

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 adequate separation distances to watercourses and water bodies and avoids areas of potential flood inundation to protect drinking water source areas.	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 (2024) guidelines as outlined below. The operational site of the CMF 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. The proposed portable fuel station and the AdBlue tank will be is setback more than 100 m from a green (low risk) waterways located to the east and more than 100 m from a red (high risk) waterway north of Mitchell Road. They will be located more than 7 km from Wyaralong Dam and is located more than 4 km from the Bromelton Off-stream storage adjacent to Logan River. The CMF is required to be setback from surrounding sensitive receptors, and with its location onsite and within the SDA precinct, is appropriately setback from sensitive receptors. The CMF is located within an area that has limited environmental values. 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 an approximately 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

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		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 of an extreme rainfall occurrence. 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 (2024) 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: Schedule 1 of the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i> references the relevant basin for water in a particular sub-region. The drinking water Environmental Values and Water Quality Objectives are outlined in the corresponding policy document for the basin.	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	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 of an extreme rainfall occurrence. 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

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	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.	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 (2024) 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	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

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– 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.		rainfall of 900 mm falling within a 6 month period of an extreme rainfall occurrence. Leachate will only be reused in pasteurisation stage of the CMF process. A Site and Soil Evaluation Report has also been completed for the CMF and an on-site wastewater treatment for the effluent disposal will be adopted for the CMF. This is associated with the staff facilities. 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.
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. Composting activities are part of the operation of the CMF. Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. 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

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		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 of an extreme rainfall occurrence. Leachate will only be reused in pasteurisation stage of the CMF process.
PO5 Intensive animal industries within water resource catchments do not create a microbial risk to public health or the environment.	AO5.1 Development involving stockpiling of manure wastes with microbial risks are to be pasteurised for pathogen kill-off before it leaves the site.	Complies The CMF will receive
Sewage treatment and disposal (where development is located outside of a local government's priority infrastructure area)		
PO7 Development provides an on-site sewage management system that is designed, constructed and managed in a way that does not compromise the environmental values for the supply of drinking water. Note: For a system under 21 Equivalent Persons, to demonstrate compliance with this performance outcome, it is recommended the applicant prepares a report using the Land Use Risk Tool and submits this as part of their application.	AO7.1 Development is connected to the reticulated sewerage network. OR AO7.2 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 AO7.3 Where the combined total peak design capacity of sewerage treatment is 21EP or greater, the system is located and designed in the following manner: – at or above the 0.5% AEP flood event (including climate change factors); – 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 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	Complies with AO7.2 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 and 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.

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	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.	
PO8 Solid and liquid wastes are managed and disposed of so that no increased risk of nuisance or environmental harm to drinking water source areas is created.	No acceptable outcome is prescribed.	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. Composting activities are part of the operation of the CMF. Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. 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 of an extreme rainfall occurrence. Leachate will only be reused in pasteurisation stage of the CMF process.
PO9 Development handling pollutants is designed and operated to ensure spills and on-site surface water is captured and treated prior to release to the environment.	No acceptable outcome is prescribed	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 of an extreme rainfall occurrence. Leachate will only be reused in pasteurisation stage of the CMF process. Composting activities are part of the operation of the CMF. Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers

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		environmental controls to be implemented during the operational phase. Organic wastes to be processed to ensure effective pasteurisation and segregation of pasteurised material from unpasteurised materials and/or leachate, in accordance with SOILCO's composting procedures and operating protocols. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance.
Vegetation management		
PO10 Development protects and enhances riparian vegetation so that it protects against bank erosion and filters sediments, nutrients and other pollutants to ensure the environmental values for the supply of drinking water are not compromised.	AO10.1 Vegetation Clearing does not occur within the following separation distances: – 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; AND AO10.2 – Vegetation Clearing is not undertaken on land within the 1% AEP flood event (including climate change factors) or on a slope greater than 15% Note: in addition to the above Acceptable Outcomes, prior to any clearing, development must ensure compliance with relevant legislation including <i>Vegetation Act 1999</i>, <i>Nature Conservation Act 1992</i>, <i>Environmental Offset Act 2014</i>, <i>Planning Act 2016</i> and <i>Planning Regulation 2017</i>.	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. – The proposed portable fuel station and the AdBlue tank will be setback more than 100 m from a green (low risk) waterway located to the east and more than 100 m from a red (high risk) waterway north of Mitchell Road. They will be located more than 7 km from Wyaralong Dam and is located more than 4 km from the Bromelton Off-stream storage adjacent to Logan River. The CMF is required to be setback from surrounding sensitive receptors, and with its location onsite and within the SDA precinct, is appropriately setback from sensitive receptors. The CMF is located within an area that has limited environmental values. – 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 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

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		landslide risk. The proposed site also has a low landslide susceptibility rating.
Stormwater quality and hydrology		
PO11 Stormwater drainage conveys run-off in a manner that: – Minimises risk to public safety, the environment and drinking water source areas; and – Does not worsen drainage impacts on neighbouring sites.	No acceptable outcome is prescribed.	Complies 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 of an extreme rainfall occurrence. 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. – 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 (2024) 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.
PO12 Development is sited, designed, constructed and managed to avoid, or where it is not possible to avoid, minimise adverse impacts on the environmental values and water quality of surface and ground water from: – Altered quality and hydrology; and	No acceptable outcome is prescribed.	Complies The Surface Water Impact Assessment completed for the Project (Appendix N) determined that through the implementation of in-built design measures, as well as the additional mitigation measures, the Project is expected to appropriately manage risks with relation to surface water. There will be no direct discharge of runoff to the surrounding environment. CMF will consist of a 30

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– The release and mobilisation of nutrients and sediments Note: a hydrological assessment and erosion and sediment control plan undertaken by a suitably qualified person may be required to demonstrate no adverse impacts to surface and ground water quality and hydrology.		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 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. An erosion and sediment control layout plan has been developed for the Project and included in Appendix A. During the construction phase, ESCP will be developed and implemented to manage erosion and sediment.
PO13 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: Schedule 1 of the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i> references the relevant basin for waters in a particular sub-region. The drinking water Environmental Values and Water Quality Objectives are outlined in the corresponding document for the basin.	AO13.1 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 AO13.2 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 AO13.3 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 AO13.1. 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. During the construction phase, ESCP will be developed and implemented to manage erosion and sediment.
PO14 Development is located and designed to improve stormwater quality so that water source areas achieve aquatic ecosystem water quality objectives including drinking water supply environmental values. Note: Schedule 1 of the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i> references the relevant basin for waters in a particular sub-region. The drinking water Environmental Values and Water Quality Objectives are outlined in the corresponding document for the basin.	AO14.1 Development does not involve an aggregate impervious area greater than 1,000m². OR AO14.2 Development is for reconfiguring a lot that; – will not create more than two additional lots; or – involves a land area less than 1000m². OR AO14.3 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 AO14.4	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.

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	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.	– 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 (2024) 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. 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.
PO15 Development adopts measures that exclude livestock from entering a waterbody or watercourse where a site is being used for intensive animal keeping, husbandry, or grazing activities, to ensure the maintenance or improvement of the quality of surface water.	No acceptable outcome is nominated.	Not applicable – The CMF proposal does not involve animal husbandry or animal-keeping activities.
PO16 Development avoids and minimises changes to the existing surface water natural hydrological regime to ensure 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

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		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 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 (2024) 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.
PO17 Development does not create or modify watercourses within a water supply buffer area.	No acceptable outcome is nominated.	Complies 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

Performance outcomes	Acceptable outcomes	Compliance
		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. The low risk waterway ACT1 and regional ecosystems within the defined distance of a watercourse will be filled in with fill to accommodate the pad for the CMF. The upstream section of ACT2 will be impacted by the proposed freshwater dam. There will be one freshwater dam adjoining the CMF which will collect and store freshwater to be used for composting process purposes. There will also be a pumping and distribution system to distribute the water around the CMF (Figure 4.3 in the planning report). A freshwater dam with overflow spillway will be constructed to store uncontaminated water runoff on the site. The water will be used in the composting process and will be distributed to the composting and manufacturing areas by a pump and piping system. The dam will be located in the most suitable location for the site drainage and topography for efficient water collection.
PO18 Development maintains the existing groundwater hydrological regime.	AO18.1 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 AO18.2 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 qualified professional may be required to demonstrate no adverse impact on the groundwater hydrological regime.	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". During the construction phase the construction contractor will prepare a Groundwater Management Plan that details the capture, testing, treatment (if required), and disposal/discharge of seepage. During the construction phase on-going groundwater monitoring of the proposed groundwater monitoring bores during and after construction will allow for early detection of any changes.
PO19 Development is not located within the defining bank of a watercourse or on steep, unstable, or erosion prone land. Note: Where development is undertaken on land exceeding 15%, a geotechnical assessment must be undertaken by a suitably qualified and experienced geotechnical engineer and certified by a Registered Professional Engineer of Queensland (RPEQ) with geotechnical qualifications.	AO19.1 Development does not involve in-stream extractive industries (e.g. commercial removal of sand or gravel materials) AO19.2 Development does not occur on a slope greater than 15%	Complies The proposed development does not involve in-stream extractive industries 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

Performance outcomes	Acceptable outcomes	Compliance
		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 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.
Operational works - Filling and excavation		
PO25 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.	AO25.1 Earthworks do not occur within: 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; AND AO25.2 Earthworks are not undertaken at or below the 1% AEP flood event or 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.
PO26 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). A concept erosion and sediment control drawing are included in Appendix A of the planning report.
Operational works – Vegetation Clearing		
PO27 Clearing of vegetation is avoided in a watercourse, waterbody or buffer areas, to protect natural ecosystems and processes so that water quality is not adversely impacted.	No acceptable outcome is prescribed.	Complies Vegetation clearing will be required for the CMF and vegetation clearing within riparian areas will be minimised. Refer to Section 5.2.1 in the town planning report for more information about potential impacts and environmental controls. 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

Performance outcomes	Acceptable outcomes	Compliance
		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.
Dangerous goods, hazardous substances or environmentally hazardous materials		
PO28 Development either: – Does not involve the manufacturing or storage of hazardous materials and chemicals within drinking water source areas; or – Is designed so dangerous foods, hazardous substances or environmental hazardous materials are stored and handled in a manner that minimises the potential for the release of hazardous materials and chemicals to drinking water source areas during a potential contamination event,	AO28.1 The storage or handling of dangerous goods, hazardous substances or environmentally hazardous materials involves an aggregate quantity less than 200L or 200kg. OR AO28.2 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 watercourse; and – 800m to a full supply level of a dam, lake or reservoir or watercourse that serves as a potable water supply. AND AO28.3 Dangerous goods, hazardous substances or environmentally hazardous materials are located and stored in the following manner: – At or above the 1% AEP flood event (including climate change factors). – 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 1940-2017: The Storage and Handling of Flammable and Combustible Liquids</i>. OR AO28.4 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 risk assessment presents minimal risk to drinking water quality.	Complies SOILCO are proposing to install a 5000 L self-bunded AdBlue tank within the project area for the operational phase of the project. The AdBlue storage tank will also include a 240V AdBlue pump, automatic AdBlue nozzle and digital inline flowmeter. The tank will consist of UV-resistant polypropylene with ISO22241 compliant AdBlue. The tank diameter will be 1.8 m and height 2.05 m. AdBlue is not a dangerous good, however it is considered to be a hazardous substance. The AdBlue tank will be located outdoors, and within a bunded area on an impervious base. It will be located within the northern portion of the site between the office and the maintenance shed. Its designated location set back more than 100 m from a green (low risk) waterway located to the east. The AdBlue is certified and manufactured to exceed the ISO 22241-1 quality management standards. A specialist AdBlue supplier will service AdBlue tank. The AdBlue tank will be self-bunded (a tank within a tank) designed for safe storage of liquids like fuel, where the outer tank acts as a containment bund to catch any leaks from the inner tank, preventing environmental contamination or loss of product. The AdBlue containment tank will have 110% spill recovery capacity. A summary of the key environmental controls to manage fuels and chemicals within project area are outlined below. The following management plans will be developed and implemented for the operation phase to manage fuel and chemicals used within the project area: – An Environmental Management Plan (refer to Attachment 1) has been prepared by SOILCO for the CMF, which will involve the construction and operation of the facility. – A hazardous materials management plan will be developed and implemented for the operational phase that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction. – An incident and emergency management plan will be developed and implemented for the operational phase. This plan will identify the potential hazards and actions to be taken to prevent environmental harm, detailing any communication required in the event of an incident. Refer to section 9.2 in the Environmental Management Plan for more information. As outlined in Section 8 of the Environmental Management Plan during the operation phase the

Performance outcomes	Acceptable outcomes	Compliance
		nominated contractor will undertake inspections of the plant and equipment. The inspections will focus on: – Environmental controls – Waste storage – Chemical storage – Site environmental safety – Compliance with management strategies implemented. There will be no direct discharge of runoff to the surrounding environment. Provision of in excess of 30 ML 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 (2024) guidelines. Hardstand areas include installing compacted material that will achieve in-situ permeability (K) of less than 1x10⁻⁹ m/s. Leachate ponds will be lined with low permeability material (either recompacted clay or HPDE) to achieve in-situ permeability (K) of less than 1x10⁻⁹ m/s. A leachate management system will be implemented to capture leachate from compost handling areas. A stormwater management system will be implemented to capture and retain rainfall in non-compost handling areas to manage the erosion and sediment. Emergency equipment shall be positioned in appropriate locations at the work site to be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following: – Emergency response instruction folders – First aid equipment – Fire extinguishers – Stretcher(s) – Oil and chemical spill kits – Safety showers/eyewash stations.
For petroleum products only: PO29 Development involving the storage of petroleum products, including a service station, in water resource catchments avoids contamination risk to surface and ground water.	For petroleum products only: AO29.1 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 AO29.2 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	Complies The portable fuel station will hold diesel and will be located to the north of the site between the office and the maintenance shed. The portable fuel station will have a capacity of 33,460 litres of diesel and be 6.1 metres (20 feet) in length. The portable fuel station will be a proprietary self-bunded storage and dispensing unit and will include an outer tank that acts as a containment bund to catch any leaks from the inner tank, preventing environmental contamination or loss of product. The portable fuel station will have spill recovery capacity for 110% of the storage volume. The portable fuel station will have the following certifications: – AS 1692-2006 Steel tanks for flammable and combustible liquids – AS 1940-2004 Storage and handling of flammable and combustible liquids

Performance outcomes	Acceptable outcomes	Compliance
	AO29.3 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.	– CAN/ULC-S601 Shop fabricated steel aboveground tanks for flammable and combustible liquids – SANS 10131 Ed.1 (2004) Above-ground storage tanks for petroleum products – UL 142 Aboveground flammable liquid tanks The portable fuel station will be located outdoors within a bunded area on an impervious base. SOILCO will develop and implement a Hazardous Materials 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. Separation distances from waterways and features have been considered during the design phase of the Project. The portable fuel station and the AdBlue tank will be set back more than 100 m from a green (low risk) waterway located to the east and more than 100 m from a red (high risk) waterway north of Mitchell Road. It is located more than 7 km from Wyaralong Dam and is located more than 4 km from the Bromelton Off-stream storage adjacent to Logan River. The CMF is required to be setback from surrounding sensitive receptors, and with its location onsite and within the SDA precinct, is appropriately setback from sensitive receptors. The CMF is located within an area that has limited environmental values. A summary of the key environmental controls to manage fuels and chemicals within the project area are outlined below. The following management plans will be developed and implemented for the operation phase to manage fuel and chemicals used within the project area: – An Environmental Management Plan has been developed for the project that outlines the environmental controls to be implemented during the operational phase – A hazardous materials management plan will be developed and implemented for the operational phase that will outline measures for managing fuel and chemical handling, storage, distribution, spill response and cleanup, and managing generated waste during construction – An incident and emergency management plan will be developed and implemented for the operational phase. This plan will identify the potential hazards and actions to be taken to prevent environmental harm, detailing any communication required in the event of an incident. Refer to section 9.2 in the Environmental Management Plan for more information. As outlined in Section 8 of the Environmental Management Plan during the operation phase the nominated contractor will undertake inspections of the plant and equipment. The inspections will focus on: – Environmental controls – Waste storage – Chemical storage – Site environmental safety – Compliance with management strategies implemented. There will be no direct discharge of runoff to the surrounding environment. Provision of in excess of 30 ML leachate storage sized in exceedance of the 24-hour event supported by the MOC, with

Performance outcomes	Acceptable outcomes	Compliance
		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 (2024) guidelines. Hardstand areas include installing compacted material that will achieve in-situ permeability (K) of less than 1x10⁻⁹ m/s. Leachate ponds will be lined with low permeability material (either recompacted clay or HPDE) to achieve in-situ permeability (K) of less than 1x10⁻⁹ m/s. A leachate management system will be implemented to capture leachate from compost handling areas. A stormwater management system will be implemented to capture and retain rainfall in non-compost handling areas to manage the erosion and sediment. Emergency equipment shall be positioned in appropriate locations at the work site to be located in a position where it is readily available to the site and maintained in a serviceable condition. Appropriate emergency equipment is to be identified commensurate with the risk of the activity being conducted and could include, but is not limited to the following: – Emergency response instruction folders – First aid equipment – Fire extinguishers – Stretcher(s) – Oil and chemical spill kits Safety showers/eyewash stations.
Material change of use for extractive industry only		
PO31 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.
PO32 An extractive industry within water resource catchments does not discharge run-off to drinking water source areas from blasting, extraction, desludging, dewatering, concrete products, overburden, waterway crossings, haulage routes or other sources. Note: Refer to the Planning Regulation 2017 for the definition of extractive industry, which includes the commercial extraction of groundwater	No acceptable outcome is nominated.	Not applicable The proposal does not involve an extractive industry.
PO33 Upon ceasing operations, premises used for extractive industry are rehabilitated by enhancing ecological functions and visual amenity of the premises and facilitating reuse of the land for a range of appropriate activities.	No acceptable outcome is nominated.	Not applicable The proposal does not involve an extractive industry.
For reconfiguring a lot only		
PO34 When reconfiguring a lot, all resultant lots requiring an on-site wastewater treatment system do not compromise the	AO34.1 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;	Not applicable The proposal does not involve reconfiguring a lot.

Performance outcomes	Acceptable outcomes	Compliance
environmental values of drinking water source areas. Note: Schedule 1 of the <i>Environmental Protection (Water and Wetland Biodiversity) Policy 2019</i> references the relevant basin for waters in a particular sub-region. The drinking water Environmental Values and Water Quality Objectives are outlined in the corresponding document for the basin.	– 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 AO34.2 Any new allotment 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 AO34.3 Any proposed lots that are to accommodate a future on-site wastewater system, maintain an average lot size of at least 2.5 ha, with no lots less than 4000m². OR AO34.4 For any reconfiguration of a lot not complying with all of the above Acceptable Outcomes, a Site and Soil Evaluation and Concept Wastewater Design is to be prepared by a suitably qualified professional demonstrating future on-site wastewater management facilities on new lots can achieve a 'medium' or lower risk rating under the Seqwater Land Use Risk Tool.	
Use of fertilisers, herbicides and pesticides		
PO35 Development involving the handling and use of herbicides, pesticides and fertilisers is to be supported by an Environmental Impact Assessment to demonstrate no environmental harm or impacts to drinking water quality.	AO35 Development ensures that the handling and use of herbicides, pesticides and fertilisers is not undertaken within: – 250m of a water supply source; and – 50m of a watercourse or waterbody.	Not applicable The Project involves the manufacture of compost material. An Environmental Assessment Report has been completed to support an Environmental Authority application to DETSI. Throughout the design process, the layout and design of key components have been sited to maximise the use of the site for infrastructure, protect the existing watercourse, locate key activities away from sensitive receptors and use pre-cleared areas. A full assessment has been made against the following criteria: – Section 125 of the EP Act. – Schedule 8, Part 3, Table 1 of the EP Regulation. – Section 35(1) of the EP Regulation. The conclusion of the assessment is that the proposed CMF achieves compliance with the relevant criteria through the implementation of a suite of mitigation measures during the construction and operational phases. The proposed ERA 53 ERA 54 and ERA 33 for the Project is considered to be appropriate development.

Table 1 Description of feedstock to be received at Bromelton Compost Facility

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
Animal manure In small amounts for blending purposes only. No more than 200 tonnes onsite at any one time.	Up to a combined total of 250,000 tonnes per annum (tpa), including the other feedstocks.	Location 8 - will be used at the final manufacturing stage. We noted that in the planning report that Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Refer to flowchart of processes in Figure 4. Inspected on arrival and stored appropriately	The material will be sourced appropriately from suppliers.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	We noted that any feedstock with a higher odour risk rating would comprise a small fraction of the total and once mixed would have a much lower odour potential Manure, soil and sand will be used for the manufacturing process as required.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Bark, lawn clippings, leaves, mulch, pruning waste, sawdust, shavings, woodchip and other waste from forest products.		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	Due to the nature of the materials received at the Facility and industry collection methods, any organic material received that has not been decontaminated and size reduced will first be processed through a decontamination line and shredded prior to ASP composting. Material will be received in the drop off area of the	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497 m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DETSI Best Practice Environmental Management Guideline ERA 53(a) Organic	Wood waste may be sold as a mulch product on its own. Lawn clippings and leaves will be included in the composting process.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
				decontamination building. The material will be visually inspected on the floor to ensure there is no excess contamination or hazardous materials in the load. Heavily contaminated loads, or loads containing hazardous materials will be rejected and disposed of to an appropriately licensed waste facility. A concrete bunker with 1,200 m ³ of capacity will allow for material to be stockpiled prior to being processed.	material processing by composting, Version 1.02.		report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Biosolids - Stabilised biosolids		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DETSI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Cardboard and paper waste - paper mulch, paper pulp effluent, paper sludge dewatered.		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase.

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
					into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	well mixed and homogenised.	A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Compostable polylactic acid (PLA) plastics - compostable plastics produced in accordance with (a) AS 4736:2006 (Biodegradable plastics) or most recent or replaced version of that standard or (b) AS 5810:2010 (Biodegradable plastics - Biodegradable plastics suitable for home composting) or the most recent or replaced version of that standard).		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Food and food processing waste (Expired/past used by date non-protein based food from supermarkets, expired beer, vegetable oil wastes and starches, vegetable waste, yeast waste, food processing effluent (wastewater) and solids (including sludges) from non protein based food) and (Food organics, expired/past used by date		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance.

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
protein based food from supermarkets, brewery and distillery effluent and waste) and (Expired soft drinks, molasses waste, grain waste (hulls/waste grains), starch water waste, sugar and sugar solutions).					Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.		Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Green waste - (leaves, grass clippings, pruning, tree branches from household maintenance).		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Inorganic additives with beneficial properties - (bentonite, crusher dust, gypsum, lime and lime slurry (inert)).		Location 8 in Figure 4, as this feedstock will be used at the manufacturing stage.	Refer to flowchart of processes in Figure 4.	As Above	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by	Added as part of the manufacturing process	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
					composting, Version 1.02.		updated Air Quality Impact Assessment Report will be provided to the OCG.
Wood waste from untreated timber - (Untreated pallets, offcuts, boards, stumps and logs, shavings, timber offcuts, crates, wood packaging).		Location 2 in Figure 4.	Refer to flowchart of processes in Figure 4.	Due to the nature of the materials received at the Facility and industry collection methods, any organic material received that has not been decontaminated and size reduced will first be processed through a decontamination line and shredded prior to ASP composting. Material will be received in the drop off area of the decontamination building. The material will be visually inspected on the floor to ensure there is no excess contamination or hazardous materials in the load. Heavily contaminated loads, or loads containing hazardous materials will be rejected and disposed of to an appropriately licensed waste facility. A concrete bunker with 1200m ³ of capacity will allow for material to be stockpiled prior to being processed.	Three leachate ponds are proposed to handle the leachate runoff from the site, and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.	Wood waste may be sold as a mulch product on its own.	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.
Soils - (clean soil, clean mud, sand).	Up to a combined 150,000 tpa of sand and soil products.	Location 8 in Figure 4, the feedstock will be used at the manufacturing stage	Refer to flowchart of processes in Figure 4.	Sourced appropriately from suppliers.	Three leachate ponds are proposed to handle the leachate runoff from the site and they will have a total capacity of 13,497m ³ . To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the	Soil and sand will be used for the manufacturing process as required	Environmental controls for the feedstock have been captured in the Bromelton Compost Manufacturing Facility Environmental Management Plan (EMP) Rev 2. The EMP covers environmental controls to be implemented during the operational phase. A feedstock management plan will be developed and implemented for the operational phase which will outline how feedstocks are sourced, stored, handled, and processed to

Detail of feedstock to be received at Bromelton Compost Manufacturing Facility	Annual quantity	Details of where feedstock will be stored and any details if any vessels are required to hold feedstock	Details of any specific offloading procedures for the feedstock	Details of sorting procedures	Details of leachate management	Will it be mixed	Environmental controls applicable to the feedstock
					DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02.		ensure efficiency, quality, and environmental compliance. Potential impacts associated with the feedstock has already been included in the planning report and in the technical assessments. An updated Air Quality Impact Assessment Report will be provided to the OCG.

