) demonstrates that stormwater achieves the design objectives listed in Table A of the SPP (appendix 2): <i>Construction Phase – Stormwater management design objectives</i> (all parts). OR AO7.2 An ESCP demonstrates how stormwater quality will be managed at the construction stage in accordance with an acceptable regional or local guideline so that target contaminants are treated to a design objective at least equivalent to Table A of the SPP (all parts). OR AO7.3 Stormwater run-off generated during construction is captured and transferred off-site or captured and treated to any applicable re-use standards and reused on-site.	Complies CMF complies with AO7.1. The Project will require land disturbance for construction of the CMF and ancillary components. This has potential to result in erosion and sedimentation, particularly during construction activities such as earthworks and excavations. SOILCO proposes to manage land disturbance impacts through erosion and sediment controls as outlined in Section 5.2 of the Town Planning Report and an erosion and sediment control plan has developed included in Appendix A.
PO8 Manage stormwater during operational (post-construction) stages to protect drinking water supply environmental values and facilitate the achievement of water quality objectives for receiving waters. Note: Drinking water supply environmental values are referenced within Schedule 1 of the <i>Environmental Protection Policy (Water) 2009</i>.	AO8.1 Development does not involve an impervious area greater than 1,000m². OR AO8.2 Development is for reconfiguring a lot that; – will not create more than two additional lots; or – involves a land area less than 1000m². OR AO8.3 Stormwater run-off generated during operation (post-construction) demonstrates a minimum reduction in mean annual load from unmitigated development that achieves the following stormwater management design objectives: – 85% reduction in total suspended solids; – 65% reduction in total phosphorus; – 45% reduction in total nitrogen; and – 95% reduction in gross pollutants. OR AO8.4 Stormwater run-off generated during operation is captured and transferred off-site or captured and treated to any applicable re-use standards and reused on-site. Note: A Site Stormwater Quality Management Plan is to be prepared by a suitably qualified individual such as a Civil Engineer or an Environmental Professional and is to be certified by a Registered Professional Engineer (RPEQ) (Civil or Environmental) to demonstrate compliance with the stormwater design objectives.	Complies – The CMF complies with AO8.4. Stormwater run-off generated during operation is captured and treated to any applicable re-use standards and reused on-site. Refer to the measures below adopted by the CMF: – There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process. – Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process. – Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. – Provision of a typical urban stormwater treatment train, including 500 m² of bio-retention filter area and a Gross Pollutant Trap. – Stormwater will be reused in the composting process within the CMF footprint. – Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with Seqwater (2017) guidelines. – The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and groundwater on-site during operation and

Performance outcomes	Acceptable outcomes	Compliance
		maintenance to minimise impacts on ecology and water quality. – In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding should be provided. A Stormwater Management Plan has been developed for the Project and is provided at Appendix N. Refer to the stormwater flow layout drawing in Appendix A.
PO9 Development maintains or improves the quality of surface water by adopting measures that exclude livestock from entering a water body where a site is being used for animal husbandry or animal-keeping activities.	No acceptable outcome is nominated.	Not applicable – The CMF proposal does not involve animal husbandry or animal-keeping activities.
PO10 Development avoids and minimises changes to the existing surface water natural hydrological regime so that: – there is no change to the reference high-flow and low-flow duration frequency curves, low-flow spells frequency curve and mean annual flow to and from waterways as a result of the development; – any relevant flows into waterways comply with the relevant flow objectives of the applicable water plan for the area; and – the collection and re-use of stormwater occurs so there is no increase to the velocity or volume of stormwater flows entering a waterway.	No acceptable outcome is nominated.	Complies – The CMF is not considered to adversely impact on the existing surface water natural hydrological regime. The existing flood conditions at the site were characterised through development of a hydraulic flood model in TUFLOW. The operational site is located outside the 1% AEP flood impact for the identified flow paths adjacent to the site, other than for two minor locations where, through detailed design, extents would be altered to locate outside the flood extent. This would also be undertaken in consideration of waterway separation distance requirements. The upgrade of Mitchell Road includes provision of appropriate flood protection and flow conveyance. The CMF is defined as the other industry use. A drainage feature classified as Stream order 1 intersects the centre of the CMF, however it has been confirmed with Department of Regional Development, Manufacturing, and Water that it is a drainage feature and Department of Agriculture and Fisheries confirmed that is not a low risk - fish passage waterway and will be remapped. There is another drainage feature classified as Stream order 1 located to the east of the CMF. The CMF will setback 25 m the drainage feature. There is another drainage feature classified as Stream order 1 located to the west of the CMF. The CMF will setback more than 25 m the drainage feature and a 30 ML harvesting storage is proposed at the beginning of the drainage feature. During the construction phase the contractor will develop and implement the following plans: – CEMP – outlining the actions for potential impacts and mitigations of environmental factors with the CMF. – ESCP developed in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats. The operational phase is not considered to impact on water supply sources for the reasons below: There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30 ML of leachate storage sized in exceedance

Performance outcomes	Acceptable outcomes	Compliance
		of the 24-hour event, with reuse in the early stage of composting. No proposed active release of leachate and no overflow up to a design standard rainfall of 900 mm falling within a 6 month period. Leachate will only be reused in pasteurisation stage of the CMF process. Diversion of upstream run-on around the CMF to separate stormwater from water that has been in contact with organic material used in the composting process Designation of respective leachate and stormwater catchments within the operational site, with separate stormwater conveyance systems. Provision of a typical urban stormwater treatment train, including 500 m² of bio-retention filter area and a Gross Pollutant Trap. Stormwater will be reused in the composting process within the CMF footprint. Provision of a 30 ML harvesting storage to the west of the operational area. Truck water tanker delivery during dry periods to meet water supply needs. Separation of stormwater from contamination and management through provision of a stormwater treatment train in accordance with SEQWater (2017) guidelines. The CMF will be operated to aim to avoid impacting on surrounding water resources. A surface and groundwater management plan will be developed and implemented by the operator to describe how the facility proposes to manage surface water and groundwater on-site during operation and maintenance to minimise impacts on ecology and water quality. In the event of overflow, the leachate will be transported offsite to an appropriately licenced facility and emergency containment bunding should be provided. During the construction phase, ESCP will be developed and implemented to manage erosion and sediment. A Stormwater Management Plan has been developed for the Project and is provided at Appendix N.
PO11 The design and location of artificial waterways: – use natural channel design principles to minimise erosion, flooding and maintenance while maximising ecological and aesthetic values of waterways; – are compatible with any existing natural waterways; and – are designed to ensure surface water hydrological regimes are maintained.	No acceptable outcome is nominated. Note: The Ipswich City Council Waterway and Channel Rehabilitation Guidelines or Brisbane City Council Natural Channel Design Guidelines demonstrate suitable natural channel design works.	Not applicable - The proposal does not involve any artificial waterways.
PO12 Development maintains the existing groundwater hydrological regime.	AO12.1 Development does not change the existing groundwater hydrological regime by lowering or raising the water table and hydrostatic pressure outside the bounds of variability of existing predevelopment conditions. AND AO12.2 Development does not result in the ingress of saline water into freshwater aquifers. Note: Where development is likely to impact on the water table, a hydrological assessment undertaken by a suitably	Complies - The desktop assessment identified that groundwater is likely to be at depth, and recharge is likely low within the Project footprint, therefore changes in groundwater levels are not expected in the vicinity of the facility. Refer to Appendix G "Groundwater assessment".

Performance outcomes	Acceptable outcomes	Compliance
	qualified professional may be required to demonstrate no adverse impact on the groundwater hydrological regime.	
Filling and excavation		
PO13 The siting and design of earthworks minimises impacts on the natural landform that may cause contamination or interfere with the flow of a waterway or water supply source.	AO13.1 Earthworks comply with the following locational criteria: – 25m setback to a stream order 1–3; – 50m setback to a stream order 4 or greater; – 200m setback to a full supply level of a dam, lake or reservoir or watercourse which serves as a potable water supply; – is not undertaken on land at or below the 1% AEP; and – is not undertaken on a slope greater than 15%.	Complies As part of the construction of the CMF and earthworks are required. Earthworks complies with the following: – The CMF has a 25m setback to a stream order 1 – The overall site slope is approximately 6.5 degrees from the southern boundary, down toward the north. – The CMF's operational site is located outside the 1% AEP flood extent for the identified flow paths adjacent to the site. – THE CMF is not within 200m of dam/lake or reservoir.
PO14 Any earthworks minimise erosion and the movement of sediment off-site. Note: A Sediment and Erosion Control Plan is to be prepared by a suitably qualified and experienced professional in accordance with best practice such as IECA 2008, Best Practice Erosion and Sediment Control.	No acceptable outcome is nominated.	Complies A construction ESCP will be developed and implemented in accordance with the Best Practice Erosion and Sediment Control manual (IECA, 2008).
Dangerous goods, hazardous substances or environmentally hazardous materials		
PO15 Dangerous goods, hazardous substances or environmentally hazardous materials are stored and handled in a manner that minimises the potential for contamination of surface and groundwater in the event of a leak or spill.	AO15.1 The storage or handling of dangerous goods, hazardous substances or environmentally hazardous materials involves an aggregate quantity less than 200L or 200kg. OR AO15.2 The storage or handling of dangerous goods, hazardous substances or environmentally hazardous materials with an aggregate quantity greater than 200L or 200kg and less than 1000L or 1000kg maintains the following separation distances: – 100m to a minor waterway; – 100m to a stream order 4 or greater; and – 800m to a full supply level of a dam, lake or reservoir or watercourse that serves as a potable water supply. AND AO15.3 Dangerous goods, hazardous substances or environmentally hazardous materials are located and stored in the following manner: – is not undertaken on land within the 1% AEP flood event; – undercover in a building or similar structure; – in or on a dedicated impervious secondary containment store or device that permits full recovery of spills; – in a manner that prevents the movement of packages/containers from their place of storage during a flood event; and – in accordance with <i>Australian Standard AS 1940-2004: The Storage and Handling of Flammable and Combustible Liquids</i>. OR AO15.4 The storage of dangerous goods, hazardous substances or environmentally hazardous materials (other than petroleum products) in aggregate quantities greater than 1000L or 1000kg is not undertaken unless a site-specific	Complies – Workshop and fuel storage area will contain the following substances: engine oil, hydraulic oil, waste oil, degreaser, diesel, Adblue. The storage will be less than 200L or 200kg. The workshop and fuel storage are located to the north of the Project area within a hard stand area and will be bunded. They are located 100m away from drainage features. SOILCO will develop and implement a Hazardous Materials and Waste Management Plan, that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during operation of the facility. Refer to Appendix K.

Performance outcomes	Acceptable outcomes	Compliance
	risk assessment presents minimal risk to drinking water quality. For petroleum products only: AO15.5 The storage of petroleum products in bulk (greater than 1000L) aboveground uses self-bunded vessels that meet Australian Standard AS 1692 Steel Tanks for Flammable and Combustible Liquids. OR AO15.6 The storage of petroleum products in bulk (greater than 1000L) aboveground uses single-skin vessels installed within a bunded compound that: – is sufficiently impervious (permeability should be <10–9 m/s) to retain and recover spillage; and – has a net capacity of at least 100% of the bunded vessel or aggregate quantity of vessels where operated as a single unit. OR AO15.7 Petroleum products belowground (greater than 200L) are stored in vessels that are non-corrodible, double walled with an interstitial space between, and meet the requirements of Australian Standard AS 1692: Steel Tanks for Flammable and Combustible Liquids and/or UL 1316 Glass fibre reinforced plastic underground storage tanks for petroleum products, alcohols and alcohol gasoline mixture.	
Material change of use for extractive industry only		
PO16 Extraction activities do not impact on erosion, natural fluvial processes, river bank stability or the storage capacity volume of a floodplain.	No acceptable outcome is nominated.	Not applicable The proposal does not involve an extractive industry.
For reconfiguring a lot only		
PO17 When reconfiguring a lot, all resultant lots requiring an on-site wastewater treatment system do not compromise the environmental values of drinking water supply. Note: Drinking water supply environmental values are referenced within Schedule 1 of the <i>Environmental Protection Policy (Water) 2009</i>.	AO17.1 Any new lot can accommodate an area for on-site wastewater treatment and disposal complying with the following: – 50m setback to a stream order 1–3; – 100m setback to a stream order 4 or greater; and – 400m setback to a full supply level of a dam, lake or reservoir or watercourse that serves as a potable water supply. AND AO17.2 Any new lot can accommodate an area for on-site wastewater treatment and disposal on land that is not within the 1% AEP flood event and on a slope at or less than 10%. AND AO17.3 Any proposed lots that are to accommodate a future on-site wastewater system, maintain an average lot size of at least 2.5 ha. Note: A wastewater site analysis is to be prepared by a suitably qualified professional demonstrating the above.	Not applicable The proposal does not involve reconfiguring a lot.

Appendix G

**Ecological Assessment – Terrestrial
Ecology Assessment and Aquatic Ecology
Assessment**

Bromelton Compost Manufacturing Facility

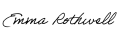
Terrestrial Ecology Assessment Report

SOILCO Pty Ltd

22 August 2024

→ The Power of Commitment



Project name		Bromelton Compost Manufacturing Facility					
Document title		Bromelton Compost Manufacturing Facility Terrestrial Ecology Assessment Report					
Project number		12626213					
File name		12626213-RPT-00-Bromelton Compost Manufacturing Facility Terrestrial Ecology Assessment					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S0	A	A. Franks S. Hampson H. Wheatley	J. Halford L. Saragossi	DRAFT	E. Rothwell	DRAFT	13/06/2024
S3	B	P. de Jong	L. Saragossi	DRAFT	E. Rothwell	DRAFT	28/06/2024
S4	B	P. de Jong					05/07/2024
S4	00	P. de Jong	P. de Jong		E. Rothwell		15/08/2024
S4	01	H. Wheatley	L. Saragossi		E. Rothwell		22/08/24

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Executive Summary

GHD Pty Ltd (GHD) was commissioned by SOILCO Pty Ltd (hereafter referred to as SOILCO) to assess the terrestrial ecological values (flora and fauna) and potential impacts of the proposed Bromelton Compost Manufacturing Facility. This report summarises the existing terrestrial ecological values within the Project footprint, and a broader 'Project area' based on desktop and field assessments. The report also presents a preliminary assessment of potential impacts the Project may have on the terrestrial ecological values, including Matters of National Environmental Significance (MNES) protected under the *Commonwealth Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Matters of State Environmental Significance (MSES) protected under Queensland legislation.

The Project area has been historically disturbed through broadscale clearing and cattle grazing. The majority of the Project footprint supports cleared non-remnant vegetation, with some eucalypt woodland along Mitchell Road. Outside of the Project footprint, areas contain eucalypt woodland, which provide the highest ecological value for threatened species, along with Mitchell Road. Eucalypt woodland areas outside of the Project footprint (south-western and southern extent of the Project area) are connected to vegetation further south and west of the Project area. Avoidance and management measures should prioritise reducing the potential for adverse impacts to these areas.

Key findings and considerations are as follows:

- The Project footprint is proposed in an area that contains some eucalypt woodland, however, primarily contains previously cleared land utilised for agricultural activities, with occasional trees and very low scattered regrowth. The Project footprint also supports cleared, ephemeral drainage lines and there are no watercourses, wetlands or permanent water sources present.
- **MNES**
 - Five MNES are likely to occur or have potential in the Project area. Specifically, five listed fauna species, one of which is also listed as migratory:
 - **Likely to occur**
 - White-throated needletail (*Hirundapus caudacutus*)
 - Koala (*Phascolarctos cinereus*)
 - Grey-headed flying fox (*Pteropus poliocephalus*)
 - **Potential to occur**
 - Yellow bellied glider (*Petaurus australis australis*)
 - Greater glider (*Petauroides volans*)
 - For four of these species, assessment against the Significant Impact Assessment Guidelines (DOE, 2013) determined that there is unlikely to be a residual, significant impact.
 - The Project's impact on the koala was considered likely to be a significant residual impact.
- **MSES**
 - Five MSES are either likely to occur or potential to occur in the Project area. Of these five, four MSES are also listed as MNES (white-throated needletail, koala, yellow-bellied glider and greater glider).
 - **Potential to occur**
 - The short-beaked echidna (*Tachyglossus aculeatus*) - has the potential to occur in the Study area. A significant impact assessment determined that the Project is unlikely to have a significant residual impact on this species
- **Impacts and mitigations**
 - Potential impacts include injury and mortality of wildlife, disturbance to wildlife (e.g. noise, light), removal of habitats through vegetation clearing, spread of invasive species and habitat degradation through dust, run-off and sedimentation.
 - To mitigate these impacts, measures should be implemented at the design phase, construction phase and the operation phase.

The project footprint within Lot 4 RP85497 for the CMF will require the clearing of 21 ha of Category X vegetation. The project footprint within Mitchell Road will require the clearing of:

- 0.5 ha of Category B Endangered and Of Concern regional ecosystems.
- 0.2 ha of Category X (non-remnant) vegetation.

– **Recommendations**

- Commonwealth/State offsets are likely to be required as part of the Project's significant residual impacts to the koala.

Contents

1.	Introduction	1
1.1	Project background	1
1.2	Purpose of this report	1
1.3	Terminology	1
1.4	Scope and limitations	2
1.5	Project description	4
1.6	Site infrastructure description	5
1.6.1	Site access and weighbridge	5
1.6.2	Office, amenities and parking	6
1.6.3	Receival building and decontamination	6
1.6.4	Forced aeration pad	6
1.6.5	Open windrow pad	6
1.6.6	Maturation, manufacturing and distribution area	7
1.6.7	Workshop and fuel storage area	7
1.6.8	Leachate ponds	7
1.6.9	Freshwater storage dam	7
2.	Methods	9
2.1	Desktop assessment	9
2.2	Field assessment	12
2.2.1	Flora field survey methods	12
2.2.2	Fauna survey methods	13
2.3	Likelihood of occurrence	16
2.4	Animal ethics and scientific permits	17
3.	Existing environmental values	18
3.1	Climate	18
3.2	Geology and Geomorphology	18
3.3	Soils	18
3.4	Regional Ecosystems	19
3.4.1	Bioregion and Subregion	20
3.4.2	Land Zones	20
4.	Desktop assessment results	21
4.1	Flora values	21
4.1.1	Regulated Vegetation	21
4.1.1.1	Regional Ecosystems	21
4.1.1.2	High Value Regrowth	22
4.1.2	Threatened Ecological Communities	22
4.1.3	Protected plants trigger area	22
4.1.4	Conservation significant flora species	22
4.1.5	Introduced flora species	23
4.1.6	Essential habitat	24
4.2	Fauna values	24
4.2.1	Essential habitat	24
4.2.2	Conservation significant fauna species	24
4.2.3	Migratory fauna	26

5.	Field assessment results	27
5.1	Flora results	27
5.1.1	Threatened Ecological Communities	27
5.1.2	Vegetation communities	28
5.1.3	Conservation significant flora species	31
5.1.4	Introduced flora species	31
5.2	Fauna results	31
5.2.1	Habitat types	31
5.2.1.1	Fauna observations	37
5.2.1.2	Microbat analysis	37
5.2.2	Threatened fauna species	38
5.2.3	Migratory fauna	38
5.2.4	Introduced fauna species	39
6.	Potential impacts	40
6.1	Overview	40
6.1.1	Loss of vegetation and habitat	40
6.1.2	Injury and mortality of wildlife	40
6.1.3	Reduced connectivity	41
6.1.4	Disturbance of wildlife by increased light, noise and vibration	41
6.1.5	Habitat degradation through dust, run-off and sedimentation	41
6.1.6	Introduction and spread of invasive species	41
7.	Mitigation measures	43
7.1	Avoidance	43
7.2	Design measures	43
7.3	Construction measures	43
7.4	Operation measures	44
8.	Significant impact assessments	46
8.1	Commonwealth listed species	46
8.1.1	White-throated needletail	46
8.1.1.1	Species ecology	46
8.1.1.2	Suitable habitat	46
8.1.1.3	Habitat critical to the survival of the species	47
8.1.1.4	Ecologically significant proportion of a population	47
8.1.1.5	Significant impact assessment	47
8.1.2	Koala	48
8.1.2.1	Species ecology	48
8.1.2.2	Suitable habitat	49
8.1.2.3	Important population	49
8.1.2.4	Habitat critical to the survival of the species	50
8.1.2.5	Significant impact assessment	51
8.1.3	Grey-headed flying fox	54
8.1.3.1	Species ecology	54
8.1.3.2	Suitable habitat	54
8.1.3.3	Important population	54
8.1.3.4	Habitat critical to the survival of the species	54
8.1.3.5	Significant impact assessment	55
8.1.4	Yellow-bellied glider	58
8.1.4.1	Species ecology	58
8.1.4.2	Suitable habitat	58
8.1.4.3	Important population	58
8.1.4.4	Habitat critical to the survival of the species	58
8.1.4.5	Significant impact assessment	59

8.1.5	Greater glider	60
8.1.5.1	Species ecology	60
8.1.5.2	Potentially suitable habitat	61
8.1.5.3	Important population	61
8.1.5.4	Habitat critical to the survival of the species	61
8.1.5.5	Significant impact assessment	61
8.2	State-listed species	65
8.2.1	Short-beaked echidna	65
8.2.1.1	Species ecology	65
8.2.1.2	Potentially suitable habitat	65
8.2.1.3	Ecologically significant locations	65
8.2.1.4	Significant impact assessment	65
9.	Conclusions	67
10.	References	68

Table index

Table 1.1	Project specific terminology	1
Table 1.2	Acronyms and abbreviations used throughout the report	2
Table 2.1	Summary of desktop searches	9
Table 2.2	Flora field survey methods	12
Table 2.3	Fauna field survey methods	13
Table 2.4	Likelihood of occurrence assessment criteria	16
Table 3.1	Major surface geologies occurring in the Project area	18
Table 3.2	Major soils occurring in the Project area.	18
Table 3.3	Land zones and associated geologies occurring in the Project area	20
Table 4.1	REs mapped within the Project area. Descriptions as per the Regional Ecosystem Description Database (Queensland Herbarium, 2023).	21
Table 4.2	Conservation significant flora species predicted to occur within the Study area	23
Table 4.3	Conservation significant fauna species predicted to occur within the Study area	25
Table 4.4	Migratory species predicted to occur within the Study area	26
Table 5.1	Key Diagnostic criteria for Grey box-Grey gum wet forest of subtropical eastern Australia (DCCEEW 2022)	27
Table 5.2	Regional ecosystems field verified within the Project area	29
Table 5.3	Terrestrial habitat types observed within the Project area and Project footprint	32
Table 5.4	Bat call summary	38
Table 8.1	Significant impact assessment summary	46
Table 8.2	Significant impact assessment - White-throated needletail	47
Table 8.3	Suitable koala habitat within the Project footprint and Project area	49
Table 8.4	Koala Habitat Critical to the Survival of the Species (HCSS) assessment	50
Table 8.5	Significant impact assessment – Koala	51
Table 8.6	Significant impact assessment – Grey-headed flying fox	55
Table 8.7	Significant impact assessment – Yellow-bellied glider	59
Table 8.8	Significant impact assessment – Greater glider	61
Table 8.9	Significant impact assessment – short-beaked echidna	65

Figure index

Figure 1.1	Project area and locality	3
Figure 2.1	Study area and locality	11
Figure 2.2	Flora survey effort and results	14
Figure 2.3	Fauna survey effort	15
Figure 5.1	Fauna habitat types	36
Figure 8.1	Potentially suitable koala habitat	53
Figure 8.2	Potentially suitable grey-headed flying-fox habitat	57
Figure 8.3	Potentially suitable greater glider (southern and central) and yellow-bellied glider (south-eastern) habitat	64

Plates

Plate 1.1	Proposed site layout	8
Plate 5.1	Lantana (<i>L. camara</i> left) and prickly pear (<i>Opuntia stricta</i> , middle) and giant rat's tail grass (<i>Sporobolus pyramidalis</i> , right) from field surveys	31
Plate 5.2	Photographed wedgetail eagle (<i>Aquila audax</i> , left), and unidentified owl pellet (right)	37
Plate 5.3	Left: Remote camera image of red fox (<i>Vulpes vulpes</i> , left) and brushtail possum (<i>Trichosurus vulpecula</i> , middle) and red-necked wallaby (<i>Notamacropus rufogriseus</i> , right)	37
Plate 5.4	Bandicoot diggings (left), possum scat (middle) and Eastern bearded dragon (<i>Pogona barbata</i>) (right)	37
Plate 5.5	European fox (<i>Vulpes vulpes</i>) from remote camera	39

Appendices

Appendix A	Desktop search results
Appendix B	Likelihood of occurrence table
Appendix C	Fauna field observations
Appendix D	Microbat Call Identification Report (Balance! Environmental)

1. Introduction

1.1 Project background

SOILCO Pty Ltd (hereafter SOILCO) are an organics recycling company with 40 years of experience in designing, building and operating organic recycling facilities. To meet the challenges of Australia's dynamic waste and resource recovery sector, SOILCO have secured three greenfield sites that are to be developed into large-scale organics recovery facilities. One of these greenfield sites is located in Bromelton, in the Scenic Rim Region in South East Queensland, which is intended to be developed into the Bromelton Compost Manufacturing Facility. The development of this facility requires the preparation and submission of planning and environmental approval applications prior to development. As such, GHD has partnered with SOILCO to provide planning and environmental services for securing statutory approvals for the Bromelton Compost Manufacturing Facility. This includes undertaking ecological investigations and seeking planning approvals for early work activities (described as clearing, cutting and filling).

The Project area is in Bromelton on Lot 4 on Plan RP85497 and along part of Mitchell Road, located approximately 6 km west of Beaudesert in the Scenic Rim Region of South East Queensland. (Figure 1.1). The Project area contains areas of heavily disturbed pastures. Large areas of the Project area were extensively cleared in 2021 and previously used for grazing. In 2008, Bromelton was declared a State Development Area (SDA) encompassing roughly 15,000 ha of greenfield land for medium to large scale industrial activities (State of Queensland, 2023). The surrounding landscape supports a mix of cropping, remnant woodlands and industrial facilities.

1.2 Purpose of this report

The purpose of this Terrestrial Ecology Assessment Report is to identify and assess potential impacts to ecological values within the Project area from the construction and operation of the proposed Compost Manufacturing Facility. Ecological values of interest include conservation significant terrestrial species and associated ecological processes.

1.3 Terminology

Terminology used in this report is outlined in Table 1.1. Acronyms and abbreviations used in this report are presented in Table 1.2.

Table 1.1 Project specific terminology

Term	Meaning
Conservation significant species	Species listed as critically endangered, endangered, vulnerable or migratory under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) or listed as critically endangered, endangered, vulnerable, near threatened, special least concerned or colonial breeders under the Queensland <i>Nature Conservation Act 1992</i> (NC Act).
Introduced fauna	Introduced fauna species listed as feral animals under the EPBC Act or listed as prohibited or restricted matter under the <i>Biosecurity Act 2014</i> .
Introduced flora	Introduced flora species listed as Weed of National Significance (WoNS) under the EPBC Act or listed as prohibited or restricted matter under the <i>Biosecurity Act 2014</i> .
Migratory species	Species listed as migratory under the <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act)
Project area	The Project area represents the Lot 4 on Plan RP85497 and Mitchell Road. The Project area is presented on Figure 1.1.
Project footprint	The Project area represents the areas subject to direct disturbance for the proposed compost manufacturing facility on Lot 4 on Plan RP85497 and along Mitchell Road. The Project footprint is presented on Figure 1.1.
Study area	The Study area represents the extent of the desktop searches. The Study area represents a 5 km buffer around the approximate centre point of the Project area (-27.97819,152.91026) (Figure 2.1).

Term	Meaning
Survey area	The Survey was conducted within the constraints of the Lot boundary (Lot 4 on Plan RP85497) and along Mitchell Road and as such will be referred to as Survey area for the remainder of this report. The Survey area is presented on Figure 1.1.
Assessment sites	Assessment sites refer to any point where an observation or piece of equipment was set.

Table 1.2 *Acronyms and abbreviations used throughout the report*

Acronyms & Abbreviations	
ALA	Atlas of Living Australia
DCCEEW	Department of Climate Change, Energy, the Environment and Water
DESI	Department of Environment, Science and Innovation
DIWA	Directory of Important Wetlands of Australia
DoR	Department of Resources
EPBC Act	<i>Environment Protection and Biodiversity Conservation Act 1999</i>
HCSS	Habitat Critical to the Survival of the Species
MNES	Matters of National Environmental Significance
MSES	Matters of State Environmental Significance
NC Act	<i>Nature Conservation Act 1992</i>
PMST	Protected Matters Search Tool
RE	Regional Ecosystem
SAT	Spot Assessment Technique
SPRAT	Species Profile and Threats Database
TEC	Threatened Ecological Community
VM Act	<i>Vegetation Management Act 1999</i>
WoNs	Weeds of National Significance

1.4 Scope and limitations

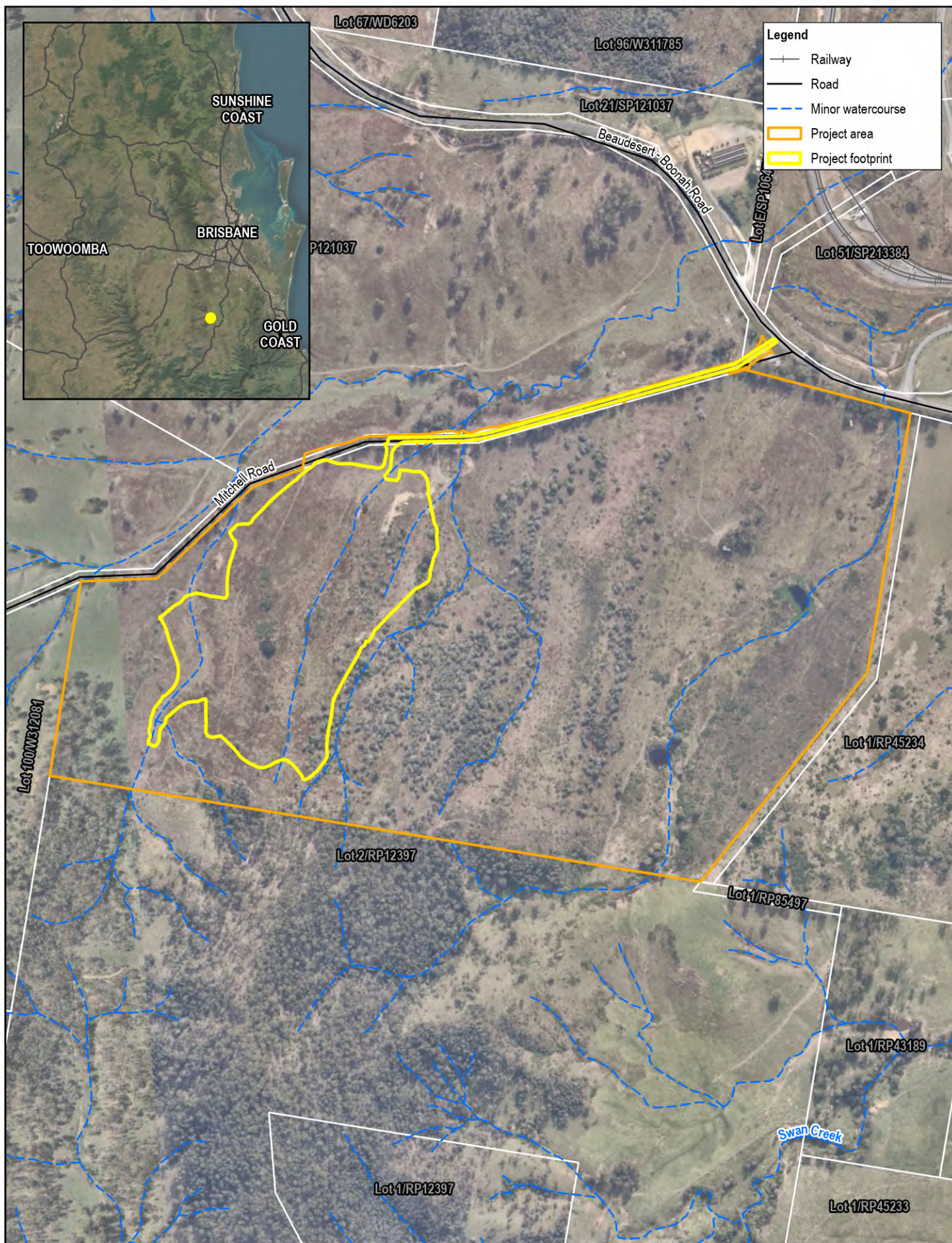
This report has been prepared by GHD for SOILCO Pty Ltd and may only be used and relied on by SOILCO Pty Ltd for the purpose agreed between GHD and SOILCO Pty Ltd as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than SOILCO Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.



Paper Size ISO A4

0 50 100 150 200
Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

Project No. 12626213
Revision No. A
Date 14/08/2024

Project area and locality

FIGURE 1-1

1.5 Project description

The Bromelton Compost Manufacturing Facility (the Bromelton CMF Project) is an organics facility located along Mitchell Road in Bromelton, in South East Queensland. The Bromelton CMF Project will involve the construction and operation of a facility for the receipt, processing, composting, and storage of the following materials: garden, food, wood wastes, manures and soil for the sale and distribution of finished compost, mulch and soil products. SOILCO will design, construct and operate the Bromelton CMF Project.

SOILCO are seeking the following approvals for the Project:

- A State Development Area (SDA) Material Change of Use approval for works within the Bromelton SDA under the State Development and Public Works Organisation Act 1971.
- An Environmental Authority (EA) Approval for Environmentally Relevant Activities (ERAs) ERA :
 - ERA 33(1): Crushing, milling, grinding or screening more than 5,000 t of material a year.
 - 53(a): Organic material processing - processing more than 200 t of organic material in a year by composting
 - ERA 54(2)(c): Mechanical waste reprocessing - operating a facility for receiving and mechanically reprocessing more than 10,000 t a year of general waste

The Bromelton CMF Project aligns with objectives in the Queensland Government Queensland Organics Strategy 2022–2032 by reducing the amount of organic waste going to landfill and it will offer economic and social benefits through employment and local business opportunities in South East Queensland.

SOILCO commenced composting operations in 1985 in Australia and has a strong distribution network in agricultural and urban markets in Australia. SOILCO are a manufacturer of quality assured compost, mulch and soil blends and specialise in the design, construction and operation of innovative organics recycling facilities in Australia. SOILCO's mission is to transform organic resources into the world's best products to regenerate and enhance the health and productivity of soil and to maximise our contribution to clean energy and sustainable communities.

SOILCO successfully operates a state-of-the-art network of licensed organics processing facilities across Eastern Australia. SOILCO's infrastructure experience spans different technology solutions, including:

- Open Windrow (OW)
- In-Vessel Composting (IVC) tunnels
- Aerated Static Piles/ Covered Aerated Static Piles (ASP/CASP)

For the Bromelton CMF Project, SOILCO will utilise ASP & OW technologies.

Table 1.3 Bromelton CMF Project components

Project Component	Details
Lot on Plan	Lot 4 on Plan RP85497 and Mitchell Road (Local government road parcel)
Summary of proposed works	Construct and operate a Compost Manufacturing Facility (CMF) at 260 Mitchell Road, Bromelton for the sale and distribution of finished compost, mulch & soil products The site will be split into 3 different processing areas: Receival, decontamination and composting utilizing Forced Aeration Pad system (ASP).
Construction disturbance area within Lot 4 RP85497	21 hectares
Operational footprint within Lot 4 RP85497	18.5 hectares
Proposed output of the compost facility and type of material to be received and processed	Receipt, processing, composting, and storage of up to 250,000 tpa of the following materials: Garden, Food and Wood wastes and manure.

Project Component	Details
	Receipt, processing, storage and blending of up to 150,000 tpa of sand and soil products for manufacturing (Virgin Excavated Natural Materials or VENM).
Technology used	Two composting technologies will be utilised to handle different feedstocks: 100,000 tpa of garden organics (GO) composted by Passive Open Windrow (OW) method. 150,000 tpa of Food Organics and Garden Organics (FOGO) is to be processed on a Forced Aeration Pad system (ASP). Wood wastes and manure will make up a small portion of the composting feedstocks and will be blended with the GO & FOGO based on onsite capacity. VENM will be received and stored as required based on demand of finished products. Due to the seasonal nature of feedstock generation, up to 15% of the total annual waste may be received in any one month. This would typically occur around spring and autumn.
Key infrastructure and structures	Access from Mitchell Road Weigh bridges Internal road network Maintenance and storage shed Final screening and manufacturing area Water tanks Aeration Pad system Office, carparking and amenities FOGO receival area 3 x leachate ponds 1 x freshwater dam Open windrows pad FOGO maturation pad Hardstand areas Retaining wall Upgrade of Mitchell Road
Hours of Operation	Monday – Friday 6am to 6pm Saturday – 6am to 4pm Sunday and public holidays 9am - 4pm
Operational Staff	22 employees
Access arrangements	Mitchell Road will connect the Bromelton CMF Project to the road network. Mitchell Road will be upgraded to accommodate the traffic from the Bromelton CMF Project.
Timeframe	Construction and Commissioning 7th April 2025 – 30th January 2026

1.6 Site infrastructure description

1.6.1 Site access and weighbridge

The Project will be accessed via the Beaudesert-Boonah Road and Mitchell Road. Mitchell Road is an unconstructed road and will be constructed prior to the commencement of the facility operation.

Heavy vehicles entering the site, will do so via the weighbridge before being directed to the appropriate area on site. Two B double above ground weighbridges with on/off ramps will manage the data capture of vehicles entering & exiting the site. Bypass lanes will be constructed to reduce the unnecessary use of the weighbridges when not required.

Products being delivered to or distributed from the facility enter and exit via the weighbridges located at the entry to the site. Internal bitumen roads will provide onsite access of vehicles to the different processing areas. This will consist of a two-way central road with one way ring roads around the perimeter of the site.

1.6.2 Office, amenities and parking

Adjacent to the weighbridge and site entrance are the proposed site office and amenities. The buildings consist of an office (measuring approximately 9.6m (w) x 6.0m (l) x 3m (h) adjacent to the weighbridge, as well as an amenity building (measuring approximately 6.0m (w) x 9.6m (l) x 3m (h)) adjacent to the site entrance. Covered external awnings will provide all weather access between the 2 buildings. These amenities will utilise a pump out tank or irrigation system, solar electricity, and potable water infrastructure via UV filters on water tanks.

Up to 3 office staff will work from the office full time and the amenities will handle up to 22 staff. An outdoor landscaped seating area with shade is proposed to provide an outdoor sitting and meeting area for staff.

Staff and visitor parking will be located adjacent to the entrance of the site in the vicinity of the weighbridge, office and amenities. Parking will be required for up to 22 staff with provision for visitor parking.

1.6.3 Receival building and decontamination

The receival building will be a steel portal frame construction 30m (w) x 80m (l) x 9m (h) with colorbond cladding on the walls and roof. A concrete floor will be utilised to handle traffic of heavy vehicles, storage of organic material and support fixed machinery. The building will have a concrete storage bay at one end for incoming material storage and another for decontaminated and shredded material storage prior to transfer to the ASP. It is proposed to fully enclose two of the walls only to contain windblown litter with wall locations determined by the prevailing wind direction. A solar power system will be installed on the roof and a water tank will be located adjacent to the building for rainwater collection.

Natural light will be provided by polycarbonate roof sections and the building will be fitted with LED high bay lights.

The building will allow heavy vehicles to drive through and drop off material into the receival area including Semi-trailer, walking floors, B-double side tippers and compaction collection vehicles. Inside a fixed sorting line consisting of an infeed hopper and conveyor, trommel screen, manual sorting cabin, overbelt magnet, windsifter and shredder will be housed to effectively inspect and decontaminate the incoming material.

1.6.4 Forced aeration pad

The forced aeration pad consists of a 9,000m² concrete pavement arranged with 18 bays that house a series of parallel PVC pipes laying lengthwise, incorporated in the concrete. The pipes have tapered plastic nozzles (spigots) that provide the mechanism for the supply of air and collection of leachate known as the “aeration floor”. Two fresh air supply fans are connected to the PVC pipes by a series of ducts, each servicing 9 bays. The system is controlled from a technical area contained within a prefabricated shipping container immediately to the rear of the pad.

1.6.5 Open windrow pad

The open windrow pad will be approximately 24,000m² with an area of 9,000m² for garden organics receival and finished compost transfer. Compacted crushed rock will be used to form the hardstand area and the pad will be graded to drain water run off to the leachate collection dam. A number of water supply connections from the leachate dam and the fresh water supply will be positioned around the area for irrigation of the piles.

The pad will be designed to handle vehicles such as windrow turners, front end loaders, Semi-trailers, B double side tippers and compaction waste collection vehicles.

1.6.6 Maturation, manufacturing and distribution area

A proposed hardstand area of 51,000m² will be utilised to mature and store the compost, receive and store virgin excavated natural materials, screen and blend finished compost, mulches and soils. The pad will be constructed from crushed compacted rock and will be graded to drain water run off to the leachate collection dam.

This area would be for the manufacturing, storage and distribution of landscape products, and the storage and loading of these products for distribution to market. Fresh water supply and general power connection points will be positioned around the area for irrigation and operation tasks. Mobile plant and heavy vehicles will access and manoeuvre in this area while mobile screening equipment will be utilised in the manufacturing process.

1.6.7 Workshop and fuel storage area

The workshop will be a 25m (w) x 48m (l) x 6m (h) shed of steel construction with colorbond cladding. Up to three bays will be fully enclosed. The remainder of the shed will be open for vehicle access and storage. The floor will be concrete with bunding around the outside of the shed. Maintenance activities will be carried out on mobile plant and equipment in the undercover area.

Self-bunded diesel and adblue tanks will be installed adjacent to the workshop with a bunded area for fuelling of vehicles onsite. Storage of oils and lubricants for the maintenance of plant and machinery will be located within a covered, bunded area within the shed.

1.6.8 Leachate ponds

The facility will have a designated leachate management system. Leachate ponds are proposed to manage dirty water generated within the receivals building, as well as from the aerated composting pad area, the passive open windrow composting area and the manufacturing storage and distribution areas. Two ponds are proposed to handle the leachate run off from the site and will be sized according to Department of Environment, Science and Innovation requirements.

To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the QLD ERA 53 Organic material processing guidelines:

- 600mm thick recompacted clay with a permeability of less than 10⁻⁹ m/s; or
- A High-density polyethylene geomembrane liner with a minimum thickness of 1.5mm.

Leachate ponds will be positioned in the most suitable site location, based on existing site topography and grading to allow gravity drainage from process areas to the ponds. Each pond will be fitted with a pumping system to deliver water to the composting areas and will be fully fenced to limit fauna & human access.

1.6.9 Freshwater storage dam

A freshwater storage dam with overflow spillway will be constructed to store uncontaminated water run off on the site. The water will be utilised in the composting process and will be distributed to the composting and manufacturing areas by a pump and piping system. For efficient water collection, determination of the dam location, will be based on site drainage requirements and topography. The size of the dam will be based on yearly rainfall data and capacity requirements.

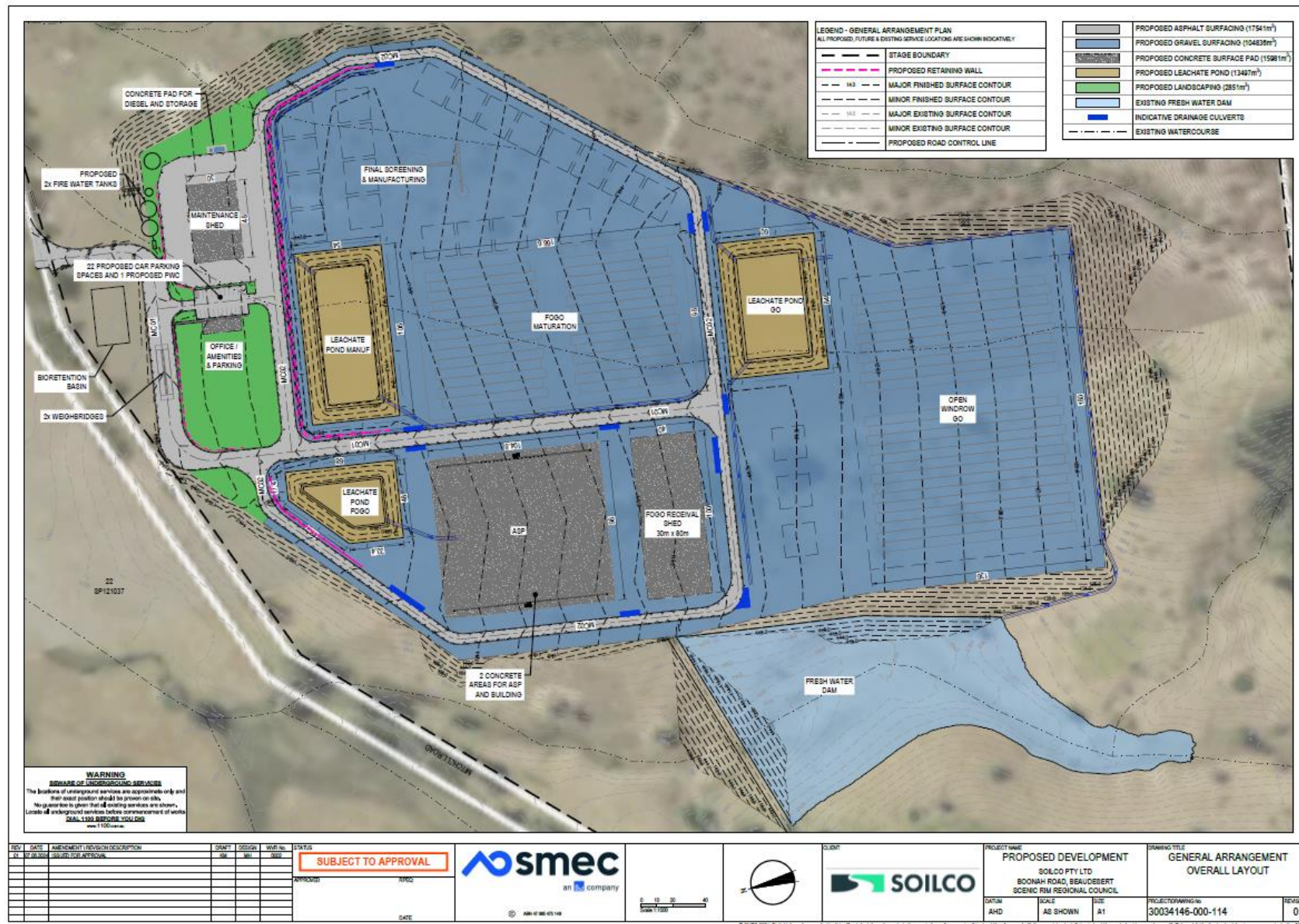


Plate 1.1 Proposed site layout

2. Methods

2.1 Desktop assessment

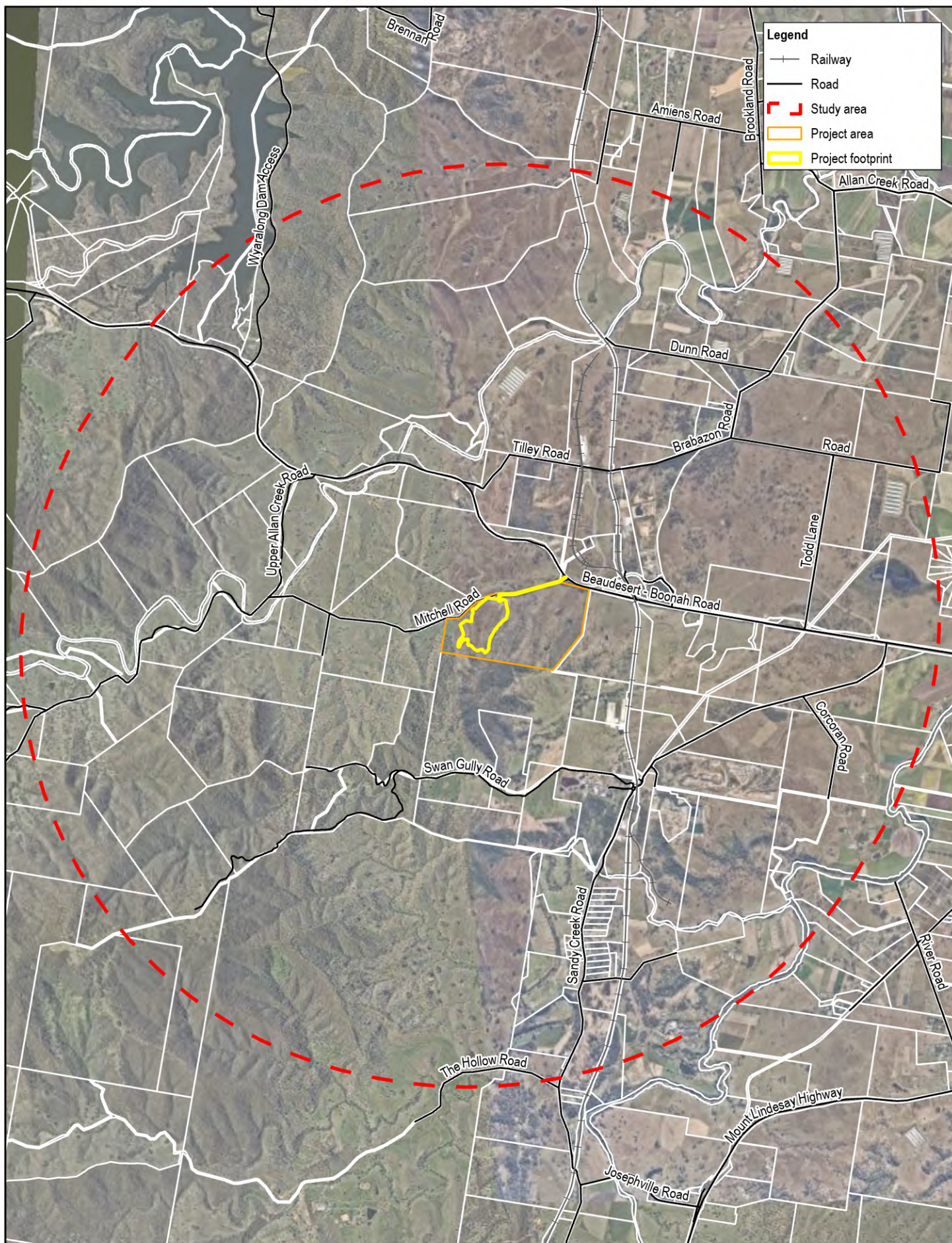
The desktop assessment was undertaken to collate existing information and identify any terrestrial ecological values of the environment within the Study area. Desktop searches were completed to identify conservation significant species and communities listed under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and/or *Nature Conservation Act 1992* (NC Act). The search extent for all desktop searches included a 5 km buffer around Project area.

The desktop assessment used the information sources listed in Table 2.1.

Table 2.1 Summary of desktop searches

Desktop search	Purpose
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	
EPBC-Act Protected Matters Search Tool (PMST)	The PMST conservation significant aquatic flora and fauna, listed under the EPBC Act (Matters of National Environmental Significance (MNES)) that have the potential to occur within the Study area (DCCEEW, 2023a).
Species Profile and Threats Database (SPRAT)	The SPRAT profiles were assessed to determine the distribution and habitat requirements of conservation significant species predicted to occur within the Study area (DCCEEW, 2023b).
Australian Government	
Directory of Important Wetlands in Australia (DIWA) database	The DIWA (2024) database was searched to understand if any nationally important wetlands are present within the Study area.
Department of Environment, Science and Innovation (DESI)	
Biomaps database	The Biomaps database was used to view WildNet records of flora and fauna species recorded in proximity to the Project area (DESI, 2024b).
Flora Survey Trigger Map spatial layer	The Flora Survey Trigger Map for Clearing Protected Plants in Queensland was viewed to determine the extent of 'high risk' areas within the Project area (DESI, 2024d).
Matters of State Environmental Significant (MSES) database	The MSES environmental database and report tool was used to identify MSES including aquatic protected areas, essential wetland habitats and waterways, and conservation significant species protected under the NC Act (DESI, 2024a).
Species Profile Search	The Species Profile Search tool was used to obtain spatial records and accompanying data for conservation significant species previously recorded in proximity to the Project area (DESI, 2024c).
WetlandMaps	WetlandMaps was used to view Wetlands mapping spatial features to identify lacustrine, riverine and palustrine water bodies or REs through point features, major and minor watercourses lines, and polygons of wetland waterbodies and wetland Regional Ecosystems (REs) (DESI, 2024e).
WildNet	The WildNet online database was assessed through Queensland Globe to identify the location and date of historical records of conservation significant species within the Study area (DESI, 2024b).
Department of Resources (DoR)	
Essential Habitat Map spatial layer	The Essential Habitat Map layer was viewed in Queensland Globe to determine if vegetation within the Study area has been identified as essential habitat for a conservation significant species listed under provisions of the NC Act (DoR, 2024b).
Vegetation Management Report	The Vegetation Management Report was retrieved to identify the occurrence and distribution of remnant vegetation, regional ecosystems (REs) and protected plant trigger areas within the Study area (DoR, 2024a).

Desktop search	Purpose
State of Queensland	
Queensland Globe	QLD Globe was used to view spatial features within the Study area (State of Queensland, 2024a).
Watercourse identification mapping	The watercourse identification mapping was assessed through Queensland Globe to determine any relevant authorisations required within the Study area covered by the <i>Water Act 2000</i> (State of Queensland, 2024c)
Other sources	
Atlas of Living Australia (ALA) database	The ALA database (2024) was used to retrieve records of historical fauna and flora species previously observed in the vicinity of the Study area.
Australasian Virtual Herbarium (AVH) database	The AVH database (2024) was used to retrieve historical records of flora species previously collected in the vicinity of the Study area.
Scientific reports and publicly available information.	A desktop search was conducted to identify existing information on aquatic habitats and aquatic fauna and flora species previously recorded in the Study area.



Study area and locality

FIGURE 2-1

2.2 Field assessment

Field surveys were completed on 10 April 2024 and 12 April 2024 to identify and describe the existing terrestrial ecological values within the Project area. For the duration of these surveys, the weather was warm, sunny and calm with a slight, south-westerly breeze present, and temperatures ranging from 10.7°C to 27.6°C (Bureau of Meteorology (BoM), 2024). No rain was recorded during the field surveys, however there was a total 51.6 mm of rainfall one week leading up to the first field survey on 10 April 2024 (BoM, 2024).

Flora assessments were conducted on 10 April 2024 by a suitably qualified botanist. Fauna assessments were conducted on 10 April 2024 and 12 April 2024 by a suitably qualified ecologist. Survey efforts were as follows:

Flora assessments

- 61 Regional Ecosystem (RE) verifications
- 14 flora photo points

Fauna assessments

- Nine habitat assessments
- Two SAT (Spot Assessment Technique) search
- Two active reptile searches
- Two remote cameras
- One Anabat
- Two audiomoths

Flora and fauna field survey techniques are presented in Sections 2.2.1 and 2.2.2 respectively.

2.2.1 Flora field survey methods

Terrestrial flora surveys were conducted on 10 April 2024 and involved quaternary level assessments and / or meandering vegetation assessments, as described in Table 2.2. Quaternary assessments were undertaken at 61 sites across the Project area, as shown in Figure 2.2.

Table 2.2 *Flora field survey methods*

Survey method	Detailed survey methodology
RE verification	Characterisation and mapping of regulated vegetation was undertaken at 61 locations in accordance with the Queensland Herbarium's methodology (Neldner et al., 2020). The quaternary level of assessment will be applied and will involve recording floristic information concerning the structure and composition of the various vegetation layers within each regional ecosystem type, together with description of the relevant land zone. Where discrepancies between the mapped regional ecosystems and the on-ground characteristics are observed, the spatial extent of remnant regional ecosystems within the clearing extent will be noted.
Recording of invasive species	The field survey involved traversing the Survey area and compiling a list of all introduced plant species visible within the Project area. The identity, location and relative abundance of any restricted matter invasive plants listed under the <i>Biosecurity Act 2014</i> was noted (i.e. categorisation of each species as sparse, frequent or dominant), and the precise location recorded.
Threatened Ecological Communities (TEC) assessments	TEC assessments were conducted within areas of vegetation with the potential to conform with Commonwealth-listed TECs. Assessments were conducted in accordance with the diagnostic criteria and conditions thresholds outlined in the individual Conservation Advice for individual TECs. Variables included: – Canopy crown cover – Dominance of non-native species (% in 1 m quadrats) – Groundcover species diversity – Canopy species dominance. – Canopy cover species diversity – Abundance of large trees (per hectare).

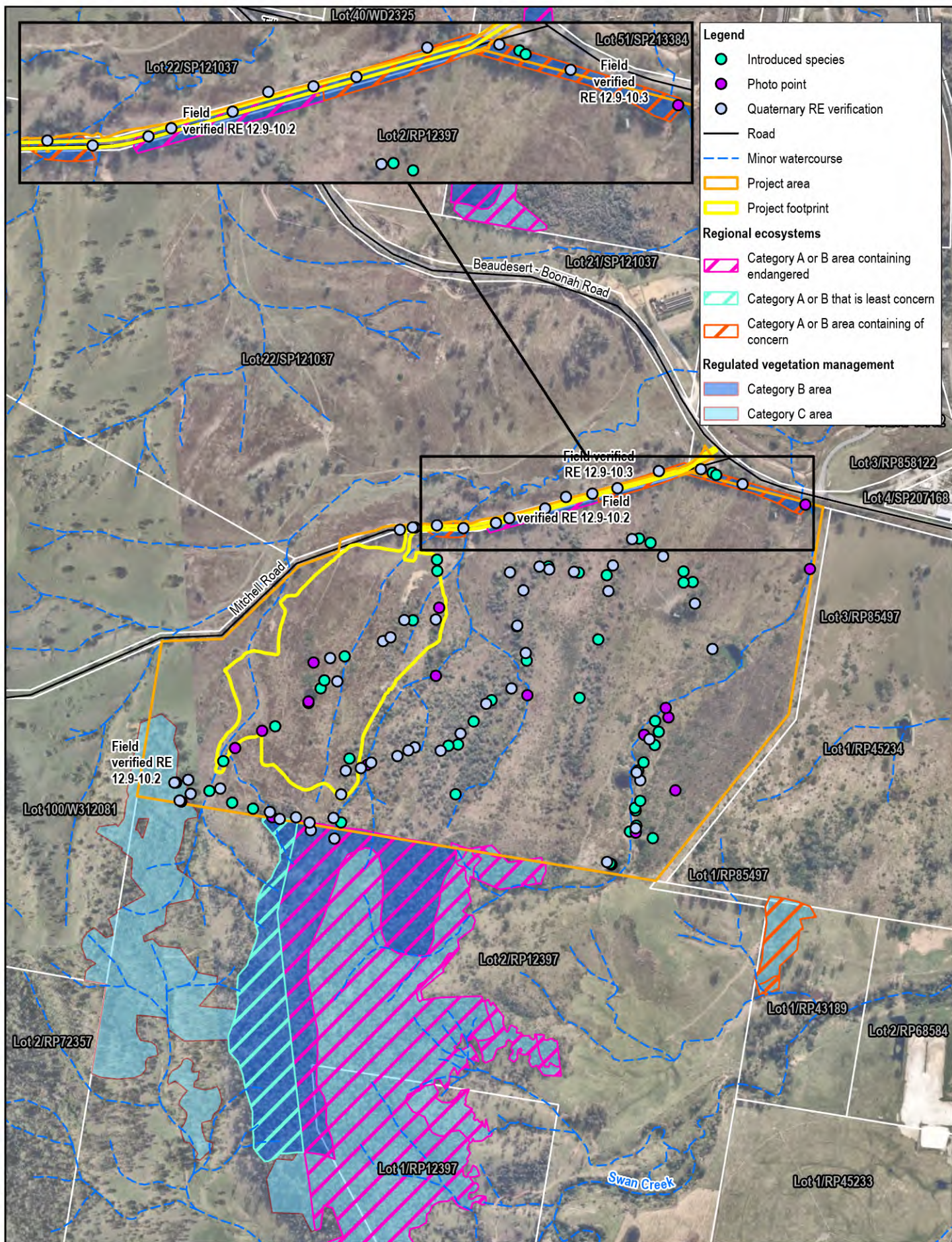
2.2.2 Fauna survey methods

The field surveys included predominantly rapid habitat assessments throughout the Project area. Survey effort was targeted towards areas deemed to be of ecological significance based on a review of desktop sources.

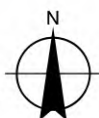
Field survey methods are detailed in Table 2.3. The location of field survey sites is presented in Figure 2.3.

Table 2.3 *Fauna field survey methods*

Survey method	Detailed survey methodology
Habitat assessments	Habitat assessments were undertaken at nine survey sites, located in representative vegetation communities and geographic locations as shown in Figure 2.3. At each of the assessment sites, the value of habitats for terrestrial fauna was assessed based on the presence of key resources and microhabitats – as determined by the structural complexity of vegetation and the presence of features such as tree hollows, burrows, rocky outcrops, caves, leaf litter and woody debris. Additionally, key habitat features important for conservation significant species were recorded.
Spot Assessment Technique (SAT)	Searches for koala faecal pellets were undertaken at two sites using the SAT (Phillips and Callaghan, 2011). The SAT utilises a point-based, tree sampling methodology that utilises the presence/absence of koala faecal pellets within a prescribed search area around the base of trees to derive a measure of koala activity.
Active searches for reptiles	Active searches were conducted at three locations which supported course woody debris, fallen logs and / or an abundance of ground layer microhabitats. 20-minute active searches were undertaken to detect reptile and amphibian species by actively searching beneath rocks, logs, bark, leaf litter and other microhabitats.
Opportunistic searches for wildlife and traces	All incidental observations of fauna during surveys were recorded. All observations of secondary fauna traces were recorded including bones, feathers, skulls, sloughed skins, faecal pellets, tracks, burrows and scratches.
Remote cameras	Remote surveillance cameras (Reconyx Hyperfire 2.0) were deployed, two cameras at two separate locations within the Project area. Remote cameras were deployed in representative habitat types to target conservation significant species. Each camera was left in situ for two nights.
Anabat detectors	Full-spectrum acoustic monitoring device (Anabat Swift – Titley's Scientific) was utilised to detect the echolocation calls of microchiropteran species within the Project area. One Anabat detector was deployed at one location (along Mitchell Road) in mature Eucalypt vegetation that provided suitable roosting structures for microbats (e.g. tree hollows, stumps and old stags). Anabats were deployed at least 1 m off the ground and situated along potential flyways like tracks, watercourses or cleared easements. Recordings were analysed by specialist sub-consultant Greg Ford from Balance Environmental. The location of the Anabat is presented on Figure 2.3.



Paper Size ISO A4
0 50 100 150 200
Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56

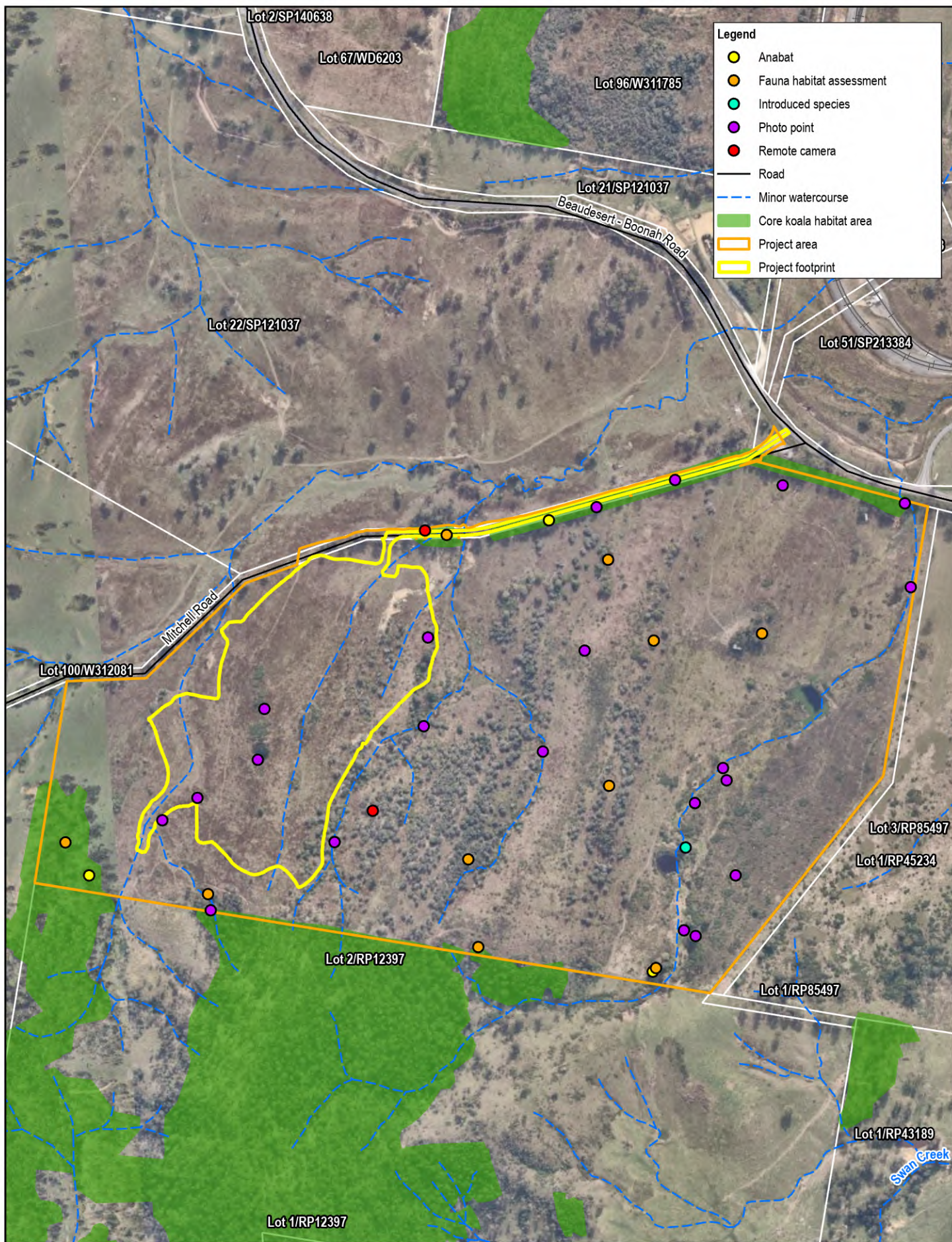


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Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

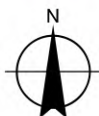
Project No. 12626213
Revision No. A
Date 14/08/2024

Flora survey effort and results

FIGURE 2-2



Paper Size ISO A4
0 50 100 150 200
Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

Project No. 12626213
Revision No. A
Date 14/08/2024

Fauna survey effort

FIGURE 2-3

2.3 Likelihood of occurrence

A likelihood of occurrence assessment was conducted to attribute a 'likelihood rating' to all conservation significant species that were predicted to occur in the desktop assessment. The likelihood of occurrence assessment was based on a review of species distributions and habitat requirements, historical records for the region, and the results of habitat assessments and terrestrial surveys conducted within the Project area.

The likelihood of occurrence rating was based on the framework in Table 2.4.

Table 2.4 Likelihood of occurrence assessment criteria

Likelihood	Decision framework	Implications for assessment and reporting
Confirmed present	Species has been recorded within the Study area during field surveys.	Included in all reporting These species were included in all reporting to: – Assess and map species habitat – Define key ecological features including important populations and habitat critical to the survival of the species – Assess species-specific impacts – Identify avoidance and mitigation measures – Undertake significance of impact assessments on residual impacts – Provide offsets for any significant residual impact
Likely to occur (High likelihood)	There are recent (within 10 years) and nearby (within 10 km) historical records of the species AND suitable high-quality habitat present within the Study area	
Potential to occur (Moderate – Low likelihood)	There are older (10 – 20 years) and more regional (10 – 30 km) historical records of the species AND suitable low to moderate quality habitat present within the Study area	
	There are no nearby or regional historical records of the species and the species was not detected in field surveys BUT suitable moderate or high-quality habitat is present within the Study area AND the species has life history characteristics that warrant increased conservatism in likelihood assessment (i.e. cryptic species or species with temporal or spatial dynamism such as annual, transient, wide-ranging species or species that are dormant for extended periods)	
	The species is unlikely to occur in the Study area but has a reasonable likelihood of occurring immediately adjacent and should be included in impact assessment due to the potential for indirect impacts on the species.	
Unlikely to occur (Very low likelihood)	The species has been historically recorded locally or regionally; however, no suitable habitat occurs within the Study area, and the species has limited mobility or temporal dynamism, allowing increased confidence that it is unlikely to occur within the Study area even on a transient basis.	Included in likelihood of occurrence reporting only These species were not included in impact assessment given they are unlikely to occur in the Study area.
	The species has NOT been recorded locally or regionally AND only small areas of very low-quality habitat are present in the Study area AND the species is readily detected wherever present.	
Highly unlikely to occur (Negligible likelihood)	The species has NOT been historically recorded in the region AND no suitable habitat is present AND the Study area is generally outside the species current known range.	
	The species has well-known and highly specific habitat requirements that are not present in the Study area AND the species has low mobility. This is reserved for species where there is very high confidence that the species will not occur.	

2.4 Animal ethics and scientific permits

GHD field surveys were conducted in accordance with the following permits and approvals:

- Animal Researcher Authority 23/24 issued by the accredited GHD Animal Ethics Committee
- DESI Scientific Purposes Permit (permit number WA0021563)

In accordance with Part 13 of the EPBC Act, no killing, injuring, taking, trading, keeping or moving of a member of the following occurred as a part of the survey efforts:

- Listed conservation significant species or ecological community (refer to sections 196 and 196A-196E of the EPBC Act)
- Listed migratory species (sections 211, 211A-211E).

3. Existing environmental values

The Project area occurs on Lot 4 on plan RP85497 and along an 800m portion of Mitchell Road, located approximately 6 km west of Beaudesert. The Project area falls in the Scenic Rim Regional Council Local Government Area and lies entirely in the South East Queensland region. Beaudesert-Boonah Road occurs along the northern boundary of the lots while the Mitchell Road reserve occurs in the north of the Project area.

3.1 Climate

The climate of the region where the Project area occurs can be described as humid subtropical with hot and humid summers, and cool to mild winters. The Project area generally falls between the 900 mm and 1000 mm rainfall isohyets. Climate records for the closest Bureau of Meteorology station to the Project area (Beaudesert Drumley Street – 40983) indicates a mean annual rainfall of 892.2 mm, 76% of which falls October through to March (BoM, 2024).

3.2 Geology and Geomorphology

Geology mapping covering the Project area indicates that three distinct surface geologies occur across the lot (Table 3.1). Minor areas of alluvium may occur along watercourses and low-lying areas.

Table 3.1 Major surface geologies occurring in the Project area

Map Code	Age	Description
Jbmk	Jurassic	Lithofeldspathic labile and sublabile to quartzose sandstone, siltstone, shale, minor coal, ferruginous oolite marker.
Jbmkh	Jurassic	Sublabile to quartzose sandstone, siltstone, shale.
Jw	Jurassic	Shale, siltstone, sandstone, coal seams.

The landform across the Project area can be described as gently undulating with ridgelines and valleys. Elevation across the Study area ranges from approximately 80 m above sea level in the north-east portion of the lot to 165 m towards the south-west (State of Queensland, 2024).

The Project area falls entirely in the Logan River sub-basin of the Logan-Albert Rivers Catchment. Several watercourses in the form of first order tributaries of Allan Creek flow northwards across the lot from the southern boundary. Two dams occur along a watercourse towards the eastern portion of the lot. Water may persist in the landscape for a significant period after rainfall owing to the gently undulating to flat topography (State of Queensland, 2024).

3.3 Soils

Soils across the Project area largely reflect the underlying geologies. Major soil types occurring in the Project area based on the Soil and Land Resources of the Logan and Albert Rivers Catchment (2004) mapping prepared at 1:50,000 scale are listed in Table 3.2.

Table 3.2 Major soils occurring in the Project area.

Soil Map Unit	Description and General Characteristics
Cv	Very shallow to shallow, red, strongly acidic to neutral texture contrast, gradational or uniformly fine soils over sandstone or siltstone from 0.3m. Chromosols, Kurosols.
Dn	Moderately deep (also shallow), red, texture contrast soil on siltstone and sandstone, generally underlain by grey clays. Chromosols, Kurosols.
Kk-Lw	Moderately deep to very deep, neutral to alkaline brown, black or occasionally yellow sodic texture contrast soils on siltstone or sandstone. Subsoils are neutral to strongly alkaline, mottled and may be calcic. Often saline. Sodosols, Kurosols.

Soil Map Unit	Description and General Characteristics
Mu	Shallow, slightly acidic brown or grey texture contrast to gradational soils on sandstone. Soils are frequently bleached and/or mottled and may also be slightly saline. Chromosols, Kurosols.
Ri	Moderately to very deep, mottled, grey, slightly acidic to alkaline gradational or uniformly fine soils over siltstone or sandstone from 0.65m. Dermosols, Ferrosols.

3.4 Regional Ecosystems

In Queensland, native vegetation is classified into Regional Ecosystems (REs). REs are discrete vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform and soil. Each RE has a number that serves as a shorthand description of its characteristics and locations, for example, RE 12.3.3. The first number, 12, indicates the bioregion which the RE is located within, in this case the South East Queensland bioregion. The second number, 3, indicates the land zone on which the ecosystem is found, in this case alluvium associated with river and creek flats. The third number, 3, is the ecosystem number and relates to the dominant vegetation, in this case *Eucalyptus tereticornis* woodland on Quaternary alluvium (DES, 2024).

The Queensland Herbarium and Biodiversity Sciences, which is part of the DESI, is responsible for mapping REs, using a combination of remotely sensed data sets and on-ground field assessments. Each RE is assigned a vegetation management class, which is based on its current and pre-clearing areal extent (how much of it remains) within a bioregion. RE class definitions are set out in the *Vegetation Management Act 1999* and are defined as follows:

- Endangered:
 - If less than 10% of the pre-clearing extent remains; or
 - If 10-30% of the pre-clearing extent remains (if the remnant extent of the RE within the bioregion is less than 10,000 ha).
- Of Concern:
 - If 10-30% of the pre-clearing extent remains; or
 - More than 30% of the pre-clearing extent remains (if the extent of the RE within the bioregion is less than 10,000 ha).
- Least Concern:
 - If more than 30% of the pre-clearing extent remains; and,
 - If the remnant extent of the RE within the bioregion is more than 10,000 ha.

Furthermore, the DESI assigns a biodiversity status to REs according to the condition of the RE and its perceived threats, in addition to its pre-clearing and remnant extent. Under this process a RE is:

- Endangered if it has:
 - – less than 10% of the pre-clearing extent unaffected by severe degradation and/or biodiversity loss¹; or
 - – 10 - 30% of the pre-clearing extent unaffected by severe degradation and/or biodiversity loss and the remnant vegetation is less than 10 000 hectares; or,
 - – a rare² RE subject to a threatening process³.
- Of Concern if it has:
 - 10 - 30% of the pre-clearing extent unaffected by moderate degradation⁴ and/or biodiversity loss.

¹ Floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 50 years even with the removal of threatening processes; or soil surface is severely degraded, for example by loss of A horizon, surface expression of salinity, surface compaction, loss of organic matter or sheet erosion

² Pre-clear extent less than 1000 ha or patch size 100 ha and of limited extent across its range

³ For example, clearing, weed invasion, fragmentation, inappropriate fire regime or grazing, or infrastructure development

⁴ Floristic and/or faunal diversity is greatly reduced but unlikely to recover within the next 20 years even with the removal of threatening processes; or soil surface is moderately degraded

- No Concern at Present if it:
 - does not meet the degradation criteria listed for Endangered and Of Concern REs.

Remnant vegetation is defined in the *Vegetation Management Act 1999* as vegetation shown on a Regional Ecosystem or remnant map. Woody vegetation is mapped as remnant where the dominant canopy has:

- >50% of the predominant canopy cover that would exist if the vegetation community were undisturbed; and
- >70% of the height of the predominant canopy that would exist if the vegetation community were undisturbed; and
- composed of the same floristic species that would exist if the vegetation community were undisturbed.

This definition is known as the '50-70-species rule'.

3.4.1 Bioregion and Subregion

The Project area occurs within the South East Queensland bioregion. The South East Queensland bioregion covers a total area of 66,600 km² and includes coastal plains of varying widths, hills and ranges, the major drainage basins of the Brisbane and Mary Rivers, Barambah Creek, the lower Burnett River and coastal mainland and island sand masses (Young *et al.*, 1999). The South East Queensland bioregion is among the richest parts of Australia for flora and fauna. The bioregion contains localised centres of endemism and a broad range of habitat types (Young *et al.*, 1999).

The Project area occurs in the Moreton Basin subregion (SEQ2) of the South East Queensland bioregion. The Moreton Basin subregion is characteristically an area of low, hilly relief and broad alluvial valleys. Geologies of the subregion are predominantly Triassic-Jurassic sandstones. Major vegetation types include eucalypt woodlands and open forests, *Acacia harpophylla* open forest and semi-evergreen vine thicket (Young *et al.*, 1999).

3.4.2 Land Zones

Land zones represent significant differences in geology and the associated landforms, soils and physical processes and generally correspond to broad geological and geomorphological categories. Two land zones (Table 3.3) are mapped from the Project area and are broadly consistent with the surface geology mapping.

Table 3.3 Land zones and associated geologies occurring in the Project area

Land zone	Description	Associated geology
8	Cainozoic igneous rocks, predominantly basalts forming extensive plains and occasional low scarps. Also includes hill, cones and plugs on trachytes and rhyolites, and associated interbedded sediments, and talus. Excludes deep soils overlying duricrusts (land zone 5). Soils include Vertosols, Ferrosols and shallow Dermosols.	None mapped
9-10	Fine, medium to coarse grained sedimentary rocks, with little or no deformation and usually forming undulating landscapes, plateaus, benches and scarps. Includes complexes of siltstones, mudstones, shales, calcareous sediments, labile and siliceous (quartzose) sandstones, conglomerates and minor interbedded volcanics. Includes a diverse range of soil types.	Jbmk, Jbmkh, Jw

4. Desktop assessment results

4.1 Flora values

4.1.1 Regulated Vegetation

The Project footprint is predominantly mapped as category X (non-remnant vegetation). Mitchell Road reserve has patches of mapped category B (remnant vegetation). To the south of the boundary of Lot 4 RP85497 is mapped category B and C vegetation (Figure 2.2).

4.1.1.1 Regional Ecosystems

Category B regulated vegetation has been mapped within the Survey area. These are areas of remnant vegetation containing Regional Ecosystems (RE). The latest RE mapping (Version 13.0, including pre-clearing and 2021 remnant REs) was obtained for the Survey area with any remnant REs present in the Survey area described with a comparison of their remnant (as of 2021) and pre-clearing extent.

Of the mapped remnant REs, one is classed as Endangered, one is classed as Of Concern and the remainder are classed as Least Concern under the provisions of the *Vegetation Management Act 1999* (VM Act). Biodiversity status is assessed by DESI when considering development applications to clear vegetation. Least Concern is not a regulatory status in its own right, unless the biodiversity status includes Essential Habitat for specific threatened fauna/flora species.

Table 4.1 REs mapped within the Project area. Descriptions as per the Regional Ecosystem Description Database (Queensland Herbarium, 2023).

Mapped RE (Grouped)	Individual RE	Description	VM Act Class	Biodiversity Status
12.8.24		<i>Corymbia citriodora</i> subsp. <i>variegata</i> , <i>Eucalyptus crebra</i> +/- <i>E. moluccana</i> open forest. Occurs on Cainozoic igneous rocks especially lower slopes of rhyolite and trachyte hills.	Endangered	Endangered
12.9-10.2		<i>Corymbia citriodora</i> subsp. <i>variegata</i> open forest or woodland usually with <i>Eucalyptus crebra</i> . Other species such as <i>Eucalyptus tereticornis</i> , <i>E. moluccana</i> , <i>E. acmenoides</i> and <i>E. siderophloia</i> may be present in scattered patches or in low densities. Understorey can be grassy or shrubby. Shrubby understorey of <i>Lophostemon confertus</i> (whipstick form) often present in northern parts of bioregion. Occurs on Cainozoic and Mesozoic sediments.	Least Concern	No Concern at Present
12.9-10.2/12.9-10.7/12.9-10.3/12.9-10.17a	12.9-10.2	<i>Corymbia citriodora</i> subsp. <i>variegata</i> +/- <i>Eucalyptus crebra</i> open forest on sedimentary rocks.	Least Concern	No Concern at Present
	12.9-10.7	<i>Eucalyptus crebra</i> +/- <i>E. tereticornis</i> , <i>Corymbia tessellaris</i> , <i>Angophora leiocarpa</i> , <i>E. melanophloia</i> woodland. Occurs on Cainozoic and Mesozoic sediments.	Of Concern	Of Concern
	12.9-10.3	<i>Eucalyptus moluccana</i> open forest on sedimentary rocks.	Of Concern	Of Concern
	12.9-10.17a	<i>Lophostemon confertus</i> or <i>L. suaveolens</i> dominated open forest usually with emergent <i>Eucalyptus</i> and/or <i>Corymbia</i> species. Occurs in gullies and southern slopes on Cainozoic and Mesozoic sediments.	Least Concern	No Concern at Present
12.9-10.3		<i>Eucalyptus moluccana</i> open forest. Other canopy species include <i>Eucalyptus siderophloia</i> or <i>E. crebra</i> , <i>E. tereticornis</i> and <i>Corymbia citriodora</i> var. <i>variegata</i> . Understorey generally sparse but can become shrubby in absence of fire. Occurs on Cainozoic and Mesozoic sediments, especially shales. Prefers lower slopes.	Of Concern	Of Concern

4.1.1.2 High Value Regrowth

Areas of regulated vegetation mapped as category C containing high value regrowth (HVR) have been mapped within the Survey area. HVR is defined under the VM Act as vegetation that is located:

- On freehold land, indigenous land or land subject of a lease issued under the *Land Act 1994* for agriculture or grazing purposes or an occupation licence under that Act.
- In an area that has not been cleared (other than for relevant clearing activities) for at least 15 years, if the area is:
 - An Endangered RE
 - An Of Concern RE, or
 - A Least Concern RE.

4.1.2 Threatened Ecological Communities

Ecological communities are naturally occurring biological assemblages that occur in a particular type of habitat. Threatened ecological communities (TECs) are ecological communities that have been assessed and assigned to a particular category related to the status of the threat to the community at a national scale, i.e. extinct, critically endangered, endangered, vulnerable and conservation dependant. TECs are protected under the EPBC Act.

Based on the EPBC Protected Matters Search Tool (PMST) five endangered (E) and two critically endangered (CE) TECs may occur within the Project area, these being:

- Coast swamp oak (*Casuarina glauca*) forest of New South Wales and Sout East Queensland ecological community (Endangered)
- Coastal swamp sclerophyll forest of New South Wales and South East Queensland (Endangered)
- Grey box-grey gum wet forest of subtropical eastern Australia (Endangered)
- Lowland rainforest of subtropical Australia (Critically endangered)
- Poplar box grassy woodland on alluvial plains (Endangered)
- Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions (Endangered)
- White box-yellow box-Blakely's red gum grassy woodland and derived native grassland (Critically endangered)

In Queensland, TECs are linked to certain REs which are identified in the listing advice of each TEC. Only one type of vegetation community that potentially aligned with a TEC occurred, being regrowth patches of RE 12.9-10.3 dominated by *Eucalyptus moluccana*. RE 12.9-10.3 may align with the grey box-grey gum wet forest of subtropical eastern Australia TEC (DCCEEW, 2022). Refer to Section 5.1.1 for further detail.

4.1.3 Protected plants trigger area

Protected plants trigger areas represent areas that are within 2 km of a conservation significant plant record and/or contain habitat highly likely to have one or more endangered, vulnerable or near threatened flora species listed under the NC Act

There were no protected plants trigger areas within the Project footprint or wider Project area.

4.1.4 Conservation significant flora species

The EPBC PMST identified the potential for 17 nationally threatened flora species listed under the EPBC Act (Table 4.2) to occur within the Study area. It should be noted that the EPBC PMST gives details of species that are predicted to be present within the defined area based on bioclimatic modelling. As such, these species have not necessarily been observed within the Project area.

Species listed under Queensland legislation (i.e. NC Act) that been historically recorded in the Study area were obtained from the DESI WildNet database. No threatened flora species have been historically recorded in WildNet

within 5 km. However, an ALA search of the Study area has historically recorded four conservation significant flora species.

Threatened flora species are defined as those species listed under the provisions of the EPBC Act and/or the Queensland Nature Conservation (Wildlife) Regulation 2006, the regulation to the *Nature Conservation Act 1992* (NC Act). Table 4.2 lists 19 threatened flora species either identified in the EPBC Protected Matters or historically recorded in the ALA databases within the Study area.

Table 4.2 Conservation significant flora species predicted to occur within the Study area

Species	Common Name	Status		Source
		EPBC Act	NC Act	
<i>Arthraxon hispidus</i>	Hairy-joint grass	V	V	PMST
<i>Bosistoa transversa</i>	Three-leaved bosistoa	V	LC	PMST
<i>Bulbophyllum globuliforme</i>	Miniature moss-orchid	V	NT	PMST
<i>Callitris baileyi</i>	Bailey's cypress pine	NL	NT	ALA
<i>Cupaniopsis shirleyana</i>	Wedge-leaf tuckeroo	V	LC	PMST
<i>Cupaniopsis tomentella</i>	Boonah tuckeroo	V	V	PMST, ALA
<i>Dichanthium setosum</i>	Bluegrass	V	LC	PMST
<i>Fontainea venosa</i>	-	V	V	PMST
<i>Melaleuca irbyana</i>	Weeping paperbark	NL	E	ALA
<i>Notelaea lloydii</i>	Lloyd's olive	V	V	PMST
<i>Notelaea x ipsviciensis</i>	Cooneana olive	CE	CR	PMST
<i>Picris evae</i>	Hawkweed	V	V	PMST
<i>Planchonella eerwah</i>	Shiny-leaved condoo	E	E	PMST, ALA
<i>Rhaponticum australe</i>	Austral cornflower	V	V	PMST
<i>Rhodamnia rubescens</i>	Scrub turpentine	CE	CR	PMST
<i>Rhodomyrtus psidioides</i>	Native guava	CE	CR	PMST
<i>Samadera bidwillii</i>	Quassia	V	V	PMST
<i>Sarcophilus weinthalii</i>	Blotched sarcophilus	V	E	PMST
<i>Thesium australe</i>	Austral Toadflax	V	V	PMST
Note: CE/CR – Critically endangered, E – Endangered, V – Vulnerable, Mig – Migratory, NT – Near threatened, SL – Special least concern, LC – Least concern, NL – Not Listed, PMST – Protected Matters Search Tool, ALA – ALA record				

4.1.5 Introduced flora species

A weed is defined as any plant that requires some form of action to reduce its harmful effects on the economy, the environment, human health and amenity (Natural Resource Management Ministerial Council, 2006). There are two types of invasion: introduction of exotic plants and movement by native species into new areas well outside their native range. Weeds have an adverse effect on an area's environmental values and ecological functioning for the following reasons:

- Competition with native species
- Change in the structure of a plant community through addition or removal of strata
- Repress recruitment of native species
- Change the natural fire fuel characteristics, which can change the natural fire regime to the detriment of native species, often resulting in the loss of native species
- Change the food sources and habitat values available to native fauna, reducing some and increasing others
- May change geomorphological processes such as erosion, and

- May lead to changes in the hydrological cycle.

Weed species considered to be of greatest threat to natural and economic values on a national basis have been ranked as Weeds of National Significance (WONS) (Thorpe and Lynch 1999). Weed significance at a national level was assessed using four major criteria:

- Invasiveness
- Impacts
- Potential for spread, and
- Socio-economic and environmental impacts.

At a State level, the *Biosecurity Act 2014* identifies those weed species that represent a threat to primary industries, natural resources and the environment. Under the Biosecurity Act, a weed species can be declared as a Prohibited or Restricted invasive plant based on it having significant adverse impacts in Queensland.

Prohibited invasive plants are those that are not present in Queensland and:

- Seriously threaten Queensland's primary industries, natural environment, livestock, human health and people's livelihoods
- Must be reported to Biosecurity Queensland within 24 hours of the sighting. A person reporting the prohibited invasive plant must take all reasonable and practical steps to minimise the risk of it spreading or escaping until they receive advice from an authorised officer.

Restricted invasive plants are those that are established in Queensland and seriously threaten Queensland's primary industries, natural environment, livestock, human health and people's livelihoods.

The WildNet and ALA database searches indicate that three restricted plant species have been previously recorded within the Study area, these being:

- *Dolichandra unguis-cati* (cat's claw creeper)
- *Sida cordifolia* (flannel weed)
- *Vachellia nilotica* (prickly acacia)

Salvinia x molesta (Salvinia) was also recorded in the desktop search extent, however as an invasive aquatic plant it is not considered in this terrestrial assessment.

4.1.6 Essential habitat

There are no areas mapped as essential habitat for threatened flora species within the Project area.

4.2 Fauna values

4.2.1 Essential habitat

Essential habitat is defined by the VM Act as areas of habitat for conservation significant species prescribed under the NC Act. Essential habitat exists where vegetation is likely to contain either:

- Three or more essential habitat factors for a species, or
- A conservation significant species (koala) at any stage of its life cycle.

Essential habitat is mapped adjacent to the Project footprint in the south, which includes an area of habitat slightly within the south-west extent of the Project area. It is anticipated that this habitat will not be directly impacted by the Project. Essential habitat is also mapped along Mitchell Road to the north. This essential habitat is also mapped as core koala (*Phascolarctos cinereus*) habitat. There is a total of 3.85 ha of essential habitat within the Project area, and 0.47 ha of essential habitat within the Project footprint.

4.2.2 Conservation significant fauna species

The EPBC Act PMST search identified 35 conservation significant fauna species that have the potential to occur in the Study area. The EPBC PMST gives details of species that are predicted to be present within the defined area

based on bioclimatic modelling. As such, these species have not necessarily been observed within the Project area.

Additionally, WildNet and ALA recorded four fauna species that have been historically recorded within the Study area (Table 4.3 and Appendix A).

Table 4.3 Conservation significant fauna species predicted to occur within the Study area

Species name	Common name	Conservation status		Source
		EPBC Act	NC Act	
Birds				
<i>Anthrochaera phyrgia</i>	Regent honeyeater	CE	CR	PMST
<i>Botaurus poiciloptilus</i>	Australasian bittern	E	E	PMST
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	V	SL	PMST
<i>Calidris ferruginea</i>	Curlew sandpiper	CE	CR	PMST
<i>Calyptorhynchus lathami lathami</i>	Glossy black-cockatoo (south-eastern)	V	V	PMST
<i>Climacteris picumnus victoriae</i>	Brown treecreeper (south-eastern)	V	V	PMST
<i>Cyclopsitta diophthalma coxeni</i>	Coxen's fig-parrot	CE	CR	PMST
<i>Dasyornis brachypterus</i>	Eastern bristlebird	E	E	PMST
<i>Erythrotriorchis radiatus</i>	Red goshawk	E	E	PMST
<i>Falco hypoleucos</i>	Grey falcon	V	V	PMST
<i>Gallinago hardwickii</i>	Latham's Snipe	V	SL	PMST, WN, ALA
<i>Geophaps scripta scripta</i>	Squatter pigeon (southern)	V	V	PMST
<i>Grantiella picta</i>	Painted honeyeater	V	V	PMST
<i>Hirundapus caudacutus</i>	White-throated needletail	V	V	PMST, WN, ALA
<i>Lathamus discolor</i>	Swift parrot	CE	E	PMST
<i>Rostratula australis</i>	Australian painted snipe	E	E	PMST
<i>Stagonopleura guttata</i>	Diamond firetail	V	V	PMST
<i>Tringa nebularia</i>	Common greenshank	E	SL	PMST
<i>Turnix melanogaster</i>	Black-breasted button-quail	V	V	PMST
Mammals				
<i>Chalinolobus dwyeri</i>	Large-eared pied bat	E	E	PMST
<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll (SE mainland)	E	E	PMST
<i>Macroderma gigas</i>	Ghost bat	V	E	PMST
<i>Petauroides volans</i>	Greater glider	E	V	PMST
<i>Petaurus australis australis</i>	Yellow-bellied glider	V	V	PMST
<i>Petrogale penicillata</i>	Brush-tailed rock-wallaby	V	V	PMST
<i>Phascolarctos cinereus</i>	Koala	E	E	PMST, WN, ALA
<i>Potorous tridactylus tridactylus</i>	Long-nosed potoroo	V	V	PMST
<i>Pseudomys novaehollandiae</i>	Pookila	V	V	PMST
<i>Pteropus poliocephalus</i>	Grey-headed flying fox	V	LC	PMST, WN, ALA
<i>Tachyglossus aculeatus</i>	Short-beaked echidna	NL	SL	WN
Reptiles				
<i>Delma torquata</i>	Collared delma	V	V	PMST
<i>Furina dunmalli</i>	Dunmall's snake	V	V	PMST

Species name	Common name	Conservation status		Source
		EPBC Act	NC Act	
<i>Hemiaspis damelii</i>	Grey snake	E	E	PMST
Frogs				
<i>Mixophyes fleayi</i>	Fleay's frog	E	E	PMST
Insect				
<i>Argynnis hyperbius inconstans</i>	Australian fritillary	CE	E	PMST
Note: CE/CR – Critically endangered, E – Endangered, V – Vulnerable, Mig – Migratory, NT – Near threatened, SL – Special least concern, NL – Not Listed, PMST – Protected Matters Search Tool, WN – WildNet record, ALA – ALA record				

4.2.3 Migratory fauna

The PMST search identified 15 migratory fauna species that are predicted to occur within the Study area based on bioclimatic modelling, knowledge of species' distributions and habitat preferences (Table 4.4 and Appendix A).

- One migratory marine species
- Seven migratory terrestrial species
- Seven migratory wetland species

A summary of migratory fauna species reported within the desktop assessment is provided in Table 4.4.

Table 4.4 Migratory species predicted to occur within the Study area

Species name	Common name	Conservation status		Source
		EPBC Act	NC Act	
Migratory marine species				
<i>Apus pacificus</i>	Fork-tailed swift	Mig	SL	PMST
Migratory terrestrial species				
<i>Cuculus optatus</i>	Oriental cuckoo	Mig	SL	PMST
<i>Hirundapus caudacutus</i>	White-throated needletail	V, Mig	V	PMST
<i>Monarcha melanopsis</i>	Black-faced monarch	Mig	SL	PMST
<i>Motacilla flava</i>	Yellow wagtail	Mig	SL	PMST
<i>Myiagra cyanoleuca</i>	Satin flycatcher	Mig	SL	PMST
<i>Rhipidura rufifrons</i>	Rufous fantail	Mig	SL	PMST
<i>Symposiachrus trivirgatus</i>	Spectacled monarch	Mig	SL	PMST
Migratory wetland species				
<i>Actitis hypoleucos</i>	Common sandpiper	Mig	SL	PMST
<i>Calidris acuminata</i>	Sharp-tailed sandpiper	V, Mig	SL	PMST
<i>Calidris ferruginea</i>	Curlew sandpiper	CE, Mig	CR	PMST
<i>Calidris melanotos</i>	Pectoral sandpiper	Mig	SL	PMST
<i>Gallinago hardwickii</i>	Latham's snipe	V, Mig	SL	PMST, WN, ALA
<i>Pandion haliaetus</i>	Osprey	Mig	SL	PMST
<i>Tringa nebularia</i>	Common greenshank	E, Mig	SL	PMST
Key to table: CE/CR – Critically endangered, E – Endangered, V – Vulnerable, Mig – Migratory, NT – Near threatened, SL – Special least concern, NL – Not Listed, PMST – Protected Matters Search Tool, WN – Wildnet record, ALA – ALA record				

5. Field assessment results

5.1 Flora results

5.1.1 Threatened Ecological Communities

The field survey assessed vegetation communities within the Project area to determine the presence of any TECs. There are no vegetation communities within the Project area that could conform to any TECs. Only one type of vegetation community that potentially aligned with a TEC occurred, being regrowth patches of RE 12.9-10.3 dominated by *Eucalyptus moluccana*. RE 12.9-10.3 may align with the grey box-grey gum wet forest of subtropical eastern Australia TEC (DCCEEW, 2022). This occurs in the Project footprint along Mitchell Road. Multiple patches were assessed against the relevant TEC criteria, including the key diagnostic characteristics and condition thresholds (Table 5.1). One of the key diagnostic characteristics of this TEC is to have a canopy that contains *Eucalyptus moluccana* and/or grey gums (*E. propinqua*) and/or *E. punctata*, however only *E. moluccana* was recorded. Due to the lack of grey gums (*E. propinqua*, *E. punctata*) and the poor quality of the habitat the TEC criteria were not met and this TEC was evaluated as being **unlikely to occur** as part of the likelihood of occurrence assessment.

Table 5.1 Key Diagnostic criteria for Grey box-Grey gum wet forest of subtropical eastern Australia (DCCEEW 2022)

Key Diagnostic criteria	Comparison to the criteria
Occurs within the NSW north coast or southeast Queensland IBRA Bioregions; within the Moreton Basin, Scenic Rim, Woodenbong, Cataract, Rocky River Gorge, Washpool, Dalmorton Clarence Sandstones or Chaelundi IBRA subregions	Conforms Occurs within the southeast Queensland IBRA bioregion
Occurs at elevations between 100m and 600m above sea level (ASL)	Conforms The Project area is above 100 m ASL
It does not occur on broader alluvial landforms (including floodplains, alluvial flats, older floodplain terraces and periodically flooded depressions), but may occur on shallower alluvial soils on the margins of the floodplain and in the smaller narrow alluvial systems.	Conforms Soil mapping confirms no alluvial plains throughout Project area with podzols, lithosols and solodics present instead.
Typically appears as a forest with a tree canopy that has a crown cover of 20% or more	Conforms Confirmed by field surveys, the area in the Study area comprises a crown cover of 20% or more
Has a tree canopy that contains <i>Eucalyptus moluccana</i> (grey box) and/or a grey gum (<i>E. propinqua</i> (small-fruited grey gum) and/or <i>E. punctata</i> (grey gum))	Does not conform <i>Eucalyptus moluccana</i> confirmed by field surveys but the remaining species were not recorded through the Project area.
Has a tree canopy dominated by one or a combination of <i>E. moluccana</i> , <i>E. propinqua</i> , <i>E. punctata</i> , <i>E. siderophloia</i> (Northern grey ironbark), or <i>Araucaria cunninghamii</i> (hoop pine); and	Does not conform The area is mapped as RE 12.9-10.3, which includes <i>E. moluccana</i> open forest. This was confirmed by field surveys that recorded patches of vegetation with a canopy dominated by this species, however, does not include <i>E. punctata</i> or <i>E. propinqua</i> .
Has an understorey typically with drier vine-forest/rainforest flora (often including vines and lianas). At some locations, the understorey vine-forest floristic elements occur together with grassy open forest flora, or in a patch mosaic with areas of grassy open forest flora interspersed with or adjacent to areas of vine-forest flora	Does not conform Field surveys confirmed that the understorey was grassy open forest but did not contain vine-forest/ rainforest flora.

5.1.2 Vegetation communities

A large proportion of the lot has been heavily altered through grazing activities. Alteration has occurred through direct historical clearing associated with pastoral activities. These areas typically support a mix of exotic and native perennial grass species and have patches of regrowth often dominated by small patches of mid canopy *Acacia leiocalyx* or *A. disparrima*. The remaining extent of the lot supports remnant or regrowth vegetation.

Remnant vegetation was confirmed present along the Mitchell Road reserve, within the Project area. Vegetation in this area supported an ecologically dominant layer (EDL) characterised by *Eucalyptus moluccana*, *E. tereticornis* or *Corymbia citriodora*. The relative dominance of these species varied. *Eucalyptus siderophloia* was occasionally present in the EDL.

Areas of regrowth in the Project area included areas mapped as high value regrowth (HVR) and areas of regrowth mapped as non-remnant vegetation (category X). The patch of HVR mapped from the south-western corner of the lot and Project area was confirmed present and supported regrowth characterised by *Corymbia citriodora* and to a lesser extent *Eucalyptus siderophloia*.

Some inconsistencies exist between the RE mapping covering the Project area and results of regulated vegetation mapping and field surveys.

An area mapped as supporting land zone 8 occurs along the Mitchell Road reserve. Land zone 8 is characterised by Cainozoic igneous rocks, predominantly basalts. However, the surface geology mapping (Section 3.2) does not indicate this rock type as being present within the Project area. Instead, the whole Project area is mapped as supporting sedimentary rocks, which are equivalent to land zone 9-10. Hence, areas presently mapped as RE 12.8.24 were field verified as RE 12.9-10.3, where *Eucalyptus moluccana* is dominant in the EDL or RE 12.9-10.2, where *Corymbia citriodora* is dominant. All other regional ecosystems identified in desktop assessment as per the post-clear extent were verified. This included REs: 12.9-10.2 and 12.9-10.3 (Table 5.2). The field verified REs are presented in Figure 2.2.

Table 5.2 *Regional ecosystems field verified within the Project area*

RE	VM Act Status	Area (ha)	Field description	Representative photos
12.9-10.2	Least concern	2.74	T1 (canopy layer): Open forest 10 – 20 m high. Canopy dominated by <i>Corymbia citriodora</i> with infrequent individuals of <i>Eucalyptus siderophloia</i> and <i>Eucalyptus tereticornis</i> T2 (subcanopy layer): 2 – 5 m high. Subcanopy frequent to sparsely present. Comprised of T1 species as well as <i>Acacia</i> species. S (shrub layer): <2 m high. Comprised of juvenile T1 species and exotic species including lantana. G (ground layer): dominated by grasses including <i>Capilligerum</i>, <i>Sporobolus</i>, <i>Chloris</i>, <i>Tagetes</i>, <i>Dichanthium</i>, <i>Bidens</i>, <i>Crotalaria</i>, and <i>Sida retusa</i>	
12.9-10.3	Endangered	0.64	T1: Open forest 10-15 m high, dominated by <i>Eucalyptus moluccana</i> with sparse <i>Eucalyptus siderophloia</i>, <i>E. tereticornis</i> and <i>Corymbia citriodora</i>. T2: 4-10 m high. Subcanopy sparse comprised of T1 species. S: <2 m high. Shrub layer sparse and generally absent.	

RE	VM Act Status	Area (ha)	Field description	Representative photos
				

5.1.3 Conservation significant flora species

There were no conservation significant flora species identified during field surveys. Likelihood of occurrence assessment determined all flora species as either **unlikely** or **highly unlikely to occur** (Appendix B), as such, no flora species required a significant impact assessment.

5.1.4 Introduced flora species

Ten Biosecurity Act Restricted plant species were recorded during the site visit, five of which are listed as Weeds of National Significance (WONS), these being:

- *Baccharis halimifolia* (groundsel bush)
- *Bryophyllum delagoense* (mother-of-millions)
- *Celtis sinensis* (Chinese celtis)
- *Lantana camara* (lantana - WONS)
- *Lantana montevidensis* (creeping lantana)
- *Opuntia stricta* (prickly pear - WONS)
- *Opuntia tomentosa* (velvety tree pear - WONS)
- *Parthenium hysterophorus* (parthenium - WONS)
- *Senecio madagascariensis* (fireweed - WONS), and
- *Sporobolus pyramidalis* (giant rat's tail grass).

Lantana camara, *Opuntia* spp. and *Sporobolus pyramidalis* (Plate 5.1) were the most frequently observed invasive flora during field surveys, occurring extensively throughout the lot and in areas of remnant and regrowth vegetation communities.



Plate 5.1 *Lantana* (*L. camara* left) and prickly pear (*Opuntia stricta*, middle) and giant rat's tail grass (*Sporobolus pyramidalis*, right) from field surveys

5.2 Fauna results

5.2.1 Habitat types

The Project area has been subject to large-scale vegetation clearing and grazing. The Project area supports cleared land that comprises an exotic grassland with very occasional shrubs and isolated trees. Open woodlands occur in the south-west of the Project area and Lot, as well as along Mitchell Road reserve. These vegetated areas include mapped essential habitat for the koala. Microhabitats were present, particularly associated with eucalypt woodlands within the Project area. These microhabitats primarily included hollows (generally small) present in eucalypt trees (predominantly *E. tereticornis*) along Mitchell Road. Terrestrial habitats identified in the field are summarised in Table 5.3 and presented in Figure 5.1.

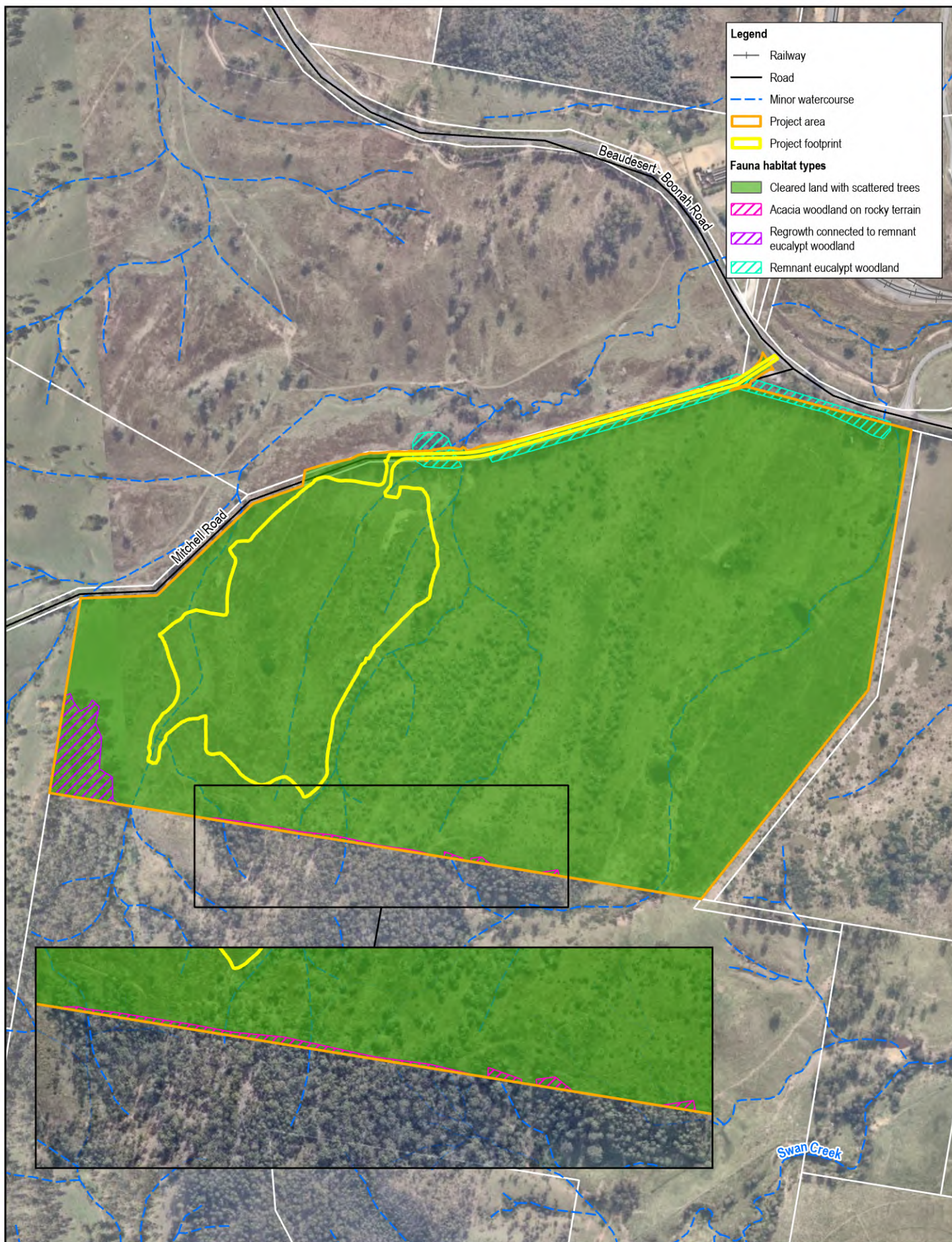
Table 5.3 Terrestrial habitat types observed within the Project area and Project footprint

Area (ha) within the Project area	Area (ha) within the Project footprint	Characteristics	Ecological values
Cleared land with scattered trees			
121.28	21.13	– Exotic grassland – Aligns with non-remnant vegetation – Occasional isolated mature and regrowth trees – Historically cleared in 2021, and prior to that heavily used for grazing – Ground-level habitats cleared and lacking microhabitat features, lacks consistent shrub layer and structural complexity – Heavy presence of exotic <i>Sporobolus pyramidalis</i>, <i>Lantana</i> and <i>Opuntia</i> spp. – Mix of native and exotic grass species – Mapped ephemeral waterways present	– Dispersal and shelter habitat for koala – Limited nesting and foraging habitat for canopy-dwelling birds, parrots, owls and microbats – Foraging habitat for ground-dwelling mammals – Ephemeral waterways provide limited refuge habitat for amphibians, and sporadic drinking water for other ground-dwelling fauna – Foraging habitat for raptors – Potential habitat for conservation significant fauna species – koala, white-throated needletail, grey-headed flying fox
Remnant eucalypt woodlands (Mitchell Road)			

Area (ha) within the Project area	Area (ha) within the Project footprint	Characteristics	Ecological values
2.16	0.5	– Aligns with REs 12.9-10.2, and 12.9-10.3 – Mature canopy trees – Open canopy – Dense ground layer – Hollow-bearing trees in low abundance, hollows generally small – Vegetation dominated by <i>E. moluccana</i>, and/or <i>E. tereticornis</i> – Scattered <i>Opuntia tomentosa</i> – <i>Lantana camara</i> present in moderate density – Low to moderate shrub layer with grassy understory – Waterholes (infrequent) along gully – Mix of native and exotic grass species – Cainozoic and Mesozoic sediments	– Some foraging and shelter habitat for reptiles and amphibians – Low quality habitat for denning and nesting for possums, gliders, parrots, owls, monitors and microbats – Some nesting and foraging habitat for canopy-dwelling birds – Foraging habitat for ground-dwelling mammals – Foraging habitat for koalas, gliders, flying-foxes and other folivores, but lack of connectivity may limit their use – Breeding habitat for frogs – Water source and drinking site for birds, mammals, reptiles – Potential habitat for conservation significant fauna species – koala, greater glider, yellow-bellied glider, white-throated needletail, grey-headed flying fox
Regrowth connected to remnant eucalypt woodlands (south-west corner)			

Area (ha) within the Project area	Area (ha) within the Project footprint	Characteristics	Ecological values
1.75	-	– Aligns with REs 12.9-10.2 – High density of mature canopy trees, mostly regrowth but some connection to adjacent remnant vegetation – Hollow-bearing trees in high abundance, hollows of variable sizes – Vegetation dominated by <i>E. tereticornis</i> – Scattered <i>Lantana camara</i> – Low to moderate shrub layer – Grassy understory – Mix of native and exotic grass species – Cainozoic and Mesozoic sediments – Low density of logs, timber piles, woody debris and other ground-level microhabitats	– Basking habitat for reptiles and amphibians – High quality habitat for denning and nesting for possums, gliders, parrots, owls, monitors and microbats – Suitable nesting and foraging habitat for canopy-dwelling birds – Foraging habitat for ground-dwelling mammals – Foraging habitat for koalas, gliders, flying-foxes and other folivores – Potential habitat for conservation significant fauna species – koala, greater glider, yellow-bellied glider, white-throated needletail, grey-headed flying fox
Acacia woodland on rocky terrain (south)			

Area (ha) within the Project area	Area (ha) within the Project footprint	Characteristics	Ecological values
0.28	-	– Vegetation dominated by <i>Acacia</i> spp. – Scattered <i>Lantana</i> spp. – Mix of native and exotic grass species, more sparse with bare ground and lots of detritus present – Sediment soils covered by rocks and granite boulders – High-density of logs, timber piles, woody debris and other ground-level microhabitats	– Many microhabitats for ground-dwelling mammals, reptiles and amphibians. Note: due to lack of eucalypts and associated large hollows, this habitat type is not suitable for the greater glider – Foraging and basking habitat for reptiles – Shelter and dispersal habitat for koalas – Nesting and foraging habitat for canopy-dwelling birds – Potential habitat for conservation significant fauna species – koala, greater glider, yellow-bellied glider, white-throated needletail, grey-headed flying fox



Paper Size ISO A4
0 50 100 150 200
Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

Project No. 12626213
Revision No. A
Date 14/08/2024

Fauna habitat types

FIGURE 5-1

5.2.1.1 Fauna observations

During field surveys there were 31 bird observations comprising 14 unique species, none of which were species of conservation significance. These ranged from species which inhabit grasslands, such as the stubble quail (*Coturnix pectoralis*) to larger birds of prey, including the wedgetail eagle (*Aquila audax*, Plate 5.2). There was also evidence of owls in the Study area (pellets, Plate 5.2).