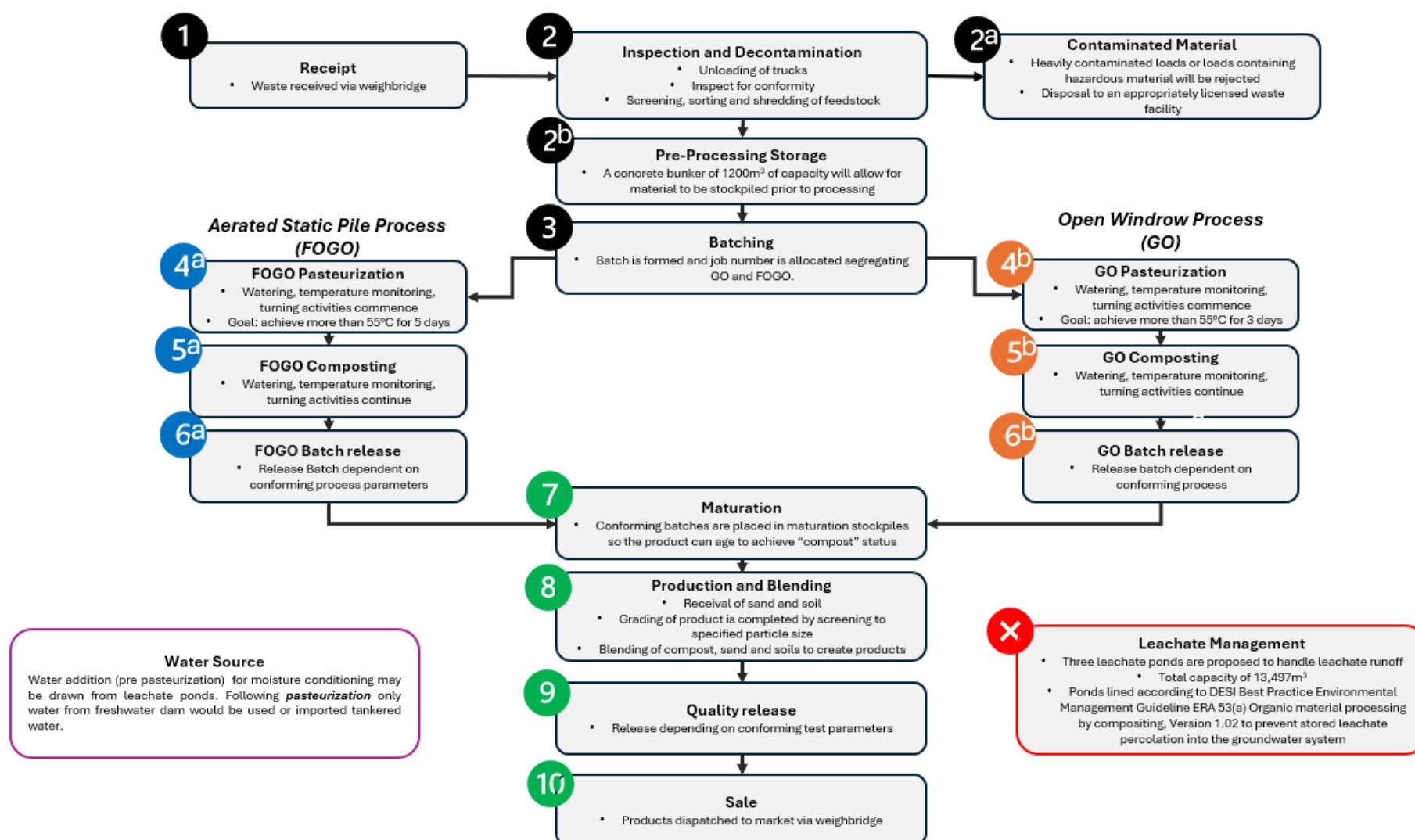


Figure 4 The compost manufacturing process proposed for Bromelton Compost Manufacturing Facility



Bromelton Compost Manufacturing Facility

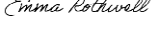
Air quality impact assessment

SOILCO Pty Ltd

17 April 2025

→ The Power of Commitment



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1. Introduction

1.1 Background

SOILCO Developments Pty Ltd (SOILCO) are preparing a Development Application (DA) for a Compost Manufacturing Facility (The Project), licensed for the production of 400,000 tonnes per annum (tpa) of compost. This assessment encompasses the construction and operation of the Compost Manufacturing Facility, which is expected to utilise a relatively small portion of the 161-hectare (ha) lot and will process approximately 250,000 tonnes per annum (tpa) of Garden organics (GO) and Food Organics & Garden Organics (FOGO). The Project is located at 260 Mitchell Road, Lot 4, Bromelton, Queensland.

1.2 Purpose of this report

GHD has been engaged by SOILCO to prepare an air quality assessment (AQA) of the construction and operational phases of the Project to support the DA.

An air quality assessment is required for construction and operation of the Project to determine any potential impacts on the nearby sensitive receptors and identify the need for any specific mitigation measures. Odour is identified as the key issue for air quality from the Project.

1.3 Scope of works

The following scope of works has been undertaken as part of this assessment:

- Review of Project information, including the design and the proposed operational sequence.
- Review of nearby sensitive land uses, review of baseline air quality, discussion of existing sources of air pollutants including odour and review of other factors influencing air quality, including climate and meteorology.
- Qualitative construction dust assessment in accordance with the Institute of Air Quality Management (IAQM) guidance on the assessment of dust from demolition and construction.
- A literature review of similar existing or proposed FOGO facilities was undertaken, including odour assessments and predicted odour contours. The review was limited to publicly available sources.
- Preparation of an odour inventory of proposed operations based on provided source/process odour emission rate data.
- Preparation of an odour dispersion model of the Project, using assumed odour emission rates, discharge parameters (e.g. flow rates) and local meteorology.
- Predict the 99.5th percentile odour concentrations at nearby sensitive receptors and area surrounding the proposal site (contours).
- Determine whether predicted odour impacts comply with the Queensland odour criterion.
- Discussion of potential dust impacts from operation of compost production facility.
- Mitigation strategies have been recommended in order to minimise odour and dust emissions from the composting facility.

1.4 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 1.2 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 (refer Section(s) 1.5 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.5 Assumptions

The following assumptions were relied upon in preparation of the air quality assessment:

- Sensitive receptors were identified using aerial photography and land use planning and may not include all existing or future receptors in the area surrounding the Project but are considered representative of receptors. The predicted modelling results were presented as a dispersion contour so that results can be interpolated to any location.
- Ambient air quality and meteorological data is considered representative however may vary year to year and be influenced by external factors including climate trends and bushfires.
- Odour emission rates have been determined from previous measurements undertaken for GHD at composting facilities in Australia. Odour emission rates were assumed to be a conservative representation of odour for the Project. Emission rates for the Project may vary depending on waste variability, inclement weather events and activities undertaken onsite. A detailed outline of odour emission rate determination is provided in Section 7.2 of this report.
- This assessment has not considered impacts of from transportation of odorous materials to site on public roads.
- There are a number of significant odour sources in the area, including Bush's Proteins, Beaudesert Saleyards, the Scenic Rim Regional Council Waste Facility/Transfer Station, poultry farms and other agricultural odour sources. Some of these may contribute to cumulative odour impacts, however most would have different odour types and odour character than composting. Regardless, discussion of potential for odour impacts is presented in Section 7.3.1.
- For the purposes of this assessment odours are assumed to be comprised of a complex mix of pollutants, including volatile organic compounds (VOCs). The odour guidance in QLD provides a methodology for dispersion modelling to predict ground level odour concentrations to be compared with the odour criteria. It is assumed there is no one individual compound from the Project activities that is a source of significant odour for the assessment.

Any additional assumptions used in the assessment are documented in the relevant sections.

2. 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 Pty Ltd (referred to as 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 53(a) Organic material processing: Processing more than 200 t of organic material in a year by composting.
 - ERA 54 Mechanical waste processing: 2 (c) – operating a facility for receiving and mechanically reprocessing more than 10,000 t a year of general waste.
 - ERA 33(1): Crushing, milling, grinding or screening more than 5,000 t of material in a year.

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 Southeast 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. A summary of the key components of the Project is outlined in Table 2.1

Table 2.1 *Summaries key 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 utilising Forced Aeration Pad system (ASP).
Construction disturbance area within Lot 4 RP85497	21 hectares
Operational footprint within Lot 4 RP85497	18.5 hectares

Project Component	Details
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. – 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 11% 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

2.1 Construction

The majority of the construction works will involve grading/excavation of the existing site, construction of semi-open composting facilities, establishment of hardstand areas and installation of plant to be used in general operation of the site.

Construction of the facility will involve:

- Bulk earthworks (Cut and fill in order to level terrain for the facility)
- Establishment of open-air compost manufacturing areas
- Establishment of the Aerated Static Pile areas
- Construction of weighbridges
- Concrete pads for loading bays
- Construction of leachate ponds.

Construction activities with potential to lead to dust generation are outlined in Table 2.2.

Table 2.2 *Dust generating construction activities*

Construction phase	Expected activities
Site establishment	– Delivery of site amenities and surveying and pegging of site.
Earthworks	– Establishment of access road to work area. – Grading, excavation and general movement of earth materials.
Roadworks and intersection works	– Removal of trees/ stripping of topsoil – Box out to required levels – Subgrade and base course – Asphaltting – Line Marking – Signage installation – Defect inspection and cleaning
Civil works	– Demolition and earthworks – Civil works. – Ponds and other civil structures
Mechanical installation	Installation of the following items: – Shredder – Drum screen – Platforms – Storage tanks/platforms – Blowers – Leachate system – Water system – Picking station – Control system & instrument mech – Odour control system – Interconnecting pipework.
Electrical installation	Installation of the following items: – Blowers – Pumps – Screens – Motor control centre works – Interconnecting cabling – Electrical installation complete.

2.2 Operation

2.2.1 Site layout

The proposed composting facility is shown in Figure 2.1. The following sections of the facility are expected to contribute to odour generation:

- FOGO receival building
- Aerated Static Pad (ASP)
- Fogo maturation area
- Open Windrows GO
- Final Screening and Manufacturing (Manure)
- Leachate Ponds (GO, FOGO and Manufacturing)

Matured compost is not expected to significantly contribute to odour emissions from the operation of the facility.

2.2.2 Composting Process

The facility will operate in accordance with the process flow outlined in Figure 2.2 and Figure 2.3. The process flow can be divided into two branches and includes the following steps:

- Material will enter site, be weighed on a weigh bridge and inspected for conformity to process requirements.
- FOGO will be delivered to the decontamination line, which will then be screened, sorted, decontaminated and shredded depending on the size of material (>60 mm in diameter material will be shredded).
 - Shredded and decontaminated FOGO will then be placed into windrows on ASP pads for 21 days.
 - ASP pads will aerate FOGO with 18,000 m³/hour of air.
 - Windrows will be turned completely one time during the three week period.
 - Once 21 days have passed, FOGO will be transferred to the manufacturing, maturation & storage area, and will be aged for a further eight weeks.
 - Virgin Excavated Natural Material (VENM) will also be stored in this area and will be blended into completed compost as required.
- Garden Organics (GO) will be sorted and then directly deposited onto open windrows for composting and maturation, which will sit for 8 weeks.
 - Windrows will be turned two times completely during the eight week period.
 - Maturation windrows will undergo water humidification periodically.
 - VENM and manure will also be mixed into finished GO compost as required.
 - Manure will be stored in the final screening and manufacturing area.
- Once material has been composted sufficiently, it will be directly transported off site or stored in “bunker” areas until it is ready to be transported off site.

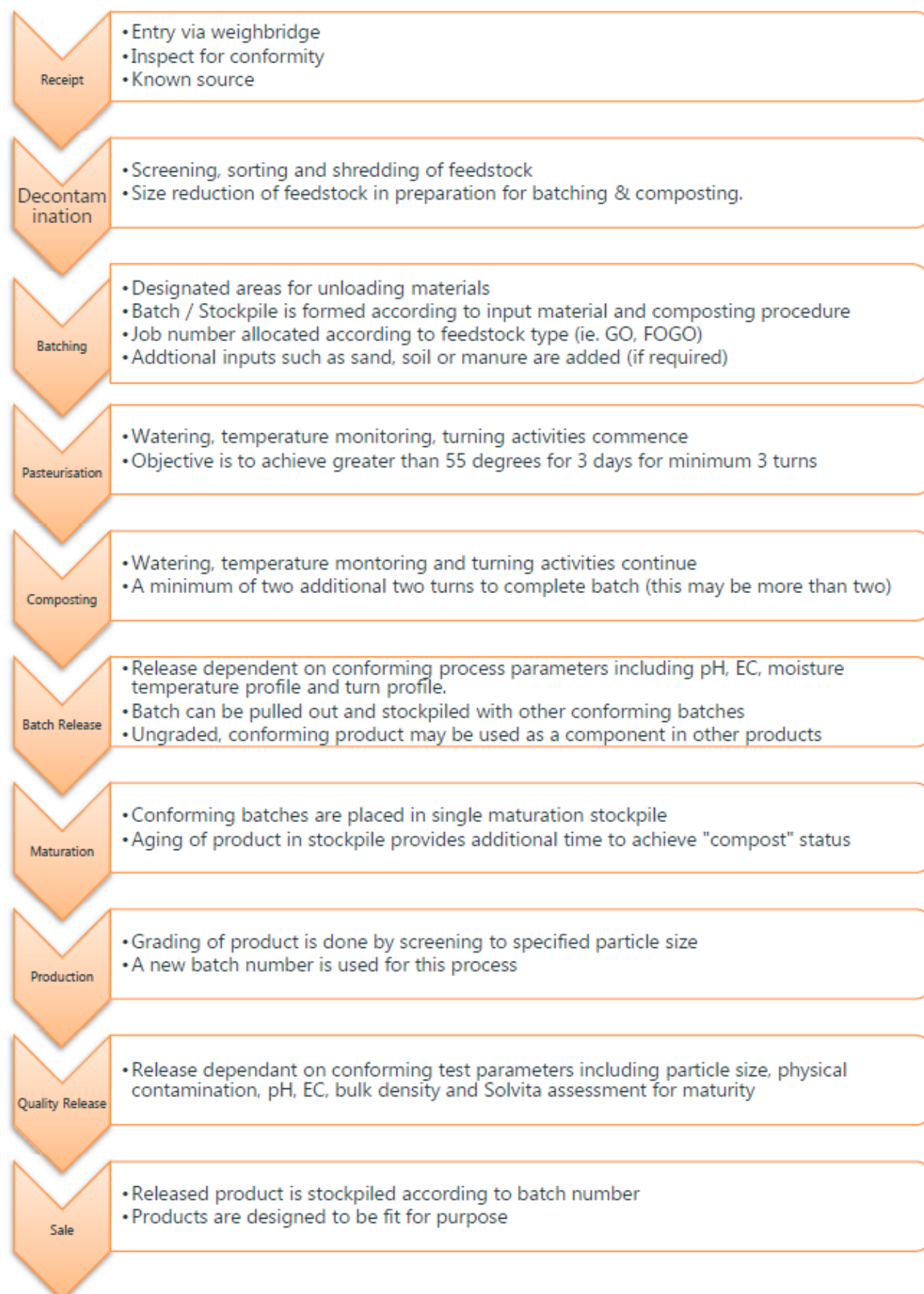


Figure 2.2 Bromelton compost manufacturing facility process flow

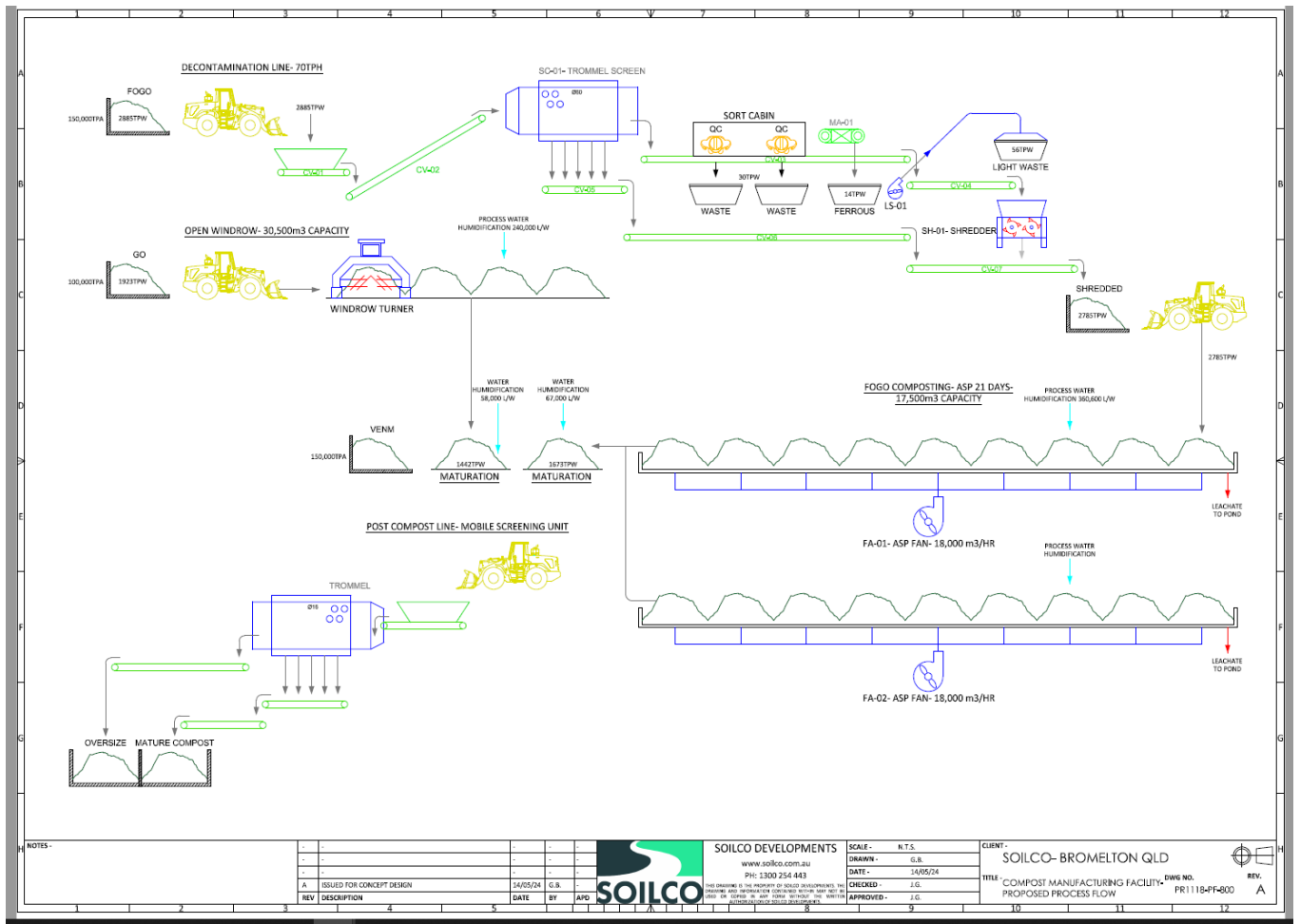


Figure 2.3 Bromelton compost manufacturing facility process flow diagram

2.2.3 Material throughput

Material receipt is expected to vary significantly across the year, with more compost being processed in the summer months than the winter months. The peak compost material throughput occurs in January and March, and the lowest material throughput occurring in June and July. The amount of compost at the facility would likely correlate to odour potential. An annual breakdown of organic materials processed at the facility is provided in Table 2.3.

Table 2.3 Annual breakdown of GO and FOGO processed across a year

Month	Estimated receipt of material (tonnes per period)		Total material received Tonnes per annum
	GO	FOGO	
Jan	9,437	14,155	23,592
Feb	8,692	13,038	21,730
Mar	9,557	14,335	23,892
Apr	8,278	12,416	20,694
May	7,900	11,850	19,750
Jun	6,256	9,384	15,640
Jul	5,955	8,932	14,887
Aug	7,613	11,420	19,033
Sep	7,985	11,977	19,962
Oct	8,707	13,060	21,767
Nov	10,825	16,237	27,062
Dec	8,797	13,195	21,992
Total per year	100,000	150,000	250,000

2.2.4 Material types

GHD has undertaken a review of potential feedstock types to be accepted at the facility with particular reference to *Best Practice Environmental Management Guideline ERA 53(a) - Organic material processing by composting* (DESI, 2024). It is important to note that feedstocks would be received and processed within the material processing building and that after this stage, all material will be well mixed and homogenised. Any feedstock with a higher odour risk rating would comprise a small fraction of the total and once mixed would have a much lower odour potential. The majority of all feedstocks accepted at the site will be green waste which has a low odour potential. The wastes to potentially be accepted and their corresponding odour rating are provided in Table 2.4.

No feedstock with a 'very high' odour rating will be accepted onsite. The only feedstocks with a 'high' rating accepted at the site are food organics for composting and small amounts of animal manure (up to 200 tonnes) for blending purposes only.

Table 2.4 Odour rating of composting feedstock (ERA 53(a)) – Organic material processing by composting

Feedstock	Examples	Odour rating	To be used at Bromelton CMF (y/n)
Abattoir waste	Meat processing leftovers, bone material, blood, tallow waste, abattoir waste including animal effluent and residues from meat processing, including abattoir effluent, liquid animal wastes (blood) and sludge	Very high	No
	Paunch material	High	No

Feedstock	Examples	Odour rating	To be used at Bromelton CMF (y/n)
Animal manure	Horse manure, chicken manure, cow manure, livestock manure, or any manure produced by animals, wastewater from holding yards	High	In small amounts for blending purposes only. No more than 200 tonnes onsite at any one time
Animal waste and animal processing waste	Any dead animals or part/s of dead animals, remains of animals or part/s of remains of animals (e.g. chickens from poultry farms), egg waste, milk waste, mixtures of animal manure and animal bedding organics	Very high	No
Bark, lawn clippings, leaves, mulch, pruning waste, sawdust, shavings, woodchip and other waste from forest products	Cane and sorghum residues including bagasse, forest mulches, cypress chip, green waste, mill mud ⁷¹ , pine bark, sawmill residues non-treated (including sawdust, bark, wood chip, shavings etc.), tub ground mulch (from land clearing and forestry waste), peat, seed hulls/husks, straw, and other natural fibrous organics, wood chips (forestry waste and land clearing, household maintenance), wood waste (including untreated pallets, offcuts, boards, stumps and logs); worm castings suitable for unrestricted use	Low	Yes
Biosolids	Biosolids that are not stabilised biosolids	Very high	No
	Stabilised biosolids	Medium	Yes
Cardboard and paper waste	Paper mulch	Low	Yes
	Paper pulp effluent, paper sludge dewatered	Medium	Yes
Compostable polylactic acid (PLA) plastics	Compostable plastics produced in accordance with: (a) AS 4736:2006 (Biodegradable plastics) or the most recent or replaced version of that standard or (b) AS 5810:2010 (Biodegradable plastics - Biodegradable plastics suitable for home composting) or the most recent or replaced version of that standard.	Low	Yes
Ammonium Nitrate, dewatered fertiliser sludge		High	No
A substance used for manufacturing fertiliser for agricultural, horticultural or garden use	Fertiliser water and fertiliser washings, stormwater from fertiliser manufacturing plants containing fertiliser washwater	Medium	No
Fish processing waste	Fish bones and other fish remains/leftovers, wastewater from fish processing	Very high	No
Food and food processing waste	Expired/past used by date non-protein based food from supermarkets, expired beer, vegetable oil wastes and starches, vegetable waste, yeast waste, food processing effluent (wastewater) and solids (including sludges) from non-protein based food	Medium	Yes
	Food processing effluent (wastewater) and solids (including sludges) from protein based food	Very high	No
	Food organics, expired/past used by date protein based food from supermarkets, brewery and distillery effluent and waste	High	Yes

Feedstock	Examples	Odour rating	To be used at Bromelton CMF (y/n)
	Expired soft drinks, molasses waste, grain waste (hulls / waste grains), starch water waste, sugar and sugar solutions	Low	Yes
Grease trap waste	Oil and grease waste recovered from grease traps	Very high	No
Green waste	Leaves, grass clippings, prunings, tree branches from household maintenance	Low	Yes
Inorganic additives with beneficial properties	Bentonite	None	Yes
	Crusher dust	None	Yes
	Drilling muds (non-CSG and no additives)	None	No
	Gypsum	Medium	Yes
	Lime and lime slurry (inert)	None	Yes
Poultry processing waste	Feathers, meal and bone leftovers, egg waste including poultry processing poultry abattoir effluent and sludges	Very high	No
Soils	Acid sulfate soils and sludge	High	No
	Clean soil, clean mud, sand	None	Yes
Stormwater	Low level organically contaminated stormwaters or groundwaters (tested)	Low	No
Wood waste from untreated timber	Untreated pallets, offcuts, boards, stumps and logs, sawdust, shavings, timber offcuts, crates, wood packaging	Low	Yes
Mushroom compost and mushroom growing substrate		Medium	No

3. Legislation and policy context

The relevant legislation and government guidance for the air quality assessment of the Project are:

- QLD *Environmental Protection Act 1994* (EP Act)
- QLD *Environmental Protection (Air) Policy 2019* (EPP (Air))
- QLD *Best Practice Environmental Management Environmentally relevant activity 53(a) - Organic material processing by composting* (2024)
- QLD *Odour Impact Assessment from Developments Guideline* (Department of Environment and Heritage Protection, 2014)
- *Application requirements for activities with impacts to air* (Department of Environment and Science, 2017)
- *National Environment Protection Council (NEPC) National Environment Protection (Ambient Air Quality) Measure 2021* (the Air NEPM)
- *Guidance on the assessment of dust from demolition and construction* (Institute of Air Quality Management, 2024) (IAQM guidance).

Under the *Environmental Protection Act 1994* (EP Act), proposals are assessed to ensure they will not adversely affect environmental values including air quality, public amenity and safety. This means ensuring the Project is not likely to cause environmental nuisance or environmental harm.

The *Environmental Protection (Air) Policy 2019* (EPP (Air)) under the EP Act establishes air environment values to be protected or enhanced. The environmental values considered relevant to this assessment are:

- The qualities of the air environment that are conducive to human health and wellbeing.
- The qualities of the air environment that are conducive to protecting the aesthetics of the environment, including the appearance of buildings, structures and other property.

The EPP (Air) provides air quality objectives for sulphur dioxide, nitrogen dioxide, ozone, carbon monoxide, particles, lead and a number of air toxics. Odour impacts are required to comply with protection of the aesthetics of the environment. Application requirements for activities with impacts to air (Department of Environment and Science, 2017) under the EP Act provide guidance on impact assessment criteria for dusts (suspended and deposited) and odour.

The QLD *Odour Impact Assessment from Developments Guideline* (Department of Environment and Heritage Protection, 2014) provides a procedure for assessing the likelihood of odour nuisance from development proposals for new facilities, modifications of existing facilities and land developments.

This air quality assessment is completed in consideration of the guidance outlined in Air—EIS information guideline (Department of Environment and Science, 2020).

The National Environment Protection Council of Environmental Ministers, now the National Environment Protection Council (NEPC), updated the Air NEPM in May 2022. The Air NEPM sets uniform national standards for ambient air quality and outlines the framework for state and territory jurisdictions to monitor and report against these standards.

The IAQM guidance provides guidance on the assessment of dust from demolition and construction activities. It provides a qualitative step by step process to assess the risk of dust impacts. This is an industry-accepted contemporary guidance which has been used for a number of large projects across Australia (SLR Consulting Pty Ltd, 2018; Aecom, 2018). Additionally, an Australia and New Zealand-specific *Good Practice Guide for the Assessment and Management of Air Pollution from Road Transport Projects* references and closely follows the IAQM approach (Clean Air Society of Australia and New Zealand, 2023).

3.1.1 Dust assessment criteria

Deposited dust

The Queensland Government guideline 'Application requirements for activities with impacts to air' states, 'A *dust deposition limit of 120 milligrams per square metre per day, averaged over one month, when monitored in accordance with 'AS3580.10.1 Methods for sampling and analysis of ambient air – Determination of Particulates – Deposited Matter – Gravimetric method of 1991', is frequently used in Queensland.*

Deposited dust criteria are most relevant for dust on surfaces and for amenity.

Particulates

The QLD *Environmental Protection (Air) Policy 2019* provide the following relevant air quality criteria for health and wellbeing shown in Table 3.1. These are relevant to human health and not directly relevant for amenity impacts.

Table 3.1 Air quality impact assessment criteria

Pollutant	Averaging period	Impact location	Impact type	Criteria (µg/m³)
TSP	Annual	Sensitive receptor	Cumulative	90
PM ₁₀	24 hour	Sensitive receptor	Cumulative	50
	Annual	Sensitive receptor	Cumulative	25
PM _{2.5}	24 hour	Sensitive receptor	Cumulative	25
	Annual	Sensitive receptor	Cumulative	8

3.1.2 Odour assessment criteria

The odour assessment criteria for the Project were taken from the *Odour impact assessment from developments guideline* (Department of Environment and Heritage Protection, 2014). Comparison of the site's predicted odour performance against the impact assessment criteria outlined in this guideline is a valuable tool in understanding the potential for off-site odour impacts, assessing the expected level of risk of odour impacts occurring as well as providing a baseline for future plant modifications or future developments surrounding the source of odour.

Odour impacts are predicted and assessed using Odour Units (OU). OU's are determined by dividing the concentration of a sample by the number of dilutions required to reach the odour threshold. The odour threshold is determined through a testing panel and is the concentration at which 50% of the testing panel participants can correctly detect an odour. In essence, the use of OU's allows for a numeric representation of a subjective sensory experience.

The modelled odour concentrations at the 'most exposed existing or likely future off-site sensitive receptors' should be compared with the following guideline values:

- **0.5 OU**, 1-hour average, 99th percentile for wake-free stacks
- **2.5 OU**, 1-hour average, 99.5th percentile for ground-level sources and wake-affected stacks, and
- For facilities that do not operate continuously, the 99.5th percentile must be applied to the actual hours of operation.

3.1.2.1 Separation distances

The Environment Protection Authority (EPA) in several states (including Department of the Environment, Tourism, Science and Innovation (DETSI) in Queensland) have specified separation distances between industrial land uses that emit odour or dust and sensitive land uses. These guidelines are published as one method of considering potential conflicts between incompatible land uses. These are recommendations only, and there is always opportunity for a proponent to demonstrate compliance with relevant legislative requirements through other methods. It is noted that separation distances are developed to minimise impacts that may occur when there are accidents, power failure, equipment failure (i.e., odour controls) or unusual meteorological conditions that may occur, as well as normal operation. The State of Queensland's recommended separation distances are outlined in

the *Queensland State Planning Policy 5/10: Air, Noise and Hazardous Material 2010*. The nearest residential receptor is approximately 1.1 km north of the Project which is greater than the recommended distance for all guidance documents (excluding Victoria which recommends >1400 m). A summary of the separation distances in each state is presented in Table 3.2.

Table 3.2 Required separation distances for this site per guidelines in each state or territory

State guideline	Facility type		Recommended separation distance
Australian Capital Territory (ACT Government, 2018)	Composting works – compost is produced at a rate of > 200 tonnes/year		1,000 m
South Australia (EPA South Australia, 2016)	Composting works (>200 tonnes/year)		1,000 m
Victoria (EPA Victoria, 2013) (EPA Victoria, 2017)	Types of feedstock: green waste, vegetable organics, grease inceptor trap waste Technology: open air receipt, enclosed aerobic composting with secondary odour capture and treatment equipment, open air maturation 90,000 tonnes/year		>1,400 m
Western Australia (WA EPA, 2005)	Composting facility – outdoor uncovered, regularly turned windrows	Manures, mixed food/putrescible and vegetative food waste	1,000 m
		Biosolids	500 m
		Green waste	150 m
Queensland (DETSI) 2010 - <i>State Planning Policy 5/10 Air, Noise and Hazardous Materials</i> .	Level 1 Industry Zones ¹	Medium impact industry	250 m
		High impact industry	500 m
		Noxious and hazardous industry	1,500 m

3.1.3 Pre-lodgement advice from DETSI

DETSI provided information relevant to air quality and odour in an email to GHD dated 20 June 2024. The pre-lodgement advice is summarised in Table 3.3.

Table 3.3 Pre-lodgement advice relevant to odour

Relevance to assessment	Advice
Air	Emissions to air: – odour including volatile organic compounds (VOCs) (from receiving raw material, mechanically reprocessing feedstock, mixing or turning compost and leachate); and – particulate matter (from turning compost, screening final compost and blending compost with clean earth).
Odour	As part of the application, the department will require a list of specific feedstocks that the site will propose to accept and the associated odour rating of each feedstock (see Schedule 1- Odour rating of composting feedstock of the ERA 53(a) MOCs). If the type of waste you intend to process is not listed, you can follow the procedure outlined in this guideline https://environment.desi.qld.gov.au/data/assets/pdf_file/0023/340727/organicfeedstockodourrating.pdf to assign an odour rating to a particular feedstock. If feedstock proposed to be accepted onsite has a high or very high odour rating, the department will require that the operations onsite that have the highest risk of causing odours are to be fully enclosed and incorporate appropriate air filtration systems. Operations that have the potential to cause odours include the initial receipt, sorting, decontaminating, shredding and mixing of feedstocks that are of a high and very high odour rating. Composting, before pasteurisation is achieved, with feedstocks of a high or very high odour rating also has the potential to cause nuisance odours. It is recommended that in-vessel or enclosed systems are used for composting these feedstocks until pasteurisation is achieved. Enclosed systems could also include GORE® covers or similar mitigation measures over composting windrows, etc. If a different method of composting is proposed

Relevance to assessment	Advice
	(which is not fully enclosed) sufficient evidence must be provided to determine the potential impacts of odours on sensitive receptors and appropriate alternative mitigation measures must be proposed to manage and mitigate odour.

GHD reviewed the proposed feedstocks to be accepted at the Project in Section 2.2.4 of this report, which identified that some wastes with high and very high odour rating will potentially be accepted at the site. Advice from DETSI is that where high or very high odour rated feedstocks are accepted, the operations are to be fully enclosed and incorporate air filtration systems. DETSI also noted that where a different method of composting is proposed (which is not fully enclosed), sufficient evidence must be provided to determine the potential impacts of odours on sensitive receptors and appropriate alternative mitigation measures must be proposed to manage and mitigate odour.

A detailed assessment of odour from the Project has been undertaken (this assessment) which includes a review of odour from similar operating facilities in order to adopt a conservative odour emission dataset, meteorological and dispersion modelling which considers local terrain, land use and weather data to predict the pattern of odour dispersion in the areas surround the Project. This assessment has incorporated conservative odour emission rates for the proposed activities at the site (refer Section 7) and demonstrates full compliance with the QLD odour criteria at all sensitive receptors. Mitigation measures are provided in Section 7.5 to minimise odour as far as practicable, including additional measures that can be implemented should odour need to be further reduced.

4. Assessment Methodology

4.1 General

This air quality assessment was completed with accordance to the *QLD Odour Impact Assessment from developments guideline* and the IAQM guidance. A qualitative assessment has been completed to assess the dust impact during construction of the Project.

Air quality may be impacted by a number of pollutants, each of which has different emission sources and effects on human health, amenity and the environment.

Based on a review of the construction methodology and operational activities, dust and particulate matter was identified as the pollutant most likely to impact nearby sensitive receptors during construction of the Project.

During operation of the Project, odour was identified as the pollutant most likely to impact nearby sensitive receptors. Dispersion of odour has been modelled and assessed for operation of the Project. The potential for dust impacts from operations are considered low given the significant distance to sensitive receptors, high moisture content of feedstocks and dust mitigation controls that will be used at the facility, including watering of unpaved surfaces such as the access road and stockpiles. Following guidance outlined in page 12 of the QLD guidance document *Application requirements for activities with impacts to air*, dispersion modelling of dust and particulate matter has therefore not been undertaken as the proposed activities are not likely to have a high impact to air.

Combustion emissions from traffic and equipment would occur during both construction and operation of the Project. However, these emissions are expected to be negligible in comparison with those from the existing traffic volume already present on the Beaudesert-Boonah Road, adjacent to the proposed site. Therefore, combustion emissions have not been further assessed in this report.

4.2 Modelling methodology

4.2.1 Dispersion model selection

CALPUFF was found to be the most appropriate dispersion modelling software to use for this Project due to the distance and topography between the meteorological observations and sensitive receptors, and the proposed site. The Project is located on elevated terrain with some gullies either side, and some nearby sensitive receptors are also located on the far side of terrain features. As well as this, the high frequency of calm conditions (wind speeds less than 0.5 metres per second) cannot be accurately accounted for using AERMOD and therefore CALPUFF is recommended.

CALPUFF is an advanced non-steady-state, Gaussian puff dispersion model that uses a three dimensional spatially varying wind field that is capable of accounting for complex terrain features and varying wind fields.

4.2.2 Emission inventory development

GHD has reviewed the odour emission rates supplied by SOILCO, who provided an odour assessment prepared by ERM (Wogamia Composting and Manufacturing Facility (CMF) Odour and Dust Assessment (29 October 2020)). The assessment references odour sampling that was undertaken by Ektimo at the site in 2019 of various stages of composting using an Isolation Flux Chamber (IFC). Derived odour emission rates were observed to be lower than odour measurements previously undertaken or reviewed by GHD on other GO and FOGO composting sites in Australia. This may be due to the sampling IFC method on permeable substrates such as composted material and is discussed in more detail in Section 7.2, or other variabilities associated with FOGO composition and age, windrow age.

In order to be conservative, GHD has conducted review of numerous other green waste and FOGO composting facilities and conservative odour emission rates have been used for this assessment. These are discussed in Section 7.2.

The odour emission inventory reflects the proposed feedstocks accepted at the facility described in Section 2.2.4, where no high risk odour feedstock types are to be accepted at the site.

4.2.3 Assumed geometry of windrows

Organic material will be processed and stored in windrows. For the purpose of this assessment, windrow size and surface area has been estimated using material volumes provided by SOILCO. Windrows are expected to be trapezoidal in shape and GHD has calculated the surface area of composting windrows based on the volume of material at any one time.

Material volumes and the total area needed to house compost, as well as the expected surface area of windrows per composting area are presented in Table 4.1 and assumed windrow geometry is presented in Appendix C-1. Modelled windrow parameters are based on the maximum expected volumes across an entire year. In reality volumes would be lower in winter months, and as such these assumptions are conservative.

Table 4.1 *Material volumes, areas and surface areas*

Area	Scenario	Total volume of material processed per period	Total area in which material is to be stored	Expected surface area of material
Maturation and storage – FOGO (Area A)	Peak period material throughput	37,336 m ³ per eight weeks ¹	16,430 m ²	16,430 m ²
	Low period material throughput	23,4467 m ³ per eight weeks ¹		
	Average Material Throughput	13,5902 m ³ per eight weeks ¹		
Aerated Static Pad – FOGO (Area B)	Peak period material throughput	14,000m ³ per three weeks	9,135 m ²	8,374 m ²
	Low period material throughput	8,800 m ³ per three weeks		
	Average Material Throughput	11,400 m ³ per three weeks		
Composting facility – GO (Area D)	Peak period material throughput	30,500 m ³ per eight weeks	24,438 m ²	18,181 m ²
	Low period material throughput	19,000 m ³ per eight weeks		
	Average Material Throughput	24,750 m ³ per eight weeks		
Final screening and manufacturing	Peak period manure stored on site for blending	200 tonnes at any time	386 m ²	204 m ²

Note: 1. Calculated from ASP output adjusted to an eight-week cycle

4.2.4 Representative year

A representative year was chosen from the last five years based on the average annual wind speed, wind direction, temperature and relative humidity recorded at the Bureau of Meteorology, Beaudesert Drumley St Automatic Weather Station (AWS). This review is shown in Appendix A-2-2. The review resulted in the selection of the 2021 calendar year (01/01/2021 – 31/12/2021) as the representative year for modelling purposes.

4.2.5 Meteorological modelling

Local meteorology including long term wind speed and direction, as well as atmospheric stability, influence how air pollutants are dispersed into the local environment.

Site specific meteorological data used to drive the dispersion model was generated by use of TAPM and CALMET meteorological models to produce a three-dimensional wind field which also accounts for local variations in the terrain. Surface observations from the Beaudesert Drumley Street AWS (040983) were assimilated into TAPM, and the prognostic data generated by TAPM were used as an 'initial guess field' for the CALMET meteorological model.

Details of the procedure undertaken to produce the site-specific meteorology are provided in Appendix A-2-3.

4.2.6 Dispersion modelling configuration

Beaudesert falls within the Scenic Rim Regional Council local government area, which has no specific dispersion modelling guidance. Consequently, predicted air quality impacts were modelled in accordance with the Brisbane City Council City (BCC) Plan 2014 using an approved computer software model CALPUFF. CALPUFF model settings were selected with consideration to the recommendations provided in the BCC Air quality planning scheme policy (Brisbane City Council, 2016) and the Queensland Department of Environment and Heritage Protection Guideline, *Odour Impact Assessment from Developments 2018*. The *Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia* (Barclay and Scire; Atmospheric Studies Group, 2011) was also to help determine appropriate model configuration settings. CALPUFF settings are outlined in section B-1.

For this assessment, the CALPUFF dispersion model was used to predict ground-level odour concentrations from the Project. The CALPUFF dispersion model utilised a meteorological dataset of one year in duration. The grid size used in the CALPUFF model was equivalent to the CALMET domain (use of CALMET further discussed in Section A-3). The same grid resolution of 100 metres used for the CALMET model was used in CALPUFF.

The source properties and emission rates utilised in the dispersion modelling are detailed in Section 7.2 and Appendix C.

Building effects on dispersion were not considered in the model as all model sources are area or volume sources.

The dispersion model was configured to predict odour concentration at identified sensitive receptor locations and for a sampling grid centred on the proposed site.

5. Existing environment

5.1 Sensitive receptors

Air quality sensitive receptors are defined in the DESI, Queensland's guideline "*Application requirements for activities with impacts to air quality*" (Department of Environment and Science, 2017) as follows:

- A dwelling, mobile home or caravan park, residential marina or other residential premises
- A motel, hotel or hostel
- A kindergarten, school, university or other educational institution
- A medical centre or hospital
- A protected area under the *Nature Conservation Act 1992*, the *Marine Parks Act 2004* or a World Heritage Area
- A public park or gardens
- a place used as a workplace including an office for business or commercial purposes.

The nearest receptors in each direction, two km from the Project site boundary have been identified and described in Table 5.1 and shown in Figure 5.1. The nearest receptors are predominantly industrial facilities, located to the north of the site. Three residential receptors (R05, R06 and R11) were identified within two kilometres of the Project boundary. Other receptors outlined in Table 5.1 below are industrial receptors and would not be considered sensitive under the DETSI guidelines.

Table 5.1 Nearby receptors

ID	Receptor type	Address	Easting (m)	Northing (m)	Distance and direction from Project	Receptor considered sensitive y/n
R01	Industrial	Beaudesert Saleyards, State Route 90	492,043	6,906,126	863 m Northeast	n
R02	Industrial	Quickcell Technology Products Pty Ltd, LOT 3 Beaudesert Boonah Rd	492,614	6,905,652	1,150 m East-northeast	n
R03	Industrial	SCT Logistics, 2603 Beaudesert Boonah Rd	492,323	6,906,010	1,000 m Northeast	n
R04	Industrial	Scenic Rim Regional Council Waste Facility, Waste Facility Rd	493,114	6,905,850	1,700 m Northeast	n
R05	Residential	388 Swan Gully Road Bromelton	489,519	6,903,432	2,000 m Southwest	y
R06	Residential	2572 Beaudesert - Boonah Road	490,940	6,906,632	1,100 m Northwest	y
R07	Industrial	28 Swan Gully Road	492,703	6,904,019	1,700 m Southeast	n
R08	Industrial	Bush's Proteins QLD (A J Bush & Sons (Manufactures))	492,401	6,903,487	1,800 m Southeast	n

ID	Receptor type	Address	Easting (m)	Northing (m)	Distance and direction from Project	Receptor considered sensitive y/n
		Pty Ltd), 358 Sandy Creek Rd				
R09	Industrial	194 Swan Gully Road	491262	6903415	1,400 m South	n
R10	Residential	15 Tilley Rd	491045	6906961	1,466 m North	y

1. GHD understands that the industrial facility located at 2,572 Beaudesert – Boonah Road is currently not in operation

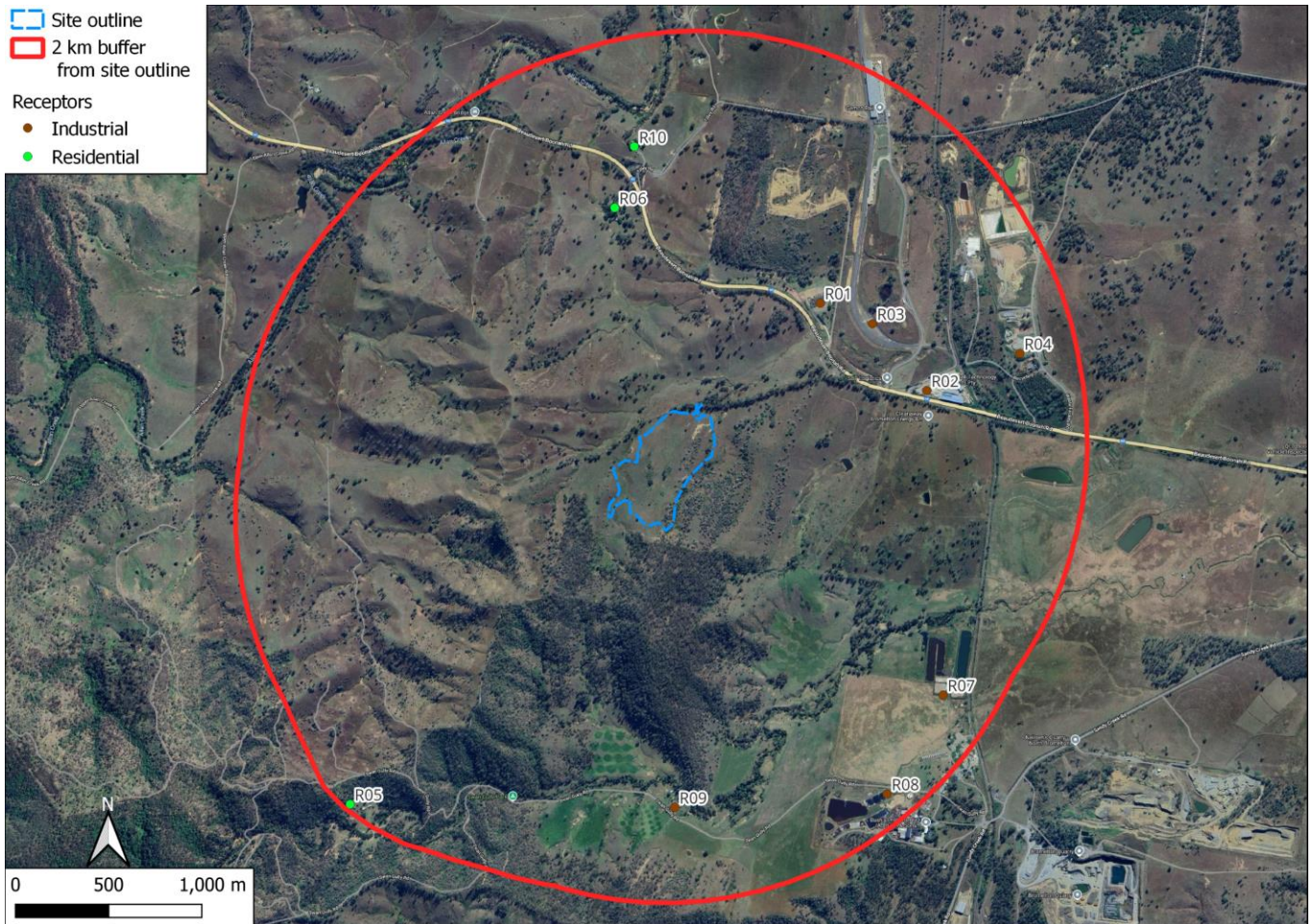


Figure 5.1 Receptors within 2km of the site boundary

5.1.1 Ecological Receptors

As part of the DA, separate terrestrial ecology assessments have been undertaken by GHD (Bromelton Compost Manufacturing Facility Terrestrial Ecology Assessment Report, dated 13 June 2024) and Redleaf Environmental (Ecological Assessment Report Mitchell Road, Bromelton, Queensland, dated December 2021). These reports have been reviewed to determine ecological sensitivity of the surrounding habitat. The ecological assessment undertaken by GHD determined that the Project site and its surroundings have been heavily impacted by human activity and is of poor quality for sensitive flora and fauna. Despite this, the survey undertaken by Redleaf Environmental determined that areas deemed essential habitat for koalas lies directly adjacent to, and within the site footprint as seen in Figure 5.2 (<20 metres from the proposed works). Furthermore, evidence of koala activity was detected on site.