Mammals identified during field surveys included the eastern grey kangaroo (*Macropus giganteus*) and red-necked wallaby (*Notamacropus rufogriseus*). Call backs for koalas were played once with no response. Remote cameras also photographed the invasive European red fox (*Vulpes vulpes*), the native common brush tailed possum (*Trichosurus vulpecula*), and the red-necked wallaby (Plate 5.3). There was evidence of bandicoots (diggings) and brushtail possums (scat) (Plate 5.4).

Microhabitats suitable for reptile habitat were located outside of the Project area, and contained large woody debris, leaf litter ground cover and crevices. These were actively searched for reptiles. Only one reptile was observed, the eastern bearded dragon (*Pogona barbata*), near Mitchell Road (Plate 5.4).

The eastern sedge frog (*Litoria fallax*) was heard on three occasions during field surveys. The invasive Cane toad (*Rhinella marina*) was found on three separate occasions.

A full summary of fauna species observed during field surveys are provided in Appendix C.



Plate 5.2 Photographed wedgetail eagle (*Aquila audax*, left), and unidentified owl pellet (right)



Plate 5.3 Left: Remote camera image of red fox (*Vulpes vulpes*, left) and brushtail possum (*Trichosurus vulpecula*, middle) and red-necked wallaby (*Notamacropus rufogriseus*, right)



Plate 5.4 Bandicoot diggings (left), possum scat (middle) and Eastern bearded dragon (*Pogona barbata*) (right)

5.2.1.2 Microbat analysis

Anabat detectors were deployed on 10 and 11 April and call analysis was completed by a Greg Ford from Balance! Environmental. From this analysis, 11 species and two undifferentiated genera were positively identified

(Table 5.4). Of these, the undifferentiated genera *Nyctophilus* was identified calling within the Project area. *Nyctophilus* contains one conservation significant species—the south-eastern long eared bat (*Nyctophilus corbeni*)—which is listed as vulnerable under both the EPBC Act and NC Act. The bat calls of the *Nyctophilus* genus cannot be differentiated to a species level. However, given the Project area is outside of the south-eastern long eared bat distribution, which is found further inland, it is considered unlikely that these calls originate from this conservation significant species. There were no other notable species identified from the bat call analysis. See Appendix D for further detail of this analysis.

Table 5.4 Bat call summary

Night	10/04/2024	11/04/2024	Total
Positively identified calls			
<i>Austronomus australis</i>	46	173	219
<i>Chalinolobus gouldii</i>	99	145	244
<i>Chalinolobus nigrogriseus</i>	4	1	5
<i>Chalinolobus picatus</i>	6	21	27
<i>Micronomus norfolkensis</i>	2	4	6
<i>Miniopterus australis</i>	28	20	48
<i>Miniopterus orianae oceanensis</i>	4	5	9
<i>Nyctophilus</i> sp.	8	4	12
<i>Ozimops lumsdenae</i>	2	2	4
<i>Rhinolophus megaphyllus</i>	1	0	1
<i>Saccolaimus flaviventris</i>	167	232	399
<i>Scotorepens</i> sp.	7	2	9
<i>Scotorepens orion</i>	1	1	2
Unresolved calls			
<i>C. nigrogriseus</i> or <i>Scotorepens</i> sp.	7	12	19
<i>M. australis</i> or <i>Vespadelus pumilus</i>	1	0	1
<i>Scotorepens</i> sp. or <i>C. picatus</i>	15	36	51
Total calls	398	658	1056

5.2.2 Threatened fauna species

There were no conservation significant fauna species identified during field surveys; however, a likelihood of occurrence assessment was completed based on habitat assessments undertaken during the field survey (see Appendix B for full detail):

- Three species—white-throated needletail (*Hirundapus caudacutus*), koala (*Phascolarctos cinereus*) and grey-headed flying fox (*Pteropus poliocephalus*)—were considered likely to occur
- Three species—greater glider (*Petauroides volans*), yellow-bellied glider (south-eastern) (*Petaurus australis australis*) and short-beaked echidna (*Tachyglossus aculeatus*)—were considered as having the potential to occur

A Significant Impact Assessment was undertaken for all species determined as **likely to occur** or with **potential to occur**. These are outlined in Section 8.

5.2.3 Migratory fauna

No migratory fauna was confirmed present within the Project area. Further, no migratory species were assessed as **likely to occur** or with **potential to occur** (Appendix B). While the white-throated needletail was considered

likely to occur, the species is also listed as vulnerable under the EPBC Act and is therefore considered in the above section and has been assessed under the vulnerable status EPBC Act significant impact guidelines criteria.

5.2.4 Introduced fauna species

The invasive cane toad (*Rhinella marina*) was observed three times during the field survey. From remote camera imagery at one location, the European fox (*Vulpes vulpes*) was observed twice Plate 5.5.



Plate 5.5 European fox (*Vulpes vulpes*) from remote camera

6. Potential impacts

6.1 Overview

This section provides a summary of the potential impacts that the construction and operation of the Project is anticipated to have on the ecological values of the receiving environment. During the construction phase the Project is expected to result in localised losses of habitat, predominantly due to clearing for access tracks, the project layout, and temporary disturbance of wildlife through construction light, noise, vibration and increased vehicle movements, as well as the potential for erosion and sedimentation.

For each potential impact, mitigation measures are detailed immediately below. An assessment of the significance of impact on MNES and MSES is detailed in Section 8 of the report.

Construction of the Project involves the following activities:

- Vegetation clearing
- General civil construction activities, including earthworks
- Operation of vehicles and machinery
- Transportation and haulage
- Storage of potentially hazardous substances such as fuel, chemicals and wastes

Operation of the Project involves the following activities

- Movement of vehicles.

6.1.1 Loss of vegetation and habitat

The Project will require the clearing of approximately 21.2 ha of Category X (non-remnant) and 0.5 ha of Category B (remnant) vegetation within the Project footprint resulting in a direct loss of vegetation and associated habitat

Vegetation clearing will result in the direct loss of fauna habitat through the removal of structural features (i.e. vegetation, hollow-bearing trees and hollow logs). These features provide microhabitats and resources for perching, foraging and den/nesting. The removal of these features will likely decrease the number of individual animals that can be accommodated in a given area and will may increase competition for resources, such as food and shelter, in immediately surrounding habitats.

Hollow-bearing trees are recognised as a limited resource in most grazing lands due to previous clearing and therefore the loss of these habitat features is considered to be a major threat to Australia's biodiversity (Gibbons and Lindenmayer 2002).

6.1.2 Injury and mortality of wildlife

Vegetation clearance during construction of the Project may result in injury and mortality of local fauna sheltering in hollows, nests and ground habitat (logs, burrows, soil, leaf litter and beneath rocks). Increased vehicle and machinery movement during the construction phase may increase local incidence of fauna injury and mortality through vehicle strike and collision, particularly in the Project footprint including Mitchell Road. Species most at risk include nocturnal species that are likely to be sheltering during the daytime when clearing activities are underway (e.g. possums and gliders) and slow moving species or sedentary species that are unlikely to be able to flee the clearing zone (e.g. koalas, small ground-dwelling mammals, reptiles and frogs). Entrapment of wildlife within excavations poses an additional threat to wildlife. Most at risk wildlife includes wide-roaming fauna like macropods, snakes and echidnas.

Conservation significant species with heightened risk of injury or mortality during construction include the koala, greater glider (southern and central) and yellow-bellied glider (south-eastern). These species are at greater risk due to localised occurrence, potential breeding areas, nocturnal behaviour and relatively slow dispersal ability.

6.1.3 Reduced connectivity

The extent of clearing within the Project area is unlikely to create a substantial barrier or restrict fauna movement. The Project is located in a landscape that has already been highly fragmented from historical clearing and agriculture. The existing state of the site in which the composting facility is proposed on is historical agricultural land in which a majority of the habitat has already been degraded. Habitat fragmentation can isolate populations by causing barriers to local fauna movement. The quality of persisting habitats can be substantially degraded by edge effects associated with increased exposure to light, noise, run-off, sedimentation, erosion and weed and pest infestation.

The Project footprint contains the unsealed Mitchell Road to the north, and is bordered by Beaudesert Boonah Road to the north-east, and a railway line to the east. Given the observed evidence of infrastructure maintenance (vegetation trimming, mowing, etc.) and impacts associated with infrastructure operation (compacted tracks), habitat within the Project area currently experiences fragmentation from the historical vegetation clearing in the surrounding landscape. Additionally, vegetation within the Project area occurs largely as non-remnant, with only patches of regrowth and remnant vegetation on the Project area boundaries including in the south-west and north along Mitchell Road. Given the above, it is considered that no patches of remnant vegetation will become directly isolated as a result of the proposed works.

The movement of koala and other conservation significant species that are likely to occur within the surrounding landscape are unlikely to be limited by the further fragmentation of habitats as a result of the Project. Nevertheless, the removal of regrowth vegetation may have localised impacts on the composition of forest bird assemblages, reptile and small ground mammal species by reducing the area of available habitat. However, connectivity between existing koala habitats will be maintained to the east and west of the Compost Manufacturing Facility.

6.1.4 Disturbance of wildlife by increased light, noise and vibration

The Project has the capacity to cause indirect degradation of adjacent habitats due to an increase in the exposure to light, noise and vibration. Construction will result in a localised increase in vehicle movements in the short-term while also increasing machinery, personnel and materials throughout both operation and construction phase. This will increase light, noise and vibration disturbance on local wildlife. Increased light, noise and vibration can alter individual species' behaviours, and disrupt the balance of inter-species interactions. Such disruptions typically favour feral predators and generalist species that owe their success to broad ecological tolerances and possess the ability to actively exploit disturbed environments.

As the surrounding landscape has historically been exposed to a diversity of land uses (agriculture, roads, rail, etc.) the Project area is likely to have already been historically exposed to high levels of artificial noise, light and vibration. Additionally, the Project area is bordered by linear infrastructures (including road and rail line) which would expose the local area to increased levels and frequencies of light, noise and vibration disturbance. Whilst the Project will likely result in increased noise, light and vibration levels, the implementation of the facility is likely to exacerbate these operational impacts in particular increase noise and lighting in the area.

6.1.5 Habitat degradation through dust, run-off and sedimentation

Construction activities have the potential to generate localised dust, erosion, run-off and sedimentation through increased vehicle movements, vegetation clearing and earthworks. This can reduce the abundance and diversity of adjacent terrestrial and aquatic habitats by physically smothering vegetation, changing nutrient levels, decreasing water quality, encouraging weed incursions and altering the movement and behaviour of fauna species. Some areas of the receiving environment have already been subject to high levels of erosion and sedimentation as a result of existing land clearing and grazing activities. Adverse weather conditions during construction can exacerbate the potential impact of erosion and sedimentation. High rainfall and strong winds have the potential to remove exposed topsoil, destabilise creek beds and distribute sediment through creek line.

6.1.6 Introduction and spread of invasive species

Construction activities have the potential to introduce new invasive species, or further spread invasive species currently within the Project area through the increased movement of people and machinery. Additionally,

established weed populations, including lantana, mother-of-millions and others (Section 5.1.4) may be further distributed throughout the Project area by construction personnel and work vehicles. Due to the import of garden materials as a result of Food Organics Garden Organics production, weeds within these garden organics may potentially be transported to site through operation activities. Additionally, ephemeral surface water flow has the potential to distribute weed species from construction areas to nearby watercourses, resulting in weeds being distributed further downstream during the wet season. A number of these species remain as a risk to the Project and require special management consideration to mitigate environmental and adverse economic impacts to landholders (i.e. lantana). Clearance of native vegetation will also create areas of disturbance that are naturally susceptible to colonisation by invasive weed species. These can form a local source of future weed infestations within the surrounding landscape.

7. Mitigation measures

7.1 Avoidance

Efforts have been made to identify and avoid landscape features that hold increased ecological value for local flora and fauna. The Project footprint has been sited predominantly within non-remnant vegetation, reducing impacts to mature vegetation containing higher ecological value than cleared and disturbed grasslands.

7.2 Design measures

The following mitigation measures are recommended to be incorporated into the Project design to address the potential impacts on the ecological values of the Project area:

- Vegetation clearing will be restricted to the minimum amount necessary for the construction within the Project footprint.
- The extent of vegetation clearing (and no-go areas) will be clearly identified on construction plans and in the field using high visibility fencing. Clearing extent will be communicated to construction supervisors.
- Require the Contractor to develop a clear staged approach to vegetation clearing to minimise the amount of clearing undertaken at one time and include an initial stage for vegetation clearing to support pioneering works such as for fence installation and establishment of erosion and sediment devices.
- Design drawings to delineate the extent of the Project area and any specific nominated no-go zones where vegetation is to be retained within the Project area.
- Design adverse incident response procedures to detail actions to be taken in the event of wildlife injury or mortality during clearing.
- Develop a construction Erosion and Sediment Control Plan (ESCP) in accordance with the Best Practice Erosion and Sediment Control manual (IECA, 2008).
- If a landscape plan is to be developed, it is recommended that this incorporates the use of endemic native species wherever possible.
- Incorporate design measures that prevent or reduce the attraction of introduced fauna such as European foxes, black rat, feral cats and wild dogs to the Project area, such as ensuring waste areas are enclosed and secure.
- Limit permanent exclusion fencing at site.
- All fencing used on the Project will use fencing without barbed wire, particularly on the top strand, to minimise incidence of flying-fox entanglement.

7.3 Construction measures

The following section provides recommendations to be considered for incorporation into the contract documentation to make sure that construction activities are managed in a way to minimise ecological impacts. Specific environmental management measures are to be incorporated into the Environmental Management Plan (Construction) (EMP(C)) including water quality, erosion and sediment control, vegetation clearing, weed control, noise management and management of fauna and cultural heritage.

The following mitigation measures are recommended prior to and during construction to address the potential impacts on flora and fauna within the Project area:

- Prepare and adhere to an EMP(C). The EMP(C) should include protocols to limit injury and mortality to fauna including management of risks associated with open excavations and increased traffic, and responses and reporting for roadkill and adverse incident protocols.
- Restrict vegetation clearing to the minimal area required to enable safe construction, operation and maintenance of the Project.

- Ensure that vegetation clearing boundaries are established with appropriate signage at regular intervals using visible and physical markings. High visibility tape, barricade webbing or similar should be utilised. Ensure that all contractors are aware of these boundaries.
- Engage suitably qualified and experienced fauna spotter/catchers to undertake pre-clearance surveys immediately prior to clearing and supervise all clearing activities associated with construction. This will involve searching and clearing tree hollows, habitat trees and fallen logs prior to clearing and relocating resident fauna to the nearest suitable, safe habitat outside the clearing footprint.
- Pre-clearance surveys to mark the locations of all potential breeding places for wildlife (i.e. hollows, nests, burrows etc), disturbance of which is to be avoided as possible. These will target areas with potential to support breeding habitat for conservation significant species and breeding places identified within this report.
- Prepare a Species Management Program (SMP) in accordance with the requirements of Section 335 of the Nature Conservation (Animals) Regulation 2020. This will outline a process to identify and minimise impact on breeding places for least concern species listed under the NC Act.
- If a koala is encountered within the Project area, the individual must not be relocated and should be left to self-disperse on their own accord (wherever possible).
- Fauna within the Project area will be encouraged to self-disperse when the works take place. Disturbances associated with construction of the facility (i.e. increased noise and human presence) are anticipated to encourage species occurring within the Project area to self-disperse.
- If injuries occur, the fauna spotter/catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably-qualified to undertake treatment/euthanasia themselves). Prior to clearing for construction, formalise arrangements with local veterinary services to treat and care for injured animals.
- Inspect trenches, excavations and machinery daily for the presence of trapped fauna.
- Develop adverse incident response procedures to detail actions to be taken in the event of wildlife injury or mortality during clearing. This will include procedures for capture and transport of injured wildlife to qualified veterinarian or humane on-site euthanasia and formalisation of arrangements with a local veterinarian to treat and care for wildlife injured during for the construction period.
- Rehabilitate and revegetate temporary construction areas as soon as possible after the completion of construction.
- Include weed management measures in the Contractor's EMP (C) to prevent the spread or introduction of invasive plants and environmental weeds.
- Reduce sources of artificial light by reducing night works and limiting site lighting to the minimum needed for safety.
- Prioritise construction activities to daylight hours to reduce the need for lighting and resultant light spill into adjacent habitat and to reduce noise and vibration impacts on nocturnal fauna species.
- Install erosion and sediment control measures where disturbance must be undertaken within or adjacent to wetted waterways.
- Implement responsible waste management practices (e.g. not leaving out food waste and not feeding wildlife) during construction. All waste will be stored in secure temporary holding containers and transported off site.
- Clearly demarcate areas of native vegetation to be removed so that equipment operators and supervisors are aware of clearing extents.
- Utilise existing cleared areas for laydown of materials.

7.4 Operation measures

Opportunities to minimise impacts to flora and fauna species, and their associated habitats include:

- Inspect and maintain all vehicles, machinery and plant regularly to minimise operational noise
- Restrict vehicle movements as far as practicable and minimise night driving.
- Reduce light spill, associated with permanent infrastructure, into retained adjacent vegetation by limiting artificial light associated with operations to the minimum needed for safety.

- Limit operation and maintenance work to day light hours, as is feasible, to decrease the impacts of light and noise pollution on nocturnal organisms within adjacent retained vegetation.
- Speed limits will be established and enforced on all access roads and/or internal roads to reduce the potential for vehicle fauna interactions.
- If fauna injuries occur within the Project area, a fauna spotter/catcher will capture and transport the injured animal to a qualified veterinarian for treatment or euthanasia (unless suitably qualified to undertake treatment/euthanasia themselves).
- Develop an Erosion and Sediment Control Plan (ESCP) in accordance with the Best Practice Erosion and Sediment Control guidelines (IECA, 2008) to minimise impacts to water quality and adjacent habitats.
- Prepare a Biosecurity Management Plan that should incorporate descriptions and mapping of major weed infestations identified during a pre-clearing survey and appropriate management actions to be undertaken. As a minimum, the management actions should include:
 - An explanation of the general biosecurity obligation under the *Biosecurity Act 2014*.
 - Procedures for vehicle wash-downs and inspections.
 - Procedures for reporting sightings of prohibited and restricted pest species within the works area.
 - A requirement that weed infested vegetation is not mulched for re-use on-site, and off-site disposal for weed infested mulch at an appropriate facility.
 - Prohibiting the movement of restricted invasive plants, including aquatic plants, such as *Salvinia molesta* (salvinia), into areas which do not contain the restricted invasive plants.

8. Significant impact assessments

Significant Impact Assessments were undertaken for six conservation significant fauna species. These are outlined in the below sections and a summary table is presented in Table 8.1.

Table 8.1 Significant impact assessment summary

Species	SIA
White-throated needletail	Unlikely
Koala	Likely
Grey-headed flying fox	Unlikely
Yellow-bellied glider	Unlikely
Greater glider	Unlikely
Short-beaked echidna	Unlikely

8.1 Commonwealth listed species

8.1.1 White-throated needletail

8.1.1.1 Species ecology

The white-throated needletail (*Hirundapus caudacutus*) is listed as vulnerable and migratory under the EPBC Act.

The white-throated needletail is a non-breeding visitor to Australia during the Austral summer, where it is widespread across eastern and south-eastern Australia. In Queensland, the species is recorded in all coastal regions to inland plains (TSSC 2019). The species forages at heights up to cloud height over a range of habitat types including woodland, open forest, rainforest, heathland and partly cleared pasture and agricultural land (Higgins 1999). The species is almost exclusively aerial, occurring from heights of less than 1 m up to more than 1000 m above the ground (Coventry 1989; Tarburton 1993; Watson 1955). Recent research has shown that while the species is predominantly aerial, the white-throated needletail does roost on land at least occasionally, with roosts typically located in tall woodland on ridgelines and clifftops, where the birds can easily alight (Tarburton 2021).

Key threats to the white -throated needletail include (TSSC, 2019):

- Collision with wind turbines, overhead wires, windows and lighthouses.
- Insecticides in particular organochlorines either through a decrease in abundance of prey items or from secondary poisoning.
- Loss of roosting sites.
- Loss of prey due to loss of forest and woodland habitats.
- Logging and habitat removal.
- Illegal netting.

8.1.1.2 Suitable habitat

Suitable habitat for this species was confirmed above the Project area. Due to the species aerial nature and foraging behaviour, potentially suitable habitat was considered as all areas above the Project area/Project footprint, used for the purpose of foraging. The species appears to rely on forests and woodlands for roosting and no such habitat occurs in the Project area. Approximately 21.15 ha of suitable white-throated needle-tail habitat occurs above the Project footprint, and 121.28 ha above the Project area. As suitable habitat is considered above the entire Project footprint and Project area, no habitat has been mapped for the species.

8.1.1.3 Habitat critical to the survival of the species

There is no formal definition of habitat critical to the survival of the species in the Commonwealth conservation advice for the white-throated needletail. The concept of 'important habitat' is relevant for the white-throated needletail, defined as 'non-breeding habitat only: Found across a range of habitats, more often over wooded areas, where it is almost exclusively aerial. Large tracts of native vegetation, particularly forest, may be a key habitat requirement for species. Found to roost in tree hollows in tall trees on ridge-tops, on bark or rock faces. Appears to have traditional roost sites' (DoE 2015).

The Project area can be described as gently undulating with ridgelines and valleys, and has been historically cleared of large areas of vegetation. Habitat within the Project area is not considered to be habitat critical to the survival of the species (i.e. roosting habitat).

8.1.1.4 Ecologically significant proportion of a population

The concept of important populations does not typically apply to species capable of migrating large distances, given their capacity to intermix and utilise habitats across a broad geographic range. The concept of 'ecologically significant proportion of a population' is used in the Draft referral guideline for 14 birds listed as migratory (DoE 2015), defined as 100 individuals (1%) and 10 individuals (0.1%).

There are four historical records within the Study area, between 3 – 8 km from the Project area. Four individuals do not meet the lower threshold (0.1%; 10 individuals) or 1% (100 individuals) upper threshold for an ecologically significant proportion of the population.

8.1.1.5 Significant impact assessment

The SIA for the white-throated needletail was undertaken in accordance with the *Significant Impact Guidelines 1.1* and *Draft Referral guidelines for 14 birds listed as migratory species under the EPBC Act*. The Project is **unlikely** to result in a significant impact on the white-throated needletail (Table 8.2).

Table 8.2 Significant impact assessment - White-throated needletail

Significant impacts criteria	Assessment – <i>Hirundapus caudacutus</i>
Lead to a long-term decrease in the size of an important population of the species	Unlikely The concept of 'ecologically significant proportion of the population' is used for species including the white-throated needletail, given the species capacity for large-scale migration. The species was not observed above the Project area, the species has already migrated to the Northern hemisphere for breeding purposes. There are four historical records within the Study area, between 3-8 km from the Project area. While no historical records occur within the Project area, suitably potential habitat occurs above the entire Project area, and this contains suitable habitat for the species foraging activities. Four individuals do not meet the lower threshold (0.1%; 10 individuals) or 1% (100 individuals) upper threshold for an ecologically significant proportion of the population. Additionally, the white-throated needletail is predominantly aerial and does not have typical associations with habitat (DCCEEW 2024c). In accordance with DoE (2015), the Project will not result in serious disruption to the 0.1% or 1% threshold of an ecologically significant proportion of a population, i.e. not predicted to have annual mortality rates or affect breeding cycles of the upper or lower threshold. It is considered unlikely that the Project will lead to a long-term decrease in the size of a population of White-throated needletail.
Reduce the area of occupancy of an important population	Unlikely The Project will not impact suitable roosting habitat for the species. Given the species forages aerially, the Project will not impact on suitable foraging habitat. The construction and operation of the Project is unlikely to result in a permanent disappearance of the species from a 2 km x 2 km area, (i.e. the scale at which area of occupancy is assessed under the EPBC Act (TSSC 2021) and the IUCN Standards and Petitions Committee 2022).
Fragment an existing population into two or more populations	Unlikely The white-throated needletail is highly mobile and is not directly dependent on habitats at ground level and has the capacity to fly over cleared and fragmented areas. No foraging

Significant impacts criteria	Assessment – <i>Hirundapus caudacutus</i>
	habitat will be impacts by the Project. No roosting habitat is considered to occur within the study area. As such, the Project has no capacity to fragment the population into two or more populations.
Adversely affect habitat critical to the survival of a species	Unlikely The white-throated needletail does not have conventional habitat requirements. While the Project will not impact potential roosting habitat critical to the survival of the species. Accordingly, the minimal vegetation clearing required for the Project is not considered likely to adversely impact habitat critical to the survival of the species.
Disrupt the breeding cycle of an important population	Unlikely The white-throated needletail is a non-breeding migrant species to Australia, habitat within Australia is only used for foraging and roosting purposes. The species breeds in Asia, from central and south-eastern Siberia and Mongolia, east to the Maritime Territories of Russia, Sakhalin and the Kuril Islands and south to northern Japan and north-eastern China (DCCEEW 2024b). As such, the Project will not disrupt the breeding cycle of an important population of this species.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely As detailed above, the white-throated needletail does not have conventional habitat requirements. Roosting habitat is not considered to be present within the study area. Additionally, foraging habitat for the species will not be impacted by the Project given the species forages aerially. This species is ubiquitous, foraging over all habitat types throughout its distribution. Accordingly, vegetation clearing for the Project will not modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to an vulnerable species becoming established in the endangered species' habitat	Unlikely No invasive species are identified as threats to the white-throated needletail. The Project is unlikely to cause any increase in invasive species that could threaten the local abundance of the white-throated needletail.
Introduce disease that may cause the species to decline	Unlikely Disease is not identified as a key threat to the white-throated needletail. This species' almost exclusively aerial habit means it is unlikely to have many opportunities to contract diseases that could threaten the viability of local populations. The Project is therefore unlikely to introduce disease that cause the species to decline.
Interfere substantially with the recovery of the species	Unlikely The Commonwealth has not prepared a national recovery plan for the species. Conservation actions have been described in the Commonwealth conservation advice for the species (TSSC 2019). There is on field-based conservation action described as 'important habitats in Australia are identified and protected.' While the Study area and the region has potential to provide suitable roosting habitat for the species, the Project will not impact potential roosting habitat. The Project is considered unlikely to substantially interfere with the recovery of the species.

8.1.2 Koala

8.1.2.1 Species ecology

The koala (*Phascolarctos cinereus*) is listed as endangered under the EPBC Act.

Koalas are widespread across Queensland, New South Wales and the Australian Capital Territory. Within Queensland, this species occurs in patchy and often low-density populations across many different bioregions. This species is most often sighted in South East Queensland; however, it is reported from northern Einasleigh Uplands and Wet tropics bioregions through to southern Mulga lands, Brigalow belt north and Brigalow belt south regions. Koalas in Queensland inhabit a number of woodlands adjacent to waterbodies. These populations are often in low density.

Koala habitat includes both coastal and inland areas that are typically characterised by Eucalypt forests and woodlands as their primary food source. Requirements for this species include sufficient trees for food, shelter and reproduction as well as avoidance of predators. The species is highly mobile, constantly moving throughout its'

range to access new food resources. Koala habitat typically includes areas of forest and woodland dominated by *Eucalyptus* species (Melzer et al. 2000), however koalas are known to utilise scattered roadside and rail vegetation, paddock trees and safe intervening ground areas that provide safe passage for the species (DAWE 2022a). The species is not only reliant on specialist foraging habitat but areas of suitable sheltering habitat that provides opportunities to rest and thermoregulate (DAWE 2022b).

Key threats to the koala are listed in the Conservation Advice (DAWE, 2022) as:

- Loss of climatically suitable habitat
- Increased intensity/frequency of drought
- Increased intensity/frequency of heatwaves
- Increased intensity/frequency of bushfire
- Declining nutritional value of foliage
- Clearing and degradation of koala habitat
- Encounter mortality with vehicles and dogs
- Koala retrovirus.

8.1.2.2 Suitable habitat

Suitable habitat for the koala was confirmed within the Project area. Foraging habitat occurs in the Mitchell Road reserve, in the form of eucalypt woodland. Habitat in this location is somewhat isolated, with marginal connectivity to larger areas of suitable habitat in the broader landscape. There is also a very small portion of eucalypt woodland on the south-west corner of the Project footprint, which also supports foraging for the koala and is connected to larger, contiguous corridors of remnant habitat. These areas contain canopy species known to be locally important koala habitat trees or ancillary habitat trees (Youngentob 2021). A total of 0.95 ha of suitable foraging habitat occurs within the Project footprint.

Suitable dispersal habitat occurs in areas of historically cleared and disturbed pasture grassland containing isolated trees, dominated by trees not listed as ancillary habitat trees or locally important koala habitat trees (Youngentob 2021). These areas were considered suitable for the koala to use as dispersal pathways, however, did not provide suitable density of locally important koala habitat trees to meet essential lifecycle functions such as foraging. Additionally, while the species may utilise these areas for dispersal, known threats occur within the project footprint and broader region, being the presence of wild dogs and vehicle traffic associated with the established roads. A total of 20.18 ha of suitable dispersal habitat occurs within the Project footprint.

Suitable habitat for the koala is detailed below in Table 8.3. Suitable habitat for the koala is mapped in Figure 8.1.

Table 8.3 *Suitable koala habitat within the Project footprint and Project area*

Habitat type	Project footprint (ha)	Project area (ha)
Suitable dispersal	20.18	111.22
Suitable foraging	0.95	10.05

8.1.2.3 Important population

There is no current formal definition of nationally important koala populations (DAWE 2022a; DAWE 2022b). Current efforts to assess and identify important populations across the range are hindered by a lack of comprehensive, unbiased data (DPIE 2020; DAWE 2022b). However, important subpopulations from a conservation perspective are likely to include those that:

- have the potential to act as source populations to adjacent areas of suitable, or potentially suitable, habitat;
- exist in areas of climatically suitable refugia during periods of environmental stress including droughts, heatwaves, and long-term climate change;
- are genetically diverse;
- are disease free and/or exhibit low rates of infection with important pathogens;
- contain genes which may confer adaptation to current and future environmental stressors;

- are geographical or environmental outliers within the species range.

Four genetically distinct populations have been identified, with all koalas in Queensland and those in northern New South Wales (north of the Clarence River Valley) representing one distinct population (DAWE 2022a). Additionally, the population in South-East Queensland has the potential to act as source populations to adjacent areas of suitable or potentially suitable habitat (DAWE 2022a). The population within the Project area is considered an important population.

8.1.2.4 Habitat critical to the survival of the species

As per the Conservation Advice (DAWE 2022a), habitat critical to the survival of a species is defined as the areas that the species relies on to avoid or halt decline and promote the recovery of the species. Under the EPBC Act, the following factors and any other relevant factors may be considered when identifying habitat that is critical to the survival of koalas (DAWE 2022a). An assessment of the Project area has been made against this criteria and is presented in Table 8.4.

Table 8.4 Koala Habitat Critical to the Survival of the Species (HCSS) assessment

Key questions to ask in evaluating habitat for Koalas are:	Assessment
whether the habitat is used during periods of stress (e.g. flood, drought or fire)	The Project footprint predominantly supports cleared, open areas with very occasional scattered trees, it does not include any refuge habitat and is unlikely to be relied upon during periods of stress. The Project footprint also intersects suitable foraging habitat along Mitchell Road. However, this habitat is surrounded by cleared areas and supports key threats to the species (i.e. feral dogs) and is considered unlikely to be used for refuge during periods of stress.
whether the habitat is used to meet essential life cycle requirements (e.g. foraging, breeding, nesting, roosting or social behaviour patterns)	The Project area supports suitable foraging and dispersal habitat. The Project footprint is likely to support essential life cycle requirements (foraging).
the extent to which the habitat is used by important populations.	The population within the Project area is considered an important population. Accordingly, the suitable habitat is considered likely to be used by important populations of koala for foraging and dispersal purposes.
whether the habitat is necessary to maintain genetic diversity and long-term evolutionary development	The Project footprint supports 21.13 ha of suitable dispersal and foraging habitat. Existing foraging habitat and dispersal pathways will be maintained in local and regional surrounding areas. The area is unlikely to be necessary for maintaining genetic diversity.
whether the habitat is necessary for use as corridors to allow the species to move freely between sites used to meet essential life cycle requirements	The Project footprint is generally cleared or supports isolated patches of habitat. While the Project footprint may support dispersal, it would not be considered as a necessary corridor to facilitate movement. Higher-quality habitat and important movement corridors occur in the broader area And the Project will not impact these areas.
whether the habitat is necessary to ensure the long-term future of the species or ecological community through reintroduction or re-colonisation	The Project footprint will not impact extensive tracts of suitable dispersal and foraging habitat. The Project footprint will impact 20.18 ha of suitable dispersal and 0.95 ha of suitable foraging habitat. The Project footprint is surrounded by higher-quality habitat, particularly to the south which would likely be important for the koala in the local area. The suitable habitat within the Project footprint is unlikely to be necessary to ensure the long-term future of the species.
any other way in which habitat may be critical to the survival of a listed threatened species.	The Project footprint supports suitable dispersal and foraging habitat considered critical to the species survival.
Conclusion	Likely to be HCSS

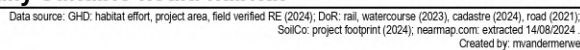
8.1.2.5 Significant impact assessment

The SIA for the koala was undertaken in accordance with the Significant Impact Guidelines 1.1. The Project is **likely** to result in a significant residual impact (Table 8.5).

Table 8.5 Significant impact assessment – Koala

Significant impacts criteria	Assessment – <i>Phascolarctos cinereus</i>
Lead to a long-term decrease in the size of a population	Unlikely Koalas are known to occur in the Study area and the Project will result in the removal of 20.18 ha of isolated trees in cleared land supporting suitable dispersal habitat and 0.95 ha of suitable foraging habitat in the Project footprint. While there will be disturbance to suitable dispersal and foraging habitat, dispersal pathways to areas of existing foraging and dispersal habitat outside the Project footprint will remain. Therefore, it is considered unlikely that the Project will lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of the species	Unlikely The Project will result in a direct loss of 21.13 ha of predicted critical habitat for the koala. Substantial koala habitat will be avoided in areas adjacent to the project footprint, particularly remnant vegetation within the study area. Once operational, the Project will have negligible impact on the species, forming minimal barrier to koala movement. Koalas are expected to persist locally through the operation phase of the Project. As such the loss of koala habitat will not cause the species to disappear from any 2 km x 2 km area, (i.e. the scale at which area of occupancy is assessed under the EPBC Act (TSSC 2021) and the IUCN Standards and Petitions Committee 2022).
Fragment an existing population into two or more populations	Unlikely The Project will result in a direct loss of 21.13 ha of predicted critical habitat for the koala. However, the Project disturbance is non-linear and confined to the footprint of the facility. Dispersal pathways and foraging habitat occur in surrounding areas and the facility will not represent a barrier to movement that will fragment existing population(s). Therefore, it is unlikely that the Project will result in the fragmentation of an existing population.
Adversely affect habitat critical to the survival of a species	Likely Areas of foraging habitat within the Project footprint are likely to constitute habitat critical to the survival of the species. Therefore, the Project is likely to adversely affect habitat critical to the survival of koalas, through direct clearing.
Disrupt the breeding cycle of a population	Unlikely The Project is not expected to disrupt the breeding cycle of the population. The koala breeding season is generally between September and March, with females giving birth to a single young between October and May. During the breeding season, males actively seek females and koala movements are more extensive. Without mitigation, the Project could lead to an increased risk of vehicle strike. Traffic volume, speed and visibility influence the koala collision rate. Prevett et al. (1995) found that road kills occurred where vehicle speeds exceeded 80 km/hr and where wider habitat corridors or linear forests occurred on both sides of the road. Potential impacts will be mitigated through implementation of on-site speed limits and signage in koala habitat areas. Clearing within koala habitat areas will be planned to occur outside of peak breeding season (if possible) and standard best practice sequential clearing using koala spotters will be exercised.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely The Project will directly impact 21.13 ha of critical koala habitat. Although clearing will cause minor reduction in the area of available habitat, the extent of habitat disturbance is not likely to decrease the availability or quality of habitat available to the local population to the extent that the species will decline. The Project footprint has been sited to avoid most areas of suitable foraging habitat, with exception to Mitchell Road, minimising the loss of further foraging habitat. Furthermore, although clearing and construction activities (e.g. machinery-generated noises) are likely to significantly increase the level of noise at a local scale, these impacts are anticipated to be short-term and will not be continued during operation.
Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat	Unlikely Invasive species including European foxes already occur throughout the investigation areas. It is likely that key threats including the wild dog occur within the Project area. While new infrastructure has the potential to increase the risk of wild dog attack on koala by attracting and facilitating regional movement of dogs, these threats are likely already

Significant impacts criteria	Assessment – <i>Phascolarctos cinereus</i>
	present within the receiving environment. Project activities will be managed by a weed and pest management plan and it is unlikely that any new weeds or pests will be introduced that are not already well established. Therefore, the Project is unlikely to result in the introduction of invasive species that are harmful to koala.
Introduce disease that may cause the species to decline	Unlikely The Project is not anticipated to introduce diseases that may cause the species to decline. Stress may lead to an increase in the expression of chlamydia in koalas, however the implementation of mitigation measures such as sequential clearing, site speed limits, use of experienced spotter-catchers during clearing and the requirement to allow koalas to self-disperse will reduce disturbance-related stress and risk of disease. Additionally, the species is susceptible to <i>Phytophthora cinnamomi</i> due the soil fungus's ability to infect eucalypt species. Biosecurity requirements (e.g. weed and seed declarations) will be implemented for the Project, and thus, this risk has been assessed as low.
Interfere with the recovery of the species	Unlikely The Commonwealth National Recovery Plan for the koala (DAWE 2022b) identifies six recovery action required for the effective management and conservation. Two of these actions are field-based actions and of relevance to the Project. These being: – Strategy 5: Strategic habitat restoration – Strategy 6: Active metapopulation management The Project is unlikely to interfere substantially with either of these recovery actions. The Project will result in the clearance of 21.13 ha of predicted critical koala habitat. The Project will result in minor loss of habitat. However, the project footprint has been largely sited in historical cattle pasture, this will pose limited fragmentation or barrier to the movement of koalas as the access tracks will not be fenced. Koala movement will be considered in designs, including following the Queensland Government's guidelines for koala-friendly fencing where fencing is required around construction areas and infrastructure. Based on the small impact footprint, the Project is unlikely to create a permanent barrier to local movement. The Project is not expected to have a measurable impact on local dog numbers or the subsequent frequency of dog attacks on koalas. The Project will contribute to the management of pest fauna through the implementation of a Weed and Pest Management Plan, that will include targeted measures for the control of wild dogs in the local region.



8.1.3 Grey-headed flying fox

8.1.3.1 Species ecology

The grey headed flying fox (*Pteropus poliocephalus*) is listed as vulnerable under the EPBC Act.

The grey headed flying fox occurs from Rockhampton, Queensland through to Melbourne, Victoria. Only small proportions of this range are utilised at a time as this species selectively forages where food is available. Due to this, patterns of occurrence vary from season to season and between years (DAWE 2021). The grey-headed flying fox requires foraging resources and roosting sites. This species is both a frugivore and nectarivore with foraging occurring throughout rainforests, open forests, and closed and open woodlands. This species often feeds on commercial fruit crops and introduced tree species (DAWE 2021). The primary food source is blossoms from *Eucalyptus* and similar genera but also forages on rainforest fruits. Roosting of this species occurs in aggregations of various sizes. Roost sites are typically located around water including lakes, rivers or near the coast. Vegetation of these sites include rainforest patches, mangroves and riparian vegetation but they will also use highly modified vegetation. The species is highly mobile and can fly as far as 40 km to feed (DAWE 2021).

Key Threats to the grey headed flying fox are listed as (DAWE 2021):

- Habitat loss
- Camp disturbance
- Mortality in commercial fruit crops
- Heat stress
- Entanglement in netting and barbed wire fencing
- Climate change
- Bushfires
- Electrocution on power lines
- Public misunderstanding of disease risk.

8.1.3.2 Suitable habitat

Suitable grey-headed flying-fox habitat was confirmed within the Project area. Suitable foraging habitat (considered habitat critical to the survival of the species) occurs within the Project footprint and wider Project area, consistent with the presence of critical spring-winter foraging resources where *E. tereticornis*, *C. citriodora* and *E. siderophloia* are present, which are foraged reliably during winter. Suitable foraging habitat occurs along the extent of Mitchell Road, and as isolated trees within the Project footprint, across a total of 1.17 ha. Suitable habitat occurs across 10.47 ha within the Project area. Other areas of critical habitat occurs in the Project area, to the east and west, containing suitable foraging resources. Potentially suitable habitat is mapped in Figure 8.2. No grey-headed flying-fox roosts were found to occur within the Project area.

8.1.3.3 Important population

There is no formal definition of important populations for the grey-headed flying-fox. Due to the species' extensive range and movement between camps, the national population is considered a single, interbreeding population (Webb and Tidemann 1995).

There is only one population, the local population is not considered to be important for key source breeding or dispersal; necessary for genetic diversity; or near the limit of the species range. Accordingly, the local population is not considered an important population.

8.1.3.4 Habitat critical to the survival of the species

Critical habitat to the survival of the grey-headed flying fox is that of important winter-spring foraging resources. These winter-spring foraging resources provide food during gestation, birth and early lactation to avoid rapid weight loss in adults and poor reproductive success (DAWE 2021). Important winter and spring vegetation communities are those that contain *Eucalyptus tereticornis*, *E. albens*, *E. crebra*, *E. fibrosa*, *E. melliodora*, *E. paniculata*, *E. pilularis*, *E. robusta*, *E. seeana*, *E. sideroxylon*, *E. siderophloia*, *Banksia integrifolia*,

Castanospermum australe, *Corymbia citriodora citriodora*, *C. eximia*, *C. maculata*, *Grevillea robusta*, *Melaleuca quinquenervia* or *Syncarpia glomulifera* (DAWE 2021).

The Project area contains *E. siderophloia*, *Corymbia citriodora citriodora* and *E. tereticornis*. Accordingly, the Project footprint contains critical habitat.

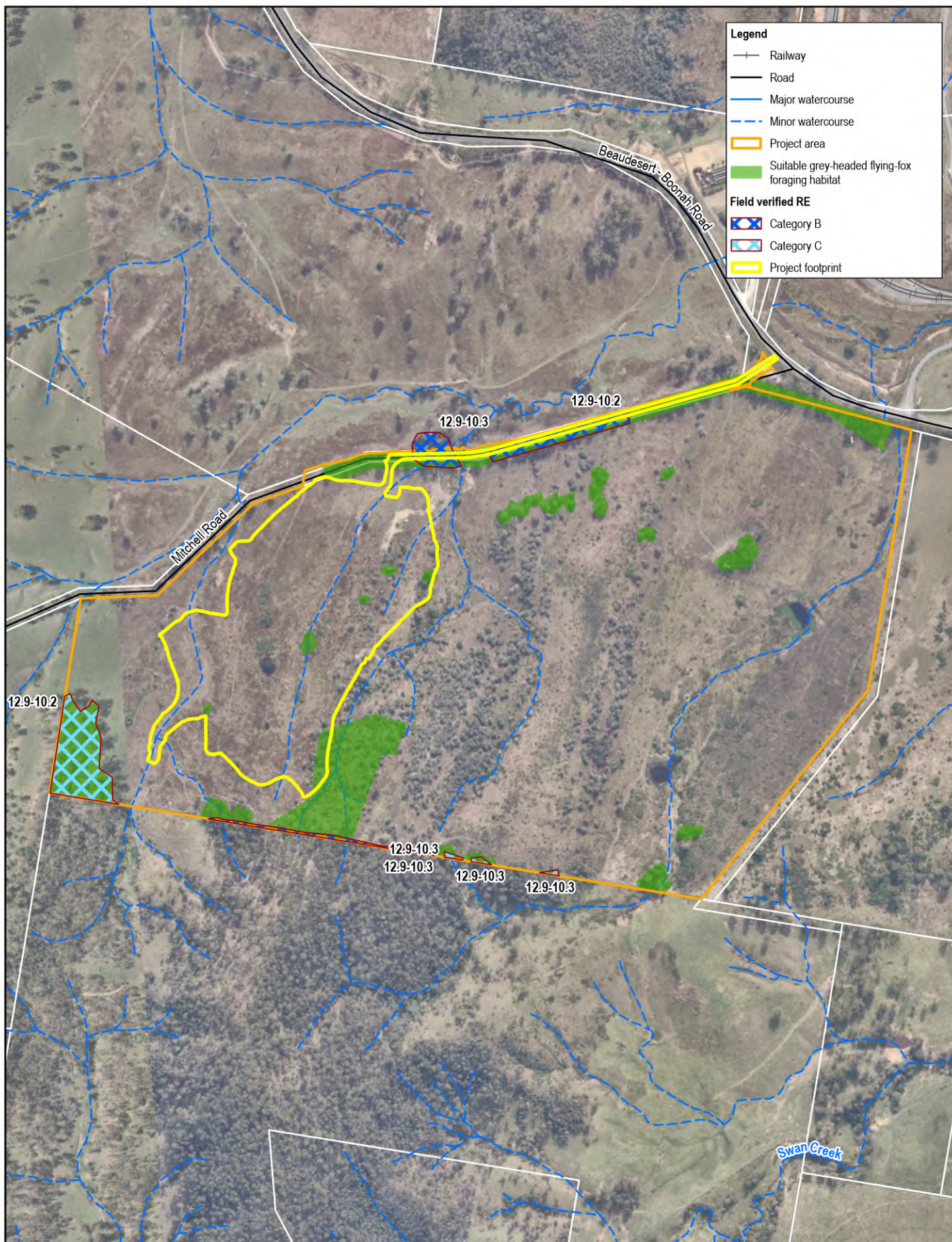
8.1.3.5 Significant impact assessment

The SIA for the grey headed flying fox was undertaken in accordance with the Significant Impact Guidelines 1.1. The Project is **unlikely** to result in a significant residual impact (Table 8.6).

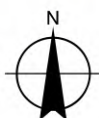
Table 8.6 Significant impact assessment – Grey-headed flying fox

Significant impacts criteria	Assessment – <i>Pteropus poliocephalus</i>
Lead to a long-term decrease in the size of an important population of the species	Unlikely The grey-headed flying-fox population is a single, interbreeding population and therefore not considered an important population under the definition outlined in the Significant impact guidelines 1.1 (DoE 2013). The Project will result in the direct loss of 1.17 ha of potential foraging habitat for the species, most of which would constitute habitat critical to the survival of the species due to the local abundance of key winter and spring flowering tree species (i.e. <i>E. tereticornis</i>). The species is highly mobile, given the presence of critical foraging habitat in the local and regional landscape, the loss of critical foraging habitat within the Project footprint is considered unlikely to lead to a long-term decrease in the size of a population.
Reduce the area of occupancy of an important population	Unlikely As detailed above, the local population is not an important population. The Project will result in the loss of 1.17 ha of habitat, most of which would constitute habitat critical to the survival of the species, however this is not considered likely to reduce the area of occupancy of the species, given the species' capacity to mobilise in response to the availability of flowering vegetation.
Fragment an existing population into two or more populations	Unlikely The grey-headed flying-fox is considered a single, mobile population (DAWE 2021). The species has an extensive range with the capacity to move large distance between camps at a national level, in response to the availability of foraging resources. The loss of habitat attributed to the Project will have localised impact that will not pose any barrier to movement. As such, impacts attributed to the Project will not fragment the population into two or more populations.
Adversely affect habitat critical to the survival of a species	Unlikely The Project will result in the loss of 1.17 ha of suitable foraging habitat, most of which constitutes habitat critical to the survival of the species. While winter-spring flowering foraging resources are important for the species, these occur widely in the local and regional landscape, including large tracts of protected vegetation, including Lamington National Park, Mount Barney National Park and others. Due to the small area of clearing and fragmented nature of habitat that occurs in the disturbance footprint, as well as the species high mobility and high availability of resources locally, the Project is considered unlikely to adversely affect critical habitat.
Disrupt the breeding cycle of an important population	Unlikely The Project is unlikely to disrupt the breeding cycle of an important population or an important grey-headed flying-fox camp. No roost or camp was observed within the Project footprint.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely The Project will result in the loss of 1.17 ha of potential foraging habitat, largely representing habitat critical to the survival of the species. The Project area is likely to be utilised for foraging, particularly during winter-spring resource bottlenecks. Accordingly, while 1.17 ha will be lost, the Project area will retain 9.3 ha of suitable foraging habitat (representing critical habitat) outside of the Project footprint. Along with the local and regional suitable habitat in the landscape, the Project is unlikely to impact the availability or quality of habitat so that the species is likely to decline,
Result in invasive species that are harmful to an vulnerable species becoming established	Unlikely

Significant impacts criteria	Assessment – <i>Pteropus poliocephalus</i>
in the endangered species' habitat	No invasive species are listed among the key threats to the grey-headed flying-fox in the Commonwealth National Recovery Plan (DAWE 2021). The Project is unlikely to introduce or encourage the spread of any invasive species that could adversely affect the species.
Introduce disease that may cause the species to decline	Unlikely The grey-headed flying-fox is susceptible to Lyssavirus. While this is generally stable in the population, exposure to significant ecological stress can cause an increase in the incidence of Lyssavirus that can cause local declines in the species (DAWE 2021). Additionally, the species is susceptible to <i>Phytophthora cinnamomi</i> due the soil fungus's ability to infect eucalypt species and cause dieback and habitat degradation. As a number of eucalypts represent habitat critical to the survival of the species, the grey-headed flying-fox has the potential to be impacted by this disease. Biosecurity requirements (e.g. weed and seed declarations) will be implemented for the Project, and thus, this risk has been assessed as low.
Interfere substantially with the recovery of the species	Unlikely The Commonwealth National Recovery Plan for the grey-headed flying-fox (DAWE 2021), and details three field-based recovery objectives: – Identify/protect/increase habitat critical to the survival of the species foraging habitat – Identify/protect/increase roosting habitat – Reduce the impact of electrocution and entanglement The Project will not impact on any suitable or known roosting habitat. The Project footprint will impact 1.17 ha of predicted foraging habitat including habitat critical to the survival. However, this is considered a low risk given the extent of habitat removal in the context of landscape-level habitat availability and the species mobility. Additionally, the Project's design and mitigation measures includes measures to reduce the risk of entanglement in fences and barbed wire, through the use of wildlife-friendly fencing or the exclusion of fencing.



Paper Size ISO A4
0 50 100 150 200
Metres



Map Projection: Transverse Mercator
Horizontal Datum: GDA2020
Grid: GDA2020 MGA Zone 56



SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

Potentially suitable grey-headed
flying-fox habitat

Project No. 12626213
Revision No. A
Date 14/08/2024

FIGURE 8-2

8.1.4 Yellow-bellied glider

8.1.4.1 Species ecology

The Yellow-bellied glider (*Petaurus australis australis*) is listed as vulnerable under the EPBC Act.

The Yellow-bellied glider has a widespread but patchy distribution from South Eastern Queensland to far South Eastern South Australia. Most of the distribution in Queensland is coastal extending from Mackay down to the New South Wales-Queensland border.

The Yellow-bellied glider occurs in eucalypt dominated woodlands and forests including both wet and dry sclerophyll forests. Abundance is highly dependent on habitat suitability. The subspecies found in Queensland prefers large patches of old growth forests for both foraging and shelter. Habitat preference for this species is towards winter-flowering smooth-barked eucalyptus, which has strip bark that provides habitat for their prey (insects). This species will also engage in sap feeding. This species is nocturnal. During the day yellow-bellied gliders shelter in hollows found in large old trees of more than one metre in diameter (DAWE 2022c).

Key Threats to the Yellow-bellied glider are listed in the Conservation Advice (DAWE 2022c) listing as:

- Habitat clearing and fragmentation
- Prescribed burns
- Timber harvesting
- Increased temperatures and changes to precipitation patterns
- Predation by European red foxes and feral cats
- Habitat degradation from feral deer
- Barbed wire fencing (entanglement).

8.1.4.2 Suitable habitat

Marginally suitable habitat was confirmed within the Project area. These areas were mapped as those that contained *Eucalyptus* or *Corymbia* genera. Suitable habitat for yellow-bellied gliders was only present along Mitchell Road within the Project footprint, and did not constitute critical habitat. This habitat was isolated and it is uncertain if accessible from higher-quality habitat south of the Project area. Marginally suitable habitat is considered to be used at a low likelihood of utilisation. Suitable habitat was mapped whether hollow-bearing trees were present or not. Other areas of higher-quality suitable habitat occur within the Project area, outside of the Project footprint, particularly in the south where habitat connected to larger tracts of remnant vegetation. A total of 1.0 ha of marginally suitable habitat occurs within the Project footprint. Suitable habitat occurs across 11.51 ha within the Project area. Potentially suitable habitat is mapped in Figure 8.3.