5.2 Climate and meteorology

The local climate and meteorology (weather) within the areas surrounding the Project site is of critical importance when assessing the potential for air quality impacts at sensitive receptors.

The Bureau of meteorology (BoM) operates a network of Automatic Weather Stations (AWS) across Australia. A BoM AWS typically measures critical meteorological parameters including wind speed, wind directions, temperature, relative humidity and pressure, with some stations also measuring cloud cover.

The nearest meteorological station to the Project is the Bureau AWS located at Beaudesert Drumley St (ID: 040983), approximately 7.9 kilometres east of the Project site. Data from 2019 through to the end of 2023 from this station have been reviewed for wind direction and speed, and temperature and rainfall data from 2007 through to the end of 2023 has been reviewed, in order to gain a better understanding of longer term climatic characteristics of the site.

5.2.1 Wind

Wind patterns at a site are one of the most important factors influencing pollutant dispersion. The annual, seasonal, and diurnal winds from the Beaudesert Drumley Street station are presented in Figure 5.3, Figure 5.4, and Figure 5.5, respectively.

Key observations for the annual wind rose (Figure 5.3) is as follows:

- Overall, winds are predominantly from the southwest.
- The average wind speed is a moderate 1.3 m/s.
- Calms, which are defined as wind speeds less than 0.5 m/s and are associated with poor dispersion outcomes, occur 33.8% of the time.

Seasonal wind roses (Figure 5.4) show the following trends:

- Relatively high prevalence of calm conditions can be observed all year round as with the highest percentage of calms being observed in winter (40.1% of the time).
- Wind speeds are generally moderate year-round, with marginally higher wind speeds observed in spring and summer.
- Winds blow primarily from the south-southwest in autumn and winter. Winter wind data shows weak directionality in wind directions. Summer wind directions occur primarily from the east-northeast and south-southwest.

Diurnal wind roses (Figure 5.5) show that:

- Calm conditions are significantly more frequent in the nighttime period relative to the daytime period, with calm conditions occurring between 58.2% to 61.4% of the time.
- Wind generally occurs from a southerly direction in the nighttime periods.
- Wind occurs primarily occurs from the southwest and northwest between 6:00 and 12:00, and primarily from the northeast between 12:00 and 18:00.

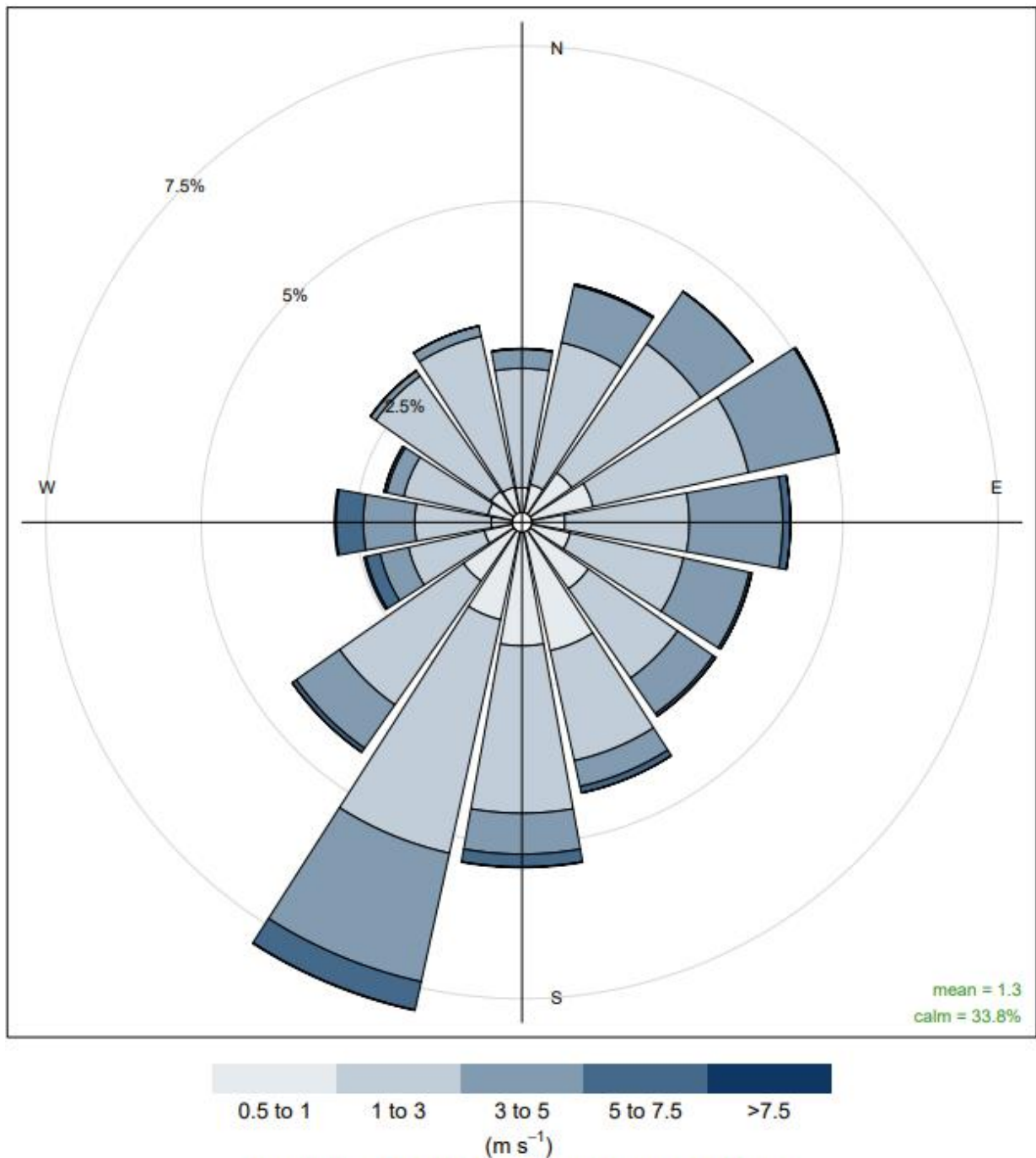


Figure 5.3 Average winds at Beaudesert Drumley Street BoM AWS (2019-2023)

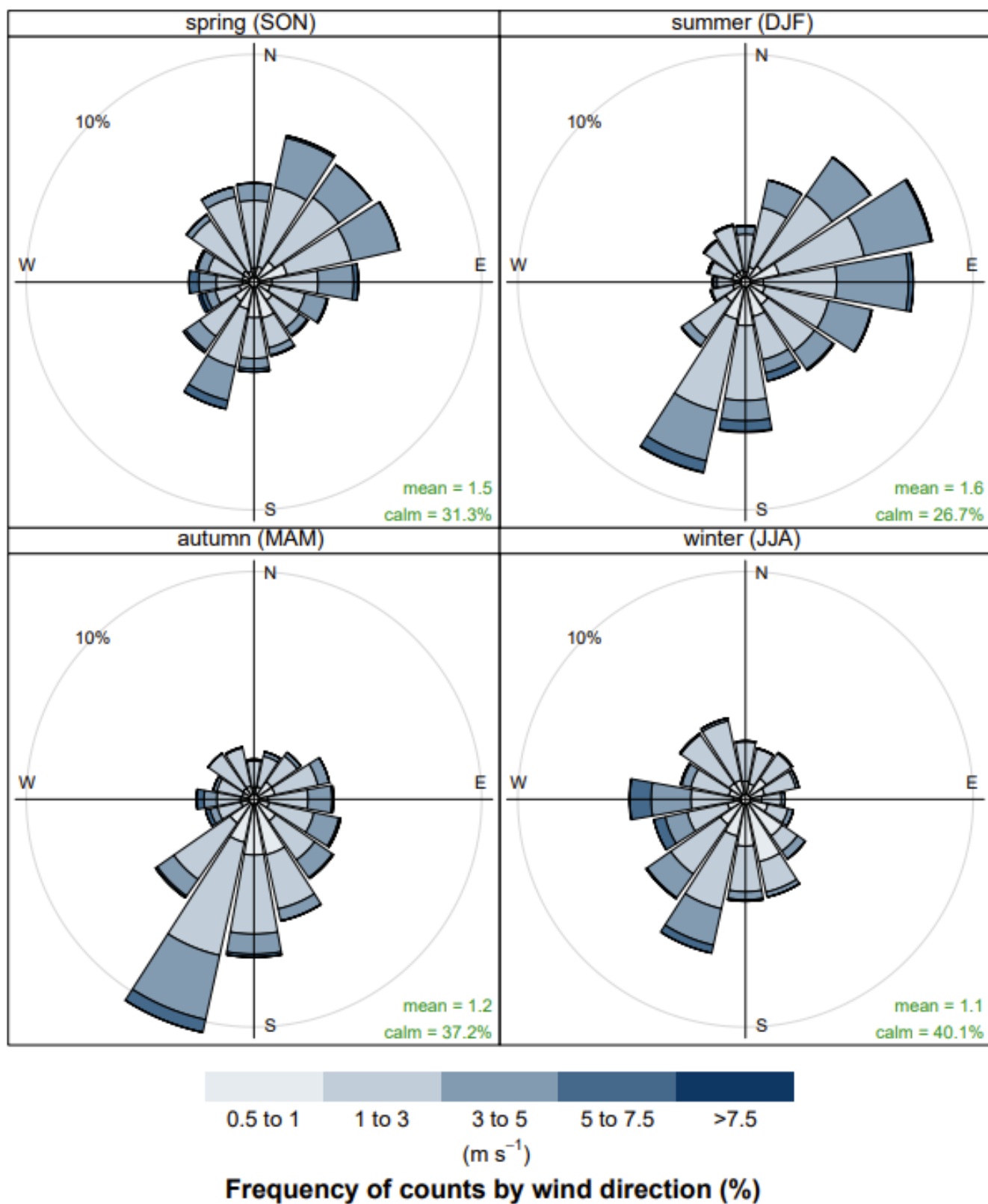


Figure 5.4 Seasonal winds at Beaudesert Drumley Street BoM AWS (2019-2023)

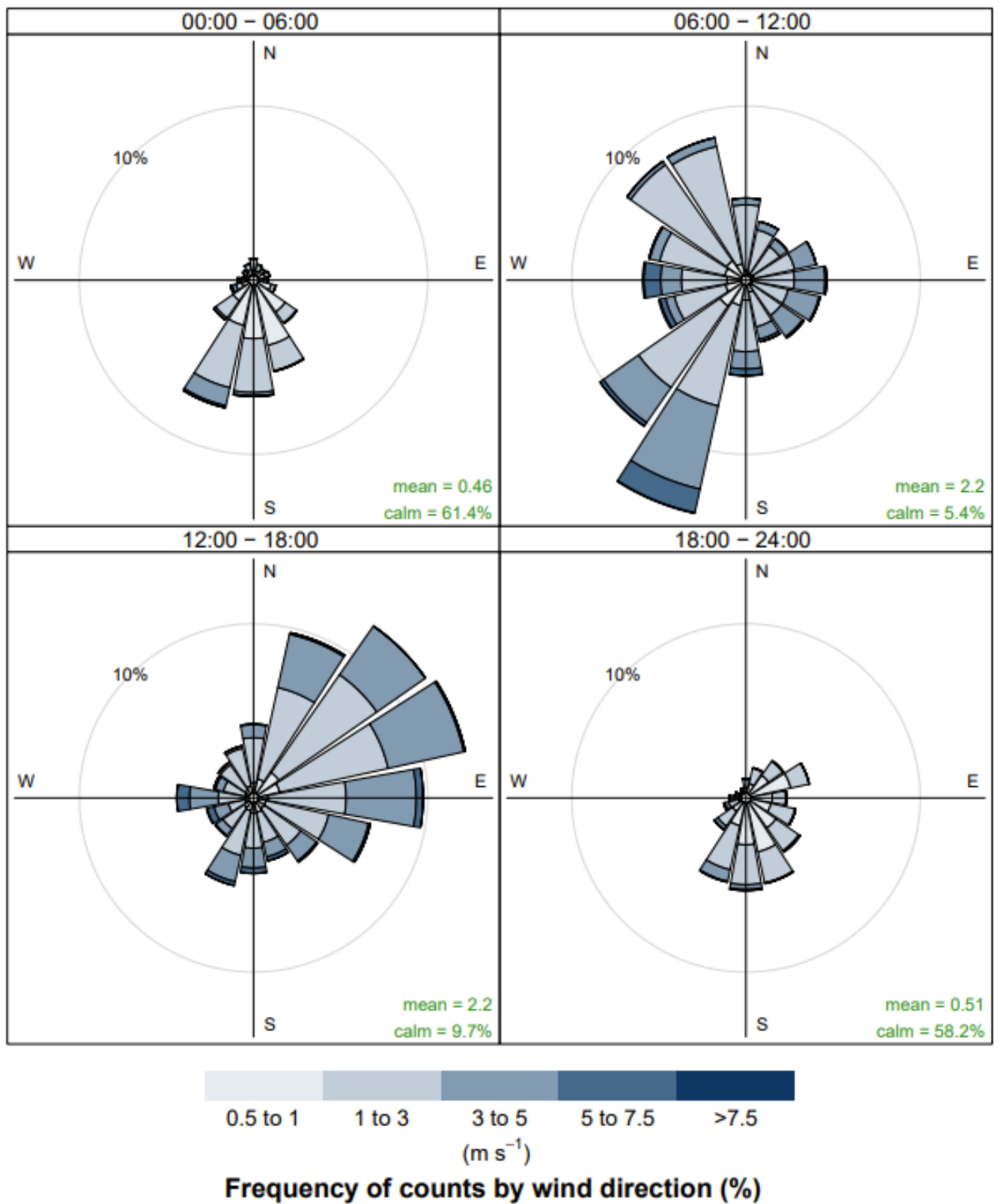


Figure 5.5 Diurnal winds at Beaudesert Drumley Street BoM AWS (2019-2023)

5.2.2 Temperature

The mean monthly temperature statistics measured at the Beaudesert Drumley Street BoM AWS from 2007-2023 are presented in Figure 5.6. The 50th percentile monthly maximum and minimum temperatures are used to show the typical temperature range for each month of the year, as well as the average monthly maximum and minimum temperatures. The average monthly maximum temperature was highest in in January, with recorded temperatures averaging 31.4 °C. The minimum monthly average temperature, 6.2 °C, occurs in July. The mean temperature is 25.3 °C in January and 13.9 °C in July.

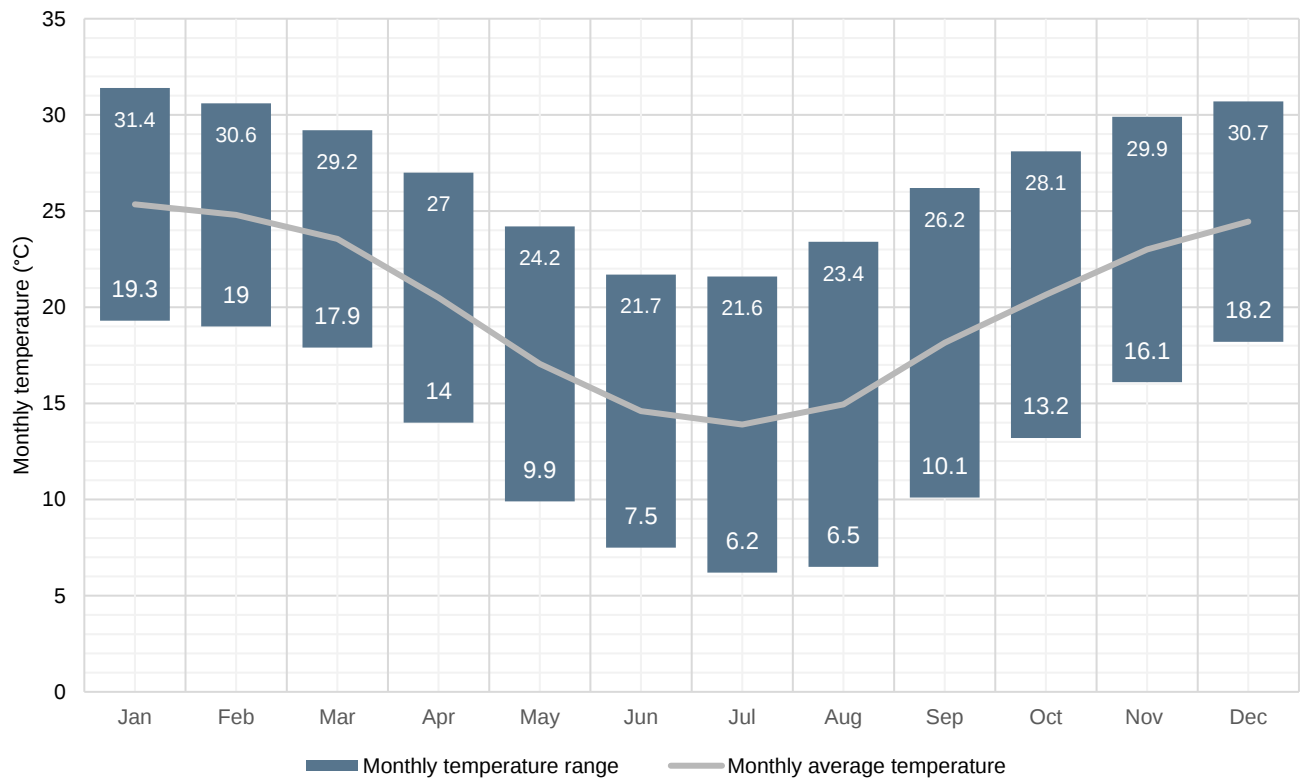


Figure 5.6 Monthly average temperatures from Beaudesert Drumley Street BoM AWS (2007-2023)

5.2.3 Rainfall

The monthly average rainfall and days of rain measured at the Beaudesert Drumley Street BoM AWS from 2007-2023 are presented in Figure 5.7. The Bars indicate the average rainfall (in mm) for a given month, and the line plot shows the average days in the month where rainfall >0.25 mm occurred. The rainfall pattern from the station shows higher rainfall occurring in summer months. The highest number of days with rain also occur during this time. Minima occur in winter (July and August), which also represent the lowest number of days with rain.

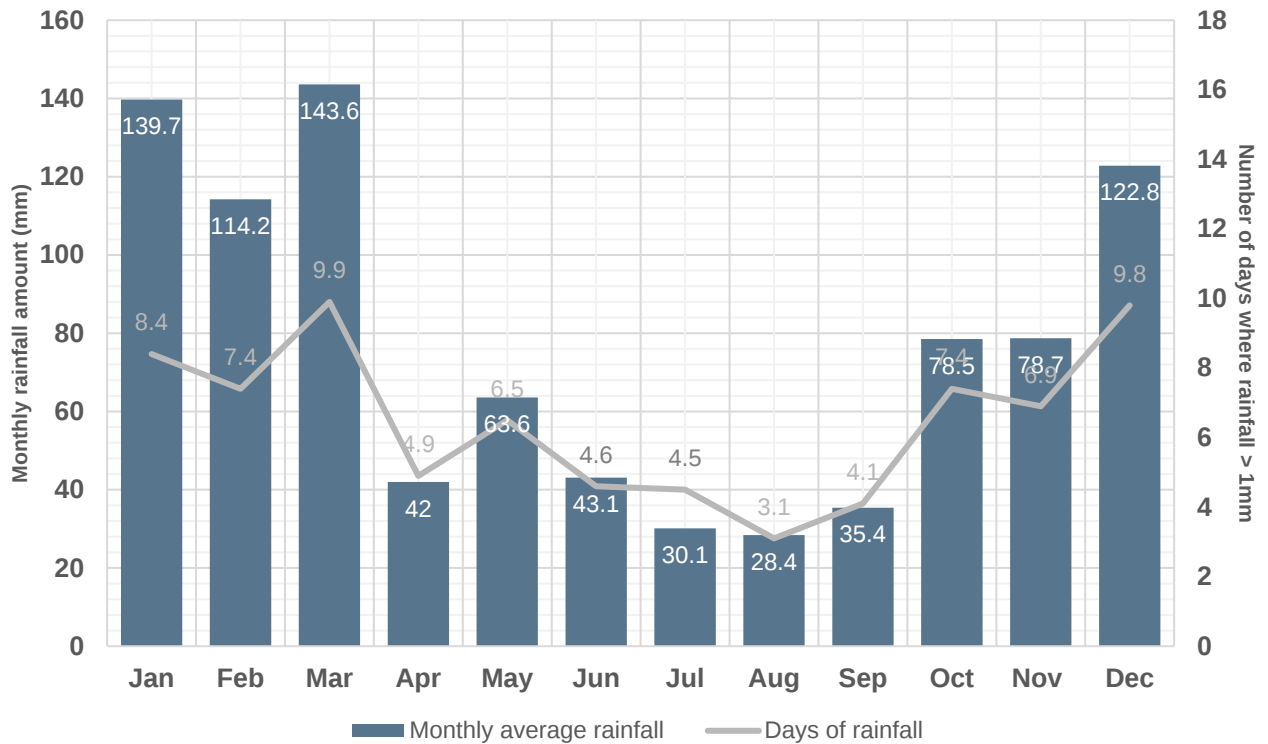


Figure 5.7 Monthly average rainfall (amount and days of rainfall) from Beaudesert Drumley Street BoM AWS (2007-2023)

5.3 Background air quality

5.3.1 Background air quality data

DESI operates a network of air quality monitoring stations (AQMS) across QLD. The objectives of the network are to check compliance with ambient air quality guidelines and criteria, identify long-term trends in air quality, investigate local issues, and assess the effectiveness of air quality management strategies. The nearest station to the Project site is located in North Maclean, approximately 24.5 km north of the site and this commenced operating in February 2021.

In order to gain an understanding of the existing air quality conditions in the region. This assessment has only considered particulate matter for background air quality data, as particulate matter is the primary compound of concern in regard to non-odorous air quality impacts for the construction and operation of a composting facility. PM₁₀ and PM_{2.5} have been used as an indicator of air quality, as they are typically the limiting pollutants when assessing dust impacts. The particulate matter observations from this station were obtained and reviewed, as summarised in Table 5.2.

Table 5.2 Summary of available background air quality recorded by the North Maclean DESI AQMS

Pollutant	Averaging period	Recorded background concentration by year (µg/m ³)		
		2021	2022	2023
PM ₁₀	Maximum 24-hour average	49.4	29.7	25.4
	70 th percentile, 24-hour	16.6	15.1	20.7
	Annual average	14.7	13.3	19.7
	Data capture	90.7%	99.6%	82.2%
PM _{2.5}	Maximum 24-hour average	25.7	17.1	12.9

Pollutant	Averaging period	Recorded background concentration by year (µg/m³)		
		2021	2022	2023
	70 th percentile, 24-hour	6.6	6.2	7.9
	Annual average	5.9	5.4	7.9
	Data capture	90.7%	99.6%	82.2%

Average 24-hour particulate monitoring data for the period is presented in Figure 5.8. During the monitoring period, exceedance of PM₁₀ 24-hour criteria (the blue line) was observed once on 26/09/2023. Exceedances of PM_{2.5} criteria are observed more frequently, occurring in March 2021, August 2023, March 2023 and December 2023.

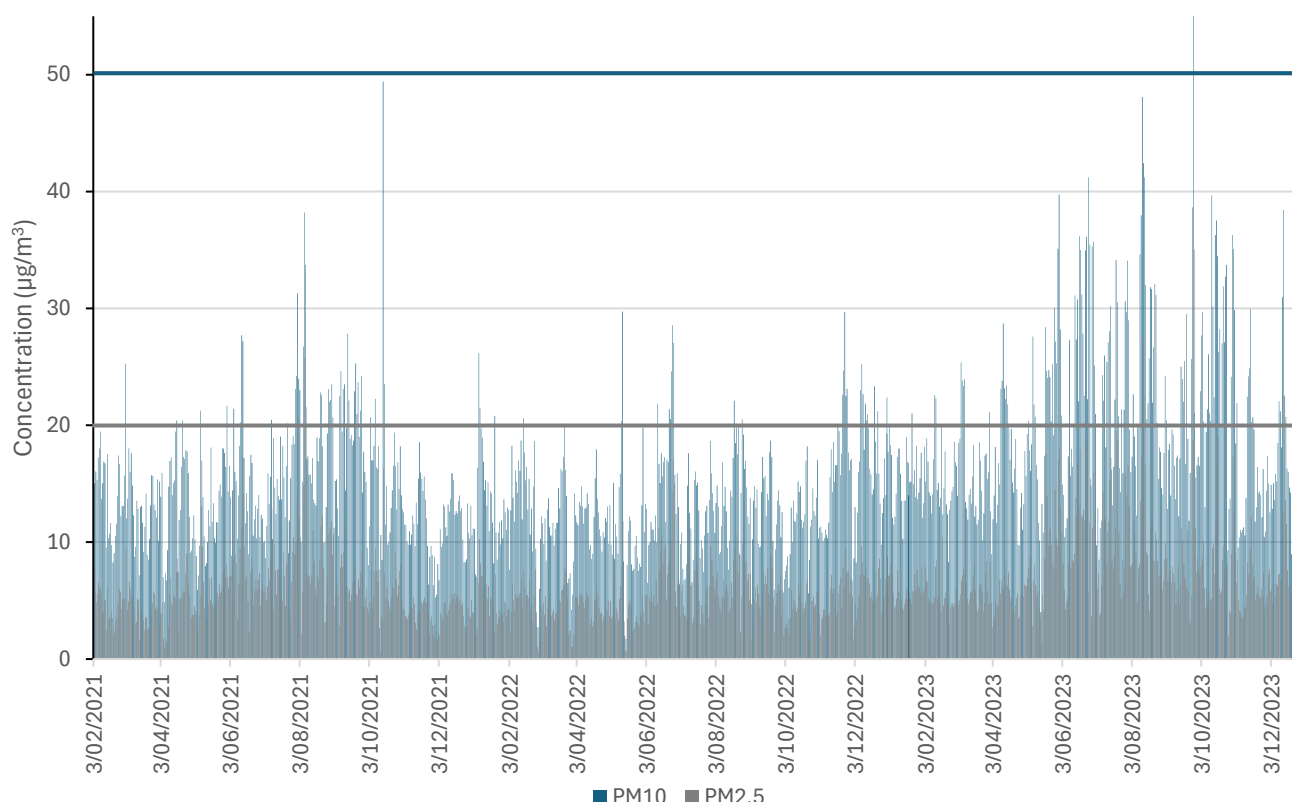


Figure 5.8 Background air quality monitoring data collected from North Maclean DESI AQMS

5.3.2 Facilities reporting to the NPI

The National Pollutant Inventory (NPI), operated under the *National Environment Protection (National Pollutant Inventory) Measure 1998*, provides publicly available information about emissions of 93 pollutants throughout Australia. Facilities that exceed prescribed threshold values are required to report their emissions to the NPI on a yearly basis.

A review of facilities reporting to the NPI in the area surrounding the Project sites revealed six facilities near the Project site (within approximately a 5 km radius). Facilities which reported emissions of particulate matter are described in Table 5.3 as these have potential to cause cumulative effects with emissions during construction and operation of the Project. Facilities which are considered likely to be a source of odour have also been included in the table.

Table 5.3 Summary of facilities within 5 km of the site which reported emissions during the 2022-2023 NPI reporting period

Facility	Address	Approximate distance and direction from Project	Activity	Emitted pollutants
GELITA Australia	Sunny Hills, Flood Rd, Josephville, Beaudesert	5 km south	Gelatine manufacture	PM and odour
Arranmore	121 Amiens Road, Beaudesert	4.5 km north	Meat chicken Facility	Odour
Bromelton Quarry Pty Ltd	325 Sandy Creek Road, Bromelton	2.4 km southeast	Alabaster mining	PM
Allans Creek Poultry Farm	75 Tilley Road, Bromelton	2.6 km northwest	Meat chicken farm	Odour
Scenic Rim Regional Council Waste Facility/Transfer Station	43 Waste Facility Road, Bromelton	0.9 km northeast	Biogas flaring	PM and odour

5.3.3 Potential cumulative odour sources

The facilities which report to the NPI, as outlined in Section 5.3.3 which have the potential to contribute to cumulative odour impacts from the operation of the Bromelton Composting Facility, are the Arranmore and Allans Creek Poultry farms, Scenic Rim Regional Council Waste Facility/Transfer Station and GELITA Australia.

Bush's Proteins (A J Bush & Sons (Manufacturers) Pty Ltd) is located approximately 1.8 km southeast of site at 358 Sandy Creek Rd, Bromelton QLD 4285 Australia. Bush's Proteins does not report to the NPI. Bush's Proteins renders meat waste products in order to produce high protein tallows and oils. This process is likely to generate an odour impact, and as such there is potential for cumulative odour impacts, however it should be noted that it is likely the odour emissions from Bush Proteins will have a different odour character to those emitted from the Bromelton Composting Facility.

GHD and SOILCO met with staff from DETSI for a Teams meeting about the Project including the Information Request. DETSI advised additional odour survey should be undertaken to get a better appreciation of odour in the locality however did not advise of any history of odour complaints or ongoing odour issues in the area. Odour surveys were conducted onsite as described in Section 5.5.

Potential for cumulative impacts surrounding industry is discussed further in Section 7.3.1.

5.4 Site visit

GHD visited the proposed SOILCO site on 11 June 2024. The proposed site is located on elevated terrain with gullies each side and slopes down to the north towards Beaudesert Boonah Road, as shown in Figure 5.9. The site is currently vegetated with grass.

During the site visit GHD drove around the local area and observed the following in regard to odour:

- GHD observed the presence of odour whilst driving along Beaudesert Boonah Road including the entry of the SOILCO site. The source of the odour was likely Bush's Proteins. The odour had a character of cooked meat similar to odours observed from abattoir sites. Winds were blowing from the south at the time.
- GHD did not detect any odours from the poultry operations located off Tilley Road, Scenic Rim Regional Council Waste Facility/Transfer Station or near to GELITA Australia; however, GHD was unable to get downwind of those premises.
- Dust was observed from trucks leaving the Bromelton Quarry, as well as some track out onto Sandy Creek Road.
- The nearest receptors to the site were verified to be residential (R05, R06 and R11 as per Section 5.1).



Figure 5.9 View looking north from the proposal site

5.5 Odour survey

GHD attended site on 10 April 2025 to undertake a number of day and evening time odour surveys in the locality. This date was chosen due to the favourable conditions to capture worst-case odour impacts from existing industry in the area towards the nearest sensitive receptors to the Project.

Conditions on the day were clear, sunny with some cloud cover and constant light south and southeasterly winds. The survey detected odours from Bush's Proteins on the SOILCO site as well as at receptors R6 and R10. Odour when detected had a character generally defined as beef and cattle, cooking meat and dog food and the intensity ranged from not perceptible up to strong. More details of the odour survey are provided in Appendix D.

Importantly the odour characteristics detected during the survey were not like any odours that are often attributed to composting facilities which have a more earthy character and can often smell like bark, vegetation, cut grass, dirt and pine.

A key observation of the odour survey was that odours tended to increase when winds increased, and that is likely due to buoyant or elevated sources of odour at Bush's Proteins rather than ground-based sources.

6. Construction impact assessment

6.1 Construction dust risk assessment

Expected construction activities are defined in Section 1.1.

The generation of dust and particulate matter are the primary pollutants during the construction phase of the Project. A risk-based assessment in accordance with the IAQM guidance was undertaken to assess potential particulate impacts during the construction of the Project. The steps and thresholds used in the assessment are described below.

Screening assessment

The guidance states that assessment is only required where there is:

- A 'human receptor' within 250 m of the boundary of the site, or 50 m of the route(s) used by construction vehicles on the public highway up to 250 m from the site entrance.
- An 'ecological receptor' within 50 m of the boundary of the site, or 50 m of the route(s) used by construction vehicles on the public highway up to 250 m from the site entrance.

As there are no human or identified ecological receptors within these distances a detailed assessment is not required for this Project and a risk-based assessment has been undertaken. The activities expected to produce the largest dust emissions have been identified and mitigation measures provided to manage these emissions.

Receptor sensitivity

Receptor risk is generally identified for dust soiling impacts, human health impacts and ecological impacts. Dust soiling is defined in the IAQM as "the effect of deposited dust on surfaces, which can lead to annoyance."

Where all receptors are greater than 250m from the Project site then this would be a sensitivity of 'low'.

Ecological receptor sensitivity

Areas within and around the site are classified as core koala habitat and essential habitat for koalas. Signs of koala presence (scratches and scat) were observed near site (<20 metres from the site boundary) during the ecological survey undertaken by Redleaf Environmental (2021). It should be noted that the koala is not traditionally considered a dust sensitive species, and that the ecological assessment undertaken by GHD determined that impacts to koalas as a result of the proposed construction were unlikely. As such the ecological receptor sensitivity was considered as low.

Dust emission magnitude

The IAQM guidance provides example definitions for small, medium and large dust emissions magnitude for each stage of construction which have been adopted for this assessment. These are as follows:

- Earthworks: Total site area (small, medium and large thresholds of <18,000 m², 18,000-110,000 m², and >110,000 m² respectively), soil type, number of heavy earth moving vehicles, formation of bunds.
- Construction: Total building volume (small, medium and large thresholds of <12,000 m³, 12,000-75,000 m³ and >75,000 m³ respectively), construction materials, presence of onsite concrete batching.
- Trackout: number of heavy duty vehicle (HDV) movements (small, medium and large thresholds of <20 HDV outward movements, 20-50 HDV outward movements, >50 HDV outward movements respectively), surface material, and length of unpaved road (small, medium and large thresholds of <50 m, 50-100 m, and >100 m respectively).

Risk assessment

The IAQM risk matrix uses the sensitivity and scale to determine the risk of dust impacts on the surrounding receptors.

A summary table of the assessment findings are presented in Table 6.1. Activities which generally are a significant source of dust are trucks travelling on unpaved roads, excavations associated with bulk earthworks, importing and spreading fill, and stockpiles.

Table 6.1 Dust risk assessment of the construction stage

Step 1: Screen the need for a detailed assessment			
There are no residences within 250 metres of the proposed construction works. Under the IAQM methodology this means a low receptor sensitivity and a detailed assessment is not needed. Nonetheless, one has been undertaken			
Step 2A: Define the potential dust emission magnitude			
Activity	IQAM works classification	Description of works	Dust emission magnitude
Site establishment	Track out	Delivery of site amenities and surveying and pegging of site.	Medium
Earthworks	Earthworks	- Establishment of access road to work area - Grading, excavation and general movement of earth materials.	Large
Roadworks and intersection works	Earthworks	- Removal of trees/ stripping of topsoil - Box out to required levels - Subgrade and base course - Asphalting - Line Marking - Signage installation - Defect inspection and cleaning	Large
Civil works	Earthworks	- Demolition and earthworks - Civil Works - Ponds and Other Civil Structures	Large
Mechanical installation	Construction	Installation of the following items: - Shredder - Drum screen - Platforms - Storage tanks/platforms - Blowers - Leachate system - Water system - Picking station - Control system & instrument mech - Odour control system - Interconnecting pipework	Medium
Electrical installation	Construction	Installation of the following items: - Blowers - Pumps - Screens - Motor control centre works - Interconnecting cabling - Electrical Installation Complete	Medium
Step 2B: Define the sensitivity of the area			
There are no residences within 250 metres of the site. Thus, the sensitivity to impacts is low.			
Step 2C Define the risk of impacts - Sensitive receptors			
Activity	IQAM works classification	Risk of dust impacts	
Site establishment	Track out	Low risk	
Earthworks	Earthworks	Low risk	

Roadworks and intersection works	Earthworks	Low risk
Civil works	Earthworks	Low risk
Mechanical installation	Construction	Low risk
Electrical installation	Construction	Low risk
Step 2C Define the risk of impacts to sensitive receptors – Ecological receptors		
Activity	IQAM works classification	Risk of dust impacts
Site establishment	Track out	Low risk
Earthworks	Earthworks	Low risk
Roadworks and intersection works	Earthworks	Low risk
Civil works	Earthworks	Low risk
Mechanical installation	Construction	Low risk
Electrical installation	Construction	Low risk

6.2 Additional analysis

Most high-speed winds (greater than 5 m/s) which contribute to dust lift off, occur from the south-southwest, meaning that most dust impacts would occur to the north-northeast (downwind). There are no identified sensitive receptors within direct proximity of the Project site and the nearest industrial receptors to the east-northeast is approximately 800 metres away, and the nearest residential receptor is approximately 1.1 km north of the site.

As such, no dust impacts are expected at surrounding receivers during construction works.

6.3 Mitigation measures

Although no impacts are expected due to construction, mitigation measures have still been proposed to avoid or minimise potential air quality impacts during construction and are provided in Section 7.5.

7. Operational assessment

7.1 Sources of odour

The Project description in Section 2 provides detail on how the facility will operate. Primary odour generating activities planned to be undertaken at the Bromelton Compost Manufacturing Facility include:

- Material processing (including receivals), shredding and sterilisation
- Open GO compost windrows
- Aerated static FOGO piles
- Maturation stockpiles
- Leachate ponds
- Manure stockpiles.

There may be some fugitive sources of odour from trucks entering and leaving the site however these are considered to be negligible. Key sources of odour and conservative operating assumptions as far as volumes onsite have been assumed when preparing the odour emissions inventory below.

7.2 Odour emissions

7.2.1 Odour emission rate review

GHD has undertaken a review of similar FOGO and GO composting facilities and assessments in order to identify representative odour emission rates for assessing the proposed facility. Odour emission rates will vary based on many factors including odour sampling methodology, the composition of waste, age of waste, time of day the sampling is undertaken and season. It is generally considered good practice to take a range of odour samples to capture any variations in odour. As part of the review GHD reviewed the following odour assessment reports:

- SOILCO Wogamia Composting and Manufacturing Facility (CMF) Odour and Dust Assessment (ERM, 2020)
- Remondis Australia Awaba AWT Facility Odour Impact Assessment (GHD, 2016)
- SITA Brooklyn, Report for Green waste Composting Facility, Baseline Odour Impact Survey (GHD, 2009)
- Odour Audit: Lucas Heights Waste & Recycling Centre (Holmes Air Sciences, 2006)
- Odour Impact Assessment for the Proposed Food plus Garden Organics (FGO) Composting Operations at the Bucketts Way Resource Recovery Facility (UNSW, 2012)
- Odour assessment of the proposed composting process at the ANL Premises, Lilydale (URS, 2008)
- Odour Survey Lucas Heights Resource Recovery Park, (Ektimo, 2014).
- Odour Monitoring and dispersion modelling study for Tunnel Tech North Ltd, Newington, South Yorkshire (Odournet, 2012)

In selecting representative odour emission rates, GHD has adopted a precautionary principal and been conservative. Whilst the SOILCO composting facility at Wogamia would reflect the best practice process and odour controls anticipated at Project, there may be variations in feedstock and climate which would change the odour profile from the Project site. It is noted that SOILCO successfully manage odour at Wogamia with a layer of applied bio cover to the top of compost piles which effectively reduces odour however this approach is not yet confirmed for the Project.

7.2.2 Odour emissions inventory

Key considerations used to develop the odour emissions inventory are:

- Shredding, turning and aeration of leachate ponds which temporarily increase the odour profile only occur during daytime hours.

- Leachate ponds in either an aerated or quiescent state were modelled as identical overlapping area sources. Quiescent ponds were modelled as active sources 24 hours per day, whereas aerated ponds were active only 4 hours per day.
- It has been conservatively assumed in the model that turning of windrows occurs every day and that 25% of both the FOGO composting and GO composting areas gets turned at a time. Turning of windrows is assumed to increase odour by 100%.
- The modelled surface area in Table 7.1 is based on calculated windrow surface areas and may not match the designated areas provided in the site plan.
- As per Section 2.2.3 the material throughputs received at the site are seasonal.
- Other assumptions on how Specific Odour Emission Rate's (SOER's) were developed for each source are provided in Appendix C-2.

The odour emissions inventory for the Project is presented in Table 7.1 and the modelled locations are provided in B-2 More details of the emissions inventory are provided in Appendix C.

Table 7.1 *Odour emissions inventory*

Source	Source type	Modelled SOER (OUV/m ² /s)	Odour emission rate (OU/s)	Hours per day source is active
Maturation and Storage - Open Windrows (Food and Garden Organics) (Area A)	Area	0.6	9,398	24
Aerated static pad emissions (Area B)	Area	Passive: 1.5	Passive: 12,948	18
		Windrow turning: 2	Windrow turning: 13,911	6
Decontamination/ material processing (Area C)	Volume	N/A	4,080	24
Shredding and screening of organic material (Area C)*	Volume	N/A	5,740	6
Composting Facility - Open Windrows - Garden Organics (Area D)	Area	Passive: 1.2	Passive: 21,641	18
		Windrow turning: 1.6	Windrow turning: 24,085	6
Leachate pond GO	Area	Quiescent: 0.2	Quiescent: 897	20
		Aerated: 1.2	Aerated: 6,881	4
Leachate pond FOGO	Area	Quiescent: 0.2	Quiescent: 515	20
		Aerated: 1.2	Aerated: 3,945	4
Leachate pond manufacturing	Area	Quiescent: 0.2	Quiescent: 1,006	20
		Aerated: 1.2	Aerated: 7,709	4
Manure stockpile	Area	2.1	429	24
Total odour emission rate (total adjusted for duration) (OU/s)			50,793	

GHD has undertaken additional comparative analysis of the total site odour emissions using the adopted SOERs compared to using measured odour data at the SOILCO Wogamia site. Analysis shows that the total OER in Table 7.1 is about 43% more than if data from SOILCO Wogamia was used, demonstrating the conservatism in the assessment.

7.3 Impact assessment

Data from the site odour emissions inventory was used in dispersion modelling to predict the 99.5th percentile odour impacts over the one year modelling period. Dispersion modelling assumes a range of meteorological conditions over the year and conservatively assumes the odour emissions are constant.

Results of odour dispersion modelling and assessment at sensitive receptors are provided below in Table 7.2 and Figure 7.1. Results show that predicted odour from the Project comply with the 2.5 OU criteria at all sensitive receptors.

Table 7.2 Predicted 99.5th percentile 1 hour average odour impacts at sensitive receptors

Receptor ID	Receptor type	Address	Predicted odour concentration at receptor
R01	Industrial	Beaudesert Saleyards, State Route 90	3.9
R02	Industrial	Quickcell Technology Products Pty Ltd, LOT 3 Beaudesert Boonah Rd	2.4
R03	Industrial	SCT Logistics, 2603 Beaudesert Boonah Rd	2.3
R04	Industrial	Scenic Rim Regional Council Waste Facility/Transfer Station – Beaudesert, Waste Facility Rd	1.3
R05	Residential	388 Swan Gully Road Bromelton QLD 4285 Australia	0.4
R06	Residential	2572 Beaudesert - Boonah Road	1.3
R07	Industrial	28 Swan Gully Road	0.7
R08	Industrial	Bush's Proteins QLD (A J Bush & Sons (Manufactures) Pty Ltd), 358 Sandy Creek Rd	0.6
R09	Industrial	194 Swan Gully Road	1
R10	Residential	15 Tilley Rd	1.2

The highest predicted 99.5th percentile odour impact is 3.9 OU at the industrial receptor R01, which is located to the northeast of the site as seen in Figure 7.1. This receptor is industrial and a source of odour and therefore not considered sensitive for the purpose of this assessment. The highest predicted odour concentration at a residential receptor is at R06, with a predicted odour concentration of 1.3, which is below the odour criteria of 2.5 OU.

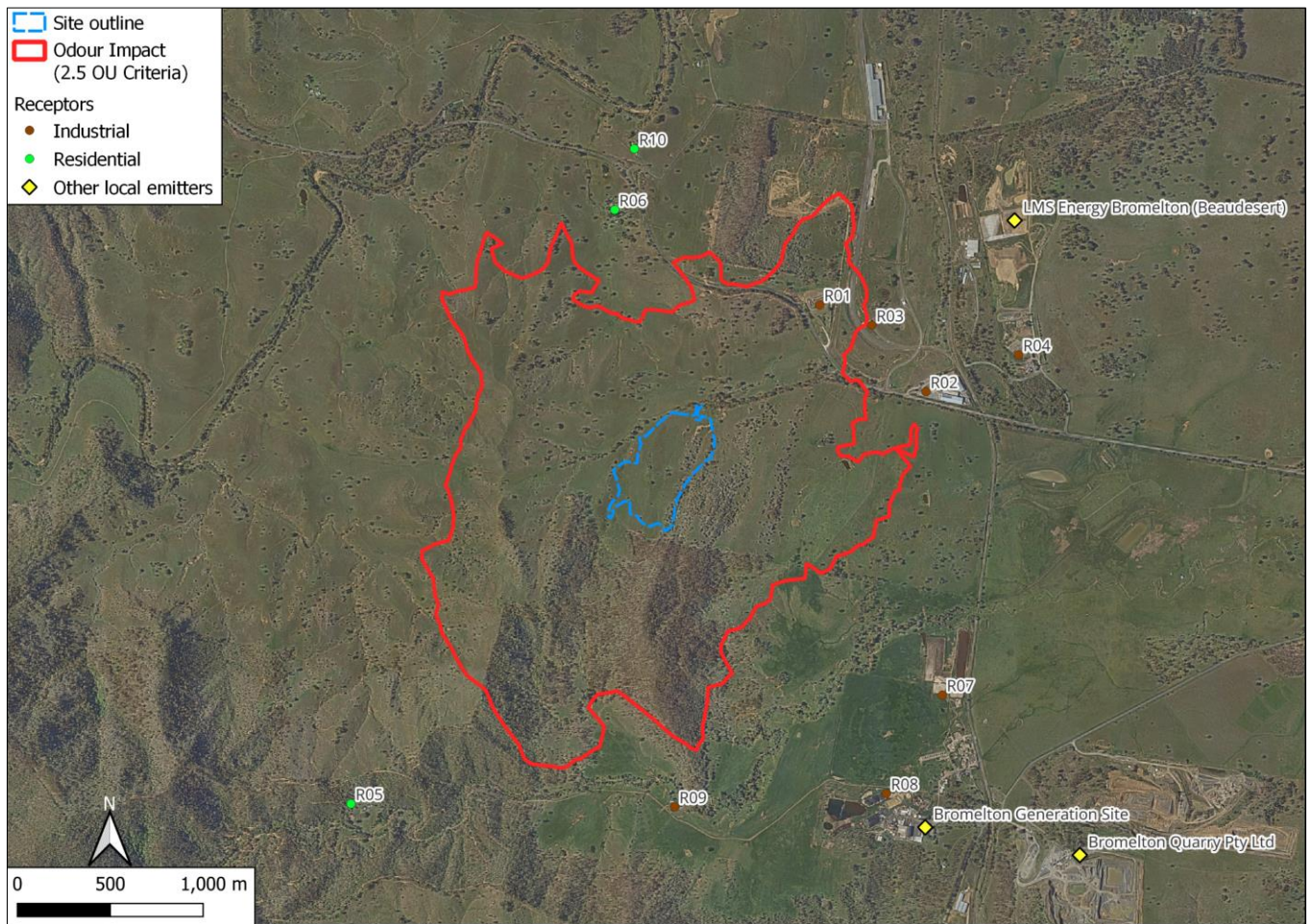


Figure 7.1 Predicted 99.5th percentile odour impact from the Project

7.3.1 Cumulative odour impacts

Cumulative odour impacts can occur when facilities of similar odour character result in increased odour occurring at the same time. This would generally only occur when the two similar odour sources are close to each other or if there is a receptor downwind from both. Based on the review of other sources of potential odour in the area undertaken in Section 5.3.3, other sources with potential for similar odours associated with composting is Scenic Rim Regional Council Waste Facility/Transfer Station. Inspection of satellite images of the site shows composting of organic material, as well as stock piling of general refuse. There is potential for odours of a similar character to combine with those from Bromelton Compost Manufacturing Facility. Based on the location of Scenic Rim Regional Council Waste Facility/Transfer Station and sensitive receptors, it is unlikely that downwind odour impacts from both facilities would lead to elevated odour at any common downwind receptors. This is due to relative location of receptors to each facility not providing an angle from which odour plumes from neighbouring emitters are likely to combine and contribute to cumulative impacts.

The main source of odour in the local area, Bush's Proteins has a distinct odour character associated with rendering and is not similar to the odour character experienced from composting. Cumulative odour impacts are therefore not likely due to the Project.

A review has also been undertaken of all identified odour sources within 2 km of the Project site and the location of sensitive receptors to determine if it would be likely that odour plumes from multiple facilities could lead to cumulative odours. No receptors were identified on the downwind direction of the Scenic Rim Regional Council Waste Facility or chicken meat farms where cumulative odour impacts with the project are likely to occur. The significant distance from the project site to receptors and other identified odour sources reduces the risk of odour impacts and cumulative odour impacts occurring.

Odour surveys described in 5.5 were undertaken taken during light southeasterly winds. No odours with a character similar to composting were detected at the nearest sensitive receptors to the Project, including R6.