8.1.4.3 Important population

Important populations are considered those that are stronghold populations, ecologically or genetically distinct, research populations and other where recovery actions are being implemented (DAWE 2022c).

The population within the Project area is not considered to represent any of the definitions for the yellow-bellied glider important populations.

8.1.4.4 Habitat critical to the survival of the species

Habitat that is critical to the survival of the Yellow-bellied glider includes trees for sap feeding, large hollow-bearing trees, and large areas of forest with foraging substrates. Other habitat that is critical to the survival of this species includes large contiguous areas of floristically diverse eucalypt forest, which are dominated by winter-flowering and smooth barked eucalypts, including:

- mature living hollow-bearing trees
- areas identified as refuges under future climate change scenarios
- short or long term post fire refuges

- habitat corridors to facilitate dispersal of the species between fragmented habitat patches and enable recolonisation or movement away from threats, and
- areas with trees that have evidence of use for sap extraction.

The Project footprint contains historically disturbed land with isolated trees, as well as eucalypt woodland along Mitchell Road. The Project footprint does not constitute critical habitat as the eucalypt woodland within the Project footprint is not largely connected to other areas and is considered unlikely to be considered as habitat important for refuge or corridors. While hollows were present the area was not suitably connected, and had no evidence of sap extraction by the species.

8.1.4.5 Significant impact assessment

The SIA for the yellow-bellied glider was undertaken in accordance with the Significant Impact Guidelines 1.1. The Project is **unlikely** to result in a significant residual impact (Table 8.7).

Table 8.7 Significant impact assessment – Yellow-bellied glider

Significant impacts criteria	Assessment – <i>Petauroides volans</i>
Lead to a long-term decrease in the size of an important population of the species	Unlikely The local population does not represent an important population. The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species. Within the Project footprint, habitat only occurs along Mitchell Road eucalypt woodland and is not highly connected to other large areas of suitable habitat. The Project has the potential to cause injury and mortality during clearing. However, these risks will be mitigated through routine measures including the use of pre-clearance surveys, sequential clearing and clearing under the direction of suitably qualified and experienced spotter-catchers. At a regional scale, the Project is not considered likely to lead to a long-term decrease in the size of the species population.
Reduce the area of occupancy of an important population	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species. Larger tracts of vegetation occur to the south of the Project area and would constitute higher-quality habitat. The Project is unlikely to result in the disappearance of yellow-bellied gliders (south-eastern) from an area sufficiently large to register a reduction in the area of occupancy, as measured at the 2 km x 2 km scale recommended under the EPBC Act (TSSC 2021) and IUCN (2022). It is therefore considered unlikely that the Project will reduce the area of occupancy of an important population of the subspecies.
Fragment an existing population into two or more populations	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species. The species has a large movement capacity. The suitable habitat within the Project area is not connected to vegetation further south and west. The clearing for the Project is unlikely to fragment the population given the species ability to glide up to 120 m between trees. As a result, the Project will not cause any loss of gene transfer that would cause genetically distinct populations to form.
Adversely affect habitat critical to the survival of a species	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species. Habitat within the Project footprint does not represent critical habitat.
Disrupt the breeding cycle of an important population	Unlikely The yellow-bellied glider (south-easter) is an obligate hollow-dwelling subspecies, habitat within the Project area supports a low to moderate density of hollow-bearing trees. The subspecies reproduces seasonally, usually with a litter size of one, over varying times across its range. Home ranges are typically large, with use of areas within the home range varying through time and space. The species is likely to avoid the Project area during the construction phase. The Project is likely to have minimal impacts to the species during the operation phase. The surrounding landscape provides suitable denning habitat for the species which will not be impacted by the Project. It is unlikely that the Project will impact on the breeding cycle of the yellow-bellied glider.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat	Unlikely The Project will remove approximately 1.0 ha of marginally suitable habitat. Construction and operation impacts will be managed through mitigation and design measures to reduce the impact to the species and their habitat. The Project area is not suitably connected to

Significant impacts criteria	Assessment – <i>Petauroides volans</i>
to the extent that the species is likely to decline	large tracts of vegetation further south and west. The loss of predicted habitat is not likely to impact the species' survival in the region. As such, it is unlikely the Project will modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to an vulnerable species becoming established in the endangered species' habitat	Unlikely The Project is unlikely to result in the introduction or spread of invasive species beyond current levels. The species is known to be predated on by European foxes, which are confirmed in the Project area. The implementation of a weed and pest management plan will further reduce potential impacts of invasive species.
Introduce disease that may cause the species to decline	Unlikely Disease is not a known threat to the species. However, the species is impacted by <i>Phytophthora cinnamomi</i> due the soil fungus's ability to infect eucalypt species and cause dieback and habitat degradation. Biosecurity requirements (e.g. weed and seed declarations) will be implemented for the Project, and thus, this risk has been assessed as low. As such, the Project is unlikely to modify, destroy, remove or isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Interfere substantially with the recovery of the species	Unlikely The Conservation Advice lists proposed recovery actions, including field-based recovery priorities: – Protection from severe fire, fragmentation and timber harvesting – Known threats are mitigated – Sap trees and hollow-bearing trees are retained for connectivity. While the Project will result in the loss of 1.0 ha of marginally suitable habitat, the habitat within the Project area is not suitably connected to large tracts of vegetation further south and west. The impacts of the access track are expected to be less than the volplane distance of the species (<120 m), and will not result in fragmentation or habitat isolation. Clearing will be minimised to the Project footprint and hollow-bearing trees will be retained where possible. The Project will implement a Weed and Pest Management Plan which will address the presence of the European fox, a known threat to the species. Bushfire is described as a major threat to the species, the Project is unlikely to change the risk of bushfires within the region. Mitigation measures detailed in this report will also be implemented to minimise impacts to the species and their habitat. As such the Project is considered unlikely to interfere with the recovery of the species.

8.1.5 Greater glider

8.1.5.1 Species ecology

The greater glider (southern and central) (*Petauroides volans*) is listed as endangered under the EPBC Act.

The greater glider (southern and central) has a broad distribution across mainland eastern Australia, occurring in Queensland, NSW, the ACT and central Victoria. In Queensland the species has been recorded from Proserpine to the NSW border (DCCEEW 2022d).

The arboreal species mainly occurs in eucalypt forests and woodlands with tall, old trees and abundant hollows for denning. The availability of tree hollows is a key limiting resource for the species; they can be found in regrowth forest provided there are sufficient hollows and can be absent from otherwise suitable habitat where there are insufficient hollows present. The species is known to prefer habitat with an abundance of hollows (2-4 live den trees per 2 ha). Home ranges are typically 1-4 ha; however, may be larger (up to 19 ha) in forests on less fertile sites and in more open woodlands (DCCEEW 2022d). Suitable habitat trees are described in the *Guide to greater glider habitat in Queensland* (DES 2022), those that have been confirmed present within the Project area and align with suitable habitat trees including: *E. tereticornis*, *E. siderophloia*, *E. moluccana* and *C. citriodora*.

Key threats to the greater glider are listed in the Conservation Advice (DCCEEW 2022d) as:

- Inappropriate fire regimes
- Habitat clearing and fragmentation
- Timber harvesting

- Entanglement in barbed wire fencing
- Predation by owls, feral cats and foxes
- Competition from sulphur-crested cockatoos (*Cacatua galerita*)
- Climate change.

8.1.5.2 Potentially suitable habitat

Marginally suitable habitat was confirmed within the Project area. These areas were mapped as those that contained *Eucalyptus* or *Corymbia* genera. Suitable habitat for the greater glider was only present along Mitchell Road within the Project footprint, and did not constitute critical habitat. This habitat was isolated and it is uncertain if accessible from higher-quality habitat south of the Project area. Marginally suitable habitat is considered to be used at a low likelihood of utilisation. Suitable habitat was mapped whether hollow-bearing trees were present or not. Other areas of higher-quality suitable habitat occur within the Project area, outside of the Project footprint, particularly in the south where habitat connected to larger tracts of remnant vegetation. A total of 1.0 ha of marginally suitable habitat occurs within the Project footprint. Suitable habitat occurs across 11.51 ha within the Project area. Potentially suitable habitat is mapped in Figure 8.3.

8.1.5.3 Important population

Due to the species endangered listing, all populations of the greater glider are considered important across its range. Coastal populations are especially important for maintaining genetic diversity, as they are geographically distinct from inland subpopulations (DCCEE 2022d).

The population within the Project area is considered an important population.

8.1.5.4 Habitat critical to the survival of the species

Suitable habitat meeting any one of the below criteria is considered critical for the survival of the greater glider (regardless of current abundance or density of greater gliders, or the perceived quality of the site):

- Large contiguous areas of eucalypt forest, which contain mature hollow-bearing trees and a diverse range of the species' preferred food species in a particular region
- Smaller or fragmented habitat patches connected to larger patches of habitat, that can facilitate dispersal of the species and/or that enable recolonisation
- Cool microclimate forest/woodland areas (e.g. protected gullies, sheltered high elevation areas, coastal lowland areas, southern slopes)
- Areas identified as refuges under future climate change scenarios
- Short-term or long-term post-fire refuges (i.e. unburnt habitat within or adjacent to recently burnt landscapes) that allow the species to persist, recover and recolonise burnt areas.

The Project footprint contains historically disturbed land with isolated trees, as well as eucalypt woodland along Mitchell Road. The Project footprint does not constitute critical habitat as the eucalypt woodland within the Project footprint is not largely connected to other areas and is considered unlikely to be considered as habitat important for refuge, recolonisation or corridors. While hollows were present the area was not suitably connected.

8.1.5.5 Significant impact assessment

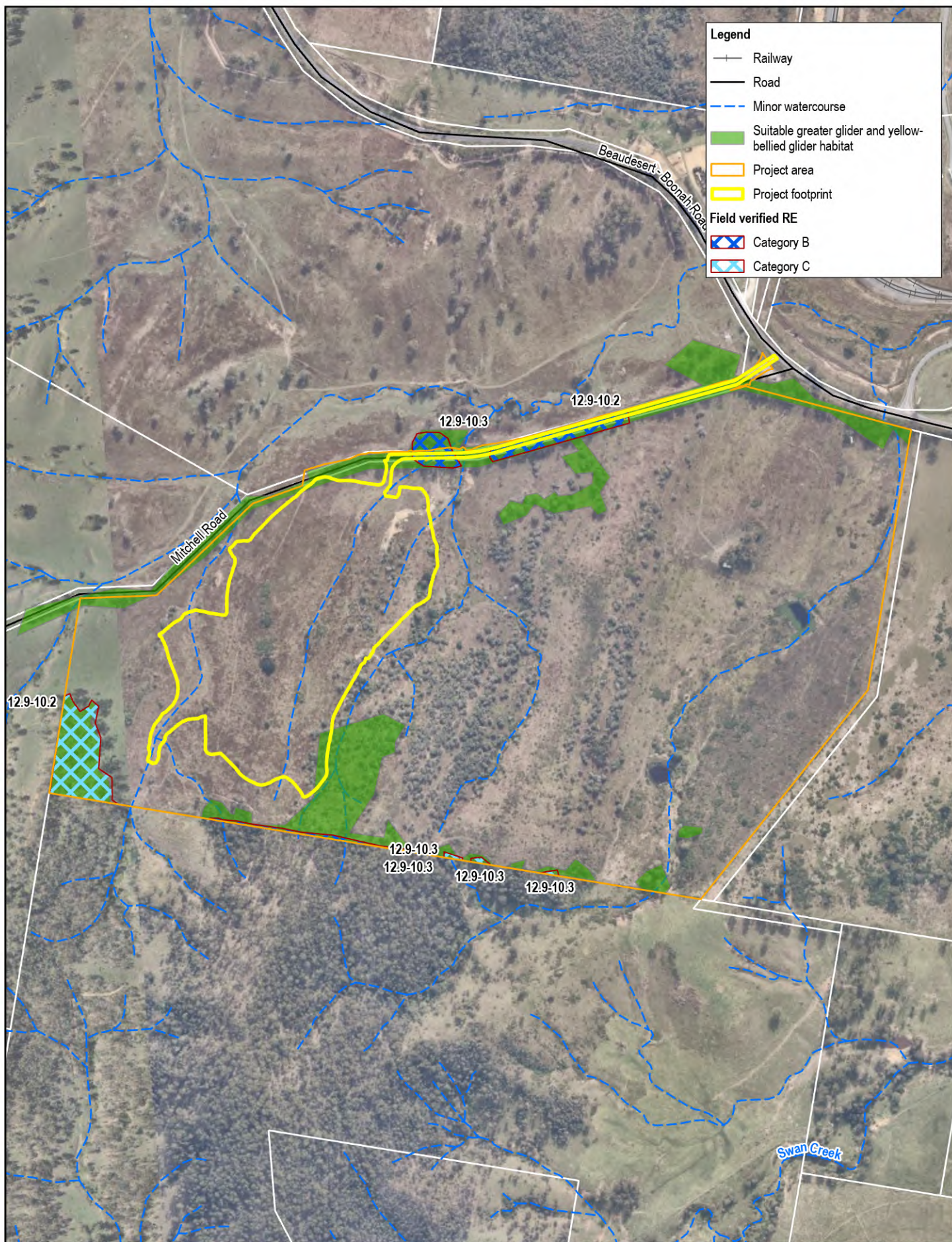
The SIA for the greater glider was undertaken in accordance with the Significant Impact Guidelines 1.1. The Project is unlikely to result in a significant residual impact (Table 8.8).

Table 8.8 Significant impact assessment – Greater glider

Significant impacts criteria	Assessment – <i>Petauroides volans</i>
Lead to a long-term decrease in the size of a population	Unlikely The local population represents an important population. The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species, which does not constitute critical habitat. Within the Project footprint, habitat only occurs along Mitchell Road eucalypt woodland. The Project has the potential to cause injury and mortality during clearing.

Significant impacts criteria	Assessment – <i>Petauroides volans</i>
	However, these risks will be mitigated through routine measures including the use of pre-clearance surveys, sequential clearing and clearing under the direction of suitably qualified and experienced spotter-catchers. At a regional scale, the Project is not considered likely to lead to a long-term decrease in the size of an important population.
Reduce the area of occupancy of the species	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species, which does not constitute critical habitat. Larger tracts of vegetation occur to the south of the Project area and would represent higher-quality habitat. The Project is unlikely to result in the disappearance of the species from an area sufficiently large to register a reduction in the area of occupancy, as measured at the 2 km x 2 km scale recommended under the EPBC Act (TSSC 2021) and IUCN (2022). It is therefore considered unlikely that the Project will reduce the area of occupancy of the species.
Fragment an existing population into two or more populations	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species, which does not constitute critical habitat. The greater glider is sensitive to habitat fragmentation due to poor dispersal ability and relatively small home ranges. The suitable habitat within the Project area is not suitably connected to vegetation further south and west. Eyre (2002) has suggested that for populations to maintain viable, they would require access to interconnected native forest patches of at least 160 km ² . The clearing for the Project is unlikely to fragment the population given the marginal habitat and the species ability to glide >100 m between trees. As a result, the Project will not cause any loss of gene transfer that would cause genetically distinct populations to form.
Adversely affect habitat critical to the survival of a species	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species, which does not constitute critical habitat. The suitable habitat within the Project footprint is not sufficiently connected further north to facilitate dispersal. Therefore, the Project is unlikely to adversely affect habitat critical to this species survival.
Disrupt the breeding cycle of a population	Unlikely The species is an obligate hollow-dwelling species, with the study area supporting low-moderate density of hollow-bearing trees in areas of mature remnant woodland areas. The suitable habitat within the Project footprint is unlikely a core breeding area of the species, given the historical disturbance and lack of connectivity further north and south of the Project area. During construction, due to the small home ranges of the species, the Project has potential to disturb the species breeding, particularly where vegetation clearing is required. Once operational, the Project is likely to have relatively limited impact on the species, with no substantial noise, light or other disturbance impacts that would limit breeding success in the local population. The local and regional landscape contains higher-quality foraging and denning habitat. Therefore it is unlikely that the Project will impact on the breeding cycle of the greater glider.
Modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	Unlikely The Project will result in the loss of 1.0 ha of marginally suitable habitat for the species, which does not constitute critical habitat. The Project footprint predominantly contains disturbed, selectively cleared pasture, bounded by eucalypt woodland to the north along Mitchell Road. The loss of this habitat is not at the magnitude that the species is likely to decline in the local region. The local and regional landscape contains large tracts of vegetation, providing higher-quality and suitably connected habitat for the species essential lifecycle requirements. Therefore, the Project is unlikely to modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Result in invasive species that are harmful to an endangered species becoming established in the endangered species' habitat	Unlikely The Project is unlikely to result in the introduction or spread of invasive species beyond current levels. The species is known to be predated on by European foxes and feral cats. The European fox has been confirmed in the Project area. The implementation of a weed and pest management plan will further reduce potential impacts of invasive species.
Introduce disease that may cause the species to decline	Unlikely Disease is not a known threat to the species. However, the species is impacted by <i>Phytophthora cinnamomi</i> due the soil fungus's ability to infect eucalypt species and cause dieback and habitat degradation. Biosecurity requirements (e.g. weed and seed declarations) will be implemented for the Project, and thus, this risk has been assessed as

Significant impacts criteria	Assessment – <i>Petauroides volans</i>
	low. As such, the Project is unlikely to modify, destroy, remove or isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline.
Interfere with the recovery of the species	Unlikely While no recovery plan has been prepared by the Commonwealth, conservation and recovery actions are detailed in the Commonwealth conservation advice (DCCEEW 2022). The field-based recovery priorities include increasing the extent, quality and connectivity of habitat required to maintain the population. The Project will result in the loss of 1.0 ha of marginally suitable habitat within the Project footprint. The removal of which will not result in the isolation of habitat for individuals. The remainder of suitable habitat within the Project area is suitably connected to large tracts of vegetation further south and west. These connected areas would provide suitable habitat in excess of the 160 km² that is considered the minimum needed to maintain viable populations. The impacts of clearing for the access track will not be wider than the maximum volplane distance of the species (>100 m). Hollow-bearing trees will be retained where possible. The risk of individual mortality or injury during construction will be addressed via the mitigation measures in the EMP and the use sequential clearing and an experienced fauna spotter-catcher during clearing. As such the Project is considered unlikely to interfere with the recovery of the species.



Paper Size ISO A4
 0 50 100 150 200
 Metres
 Map Projection: Transverse Mercator
 Horizontal Datum: GDA2020
 Grid: GDA2020 MGA Zone 56



SOILCO Pty Ltd
 Bromelton Compost Manufacturing Facility
 Terrestrial Ecology Assessment
**Potentially suitable greater glider
 (southern and central) and yellow-bellied
 glider(south-eastern) habitat**

Project No. 12626213
 Revision No. A
 Date 14/08/2024

FIGURE 8-3

8.2 State-listed species

8.2.1 Short-beaked echidna

8.2.1.1 Species ecology

The short-beaked echidna is listed as special least concern under the Queensland NC Act.

The short-beaked echidna is widely distributed throughout Australia, occurring in a broad range of habitats, wherever there is suitable availability of ant or termite prey (Augee 1998). The species has specialist nursery burrows and shelters in hollow logs but otherwise does not have any fixed nest or shelter sites (Augee 1998). Given the species broad habitat tolerances, the short-beaked echidna can occur in almost all landscapes including deserts, closed forest, woodland, rainforest, heath, cleared agricultural, grazing land and suburbia.

8.2.1.2 Potentially suitable habitat

The short-beaked echidna has broad habitat requirements occurring in any habitat where the species has access to food (Abensperg-Traun 1991). Given the species' broad habitat tolerances, all habitats in the study area constitute potential habitat and ecologically significant locations are likely to occur in areas of remnant or regrowth where there is greater resource availability and shelter. Accordingly, a total of 4.31 ha of ecologically significant locations and 121.28 ha of general habitat occurs within the Project area.

8.2.1.3 Ecologically significant locations

In accordance with Ecologically significant locations are those areas utilised for breeding, foraging, nesting, migration or resting site of a species (DSDIP 2014).

There is no formal definition for short-beaked echidna, the definition in the Queensland Government Significant Residual Impact Guideline (DSDIP 2014) applies. Ecologically significant locations are likely to occur in areas of remnant or regrowth where there is greater resource availability and shelter. Accordingly, a total of 4.31 ha of ecologically significant locations occurs within the Project area, and 0.5 ha occurs within the Project footprint.

8.2.1.4 Significant impact assessment

A significance of impact assessment has been undertaken against the Queensland 'Significant Residual Impact Guideline 2014' (DSDIP 2014). The Project is **unlikely** to result in a significant residual impact The Significant (Table 8.9).

Table 8.9 Significant impact assessment – short-beaked echidna

Criteria	Assessment
An action is likely to have a significant impact on a special least concern (non-migratory) animal wildlife habitat if it is likely that it will result in:	
A long-term decrease* in the size of a local population; or	Unlikely Construction of the Project will result in the clearance 20.60 ha of suitable general habitat for the short-beaked echidna and 0.5 ha of ecologically significant locations. Habitat for the species is widespread and abundant within the region, owing to the species broad tolerance to a range of terrestrial habitat types. Potential risks to the short-beaked echidna posed by construction of the Project will be reduced through the use of routine controls outlined in the Project EMP. Any echidnas found within the Project area during clearing and development activities will be given the opportunity to move out on their own accord. Given these factors, the Project is unlikely to lead to a long-term decrease in the size of the local echidna population.
A reduced extent of occurrence of the species; or	Unlikely As detailed above, the Project will result in a localised loss of habitat that will have limited bearing on the availability of local or regional habitat. Potential impacts associated with vegetation clearing and increased vehicle movements will be managed using mitigation measures presented in the Project EMP. As such, the Project is unlikely to reduce the extent of occurrence of the species

Criteria	Assessment
Fragmentation of an existing population; or	Unlikely Given the species broad habitat tolerances, the short-beaked echidna can occur in almost all landscapes including deserts, closed forest, woodland, rainforest, heath, cleared agricultural and grazing land and suburbia. Suitable habitat for the species is available on all sides of the Project and the localised clearing of 20.43 ha of suitable general habitat and 0.5 ha of ecologically significant locations will pose no barrier to echidna movement and will not fragment the population due to their ability to traverse localised disturbances.
Result in genetically distinct populations forming as a result of habitat isolation; or	Unlikely As detailed above, the species capacity to move locally and regionally will not be limited by any localised land clearing necessary for construction. Due to the high mobility of this species and the lack of physical barriers once constructed, this species will not be limited by any localised effects of the composting facility being present. As a result, the Project will not cause any loss of gene transfer that would cause genetically distinct populations to form.
Disruption to ecologically significant locations (breeding, feeding or nesting sites) of a species	Unlikely While disturbance to individuals may be experienced during construction, this disturbance will be short-term such that no impact on the lifecycle of this species is anticipated. Furthermore, any disturbance during construction will be highly localised and therefore unlikely to impact ecologically significant locations of this species. The operation phase of the project will not further disrupt any ecologically significant locations for this species. No long-term impact on the lifecycle of this species is anticipated. This conclusion is based on the small extent of the proposed impact.
*Long-term decrease - any decline in a local population that is greater than which would be apparent without the action being present.	

9. Conclusions

SOILCO Pty Ltd (SOILCO) are intending to develop the Bromelton Compost Manufacturing Facility on a greenfield site 6 km west of Beaudesert in the Scenic Rim Region of South East Queensland. This report has been developed to provide an overview of the terrestrial flora and fauna ecological values and constraints present within the Project area. The report identifies the presence and likelihood of occurrence of Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES), including terrestrial flora, fauna species and other matters listed under the EPBC Act and/or NC Act respectively.

Several ecological values were identified during the desktop assessment for the Project area including regulated vegetation, core koala habitat, and predicted habitat for conservation significant species. Field surveys were conducted on 10 and 12 April 2024 by suitably qualified ecologists to provide a comprehensive assessment of the ecological values within the Project area. The field survey included assessment of vegetation communities (TECs and REs), searches for conservation significant flora species, assessment of fauna habitat values, and active and opportunistic searches for fauna.

The outcome of the field-verification mapping identified two REs in the Project area. Most REs have been mapped as homogenous, however there is one mixed polygon of four REs. Of those REs confirmed on site, one (12.9-10.3) is listed as of 'Of concern' (VM Act), with the remaining all listed as 'Least concern'. No threatened ecological communities or conservation significant flora were observed within the Project area. Five Weeds of National Significance were recorded, including the prickly pear (*Opuntia* sp.) and mother of millions (*Bryophyllum delagoense*). These weeds are also Category 3 restricted matter flora species (*Biosecurity Act 2014*).

Fauna breeding places were present amongst remnant vegetation patches within the Project area, providing a range of microhabitat features for breeding, shelter and roosting habitat. Fauna breeding places were generally uncommon within the Project area owing to a lack of remnant vegetation and historical clearing. The highest value fauna habitat was found in the south-west margin of the Project area, as well as along Mitchell Road to the north outside of the Project area.

Six conservation significant fauna species were considered likely or with potential to occur, due to the presence of suitable habitat and historical records within the Study area, these species and the Project's impact to potentially suitable habitat within the Project footprint is summarised below:

- Likely to occur
 - White-throated needletail – 21.15ha of suitable habitat
 - Koala – 0.95 ha of suitable foraging habitat and 20.18 ha of suitable dispersal habitat
 - Grey-headed flying-fox – 1.17 ha of suitable foraging habitat
- Potential to occur
 - Yellow bellied glider (south-eastern) –1.0 ha of marginally suitable habitat
 - Greater glider (southern and central) –1.0 ha of marginally suitable habitat
 - Short-beaked echidna –21.15 ha of suitable general habitat

Substantial avoidance has been achieved by locating proposed infrastructure footprints in areas of existing disturbance. Mitigation measures are likely to be effective in substantially reducing the extent and magnitude of impact on terrestrial ecological values through the construction and operation phases of the Project. Significant impact assessments were undertaken for the six conservation significant species:

- **Significant residual impact unlikely** – white-throated needletail, grey-headed flying-fox, greater glider (southern and central), yellow-bellied glider (south-eastern), short-beaked echidna
- **Significant residual impact likely** – koala.

Commonwealth and State environmental offsets will be required to compensate for the anticipated significant residual impacts on the koala.

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Appendices

Appendix A

Desktop search results



Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Custom Geometry

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.



Table of Contents

Assessment Area Details 4

Matters of State Environmental Significance (MSES) 5

 MSES Categories 5

 MSES Values Present 6

 Additional Information with Respect to MSES Values Present 7

 MSES - State Conservation Areas 7

 MSES - Wetlands and Waterways 7

 MSES - Species 7

 MSES - Regulated Vegetation 9

 Map 1 - MSES - State Conservation Areas 12

 Map 2 - MSES - Wetlands and Waterways 13

 Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals 14

 Map 3b - MSES - Species - Koala habitat area (SEQ) 15

 Map 3c - MSES - Wildlife habitat (sea turtle nesting areas) 16

 Map 4 - MSES - Regulated Vegetation 17

 Map 5 - MSES - Offset Areas 18

Appendices 19

 Appendix 1 - Matters of State Environmental Significance (MSES) methodology 19

 Appendix 2 - Source Data 20

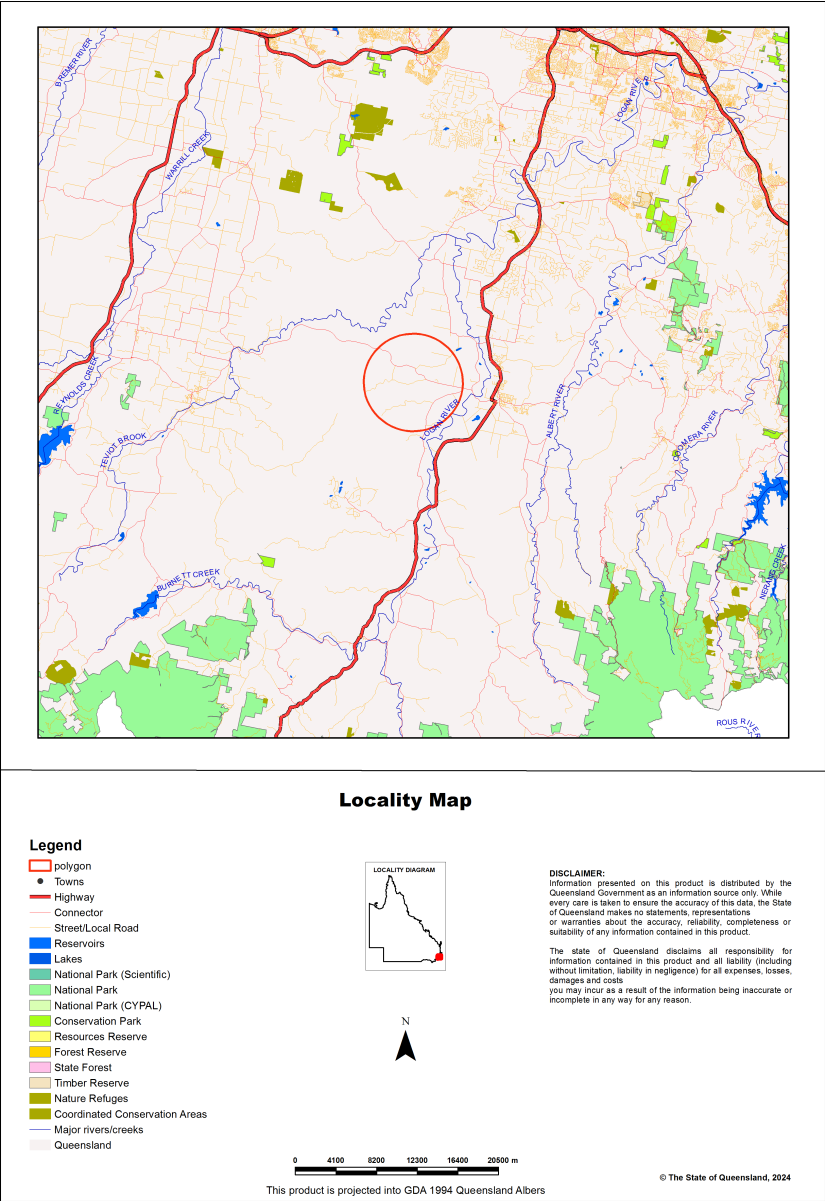
 Appendix 3 - Acronyms and Abbreviations 21

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Custom Geometry

Size (ha)	7,719.41
Local Government(s)	Scenic Rim Regional
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Logan-Albert



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;
- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;
- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;
- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;
- Regulated vegetation under the *Vegetation Management Act 1999* that is:
 - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
 - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
 - Category R areas on the regulated vegetation management map;
 - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
 - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;
- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;
- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;
- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
1c Protected Areas- special wildlife reserves	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	32.46 ha	0.4%
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways	0.0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	61.15 ha	0.8%
7b Special least concern animals	63.85 ha	0.8%
7c i Koala habitat area - core (SEQ)	1260.44 ha	16.3%
7c ii Koala habitat area - locally refined (SEQ)	0.0 ha	0.0 %
7d Sea turtle nesting areas	0.0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	123.02 ha	1.6%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	212.2 ha	2.7%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	1245.23 ha	16.1%
8e Regulated Vegetation - intersecting a watercourse	170.6 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	30.47 ha	0.4%
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	8.46 ha	0.1%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

1c. Protected Areas - special wildlife reserves

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

Natural wetlands that are 'High Ecological Significance' (HES) on the Map of Queensland Wetland Environmental Values are present.

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Values are present

7c i. Koala habitat area - core (SEQ)

Values are present

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
<i>Boronia keysii</i>	Keys boronia	V	None
<i>Calyptorhynchus lathami</i>	Glossy black cockatoo	V	Core
<i>Casuarius casuaris johnsonii</i>	Sthn population cassowary	E	None
<i>Crinia tinnula</i>	Wallum froglet	V	None
<i>Denisonia maculata</i>	Ornamental snake	V	None
<i>Euastacus bindal</i>	Mount Elliot crayfish	CR	None
<i>Euastacus binzayedii</i>		CR	None
<i>Euastacus eungella</i>		E	None
<i>Euastacus hystricosus</i>		E	None
<i>Euastacus jagara</i>	Jagara hairy crayfish	CR	None
<i>Euastacus madae</i>		CR	None
<i>Euastacus monteithorum</i>		E	None
<i>Euastacus robertsi</i>		E	None
<i>Litoria freycineti</i>	Wallum rocketfrog	V	None
<i>Litoria olongburensis</i>	Wallum sedgefrog	V	None
<i>Macadamia integrifolia</i>		V	None
<i>Macadamia ternifolia</i>		V	None
<i>Macadamia tetraphylla</i>	bopple nut	V	None
<i>Melaleuca irbyana</i>	swamp tea-tree	E	None
<i>Petaurus gracilis</i>	Mahogany Glider	E	None
<i>Petrogale coenensis</i>	Cape York rock-wallaby	V	None
<i>Petrogale penicillata</i>	brush-tailed rock-wallaby	V	Core
<i>Petrogale persephone</i>	Proserpine rock-wallaby	E	None
<i>Petrogale purpureicollis</i>	purple-necked rock-wallaby	V	None
<i>Petrogale sharmani</i>	Sharmans rock-wallaby	V	None

Species	Common name	NCA status	Presence
<i>Petrogale xanthopus celeris</i>	yellow-footed rock-wallaby (Qld subspecies)	V	None
<i>Pezoporus wallicus wallicus</i>	Eastern ground parrot	V	None
<i>Phascolarctos cinereus</i>	Koala - outside SEQ*	E	None
<i>Taudactylus pleione</i>	Kroombit tinkerfrog	E	None
<i>Xeromys myoides</i>	Water Mouse	V	None

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Threatened (endangered or vulnerable) wildlife species records

(no results)

Special least concern animal species records

Scientific name	Common name	Migratory status
<i>Tachyglossus aculeatus</i>	short-beaked echidna	None
<i>Gallinago hardwickii</i>	Latham's snipe	M-J/R/B/E

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

*Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL).
Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

<https://www.qld.gov.au/environment/plants-animals/species-list/>

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals**, **Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

<https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/>

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

<https://environment.ehp.qld.gov.au/regional-ecosystems/>

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.9-10.2/12.9-10.7/12.9-10.17a	O-subdom	rem_oc
12.9-10.3	O-dom	rem_oc
12.8.16	O-dom	rem_oc
12.3.3	E-dom	rem_end
12.8.24	E-dom	rem_end
12.3.3/12.3.7	E-dom	rem_end
12.3.8	O-dom	rem_oc
12.9-10.3/12.9-10.2	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.3.3	E-dom	hvr_end
12.8.24	E-dom	hvr_end
12.9-10.2/12.9-10.7/12.9-10.3/12.9-10.17a	O-subdom	hvr_oc
12.9-10.3/12.9-10.2	O-dom	hvr_oc
12.9-10.7	O-dom	hvr_oc
12.9-10.3	O-dom	hvr_oc
12.9-10.2/12.9-10.7/12.9-10.17a	O-subdom	hvr_oc

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Regulated vegetation map category	Map number
B	9442
C	9442
A	9442

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

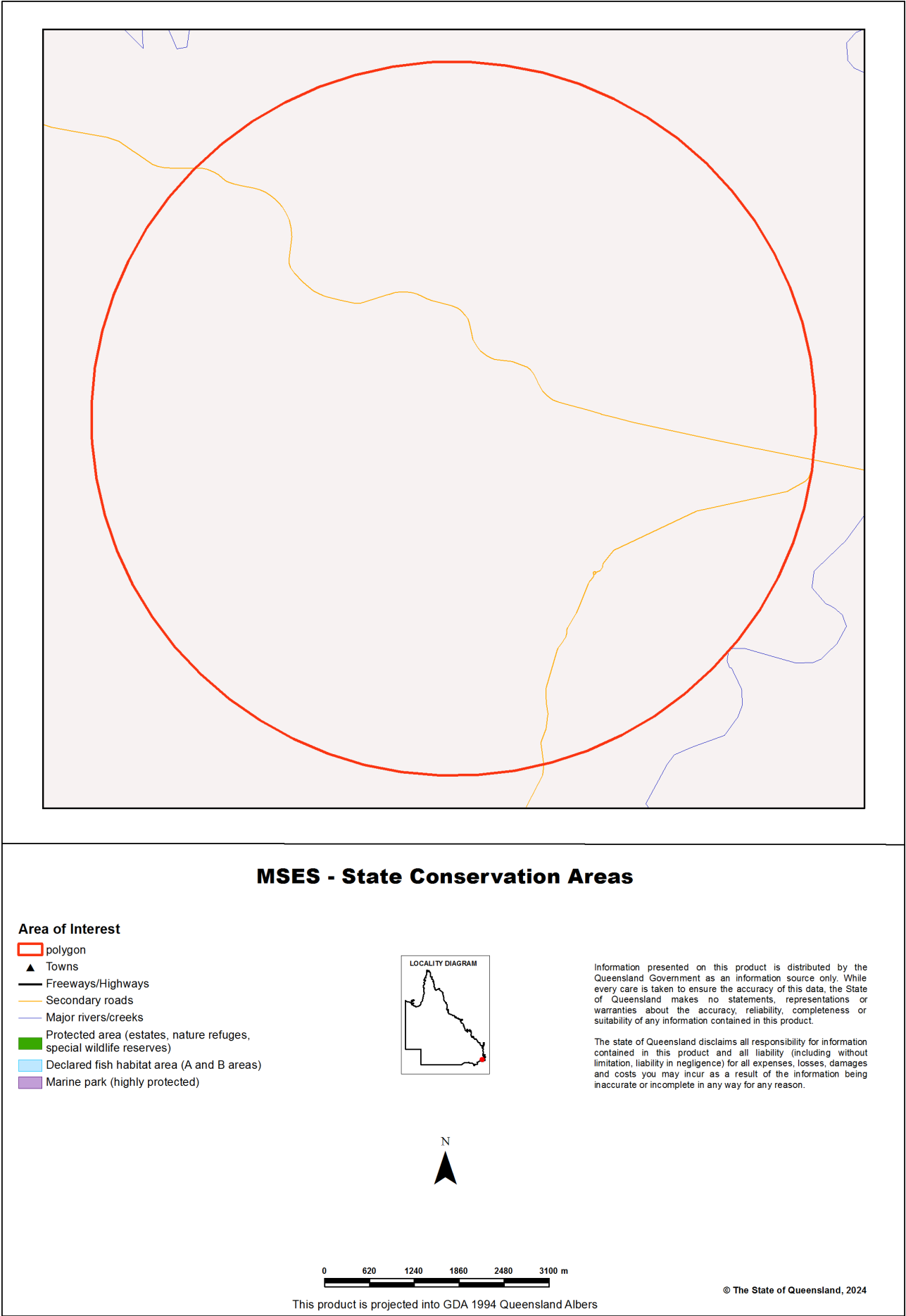
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

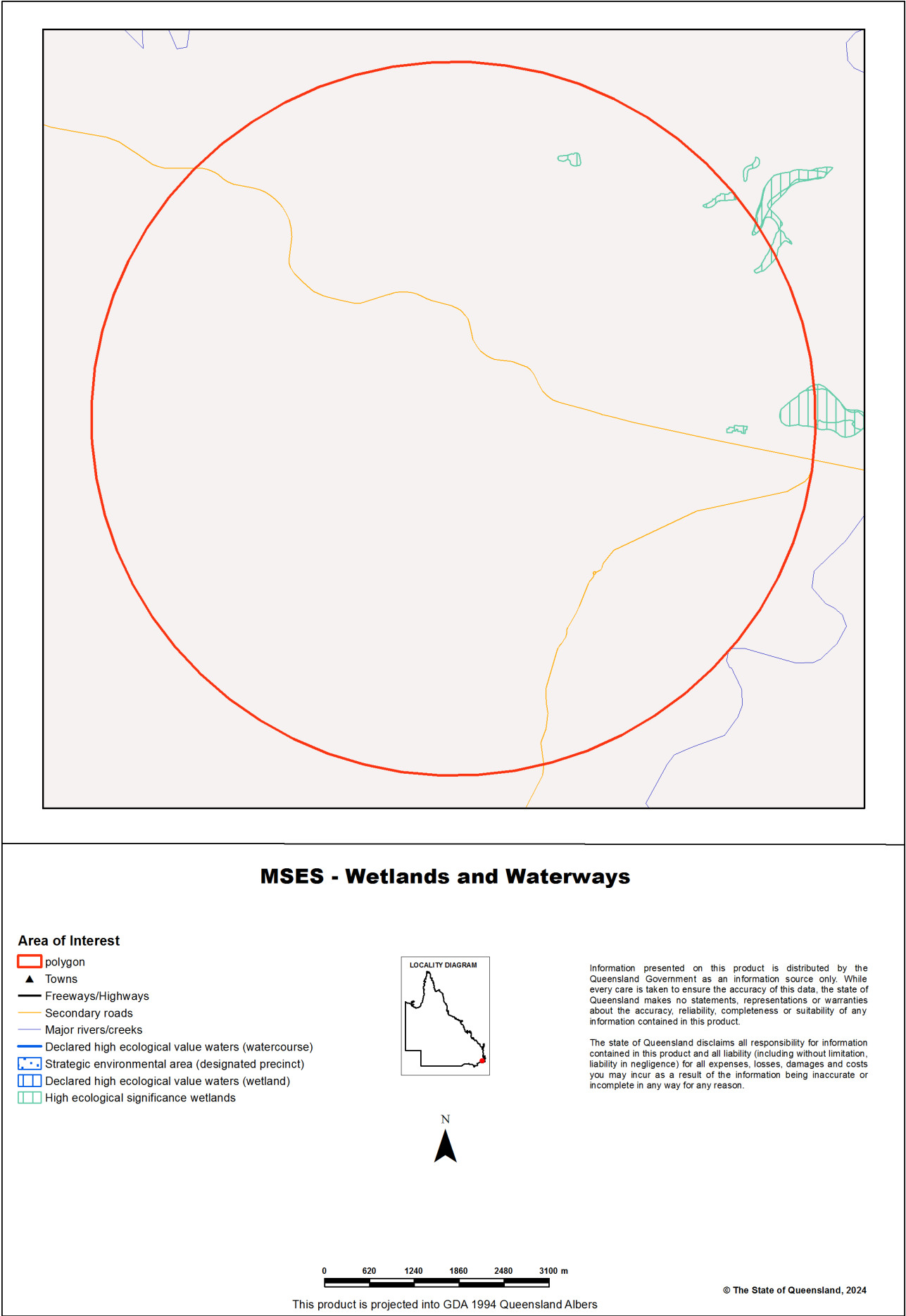
PMAV number	LOTPLAN	Agreement date
2014/007610	6WD1110	2014-10-31 00:00:00
2014/007610	33SP221032	2014-10-31 00:00:00
2014/007610	5WD1110	2014-10-31 00:00:00

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

Map 1 - MSES - State Conservation Areas



Map 2 - MSES - Wetlands and Waterways



MSES - Species
Threatened (endangered or vulnerable) wildlife and
special least concern animals

Area of Interest

- polygon
- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- ▨ Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)

LOCALITY DIAGRAM

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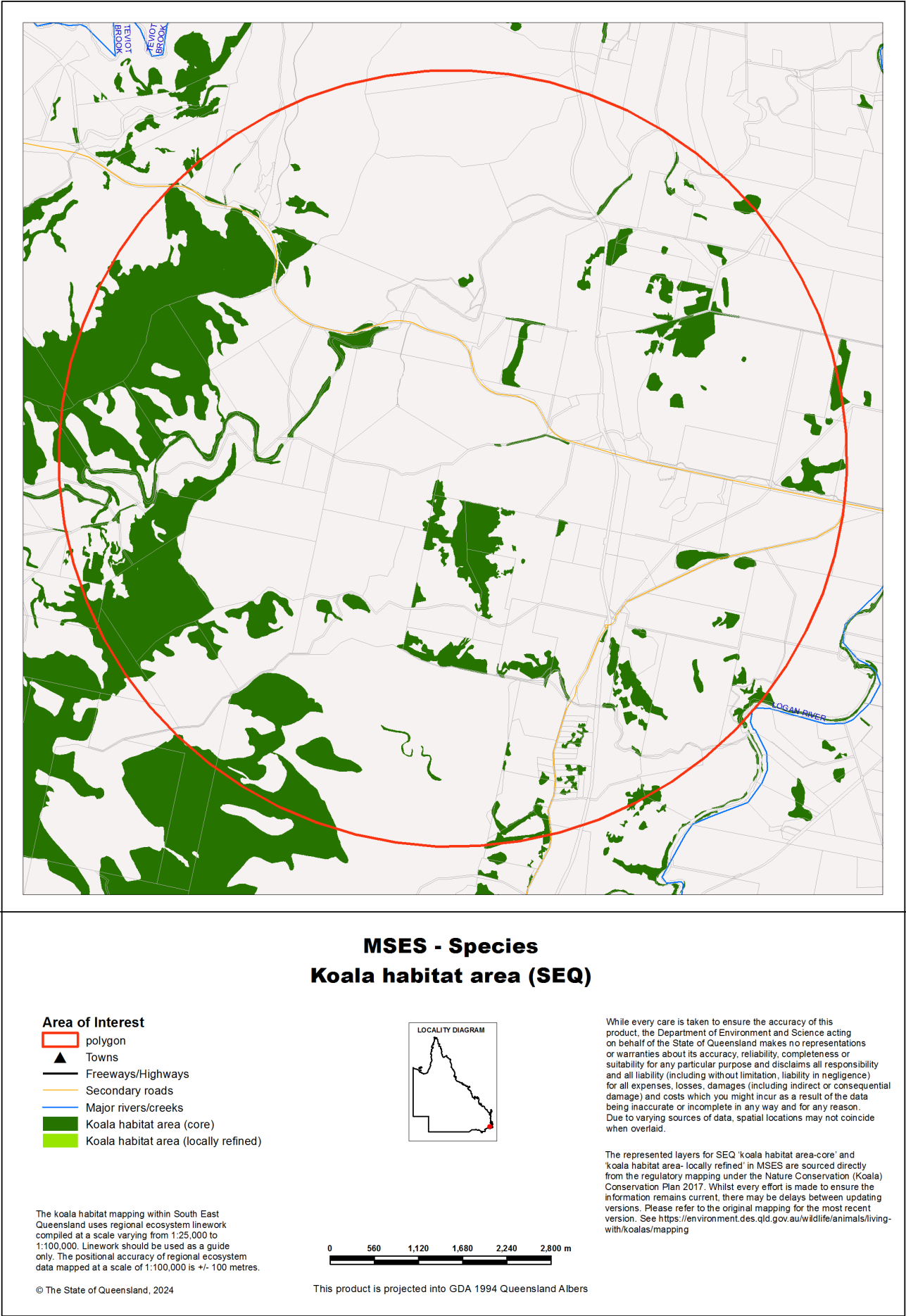
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0 620 1240 1860 2480 3100 m

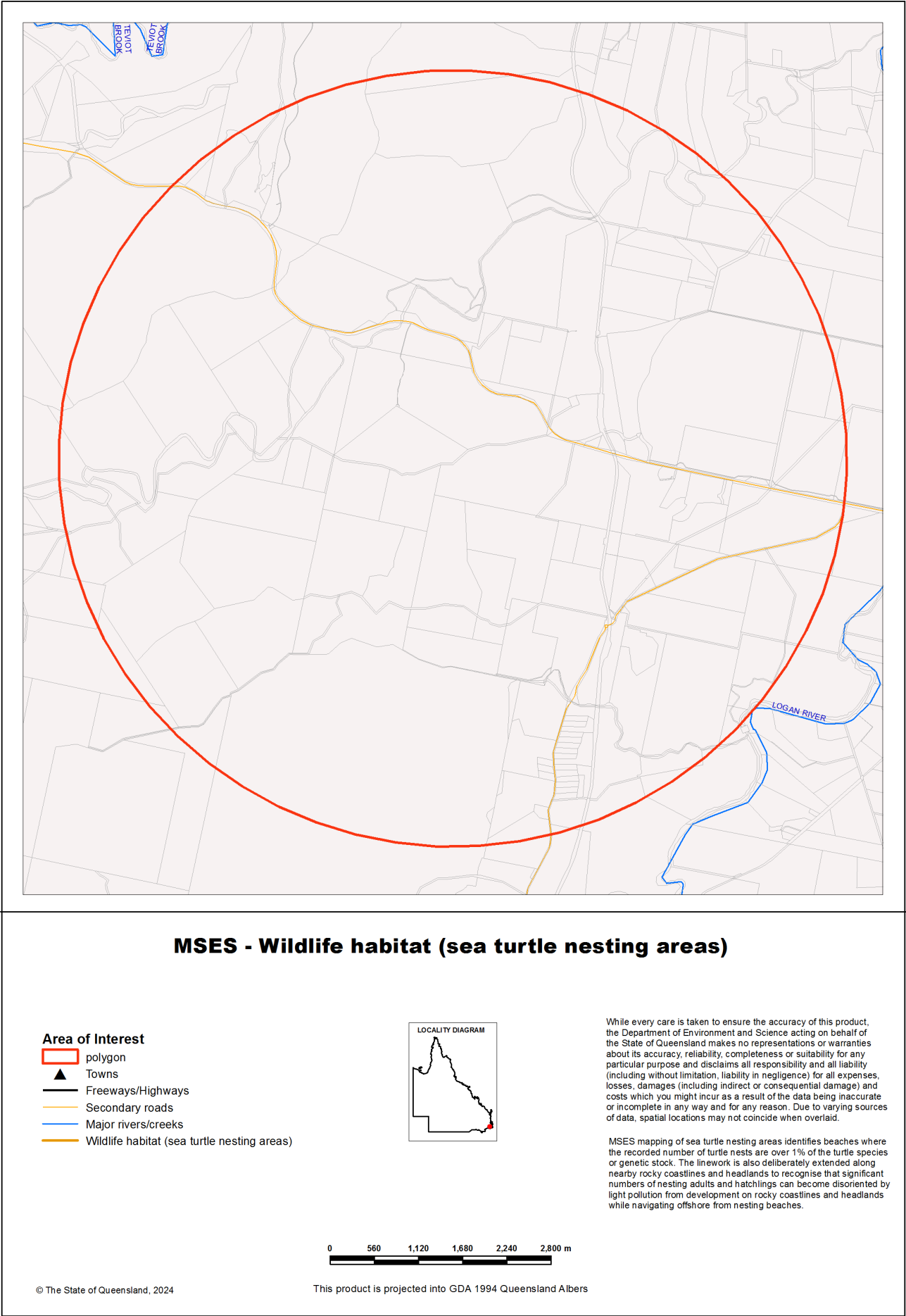
This product is projected into GDA 1994 Queensland Albers

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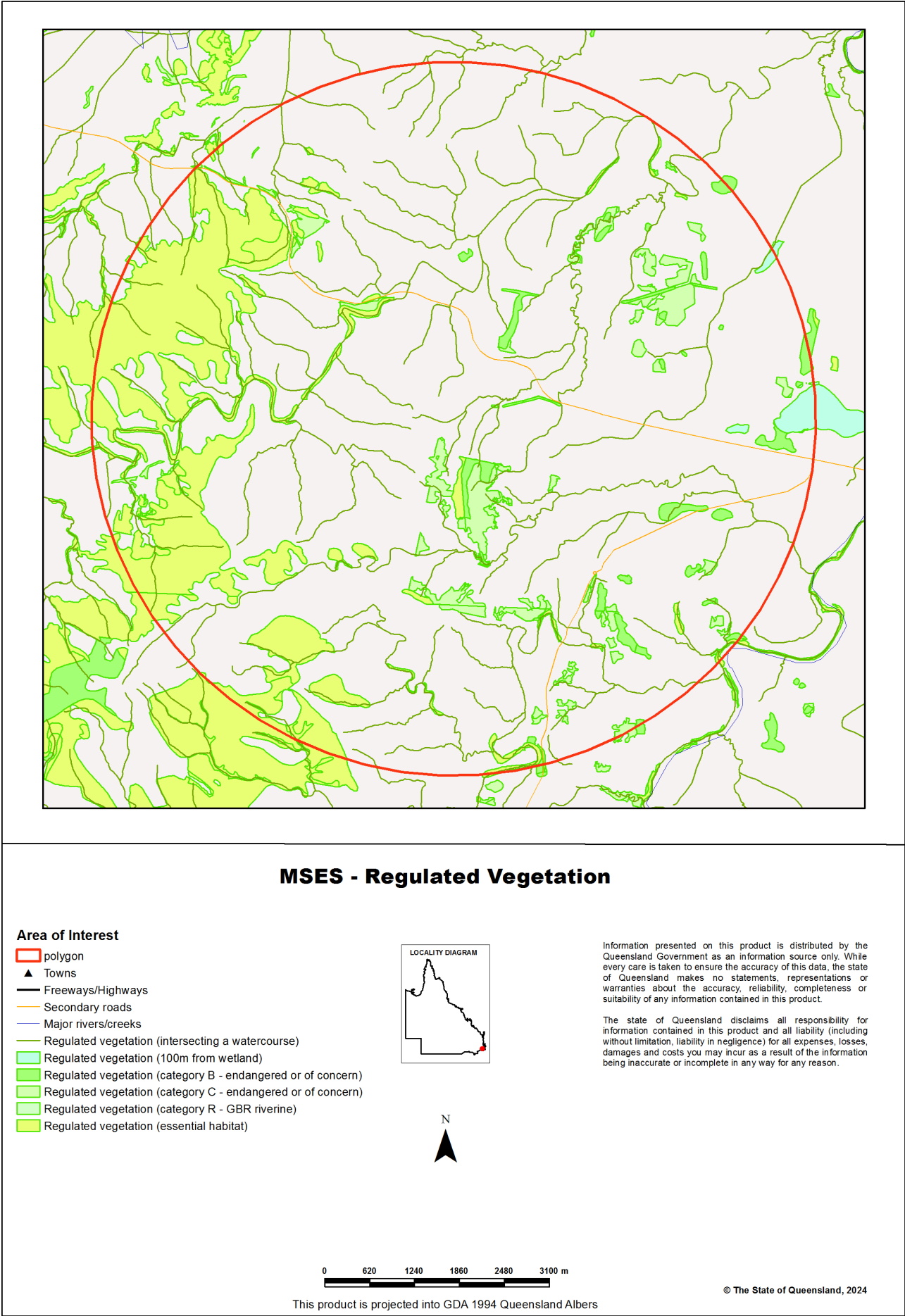
Map 3b - MSES - Species - Koala habitat area (SEQ)



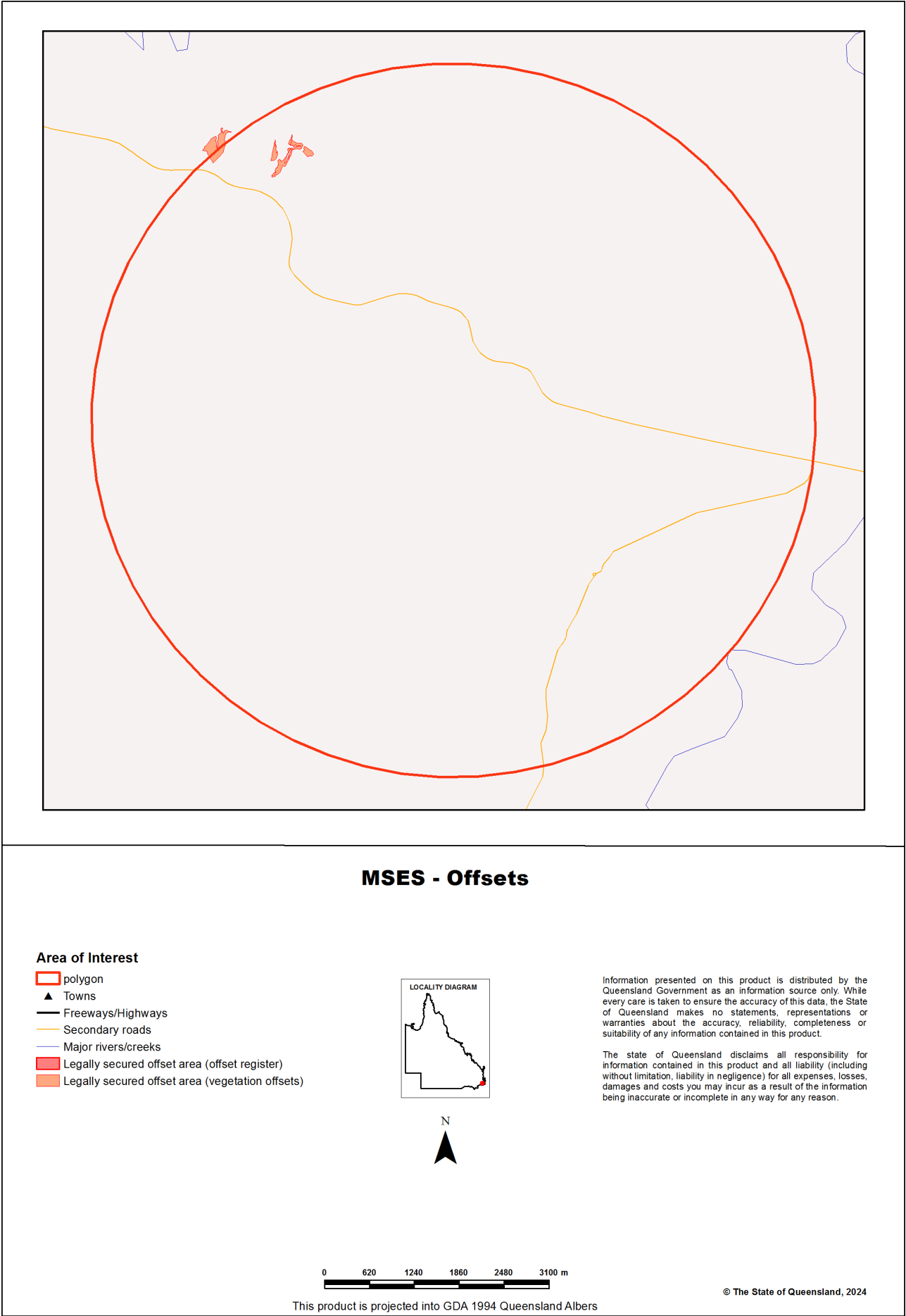
Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

<http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html> .