The Project site and the nearest sensitive receptor (R6) are located on much higher ground than other sources of odour identified above including Bush's Proteins. Odour from Bush's Proteins is more likely to be confined to the lower lying areas including draining line surrounding the facility and to the north, south and west of the site however it is noted Bush's Proteins have some elevated and buoyant plumes which may disperse differently to ground based odour sources. It is recommended that DETSI work with Bush's Proteins to help reduce any problematic odours in the locality however it is noted that the odour character from Bush's Proteins and the Project are not alike and not considered cumulative.

The site based CALMET wind rose presented in A-3 demonstrates very little light winds from the southeast with most of the light calm winds coming from the western quadrants of the wind rose.

7.4 Operational dust impact

There is some potential for dust emissions during the operation of the Bromelton Compost Manufacturing Facility. Most dust would be from trucks and other vehicles travelling on unpaved roads and other sources associated with material handling onsite, wind erosion from unsealed surfaces and stockpiles, unloading and turning compost stockpiles and product screening. As discussed in Section 4, atmospheric dispersion modelling was not undertaken of operational dust impacts due to the low risk for offsite impacts and the proposed management measures which can readily control dust emissions.

Existing sources of dust in the area would be attributable to the industry described in Section 5.3, with the two quarries likely contributing to most of the local particulate load.

Material receivals and composting material have high moisture content, and this will be managed throughout the process to have an optimal moisture content for the production of compost, which reduces the potential for dust generation.

Dust emissions from unpaved access and site roads, as well as all composting operations are readily managed with application of watering and proactive dust controls. Watering would also apply to any soil and VENM stockpiles as required.

Given the distance from the site to receptors (minimum of 1,100 m to the nearest residential receptor) and the outcomes of the construction assessment, the risk of dust impacts from the site are low.

A review of the wind pattern of the site in Section 5.2.1 also shows that residential receptors are not located in the direction of the prevailing wind directions.

Management measures to reduce the risk of dust impacts from the development are outlined in Section 7.5.

7.5 Management and mitigation measures

Odour from the Project is not predicted to impact any surrounding sensitive receptors. Mitigation measures provided below will be incorporated at the site to minimise odour generated by the Project.

General air quality mitigation and management measures for construction and operation of the Project are provided below in Table 7.3.

Table 7.3 Mitigation measures – air quality

No.	Outcome	Mitigation measure	Timing
AQ1	Dust emissions are minimised during construction.	Prepare a construction dust control protocol that details management measures, a method for recording dust complaints, and monitoring requirements.	Pre-construction
AQ2	Dust emissions are minimised during construction.	On days with forecast and actual high winds (i.e., over 10 m/s), reduce work effort accordingly if wind-blown dust is observed to be leaving the site boundary.	Construction
AQ3	Dust emissions are minimised during construction and operation	Undertake dust suppression, as required, using water sprays, water extension agents, soil stabilising polymers or other media on: – Unpaved work areas subject to traffic or wind. – Spoil and aggregate stockpiles. – Sand and soil stockpiles – During the loading and unloading of dust generating materials. – Unpaved access tracks.	Construction and operation
AQ4	Dust emissions are minimised during construction.	If the works are creating levels of dust which may significantly impact on public amenity, modify or stop the works until the dust hazard is reduced to an acceptable level.	Construction
AQ5	Dust emissions are minimised during construction.	Stockpile turning will be suspended during periods of high wind.	Construction
AQ6	Ignition risk, spills, and air emissions are minimised during construction and operation.	Maintain plant and equipment in good condition to minimise ignition risk of fuel or chemicals, spills, and air emissions that may cause nuisance.	Construction and operation
AQ7	Odour emissions are minimised during operation	Establish an onsite meteorological station to inform operational activities and identify odour sources in the event of a complaint.	Operation
AQ8	Odour emissions are minimised during operation	Mixing putrescible feedstock materials immediately into the compost process, if not pre-treated or dried	Operation
AQ9	Odour emissions are minimised during operation	Implementing a management strategy for turning open windrows to prevent anaerobic conditions which is determined by an experienced operator through site trials and measurements	Operation
AQ10	Odour emissions are minimised during operation	Minimising turning events for open windrows, especially during the first 7-10 days of composting, with only the minimum turning required to support pasteurisation and moisture redistribution	Operation
AQ11	Odour emissions are minimised during operation	Install and operate as needed an aerator in the leachate pond to reduce the odour potential from the stored leachate. Leachate is expected to be aerated 4 hours per day.	Operation
AQ12	Odour emissions are minimised during operation	Scheduling activities for times when they will have least impact (e.g. avoid undertaking odour-generating activities such as turning windrows of compost at times when it is	Operation

No.	Outcome	Mitigation measure	Timing
		windy, and the odour might carry to a sensitive or commercial place.	
AQ13	Odour emissions are minimised during operation	If site activities are emitting odour at concentrations which are observed offsite, the odour generating activities should be modified or stopped until the odour is reduced to an acceptable level.	Operation
AQ14	Odour emissions are minimised during operation	Train staff (internal and contractors) on odour management strategy and all relevant procedures.	Operation
AQ15	Odour emissions are minimised during operation	An Odour Management Plan to be developed prior to the activity commencing which includes: a) Identification of all odour sources, and potential odour sources at the site, including odours and potential odours generated from the activity; and b) A requirement that odour investigations be completed by an appropriately qualified person; and c) An analysis of routine and non-routine processes and operating conditions that could result in, and potentially result in, odour emissions; and d) Measures to avoid the generation and minimise the impacts of odours; and e) At a minimum, annual reviews of the effectiveness of the measures.	Operation
AQ16	Odour emissions are minimised during operation	Upon receipt of a verified odour complaint, engage a suitable experienced odour professional to conduct odour surveillance (odour surveys) to determine the extent of odour from the site and investigate what site activities led to elevated odour.	Operation
AQ17	Particulate matter emissions are minimised during operation	If compost windrows are dry enough to be a source of elevated dust, then water sprays should be applied before and during turning to limit dust. This can be confirmed with visual inspections and visible dust plumes should not be seen leaving the project footprint.	Operation

8. Conclusion

The Project seeks to operate a composting facility at 260 Mitchell Road, Lot 4, Bromelton, Queensland. An air quality assessment has been undertaken for the development, which includes processing of approximately 250,000 tonnes per annum of garden organics and food organics and garden organics.

A qualitative assessment of the air quality impacts from construction of the Project was undertaken in accordance with the *Guidance on the assessment of dust from demolition and construction* (Institute of Air Quality Management, 2024). This took into account the sensitivity of the sensitive receptors surrounding the site, and the potential dust emission magnitude from earthworks, construction and trackout. Risk of dust impacts was found to be low risk for dust soiling, human health and ecological impacts.

A qualitative assessment of dust impacts during operation was also undertaken and it was determined that dust impacts from the operation of the composting facility will be low. Atmospheric dispersion modelling was not undertaken of operational dust impacts due to the low risk for offsite impacts and the proposed management measures which can readily control dust emissions.

A review was undertaken of similar operating FOGO and GO composting facilities in Australia in order to identify representative odour emission rates for assessing the proposed facility. Based on this review, GHD prepared a conservative odour emissions inventory for use in dispersion modelling. Based on odour sampling at a similar SOILCO facility the odour emission rates used in the assessment of this Project are 43% higher than what is anticipated during actual site operations.

Dispersion modelling was undertaken to estimate the impacts of odour emissions for the operational stage of the Project in accordance with the *Odour impact assessment from developments guideline* (Department of Environment and Heritage Protection, 2014). Results of the dispersion modelling predicted that odour concentrations comply with the QLD 99.5th percentile odour criterion of 2.5 OU at all sensitive receptors. The maximum predicted odour concentration at a residential receptor is 1.3 OU and the maximum predicted at an industrial receptor (R01) is 3.9 OU.

Based on the findings of this assessment, air quality impacts from the proposed composting facility at 260 Mitchell Road, Lot 4, Bromelton Queensland 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.

Appendix A

Meteorological modelling methodology

A-1 Overview

Local meteorology, including long term wind speed and direction as well as atmospheric stability, can influence how pollutants are dispersed into the local environment.

This appendix outlines the methodology used to synthesise site-representative meteorology for the Project. The meteorology is used in CALPUFF to drive the dispersion model.

A-2 Methodology

The meteorology modelling methodology is summarised below:

- Selection of a model period.
- Development of coarsely gridded prognostic meteorological data set using The Air Pollution Model (TAPM).
- Development of fine gridded meteorological data set which takes in account local terrain features using the CALMET diagnostic meteorological model.
- Extraction of predicted meteorological parameters from the CALMET model.

A-2-1 Nearby BoM station review

The nearest BoM station is the Beaudesert Drumley Street AWS (040983). It is located approximately 6.9 km east of the site. This station began operation in 2007 and collects all desired meteorological parameters except for cloud data. Cloud data was unavailable for this site, as such cloud data has been simulated using TAPM.

A-2-2 Representative year selection

Climate data was averaged over five years. Data sets were then compared against the mean plots and the standard deviation from the mean was used to determine which year was most similar to the average. 2021 was determined to have data which most closely adhered to the average data. Furthermore, no significant storms or climactic events occurred in the vicinity during the year of 2021. As such 2021 was determined to be the most representative year used for modelling.

A-2-3 Prognostic meteorology

TAPM was run with observations from the Beaudesert AWS assimilated to improve model performance. The parameters for the prognostic model TAPM are summarised in Table A.1.

Table A.1 TAPM parameters

Parameter	Value
Modelled period	01 January 2021 to 31 December 2021
Domain centre	UTM zone 56S Easting: 495,083_m Northing: 6,905,566m
Number of grid points	25 x 25
Number of grids (spacing)	4 (30 km, 10 km, 3 km, 1 km)
Number of vertical levels	25
Data assimilation	Beaudesert Drumley Street AWS
Radius of influence	8 km

A-3 CALMET modelling

CALMET (Version 7) was used to resolve the wind field around the subject site to 100 metres spatial resolution. The application of CALMET for this purpose is an approved modelling approach in NSW as per the Approved Methods with model guidance documentation provided.

CALMET was run in no-observations (no-obs) mode using gridded prognostic data generated by TAPM as an initial guess field. This approach is consistent with guidance documentation.

Model settings were selected with consideration to the recommendations provided in the Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia (J Barclay and J Scire, Atmospheric Studies Group TRC Environmental Corporation, 2011) and the Department of Environment and Heritage Protection.

The CALMET model parameters are summarised in Table A.2. The TERRAD value was selected based on the 'base to peak' value of the terrain elevations in the immediate vicinity of the subject site.

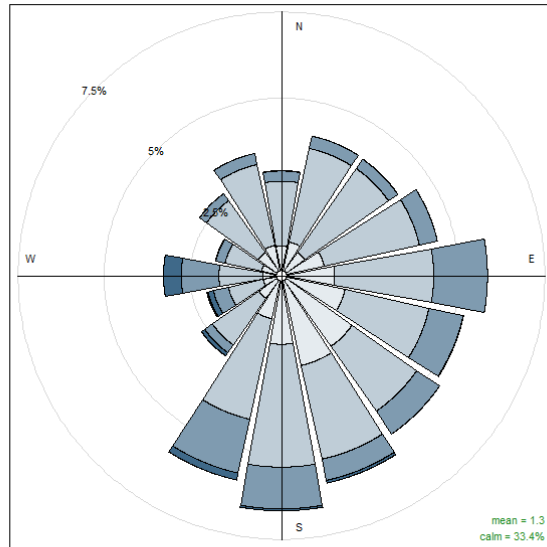
Terrain and land use data used for the CALMET modelling are presented in Figures A.6 and A.7 respectively.

Table A.2 Summary of CALMET model parameters

Parameter	Value
Modelled period	1 January 2021 to 31 December 2021
Mode	'No-obs'
Initial guess field	TAPM .m3d file
UTM zone	56S
Domain origin (Southwest corner)	Easting: 486,500 m Northing: 6,897,000 m
Domain size	180 x 180 at 0.1 km resolution (18.0 km x 18.0 km)
Vertical resolution (cell heights)	10 (0, 20, 40, 80, 160, 320, 640, 1200, 2000, 3000, 4000)
TERRAD	2 km
IEXTRP	1
BIAS (NZ)	0 × 10
R1 and R2	0, 0
RMAX1 and RMAX2	0, 0

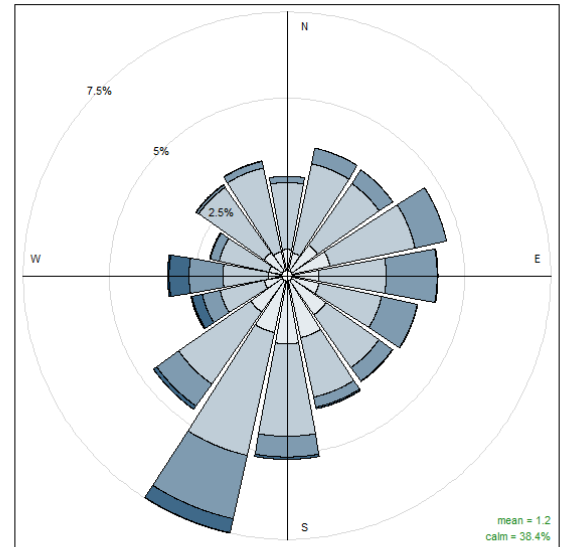
Figure A.1 presents a comparison between the CALMET-generated data and the Beaudesert Drumley Street AWS observation. The annual, seasonal and diurnal wind roses show generally good agreement, providing confidence in the suitability of the modelled meteorological conditions used in this assessment.

CALMET

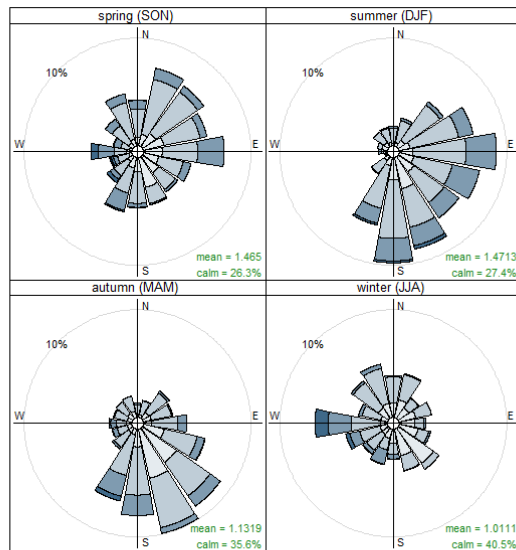


0.5 to 1 1 to 3 3 to 5 5 to 7.5 >7.5
(m s⁻¹)
Frequency of counts by wind direction (%)

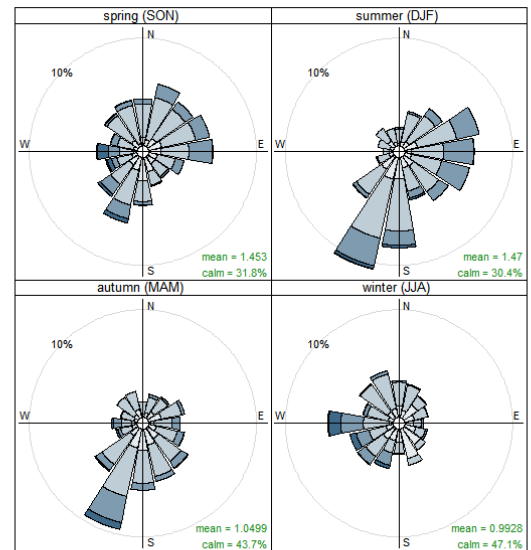
Observations



0.5 to 1 1 to 3 3 to 5 5 to 7.5 >7.5
(m s⁻¹)
Frequency of counts by wind direction (%)



0.5 to 1 1 to 3 3 to 5 5 to 7.5 >7.5
(m s⁻¹)
Frequency of counts by wind direction (%)



0.5 to 1 1 to 3 3 to 5 5 to 7.5 >7.5
(m s⁻¹)
Frequency of counts by wind direction (%)

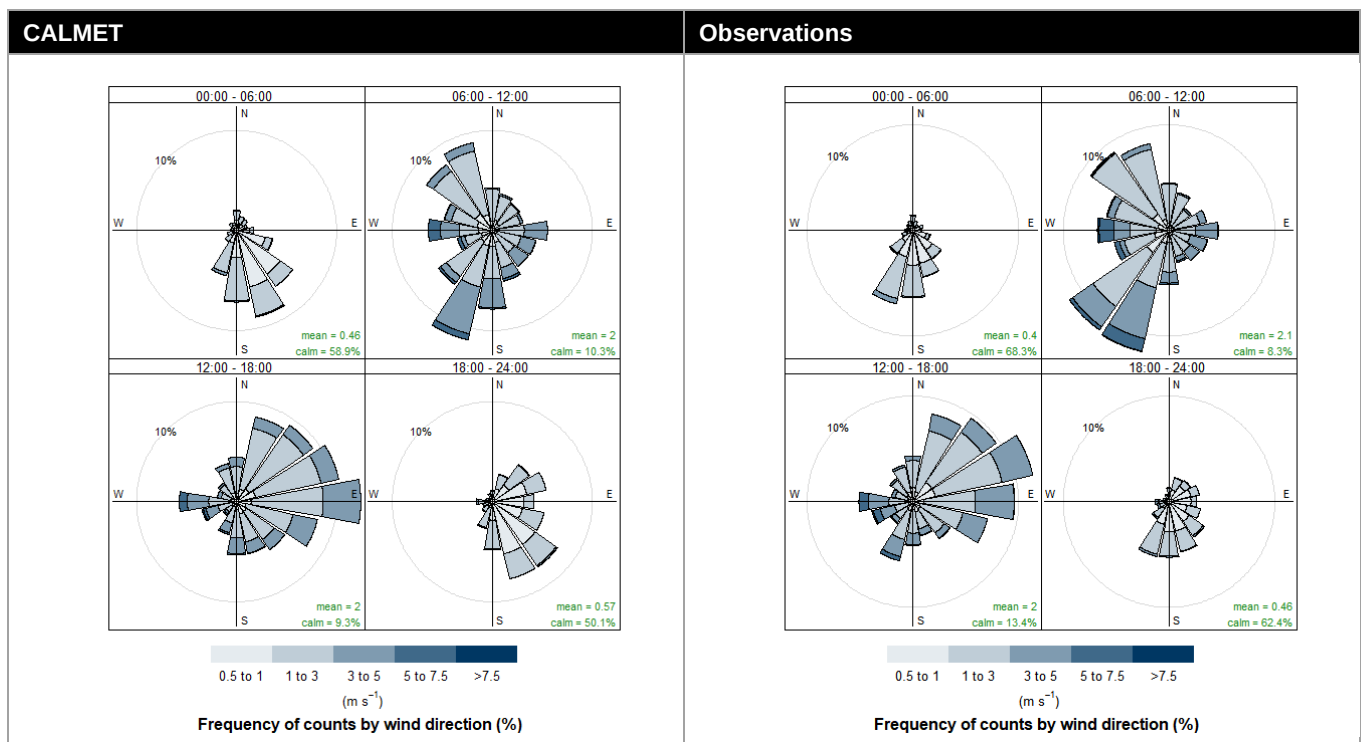


Figure A.1 *Modelled and observed wind data at Beaudesert Drumley Street AWS (2021)*

A detailed analysis of the CALMET generated meteorological dataset including wind speed and stability class, mixing height, and temperature at the Project site is presented below.

Figure A.2 shows the diurnal variation in both maximum and average mixing heights predicted by CALMET at the site during 2021. The diurnal mixing height profile is typical — starting low in the early morning due to stable conditions and surface inversions, rising rapidly after sunrise with surface heating, peaking in the mid to late afternoon, and decreasing again after sunset as cooling re-establishes stable conditions overnight.

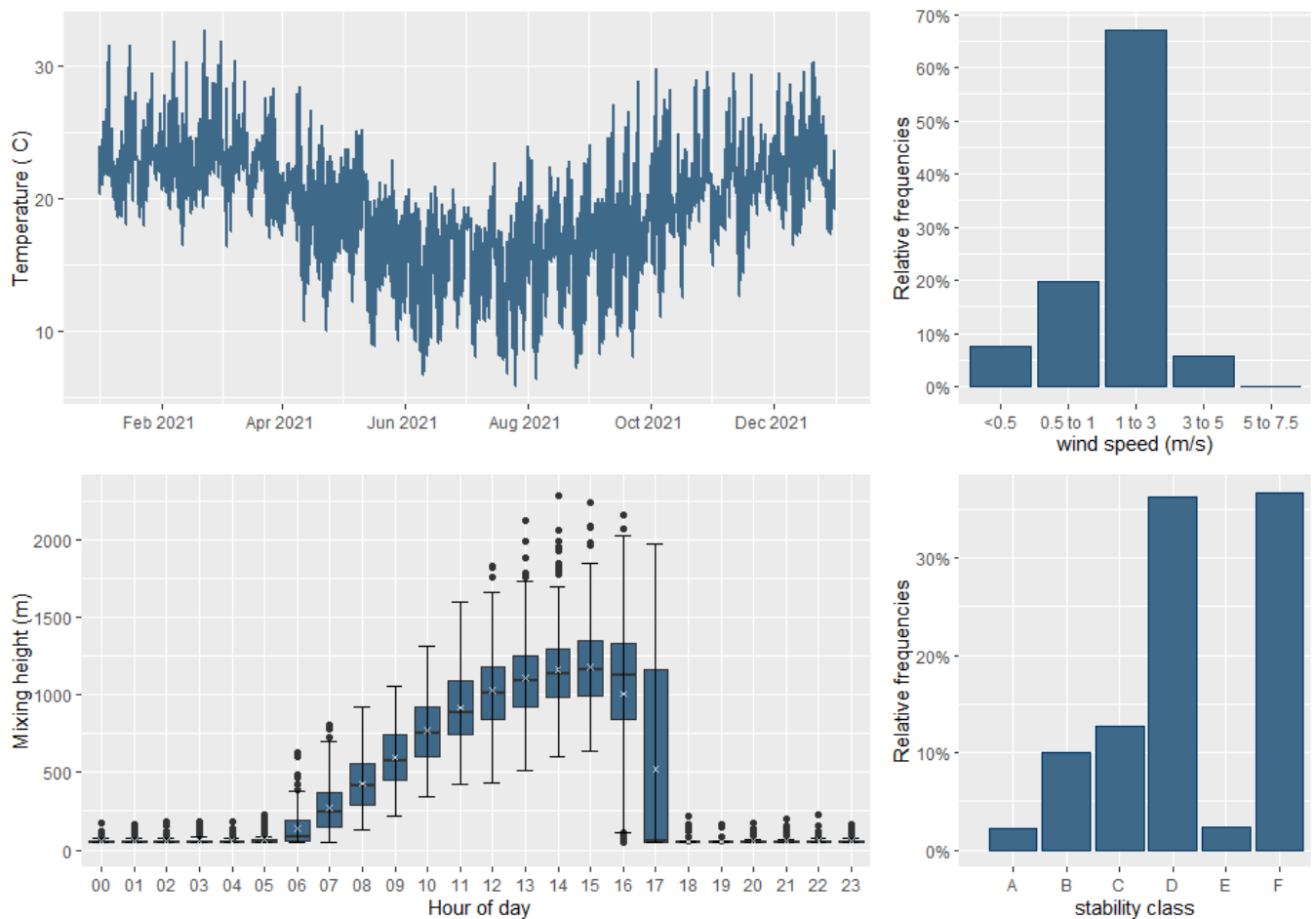
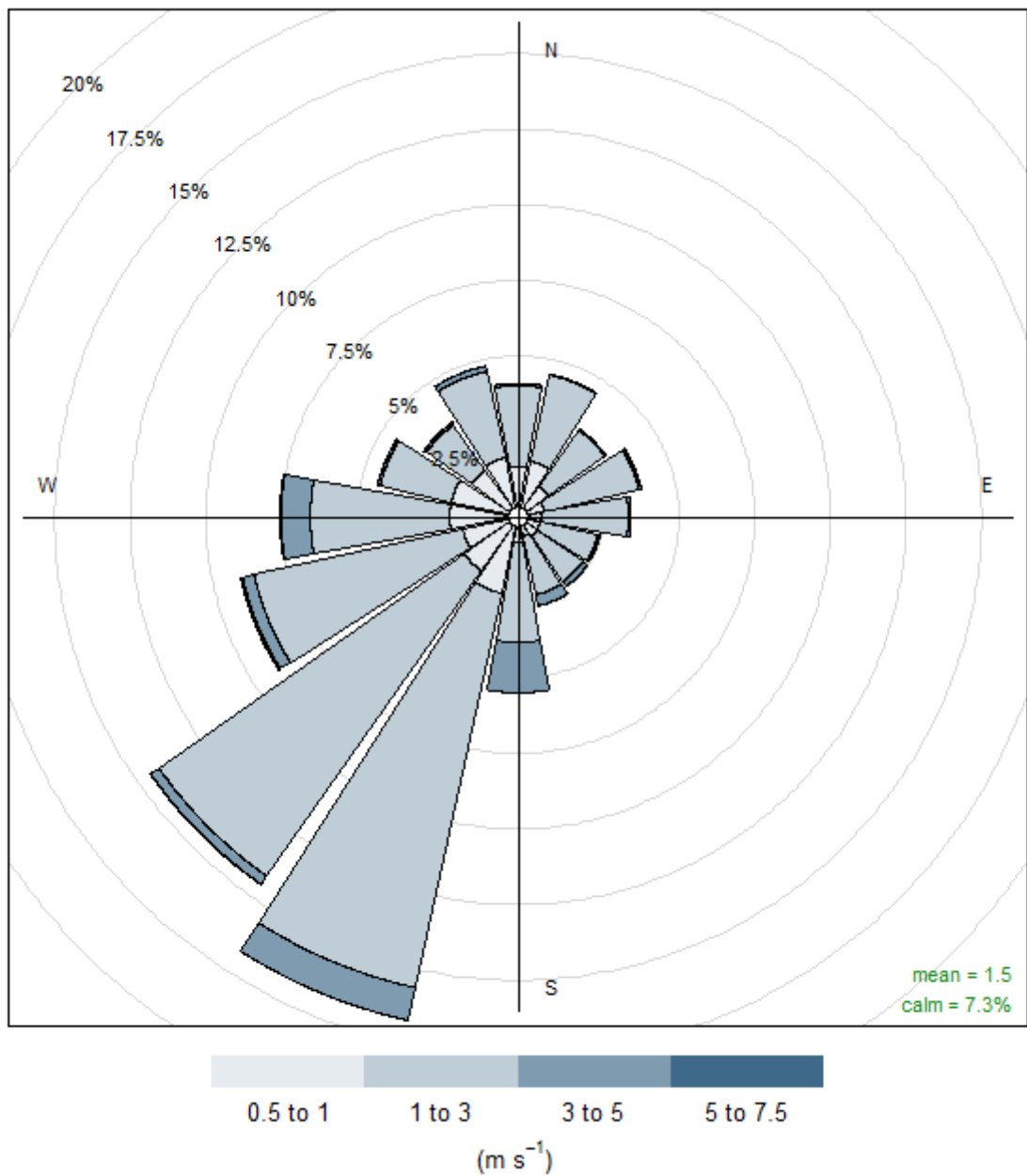


Figure A.2 Predicted temperature, mixing height, wind speed and stability class frequency at the Project (2021)

The wind rose for the entire data period taken at the Project site is shown in Figure A.3 and shows the following features:

- The predominant annual average wind directions are from the south-southwest and from the south.
- The average wind speed predicted was 1.5 m/s.
- Calm conditions (wind speeds less than 0.5 m/s) occurred 7.3% of the time.
- High wind speeds (winds greater than 5 m/s) which are often attributed to dust lift off mostly occur from the southeast and west.