Appendix 2 - Source Data

The datasets listed below are available on request from:

<http://qldspatial.information.qld.gov.au/catalogue/custom/index.page>

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	current QSpatial data (http://qspatial.information.qld.gov.au)
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	- WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019 - Sea Turtle Nesting Areas records
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- <i>Environmental Protection Act 1994</i>
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- <i>Nature Conservation Act 1992</i>
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- <i>Vegetation Management Act 1999</i>

WildNet Records

Pest List

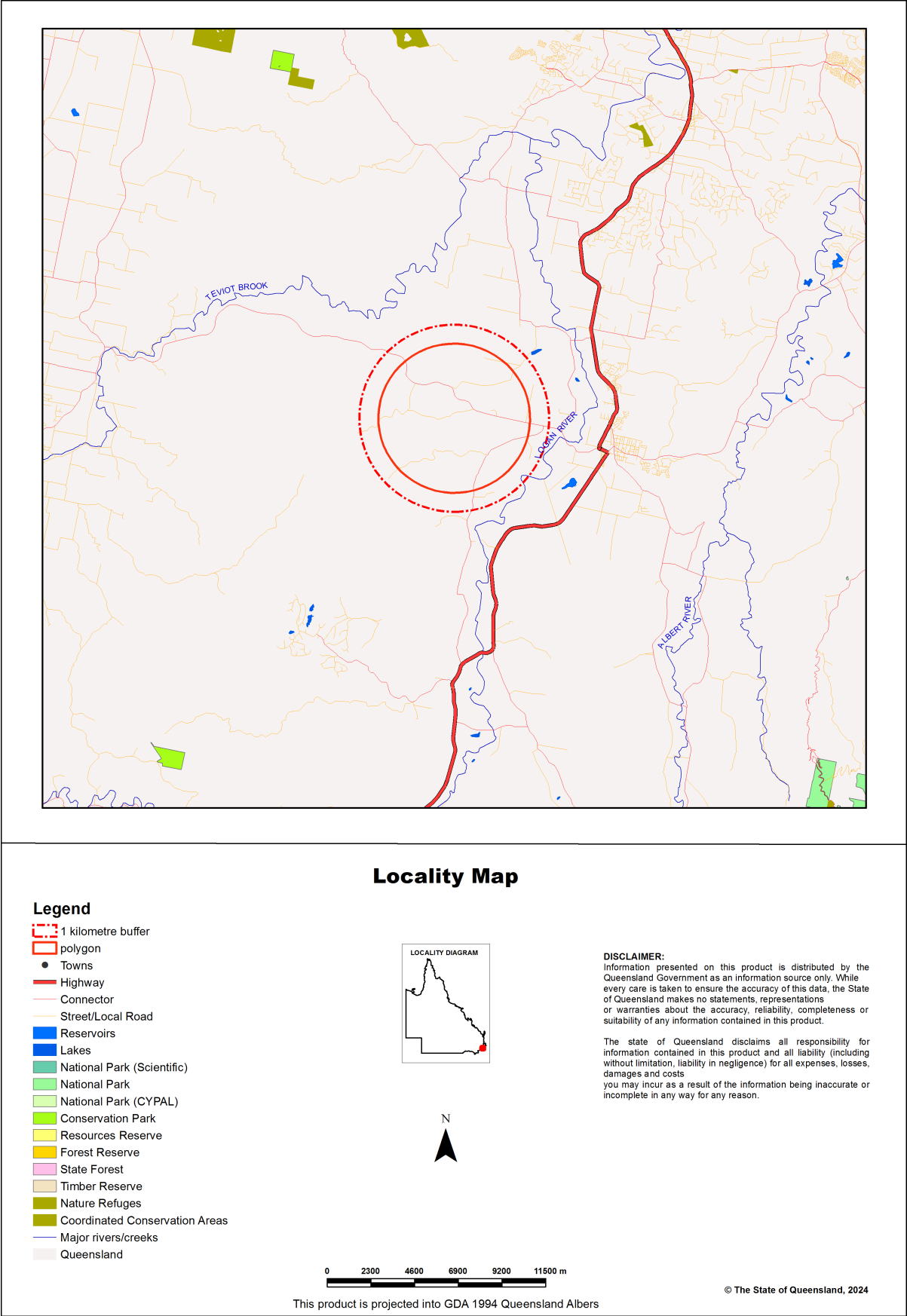


For the selected area of interest 4931.9ha Custom Geometry

Current as at 22/04/2024

WildNetPestList

Map 1. Locality Map



Summary Information

The following table provides an overview of the area of interest Custom Geometry.

Table 1. Area of interest details

Size (ha)	4,931.9
Local Government(s)	Scenic Rim Regional
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Logan-Albert

Protected Area(s)

No estates or reserves are located within the area of interest.

World Heritage Area(s)

No World Heritage Areas are located within the area of interest.

Ramsar Area(s)

No Ramsar Areas are located within the area of interest.

Pest List

Introduction

This report is derived from a spatial layer generated from the [WildNet database](#) managed by the Department of Environment and Science. The layer which is generated weekly contains the WildNet wildlife records that are not classed as erroneous or duplicate, that have a location precision equal to or less than 10000 metres and do not have a count of zero.

The WildNet dataset is constantly being enhanced and the taxonomic and status information revised. If a species is not listed in this report, it does not mean it doesn't occur there and listed species may also no longer inhabit the area. It is recommended that you also access other internal and external data sources for species information in your area of interest (Refer Links and Support).

Species Data

Contextual location information is presented in Map 1.

A summary of the pests recorded within the area of interest and its one kilometre buffer is presented in Table 2.

Table 2. Pests recorded within the area of interest and its one kilometre buffer

Taxon Id	Kingdom	Class	Family	Scientific Name	Common Name	Specimens	Records	Last record	Endemicity
26943	Animalia	Actinopterygii	Cyprinidae	<i>Cyprinus carpio</i>	European carp	0	1	08/12/2006	II
27055	Animalia	Actinopterygii	Poeciliidae	<i>Gambusia holbrooki</i>	mosquitofish	0	1	08/12/2006	II
716	Animalia	Amphibia	Bufonidae	<i>Rhinella marina</i>	cane toad	0	3	08/12/2006	II
1804	Animalia	Aves	Columbidae	<i>Columba livia</i>	rock dove	0	1	16/09/2000	II
1314	Animalia	Aves	Sturnidae	<i>Acridotheres tristis</i>	common myna	0	1	16/09/2000	II
1303	Animalia	Aves	Sturnidae	<i>Sturnus vulgaris</i>	common starling	0	2	10/06/1992	II
19177	Animalia	Insecta	Nymphalidae	<i>Danaus plexippus</i>	monarch	0	4	05/05/1993	II
1071	Animalia	Mammalia	Canidae	<i>Vulpes vulpes</i>	red fox	1	1	02/05/1960	II

Taxon Id	Kingdom	Class	Family	Scientific Name	Common Name	Specimens	Records	Last record	Endemicity
832	Animalia	Mammalia	Leporidae	<i>Lepus europaeus</i>	European brown hare	1	5	08/12/2006	II
764	Animalia	Mammalia	Muridae	<i>Mus musculus</i>	house mouse	0	2	10/06/1992	II
34113	Plantae	Equisetopsida	Leguminosae	<i>Vachellia nilotica</i>	prickly acacia	2	2	05/10/2016	IU

Species table headings and codes

Taxon Id: Unique identifier of the taxon from the WildNet database.

Specimens: The number of specimen-backed records of the taxon.

Records: The total number of records of the taxon.

Last record: Date of latest record of the taxon.

Endemicity: The endemicity code for the taxon (Introduced (Intranational) (IA), Introduced (International) (II), Introduced (Unknown), Exotic (Intranational) (XA), Exotic (International) (XI) and Exotic (Unknown) (XU)).

Links and Support

Other sites that deliver species information from the [WildNet database](#) include:

- [Species profile search](#) - access species information approved for publication including species names, statuses, notes, images, distribution maps and records
- [Species lists](#) - generate species lists for Queensland protected areas, forestry areas, local governments and areas defined using coordinates
- [Biomaps](#) - view biodiversity information, including WildNet records approved for publication, and generate reports
- [Queensland Globe](#) - view spatial information, including WildNet records approved for publication
- [Old wildlife data API](#) - access WildNet species information approved for publication such as notes, images and records etc.
- [WetlandMaps](#) - view species records, survey locations etc. approved for publication
- [WetlandSummary](#) - view wildlife statistics, species lists for a range of area types, and access WildNet species profiles
- [WildNet wildlife records - published - Queensland](#) - spatial layer of WildNet records approved for publication generated weekly
- [Generalised distribution and densities of Queensland wildlife](#) - Queensland species distributions and densities generalised to a 10 km grid resolution
- [Conservation status of Queensland wildlife](#) - access current lists of priority species for Queensland including nomenclature and status information
- [Queensland Confidential Species](#) - the list of species flagged as confidential in the WildNet database.

Please direct queries about this report to the [WildNet Team](#).

Other useful sites for accessing Queensland biodiversity data include:

- [Useful wildlife resources](#)
- [Queensland Government Data](#)
- [Atlas of Living Australia \(ALA\)](#)
- [Online Zoological Collections of Australian Museums \(OZCAM\)](#)
- [Australia's Virtual Herbarium \(AVH\)](#)
- [Protected Matters Search Tool](#)

Disclaimer

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WildNet Records

Species List

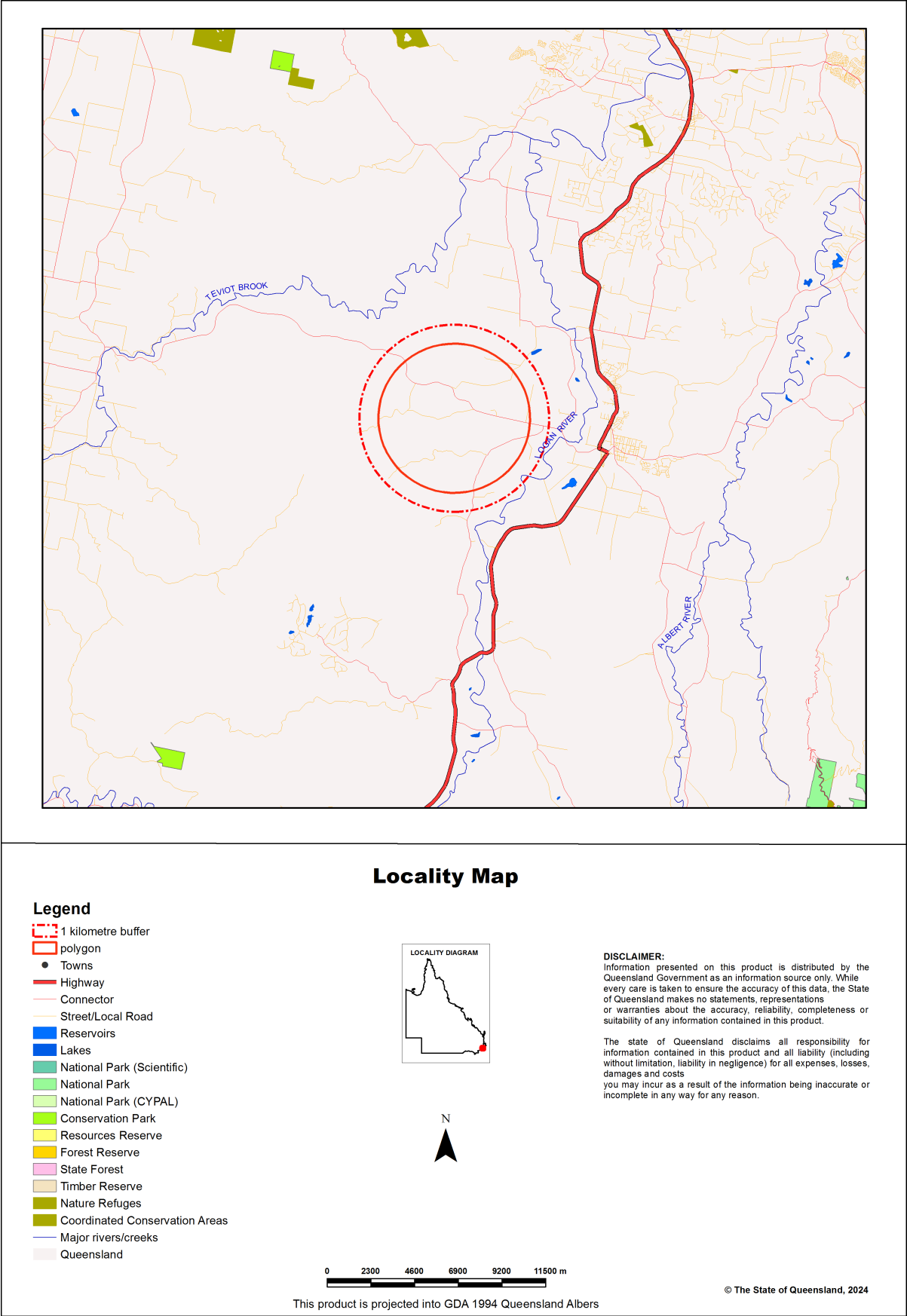


For the selected area of interest 4931.9ha Custom Geometry

Current as at 22/04/2024

WildNetSpeciesList

Map 1. Locality Map



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Table 2 lists the animals recorded within the area of interest and its one kilometre buffer.

Table 3 lists the plants recorded within the area of interest and its one kilometre buffer.

Table 4 lists the fungi recorded within the area of interest and its one kilometre buffer.

Table 5 lists the other species recorded within the area of interest and its one kilometre buffer.

Table 2. Animals recorded within the area of interest and its one kilometre buffer

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
26910	Actinopterygii	Anguillidae	<i>Anguilla reinhardtii</i>	longfin eel	None	None	0	1	09/05/1992
26943	Actinopterygii	Cyprinidae	<i>Cyprinus carpio</i>	European carp	None	None	0	1	08/12/2006
27036	Actinopterygii	Mugilidae	<i>Trachystoma petardi</i>	pinkeye mullet	None	None	0	1	09/05/1992
27055	Actinopterygii	Poeciliidae	<i>Gambusia holbrooki</i>	mosquitofish	None	None	0	1	08/12/2006
716	Amphibia	Bufonidae	<i>Rhinella marina</i>	cane toad	None	None	0	3	08/12/2006
627	Amphibia	Hylidae	<i>Litoria caerulea</i>	common green treefrog	C	None	0	2	10/06/1992
608	Amphibia	Hylidae	<i>Litoria fallax</i>	eastern sedgefrog	C	None	0	1	08/12/2006

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
684	Amphibia	Limnodynastidae	<i>Limnodynastes tasmaniensis</i>	spotted grassfrog	C	None	0	1	31/07/2020
1419	Aves	Acanthizidae	<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill	C	None	0	4	11/11/1999
1396	Aves	Acanthizidae	<i>Gerygone olivacea</i>	white-throated gerygone	C	None	0	2	16/09/2000
1382	Aves	Acanthizidae	<i>Sericornis frontalis</i>	white-browed scrubwren	C	None	0	3	16/09/2000
1742	Aves	Accipitridae	<i>Accipiter cirrocephalus</i>	collared sparrowhawk	C	None	0	2	10/06/1992
1729	Aves	Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk	C	None	0	2	17/01/2012
1732	Aves	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle	C	None	0	2	10/06/1992
1721	Aves	Accipitridae	<i>Aviceda subcristata</i>	Pacific baza	C	None	0	2	10/06/1992
1707	Aves	Accipitridae	<i>Haliastur sphenurus</i>	whistling kite	C	None	0	4	10/06/1992
1305	Aves	Acrocephalidae	<i>Acrocephalus australis</i>	Australian reed-warbler	C	None	0	2	08/12/2006
1776	Aves	Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher	C	None	0	3	11/11/1999
1767	Aves	Alcedinidae	<i>Dacelo novaeguineae</i>	laughing kookaburra	C	None	0	4	08/12/2006
1762	Aves	Alcedinidae	<i>Todiramphus sanctus</i>	sacred kingfisher	C	None	0	5	11/11/1999
1993	Aves	Anatidae	<i>Anas gracilis</i>	grey teal	C	None	0	4	16/09/2000
1998	Aves	Anatidae	<i>Anas superciliosa</i>	Pacific black duck	C	None	0	10	08/12/2006
2003	Aves	Anatidae	<i>Chenonetta jubata</i>	Australian wood duck	C	None	0	6	08/12/2006
1279	Aves	Anhingidae	<i>Anhinga novae hollandiae</i>	Australasian darter	C	None	0	3	16/09/2000
1971	Aves	Apodidae	<i>Hirundapus caudacutus</i>	white-throated needletail	V	V	0	3	16/01/2012
1829	Aves	Ardeidae	<i>Ardea alba modesta</i>	eastern great egret	C	None	0	2	10/06/1992
1831	Aves	Ardeidae	<i>Ardea intermedia</i>	intermediate egret	C	None	0	1	05/05/1993
1832	Aves	Ardeidae	<i>Ardea pacifica</i>	white-necked heron	C	None	0	2	10/06/1992
1830	Aves	Ardeidae	<i>Bubulcus ibis</i>	cattle egret	C	None	0	5	08/12/2006
1826	Aves	Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron	C	None	0	6	08/12/2006
1818	Aves	Ardeidae	<i>Nycticorax caledonicus</i>	nankeen night-heron	C	None	0	3	08/12/2006
1654	Aves	Artamidae	<i>Cracticus nigrogularis</i>	pied butcherbird	C	None	0	9	16/09/2000
1656	Aves	Artamidae	<i>Cracticus torquatus</i>	grey butcherbird	C	None	0	1	10/05/1992
1644	Aves	Artamidae	<i>Gymnorhina tibicen</i>	Australian magpie	C	None	0	6	12/01/2012

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
1645	Aves	Artamidae	<i>Strepera graculina</i>	pied currawong	C	None	0	2	05/05/1993
1191	Aves	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo	C	None	0	2	10/06/1992
1193	Aves	Cacatuidae	<i>Eolophus roseicapilla</i>	galah	C	None	0	7	08/12/2006
1173	Aves	Cacatuidae	<i>Nymphicus hollandicus</i>	cockatiel	C	None	0	1	27/08/1959
1636	Aves	Campephagidae	<i>Coracina novae hollandiae</i>	black-faced cuckoo-shrike	C	None	0	5	29/09/1992
1637	Aves	Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike	C	None	0	1	10/05/1992
1940	Aves	Charadriidae	<i>Elseyornis melanops</i>	black-fronted dotterel	C	None	0	3	16/09/2000
27774	Aves	Charadriidae	<i>Vanellus miles</i>	masked lapwing	C	None	0	1	08/12/2006
1933	Aves	Charadriidae	<i>Vanellus miles novae hollandiae</i>	masked lapwing (southern subspecies)	C	None	0	2	10/06/1992
1820	Aves	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	black-necked stork	C	None	0	9	04/09/2001
1294	Aves	Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola	C	None	0	4	12/01/2012
1804	Aves	Columbidae	<i>Columba livia</i>	rock dove	None	None	0	1	16/09/2000
1810	Aves	Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove	C	None	0	4	08/12/2006
18323	Aves	Columbidae	<i>Geopelia placida</i>	peaceful dove	C	None	0	3	10/06/1992
1793	Aves	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon	C	None	0	5	08/12/2006
1779	Aves	Coraciidae	<i>Eurystomus orientalis</i>	dollarbird	C	None	0	8	08/12/2006
1609	Aves	Corvidae	<i>Corvus orru</i>	Torresian crow	C	None	0	12	08/12/2006
1751	Aves	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal	C	None	0	3	08/12/2006
1745	Aves	Cuculidae	<i>Chalcites lucidus</i>	shining bronze-cuckoo	C	None	0	1	10/05/1992
1740	Aves	Cuculidae	<i>Scythrops novaehollandiae</i>	channel-billed cuckoo	C	None	0	3	08/12/2006
1611	Aves	Dicaeidae	<i>Dicaeum hirundinaceum</i>	mistletoebird	C	None	0	3	10/06/1992
1601	Aves	Dicruridae	<i>Dicrurus bracteatus</i>	spangled drongo	C	None	0	1	10/05/1992
1366	Aves	Estrildidae	<i>Lonchura castaneothorax</i>	chestnut-breasted mannikin	C	None	0	3	08/12/2006
1342	Aves	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch	C	None	0	4	08/12/2006
1704	Aves	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel	C	None	0	7	09/12/1993
1691	Aves	Falconidae	<i>Falco longipennis</i>	Australian hobby	C	None	0	2	10/06/1992

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
1583	Aves	Hirundinidae	<i>Cheramoeca leucosterna</i>	white-backed swallow	C	None	0	1	10/06/1992
1572	Aves	Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow	C	None	0	3	10/06/1992
1585	Aves	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin	C	None	0	5	09/12/1993
1573	Aves	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin	C	None	0	1	10/05/1992
1289	Aves	Locustellidae	<i>Cincloramphus timoriensis</i>	tawny grassbird	C	None	0	3	12/01/2012
1570	Aves	Maluridae	<i>Malurus cyaneus</i>	superb fairy-wren	C	None	0	5	08/12/2006
1558	Aves	Maluridae	<i>Malurus melanocephalus</i>	red-backed fairy-wren	C	None	0	6	08/12/2006
1523	Aves	Meliphagidae	<i>Caligavis chrysops</i>	yellow-faced honeyeater	C	None	0	1	05/05/1993
1497	Aves	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater	C	None	0	5	11/11/1999
1500	Aves	Meliphagidae	<i>Manorina melanocephala</i>	noisy miner	C	None	0	6	08/12/2006
1501	Aves	Meliphagidae	<i>Manorina melanophrys</i>	bell miner	C	None	0	1	31/12/1870
1504	Aves	Meliphagidae	<i>Meliphaga lewinii</i>	Lewin's honeyeater	C	None	0	3	10/06/1992
1507	Aves	Meliphagidae	<i>Melithreptus albobularis</i>	white-throated honeyeater	C	None	0	7	12/01/2012
1489	Aves	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater	C	None	0	2	10/06/1992
1493	Aves	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird	C	None	0	2	29/09/1992
1494	Aves	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird	C	None	0	2	10/06/1992
1471	Aves	Meliphagidae	<i>Plectorhyncha lanceolata</i>	striped honeyeater	C	None	0	1	05/05/1993
1764	Aves	Meropidae	<i>Merops ornatus</i>	rainbow bee-eater	C	None	0	5	08/12/2006
1589	Aves	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark	C	None	0	10	08/12/2006
1586	Aves	Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher	C	None	0	2	10/06/1992
1455	Aves	Motacillidae	<i>Anthus novaeselandiae</i>	Australasian pipit	C	None	0	2	10/06/1992
1453	Aves	Neosittidae	<i>Daphoenositta chrysoptera</i>	varied sittella	C	None	0	2	08/12/2006
1442	Aves	Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole	C	None	0	3	10/06/1992
1444	Aves	Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird	C	None	0	4	08/12/2006
1449	Aves	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush	C	None	0	3	10/06/1992
1450	Aves	Pachycephalidae	<i>Colluricincla megarrhyncha</i>	little shrike-thrush	C	None	0	2	10/06/1992

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
1437	Aves	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler	C	None	0	4	08/12/2006
1392	Aves	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote	C	None	0	8	12/01/2012
1284	Aves	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican	C	None	0	1	16/09/2000
1347	Aves	Petroicidae	<i>Eopsaltria australis</i>	eastern yellow robin	C	None	0	2	10/06/1992
1332	Aves	Petroicidae	<i>Petroica rosea</i>	rose robin	C	None	0	1	10/05/1992
1261	Aves	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant	C	None	0	3	16/09/2000
1275	Aves	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant	C	None	0	2	09/05/1992
1263	Aves	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant	C	None	0	2	10/06/1992
1687	Aves	Phasianidae	<i>Synoicus ypsilophorus</i>	brown quail	C	None	0	3	11/11/1999
1955	Aves	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth	C	None	0	1	10/05/1992
1249	Aves	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe	C	None	0	2	16/09/2000
1317	Aves	Pomatostomidae	<i>Pomatostomus superciliosus</i>	white-browed babbler	C	None	0	1	08/12/2006
1318	Aves	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler	C	None	0	1	10/05/1992
1180	Aves	Psittaculidae	<i>Alisterus scapularis</i>	Australian king-parrot	C	None	0	2	10/06/1992
1136	Aves	Psittaculidae	<i>Platycercus adscitus</i>	pale-headed rosella	C	None	0	3	08/12/2006
1139	Aves	Psittaculidae	<i>Platycercus eximius</i>	eastern rosella	C	None	0	1	10/12/1991
1124	Aves	Psittaculidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet	C	None	0	4	29/09/1992
1125	Aves	Psittaculidae	<i>Trichoglossus moluccanus</i>	rainbow lorikeet	C	None	0	8	08/12/2006
1623	Aves	Psophodidae	<i>Psophodes olivaceus</i>	eastern whipbird	C	None	0	3	10/06/1992
1673	Aves	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen	C	None	0	2	16/09/2000
1893	Aves	Recurvirostridae	<i>Himantopus leucocephalus</i>	pied stilt	C	None	0	19	16/09/2000
1575	Aves	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail	C	None	0	2	05/05/1993
1576	Aves	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail	C	None	0	6	12/01/2012
1857	Aves	Scolopacidae	<i>Gallinago hardwickii</i>	Latham's snipe	SL	V	0	1	16/09/2000
1102	Aves	Strigidae	<i>Ninox boobook</i>	southern boobook	C	None	0	3	10/06/1992
1314	Aves	Sturnidae	<i>Acridotheres tristis</i>	common myna	None	None	0	1	16/09/2000

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
1303	Aves	Sturnidae	<i>Sturnus vulgaris</i>	common starling	None	None	0	2	10/06/1992
1822	Aves	Threskiornithidae	<i>Platalea flavipes</i>	yellow-billed spoonbill	C	None	0	1	11/11/1999
1823	Aves	Threskiornithidae	<i>Platalea regia</i>	royal spoonbill	C	None	0	2	16/09/2000
1812	Aves	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis	C	None	0	4	16/09/2000
1800	Aves	Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis	C	None	0	7	08/12/2006
1276	Aves	Zosteropidae	<i>Zosterops lateralis</i>	silveryeye	C	None	0	5	08/12/2006
19179	Insecta	Nymphalidae	<i>Danaus petilia</i>	lesser wanderer	None	None	0	2	29/09/1992
19177	Insecta	Nymphalidae	<i>Danaus plexippus</i>	monarch	None	None	0	4	05/05/1993
1068	Mammalia	Canidae	<i>Canis familiaris (dingo)</i>	dingo	None	None	0	3	10/06/1992
1071	Mammalia	Canidae	<i>Vulpes vulpes</i>	red fox	None	None	1	1	02/05/1960
832	Mammalia	Leporidae	<i>Lepus europaeus</i>	European brown hare	None	None	1	5	08/12/2006
901	Mammalia	Macropodidae	<i>Macropus giganteus</i>	eastern grey kangaroo	C	None	1	4	10/06/1992
902	Mammalia	Macropodidae	<i>Notamacropus parryi</i>	whiptail wallaby	C	None	3	4	08/12/2006
904	Mammalia	Macropodidae	<i>Notamacropus rufogriseus</i>	red-necked wallaby	C	None	3	4	05/05/1993
764	Mammalia	Muridae	<i>Mus musculus</i>	house mouse	None	None	0	2	10/06/1992
784	Mammalia	Peramelidae	<i>Isodon macrourus</i>	northern brown bandicoot	C	None	0	1	05/05/1993
859	Mammalia	Phalangeridae	<i>Trichosurus vulpecula</i>	common brushtail possum	C	None	0	1	22/09/2014
860	Mammalia	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala	E	E	0	3	09/01/2004
962	Mammalia	Pteropodidae	<i>Pteropus poliocephalus</i>	grey-headed flying-fox	C	V	0	2	10/06/1992
838	Mammalia	Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna	SL	None	1	4	10/06/1992
554	Reptilia	Agamidae	<i>Intellagama lesueurii</i>	eastern water dragon	C	None	0	5	08/12/2006
556	Reptilia	Agamidae	<i>Pogona barbata</i>	bearded dragon	C	None	0	3	29/09/1992
519	Reptilia	Boidae	<i>Morelia spilota</i>	carpet python	C	None	0	2	10/06/1992
63	Reptilia	Chelidae	<i>Chelodina longicollis</i>	eastern snake-necked turtle	C	None	0	4	10/06/1992
512	Reptilia	Colubridae	<i>Dendrelaphis punctulatus</i>	green tree snake	C	None	0	2	10/06/1992
429	Reptilia	Diplodactylidae	<i>Diplodactylus vittatus</i>	wood gecko	C	None	1	1	31/12/1960
462	Reptilia	Elapidae	<i>Pseudechis porphyriacus</i>	red-bellied black snake	C	None	0	2	10/06/1992

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
454	Reptilia	Elapidae	<i>Pseudonaja textilis</i>	eastern brown snake	C	None	0	2	10/06/1992
31898	Reptilia	Scincidae	<i>Cryptoblepharus pulcher pulcher</i>	elegant snake-eyed skink	C	None	0	2	29/09/1992
170	Reptilia	Scincidae	<i>Lampropholis guichenoti</i>	pale-flecked garden sunskink	C	None	0	2	10/06/1992
150	Reptilia	Scincidae	<i>Lygisaurus foliorum</i>	tree-base litter-skink	C	None	0	1	17/01/2012
107	Reptilia	Scincidae	<i>Tiliqua scincoides scincoides</i>	eastern bluetongue	C	None	0	2	10/06/1992

Table 3. Plants recorded within the area of interest and its one kilometre buffer

Taxon Id	Class	Family	Scientific Name	Common Name	NCA	EPBC	Specimens	Records	Last record
34113	Equisetopsida	Leguminosae	<i>Vachellia nilotica</i>	prickly acacia	None	None	2	2	05/10/2016

Table 4. Fungi recorded within the area of interest and its one kilometre buffer

No species found within the area of interest and its one kilometre buffer.

Table 5. Other species recorded within the area of interest and its one kilometre buffer

No species found within the area of interest and its one kilometre buffer.

Species table headings and codes

- Taxon Id:** Unique identifier of the taxon from the WildNet database.
- NCA:** Queensland conservation status of the taxon under the *Nature Conservation Act 1992* (Least Concern (C), Critically Endangered (CR), Endangered (E), Extinct (EX), Near Threatened (NT), Extinct in the Wild (PE), Special Least Concern (SL), and Vulnerable (V)).
- EPBC:** Australian conservation status of the taxon under the *Environment Protection and Biodiversity Conservation Act 1999* (Conservation Dependent (CD), Critically Endangered (CE), Endangered (E), Extinct (EX), Vulnerable (V), and Extinct in the Wild (XW)).
- Specimens:** The number of specimen-backed records of the taxon.
- Records:** The total number of records of the taxon.
- Last record:** Date of latest record of the taxon.

Links and Support

- Other sites that deliver species information from the [WildNet database](#) include:
- [Species profile search](#) - access species information approved for publication including species names, statuses, notes, images, distribution maps and records
 - [Species lists](#) - generate species lists for Queensland protected areas, forestry areas, local governments and areas defined using coordinates
 - [Biomaps](#) - view biodiversity information, including WildNet records approved for publication, and generate reports
 - [Queensland Globe](#) - view spatial information, including WildNet records approved for publication
 - [Old wildlife data API](#) - access WildNet species information approved for publication such as notes, images and records etc.
 - [WetlandMaps](#) - view species records, survey locations etc. approved for publication
 - [WetlandSummary](#) - view wildlife statistics, species lists for a range of area types, and access WildNet species profiles
 - [WildNet wildlife records - published - Queensland](#) - spatial layer of WildNet records approved for publication generated weekly

- [Generalised distribution and densities of Queensland wildlife](#) - Queensland species distributions and densities generalised to a 10 km grid resolution
- [Conservation status of Queensland wildlife](#) - access current lists of priority species for Queensland including nomenclature and status information
- [Queensland Confidential Species](#) - the list of species flagged as confidential in the WildNet database.

Please direct queries about this report to the [WildNet Team](#).

Other useful sites for accessing Queensland biodiversity data include:

- [Useful wildlife resources](#)
- [Queensland Government Data](#)
- [Atlas of Living Australia \(ALA\)](#)
- [Online Zoological Collections of Australian Museums \(OZCAM\)](#)
- [Australia's Virtual Herbarium \(AVH\)](#)
- [Protected Matters Search Tool](#)

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government, to the maximum extent permitted by law, makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.





Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 07-May-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	52
Listed Migratory Species:	15

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Moreton bay	30 - 40km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.	

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In buffer area only
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In buffer area only
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In feature area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[<u>Resource Information</u>]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythroriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Maccullochella mariensis Mary River Cod [83806]	Endangered	Translocated population known to occur within area	In buffer area only
FROG			
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In feature area
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Macroderma gigas			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area	In feature area
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis tomentella Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area	In feature area
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Notelaea x ipsviciensis listed as Notelaea ipsviciensis Cooneana Olive [93460]	Critically Endangered	Species or species habitat may occur within area	In feature area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhaponticum australe Austral Cornflower, Native Thistle [22647]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sarcochilus weinthalii Blotched Sarcochilus, Weinthals Sarcanth [12673]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]		Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals [Resource Information]				
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Kagaru to Acacia Ridge and Bromelton Inland Rail Project	2021/8927		Completed	In buffer area only
Controlled action				
Casino Ipswich Pipeline	2007/3877	Controlled Action	Completed	In feature area
Wyaralong Dam	2006/3157	Controlled Action	Post-Approval	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Offstream Storage Facility and associated infrastructure	2007/3502	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
South West Pipeline and Wyaralong Tanks Project, Qld	2018/8320	Not Controlled Action	Completed	In buffer area only
Upgraded sewerage infrastructure in the Helensvale/Coombah catchment	2004/1427	Not Controlled Action	Completed	In feature area

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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Appendix B

Likelihood of occurrence table

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
MNES Threatened ecological communities										
Coastal Swamp Oak (<i>Casuarina glauca</i>) Forest of New South Wales and South East Queensland ecological community	E	NL	PMST	Can vary from forest to woodland structure depending on location and disturbance history. Typically found on unconsolidated sediments, where groundwater is saline or brackish and is occasionally saturated, water-logged, or inundated. Commonly found on coastal flats, floodplains, drainage lines, lake margins, wetlands and estuarine fringes. More likely to include saline-tolerant species. Climbing and epiphytic plants commonly associated with this TEC, as well as semi-continuous to continuous ground cover.	Yes – predicted may occur in buffer area only	NA	No REs diagnostic mapped on the RE mapping or were observed during field surveys	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area. Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.
Coastal swamp sclerophyll forest of New South Wales and South East Queensland	E	NL	PMST	This TEC occurs on the mainland and islands within 20 km of the coast along the south-east Australian mainland. Located in low-lying coastal alluvial areas with swamps, floodplain pockets, depressions, and other minimal relief features present. Soils are generally waterlogged or intermittently/episodically inundated for 1-3 months per year (seasonal). Soils are unconsolidated and incorporate silt and organic matter. Structure varies from open woodland to closed forest with layered canopy. Sub-canopy may consist of melaleuca grading into taller melaleuca and/or eucalypts.	Yes – predicted may occur in buffer area only	NA	No REs diagnostic mapped on the RE mapping or were observed during field surveys	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area. Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.
Grey box-grey gum wet forest of subtropical eastern Australia	E	NL	PMST	TEC with an assemblage of wet forest native species. Canopy is dominated by Grey box (<i>Eucalyptus moluccana</i> (grey box) and/or grey gum species. Understory predominantly composed of drier vine forest (rainforest) species. May or may not have hoop pine (<i>Araucaria cunninghamii</i>) present. Found from northern NSW to south-east Queensland, generally located on escarpment slopes and foothills on	Yes – predicted likely to occur in feature area	NA	Yes – RE 12.9-10.3 was verified in flora field survey but not large enough to warrant TEC	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area. Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
				inland hinterlands. Associated with areas where mean annual rainfall exceeds ~1000 mm.						
Lowland rainforest of subtropical Australia	CE	NL	PMST	Occurs in basalt and alluvial soils and structure is generally moderately tall to tall, closed forest. Contains low abundance of eucalypt, melaleuca and casuarina species and diversity of vines. Very flora diverse TEC with potential for cabbage/bangalow palm forest, and riparian areas dominated by <i>Syzygium floribundum</i> . Canopy multilayered with emergent trees and understory generally sparse with shrubs and seedlings.	Yes – predicted may occur in feature area	NA	No REs diagnostic mapped on the RE mapping or were observed during field surveys	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area. Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.
Poplar box grassy woodland on alluvial plains	E	NL	PMST	The 'Poplar box grassy woodland' TEC varies from a grassy woodland to grassy open woodland structure. This TEC typically exhibits as an open forest structure with an overstorey dominated by <i>Eucalyptus populnea</i> (poplar box) and an understory predominantly composed of perennial forbs and grasses (DEE 2019). The structure and composition of vegetation in the ecological community are primarily determined by topography, hydrology, fire regimes, soil fertility, disturbance and management history (DEE 2019). The ecological community is largely recorded in gently undulating to flat landscapes and occasionally on gentle slopes on a wide range of soil types of alluvial and depositional origin (DEE 2019). The TEC expands over seven bioregions including: Brigalow Belt North, Brigalow Belt South, Southeast Queensland, Cobar Peneplain, Darling Riverine Plains, NSW South Western Slopes and Riverina.	Yes – predicted may occur in feature area	NA	No REs diagnostic mapped on the RE mapping or were observed during field surveys	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area. Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.
Subtropical eucalypt floodplain forest	E	NL	PMST	Found on alluvial landforms such as floodplains and riparian zones. Structure varies from tall open forest	Yes – predicted likely to	NA	No REs diagnostic mapped on	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
and woodland of the New South Wales North Coast and South East Queensland bioregions				to woodland, depending of level of clearing. Tree canopy dominated by eucalypts and/or myrtaceous trees including species from <i>Angophora</i> , <i>Corymbia</i> , <i>Lophostemon</i> and <i>Syncarpia</i> genera. Mid-layer may be present including shrubs and climbers extending from mid-layer to canopy. Has diverse and abundance ground cover of flora including grasses, ferns, sedges and scramblers. In-tact may have high litter and log detritus.	occur in feature area		the RE mapping or were observed during field surveys			Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.
White box-yellow box-Blakely's red gum grassy woodland and derived native grassland	CE	NL	PMST	Known to occur in hilly to undulating landscapes in areas with moderately fertile soils. Average rainfall is between 400-900 mm per year. Structure prior to European settlement was open grassy woodland with medium height trees. In relatively undisturbed state trees have clearly separated canopy, typically 30 m tall.	Yes – predicted likely to occur in feature area	NA	No REs diagnostic mapped on the RE mapping or were observed during field surveys	NA	No	Unlikely to occur No REs diagnostic of this TEC was mapped within the Project area. Additionally, this TEC was not recorded during the field surveys. On this basis the TEC is considered unlikely to occur within the Project area.
Flora										
<i>Arthraxon hispidus</i> Hairy-joint grass	V	V	PMST ALA	In NSW and Queensland, found in or on the edges of rainforest and in wet eucalypt forest, often near creeks or swamps, as well as woodland.	Yes-predicted habitat likely to occur in feature area	No – nearest record ~29 km SE in 2022	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent and was not identified in field surveys. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Bosistoa transversa</i> Three-leaved bosistoa	V	LC	PMST ALA	<i>Bosistoa transversa</i> is a small tree that grows in lowland subtropical rainforest up to 300 m above sea level. <i>B. transversa</i> has been recorded from Richmond River NSW to Mt Larcom near Gladstone, Queensland and conserved in numerous national parks, reserves, and state forests	Yes-predicted habitat may occur in feature area	No – nearest record ~26.5 km NE in 1992	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent and was not identified in field surveys. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Bulbophyllum globuliforme</i> Miniature moss orchid	V	NT	PMST ALA	Host-specific species, only growing on the Hoop Pine, where it colonises the upper branches of mature trees. The Hoop Pine occurs in upland	Yes-predicted habitat may	No – nearest record ~31 km SE	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent and was not identified in field

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
				subtropical rainforest communities that have a discontinuous distribution along the Australian east coast.	occur in buffer area	of Project area in 1997				surveys. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Callitris baileyi</i> Bailey's cypress pine	NL	NT	ALA	Sporadic occurrence throughout south-east Queensland, from state border to Goomeri in the north and the Bunya Mountains to the west. Grows on rocky slopes, hills, or mountainous areas. Found on shallow clay soils, and is commonly associated with eucalypt woodland species such as ironbark, blue gum, and spotted gum.	No	Yes – 4.4 km East in 2016 and 9.9 km NE in 2023	No suitable habitat present	No	No	Unlikely to occur The species has multiple recent records (within 10 years) within 10 km of the Project area however no suitable habitat was confirmed present in the Study area. As such, the species is considered as unlikely to occur.
<i>Cupaniopsis shirleyana</i> Wedge-leafed tuckeroo	V	LC	PMST ALA	Occurs in a variety of dry rainforest vegetation types, including vine thicket communities on hillsides, stream beds and along riverbanks. Predominately found on dark brown sandy loams/ sandy clay loams/ rocky scree slopes.	Yes-predicted habitat may occur in buffer area	Yes – 5.9 km NE in 2021, 8.3 km W in 2021 and 10.2 km E in 2022	No suitable habitat present	No	No	Unlikely to occur The species has multiple recent records (within 10 years) within 10 km of the Project area however no suitable habitat was confirmed present in the Study area. As such, the species is considered as unlikely to occur.
<i>Cupaniopsis tomentella</i> Boonah tuckeroo	V	V	PMS ALA	Grows in vine thickets predominantly on fertile clay soils. These areas have been extensively cleared for agriculture and close settlement and the only seven known occurrences are confined to small isolated remnants on scree slopes and roadsides.	Yes-predicted habitat likely to occur in feature area	Yes – 3.8 km NE in 2018	No suitable habitat present	No	No	Unlikely to occur The species has one recent record (within 10 years) within 10 km of the Project area however no suitable habitat was confirmed present in the Study area. As such, the species is considered as unlikely to occur.
<i>Dichanthium setosum</i> Bluegrass	V	LC	PMST ALA	The species is distributed throughout inland NSW and Queensland, from Sydney to Cairns and inland to Hughenden (DCCEEW, 2023). Occurs in heavy soils (predominantly cracking clays or alluvium, often in gilgai) in woodland or open woodland usually dominated by <i>Acacia</i> (brigalow) and / or <i>Eucalyptus</i> species (DCCEEW, 2023). As a warm season perennial, the species commences growing in spring, flowers in summers and becomes dormant in late autumn (DCCEEW, 2023).	Yes-predicted habitat likely to occur in feature area	No – two nearest records ~19.5 km S both in 2022	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
<i>Fontainea venosa</i>	V	V	PMST ALA	This species occurs in Araucarian microphyll vine forest with a mean annual rainfall of 1000 mm on alluvial soil along creeks.	Yes-predicted habitat may occur in feature area	No - nearest rescored ~28.4 km NE in 2016	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Melaleuca irbyana</i> Weeping paperbark	NL	E	ALA	Occurs in flat areas that are periodically inundated or waterlogged made up of poor draining, heavy clay soils. Typical vegetation structure includes eucalypt forest, mixed forest and Melaleuca woodland with a sparse, grassy understorey.	No	Yes – 3.6 km N in 2020, 6.4 km N in 2022 and 7.1 km N in 2021	No suitable habitat present	No	No	Unlikely to occur The species has multiple recent records (within 10 years) within 10 km of the Project area but no suitable habitat occurs within the Study area (no melaleuca identified in inundated areas during field surveys). As such, the species is considered as unlikely to occur.
<i>Notelaea lloydii</i> Lloyd's olive	V	V	PMST ALA	The species occurs on undulating to hilly terrain either in moist gullies or on gentle to steep dry slopes, but is rarely found on rocky outcrops. Soil types are mostly shallow, well drained and stony to very rocky in texture. Found in the ecotone between eucalypt open forests and vine thickets.	Yes-predicted habitat likely to occur in feature area	No - nearest record ~17.2 km NW in 2018	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Notelaea x ipsviciensis</i> Cooneana olive	CE	CR	PMST ALA	Surviving throughout degraded, eucalypt dominated dry sclerophyll vegetation communities, this species prefers open woodland communities with open canopies. Soils with low fertility, depauperate and sandstone based are also preferred.	Yes-predicted habitat may occur in feature area	No - nearest record ~38.5 km N in 2019	Yes – low quality marginal habitat	No	No	Unlikely to occur The species has not been historically recorded within the desktop search extent. Only low quality suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Picris evae</i> Hawkweed	V	V	PMST ALA	Occurs in Eucalyptus open woodland with a grassy understorey. Collections have been made along roadsides and in cultivated areas, such as paddocks, on black, dark grey or red-brown soils, reddish clay-loam or medium clay soils.	Yes-predicted habitat may occur in feature area	No - nearest record ~39 km NE in 2016	Yes – low quality marginal habitat	No	No	Unlikely to occur The species has not been historically recorded within the desktop search extent. Only low quality suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Planchonella eerwah</i>	E	E	PMST ALA	The species grows in subtropical rainforest, dry rainforest and hoop pine vine scrub.	Yes-predicted habitat likely	Yes – 2 km NE in 2019, 6.1 km E in	No suitable habitat present	No	No	Unlikely to occur The species has multiple recent records (within 10 years) within 10 km of the

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	EPBC Act	NC Act								
Shiny-leaved condoo					to occur in feature area	2019 and 8.2 km N in 2019				Project area but no suitable habitat occurs within the Study area (no rainforest vegetation or hoop pine vine scrub). As such, the species is considered as unlikely to occur.
<i>Rhaponticum australe</i> Austral cornflower	V	V	PMST ALA	Usually grows on heavy black or red-brown clay, or clay loams derived from basalt. Often found in woodland, grassland, roadside and cultivation headlands.	Yes-predicted habitat may occur in feature area	Yes – 6.5 km N in 2011	No suitable habitat present	No	No	Unlikely to occur The species has only one older record (over 10 years ago) within 10 km of the Project area. No suitable habitat occurs within the Study area. As such, the species is considered as unlikely to occur.
<i>Rhodamnia rubescens</i> Scrub turpentine	CE	CR	PMST ALA	Commonly occurs in all rain forest sub-forms, except cool temperate rainforest, wet sclerophyll associations in rainforest transition zones, and along creeks. The species is characterised as a common understory tree and occupies a range of volcanically derived and sedimentary soils. It is a common pioneer species in eucalypt forests and may also occur as a pioneer in adjacent areas of dry sclerophyll and grassy woodland associations.	Yes-predicted habitat may occur in feature area	Yes – 9 km E in 1987	No suitable habitat present	No	No	Unlikely to occur The species has only one older record (over 30 years ago) within 10 km of the Project area. No suitable habitat occurs within the Study area. As such, the species is considered as unlikely to occur.
<i>Rhodomyrtus psidioides</i> Native guava	CE	CR	PMST ALA	A pioneer species in disturbed environments, the species is likely to occur in subtropical rainforests, warm temperate rainforests, littoral rainforest, and wet sclerophyll forests. Additionally, adjoining margins of sclerophyll vegetation associated with any of these rainforest formations.	Yes-predicted habitat may occur in feature area	No - nearest record ~10.6 km E in 2022	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Samadera bidwillii</i> Quassia	V	V	PMST ALA	Commonly occurs in lowland rainforest or on rainforest margins, but it can also be found in other forest types, such as open forest and woodland. The species occurs on lithosols, skeletal soils, loam soils, sands, silts and sands with clay subsoils.	Yes-predicted habitat likely to occur in feature area	No – nearest record ~53 km SE in 1999	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.

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<i>Sarcophilus weinthalii</i> Blotched sarcochilus	V	E	PMST ALA	Occurs in rainforest, dry rainforest and drier scrub of sub-coastal ranges and associated foothills inland from the coast.	Yes-predicted habitat may occur in feature area	No - nearest record ~41 km SW in 2020	No suitable habitat present	No	No	Highly unlikely to occur The species has not been historically recorded within the desktop search extent. No suitable habitat is present within the Study area. As such, the species is considered highly unlikely to occur.
<i>Thesium australe</i> Austral toadflax	V	V	PMST ALA	<i>Thesium australe</i> occurs in shrubland, grassland or woodland, often on damp sites. Vegetation types include open grassy heath and grassland surrounded by <i>Eucalyptus</i> woodland. Semi-parasitic on roots of a range of grass species, notably <i>Themeda triandra</i> . It occurs in subtropical, temperate and subalpine climates over a wide range of altitudes. It occurs on soils derived from sedimentary, igneous and metamorphic geology on a range of soils including black clay loams to yellow podzolics and peaty loams.	Yes-predicted habitat likely to occur in feature area	Yes – 8.6 km E in 1920	Yes – low quality marginally suitable – eucalypt woodland habitat	No	No	Unlikely to occur The species has only one very old record (over 100 years ago) within 10 km of the Project area, and the next nearest record occurs 19 km SW recorded in 1933. Likely historical distribution in the broader region prior to clearing over the past century. Very low quality suitable habitat occurs within the Study area. As such, the species is considered as unlikely to occur.
Birds										
<i>Anthochaera phrygia</i> Regent honeyeater	CE	CR	PMST	The species mostly inhabits inland slopes of the Great Dividing Range, in areas of low to moderate relief with moist, fertile soils. It is most commonly associated with box-ironbark eucalypt woodland and dry sclerophyll forest, but also inhabits riparian vegetation.	No	No – Nearest record 19.59 km N in 2019	Adjacent to the Project area	No	No	Unlikely to occur The species has been historically recorded 20 km from the Project area; however, limited suitable habitat was identified adjacent to the Project area during the field survey. The species is rare, and has a low potential of occurring within the Project area.
<i>Botaurus poiciloptilus</i> Australasian bittern	E	E	PMST	The Australasian Bittern occurs mainly in freshwater wetlands and, rarely, in estuaries or tidal wetlands. It favours wetlands with tall dense vegetation. It favours permanent and seasonal freshwater habitats, particularly those dominated by sedges, rushes and reeds.	No	No - nearest 6.54 km E in 1973.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Calidris acuminata</i>	V	SL	PMST	The Sharp-tailed Sandpiper prefers muddy edges of shallow fresh or brackish wetlands, with inundated or	No	No – nearest 7.95 km SW in	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no

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Sharp-tailed Sandpiper				emergent sedges, grass, saltmarsh or other low vegetation.		1973 and 6.39 km E in 2013				suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Calidris ferruginea</i> Curlew sandpiper	CE	CR	PMST	Curlew Sandpipers mainly occur on intertidal mudflats in sheltered coastal areas, such as estuaries, bays, inlets and lagoons, and also around non-tidal swamps, lakes and lagoons near the coast, and ponds in saltworks and sewage farms. They are also recorded inland, though less often.	No	No – Nearest 27.13 km E	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Calyptrorhynchus lathamii</i> Glossy black-cockatoo	V	V	PMST	In south-east Queensland and north-east New South Wales, they show preference for black sheoak (<i>A. littoralis</i>) and forest sheoak (<i>A. torulosa</i>). Alternative tree species they will also feed on are stringybark sheoak (<i>A. inophloia</i>), coastal sheoak (<i>C. equisetifolia</i>), river sheoak (<i>C. cunninghamiana</i>) and swamp sheoak (<i>C. glauca</i>). South-eastern Glossy Black-Cockatoo nest only in very old trees in large hollows.	No	No - nearest 12.12 km SW in 1995	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Climacteris picumnus victoriae</i> Brown tree creeper (southeastern)	V	V	PMST	Habitats with relatively undisturbed grassy woodland with native understorey (open at ground level), large living and dead trees with hollows, and fallen timber which provides essential foraging areas.	No	No - nearest 52.22 km SE into NSW.	Yes – eucalypt woodland with grassy understorey	No	No	Unlikely to occur While suitable habitat occurs adjacent to the Project area, low quality habitat occurs within the Project area. The species has not been historically recorded within the Study area. The nearest record is 50 km south-east. Accordingly, the species is considered unlikely to occur.
Coxen's fig-parrot	CE	CR	PMST	Coxen's Fig-Parrot occurs in rainforest habitats including subtropical rainforest, dry rainforest, littoral and developing littoral rainforest, and vine forest.	No	No – Nearest record 27.6 km SE	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Erythroriorchis radiatus</i> Red goshawk	E	V	PMST	The Red Goshawk occurs in coastal and sub-coastal areas in wooded and forested lands of tropical and warm-temperate Australia. The Red	No	No - Nearest 30.47 km SE	Yes – tall open woodlands	No	No	Unlikely to occur The species has not been historically recorded within the Study area. While records are scattered from the QLD-

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				Goshawk nests in large trees, frequently the tallest and most massive in a tall stand, and nest trees are invariably within one km of permanent water.						NSW border north to Cape York, the red goshawk has experienced a recent, rapid northward contraction, and is now rarely encountered south of southern Cape York in Queensland (Garnett and Baker 2020).
<i>Falco hypoleucos</i> Grey falcon	V	V	PMST	The species frequents timbered lowland plains, particularly acacia shrublands that are crossed by tree-lined water courses. Additionally, the species has been observed hunting in treeless areas and frequents tussock grassland and open woodland, especially in winter.	No	No – nearest 40.96 km NE in 2007.	Limited suitable habitat	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. The grey falcon is Australia's rarest falcon. Accordingly, the species is considered unlikely to occur.
<i>Geophaps scripta scripta</i> Squatter pigeon (southern)	V	V	PMST	The species occurs in open-forests to sparse, open-woodlands and scrub that are dominated by <i>Eucalyptus</i> , <i>Corymbia</i> and <i>Acacia</i> or <i>Callitris</i> species, remnant and regrowth within 3 km of water	No	No - nearest 31.98 km SW in 1986.	Limited suitability. Dependent on low density of grass and shrub layer in eucalypt woodland habitats	No	No	Unlikely to occur The groundcover was typically denser than the subspecies preferred 33%. The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Grantiella picta</i> Painted honeyeater	V	V	PMST	The painted honeyeater occurs sparsely from south-eastern Australia to north-western Queensland, concentrated on inland slopes of the Great Dividing Range between the Grampians, Victoria, and Roma, Queensland. The species moves north-south in response to fruiting of mistletoe. The species inhabits mistletoes in eucalypt forest and woodlands	No	No - nearest 44.58 km W in 1993.	Yes – mistletoe and flowering foraging resources within eucalypt woodland	No	No	Unlikely to occur The species has not been historically recorded within the Study area. While suitable foraging resources including mistletoe and eucalypts were observed within the Project area, the species is considered unlikely to occur within the Project area, due to the higher-quality remnant and regrowth vegetation present adjacent to the Project area and within the wider local and regional landscape. Accordingly, the species is considered unlikely to occur.
<i>Hirundapus caudacutus</i> White-throated needletail	V	V	PMST	In Australia, the White-throated Needletail is almost exclusively aerial. Although they occur over most types of habitat, they are probably recorded most often above wooded areas, including open forest and rainforest,	Yes – predicted habitat may occur in feature area	Yes – 3.12 km SE in 1992, 6.1 km E in 2021, 6.27 km E in	Yes	No	No	Likely to occur The species has been recorded within the Study area, and suitable foraging activity is likely to occur above the Project area. Accordingly, the species is considered likely to occur.