Frequency of counts by wind direction (%)

Figure A.34 Wind rose at the Project from CALMET (2021)

Appendix B

Dispersion Modelling Methodology

B-1 CALPUFF modelling

CALPUFF (Version 7) was used to calculate odour dispersion around the subject site to 100 metres spatial resolution. The application of CALPUFF for this purpose is an approved modelling approach in NSW as per the Approved Methods with model guidance documentation provided.

Model settings were selected with consideration to the recommendations provided in the Generic Guidance and Optimum Model Settings for the CALPUFF Modelling System for Inclusion into the Approved Methods for the Modelling and Assessments of Air Pollutants in NSW, Australia (J Barclay and J Scire, Atmospheric Studies Group TRC Environmental Corporation, 2011) and the Department of Environment and Heritage Protection.

The technical CALPUFF model parameters are summarised in Table B.2.

Parameter	Description	Value
MGAUSS	Near field vertical distribution (0 = uniform, 1 = Gaussian)	1
MCTADJ	Terrain adjustment method (0 = none, 1 = ISC-type, 2 = CALPUFF-type, 3 = partial plume path)	3
MCTSG	Model subgrid-scale complex terrain? (0 = no, 1 = yes)	0
MSLUG	Near-field puffs modelled as elongated slugs? (0 = no, 1 = yes)	0
MTRANS	Model transitional plume rise? (0 = no, 1 = yes)	1
MTIP	Apply stack tip downwash to point sources? (0 = no, 1 = yes)	1
MRISE	Plume rise module for point sources (1 = Briggs, 2 = numerical)	1
MTIP_FL	Apply stack tip downwash to flare sources? (0 = no, 1 = yes)	0
MRISE_FL	Plume rise module for flare sources (1 = Briggs, 2 = numerical)	2
MBDW	Building downwash method (1 = ISC, 2 = PRIME)	1
MSHEAR	Treat vertical wind shear? (0 = no, 1 = yes)	0
MSPLIT	Puff splitting allowed? (0 = no, 1 = yes)	0
MCHEM	Chemical transformation method (0 = not modelled, 1 = MESOPUFF II, 2 = User-specified, 3 = RIVAD/ARM3, 4 = MESOPUFF II for OH, 5 = half-life, 6 = RIVAD w/ISORROPIA, 7 = RIVAD w/ISORROPIA CalTech SOA)	0
MAQCHEM	Model aqueous phase transformation? (0 = no, 1 = yes)	0
MLWC	Liquid water content flag	1
MWET	Model wet removal? (0 = no, 1 = yes)	0
MDRY	Model dry deposition? (0 = no, 1 = yes)	0
MTILT	Model gravitational settling (plume tilt)? (0 = no, 1 = yes)	0
MDISP	Dispersion coefficient calculation method (1= PROFILE.DAT, 2 = Internally, 3 = PG/MP, 4 = MESOPUFF II, 5 = CTDM)	2
MTURBVW	Turbulence characterization method (only if MDISP = 1 or 5)	3
MDISP2	Missing dispersion coefficients method (only if MDISP = 1 or 5)	3
MTAULY	Sigma-y Lagrangian timescale method	0
MTAUADV	Advective-decay timescale for turbulence (seconds)	0
MCTURB	Turbulence method (1 = CALPUFF, 2 = AERMOD)	1
MROUGH	PG sigma-y and sigma-z surface roughness adjustment? (0 = no, 1 = yes)	0
MPARTL	Model partial plume penetration for point sources? (0 = no, 1 = yes)	1
MPARTLBA	Model partial plume penetration for buoyant area sources? (0 = no, 1 = yes)	0

Parameter	Description	Value
MTINV	Strength of temperature inversion provided in PROFILE.DAT? (0 = no - compute from default gradients, 1 = yes)	0
MPDF	PDF used for dispersion under convective conditions? (0 = no, 1 = yes)	1
MSGTIBL	Sub-grid TIBL module for shoreline? (0 = no, 1 = yes)	0
MBCON	Boundary conditions modelled? (0 = no, 1 = use BCON.DAT, 2 = use CONC.DAT)	0
MSOURCE	Save individual source contributions? (0 = no, 1 = yes)	0
MFOG	Enable FOG model output? (0 = no, 1 = yes - PLUME mode, 2 = yes - RECEPTOR mode)	0

B-2 CALPUFF Sources

Source details are provided in table B.3 below. Location of modelled sources are provided in figure B.1

Table B.1 Source details

Description	Type	Base_Elev (m) [m]	Height (m) [m]	SigmaY (m)	SigmaZ (m)
Composting Facility - Open Windrows - Garden Organics (Area D)	AREA_POLY	134.5	1	N/A	1.5
Leachate pond GO Quiescent	AREA_POLY	123.71	0	N/A	0.5
Leachate ponds FOGO quiescent	AREA_POLY	115.3	0	N/A	0.5
Maturation and Storage - Open Windrows (Food Organics) (Area A)	AREA_POLY	117.38	1	N/A	2
Aerated static pad emissions (Area B)	AREA_POLY	123.6	2	9.3	2.3
Composting Facility - Open Windrows - Garden Organics - Windrow Turning Factor (Area D)	AREA_POLY	134.46	2	N/A	2.5
Aerated static pad windrow turning emissions (Area B)	AREA_POLY	123.6	2	N/A	2.5
Shredding of organic material (Area C)	VOLUME	125.2	2	N/A	2.5
Leachate GO - Aerated 4 hours a day	AREA_POLY	123.71	0	2.5	0.5
Leachate FOGO Aerated 4 hours a day	AREA_POLY	115.81	0	N/A	0.5
Leachate Manuf Quiescent	AREA_POLY	114.51	0	N/A	0.5
Leachate Manuf Aerated	AREA_POLY	113.98	0	N/A	0.5
Decontamination/material processing (Area C)	VOLUME	125.05	2.8	N/A	1.3
Manure Pile	AREA_POLY	114.42	2	9.3	2.2



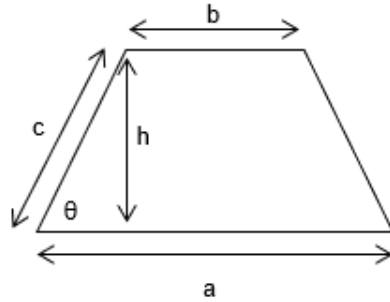
Figure B.1 **Modelled Areas**

Appendix C

Emissions Inventory Additional Information

C-1 Operational Parameters

Table C.1 Operational parameters

Parameter	Descriptor	Value		Source
General Operational parameters				
Hours of Operation	Hours of operation Monday – Friday	6am – 6 pm		SOILCO
	Hours worked – Saturday	6am – 4 pm		
	Hours Worked – Sunday	9 am – 4 pm		
	Hours worked – Monday - Friday	12 hours		
	Hours worked Saturday	10 hours		
	Hours worked Sunday	7 hours		
Material dimensions	Windrow Dimensions	a = 5 m		Assumed
		b = 3.1 m		
		c = 4.4 m		
		h = 4 m		
	Manure pile Dimensions	a = 4 m		
		b = 2 m		
		c = 2.8 m		
		h = 2 m		
Material throughput information				
Maturation and storage (Area A)	Full production cycle length	8-week cycle		SOILCO
	FOGO Material density	0.55 t/m ³		
	Volume of compost produced per year	Approximately 150,000 tonnes per annum		
	Compost produced during peak period	21150 tonnes per 8 weeks		Calculated
		2643.75 tonnes per week		
	Compost produced during low period	12906.667 tonnes per 8 weeks		
1613.3 tonnes per week				

Parameter	Descriptor	Value	Source
	Compost produced during average period	16,720 tonnes per 8 weeks	
		4180 tonnes per week	
Aerated Static Piles (Area B)	Full production cycle length	3-week cycle	SOILCO
	FOGO material density	0.55 t/m ³	
	FOGO processed per year	150,000 tonnes per annum	
	FOGO Processed during peak period	7700 tonnes per 3 weeks	
		2566.7 tonnes per week	
	Fogo processed during low period	4840 tonnes per 3 weeks	
		1613.3 tonnes per week	
	Fogo processed on average	6270 tonnes per 3 weeks	
		2090 tonnes per week	
	Material turnover rate	1 full turnover of material per 3-week period	
Pre-treatment of imported material – Decontamination line (Area C)	Decontamination line capacity	70 tonnes per hour	SOILCO
	Screening volume – Peak period	2567 tonnes per week	
		400 tonnes per weekday	
		333 tonnes per Saturday	
		233 tonnes per Sunday	
		33 tonnes per hour	
	Screening volume – Low Period	2933 tonnes per week	
		251 tonnes per weekday	
		210 tonnes per Saturday	
		147 tonnes per Sunday	
		21 tonnes per hour	
Garden Organics Open Windrows (Area D)	GO Material density	0.45 t/m ³	SOILCO
	Compost produced during peak period	13725.0 tonnes per 8 weeks	
		2375.0 tonnes per week	
	Compost produced during low period	8550.0 tonnes per 8 weeks	

Parameter	Descriptor	Value	Source
		1068.8 tonnes per week	
	Compost produced during average period	11,137.5 tonnes per 8 weeks	
		1392.2 tonnes per week	
Final Screening and Manufacturing	Maximum volume of manure on site	200 tonnes	SOILCO
	Manure density	195kg/m ³	Khater, E. 2012, "Chemical and Physical Properties of Compost", <i>Misr Journal of Agricultural Engineering</i> 29(4): 1567 - 1582

C-2 Odour Emissions Inventory

Table C.2 Odour emission rate source information

Source	Waste Type	Waste age	Season of odour measurement	Odour measurement methodology	Reference for SOER	Description
Maturation and Storage - Open Windrows (Food and Garden Organics) (Area A)**	Green organics	8 weeks	Autumn - Winter	Temporary Enclosure (wind tunnel)	GHD, "SITA Brooklyn, Report for Greenwaste Composting Facility, Baseline Odour Impact Survey"	SOER was derived from odour measurements of Green Organics at the end of the 4 week composting cycle at Bucketts Way RRF (SOER 0.86) and odour measurements at SITA Brooklyn at 8 weeks of food and garden organics composting (SOER 0.38). The weighted average SOER (0.6) was used for the combined maturation stockpile based on expected volumes of 100,000 tpa and 150,000 tpa of GO and FOGO respectively.
	Food and green organics	4 weeks	Spring	Isolation flux chamber	Water research centre UNSW, "Odour Impact Assessment for the Proposed Food plus Garden Organics (FGO) Composting Operations at the Bucketts Way Resource Recovery Facility", N.D.	
Aerated static pad emissions (Area B)	Food and green organics	8 days	Spring	Isolation flux chamber	Water research centre UNSW, "Odour Impact Assessment for the Proposed Food plus Garden Organics (FGO) Composting Operations at the Bucketts Way Resource Recovery Facility", N.D.	ASP emissions factor is derived from the average of measurements taken across composting of food and green organics undertaken at UNSW. Windrow turning is assumed to occur for 6 hours per day as a worst case scenario. To be conservative, during turning of windrows, during turning, an additional 100% of the passive windrow emissions factor is applied on top of the ASP factor. The odour emission rate has been applied to 25% of the total windrow area, as it has been assumed that up to 25% of the entire windrow could be practically turned in one day. We note measured odour emissions from this site are higher than the measured odour emissions at the SOILCO Wogamia site.
Decontamination/material processing (Area C)	Food and green organics	8 days	Spring	Isolation flux chamber	Water research centre UNSW, "Odour Impact Assessment for the Proposed Food plus Garden Organics (FGO) Composting Operations at the Bucketts Way Resource Recovery Facility", N.D.	Unprocessed FOGO emissions factor was taken from a measurement of unprocessed food organics in the receival area of a FOGO processing facility. Source accounts for passive emissions from organic material. As such it has been assumed that odour is emitted 24 hours per day. Decontamination/Material processing area has been modelled.

Source	Waste Type	Waste age	Season of odour measurement	Odour measurement methodology	Reference for SOER	Description		
Shredding and screening of organic material (Area C)*	Green organics	<24 hours	N/A	Odour Sample	URS, "Odour assessment of the proposed composting process at the ANL Premises, Lilydale" (Ref:43283297, Dated: 28 August 2008)	Odour emission rate for shredding and screening of organic matter was taken from a measurement of shredding decomposing garden organic. Modelled as a volume source (21.5m³). Shredding is assumed to take place 6 hours per day as a worst case scenario.		
Composting Facility - Open Windrows - Garden Organics (Area D)	Green organics	8 weeks	Autumn - Winter	Temporary Enclosure (wind tunnel)	GHD, "SITA Brooklyn, Report for Greenwaste Composting Facility, Baseline Odour Impact Survey"	Emission factor taken from measurements previously undertaken by GHD as part of a green waste composting facility odour impact survey. OER was derived from an average of fresh and intermediately matured garden organic compost odour. measurements. Emissions factor has been adjusted by predicted surface area of windrows, as seen in Figure 2.3. Windrow turning is assumed to occur for 6 hours per day as a worst case scenario. To be conservative, during turning of windrows, during turning, an additional 100% of the passive windrow emissions factor is applied on top of the modelled emission source. The odour emission rate has been applied to 25% of the total windrow area, as it has been assumed that up to 25% of the entire windrow could be practically turned in one day.		
Leachate Pond GO Quiescent	Green waste leachate dam	N/A	Autumn	Isolation flux chamber	Holmes Air Sciences, "Odour Audit: Lucas Heights Waste & Recycling Centre", (Ref: No. 14 LUCAS HEIGHTS_ODOUR AUDIT_final.doc, May 2006) Ektimo, "Odour Survey Lucas Heights Resource Recovery Park", (Ref: No. 140107r Dated May and June 2014)	The leachate ponds were modelled assuming 4 hours of aeration in the daytime period each day. The SOER was selected from the compost pond IFC measurements taken from the composting leachate pond at the Lucas Heights Resource Recovery Park in 2006 and the aerated rate was derived from measurements at Lucas Height Landfill (Ektimo Report No. 140107r 2014 (Lucas Heights) Back Calculations by GHD), which apply the same increased factor measured for the landfill leachate pond.		
Leachate Pond FOGO Quiescent								
Leachate Pond Manufacturing Quiescent								
Leachate Pond GO Aerated	Green waste leachate dam	N/A	N/A	Data scaled from upwind and downwind transect				
Leachate POND FOGO Aerated								

Source	Waste Type	Waste age	Season of odour measurement	Odour measurement methodology	Reference for SOER	Description
Leachate Pond Manufacturing Aerated						
Manure pile	Manure	N/A	Autumn-Winter	Lindvall hood	Odournet; "Odour monitoring and dispersion modelling study for Tunnel Tech North Ltd, Newington, South Yorkshire" (Ref: TTN12FINAL Dated November 2012)	Emission factor sourced from odour measurements of horse manure were adopted for the purpose of this assessment. The manure pile has been modelled in the north easternmost storage bay within the processing and manufacturing area. Source area to surface area ratio has been determined assuming a trapezoidal shape. Assumed geometry and material density are outlined in Appendix C-1.

Table C.3 Source areas and odour emission rates

Source	Source type	Source Area(m ²)/ Volume(m ³)	Estimated surface area of windrows (m ²)	Source area to surface area scaling factor ¹	Reference SOER (OUV/m ² /s)	Modelled SOER (OUV/m ² /s) (See table B2-1)	Odour emission rate (OU/s)	Hours per day source is active
Maturation and Storage - Open Windrows (Food and Garden Organics) (Area A)	Area	16,430	16,430	1	0.6	0.6	9,398	24
Decontamination/ material processing (Area C)	Volume	256	N/A	N/A	1.7	1.7	7,137	24
Shredding and screening of organic material (Area C)*	Volume	22	N/A	N/A	-	-	5,740	6
Aerated static pad emissions (Area B)	Area	9,135	8374	0.92	1.7	Passive: 1.6	Passive: 12,948	18
						Windrow turning: 2	Windrow turning: 13,911	6
Composting Facility - Open Windrows - Garden Organics (Area D)	Area	24,438	18,181	0.74	1.6	Passive: 1.2	Passive: 21,641	18
						Windrow turning: 1.6	Windrow turning: 24,085	6
Leachate Pond GO Quiescent	Area	5,983	N/A	N/A	0.15	Quiescent: 0.15	Quiescent: 897	20
						Aerated: 1.15	Aerated: 6,881	4
Leachate Pond FOGO	Area	3,431	N/A	N/A	0.15	Quiescent: 0.15	Quiescent: 515	20
						Aerated: 1.15	Aerated: 3,945	4
Leachate Pond Manufacturing	Area	6,704	N/A	N/A	0.15	Quiescent: 0.15	Quiescent: 1,006	20
						Aerated: 1.15	Aerated: 7,709	4
Manure Pile	Area	386	204	0.53	4	2.1	429	24

Note: 1. Emissions scaling factor adjusts the emissions factor based on the expected area of odorous material in windrows divided by the area of source.

Appendix D

Odour Surveys

Ambient Odour Survey Methodology

On 10 April 2025, GHD conducted a series of ambient odour surveys at various times throughout the day.

The primary objectives of these surveys were to evaluate:

- The intensity of the odour, and
- The characteristics of the detected odours.

Given the access restriction in the locality the extent of odour plumes was not able to be ascertained.

Odour Intensity

During the odour surveys, GHD implemented a modified version of the German standard VDI 3882:1992 Part 1 for determining odour intensity. This approach was chosen due to the absence of an Australian Standard for rating odour intensity. The VDI 3882 standard is widely recognised and referenced by Australian regulatory bodies.

To evaluate odour intensity at each location where discernible odours were detected, the odour assessor classified the intensity based on a specified scale outlined below in table D.1.

Table D.1 Summary of Odour Intensity Scale Utilised during the Field Odour Surveys

Odour	Intensity Level
Extremely Strong	6
Very Strong	5
Strong	4
Distinct	3
Weak	2
Very Weak	1
Not perceptible	0

Odour Characteristics

The aim of the surveys was to get an understanding of existing odour sources and characteristics in the local area, especially at nearby receptors to the Project. Known odour sources include Scenic Rim Regional Council Waste Facility/Transfer Station, poultry farms and Bush's Proteins. Odours from these facilities were the focus.

GHD personnel noted offensive descriptors related to these sites during the surveys however also noted more natural sources as well.

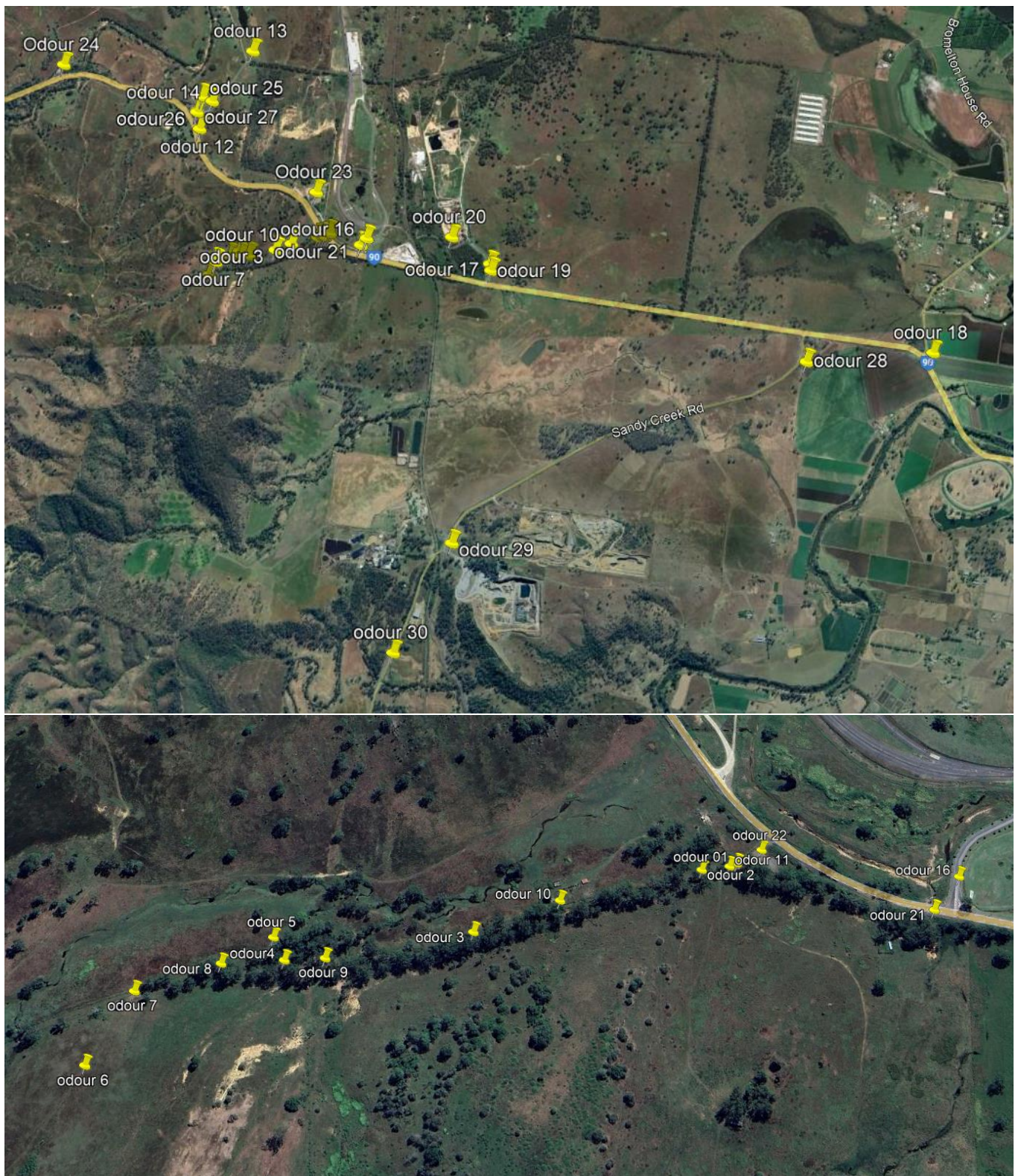
The assessment included publicly accessible areas mostly downwind of the Project site and also the Bush's Proteins site. Some survey locations were outside of the plume during the survey. Results of the surveys are summarised in table D.2.