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				and may also fly between trees or in clearings, below the canopy, but they are less commonly recorded flying above woodland.		2022 and 7.9 km E in 2018.				
<i>Lathamus discolor</i> Swift parrot	CE	E	PMST	The swift parrot breeds in Tasmania during the summer before migrating north to mainland Australia for the winter. The swift parrot inhabits dry sclerophyll eucalypt forests and woodlands and occasionally occurs in wet sclerophyll forests. The presence of winter flowering eucalypt species is a critical habitat requirement for the species in southeast Queensland.	No	No - Nearest 30.5 km SW in 2020.	Limited suitable habitat	No	No	Unlikely to occur The species has not been historically recorded within the Study area; however, limited suitable habitat occurs within the Project area as winter flowering eucalypts. The species is considered unlikely to occur within the Project area, due to the higher-quality remnant and regrowth vegetation present adjacent to the Project area and within the wider local and regional landscape. Accordingly, the species is considered unlikely to occur.
<i>Rostratula australis</i> Australian painted snipe	E	E	PMST	The Australian Painted Snipe generally inhabits shallow terrestrial freshwater (occasionally brackish) wetlands, including temporary and permanent lakes, swamps and claypans. They also use inundated or waterlogged grassland or saltmarsh, dams, rice crops, sewage farms and bore drains.	No	No – Nearest 18.13 km E in 1993 and 13.27 km S in 2009.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Stagonopleura guttata</i> Diamond firetail	V	V	PMST	The species require eucalypt, acacia or casuarina woodlands, open forests and other lightly timbered habitats. Key features in these habitats are low tree density, few large logs, and little litter cover but high grass cover for foraging, roosting and breeding. Additional habitat is Drooping she-oak (<i>Allocasuarina verticillata</i>) within the Mt Lofty Ranges.	No	No – Nearest 31.79 km SW in 2013.	Habitat was generally unsuitable with no areas of naturally low tree density	No	No	Unlikely to occur The species has not been historically recorded within the Study area and marginally suitable habitat occurs within the Project area. The Project area has been largely cleared and disturbed from cattle grazing and the species is considered unlikely to utilise the habitat within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Turnix melanogaster</i> Black-breasted button quail	V	V	PMST	The species prefer drier low closed forests, particularly semi-evergreen vine thicket, low microphyll vine forest, araucarian microphyll vine forest and araucarian notophyll vine forest.	No	No - nearest 10.51 km NW.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.

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<i>Tringa nebularia</i> Common Greenshank	E, Mig	SL	PMST	The Common Greenshank is found in a wide variety of inland wetlands and sheltered coastal habitats of varying salinity. It occurs in sheltered coastal habitats, typically with large mudflats and saltmarsh, mangroves or seagrass.	No	No – Nearest 8.63 km E in 1972	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Dasyornis brachypterus</i> Eastern Bristlebird	E	E	PMST	The Eastern Bristlebird inhabits a broad range of vegetation communities with a variety of plant species compositions that are generally low, dense, ground or understorey vegetation.	No	No - nearest 30.61 km SE in 1991	Yes – suitable habitat occurs in grassland and adjacent woodland	No	No	Unlikely to occur The species has not been historically recorded within the Study area. The Project is generally outside of the species mapped distribution. Suitable habitat occurs within the Study area, however, the species is generally considered unlikely to occur within the Project area.
<i>Gallinago hardwickii</i> Latham's snipe	V, Mig	SL	PMST	In Australia, this species occurs in temperate and tropical regions. They usually occur in open, freshwater wetlands, flooded meadows, seasonal or semi-permanent swamps or open waters as well modified, artificial habitats including pastures, ploughed paddocks and drainage ditches.	Yes	Yes – 2.95 km SE in 2000, 6 km NE in 2011, 6.05 km E in 2017 and 6.25 km E in 2006	Low quality habitat adjacent to the Project area	No	No	Unlikely to occur The species has been historically recorded within the Study area, however no suitable habitat occurs within the Project area. While low quality potential habitat occurs adjacent to the Project area, the species is considered unlikely to occur within the Project area.
Mammals										
<i>Chalinolobus dwyeri</i> Large-eared pied bat	V	V	PMST	Found along sandstone cliffs and fertile woodland valley habitat within close proximity of each other. It has been found that rainforest and moist eucalypt forest habitats on other geological substrates at high elevation are of similar importance to the species.	No	No - nearest 25.24 km SE in 2004.	Limited suitable habitat	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable foraging or roosting habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Petauroides volans</i> Greater glider	E	V	PMST	The greater glider is an arboreal nocturnal marsupial, largely restricted to eucalypt forests and woodlands. It is typically found in highest abundance in taller, montane, moist eucalypt forests with relatively old trees and abundant hollows.	Yes – predicted habitat may occur in feature area	No – nearest 5.5 km E in 2023.	Suitable habitat – eucalypt woodland with hollow-bearing trees	No	No	Potential to occur The species has been historically recorded within the Study area and suitably connected habitat occurs in the south-western most corner of the Project area and along Mitchell Road. Accordingly, the species is considered to have potential to occur.

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	EPBC Act	NC Act								
<i>Petaurus australis australis</i> Yellow-bellied glider (south-eastern)	V	V	PMST	This species occurs in eucalypt dominated woodlands and forests including both wet and dry sclerophyll forests. The south-eastern subspecies prefers larger patches of mature growth forests with suitable trees for foraging and shelter. Smooth-barked eucalypt are also important and preferred.	Yes – predicted habitat may occur in feature area	No – nearest 10.86 km E.	Suitable habitat – eucalypt woodland with suitable tree species present, hollow-bearing trees with species present that are found in the subspecies habitat (<i>Corymbia trachyphloia</i> , <i>Eucalyptus crebra</i> , <i>E. fibrosa</i> , <i>E. moluccana</i> and <i>E. tereticornis</i>).	No	No	Potential to occur The species has not been historically recorded within the Study area; however suitably connected habitat occurs in the south-western most corner of the Project area and along Mitchell Road. Accordingly, the species is considered to have potential to occur.
<i>Phascolarctos cinereus</i> Koala	E	E	PMST, WN, GHD (2019)	The koala is a habitat specialist, feeding almost exclusively on the leaves of trees from the Eucalyptus, Corymbia, Lophostemon, Angophora and Melaleuca genus (DAWE 2022a). Koalas have a broad but patchy distribution, restricted to the eucalypt forests and woodlands of eastern Australia (DAWE 2022a). The distribution and density of koalas is influenced by numerous factors, including habitat connectivity, habitat quality, population dynamics and the presence of threats (DAWE 2022b).	Yes – predicted habitat may occur in feature area	Yes – 1.29 km NW in 2004, 2.02 km S in 1982, 1.9 km E in 2022, 3.34 km E in 2023, 3.49 km SE in 2021 and 4.05 km E in 2023.	Suitable habitat – eucalypt woodland	No	No	Likely to occur The species has been historically recorded within the Study area and suitable habitat occurs in the Project area. Accordingly, the species is considered likely to occur.
<i>Pteropus poliocephalus</i> Grey-headed flying fox	V	LC	PMST	This species occurs in the coastal belt from Rockhampton in central Queensland to Melbourne in Victoria. The species is organised around roost sites commonly formed in gullies, typically not far from water and usually in vegetation with a dense canopy.	Yes – predicted habitat may occur in feature area	Yes – 3.23 km SE in 1992 and 8.09 km E in 2022.	Yes – Suitable foraging resources are present in the Study area (i.e. <i>E.</i>	No	No	Likely to occur The species has been historically recorded within the Study area and suitable habitat occurs in the Project area. Accordingly, the species is considered likely to occur.

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				Bats commute daily to foraging areas, typically within 15 km of the day roost where they feed on a wide variety of flowering and fruiting plants including the blossoms of eucalypts			<i>tereticornis</i> , <i>E. crebra</i> , <i>E. fibrosa</i>).			
<i>Macroderma gigas</i> Ghost Bat	V	E	PMST	They currently occupy habitats ranging from the arid Pilbara to tropical savanna woodlands and rainforests. During the daytime they roost in caves, rock crevices and old mines.	No	No records in South east Queensland	No	No	No	Highly Unlikely to occur The species has not been historically recorded within the Study area and no suitable foraging or roosting habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Pseudomys novaehollandiae</i> New Holland Mouse	V	V	PMST	The New Holland Mouse is known to inhabit open heathlands, open woodlands with a heathland understorey and vegetated sand dunes.	No	No – nearest 56.57 km SE.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Potorous tridactylus tridactylus</i> Long-nosed potoroo	V	V	PMST	This species has a fragmented distribution between Gladstone (Many Peaks Range), south to the northern boundaries of the Sydney Basin. The species has been observed in open forests, heath-woodland with sandy loam soils.	No	No - nearest 25.35 km E in 1976.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Petrogale penicillata</i> Brush-tailed Rock wallaby	V	V	PMST	This species prefers rocky habitats, including loose boulder-piles, rocky outcrops, steep rocky slopes, cliffs, gorges and isolated rock stacks.	Yes	No - nearest 17.71 km SW.	No suitable habitat occurs in the Project area.	No	No	Unlikely to occur The species has not been historically recorded within the Study area. No suitable habitat occurs within the Project area; and while marginal potential foraging habitat occurs adjacent to the Project area, no suitable shelter habitat occurs nearby. Accordingly, the species is considered unlikely to occur.
<i>Dasyurus maculatus maculatus</i> Spot-tailed Quoll	E	E	PMST	The Spot-tailed Quoll has a preference for mature wet forest habitat. Unlogged forest or forest that has been less disturbed by timber harvesting is also preferable.	No	No - nearest 8.28 km E in 1975.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
<i>Tachyglossus aculeatus</i> Short-beaked echidna	NL	SL	WN ALA	This species is found throughout Australia, including Tasmania. As such, this nocturnal species has an extensive habitat range and can be ubiquitous in almost all habitats, including urban areas. They are usually found among rocks, logs and tree root areas, and have large home ranges (up to 50 ha).	No	Yes – 2.8 km NE in 1870, 4.2 km SE in 1991, 3.2 km, 5 km, and 5.7 km SE in 1992, 6.4 km E in 1973	Yes – suitable foraging habitat bordering Project area	No	No	Potential to occur The species has multiple historical records (within 50 years) within 10 km of the Project area and suitable habitat occurs within the Project area. As such, the species is considered as having the potential to occur.
Reptiles										
<i>Delma torquata</i> Collared delma	V	V	PMST	The collared delma occurs in south-east Queensland where it is known from a number of locations including the Condamine region). The species occurs in eucalypt dominated woodland and open forest, microhabitat associated with the species includes exposed rocky outcrops with native groundcover	No	No - nearest 33.94 km N	Suitable – eucalypt woodland, was present but lacked deep mats of leaf litter that is essential to provide suitable habitat	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Furina dunmalli</i> Dunmall's snake	V	V	PMST	Dunmall's Snake has been found in a broad range of habitats, including: forests and woodlands on black alluvial cracking clay and clay loams. Plus open forests and woodland associations on sandstone derived soils.	No	No records in South east Queensland	No – deep cracking clays were not observed.	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
<i>Hemiaspis damelii</i> Grey snake	E	V	PMST	The grey snake occurs in southeastern Queensland, with most records near Macintyre and Condamine Rivers and associated floodplains from Dalby to Glenmorgon, north towards Rockhampton. The grey snake occurs in <i>A. harpophylla</i> and <i>Casuarina cristata</i> woodlands on heavy cracking clay soils, typically associated with water bodies where the species shelters under logs or in soil cracks. The species is strongly	No	No - nearest 42.18 km N	No suitable habitat – deep cracking clays were not observed.	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
				associated with frog presence, which is its main food source, wetlands and cracking clays						
Amphibians										
<i>Mixophyes fleayi</i> Fleay's barred frog	E	E	PMST	This species distribution occurs patchily from far-south Queensland and far north-east NSW (TSSC, 2021). Fleay's Frog is associated with montane rainforest and open forest communities adjoining rainforest. The species occurs along stream habitats (TSSC, 2021).	No	No - nearest 22.80 km SE.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
Fish										
<i>Maccullochella mariensis</i> Mary River Cod	E	NL	PMST	The Murray cod was historically distributed through the Murray-Darling basin, extending from southern Queensland through to Victoria and South Australia, where it still occurs in parts of its historical distribution. The species occurs in a range of habitats from clear, rocky stream to slow flower turbid lowland rivers.	No	No - nearest 22.80 km SE.	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Insects										
<i>Argynnis hyperbius inconstans</i> Australian Fritillary	CE	LC	PMST	The Australian fritillary usually occurs around river estuaries or open, swampy coastal regions. It occurs in areas where its larval food plant, the arrowhead violet, occurs. It often grows beneath grasses and other plants.	No	No records in South east Queensland		No	No	Highly Unlikely to occur The Study area is generally outside the species current known range. The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Migratory										
Avifauna										
Fork-tailed Swift <i>(Apus pacificus)</i>	Mig	LC	PMST	The Fork-tailed Swift is almost exclusively aerial. In Australia, they mostly occur over inland plains but sometimes above foothills or in coastal areas. They often occur over cliffs and beaches and also over islands and sometimes well out to sea.	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and while suitable habitat occurs above the Project area, the species has low likelihood of occurring
Satin Flycatcher <i>(Myiagra cyanoleuca)</i>	Mig	LC	PMST	The Satin flycatcher inhabit heavily generated gullies in eucalypt dominated forests and taller woodlands. When migrating the species occurs in coastal forests, woodlands, mangroves and drier woodlands and open forests.	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
Osprey (<i>Pandion haliaetus</i>)	Mig	LC	PMST	Ospreys occur in littoral and coastal habitats and terrestrial wetlands. They will travel along major rivers and require fresh, brackish or saline open water for foraging.	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Pectoral Sandpiper (<i>Calidris melanotos</i>)	Mig	LC	PMST	Prefers shallow fresh to saline wetlands. The species is found at coastal lagoons, estuaries, bays, swamps, lakes, inundated grasslands, saltmarshes, river pools, creeks, floodplains and artificial wetlands. The species is usually found in coastal or near coastal habitat but occasionally found further inland. It prefers wetlands that have open fringing mudflats and low, emergent or fringing vegetation	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Rufous Fantail (<i>Rhipidura rufifrons</i>)	Mig	LC	PMST	The rufous fantail is distributed throughout northern and eastern coastal Australia, though is considered more common in the north. The species inhabits sclerophyll forests, often in gullies dominated by eucalypts and usually within a dense shrubby understory that often includes ferns. Movement patterns for the rufous fantail are not well-known, and eastern populations are believed to migrate to northern Australian during the winter.	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Black-faced Monarch (<i>Monarcha melanopsis</i>)	Mig	LC	PMST	The Black-faced monarch occurs in rainforest ecosystems, semi deciduous vine thickets and notophyll vine forest. Gullies, dry sclerophyll and open eucalypt forest are where they also occur.	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.

Species	Conservation status		Source	Habitat requirements	Study area in species mapped distribution	Nearby historical records (relative to Project area)	Habitat presence and quality	Species recorded in field surveys	Conservatism needed due to reduced detectability	Likelihood of Occurrence
	EPBC Act	NC Act								
Common sandpiper (<i>Actitis hypoleucos</i>)	Mig	LC	PMST	The species utilises a wide range of coastal wetlands and some inland wetlands, with varying levels of salinity, and is mostly found around muddy margins or rocky shores and rarely on mudflats.	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Oriental Cuckoo (<i>Cuculus optatus</i>)	Mig	LC	PMST	The species inhabits coastal regions across northern and eastern Australia, as well as offshore islands. Species utilises a range of vegetated habitats, including monsoon rainforests, wet sclerophyll forests, open woodlands and along the edges of forests	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Yellow Wagtail (<i>Motacilla flava</i>)	Mig	LC	PMST	The species is found in highly variable habitats, but typically found in open grassy flats near water. Habitats include open areas of low vegetation such as grasslands, pastures, sport fields and damp open areas	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Spectacled Monarch (<i>Symposiachrus trivirgatus</i>)	Mig	LC	PMST	The spectacled monarch is found in coastal north-eastern and eastern Australia, from Cape York to Port Stephens. The species prefers thick understory habitats in rainforests, wet sclerophyll forests and mangroves	No	No	No	No	No	Unlikely to occur The species has not been historically recorded within the Study area and no suitable habitat occurs within the Project area. Accordingly, the species is considered unlikely to occur.
Key to table: CE/CR – Critically Endangered, E – Endangered, V – Vulnerable, Mig – Migratory, NT – Near threatened, SL – Special least concern, LC – Least concern, NL – Not Listed, PMST – Protected Matters Search Tool, WN – WildNet record, ALA – ALA record, NA – Not applicable										

Appendix C

Fauna field observations

Scientific name	Common name	Sightings
Birds		
<i>Anas superciliosa</i>	Pacific black duck	4
<i>Aquila audax</i>	Wedgetail eagle	2
<i>Chenonetta jubata</i>	Australian wood duck	3
<i>Corvus orru</i>	Torresian crow	2
<i>Coturnix pectoralis</i>	Stubble quail	5
<i>Cracticus nigrogularis</i>	Pied butcher bird	1
<i>Cracticus tibicen</i>	Australian Magpie	1
<i>Dacelo novaeguineae</i>	Laughing kookaburra	1
<i>Falco cenchroides</i>	Nankeen kestrel	1
<i>Haliastur sphenurus</i>	Whistling kite	2
<i>Hirundo neoxena</i>	Welcome swallow	6
<i>Meliphaga lewinii</i>	Lewin's honeyeater	1
<i>Rhipidura leucophrys</i>	Willy wagtail	2
<i>Strepera graculina</i>	Currawong	1
Reptiles		
<i>Pogona barbata</i>	Eastern bearded dragon	1
Frogs		
<i>Rhinella marina</i>	Cane toad	3
<i>Litoria fallax</i>	Eastern sedgefrog	3 (heard)
Mammal		
<i>Macropus giganteus</i>	Eastern grey kangaroo	8
<i>Notamacropus rufogriseus</i>	Red-necked wallaby	2 (one on remote camera)
<i>Trichosurus vulpecula</i>	Brushtail possum	2 (remote camera)
<i>Vulpes vulpes</i>	European fox	1 (remote camera)

Appendix D

**Microbat Call Identification Report
(Balance! Environmental)**



Microbat Call Identification Report

Prepared for ("Client"):	GHD
Survey location/project name:	Bromelton, SE Qld
Survey dates:	10 th and 11 th April 2024
Client project reference:	Project # 12626213 Task: 002
Job no.:	GHD-2402
Report date:	15 May 2024

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Methods

Data received

Balance! Environmental received 2452 ultrasonic WAV files, recorded at a single site over two consecutive nights (10th and 11th April 2024) using an Anabat Swift detector (Titley Scientific, Brisbane).

Bat-call analysis

All WAV files were analysed in *Anabat Insight* (v. 2.1.1; Titley Scientific), as follows:

- A generic bat-calls filter was used to scan all files and mark those containing at least four bat-call pulses. Files that did not pass the filter were labelled as noise and excluded from further analysis.
- Files that passed the filter were then processed with the Decision Tree Analysis tool to group and label files according to the average zero-crossing metrics of calls within each file. Separation was based primarily on the characteristic frequency (Fc) metric, but metrics such as pulse duration (Dur), slope of characteristic section (Sc) and time between pulses (TBC) were included to further refine calls recognition by the Decision Tree.
- Species present within each Decision Tree output group were confirmed using a combination of further species-specific metric-based filters and manual review of the call spectrograms. Manual species confirmation was based on comparing visual properties of call spectrograms and derived metrics with those of reference calls from southern Queensland and/or with published call descriptions (e.g., Reinhold et al. 2001).

The likelihood of species' occurrence on site was confirmed by referring to published distributional information (e.g., Australasian Bat Society 2021, Churchill 2008; Baker & Gynther 2023).

Reporting standard

The format and content of this report follows Australasian Bat Society standards for the interpretation and reporting of bat call data (Reardon 2003), available on-line at <http://www.ausbats.org.au/>.

Species nomenclature follows Armstrong *et al.* (2020).

Results & Discussion

The bat-calls filter excluded 1488 “noise-only” WAV files from further analysis. The remaining 964 files included 1056 individual bat call passes, 93% (985) of which were positively attributed to distinct taxa. The other 71 “unresolved” calls could not be reliably identified and were assigned to several multi-species groups.

At least 13 and up to 17 species were detected (see **Table 1**). The positively-identified calls were assigned to 11 distinct species plus two undifferentiated congeneric groups: *Nyctophilus* spp.; and *Scotorepens* spp. Calls attributed to *Nyctophilus* potentially represent up to three species - *N. bifax*, *N. geoffroyi*, *N. gouldi* – while the *Scotorepens* calls belonged to *S. greyii* and/or *S. sp.* (*sensu* Parnaby 1992).

Most of the unresolved calls belonged to species that were otherwise reliably identified; however, one call possibly represents an additional species – *Vespadelus pumilus* – that was not otherwise recognised in the dataset.

Sample spectrograms of each identified call type are presented in **Appendix 1**.

Table 1 Bats recorded at Bromelton, 10th and 11th April 2024.

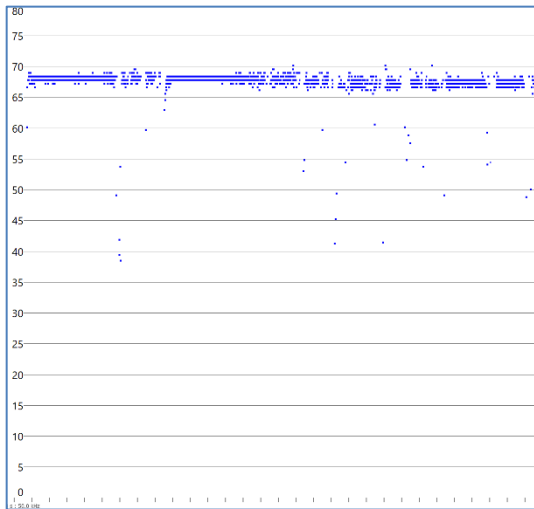
Number of calls allocated per species per night.

Night:	10/04/2024	11/04/2024	Species Total
Positively identified calls			
<i>Rhinolophus megaphyllus</i>	1		1
<i>Chalinolobus gouldii</i>	99	145	244
<i>Chalinolobus nigrogriseus</i>	4	1	5
<i>Chalinolobus picatus</i>	6	21	27
<i>Nyctophilus</i> sp.	8	4	12
<i>Scotorepens</i> sp.	7	2	9
<i>Scotorepens orion</i>	1	1	2
<i>Miniopterus australis</i>	28	20	48
<i>Miniopterus orianae oceanensis</i>	4	5	9
<i>Austronomus australis</i>	46	173	219
<i>Micronomus norfolkensis</i>	2	4	6
<i>Ozimops lumsdenae</i>	2	2	4
<i>Saccolaimus flaviventris</i>	167	232	399
Unresolved calls			
<i>C. nigrogriseus</i> or <i>Scotorepens</i> sp.	7	12	19
<i>M. australis</i> or <i>Vespadelus pumilus</i>	1		1
<i>Scotorepens</i> sp. or <i>C. picatus</i>	15	36	51
Detector-night Total	398	658	1056

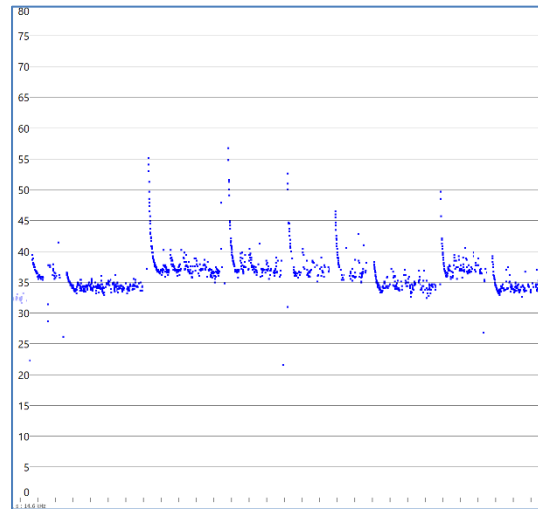
References

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URL: <http://ausbats.org.au/species-list/4593775065>
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- Reinhold, L., Law, B., Ford, G. and Pennay, M. (2001). *Key to the bat calls of south-east Queensland and north-east New South Wales*. Department of Natural Resources and Mines, Brisbane.

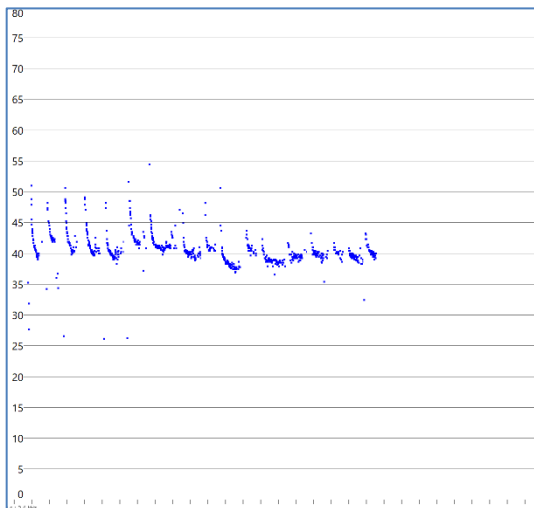
Appendix 1 Representative call sequences recorded at Bromelton, 10-11 April 2024.
x-axis = 10 ms per tick-mark; time between pulses removed ("compressed")



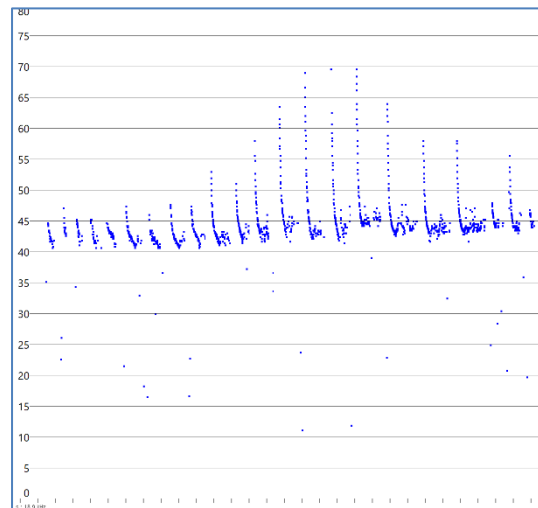
Rhinolophus megaphyllus



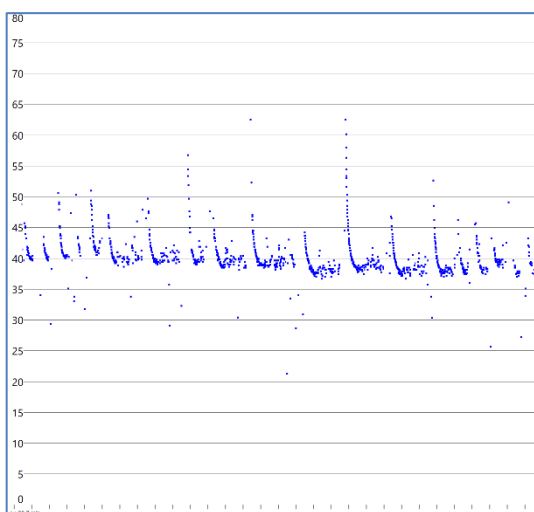
Chalinolobus gouldii



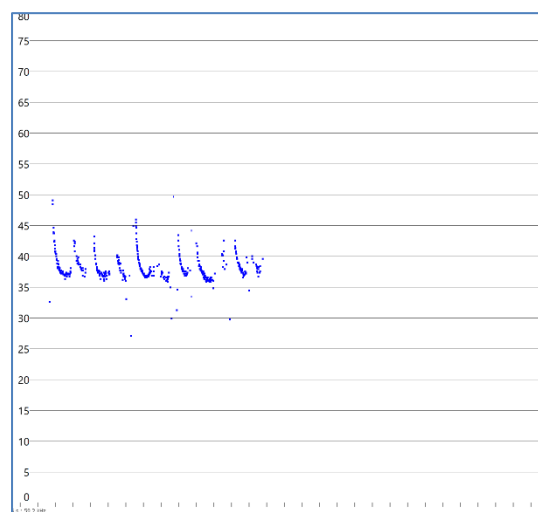
Chalinolobus nigrogriseus



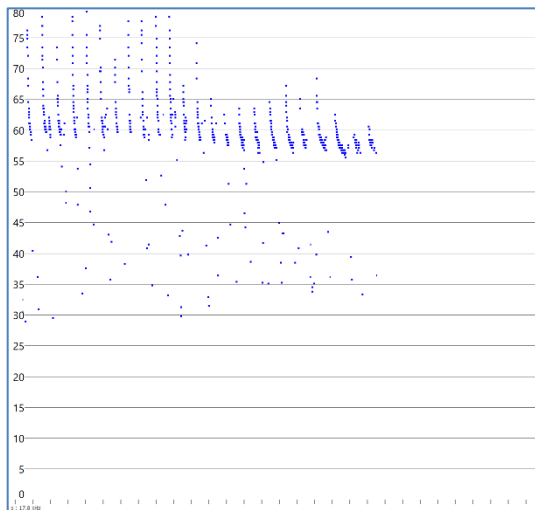
Chalinolobus picatus



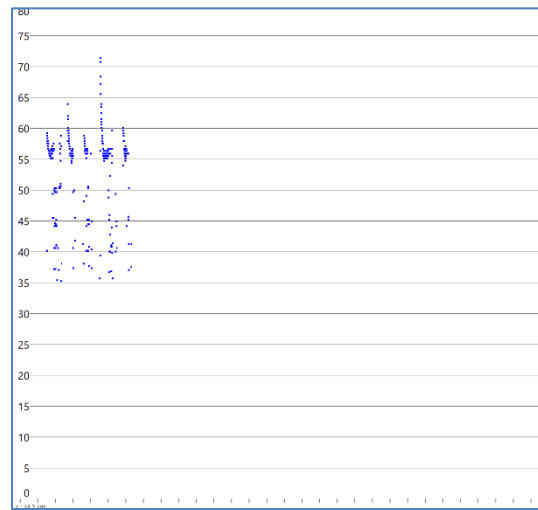
Scotorepens sp. (sensu Parnaby 1992) / *S. greyii*



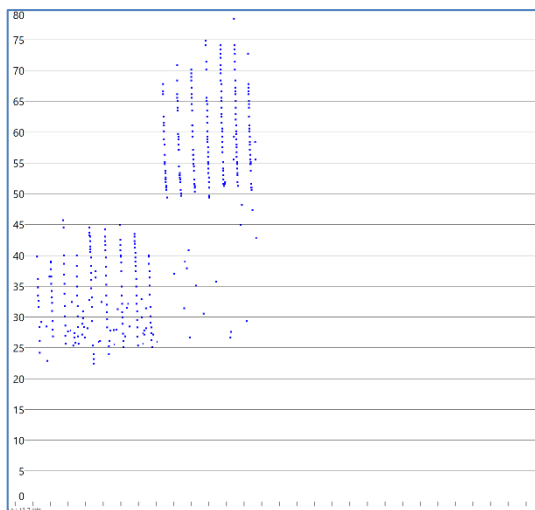
Scotorepens orion



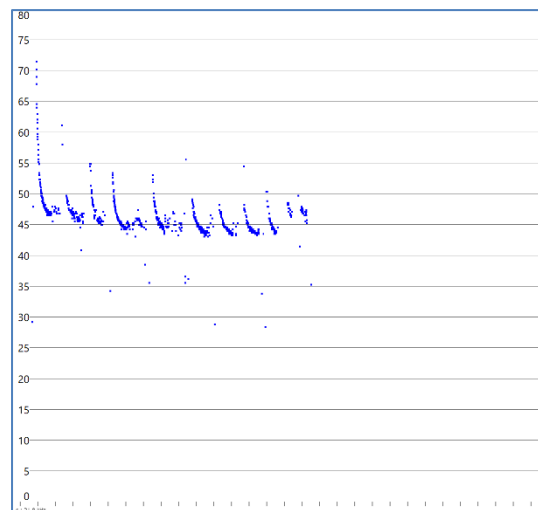
Miniopterus australis



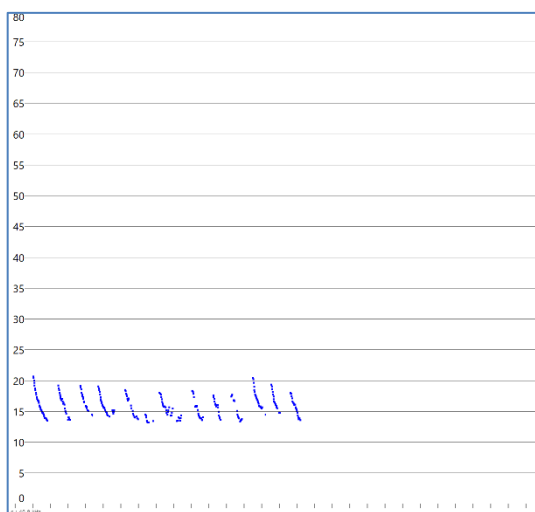
M. australis or *Vespadelus pumilus*



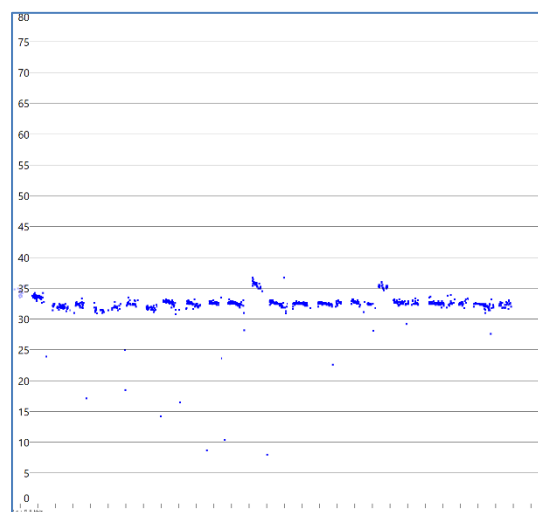
Nyctophilus sp.



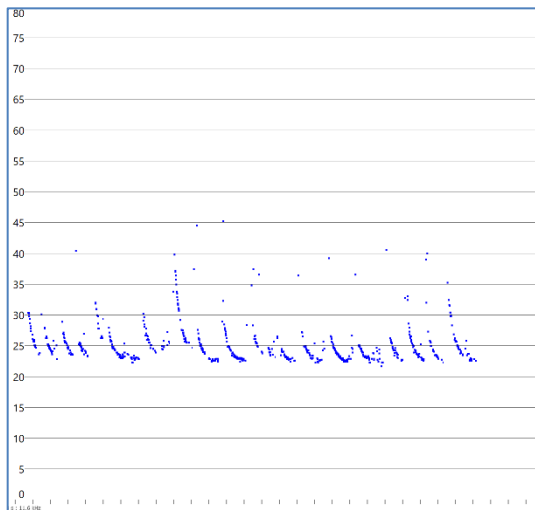
Miniopterus orianae oceanensis



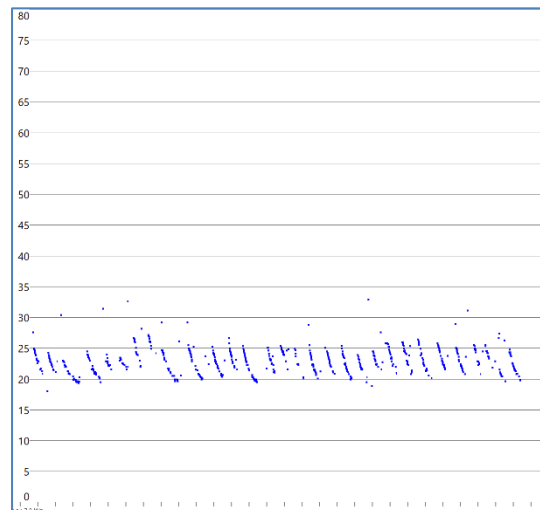
Austronomus australis



Micronomus norfolkensis



Ozimops lumsdenae



Saccolaimus flaviventris



Bromelton Compost Manufacturing Facility

Aquatic Ecology Assessment Report

SOILCO Pty Ltd

21 August 2024

→ **The Power of Commitment**



Project name		Bromelton Compost Manufacturing Facility					
Document title		Bromelton Compost Manufacturing Facility Aquatic Ecology Assessment Report					
Project number		12626213					
File name		12626213-RPT-00-Bromelton Compost Manufacturing Facility Aquatic Ecology Assessment.docx					
Status Code	Revision	Author	Reviewer		Approved for issue		
			Name	Signature	Name	Signature	Date
S0	A	S. Hampson T. Moeser	C. Chargulaf	DRAFT	E. Rothwell	DRAFT	20-05-2024
S4	0	C. Chargulaf	C. Chargulaf		E. Rothwell		14-08-2024
S4	1	H. Wheatley	P. Wijesinghe		E. Rothwell		22-08-24

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Executive Summary

GHD Pty Ltd (GHD) was commissioned by SOILCO Pty Ltd (here after referred to as SOILCO) to assess the aquatic ecological values and potential impacts of the proposed Bromelton Compost Manufacturing Facility and Mitchell Road. This report summarises the existing aquatic ecological values within the Project area, and a broader 'Study area' based on desktop and field assessments. The report also presents a preliminary assessment of potential impacts the Project may have on the aquatic ecological values, including Matters of National Environmental Significance (MNES) protected under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and Matters of State Environmental Significance (MSES) protected under Queensland legislation. Key findings and considerations are as follows:

- Desktop assessment identified one potential aquatic MNES – the Mary River cod – however this was determined as unlikely to occur. There were no aquatic MSES identified. Therefore, no significant impact assessments were required.
- There are two mapped green (low risk) DAF waterways for fish barrier works that pass through the Project area. These are classified as drainage lines under the *Water Act 2000*, however based on field surveys they do not provide fish passage or contain any defining features of a waterway. Declassification of these waterways is recommended.
- These two green waterways are considered to be in 'Poor' condition based on field habitat assessments, and have low diversity of aquatic flora. The remaining three waterways assessed in the Study area were in 'Fair' condition. No aquatic fauna was observed during field surveys.
- Water quality results indicate overall water quality across the Study area was reasonably poor for supporting aquatic species.
- There are three mapped green (low risk) DAF waterways for fish barrier works that are intersected by Mitchell Road. Where the Project requires new culverts or culverts to be replaced for these crossings, this will require a development approval unless designs can comply with the Accepted development requirements.
- Potential impacts include the loss or degradation of aquatic habitats (particularly through decreased water quality from erosion and sedimentation), disturbance to aquatic fauna, and the spread of invasive species. However, given the poor condition and low risk of the green waterways, the facility is expected to largely avoid significant impacts on aquatic ecological values.
- To mitigate impacts, the Project will implement a Construction Environmental Management Plan (CEMP), Erosion and Sediment Control Plans, and Biosecurity Plans. Water containment measures, including on-site storage ponds and channels, will manage site runoff, ensuring minimal impact on local water flows.

Contents

1.	Introduction	4
1.1	Project background	4
1.2	Project area	4
1.3	Purpose of this report	6
1.4	Terminology	6
1.5	Scope and limitations	6
2.	Method	8
2.1	Desktop assessment	8
2.2	Field assessment	9
2.2.1	Habitat assessment	12
2.2.2	<i>In-situ</i> water quality	13
2.2.3	Observations	13
2.3	Likelihood of occurrence	13
3.	Desktop assessment results	15
3.1	EPBC Act	15
3.2	MSES	15
3.3	WildNet and Atlas of Living Australia	15
3.4	Waterways providing for fish passage	16
3.5	Biosecurity	18
4.	Field results	18
4.1	Habitat assessments	18
4.2	<i>In-situ</i> water quality	25
4.3	Aquatic plants	26
4.4	Aquatic fauna	28
4.4.1	Fish	28
4.4.2	Other aquatic fauna	28
4.5	Conservation significant species	29
4.5.1	Likelihood of occurrence	29
4.5.2	Mary River cod	29
4.6	Mitchell Road waterway crossings	29
5.	Potential impacts	31
5.1	General	31
5.2	Construction impacts	31
5.2.1	Loss of aquatic habitat	31
5.2.2	Degradation of aquatic habitat and water	31
5.2.3	Disturbance of aquatic fauna by increased light, noise and vibration	32
5.2.4	Alteration of flow and aquatic fauna movement	32
5.2.5	Fauna injury and mortality	33
5.2.6	Introduction and spread of invasive species	33
5.3	Operational impacts	33
6.	Mitigation measures	34
6.1	Impact avoidance	34

6.1.1	Avoidance achieved during the design phase	34
6.1.2	Design, construction and operation measures	34
7.	Conclusions	35
8.	References	36

Table index

Table 1.1	Project specific terminology	6
Table 2.1	Summary of desktop searches	8
Table 2.2	Habitat characteristics and features recorded during habitat assessments	12
Table 2.3	River bioassessment program: habitat assessment score criteria	13
Table 2.4	Likelihood of occurrence assessment criteria	14
Table 3.1	Historical records within 5km of the Project area	15
Table 4.1	Site habitat bioassessment	18
Table 4.2	Site characteristics and ecological values	19
Table 4.3	In-situ water quality results	25
Table 4.4	Aquatic plants recorded during the field surveys	26
Table 4.5	Likelihood of occurrence assessment	29

Figure index

Figure 1.1	Proposed Project area and locality	5
Figure 2.1	Aquatic survey locations	11
Figure 3.1	DAF mapped waterways for waterway barrier works	17
Figure 4.1	Waterway crossing of Allan Creek tributary 3	30

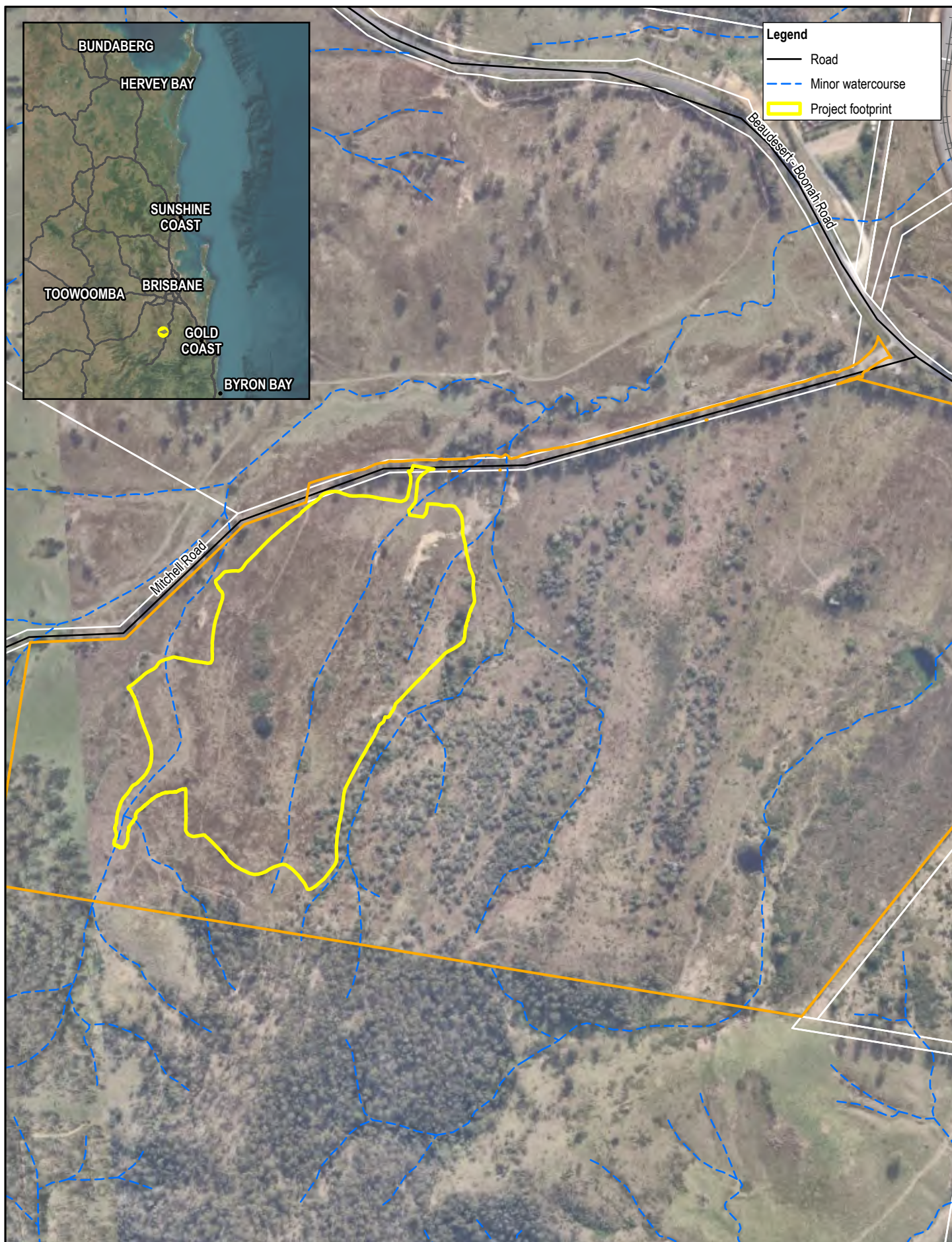
1. Introduction

1.1 Project background

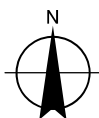
SOILCO Pty Ltd (hereafter SOILCO) are an organics recycling company with 40 years of experience in designing, building and operating organic recycling facilities. To meet the challenges of Australia's dynamic waste and resource recovery sector, SOILCO have secured three greenfield sites that are to be developed into large-scale organics recovery facilities. One of these greenfield sites, located in Bromelton, Queensland within the Scenic Rim, is intended to be developed into the Bromelton Compost Manufacturing Facility (the Project). The development of this facility requires the preparation and submission of planning and environmental approval applications prior to development. As such, GHD has partnered with SOILCO to provide planning and environmental services for securing statutory approvals for the Bromelton Compost Manufacturing Facility. This includes seeking planning approvals for early work activities (described as clearing, cutting and filling).

1.2 Project area

The Project area is in Bromelton on Lot 4 on plan RP85497, located approximately 6 km west of Beaudesert in the Scenic Rim Region of south-east Queensland (Figure 1.1). In 2008, Bromelton was declared a State Development Area (SDA) encompassing roughly 15,000 ha of greenfield land for medium to large scale industrial activities (State of Queensland, 2023). Tributaries within the Project area flow approximately 6.5 km North into Allan Creek, forming part of the Logan River sub-basin, which then discharges into southern Moreton Bay (Quandamooka country) approximately 35km from the Project area. The region is predominantly agricultural land with sparse riparian vegetation on waterway margins.



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SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Aquatic Ecology Assessment

Project No. **12626213**
Revision No. **A**
Date **12/08/2024**

Project area and locality

FIGURE 1.1

1.3 Purpose of this report

The purpose of this Aquatic Ecology Assessment Report is to identify and assess any potential impacts to ecological values within the Project area. Ecological values of interest include conservation significant aquatic species and associated ecological values.

This report details the findings of the desktop assessment and field surveys undertaken within the Project area. The report includes:

- Details of Project background
- Description of aquatic assessment methodology
- Summary of existing aquatic ecological values (including results of desktop and field assessments) and list of aquatic fauna species likely to be present within the Project area
- Likelihood of occurrence assessment for conservation significant aquatic fauna
- Discussion on potential impacts to waterways providing for fish passage from the proposed remediation works
- Environmental impact mitigation recommendations during design and construction.

1.4 Terminology

Terminology used in this report is outlined in Table 1.1.

Table 1.1 Project specific terminology

Desktop search	Purpose
Project area	The Project area represents the areas subject to direct disturbance for the proposed compost manufacturing facility. The Project area is presented on Figure 1.1.
Study area	The Study area represents the extent of the desktop searches. The Study area represents a 5 km buffer around the approximate centre point of the Project area (-27.97819,152.91026).
Conservation significant species	Species listed as critically endangered, endangered, vulnerable or migratory under the Commonwealth <i>Environment Protection and Biodiversity Conservation Act 1999</i> (EPBC Act) or listed as critically endangered, endangered, vulnerable, near threatened, special least concerned or colonial breeders under the Queensland <i>Nature Conservation Act 1992</i> (NC Act).
Migratory species	Species listed as migratory under the EPBC Act
Introduced fauna	Introduced fauna species listed as feral animals under the EPBC Act or listed as prohibited or restricted matter under the <i>Biosecurity Act 2014</i> .

1.5 Scope and limitations

This report has been prepared by GHD for SOILCO Pty Ltd and may only be used and relied on by SOILCO Pty Ltd for the purpose agreed between GHD and SOILCO Pty Ltd as set out in Section 1.3 of this report.

GHD otherwise disclaims responsibility to any person other than SOILCO Pty Ltd arising in connection with this report. GHD also excludes implied warranties and conditions, to the extent legally permissible.

The services undertaken by GHD in connection with preparing this report were limited to those specifically detailed in the report and are subject to the scope limitations set out in the report.

The opinions, conclusions and any recommendations in this report are based on conditions encountered and information reviewed at the date of preparation of the report. GHD has no responsibility or obligation to update this report to account for events or changes occurring subsequent to the date that the report was prepared.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report. GHD disclaims liability arising from any of the assumptions being incorrect.

1.6 Project description

The Bromelton Compost Manufacturing Facility (the Bromelton CMF Project) is an organics facility located along Mitchell Road in Bromelton, in South East Queensland. The Bromelton CMF Project will involve the construction and operation of a facility for the receipt, processing, composting, and storage of the following materials: garden, food, wood wastes, manures and soil for the sale and distribution of finished compost, mulch and soil products. SOILCO will design, construct and operate the Bromelton CMF Project.

SOILCO are seeking the following approvals for the Project:

- A State Development Area (SDA) Material Change of Use approval for works within the Bromelton SDA under the State Development and Public Works Organisation Act 1971.
- An Environmental Authority (EA) Approval for Environmentally Relevant Activities (ERAs):
 - ERA 33(1): Crushing, milling, grinding or screening more than 5,000t of material in a year.
 - ERA 53(a): Organic material processing - processing more than 200 t of organic material in a year by composting
 - ERA 54(2)(c): Mechanical waste reprocessing - operating a facility for receiving and mechanically reprocessing more than 10,000 t a year of general waste

The Bromelton CMF Project aligns with objectives in the Queensland Government Queensland Organics Strategy 2022–2032 by reducing the amount of organic waste going to landfill and it will offer economic and social benefits through employment and local business opportunities in South East Queensland.

SOILCO commenced composting operations in 1985 in Australia and has a strong distribution network in agricultural and urban markets in Australia. SOILCO are a manufacturer of quality assured compost, mulch and soil blends and specialise in the design, construction and operation of innovative organics recycling facilities in Australia. SOILCO's mission is to transform organic resources into the world's best products to regenerate and enhance the health and productivity of soil and to maximise our contribution to clean energy and sustainable communities.

SOILCO successfully operates a state-of-the-art network of licensed organics processing facilities across Eastern Australia. SOILCO's infrastructure experience spans different technology solutions, including:

- Open Windrow (OW)
- In-Vessel Composting (IVC) tunnels
- Aerated Static Piles/ Covered Aerated Static Piles (ASP/CASP)

For the Bromelton CMF Project, SOILCO will utilise ASP & OW technologies.

Table 1.2 *Bromelton CMF Project components*

Project Component	Details
Lot on Plan	Lot 4 on Plan RP85497 and Mitchell Road (Local government road parcel)
Summary of proposed works	Construct and operate a Compost Manufacturing Facility (CMF) at 260 Mitchell Road, Bromelton for the sale and distribution of finished compost, mulch & soil products The site will be split into 3 different processing areas: Receiving, decontamination and composting utilizing Forced Aeration Pad system (ASP).
Construction disturbance area within Lot 4 RP85497	21 hectares
Operational footprint within Lot 4 RP85497	18.5 hectares
Proposed output of the compost facility and type of material to be received and processed	Receipt, processing, composting, and storage of up to 250,000 tpa of the following materials: Garden, Food and Wood wastes and manure. Receipt, processing, storage and blending of up to 150,000 tpa of sand and soil products for manufacturing (Virgin Excavated Natural Materials or VENM).
Technology used	Two composting technologies will be utilised to handle different feedstocks: 100,000 tpa of garden organics (GO) composted by Passive Open Windrow (OW) method.

Project Component	Details
	150,000 tpa of Food Organics and Garden Organics (FOGO) is to be processed on a Forced Aeration Pad system (ASP). Wood wastes and manure will make up a small portion of the composting feedstocks and will be blended with the GO & FOGO based on onsite capacity. VENM will be received and stored as required based on demand of finished products. Due to the seasonal nature of feedstock generation, up to 15% of the total annual waste may be received in any one month. This would typically occur around spring and autumn.
Key infrastructure and structures	Access from Mitchell Road Weigh bridges Internal road network Maintenance and storage shed Final screening and manufacturing area Water tanks Aeration Pad system Office, carparking and amenities FOGO receival area 3 x leachate ponds 1 x freshwater dam Open windrows pad FOGO maturation pad Hardstand areas Retaining wall Upgrade of Mitchell Road
Hours of Operation	Monday – Friday 6am to 6pm Saturday – 6am to 4pm Sunday and public holidays 9am - 4pm
Operational Staff	22 employees
Access arrangements	Mitchell Road will connect the Bromelton CMF Project to the road network. Mitchell Road will be upgraded to accommodate the traffic from the Bromelton CMF Project.
Timeframe	Construction and Commissioning 7th April 2025 – 30th January 2026

2. Method

2.1 Desktop assessment

The desktop assessment was undertaken to collate existing information and identify any aquatic ecological values of the environment within the Project extent. Desktop searches were completed to provide location specific information on aquatic ecosystems/habitats and aquatic species listed as conservation significant under the EPBC Act and/or NC Act. The search extent for all desktop searches included a 5 km buffer around Project area to identify all the aquatic species known to occur in the area.

The desktop assessment used the information sources listed in 2.1.

Table 2.1 *Summary of desktop searches*

Desktop search	Purpose
Department of Climate Change, Energy, the Environment and Water (DCCEEW)	
EPBC Act Protected Matters Search Tool (PMST)	The PMST identifies conservation significant aquatic flora and fauna species and communities listed under the EPBC Act as Matters of National Environmental Significance (MNES) that have the potential to occur within the Study area (DCCEEW, 2023a).
Species Profile and Threats Database (SPRAT)	The SPRAT profiles were assessed to determine the distribution and habitat requirements of conservation significant species predicted to occur within the Study area (DCCEEW, 2023b).
Department of Environment, Science and Innovation (DESI)	
Matters of State Environmental Significant (MSES) database	The MSES environmental database and report tool was used to identify MSES including aquatic protected areas, essential wetland habitats and waterways, and threatened species protected under the NC Act (DESI, 2023a).
WildNet	The WildNet online database was assessed through Queensland Globe to identify the location and date of historical records of conservation significant species within the Study area (DESI, 2023b).
Department of Agriculture and Fisheries (DAF)	
Queensland waterways for waterway barrier works (WWBW spatial layer)	The Queensland waterways for waterway barrier works mapping was assessed through Queensland Globe to identify any mapped waterways within the Study area (DAF, 2024).
State of Queensland	
Queensland Globe State Mapping Layers	Queensland Globe mapping layers were used to review presence of significant wetlands and fish habitat areas within the Study area (State of Queensland, 2024a).
Watercourse identification mapping	The watercourse identification mapping was assessed through Queensland Globe to determine any relevant authorisations required within the Study area covered by the <i>Water Act 2000</i> (State of Queensland, 2024b)
Other sources	
Atlas of Living Australia (ALA) database	The ALA database (2024) was used to retrieve records of historical flora and fauna species previously observed in the vicinity of the Study area.
Scientific reports and publicly available information.	A search was conducted to identify existing information on aquatic habitats and aquatic fauna and flora species previously recorded in the Study area.

2.2 Field assessment

A field survey was conducted to confirm the existing ecological values of the Study area identified from the desktop assessment. The survey was also used to inform the likelihood of occurrence assessment for EPBC Act and NC Act listed species. Assessment of waterways providing for fish passage at the site of the proposed compost facility was also completed. The field survey was undertaken within the Study area on both 5 and 10 April 2024. The survey involved habitat assessments and *in-situ* water quality sampling (see Section 2.2.1 and 2.2.2).

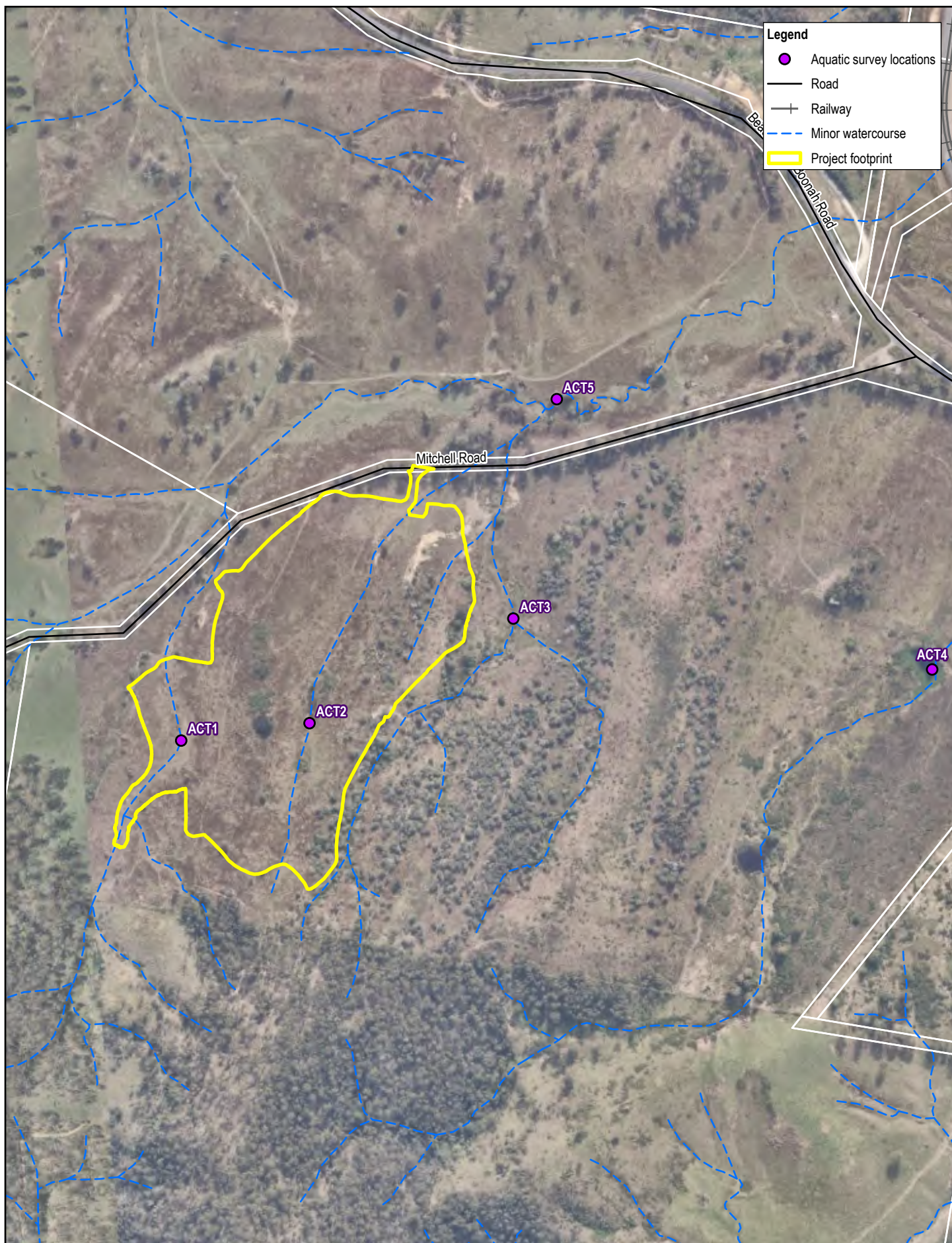
Survey site locations are presented in Figure 2.1. A total of five tributaries were assessed:

- Allan Creek Tributary (ACT) 1, 2, and 3 surveyed 5 April 2024
 - o ACT1 flows through the south-west extent of the Project area
 - o ACT2 flows through the Project area
 - o ACT3 is located slightly east and outside of the Project area but within the Lot boundary

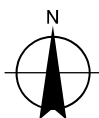
- ACT 4 and 5 surveyed 10 April 2024
 - ACT4 is located far east and outside of the Project area but within the Lot boundary
 - ACT5 is outside of the Lot at the confluence of tributaries ACT1-3

Based on information provided by the Queensland Department of Regional Development, Manufacturing and Water, all these tributaries would be determined as drainage features for the purpose of the *Water Act 2000*.

Weather conditions on 5 April 2024 recorded 6 mm of rain and light winds with temperatures ranging from 18.8°C to 24.0°C (Bureau of Meteorology, 2024). On 10 April 2024, there was also light winds with no rain and a wider temperature range from 10.7°C to 27.2°C. A total of 32.6 mm of rain had been received since the start of April prior to the field survey commencement on 5 April 2024, with an additional 13.8 mm rain between the two survey events. All weather data was sourced from the nearest available Australian Bureau of Meteorology weather station – Beaudesert Drumley Street (Station ID 040983).



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Bromelton Compost Manufacturing Facility
Aquatic Ecology Assessment

Project No. **12626213**
Revision No. **A**
Date **12/08/2024**

Aquatic survey locations

FIGURE 2.1

2.2.1 Habitat assessment

Aquatic habitat assessments were undertaken at five sites in the Study area. These habitat assessments were completed to describe the presence and condition of key aquatic habitat features and overall condition of the waterway at each site. The assessments were conducted in accordance with the *Queensland Australian River Assessment System (AusRivAS) Sampling and Processing Manual* (Department of Natural Resources and Mines (DNRM), 2001) and *Monitoring and Sampling Manual* (Department of Environment and Science (DES), 2018a).

Habitats were characterised in terms of the key features outlined in Table 2.2.

The location and extent of habitats within the site were mapped along the extent of the waterways within the Project area with photographs at each site taken to provide additional representation of habitat conditions at the time of the survey. All

An overall condition score was calculated by scoring each habitat variable against condition criteria detailed in Table 2.2. These scores were then compared between sites to identify patterns within the data and provide an ecologically relevant interpretation of the results.

Table 2.2 *Habitat characteristics and features recorded during habitat assessments*

Habitat characteristic	Key features
Channel type	Reach morphology: bank full bank height, bank full stream width, stream wetted width, normal wetted width, water depth
Habitat diversity and extent	Variety of habitat: the presence of shallow, deep, pool, run, riffle, undercut bank, woody debris and macrophytes habitats
Bed and bank composition	Substrate: percent representation by bedrock, boulder (>256 mm), cobble (64-256 mm), pebble (4-64 mm), gravel (2-4 mm), sand (0.05-2 mm) and silt/clay (<0.05 mm) classifications Sediment deposits: presence of instream deposits of either sand or silt (or none)
Surface water attributes	Water quality: substrate anoxia, water surface colour and condition, the presence of water or substrate odour was noted Hydrology: estimates of velocity
Instream habitat	Snags and woody debris: representation of detritus (leaves, twigs), sticks (<2 cm diameter), branches (<15 cm diameter) and logs (>15 cm diameter) classifications estimated in terms of cover within the reach as either none, little (1-10%), some (10-50%), moderate (50-75%) or extensive (>75%) Habitat attributes: presence of periphyton, moss, filamentous algae, macrophytes, bank overhang vegetation, trailing bank vegetation, blanketing silt and substrate anoxia, using the same 'none' to 'extensive' categories as for snags and woody debris Macrophytes: general characterisations of visible macrophytes
Riparian condition	Riparian zone: width of riparian zone, % canopy cover, % shading, cover (none' to 'extensive') of bare ground, grass, shrubs, trees <10 m high; trees >10 m high and presence of exotic species
Existing disturbances/modifications or barriers	Disturbances: impacts from humans, pastoral animals, non-pastoral animals Presence of erosion, artificial and/or natural barriers
Breeding habitat	Location and suitability of potential breeding habitats

Table 2.3 River bioassessment program: habitat assessment score criteria

Habitat variable	Poor	Fair	Good	Excellent
Bottom substrate	0 - 5	6 - 10	11 - 15	16 - 20
Embeddedness	0 - 5	6 - 10	11 - 15	16 - 20
Velocity and depth category	0 - 5	6 - 10	11 - 15	16 - 20
Channel alteration	0 - 3	4 - 7	8 - 11	12 - 15
Bottom scouring and deposition	0 - 3	4 - 7	8 - 11	12 - 15
Pool/riffle, run/bend ratio	0 - 3	4 - 7	8 - 11	12 - 15
Bank stability	0 - 2	3 - 5	6 - 8	9 - 10
Bank vegetation and stability	0 - 2	3 - 5	6 - 8	9 - 10
Streamside cover	0 - 2	3 - 5	6 - 8	9 - 10
Total	0 - 38	39 - 74	75 - 110	111 - 135

2.2.2 *In-situ* water quality

In-situ water quality readings were collected for surface water when present at sites (>0.2 m depth). *In-situ* water quality measurements were recorded using a calibrated YSI Pro DSS multi-parameter water quality meter, and measurements included:

- Water temperature (°C)
- pH (pH units)
- Electrical conductivity (µS/cm)
- Dissolved oxygen (mg/L and % saturation)
- Turbidity (NTU)

The meter was calibrated as per manufacturer's requirements prior to deployment.

Surface water quality data was compared against the guidelines given in the *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*, – Western Logan River Freshwaters – Upper Freshwaters – Moderately Disturbed waters (Low Flow) (DES 2022).

2.2.3 Observations

Opportunistic observations of fish and other aquatic fauna were undertaken at all sites.

2.3 Likelihood of occurrence

A likelihood of occurrence assessment was conducted to attribute a 'likelihood rating' to all conservation significant species that were predicted to occur in the desktop assessment. The likelihood of occurrence assessment was based on a review of species distributions and habitat requirements, historical records for the region, and the results of habitat assessments and aquatic surveys conducted within the Project area.

The likelihood of occurrence ranking was based on the framework in

Table 2.4 Likelihood of occurrence assessment criteria

Likelihood	Criteria
Confirmed present	Species has been recorded within the Study area during field surveys.
Likely to occur	- There are recent (within 10 years) and nearby (within 10km) historical records of the species. - Suitable high-quality habitat is present within the Study area.
Potential to occur	- There are older (10-20 years) and more regional (10-30km) historical records of the species. - The species was not detected in field surveys. - Low to moderate habitat suitability/quality is present within the Study area. - The species has life history characteristics that warrant increased conservatism in likelihood assessment (i.e. cryptic species or species with temporal or spatial dynamism such as transient, wide-ranging species or species that are dormant for extended periods). - The species is unlikely to occur in the Study area but has a reasonable likelihood of occurring immediately adjacent and should be included in impact assessment due to the potential for indirect impacts on the species
Unlikely to occur (Very low likelihood)	The species has been historically recorded locally or regionally; however, no suitable habitat occurs within the Study area, and the species has limited mobility or temporal dynamism, allowing increased confidence that it is unlikely to occur within the Study area even on a transient basis.
Highly unlikely to occur (Negligible likelihood)	- The species has not been historically recorded in the region. - No suitable habitat is present, and the Study area is generally outside the species current known range. - The species has well-known and highly specific habitat requirements that are not present in the Study area. - The species has low mobility. This is reserved for species where there is very high confidence that the species will not occur.

3. Desktop assessment results

3.1 EPBC Act

Several EPBC Act referrals have been submitted on land in close proximity of the Bromelton Compost Manufacturing Facility Project area. Referrals submitted in the last 10 years for projects located within 5 km of the Project area include:

- 2021/8927 Kagaru to Acacia Ridge and Bromelton Inland Rail Project
- 2018/8320 South West Pipeline and Wyaralong Tanks Project, Qld
- 2015/7522 Improving rabbit biocontrol; releasing another strain of RHDDV, southern two thirds of Australia

Information provided in these referrals has been reviewed as part of the assessment. These studies did not confirm the presence of any threatened aquatic species.

The desktop assessment for MNES identified that the Project area is 30-40 km upstream from the Moreton Bay Ramsar Wetland. There were no threatened aquatic ecological communities found to occur in the Project area or surrounds.

The EPBC Act PMST results determined that the Mary River cod (*Maccullochella mariensis*) was the only conservation significant aquatic species with the potential to occur in the Project area. The Mary River cod was historically found in the Logan-Albert catchment, but now only occurs naturally in the Mary River catchment. The species is listed as endangered under the EPBC Act, and there is a known translocated population of Mary River cod within the region. However, there are no records of the Mary River cod in the desktop search extent.

3.2 MSES

There are no fish habitat areas present in the Project area, and the DESI referable wetlands mapping indicates the Project area is not located in a wetland protection trigger area. However, there are natural wetlands of 'High Ecological Significance' occurring within 5 km of the Project area. These wetlands comprise less than 1% of the desktop search extent, with the closest wetland area situated over 3 km from the Project boundary.

3.3 WildNet and Atlas of Living Australia

The WildNet results (Appendix A) identified no species of conservation significance in the desktop search extent. There was a total of two freshwater turtle species (eastern snake-necked turtle and Murray turtle) and 21 freshwater fish including three exotic species (Mozambique mouthbrooder, European carp and the eastern gambusia) as shown in Table 3.1.

Table 3.1 Historical records within 5km of the Project area

Scientific name	Common name	Conservation significant species	Movement behaviour
Fish			
<i>Ambassis agassizii</i>	Agassiz's glassfish	No	Potamodromous
<i>Anguilla australis</i>	southern shortfin eel	No	Catadromous
<i>Anguilla reinhardtii</i>	longfin eel	No	Catadromous
<i>Oreochromis mossambica</i>	Mozambique mouthbrooder	No – exotic species	Potadromous
<i>Cyprinus carpio</i>	European carp	No – exotic species	Potamodromous
<i>Gobiomorphus australis</i>	striped gudgeon	No	Potamodromous
<i>Hypseleotris compressa</i>	empire gudgeon	No	Potamodromous
<i>Hypseleotris galii</i>	firetail gudgeon	No	Potamodromous

Scientific name	Common name	Conservation significant species	Movement behaviour
<i>Hypseleotris klunzingeri</i>	western carp gudgeon	No	Potamodromous
<i>Philypnodon grandiceps</i>	flathead gudgeon	No	Potamodromous
<i>Philypnodon macrostomus</i>	dwarf flathead gudgeon	No	Potamodromous
<i>Awaous acritosus</i>	roman-nose goby	No	Amphidromous
<i>Melanotaenia duboulayi</i>	crimsonspotted rainbowfish	No	Potamodromous
<i>Mugil cephalus</i>	sea mullet	No	Catadromous
<i>Macquaria novemaculeata</i>	Australian bass	No	Catadromous
<i>Tandanus tandanus</i>	freshwater catfish	No	Potamodromous
<i>Gambusia holbrooki</i>	eastern gambusia	No – exotic species	Potamodromous
<i>Pseudomugil signifer</i>	Pacific blue eye	No	Catadromous
<i>Retropinna semoni</i>	Australian smelt	No	Potamodromous
<i>Notesthes robusta</i>	bullrout	No	Catadromous
<i>Leiopotherapon unicolor</i>	spangled perch	No	Potamodromous
Reptiles			
<i>Chelodina longicollis</i>	eastern snake-necked turtle	No	Potamodromous
<i>Emydura macquarii</i>	Murray turtle	No	Potamodromous

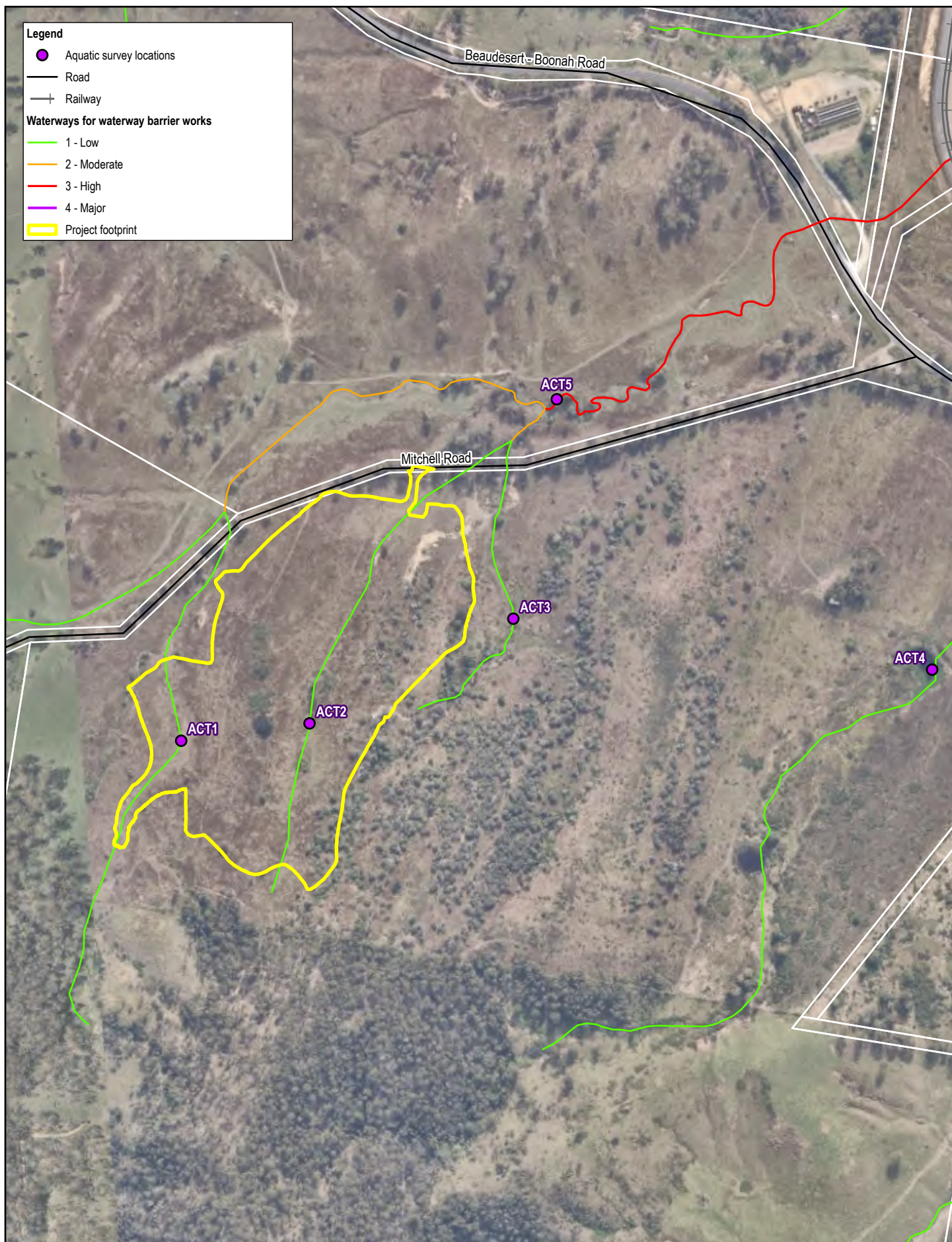
3.4 Waterways providing for fish passage

There are two waterways in the Project area mapped as 'green' (low risk) waterways under the Queensland waterways for waterway barrier works mapping (Figure 3.1). Both of these waterways flow north-west into two separate 'amber' (moderate risk) waterways, and then converge to a 'red' (major risk) waterway approximately 200 m from the Project area. This 'red' waterway then continues to flow north-west as a tributary to Allan Creek. Allan Creek is mapped as a 'purple' (major risk) waterway, which has a confluence to the Logan River approximately 6.5 km downstream of the Project area.

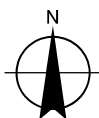
There are three waterways mapped as 'green' (low risk) waterways that are intersected by Mitchell Road; two of which are the same waterways mapped in the Project area. The other mapped waterway along site ACT3 is located east of the Project area and flows downstream to an 'amber' (moderate risk) waterway at the confluence with the waterway along site ACT2 (Figure 3.1).

The mapped drainage lines along sites ACT1 and ACT2 do not provide fish passage or contain any defining features of a waterway (i.e. defined bed and banks, fish habitat) (Figure 3.1). It is recommended to lodge a waterway determination requesting to declassify these two mapped fish passage waterways. The mapped waterway along site ACT3 does contain defining features of a waterway and could provide for fish passage in periods of flow.

A search of the EPBC Act PMST indicated that the Project area is not located within the vicinity of any wetlands of international importance. The Moreton Bay Ramsar Wetland is located approximately 30-40 km downstream of the Project area. Due to the distance between the Project area and the Moreton Bay Ramsar Wetland the proposed composting facility is unlikely to have an impact on the wetland.



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Bromelton Compost Manufacturing Facility
Aquatic Ecology Assessment

DAF mapped
waterways for waterway barrier works

Project No. 12626213
Revision No. A
Date 12/08/2024

FIGURE 3.1

3.5 Biosecurity

Historical records identified three introduced fish species including the Mozambique mouthbrooder (*Oreochromis mossambica*), European carp (*Cyprinus carpio*) and eastern gambusia (*Gambusia holbrooki*). All three species are category 3, 5, 6 and 7 restricted noxious species under the *Biosecurity Act 2014* and therefore must not be kept, fed, given away, sold or released into the environment.

4. Field results

4.1 Habitat assessments

Riverine habitat assessments were carried out at five sites as shown in Figure 2.1. Bioassessment scores conducted during the field survey are shown in Table 4.1. Sites ACT1 and ACT 2 habitat scores were rated 'poor' with low ecological values due to limited instream habitat and connectivity. Sites ACT3, ACT4 and ACT5 habitat scores were 'fair' with moderate ecological values. Instream habitat for these sites varied ranging from boulder/cobble benthic habitat, undercut banks and exposed roots providing refuge for small-bodied fish within pool sections. Site characteristics and ecological values are described in more detail in Table 4.2.

Table 4.1 Site habitat bioassessment

Habitat variable	Scale	ACT1	ACT2	ACT3	ACT4	ACT5
Bottom substrate	0-20	5	3	6	6	6
Embeddedness	0-20	5	4	7	7	7
Velocity and depth category	0-20	3	3	6	6	7
Channel alteration	0-15	2	3	4	5	6
Habitat variable	0-15	3	3	6	8	8
Pool/riffle, run/ben ratio	0-15	3	4	7	7	7
Bank stability	0-10	7	5	5	6	6
Bank vegetation and stability	0-10	4	4	8	8	8
Streamside cover	0-10	5	5	7	6	7
Totals	0-135	37	34	56	59	62
Habitat score category		Poor	Poor	Fair	Fair	Fair

Table 4.2 Site characteristics and ecological values

Site	Characteristics	Ecological values
Allan Creek Tributary 1 (ACT1)		
Site 	– Mapped as a drainage feature under the <i>Water Act 2000</i> and low risk (green) waterway for waterway barrier works under the <i>Fisheries Act 1994</i>. – 1st order ephemeral tributary consisting of intermittent pool sections. – Isolated pools holding water were highly turbid with a maximum wetted width of 3 m and maximum depth of 0.5m – Benthic habitat predominantly grass throughout the drainage line, with 100% silt/clay substrate. – Some native macrophytes recorded in the drainage line including tall spikerush (<i>Eleocharis sphacelate</i>), bunchy sedge (<i>Cyperus polystachyos</i>) and willow-primrose (<i>Ludwigia octalis</i>). – Little to no riparian vegetation along banks. Patches of <i>Lantana camara</i> (a declared weed) and sparse mature <i>Lophostemon suaveolens</i> within the gully. – No large woody debris present within channel.	– Overall habitat rating was poor (37) with low aquatic ecological values. – No connectivity and fish passage to upstream areas. – Instream habitat was limited to grass and macrophytes. – Habitat disturbance from prior vegetation clearing and cattle grazing evident along the drainage line extent.
Upstream 		
Downstream 		

Site	Characteristics	Ecological values
Allan Creek Tributary 2 (ACT2)		
Site 	– Mapped as a drainage feature under the <i>Water Act 2000</i> and low risk (green) waterway for waterway barrier works under the <i>Fisheries Act 1994</i>. – 1st order ephemeral tributary consisting of shallow intermittent pool sections. – Isolated pools holding water were highly turbid with a maximum wetted width of 3 m and maximum depth of 0.5 m at the time of survey. – Benthic habitat consisted of exotic grass vegetation and native macrophytes with 100% silt/clay substrate. – Sparse <i>Eucalyptus teriticornis</i> riparian vegetation. – No large woody debris observed. – Macrophytes recorded along the drainage line include tall spike rush (<i>Eleocharis sphacelate</i>), bunchy sedge (<i>Cyperus polystachyos</i>) and long leaf willow-primrose (<i>Ludwigia longifolia</i>).	– Overall habitat rating was poor (34) with low aquatic ecological values. – Instream habitat limited to some macrophytes and grass vegetation. – No connectivity and fish passage to upstream areas. – Habitat disturbance from previous clearing and cattle grazing.
Upstream 		
Downstream 		

Site	Characteristics	Ecological values
Allan Creek Tributary 3 (ACT3)		
Site 	– Mapped as a drainage feature under the <i>Water Act 2000</i> and low risk (green) waterway for waterway barrier works under the <i>Fisheries Act 1994</i>. – Isolated pools holding water were highly turbid with a maximum wetted width of 3 m and maximum depth of 0.5 m at the time of survey. – Benthic habitat varied throughout the creek, consisting of boulder, pebble/cobble sections and sand/clay substrate within the pool sections. – Left and right banks showed moderate signs of erosion. Sections of undercut banks with exposed roots were common. – Riparian vegetation along banks consisted of overhanging mature <i>Casuarina cunninghamiana</i> and <i>Eucalyptus teriticornis</i> with <i>Lantana camara</i> shrub layer. – Large woody debris present within channel. – Native macrophytes recorded along drainage include slender knotweed (<i>Persicaria decipiens</i>) and rice sedge (<i>Cyperus difformis</i>).	– Overall habitat rating was fair (56) with moderate ecological value. – Instream habitat consisted of pebble/cobble substrate, undercut banks with exposed roots and large woody debris providing foraging and refuge habitat for fish species. – Habitat disturbance from cattle evident within bed and banks of waterway. Previous vegetation clearing throughout lower section.
Upstream 		
Downstream		

Site	Characteristics	Ecological values
		
Allan Creek Tributary 4 (ACT4)		
Site 	– Mapped low risk (green) waterway for waterway barrier works under the <i>Fisheries Act 1994</i> and drainage feature under the <i>Water Act 2000</i>. – Permanent intermittent pool sections (modified dams) within creek. – Deeper pool sections had a maximum wetted width of 40m and approximate depth of 2-3 m at the time of survey. – Benthic habitat varied throughout the creek, mainly consisting of pebble/cobble sections and 100% silt/clay substrate within the permanent pools. – Left and right banks showed moderate signs of erosion. Sections of undercut banks with exposed roots were common. – Riparian vegetation along the upper reaches of the drainage channel consisted of mature <i>Eucalyptus teriticornis</i> with <i>Lantana camara</i> shrub layer. – Large woody debris present within channel. – Native macrophytes recorded along drainage line include swamp lily (<i>Ottelia ovalifolia</i>), slender knowtweed (<i>Persicaria decipiens</i>), tall spikerush (<i>Eleocharis sphacelate</i>), common rush (<i>Juncus usitatus</i>) and rice sedge (<i>Cyperus difformis</i>).	– Overall habitat rating was fair (58) with moderate to high ecological value. – Instream habitat consisted of sections of pebble/cobble substrate, undercut banks with exposed roots and large woody debris providing foraging and refuge habitat for fish species. – Habitat disturbance from cattle evident within bed and banks of waterway.
Upstream 		

Site	Characteristics	Ecological values
Downstream 		

Site	Characteristics	Ecological values
Allan Creek Tributary 5 (ACT5)		
Site  Upstream	– Mapped as a drainage feature under the <i>Water Act 2000</i> and high risk (red) waterway for waterway barrier works under the <i>Fisheries Act 1994</i>. – 3rd order tributary with semi-permanent intermittent pool sections within creek. – Pool sections were highly turbid with a maximum wetted width of 3 m and maximum depth of 1 m at the time of survey. – Benthic habitat varied throughout the creek, mainly consisting of pebble/cobble sections and 100% silt/clay substrate within the permanent pools. – Left and right banks showed moderate signs of erosion. Sections of undercut banks with exposed roots were common. – Riparian vegetation along banks consisted of overhanging mature <i>Casuarina cunninghamiana</i> and <i>Eucalyptus teriticornis</i> with <i>Lantana camara</i> shrub layer. – Large woody debris present within channel. – Native macrophytes recorded along drainage line include swamp lily (<i>Ottelia ovalifolia</i>), water snowflake (<i>Nymphoides indica</i>), slender knotweed (<i>Persicaria decipiens</i>), tall spikerush (<i>Eleocharis sphacelate</i>) and common rush (<i>Juncus usitatus</i>).	– Overall habitat rating was good (76) with moderate to high ecological value, providing connectivity and fish passage to upstream and downstream areas during wet-season months (typically December to April). – Instream habitat consisted of pebble/cobble substrate, undercut banks with exposed roots and large woody debris providing foraging and refuge habitat for fish species. – Habitat disturbance from cattle evident within bed and banks of waterway.

Site	Characteristics	Ecological values
 Downstream 		

4.2 *In-situ* water quality

In-situ water quality was taken at each site during the surveys (Table 4.3). The parameters were compared to the Western Logan River Freshwaters- upland moderately disturbed water quality guidelines (DES, 2022). There are no water quality guidelines for water temperature; however, water temperatures were within normal ranges expected for the sampling season. Exceedances were recorded at all five sites for dissolved oxygen and turbidity. Dissolved oxygen ranged from 50.6% (ACT2) to 84.1% (ACT5) whilst turbidity ranged from 42.11 NTU (ACT4) to 78.15 NTU (ACT1). Exceedances for electrical conductivity were also recorded at all sites, except for site ACT4 (346 μ S/cm). The pH was within the water quality guideline range at each site. These results indicate the overall water quality across site was reasonably poor to support a diverse range of aquatic species.

Table 4.3 *In-situ* water quality results

Sample Location ID	Temp.	pH	Electrical conductivity	Dissolved oxygen	Dissolved oxygen	Turbidity
Units	°C	pH unit	μ S/cm	mg/L	% sat.	NTU
Guideline *	–	6.5-8.0	350	–	85 – 110%	11
ACT1	27.5	7.5	371	5.9	51.2	78.15
ACT2	27.2	7.0	365	5.8	50.6	64.12
ACT3	26.9	6.9	357	6.2	58.6	74.72
ACT4	21.8	7.3	346	6.4	65.8	42.11
ACT5	22.1	7.9	361	6.8	84.1	73.85

* *Environmental Protection (Water and Wetland Biodiversity) Policy 2019*, Logan River Environmental Values and Water Quality Objectives Basin No. 145 (part) – Western Logan River Freshwaters – Upland Freshwaters – Upland Moderately Disturbed waters (Low Flow)

Orange cells note exceedances compared against water quality guidelines.

4.3 Aquatic plants

Aquatic plants (macrophytes) recorded at each site are shown in Table 4.4. Site ACT4 recorded the highest density and diversity of macrophytes (six species) with sites ACT1 and ACT2 recording the lowest density and diversity (three species).

Table 4.4 Aquatic plants recorded during the field surveys

Species	ACT1	ACT2	ACT3	ACT4	ACT5
 <i>Ottelia ovalifolia</i> Swamp Lily	x	x	x	✓	✓
 <i>Nymphoides indica</i> Water snowflake	x	x	x	✓	x
 <i>Persicaria decipiens</i> Slender knotweed	x	x	✓	✓	✓

Species	ACT1	ACT2	ACT3	ACT4	ACT5
 <i>Eleocharis sphacelate</i> Tall spikerush	✓	✓	✓	✓	✓
 <i>Juncus usitatus</i> Common rush	x	x	x	✓	✓
 <i>Cyperus difformis</i> Rice Sedge	x	x	✓	✓	x

Species	ACT1	ACT2	ACT3	ACT4	ACT5
 <i>Cyperus polystachyos</i> Bunchy sedge	✓	✓	✗	✗	✗
 <i>Ludwigia octovalvis</i> Willow primrose	✓	✓	✗	✗	✗

4.4 Aquatic fauna

4.4.1 Fish

The desktop assessment identified a total of 18 native fish species with a further three exotic species previously recorded within 5 km of the Project area (Table 3.1). These fish species exhibit various migratory behaviours, including:

- Seven catadromous species (breeding in marine environments, migrating from freshwater),
- One amphidromous species (migrating between freshwater and marine environments, not for breeding),
- 17 potamodromous species (migrating within freshwater)

No fish species were observed during the field survey.

4.4.2 Other aquatic fauna

Other aquatic fauna known to occur within the search extent:

- Eastern snake-necked turtle (*Chelodina longicollis*)
- Murray river turtle (*Emydura macquarii*)

None of the turtle species are listed as threatened under the EPBC Act or NC Act. No turtles or evidence of turtle nesting was observed within the Project area during field surveys.

4.5 Conservation significant species

As described in Section 3.1, conservation significant aquatic species identified based on the desktop assessment was limited to the Mary River cod (*Maccullochella mariensis*), currently listed as endangered under the EPBC act.

4.5.1 Likelihood of occurrence

A likelihood of occurrence assessment was undertaken for any threatened species that have potential to occur within the Project area based on the results of the desktop assessment and field survey. A likelihood of occurrence assessment was undertaken for the Mary River cod based on species records and the presence or absence of suitable habitat identified during field surveys. The likelihood of occurrence assessment is summarised in Table 4.5 with additional details on the species provided below.

Table 4.5 Likelihood of occurrence assessment

Species Name	EPBC Act status	NC Act status	Study area in species mapped distribution	Nearby historical records	Likelihood of occurrence
Mary River cod (<i>Maccullochella mariensis</i>)	Endangered	-	No	47km	Unlikely to occur – Limited to no suitable habitat within the site. Local records for the species have not been identified.

4.5.2 Mary River cod

The Mary River cod is listed as endangered under the EPBC Act. This species is endemic to the Mary River and primarily inhabits large, deep (0.8 – 3 m), shaded pools within relatively undisturbed tributaries (DCCEEW 2022). Key habitat features include heavily undercut banks, large woody debris and overhanging vegetation. Still or very slow-flowing waters are preferred (Pusey et al. 2004). Mary River cod are ambush predators, which feed mostly at dawn and dusk (DCCEEW 2022). The home range size of the Mary River cod is generally small (100 – 1000 m). Mary River cod spawn annually during spring soon after the water temperature rises to 20°C, and it is presumed that they lay eggs within hollow logs (QDPI 1996).

Habitat conditions within the Project area are considered to be absent for the Mary River cod due to the lack of large permanent pool habitats and the absence of structurally complex in-stream features such as large rocks, snags, overhanging banks and vegetation, and woody debris within perennial waterways. Overall, based on the absence of suitable habitat this species is considered as 'unlikely to occur'.

4.6 Mitchell Road waterway crossings

Mitchell Road is currently a gravel lined access road for the adjoining properties. The road crosses three waterways DAF mapped 'green' (low risk) waterways and currently there are only pipe culverts under the crossing of Allan Creek tributary 1, downstream of site ACT1. At the crossing of Allan Creek tributary 2 and 3, downstream of sites ACT2 and ACT3, there are currently no culverts and the road is impeding fish passage and natural water flow (e.g. Figure 4.1) due to poorly constructed bed level crossings not in line with the natural channel bed. Allan Creek tributary 3 meets the requirements of a waterway (Section 3.4) and therefor fish passage will need to be considered during construction. Pending waterway determination as discussed in Section 3.4, Allan Creek tributaries 1 and 2 will currently require culverts for any upgrades to Mitchell Road.

Where the Project requires new culverts or culverts to be replaced, this will require a development approval unless designs can comply with the *Accepted development requirements for operational work that is constructing or raising waterway barrier works* (DAF 2018). At a minimum, culvert crossings of a 'green' waterway must meet the following:

- Have a minimum (combined) culvert aperture width of 1.2m and be placed within the low flow channel; or have a combined culvert aperture width that spans 100% of the main channel width.

- All new or replacement culvert cells must be installed at or below bed level.
- The obvert (internal roof) of the culvert cell(s) must be a minimum of 300 mm above the commence to flow water level (or bed level, for ephemeral waterways).
- The culvert must be installed at no steeper gradient than the waterway bed gradient.
- New culvert cells must be aligned parallel (within 10°) to the direction of water flow to minimise turbulence.



Figure 4.1 *Waterway crossing of Allan Creek tributary 3*

5. Potential impacts

5.1 General

Potential direct and indirect impacts on aquatic ecology values from construction and operation of the compost manufactory facility include:

- Loss of aquatic habitat
- Degradation of aquatic habitat and water quality
- Disturbance of aquatic fauna
- Alteration of flow and fauna movement
- Injury and mortality of wildlife
- Introduction and spread of invasive species.

These potential impacts are discussed below. A suite of mitigation measures have been developed in response to the identified potential impacts and are discussed in Section 6.

5.2 Construction impacts

5.2.1 Loss of aquatic habitat

The design has been drafted to minimise encroachment onto aquatic habitat as far as reasonably possible, with refinements to the pad design to minimise impact to downstream hydraulics. The current design will have a direct impact on two drainage lines that are green (low risk) Queensland DAF mapped waterways for waterway barrier works. These waterways are currently impacted by local land uses (e.g. agriculture practices and the historical loss of aquatic habitat). Any new infrastructure built on the site will create impacts to the ecosystem and surrounding environments including the removal of surrounding riparian vegetation. The Project area will not directly impact the amber (medium risk) and red (high risk) waterways to the north of the Project area as shown in Figure 3.1.

5.2.2 Degradation of aquatic habitat and water

Degradation and disturbance of aquatic habitat may occur through the reduction of water quality from excessive sediment and release of contaminants, increase in weed and pest species, and overall reduction in suitability of habitat conditions (e.g. loss of riparian habitat). There are numerous ways that construction activities can impact the aquatic environment. These are:

- Dust generation, sedimentation and erosion
- Storage and spillage of hazardous materials
- Flow diversion and control
- Rubbish.

Increased erosion and sedimentation resulting from earthworks and removal of vegetation has the potential to degrade the quality of habitat in the Project area and could be transported downstream of areas of high ecological value. Earthworks and construction works have the potential to affect water quality resulting in altered water chemistry (e.g. increased turbidity, decreased oxygen levels and reduced light penetration), changes in channel morphology (e.g. filling of pools or increased scouring), alteration of substrate composition and smothering of habitat resources (e.g. food and riparian structure) (Wood and Armitage, 1997; Wheeler et al., 2005). Unmitigated, these impacts may have a localised effect on fauna by reducing habitat value (e.g. number of refuges, microhabitats and food availability) within the immediate and downstream areas. The potential ecological consequences to fauna species may include a temporary and localised decrease in abundance and a decrease in

breeding success. Sediment mobilisation is most likely to be generated during the construction phase as a result of heavy machinery use, removal of riparian vegetation and erosive effects of construction in the vicinity of banks.

Degradation of aquatic habitat has the potential to occur throughout the duration of the construction period and may impact waterways within the direct Project area and may extend to downstream areas during flow events.

During construction, large machinery will be required to transport materials and conduct earthworks. The use of machinery has the potential to degrade downstream environments as a result of accidental spillage of contaminants (e.g. fuels and lubricants). Many chemicals, such as petrol and diesel fuel, drilling lubricants and pesticides, are particularly toxic to freshwater macroinvertebrate taxa. Construction materials like cement slurries are also highly caustic and can raise pH above tolerable limits for aquatic taxa. In severe cases, a large-scale hydrocarbon spill would result in the formation of a toxic surface slick with the potential to cause death, poor health and / or reduced reproductive success in aquatic communities for a period of months to years. The risks associated with the spillage of contaminants can be significantly mitigated by conformance with the legislation and recommended measures contained in a Construction Environmental Management Plan (CEMP).

During construction and operation, there is the potential for rubbish from the site to enter the waterway, which can harm aquatic fauna. Rubbish can be in the form of drink bottles and cans, plastic wrappers and/or larger material generated from the site. Rubbish can flow downstream and degrade the habitat quality of waterways, as well as potentially harm fauna (e.g. via ingestion or strangling). Additional indirect impacts associated with the drainage works may include changes to hydrology from changed runoff conditions and overflow pathways. These indirect impacts may also have flow on effects downstream to wetland areas and important habitat for marine threatened species.

5.2.3 Disturbance of aquatic fauna by increased light, noise and vibration

The Project has the capacity to cause indirect degradation of adjacent habitats due to an increase in the exposure to light, noise and vibration from construction machinery and vehicles and operation of the facility. This will increase light, noise and vibration disturbance on local fauna. Increased light, noise and vibration can alter individual species' behaviours, and disrupt the balance of inter-species interactions. Such disruptions typically favour feral predators and generalist species that owe their success to broad ecological tolerances and possess the ability to actively exploit disturbed environments. However, this risk of an increase in the exposure to light, noise and vibration is low given that the adjacent waterways are ephemeral and will unlikely support fauna during the construction period.

Reducing night works and limiting site lighting to the minimum needed for safety will minimise light disturbance and disruption of nocturnal behaviours.

5.2.4 Alteration of flow and aquatic fauna movement

Seasonal migrations are an important life stage for many of Australia's native aquatic fauna, with numerous aquatic fish species undertaking migrations as part of their lifecycle and/or movements as part of their day-to-day foraging activities. During construction, water flow within intersected waterways has the potential to be impacted by construction works. As a consequence, upstream and downstream movement of aquatic fauna may be temporarily restricted thus affecting dispersal, life history movement stages, breeding and foraging. In-stream works will be timed in a manner that minimises impacts to aquatic fauna and are planned to occur during the dry season, as far as practicable.

The freshwater watercourses within the Project area are ephemeral in nature, containing only seasonal running water in the wake of sustained rainfall events. For most of the year, these waterways consist of occasional disconnected pools, with no opportunity for broad-scale migrations/movements. Should high rainfall climatic conditions occur during construction, these waterways will likely flow and aquatic species may utilise the ephemeral tributaries for movement. As construction is to occur within the dry season, flow controls or diversions are unlikely to be required. The design and construction of the compost facility is expected to comply with waterway barrier works Acceptable Development Requirements; however, there may be residual impacts to flow and fauna movement due to the change in impervious area. Nonetheless, there are not expected to be any significant downstream alterations of flow to affect high value areas downstream.

Regarding Mitchell Road, as long as design and construction complies with the Acceptable Development Requirements, then flow should be maintained at each waterway crossing during operation. For the waterways that currently have bed level crossings, design and construction can include measures that would improve fish passage as currently the crossings are not in line with the natural channel bed. Construction in the dry season will limit the need for flow controls or diversions, and residual impacts due to increased impervious areas are anticipated to be minor.

5.2.5 Fauna injury and mortality

Aquatic fauna may be injured or killed due to construction works within waterways including excavation, and dewatering of modified dams. However, there is unlikely to be much permanent water present at any of the sites and the risk of injury or mortality is considered to be low. Additional impacts may arise from flow diversion and flood management activities and the generation, storage and disposal of waste and hazardous materials on-site near waterways.

Construction activities may also foster greater utilisation of the area by introduced fauna. The incorrect disposal of rubbish and other refuse may encourage introduced species (including pigs, dogs, foxes, and cats) to the area, which in turn may increase predation pressure on aquatic fauna species, especially fauna persisting in isolated pools.

Overall, the risk of injury/mortality to aquatic fauna will be limited to the Project area. Considering the majority of intersected waterways exist as ephemeral waterways, little to no impact on aquatic fauna is anticipated, as these waterways will likely be dry during construction. Any aquatic fauna will be salvaged and relocated in accordance with DAF fish salvage guidelines (State of Queensland, 2024) in any isolated pools prior to construction.

5.2.6 Introduction and spread of invasive species

There are three fish and a number of terrestrial biosecurity species that are associated with waterways and/or are readily transported by waterways within the Logan River catchment. The Project area is host to a number of common weeds at varying densities.

The spread of aquatic weeds may occur where vehicles /machinery are washed down incorrectly or not at all and driven between locations which allows seeds to enter nearby waterways. Pest fish may be spread by disturbance and degradation of waterways allowing the pest fish to outcompete native fish and cause localised displacement of native fish. Aquatic weeds and pest fish reduce the habitat quality for all native aquatic species.

5.3 Operational impacts

Potential impacts to aquatic ecology values from operation of the compost facility are expected to be minimal. Potential operational impacts include water quality degradation resulting from storage pond or road runoff during high rainfall events and rubbish entering downstream waterways via stormwater drains on site.

6. Mitigation measures

6.1 Impact avoidance

6.1.1 Avoidance achieved during the design phase

Efforts have been made to identify and avoid landscape features that hold increased ecological value for local flora and fauna. The Project area is located on two mapped green (low risk) waterways that are rated as 'Poor' based on habitat assessments conducted in field. This location avoids direct and indirect impacts to moderate and high ecological value waterways including the red (high-risk) watercourse (ACT5), which links to habitats that occur adjacent to the Project area, providing the main source of connectivity linking aquatic habitats to the north.

6.1.2 Design, construction and operation measures

Opportunities to minimise impacts to aquatic flora and fauna species, and aquatic habitat include:

- Minimise the extent of all vegetation clearing wherever possible, particularly within riparian zones of waterways.
- Where reasonable and practicable, incorporate water sensitive urban design measures to minimise runoff that enters waterways. This should take into consideration the water quality objectives, level of risk, maintenance requirements and physical space within the site to accommodate treatment devices. It should also include consideration of any locations where additional scour protection may be required to minimise erosion risk and maintain watercourse stability. Measures may include wide grassed swales, rock dissipaters, gross pollutant traps, and sediment basins. Within waterways and riparian areas, erosion and sediment control measures should prioritise soft engineering measures to achieve stabilisation where possible (i.e. geofab, jute matting or planting).
- Minimise lighting impacts into retained adjacent vegetation and wetland areas by reducing light spill outside of the Project site.
- All waterway crossing structures are to consider the suite of fish present in the waterway and the fish species' passage requirements. Thirty-four native freshwater fish have been recorded in the catchment (refer to Section 4.8), which may migrate upstream when flows occur. Fish most likely to migrate into the Project area are small-bodied fish that are adapted to the ephemeral conditions of the local waterways, such as gudgeons, rainbowfish, etc.
- Where possible, design culverts in accordance with the 'Accepted development requirements for operational work that is constructing or raising waterway barrier works' (DAF, 2018).
- Develop an Erosion and Sediment Control Plan (ESCP) in accordance with the Best Practice Erosion and Sediment Control guidelines (International Erosion Control Association, 2008) to minimise impacts to water quality and aquatic habitat.
- Where de-watering of waterways and/or modified dams is required, develop a Dewatering Management Plan to identify appropriate management strategies for aquatic fauna to minimise injury and death during construction, which include (as a minimum) the following:
 - Aquatic fauna salvage prior to and during de-watering by a suitably qualified aquatic ecologist
 - Translocating species to nearby waterways or wetlands of similar quality
 - Temporary storage and monitoring to demonstrate the water meets the reuse or discharge water quality objectives
 - On-site re-use of suitable water (e.g. for dust suppression) where practicable
 - Contingency for on-site treatment and discharge for water that does not meet the objectives or approvals conditions

- Prepare a Biosecurity Management Plan that should incorporate descriptions and mapping of major weed infestations identified during a pre-clearing survey and appropriate management actions to be undertaken. As a minimum, the management actions should include:
 - An explanation of the general biosecurity obligation under the *Biosecurity Act 2014*
 - Procedures for vehicle wash-downs and inspections
 - A requirement for 'weed free' certification and checks prior to vehicles entering the construction site during site establishment
 - Procedures for reporting sightings of prohibited and restricted pest species within the works area
 - A requirement for the appropriate treatment of all restricted invasive plants in the construction area before construction begins
 - A requirement that weed infested vegetation is not mulched for re-use on-site, and off-site disposal for weed infested mulch at an appropriate facility
 - The identification of no-go zones and protection areas in the construction area
 - Prohibiting the movement of restricted invasive plants, including aquatic plants, such as *Salvinia molesta* (salvinia), into areas which do not contain the restricted invasive plants
- Design storage facilities and laydown areas a minimum of 50 m from any waterway, where possible. If areas cannot be located 50 m away, then bunds would need to be erected around the perimeter of the laydown area and checked daily for failures. Any failures in the bund wall will need to be rectified prior to any additional material being stored.

7. Conclusions

Baseline field surveys have been undertaken to assess the aquatic ecological values of the Bromelton Compost Facility Project area. This report provides an assessment of the aquatic ecological values specific to the Study area including the Mitchell Road corridor. Surveys included desktop assessments and field surveys for MNES and MSES values.

The compost facility will be located in an area with two mapped green (low risk) waterways which are regarded as 'poor' condition based on in field habitat assessments. Potential impacts of the Project identified for these waterways were predominantly related to the construction phase, including loss and/or degradation of aquatic habitat, disturbance of aquatic fauna, and introduction and spread of invasive species. However, given the 'poor' condition rating of these two waterways, and their low risk to fish passage, this facility is largely expected to avoid impacts to aquatic ecological values. This includes having no construction on any amber (moderate risk) or red (high-risk) mapped waterways for waterway barrier works. No aquatic MNES or MSES occur within the Project area and therefore no significant impact assessments were required. Additionally, consultation with DAF could have the green waterways reviewed as they currently hold little aquatic ecological value for the catchment.

Mitchell Road is currently a gravel lined access road for the adjoining properties that crosses three waterways DAF mapped 'green' (low risk) waterways. Where the Project requires new culverts or culverts to be replaced, this will require a development approval unless designs can comply with the Accepted development requirements for operational work that is constructing or raising waterway barrier works (DAF 2018).

Overall, the compost facility is expected to avoid direct impacts to the DAF mapped red (high risk) and amber (moderate risk) waterways further downstream, and is expected to only impact on waterways mapped as green (low risk). Mitchell Road will only impact waterways mapped as green (low risk). Aquatic ecological values will also be protected through design and implementation of a Construction Environmental Management Plan (CEMP), Erosion and Sediment Control plans and Biosecurity plans. Water from the site will be contained using on-site storage ponds and channels, which will limit the run-off from the site so that localised flows are not impacted by the increase in impervious area.

8. References

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Appendices

Appendix A

Desktop searches



Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest
Custom Geometry

Environmental Reports - General Information

The Environmental Reports portal provides for the assessment of selected matters of interest relevant to a user specified location, or area of interest (AOI). All area and derivative figures are relevant to the extent of matters of interest contained within the AOI unless otherwise stated. Please note, if a user selects an AOI via the "central coordinates" option, the resulting assessment area encompasses an area extending for a 2km radius from the point of interest.

All area and area derived figures included in this report have been calculated via reprojecting relevant spatial features to Albers equal-area conic projection (central meridian = 146, datum Geocentric Datum of Australia 1994). As a result, area figures may differ slightly if calculated for the same features using a different co-ordinate system.

Figures in tables may be affected by rounding.

The matters of interest reported on in this document are based upon available state mapped datasets. Where the report indicates that a matter of interest is not present within the AOI (e.g. where area related calculations are equal to zero, or no values are listed), this may be due either to the fact that state mapping has not been undertaken for the AOI, that state mapping is incomplete for the AOI, or that no values have been identified within the site.

The information presented in this report should be considered as a guide only and field survey may be required to validate values on the ground.

Please direct queries about these reports to: Planning.Support@des.qld.gov.au

Disclaimer

Whilst every care is taken to ensure the accuracy of the information provided in this report, the Queensland Government makes no representations or warranties about its accuracy, reliability, completeness, or suitability, for any particular purpose and disclaims all responsibility and all liability (including without limitation, liability in negligence) for all expenses, losses, damages (including indirect or consequential damage) and costs which the user may incur as a consequence of the information being inaccurate or incomplete in any way and for any reason.



Table of Contents

Assessment Area Details 4

Matters of State Environmental Significance (MSES) 5

 MSES Categories 5

 MSES Values Present 6

 Additional Information with Respect to MSES Values Present 7

 MSES - State Conservation Areas 7

 MSES - Wetlands and Waterways 7

 MSES - Species 7

 MSES - Regulated Vegetation 9

Map 1 - MSES - State Conservation Areas 12

Map 2 - MSES - Wetlands and Waterways 13

Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals 14

Map 3b - MSES - Species - Koala habitat area (SEQ) 15

Map 3c - MSES - Wildlife habitat (sea turtle nesting areas) 16

Map 4 - MSES - Regulated Vegetation 17

Map 5 - MSES - Offset Areas 18

Appendices 19

 Appendix 1 - Matters of State Environmental Significance (MSES) methodology 19

 Appendix 2 - Source Data 20

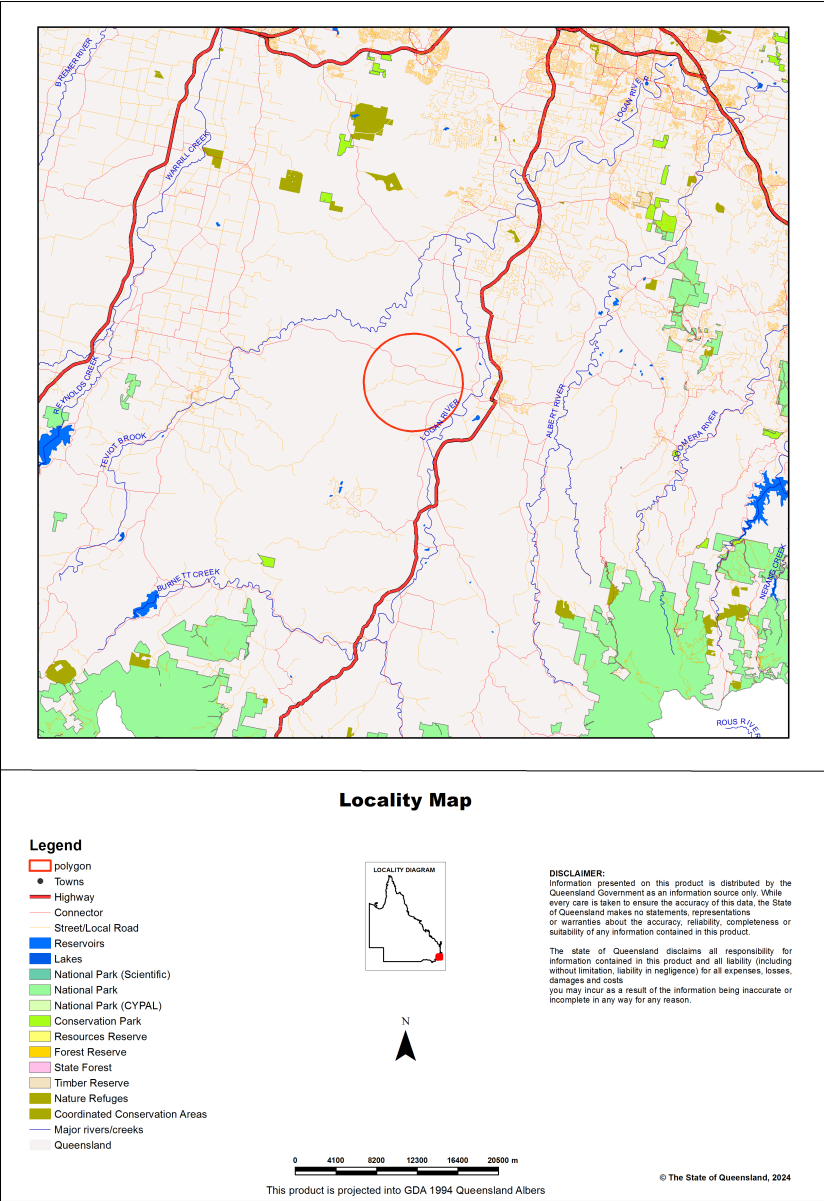
 Appendix 3 - Acronyms and Abbreviations 21

Assessment Area Details

The following table provides an overview of the area of interest (AOI) with respect to selected topographic and environmental values.

Table 1: Summary table, details for AOI Custom Geometry

Size (ha)	7,719.41
Local Government(s)	Scenic Rim Regional
Bioregion(s)	Southeast Queensland
Subregion(s)	Moreton Basin
Catchment(s)	Logan-Albert



Matters of State Environmental Significance (MSES)

MSES Categories

Queensland's State Planning Policy (SPP) includes a biodiversity State interest that states:

'The sustainable, long-term conservation of biodiversity is supported. Significant impacts on matters of national or state environmental significance are avoided, or where this cannot be reasonably achieved; impacts are minimised and residual impacts offset.'

The MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The SPP defines matters of state environmental significance as:

- Protected areas (including all classes of protected area except coordinated conservation areas) under the *Nature Conservation Act 1992* ;
- Marine parks and land within a 'marine national park', 'conservation park', 'scientific research', 'preservation' or 'buffer' zone under the *Marine Parks Act 2004* ;
- Areas within declared fish habitat areas that are management A areas or management B areas under the Fisheries Regulation 2008;
- Threatened wildlife under the *Nature Conservation Act 1992* and special least concern animals under the Nature Conservation (Wildlife) Regulation 2006;
- Regulated vegetation under the *Vegetation Management Act 1999* that is:
 - Category B areas on the regulated vegetation management map, that are 'endangered' or 'of concern' regional ecosystems;
 - Category C areas on the regulated vegetation management map that are 'endangered' or 'of concern' regional ecosystems;
 - Category R areas on the regulated vegetation management map;
 - Regional ecosystems that intersect with watercourses identified on the vegetation management watercourse and drainage feature map;
 - Regional ecosystems that intersect with wetlands identified on the vegetation management wetlands map;
- Strategic Environmental Areas under the *Regional Planning Interests Act 2014* ;
- Wetlands in a wetland protection area of wetlands of high ecological significance shown on the Map of Queensland Wetland Environmental Values under the Environment Protection Regulation 2019;
- Wetlands and watercourses in high ecological value waters defined in the Environmental Protection (Water) Policy 2009, schedule 2;
- Legally secured offset areas.

MSES Values Present

The MSES values that are present in the area of interest are summarised in the table below:

Table 2: Summary of MSES present within the AOI

1a Protected Areas- estates	0.0 ha	0.0 %
1b Protected Areas- nature refuges	0.0 ha	0.0 %
1c Protected Areas- special wildlife reserves	0.0 ha	0.0 %
2 State Marine Parks- highly protected zones	0.0 ha	0.0 %
3 Fish habitat areas (A and B areas)	0.0 ha	0.0 %
4 Strategic Environmental Areas (SEA)	0.0 ha	0.0 %
5 High Ecological Significance wetlands on the map of Referable Wetlands	32.46 ha	0.4%
6a High Ecological Value (HEV) wetlands	0.0 ha	0.0 %
6b High Ecological Value (HEV) waterways	0.0 km	Not applicable
7a Threatened (endangered or vulnerable) wildlife	61.15 ha	0.8%
7b Special least concern animals	63.85 ha	0.8%
7c i Koala habitat area - core (SEQ)	1260.44 ha	16.3%
7c ii Koala habitat area - locally refined (SEQ)	0.0 ha	0.0 %
7d Sea turtle nesting areas	0.0 km	Not applicable
8a Regulated Vegetation - Endangered/Of concern in Category B (remnant)	123.02 ha	1.6%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	212.2 ha	2.7%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	1245.23 ha	16.1%
8e Regulated Vegetation - intersecting a watercourse	170.6 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	30.47 ha	0.4%
9a Legally secured offset areas- offset register areas	0.0 ha	0.0 %
9b Legally secured offset areas- vegetation offsets through a Property Map of Assessable Vegetation	8.46 ha	0.1%

Additional Information with Respect to MSES Values Present

MSES - State Conservation Areas

1a. Protected Areas - estates

(no results)

1b. Protected Areas - nature refuges

(no results)

1c. Protected Areas - special wildlife reserves

(no results)

2. State Marine Parks - highly protected zones

(no results)

3. Fish habitat areas (A and B areas)

(no results)

Refer to **Map 1 - MSES - State Conservation Areas** for an overview of the relevant MSES.

MSES - Wetlands and Waterways

4. Strategic Environmental Areas (SEA)

(no results)

5. High Ecological Significance wetlands on the Map of Queensland Wetland Environmental Values

Natural wetlands that are 'High Ecological Significance' (HES) on the Map of Queensland Wetland Environmental Values are present.

6a. Wetlands in High Ecological Value (HEV) waters

(no results)

6b. Waterways in High Ecological Value (HEV) waters

(no results)

Refer to **Map 2 - MSES - Wetlands and Waterways** for an overview of the relevant MSES.

MSES - Species

7a. Threatened (endangered or vulnerable) wildlife

Values are present

7b. Special least concern animals

Values are present

7c i. Koala habitat area - core (SEQ)

Values are present

7c ii. Koala habitat area - locally refined (SEQ)

Not applicable

7d. Wildlife habitat (sea turtle nesting areas)

Not applicable

Threatened (endangered or vulnerable) wildlife habitat suitability models

Species	Common name	NCA status	Presence
<i>Boronia keysii</i>	Keys boronia	V	None
<i>Calyptorhynchus lathami</i>	Glossy black cockatoo	V	Core
<i>Casuarius casuarius johnsonii</i>	Sthn population cassowary	E	None
<i>Crinia tinnula</i>	Wallum froglet	V	None
<i>Denisonia maculata</i>	Ornamental snake	V	None
<i>Euastacus bindal</i>	Mount Elliot crayfish	CR	None
<i>Euastacus binzayedii</i>		CR	None
<i>Euastacus eungella</i>		E	None
<i>Euastacus hystricosus</i>		E	None
<i>Euastacus jagara</i>	Jagara hairy crayfish	CR	None
<i>Euastacus maidae</i>		CR	None
<i>Euastacus monteithorum</i>		E	None
<i>Euastacus robertsi</i>		E	None
<i>Litoria freycineti</i>	Wallum rocketfrog	V	None
<i>Litoria olongburensis</i>	Wallum sedgefrog	V	None
<i>Macadamia integrifolia</i>		V	None
<i>Macadamia ternifolia</i>		V	None
<i>Macadamia tetraphylla</i>	bopple nut	V	None
<i>Melaleuca irbyana</i>	swamp tea-tree	E	None
<i>Petaurus gracilis</i>	Mahogany Glider	E	None
<i>Petrogale coenensis</i>	Cape York rock-wallaby	V	None
<i>Petrogale penicillata</i>	brush-tailed rock-wallaby	V	Core
<i>Petrogale persephone</i>	Proserpine rock-wallaby	E	None
<i>Petrogale purpureicollis</i>	purple-necked rock-wallaby	V	None
<i>Petrogale sharmani</i>	Sharmans rock-wallaby	V	None

Species	Common name	NCA status	Presence
<i>Petrogale xanthopus celeris</i>	yellow-footed rock-wallaby (Qld subspecies)	V	None
<i>Pezoporus wallicus wallicus</i>	Eastern ground parrot	V	None
<i>Phascolarctos cinereus</i>	Koala - outside SEQ*	E	None
<i>Taudactylus pleione</i>	Kroombit tinkerfrog	E	None
<i>Xeromys myoides</i>	Water Mouse	V	None

*For koala model, this includes areas outside SEQ. Check 7c SEQ koala habitat for presence/absence.

Threatened (endangered or vulnerable) wildlife species records

(no results)

Special least concern animal species records

Scientific name	Common name	Migratory status
<i>Tachyglossus aculeatus</i>	short-beaked echidna	None
<i>Gallinago hardwickii</i>	Latham's snipe	M-J/R/B/E

Shorebird habitat (critically endangered/endangered/vulnerable)

Not applicable

Shorebird habitat (special least concern)

Not applicable

*Nature Conservation Act 1992 (NCA) Status- Endangered (E), Vulnerable (V) or Special Least Concern Animal (SL).
Environment Protection and Biodiversity Conservation Act 1999 (EPBC) status: Critically Endangered (CE) Endangered (E), Vulnerable (V)

Migratory status (M) - China and Australia Migratory Bird Agreement (C), Japan and Australia Migratory Bird Agreement (J), Republic of Korea and Australia Migratory Bird Agreement (R), Bonn Migratory Convention (B), Eastern Flyway (E)

To request a species list for an area, or search for a species profile, access Wildlife Online at:

<https://www.qld.gov.au/environment/plants-animals/species-list/>

Refer to **Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals**, **Map 3b - MSES - Species - Koala habitat area (SEQ)** and **Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)** for an overview of the relevant MSES.

MSES - Regulated Vegetation

For further information relating to regional ecosystems in general, go to:

<https://www.qld.gov.au/environment/plants-animals/plants/ecosystems/>

For a more detailed description of a particular regional ecosystem, access the regional ecosystem search page at:

<https://environment.ehp.qld.gov.au/regional-ecosystems/>

8a. Regulated Vegetation - Endangered/Of concern in Category B (remnant)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.9-10.2/12.9-10.7/12.9-10.17a	O-subdom	rem_oc
12.9-10.3	O-dom	rem_oc
12.8.16	O-dom	rem_oc
12.3.3	E-dom	rem_end
12.8.24	E-dom	rem_end
12.3.3/12.3.7	E-dom	rem_end
12.3.8	O-dom	rem_oc
12.9-10.3/12.9-10.2	O-dom	rem_oc

8b. Regulated Vegetation - Endangered/Of concern in Category C (regrowth)

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.3.3	E-dom	hvr_end
12.8.24	E-dom	hvr_end
12.9-10.2/12.9-10.7/12.9-10.3/12.9-10.17a	O-subdom	hvr_oc
12.9-10.3/12.9-10.2	O-dom	hvr_oc
12.9-10.7	O-dom	hvr_oc
12.9-10.3	O-dom	hvr_oc
12.9-10.2/12.9-10.7/12.9-10.17a	O-subdom	hvr_oc

8c. Regulated Vegetation - Category R (GBR riverine regrowth)

Not applicable

8d. Regulated Vegetation - Essential habitat

Values are present

8e. Regulated Vegetation - intersecting a watercourse**

A vegetation management watercourse is mapped as present

8f. Regulated Vegetation - within 100m of a Vegetation Management wetland

Regulated vegetation map category	Map number
B	9442
C	9442
A	9442

Refer to **Map 4 - MSES - Regulated Vegetation** for an overview of the relevant MSES.

MSES - Offsets

9a. Legally secured offset areas - offset register areas

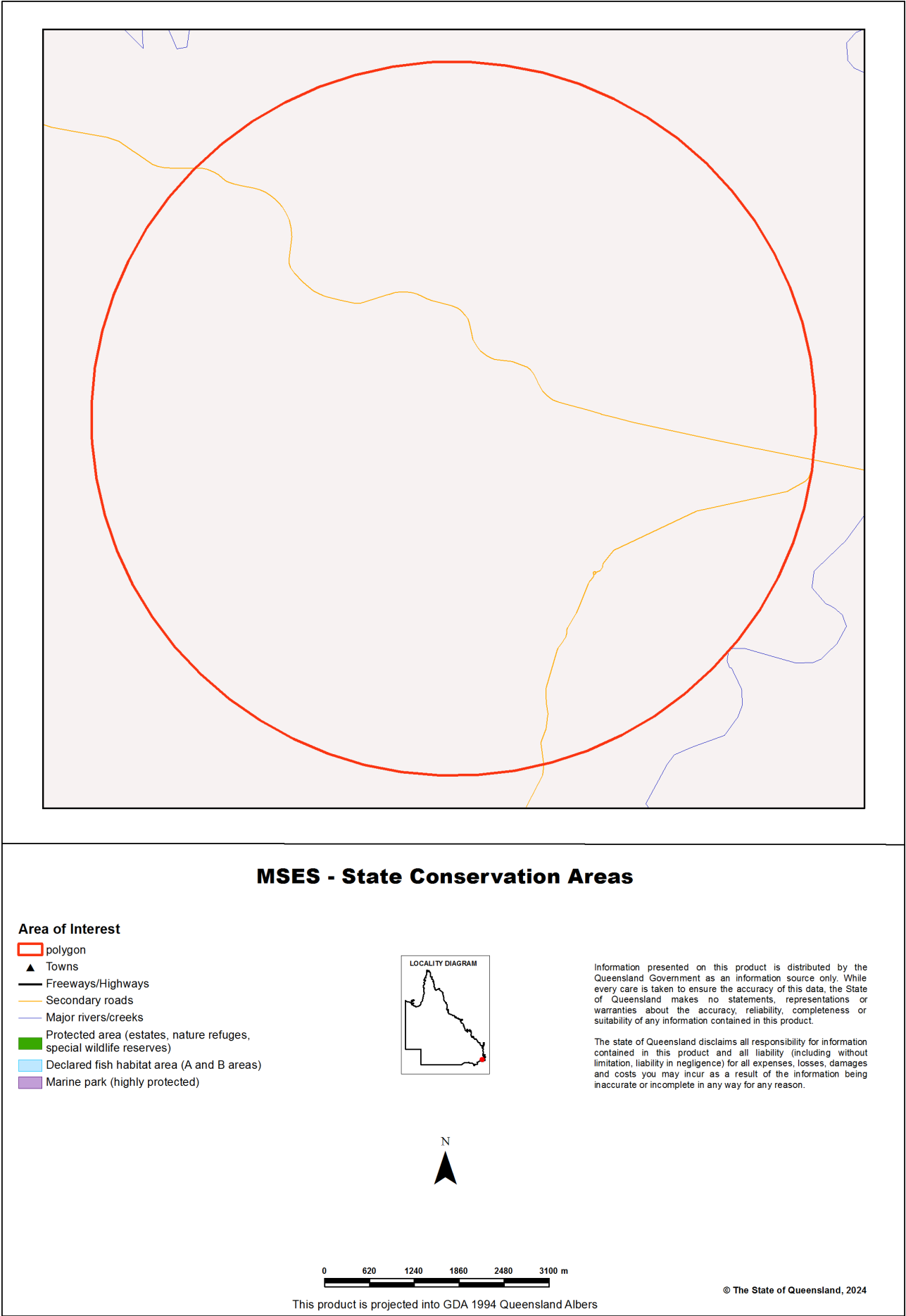
(no results)

9b. Legally secured offset areas - vegetation offsets through a Property Map of Assessable Vegetation

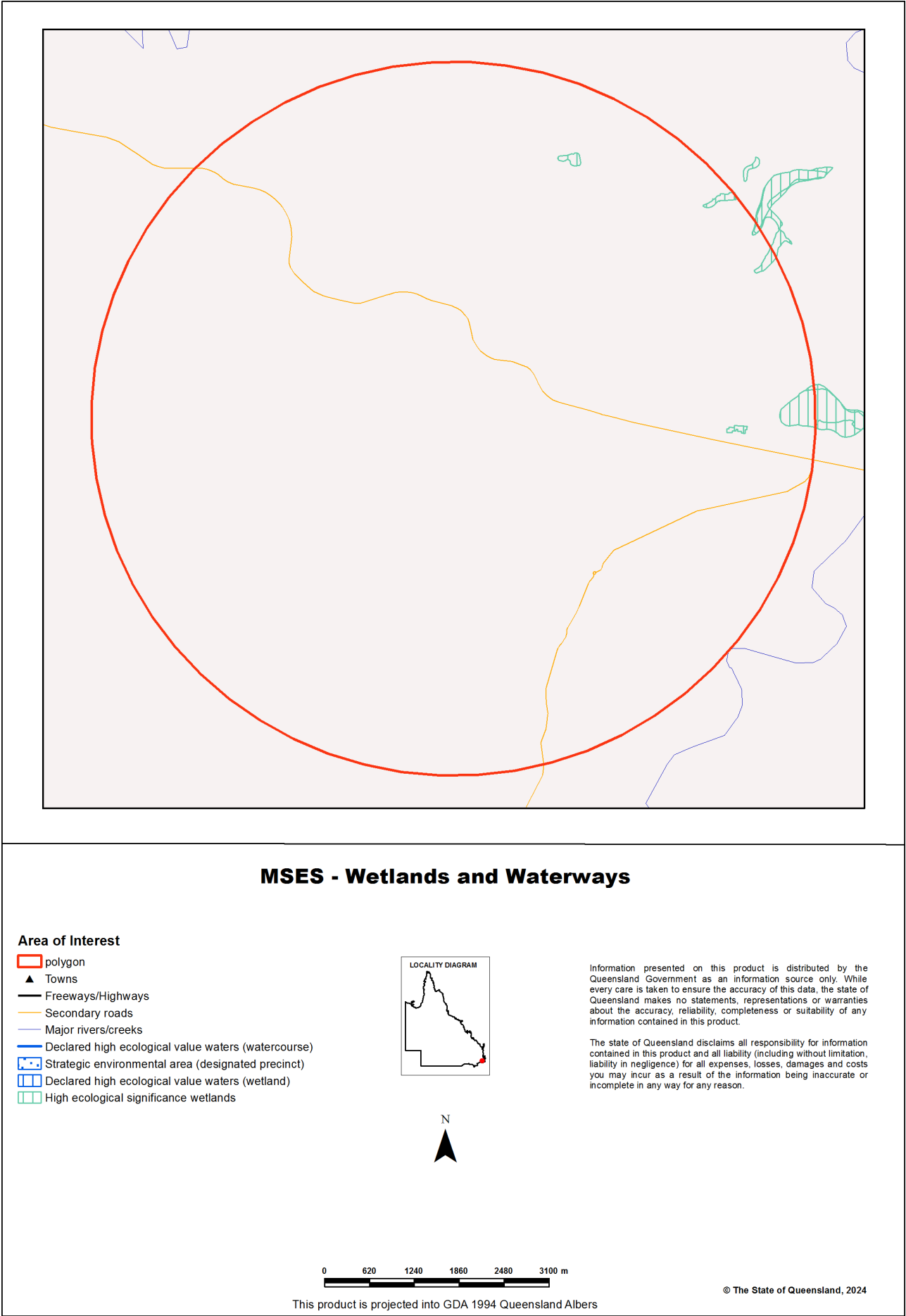
PMAV number	LOTPLAN	Agreement date
2014/007610	6WD1110	2014-10-31 00:00:00
2014/007610	33SP221032	2014-10-31 00:00:00
2014/007610	5WD1110	2014-10-31 00:00:00

Refer to **Map 5 - MSES - Offset Areas** for an overview of the relevant MSES.

Map 1 - MSES - State Conservation Areas



Map 2 - MSES - Wetlands and Waterways



MSES - Species
Threatened (endangered or vulnerable) wildlife and
special least concern animals

Area of Interest

- polygon
- ▲ Towns
- Freeways/Highways
- Secondary roads
- Major rivers/creeks
- Wildlife habitat (special least concern)
- Wildlife habitat (endangered or vulnerable)

LOCALITY DIAGRAM

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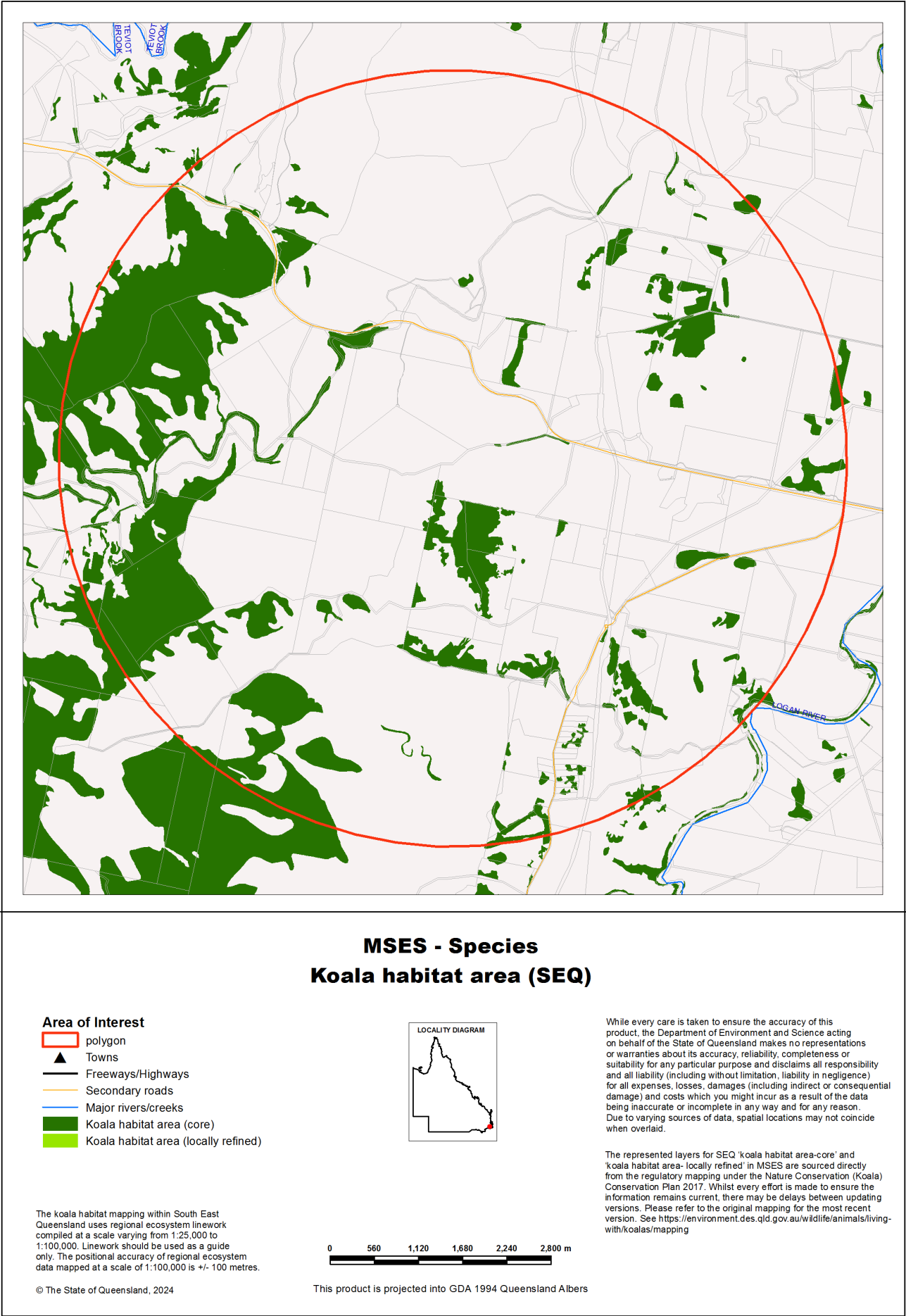
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0 620 1240 1860 2480 3100 m

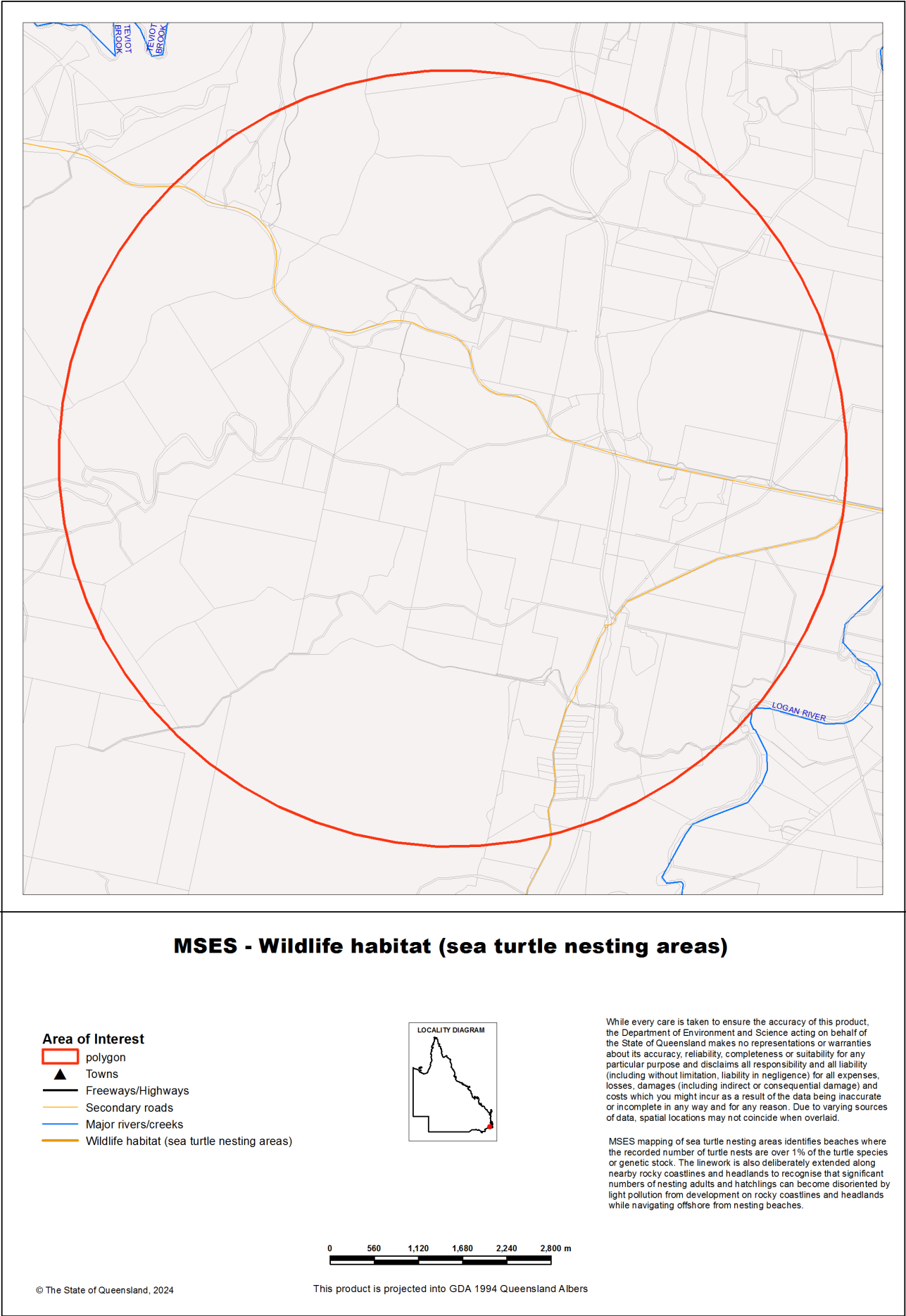
This product is projected into GDA 1994 Queensland Albers

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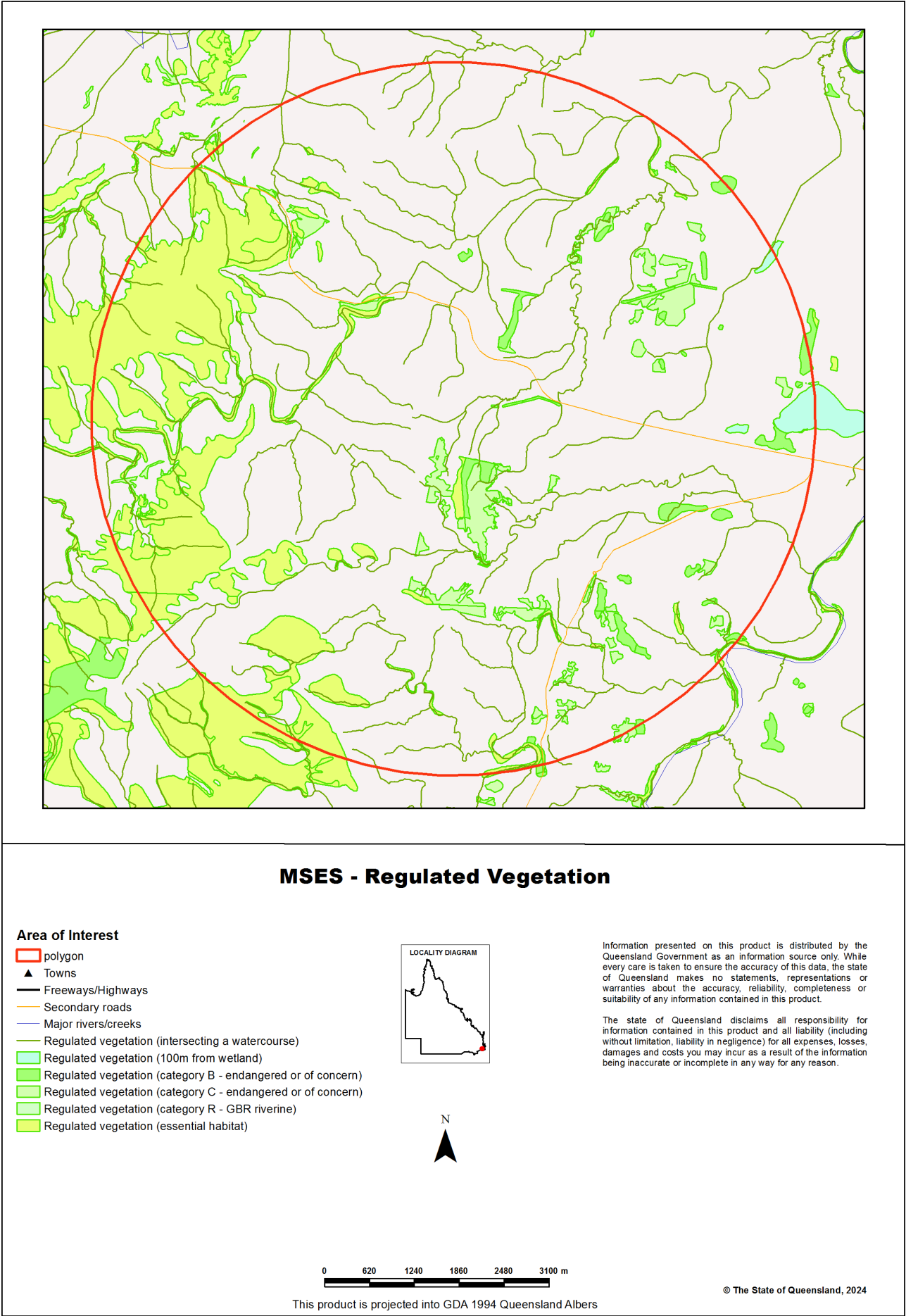
Map 3b - MSES - Species - Koala habitat area (SEQ)



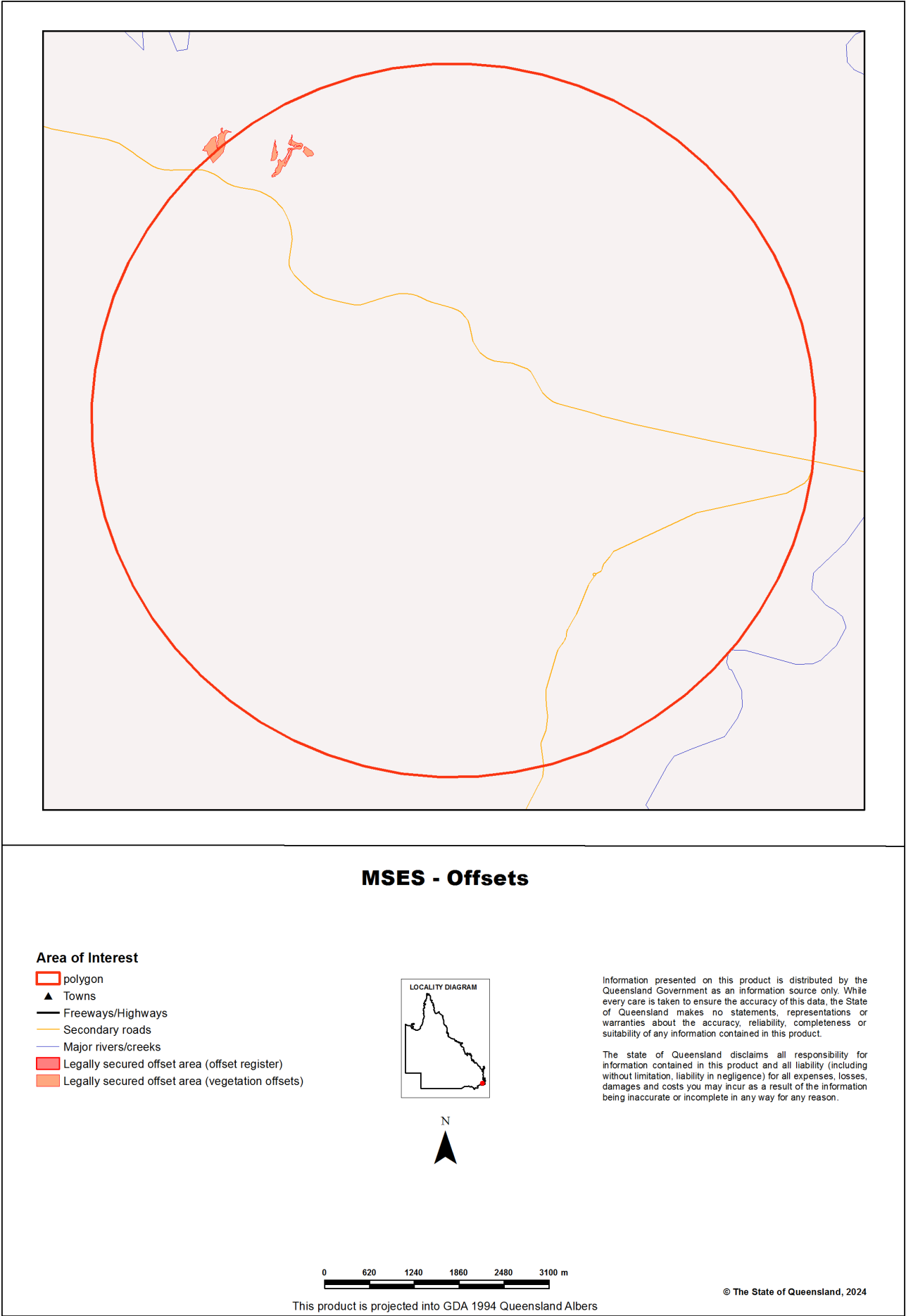
Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)



Map 4 - MSES - Regulated Vegetation



Map 5 - MSES - Offset Areas



Appendices

Appendix 1 - Matters of State Environmental Significance (MSES) methodology

MSES mapping is a regional-scale representation of the definition for MSES under the State Planning Policy (SPP). The compiled MSES mapping product is a guide to assist planning and development assessment decision-making. Its primary purpose is to support implementation of the SPP biodiversity policy. While it supports the SPP, the mapping does not replace the regulatory mapping or environmental values specifically called up under other laws or regulations. Similarly, the SPP biodiversity policy does not override or replace specific requirements of other Acts or regulations.

The Queensland Government's "Method for mapping - matters of state environmental significance for use in land use planning and development assessment" can be downloaded from:

<http://www.ehp.qld.gov.au/land/natural-resource/method-mapping-mses.html> .

Appendix 2 - Source Data

The datasets listed below are available on request from:

<http://qldspatial.information.qld.gov.au/catalogue/custom/index.page>

- Matters of State environmental significance

Note: MSES mapping is not based on new or unique data. The primary mapping product draws data from a number of underlying environment databases and geo-referenced information sources. MSES mapping is a versioned product that is updated generally on a twice-yearly basis to incorporate the changes to underlying data sources. Several components of MSES mapping made for the current version may differ from the current underlying data sources. To ensure accuracy, or proper representation of MSES values, it is strongly recommended that users refer to the underlying data sources and review the current definition of MSES in the State Planning Policy, before applying the MSES mapping.

Individual MSES layers can be attributed to the following source data available at QSpatial:

MSES layers	current QSpatial data (http://qspatial.information.qld.gov.au)
Protected Areas-Estates, Nature Refuges, Special Wildlife Reserves	- Protected areas of Queensland - Nature Refuges - Queensland - Special Wildlife Reserves- Queensland
Marine Park-Highly Protected Zones	Moreton Bay marine park zoning 2008
Fish Habitat Areas	Queensland fish habitat areas
Strategic Environmental Areas-designated	Regional Planning Interests Act - Strategic Environmental Areas
HES wetlands	Map of Queensland Wetland Environmental Values
Wetlands in HEV waters	HEV waters: - EPP Water intent for waters Source Wetlands: - Queensland Wetland Mapping (Current version 5) Source Watercourses: - Vegetation management watercourse and drainage feature map (1:100000 and 1:250000)
Wildlife habitat (threatened and special least concern)	- WildNet database species records - habitat suitability models (various) - SEQ koala habitat areas under the Koala Conservation Plan 2019 - Sea Turtle Nesting Areas records
VMA regulated regional ecosystems	Vegetation management regional ecosystem and remnant map
VMA Essential Habitat	Vegetation management - essential habitat map
VMA Wetlands	Vegetation management wetlands map
Legally secured offsets	Vegetation Management Act property maps of assessable vegetation. For offset register data-contact DES
Regulated Vegetation Map	Vegetation management - regulated vegetation management map

Appendix 3 - Acronyms and Abbreviations

AOI	- Area of Interest
DES	- Department of Environment and Science
EP Act	- <i>Environmental Protection Act 1994</i>
EPP	- Environmental Protection Policy
GDA94	- Geocentric Datum of Australia 1994
GEM	- General Environmental Matters
GIS	- Geographic Information System
MSES	- Matters of State Environmental Significance
NCA	- <i>Nature Conservation Act 1992</i>
RE	- Regional Ecosystem
SPP	- State Planning Policy
VMA	- <i>Vegetation Management Act 1999</i>



Australian Government

Department of Climate Change, Energy,
the Environment and Water

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected. Please see the caveat for interpretation of information provided here.

Report created: 18-Apr-2024

[Summary](#)

[Details](#)

[Matters of NES](#)

[Other Matters Protected by the EPBC Act](#)

[Extra Information](#)

[Caveat](#)

[Acknowledgements](#)

Summary

Matters of National Environment Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the [Administrative Guidelines on Significance](#).

World Heritage Properties:	None
National Heritage Places:	None
Wetlands of International Importance (Ramsar	1
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	7
Listed Threatened Species:	52
Listed Migratory Species:	15

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at <https://www.dcceew.gov.au/parks-heritage/heritage>

A [permit](#) may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Lands:	None
Commonwealth Heritage Places:	None
Listed Marine Species:	21
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None
Habitat Critical to the Survival of Marine Turtles:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have

State and Territory Reserves:	None
Regional Forest Agreements:	None
Nationally Important Wetlands:	None
EPBC Act Referrals:	7
Key Ecological Features (Marine):	None
Biologically Important Areas:	None
Bioregional Assessments:	1
Geological and Bioregional Assessments:	None

Details

Matters of National Environmental Significance

Wetlands of International Importance (Ramsar Wetlands)		[Resource Information]
Ramsar Site Name	Proximity	Buffer Status
Moreton bay	30 - 40km upstream from Ramsar site	In feature area

Listed Threatened Ecological Communities	[Resource Information]
For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps. Status of Vulnerable, Disallowed and Ineligible are not MNES under the EPBC Act.	

Community Name	Threatened Category	Presence Text	Buffer Status
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community may occur within area	In buffer area only
Coastal Swamp Sclerophyll Forest of New South Wales and South East Queensland	Endangered	Community may occur within area	In buffer area only
Grey box-grey gum wet forest of subtropical eastern Australia	Endangered	Community likely to occur within area	In feature area
Lowland Rainforest of Subtropical Australia	Critically Endangered	Community may occur within area	In feature area
Poplar Box Grassy Woodland on Alluvial Plains	Endangered	Community may occur within area	In feature area
Subtropical eucalypt floodplain forest and woodland of the New South Wales North Coast and South East Queensland bioregions	Endangered	Community likely to occur within area	In feature area
White Box-Yellow Box-Blakely's Red Gum Grassy Woodland and Derived Native Grassland	Critically Endangered	Community likely to occur within area	In feature area

Listed Threatened Species			[<u>Resource Information</u>]
Status of Conservation Dependent and Extinct are not MNES under the EPBC Act. Number is the current name ID.			
Scientific Name	Threatened Category	Presence Text	Buffer Status
BIRD			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Foraging, feeding or related behaviour may occur within area	In feature area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calyptorhynchus lathami lathami South-eastern Glossy Black-Cockatoo [67036]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Climacteris picumnus victoriae Brown Treecreeper (south-eastern) [67062]	Vulnerable	Species or species habitat may occur within area	In feature area
Cyclopsitta diophthalma coxeni Coxen's Fig-Parrot [59714]	Critically Endangered	Species or species habitat likely to occur within area	In feature area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area	In buffer area only
Erythroriorchis radiatus Red Goshawk [942]	Endangered	Species or species habitat likely to occur within area	In feature area
Falco hypoleucos Grey Falcon [929]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Geophaps scripta scripta Squatter Pigeon (southern) [64440]	Vulnerable	Species or species habitat may occur within area	In feature area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area	In feature area
Stagonopleura guttata Diamond Firetail [59398]	Vulnerable	Species or species habitat may occur within area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
FISH			
Maccullochella mariensis Mary River Cod [83806]	Endangered	Translocated population known to occur within area	In buffer area only
FROG			
Mixophyes fleayi Fleay's Frog [25960]	Endangered	Species or species habitat may occur within area	In feature area
INSECT			
Argynnis hyperbius inconstans Australian Fritillary [88056]	Critically Endangered	Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
MAMMAL			
Chalinolobus dwyeri			
Large-eared Pied Bat, Large Pied Bat [183]	Endangered	Species or species habitat may occur within area	In feature area
Dasyurus maculatus maculatus (SE mainland population)			
Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat likely to occur within area	In feature area
Macroderma gigas			
Ghost Bat [174]	Vulnerable	Species or species habitat may occur within area	In feature area
Petauroides volans			
Greater Glider (southern and central) [254]	Endangered	Species or species habitat likely to occur within area	In feature area
Petaurus australis australis			
Yellow-bellied Glider (south-eastern) [87600]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Petrogale penicillata			
Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area	In feature area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT)			
Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Endangered	Species or species habitat likely to occur within area	In feature area
Potorous tridactylus tridactylus			
Long-nosed Potoroo (northern) [66645]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pseudomys novaehollandiae			
New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Pteropus poliocephalus			
Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Bosistoa transversa Three-leaved Bosistoa, Yellow Satinheart [16091]	Vulnerable	Species or species habitat may occur within area	In feature area
Bulbophyllum globuliforme Miniature Moss-orchid, Hoop Pine Orchid [6649]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis shirleyana Wedge-leaf Tuckeroo [3205]	Vulnerable	Species or species habitat may occur within area	In buffer area only
Cupaniopsis tomentella Boonah Tuckeroo [3322]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area	In feature area
Notelaea lloydii Lloyd's Olive [15002]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Notelaea x ipsviciensis listed as Notelaea ipsviciensis Cooneana Olive [93460]	Critically Endangered	Species or species habitat may occur within area	In feature area
Picris evae Hawkweed [10839]	Vulnerable	Species or species habitat may occur within area	In feature area
Planchonella eerwah Shiny-leaved Condoo, Black Plum, Wild Apple [17340]	Endangered	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Rhaponticum australe Austral Cornflower, Native Thistle [22647]	Vulnerable	Species or species habitat may occur within area	In feature area
Rhodamnia rubescens Scrub Turpentine, Brown Malletwood [15763]	Critically Endangered	Species or species habitat may occur within area	In feature area
Rhodomyrtus psidioides Native Guava [19162]	Critically Endangered	Species or species habitat may occur within area	In feature area
Samadera bidwillii Quassia [29708]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Sarcochilus weinthalii Blotched Sarcochilus, Weinthals Sarcanth [12673]	Vulnerable	Species or species habitat may occur within area	In feature area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat likely to occur within area	In feature area
REPTILE			
Delma torquata Adorned Delma, Collared Delma [1656]	Vulnerable	Species or species habitat may occur within area	In feature area
Furina dunmalli Dunmall's Snake [59254]	Vulnerable	Species or species habitat may occur within area	In feature area
Hemiaspis damelii Grey Snake [1179]	Endangered	Species or species habitat likely to occur within area	In feature area
Listed Migratory Species		[Resource Information]	
Scientific Name	Threatened Category	Presence Text	Buffer Status
Migratory Marine Birds			
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area	In feature area
Migratory Terrestrial Species			

Scientific Name	Threatened Category	Presence Text	Buffer Status
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area	In feature area
Migratory Wetlands Species			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area	In feature area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area	In feature area

Other Matters Protected by the EPBC Act

Listed Marine Species	[Resource Information]		
Scientific Name	Threatened Category	Presence Text	Buffer Status
Bird			
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat may occur within area	In feature area
Anseranas semipalmata Magpie Goose [978]		Species or species habitat may occur within area overfly marine area	In feature area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area overfly marine area	In feature area
Bubulcus ibis as Ardea ibis Cattle Egret [66521]		Species or species habitat may occur within area overfly marine area	In feature area
Calidris acuminata Sharp-tailed Sandpiper [874]	Vulnerable	Species or species habitat likely to occur within area	In feature area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat may occur within area overfly marine area	In feature area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat known to occur within area	In feature area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area overfly marine area	In feature area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area overfly marine area	In feature area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area overfly marine area	In feature area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat likely to occur within area overfly marine area	In feature area
Motacilla flava Yellow Wagtail [644]		Species or species habitat may occur within area overfly marine area	In feature area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat likely to occur within area overfly marine area	In feature area
Pandion haliaetus Osprey [952]		Species or species habitat likely to occur within area	In buffer area only

Scientific Name	Threatened Category	Presence Text	Buffer Status
Pterodroma cervicalis White-necked Petrel [59642]		Species or species habitat may occur within area	In feature area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat likely to occur within area overfly marine area	In feature area
Rostratula australis as Rostratula benghalensis (sensu lato) Australian Painted Snipe [77037]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area
Symposiachrus trivirgatus as Monarcha trivirgatus Spectacled Monarch [83946]		Species or species habitat may occur within area overfly marine area	In feature area
Tringa nebularia Common Greenshank, Greenshank [832]	Endangered	Species or species habitat likely to occur within area overfly marine area	In feature area

Extra Information

EPBC Act Referrals [Resource Information]				
Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Kagaru to Acacia Ridge and Bromelton Inland Rail Project	2021/8927		Completed	In buffer area only
Controlled action				
Casino Ipswich Pipeline	2007/3877	Controlled Action	Completed	In feature area
Wyaralong Dam	2006/3157	Controlled Action	Post-Approval	In feature area
Not controlled action				
Improving rabbit biocontrol: releasing another strain of RHDV, sthrn two thirds of Australia	2015/7522	Not Controlled Action	Completed	In feature area
Offstream Storage Facility and associated infrastructure	2007/3502	Not Controlled Action	Completed	In buffer area only

Title of referral	Reference	Referral Outcome	Assessment Status	Buffer Status
Not controlled action				
South West Pipeline and Wyaralong Tanks Project, Qld	2018/8320	Not Controlled Action	Completed	In buffer area only
Upgraded sewerage infrastructure in the Helensvale/Coombah catchment	2004/1427	Not Controlled Action	Completed	In feature area

Bioregional Assessments			[Resource Information]
SubRegion	BioRegion	Website	Buffer Status
Clarence-Moreton	Clarence-Moreton	BA website	In feature area

Caveat

1 PURPOSE

This report is designed to assist in identifying the location of matters of national environmental significance (MNES) and other matters protected by the Environment Protection and Biodiversity Conservation Act 1999 (Cth) (EPBC Act) which may be relevant in determining obligations and requirements under the EPBC Act.

The report contains the mapped locations of:

- World and National Heritage properties;
- Wetlands of International and National Importance;
- Commonwealth and State/Territory reserves;
- distribution of listed threatened, migratory and marine species;
- listed threatened ecological communities; and
- other information that may be useful as an indicator of potential habitat value.

2 DISCLAIMER

This report is not intended to be exhaustive and should only be relied upon as a general guide as mapped data is not available for all species or ecological communities listed under the EPBC Act (see below). Persons seeking to use the information contained in this report to inform the referral of a proposed action under the EPBC Act should consider the limitations noted below and whether additional information is required to determine the existence and location of MNES and other protected matters.

Where data are available to inform the mapping of protected species, the presence type (e.g. known, likely or may occur) that can be determined from the data is indicated in general terms. It is the responsibility of any person using or relying on the information in this report to ensure that it is suitable for the circumstances of any proposed use. The Commonwealth cannot accept responsibility for the consequences of any use of the report or any part thereof. To the maximum extent allowed under governing law, the Commonwealth will not be liable for any loss or damage that may be occasioned directly or indirectly through the use of, or reliance

3 DATA SOURCES

Threatened ecological communities

For threatened ecological communities where the distribution is well known, maps are generated based on information contained in recovery plans, State vegetation maps and remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species

Threatened, migratory and marine species distributions have been discerned through a variety of methods. Where distributions are well known and if time permits, distributions are inferred from either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc.) together with point locations and described habitat; or modelled (MAXENT or BIOCLIM habitat modelling) using

Where little information is available for a species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc.).

In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More detailed distribution mapping methods are used to update these distributions

4 LIMITATIONS

The following species and ecological communities have not been mapped and do not appear in this report:

- threatened species listed as extinct or considered vagrants;
- some recently listed species and ecological communities;
- some listed migratory and listed marine species, which are not listed as threatened species; and
- migratory species that are very widespread, vagrant, or only occur in Australia in small numbers.

The following groups have been mapped, but may not cover the complete distribution of the species:

- listed migratory and/or listed marine seabirds, which are not listed as threatened, have only been mapped for recorded
- seals which have only been mapped for breeding sites near the Australian continent

The breeding sites may be important for the protection of the Commonwealth Marine environment.

Refer to the metadata for the feature group (using the Resource Information link) for the currency of the information.

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

- [-Office of Environment and Heritage, New South Wales](#)
- [-Department of Environment and Primary Industries, Victoria](#)
- [-Department of Primary Industries, Parks, Water and Environment, Tasmania](#)
- [-Department of Environment, Water and Natural Resources, South Australia](#)
- [-Department of Land and Resource Management, Northern Territory](#)
- [-Department of Environmental and Heritage Protection, Queensland](#)
- [-Department of Parks and Wildlife, Western Australia](#)
- [-Environment and Planning Directorate, ACT](#)
- [-Birdlife Australia](#)
- [-Australian Bird and Bat Banding Scheme](#)
- [-Australian National Wildlife Collection](#)
- [-Natural history museums of Australia](#)
- [-Museum Victoria](#)
- [-Australian Museum](#)
- [-South Australian Museum](#)
- [-Queensland Museum](#)
- [-Online Zoological Collections of Australian Museums](#)
- [-Queensland Herbarium](#)
- [-National Herbarium of NSW](#)
- [-Royal Botanic Gardens and National Herbarium of Victoria](#)
- [-Tasmanian Herbarium](#)
- [-State Herbarium of South Australia](#)
- [-Northern Territory Herbarium](#)
- [-Western Australian Herbarium](#)
- [-Australian National Herbarium, Canberra](#)
- [-University of New England](#)
- [-Ocean Biogeographic Information System](#)
- [-Australian Government, Department of Defence](#)
- [Forestry Corporation, NSW](#)
- [-Geoscience Australia](#)
- [-CSIRO](#)
- [-Australian Tropical Herbarium, Cairns](#)
- [-eBird Australia](#)
- [-Australian Government – Australian Antarctic Data Centre](#)
- [-Museum and Art Gallery of the Northern Territory](#)
- [-Australian Government National Environmental Science Program](#)
- [-Australian Institute of Marine Science](#)
- [-Reef Life Survey Australia](#)
- [-American Museum of Natural History](#)
- [-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania](#)
- [-Tasmanian Museum and Art Gallery, Hobart, Tasmania](#)
- [-Other groups and individuals](#)

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the [Contact us](#) page.

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