Table D.2 Summary of Odour Survey Results

Survey number	Start	Wind direction	Odour intensity	Odour character	Comment
01	1.45pm	SE – light	2	Cow manure, agricultural	Constant odour
02	1.48pm	SE – light	0	-	-
03	1.53pm	SE – light	1	Cows, agricultural, cooking meat	More noticeable with wind gusts
04	2.00pm	SE – light	3	Agricultural, cooking meat	Odour tended to increase with wind gusts
05	2.02pm	SE – light, some gusts	3	Agricultural, cow poo, cooking meat	Constant
06	2.05pm	SE – light, some gusts	2	Agricultural, cooking meat	
07	2.10pm	SE – light	0	-	-
08	2.14pm	SE – light	0	-	-
09	2.16pm	SE – light	0	-	-
10	2.20pm	SE – light	0	-	-
11	2.23pm	SE – light	0	-	-
12	2.31pm	SE – light, gusting	0	-	-
13	2.34pm	SE – light	0	-	-
14	2.37pm	SE – light	0	-	-
15	2.40pm	SE – light	0	-	-
16	2.45pm	SE – light	0	-	-
17	2.50pm	SE – light	1	Cattle, cooking meat, grass, garbage	Not distinct, odour on and off. Odour also from garbage truck passing
18	2.55pm	SE – light	1	Rural, cut grass, fertiliser, bitumen	Lawn farm opposite
19	4.32pm	SE – light, gusting	1	Agricultural	-
20	4.36pm	SE – light, none	1	Floral, garden smells	Local vegetation
21	4.41pm	SE – light	4	Cow manure, cattle, meat cooking, agricultural	Low elevation next to creek, constant odour
22	4.46pm	SE – light	4	Cattle, dog food, cooking meat, dairy	Constant odour
23	4.50pm	SE – light to moderate	3	Cattle, cooking meat, beef	Odour fluctuates with wind, stronger with higher gusts
24	4.59pm	SE – light	1	Natural grass smells	-
25	5.02pm	SE – light to moderate	2	Cattle, dairy. Cooking meat	Odour stronger with wind gusts
26	5.06pm	SE – light, gusts	2	Cattle, meat	Fluctuates from no odour to some
27	5.10pm	SE – light	2	Cattle, beef	Odour mild but noticeable, fluctuates with wind and over the period.
28	5.17pm	SE – light	1	Cut grass	-
29	5.30pm	SE – light	1	Dust, dirt	Adjacent quarry and on gravel area
30	5.35pm	SE – light	0	-	-

An overview of the survey locations is provided in the images below.







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→ **The Power of Commitment**

Bromelton Compost Manufacturing Facility

Acoustic Assessment

SOILCO Pty Ltd

04 April 2025

→ **The Power of Commitment**



Project name		Bromelton Compost Manufacturing Facility					
Document title		Bromelton Compost Manufacturing Facility Acoustic Assessment					
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Executive summary

GHD has been engaged by SOILCO Pty Ltd to prepare an acoustic assessment of the construction and operational phases of a Compost Manufacturing Facility (the Project) to support the material change of use (MCU) development application under Bromelton State Development Area (SDA) Planning Scheme (referred to as an SDA development application) and the Environmental Authority application for environmentally relevant activities. This acoustic assessment determines any potential impacts on the nearby sensitive receivers, and identifies any specific mitigation measures required.

Potentially impacted receivers surrounding the Project site (Lot 4 on RP85497 and Mitchell Road (road parcel)) were identified via aerial imagery. The nearest types of receivers were comprised of residential and industrial receivers. The nearest identified residential receiver is 1,370 metres south of the site, and the nearest industrial receiver is 1,230 metres east of the site.

The applicable noise criteria for the different noise generating aspects of the Project were established. They are based on relevant legislation, regulations and guidelines for the Project. They include:

- *Environmental Protection Act 1994*
- *Environmental Protection (Noise) Policy 2019*
- TMR Code of Practice – Volume 1 and 2

Noise modelling was undertaken to determine the potential noise impacts of different aspects of the Project. The results show the following:

- All construction activities are expected to comply with the established criteria at all receivers. This includes the construction of Mitchell Road.
- Construction road traffic noise is expected to comply with the established criteria at all receivers.
- Operational activities are expected to comply with the established criteria at all receivers during the day-time period.
- Operational activities are expected to comply with the established criteria at all receivers during the 6am to 7am 'morning shoulder' period.
- Mechanical plant expected to run 24/7 are expected to comply with the established criteria at all receivers for all time periods.
- Operational road traffic noise is expected to comply with the established criteria at all receivers. This includes the road traffic noise from Mitchell Road on nearby sensitive receivers.

Noise mitigation and management measures to be considered and implemented include:

- For construction, measures should be implemented where reasonable and feasible as part of best practice. This is detailed in Section 7.2.
- For operations, measures should be implemented to mitigate and manage the noise impacts from the site. Site specific noise mitigation and management measures are detailed in Section 7.3.1.
- For operations, best practice environmental management measures should also be implemented. These are detailed in Section 7.3.2.

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.4, and the assumptions and qualifications contained throughout the report.

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1. Introduction

1.1 Background

SOILCO Pty Ltd (SOILCO) are preparing a approvals application documentation for a Compost Manufacturing Facility (the Project). This assessment encompasses the construction and operation of the Compost Manufacturing Facility, which is expected to utilise a relatively small portion of the 161 hectare (ha) lot and will process Garden Organics (GO) and Food Organics & Garden Organics (FOGO). The Project is located at 260 Mitchell Road, Lot 4 on RP85497, Bromelton, Queensland.

1.2 Purpose of this report

GHD has been engaged by SOILCO to prepare the acoustic assessment for the construction and operational phases of the Project to support the material change of use (MCU) development application under Bromelton State Development Area (SDA) Planning Scheme (referred to as an SDA development application) and the Environmental Authority application for environmentally relevant activities.

The acoustic assessment will discuss potential impacts on the nearby sensitive receivers from the Project and will identify specific mitigation measures to be implemented for the construction and operational phases of the Project.

1.3 Scope of works

The scope of works undertaken as part of the acoustic assessment included the following:

- Identifying and mapping noise-sensitive receivers potentially impacted by the operation of the site.
- Undertaking background noise monitoring for a period of one week at two locations representative of the nearest sensitive receivers.
- Determining noise criteria for the site based on the background noise levels in accordance with the *Environmental Protection (Noise) Policy 2019* and Department of Environment, Science and Innovation (DESI) Guidelines.
- Reviewing sound power data provided by the client or, used for past composting projects considered relevant.
- Preparing a computer noise model using topographic elevation contours, to determine sound power levels for noise producing activities.
- Predicting noise level emissions from the use of the composting facility to nearest sensitive receivers.
- Determining potential impacts of noise generated by traffic entering and leaving the site.
- Determining any noise reduction measures required for the composting facility (if necessary), to carry out the proposed operations.
- Preparing the acoustic assessment report (this document) including:
 - Ambient noise monitoring results
 - Potential noise mitigation measures to allow for the proposed operating hours

1.4 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.

GHD has prepared this report on the basis of information provided by SOILCO Pty Ltd and others who provided information to GHD (including Government authorities), which GHD has not independently verified or checked beyond the agreed scope of work. GHD does not accept liability in connection with such unverified information, including errors and omissions in the report which were caused by errors or omissions in that information.

The opinions, conclusions and any recommendations in this report are based on information obtained from, and testing undertaken at or in connection with, specific sample points. Site conditions at other parts of the site may be different from the site conditions found at the specific sample points.

Investigations undertaken in respect of this report are constrained by the particular site conditions, such as the location of buildings, services and vegetation. As a result, not all relevant site features and conditions may have been identified in this report.

The opinions, conclusions and any recommendations in this report are based on assumptions made by GHD described in this report (refer Section 1.5 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

Accessibility of documents

If this report is required to be accessible in any other format, this can be provided by GHD upon request and at an additional cost if necessary.

1.5 Assumptions

The following assumptions were relied upon in preparation of this acoustic assessment:

- Sensitive receivers were identified using aerial photography and may not include all existing or future receivers near the Project site. The information provided in this report is considered representative at the time of assessment.
- Mitchell Road is being developed to service the Project. The intended traffic volumes on the road at the time of assessment is limited to that required for the construction and operation of the Project.

Additional assumptions are also established throughout the report as appropriate.

1.6 Terminology

Terminology used in this report is outlined in Table 1.1.

Table 1.1 *Project-specific terminology*

Term	Meaning
CMF	The Bromelton Compost Manufacturing Facility.
Construction footprint	The 21 ha area where the proposed facility construction activities are planned.
Permanent footprint	The 18.5 ha area where the proposed facility will be permanently occupied.
Project site	The Bromelton CMF Project site includes all of Lot 4 on RP85497 and Mitchell Road (road parcel).
Project lot boundary	The boundary of Lot 4 on RP85497, which has a total area of 106 ha.
Study area	The study area represents the extent of the desktop searches undertaken for environmental assessments, and includes a 5 km buffer around the approximate centre point (latitude and longitude -27.97819,152.91026) of the Bromelton CMF Project site.

2. Project description

The Bromelton Compost Manufacturing Facility (the 'Bromelton CMF Project') is an organics facility located along Mitchell Road in Bromelton, South East Queensland. The Bromelton CMF Project will involve the construction and operation of this 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 Pty Ltd (referred to as 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 the following Environmentally Relevant Activities (ERAs):
 - ERA 33(1): Crushing, milling, grinding or screening more than 5,000t of material in a year.
 - ERA53(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 the objectives set out in the Queensland Government Queensland Organics Strategy 2022–2032, by reducing the amount of organic waste going to landfill. It will also offer economic and social benefits through employment and local business opportunities in South East Queensland.

SOILCO commenced composting operations in 1985 in Australia, where they have a strong distribution network across agricultural and urban markets. 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 their 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 various 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 2.1 and Figure 2.1 summarise and depict the key components of the Bromelton CMF Project.

Table 2.1 *Project summary*

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 and soil products. The site will be split into 3 different processing areas: receipt, decontamination and composting; utilizing a 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 (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), 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 to 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: 7 April 2025 – 30 January 2026

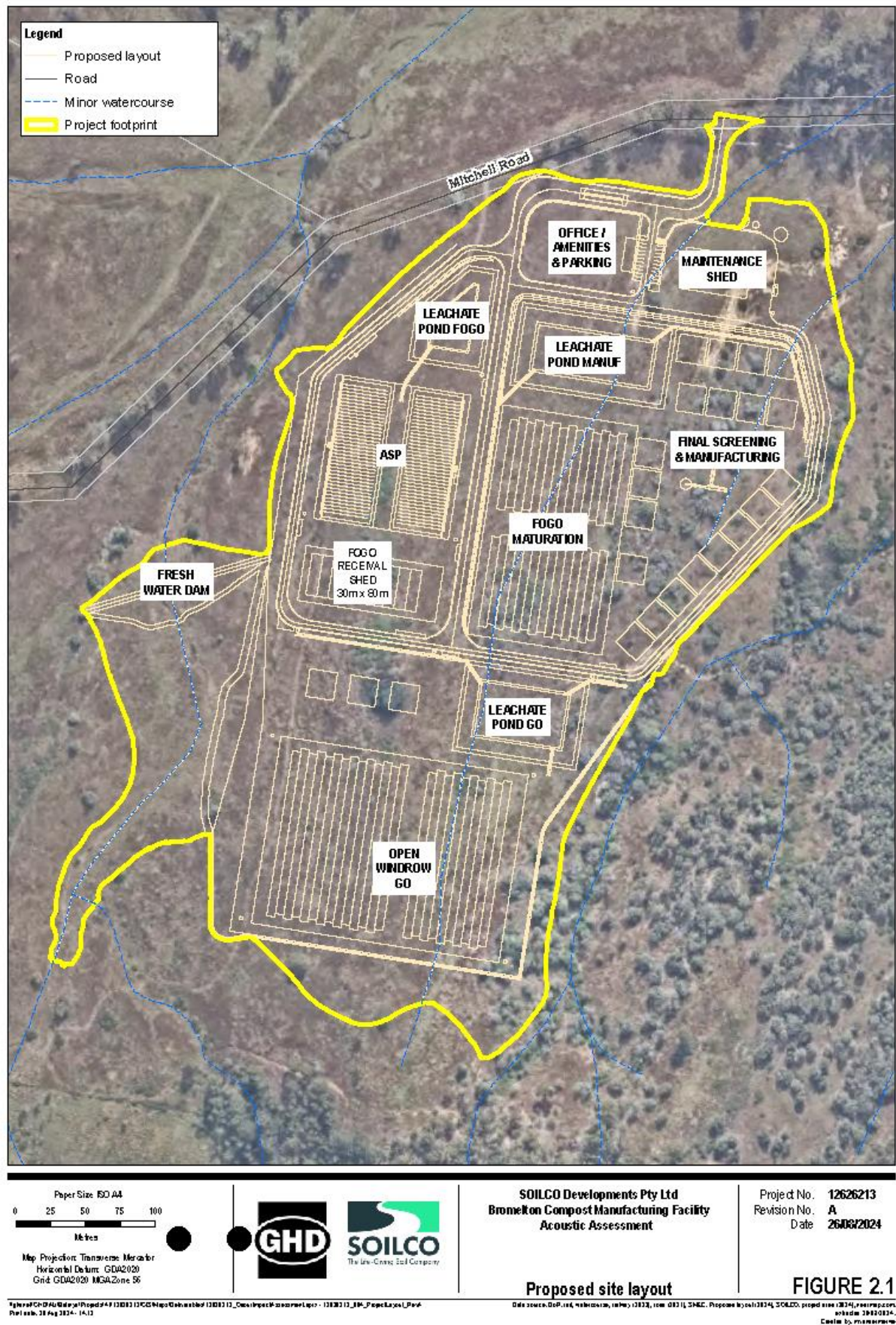


Figure 2.1 Proposed site layout

3. Existing environment

3.1 Sensitive receivers

Potentially impacted receivers surrounding the Project site have been identified via aerial imagery and are listed below in Table 3.1, and depicted in Figure 3.1. They primarily consist of rural residential and industrial properties. The existing environment consists of rural open land with residential buildings and industrial operations scattered around. The main road servicing the area is Beaudesert Boonah Road.

Table 3.1 Identified sensitive receivers

ID	Address	Type	Distance and direction from Project site
R01	140 Tilley Road, Bromelton QLD	Residential	1,640 m north-east
R02	15 Tilley Road, Bromelton QLD	Residential	1,440 m north
R03	2430 Beaudesert Boonah Road, Bromelton QLD	Residential	1,425 m north
R04	388 Swan Gully Road, Bromelton QLD	Residential	2,000 m south-west
R05	194 Swan Gully Road, Bromelton QLD	Cattle Yard ¹	1,400 m south
R06a	Bush's Proteins QLD 358 Sandy Creek Road, Bromelton QLD	Industrial ¹	1,800 m south-east
R06b	358 Sandy Creek Road, Bromelton QLD	Residential	2,320 m south-east
R07	28 Swan Gully Road, Bromelton QLD	Industrial ¹	1,700 m south-east
R08	Quickcell Technology Products Pty Ltd 2613 Beaudesert Boonah Road, Bromelton QLD	Industrial ¹	1,150 m east
R09	SCT Logistics 2603 Beaudesert Boonah Road, Bromelton QLD	Industrial ¹	1,830 m north-east
R10	Beaudesert Saleyards 2563 Beaudesert Boonah Road, Bromelton QLD	Industrial ¹	860 m north-east

¹ Industrial receivers and Cattle Yards are not considered as noise sensitive receivers in the EPP (Noise), but have been included in this assessment for reference.

3.2 Acoustic environment

3.2.1 Noise monitoring

3.2.1.1 Methodology

The methodology for the noise monitoring program included the following:

- The nearest sensitive receivers were identified, including residences and other sensitive land uses, in the vicinity of the proposal.
- Noise logging was conducted from Wednesday 19 June 2024 to Wednesday 26 June 2024 at two locations near the Project site. The objectives of the logging were to determine the background noise levels at representative locations around the site and establish target operational noise emission levels for the facility.
- All equipment was calibrated by a NATA calibrated calibrator (Larson Davis CAL200 (S/N: 9193)). Field calibration was performed before and after measurements and no significant drift (less than 0.8 dB) to reference noise level was noted.
- Noise monitoring was undertaken using Svan 977 environmental noise loggers. The noise loggers were programmed to accumulate L_{A90}, L_{A10}, and L_{Aeq} noise descriptors continuously over the entire monitoring period.

- The data collected by the logger was downloaded and analysed, and any invalid data removed. Invalid data generally refers to periods of time where average wind speeds were greater than 5 m/s, or when rainfall occurred, which is consistent with the approach recommended by *AS 1055:2018 Acoustics – Description and measurement of environmental noise* and the Department of Environment and Science *Noise Measurement Manual* (ESR/2016/2195). Meteorological data was sourced from a portable weather station deployed at a logger location.

3.2.1.2 Noise monitoring details

Two noise loggers were deployed near the Project site to capture existing ambient and representative background levels of the area. The logger locations were selected to capture noise characteristics considered representative of the Project area. Selection considerations included the location of nearby sensitive receivers, topography and contribution from other noise generating activities (such as road noise). The logger locations used for the assessment are considered to be representative of the existing background and ambient noise environment in the Project area.

Details of the noise monitoring equipment and locations are provided in Table 3.5 and Figure 3.1. Noise logger daily data results are summarised in Table 3.2 and Table 3.3. The summary of the Rating background levels and ambient noise levels recorded at Location ML1 and ML2 are summarised in Table 3.4. Daily noise monitoring charts are presented in Appendix A.

Table 3.2 Summary of noise monitoring results – ML1 (98420) dB(A), L_{A90} , L_{Aeq} and L_{A10}

Date	Rating background level, range and (10 th percentile) $L_{A90(15min)}$, dB(A)				Ambient average noise levels, $L_{Aeq(period)}$, range and (logarithmic average), dB(A)				Statistical noise levels, Range and (90 th percentile) $L_{A10(15min)}$, dB(A)			
	Morning Shoulder ¹	Day ¹	Evening ¹	Night ¹	Morning Shoulder ¹	Day ¹	Evening ¹	Night ¹	Morning Shoulder ¹	Day ¹	Evening ¹	Night ¹
Wednesday-19-Jun-24		32 - 43 (37)	24 - 33 (24)	23 - 47 (23)		47 - 63 (54)	39 - 50 (46)	31 - 53 (46)		50 - 65 (54)	42 - 53 (49)	32 - 56 (43)
Thursday-20-Jun-24	42 - 47 (42)	36 - 45 (37)	24 - 39 (26)	23 - 47 (23)	51 - 53 (52)	48 - 59 (52)	39 - 47 (44)	30 - 54 (47)	54 - 56 (55)	52 - 64 (53)	41 - 50 (46)	30 - 57 (44)
Friday-21-Jun-24	43 - 47 (43)	36 - 46 (39)	32 - 41 (34)	19 - 42 (22)	52 - 54 (53)	47 - 67 (56)	41 - 61 (51)	26 - 54 (44)	55 - 57 (56)	51 - 71 (54)	43 - 56 (48)	26 - 55 (42)
Saturday-22-Jun-24	31 - 42 (31)	35 - 47 (37)	25 - 36 (25)	21 - 44 (22)	46 - 54 (51)	46 - 65 (55)	40 - 54 (47)	27 - 52 (46)	50 - 55 (53)	50 - 67 (54)	45 - 60 (50)	28 - 55 (43)
Sunday-23-Jun-24	41 - 43 (41)	32 - 48 (41)	24 - 34 (25)	25 - 48 (26)	49 - 52 (51)	50 - 58 (54)	27 - 49 (44)	29 - 63 (50)	51 - 54 (54)	52 - 61 (55)	28 - 51 (48)	30 - 67 (42)
Monday-24-Jun-24	38 - 48 (38)	34 - 46 (36)	25 - 34 (25)	20 - 46 (24)	53 - 63 (59)	48 - 63 (54)	34 - 48 (45)	29 - 54 (45)	56 - 67 (58)	51 - 65 (54)	38 - 52 (48)	32 - 57 (43)
Tuesday-25-Jun-24	40 - 46 (40)	37 - 45 (37)	29 - 43 (29)	24 - 45 (24)	50 - 54 (52)	49 - 68 (57)	36 - 57 (48)	30 - 55 (47)	53 - 57 (55)	51 - 73 (54)	35 - 52 (47)	29 - 57 (43)
Wednesday-26-Jun-24	43 - 45 (43)	44 - 49 (44)			52 - 55 (54)	52 - 62 (56)			55 - 57 (57)	55 - 62 (57)		
RBL and Overall average² L_{eq} and L_{A10}	41	37	25	23	54	55	47	47	55	54	48	43

Notes:

1. Morning Shoulder 6:00 am to 7:00 am, Daytime 7:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 7:00 am.
2. Average L_{eq} was calculated using logarithmic average, while average L_{A10} was calculated using the median of the daily data.

Table 3.3 Summary of noise monitoring results – ML2 (98418) dB(A), L_{A90} , L_{Aeq} and L_{A10}

Date	Rating background level, range and (10 th percentile) $L_{A90(15min)}$, dB(A)				Ambient average noise levels, $L_{Aeq(period)}$, range and (logarithmic average), dB(A)				Statistical noise levels, Range and (90 th percentile) $L_{A10(15min)}$, dB(A)			
	Morning Shoulder ¹	Day ¹	Evening ¹	Night ¹	Morning Shoulder ¹	Day ¹	Evening ¹	Night ¹	Morning Shoulder ¹	Day ¹	Evening ¹	Night ¹
Wednesday-19-Jun-24		28 - 38 (29)	21 - 28 (21)	21 - 42 (22)		36 - 48 (43)	32 - 42 (38)	27 - 49 (41)		38 - 49 (43)	37 - 46 (41)	29 - 51 (41)
Thursday-20-Jun-24	38 - 42 (38)	29 - 41 (30)	25 - 40 (25)	21 - 44 (22)	45 - 49 (47)	36 - 52 (44)	32 - 46 (39)	27 - 51 (42)	48 - 51 (50)	39 - 56 (45)	35 - 49 (40)	26 - 53 (41)
Friday-21-Jun-24	39 - 44 (39)	30 - 46 (31)	36 - 47 (37)	21 - 43 (23)	49 - 51 (49)	36 - 49 (44)	39 - 48 (46)	26 - 48 (40)	50 - 53 (52)	37 - 53 (45)	41 - 49 (48)	28 - 50 (37)
Saturday-22-Jun-24	32 - 38 (32)	26 - 39 (29)	22 - 32 (22)	21 - 46 (21)	39 - 48 (46)	33 - 46 (42)	33 - 41 (38)	25 - 54 (44)	43 - 50 (48)	35 - 49 (42)	37 - 43 (42)	26 - 53 (35)
Sunday-23-Jun-24	38 - 43 (38)	33 - 47 (35)	22 - 36 (23)	21 - 41 (23)	48 - 54 (51)	40 - 52 (48)	28 - 50 (41)	26 - 49 (41)	48 - 52 (52)	43 - 54 (51)	30 - 49 (41)	27 - 51 (36)
Monday-24-Jun-24	38 - 41 (38)	28 - 44 (31)	22 - 35 (23)	21 - 40 (22)	45 - 49 (48)	33 - 54 (45)	29 - 51 (42)	25 - 49 (41)	48 - 51 (50)	36 - 55 (44)	29 - 48 (41)	26 - 50 (39)
Tuesday-25-Jun-24	38 - 40 (38)	29 - 45 (31)	26 - 43 (27)	21 - 42 (22)	47 - 49 (48)	36 - 53 (46)	33 - 44 (38)	24 - 52 (41)	49 - 50 (49)	39 - 55 (45)	35 - 46 (40)	25 - 56 (36)
Wednesday-26-Jun-24	38 - 42 (38)	29 - 42 (31)			46 - 52 (49)	44 - 56 (51)			47 - 56 (50)	44 - 57 (50)		
RBL and Overall average² L_{eq} and L_{A10}	38	31	23	22	49	46	41	41	50	45	41	37

Notes:

1. Morning Shoulder 6:00 am to 7:00 am, Daytime 7:00 am to 6:00 pm, Evening 6:00 pm to 10:00 pm, Night-time 10:00 pm to 7:00 am.
2. Average L_{eq} was calculated using logarithmic average, while average L_{A10} was calculated using the median of the daily data.

Table 3.4 *Noise monitoring results*

Location	Background noise descriptors ($L_{A90(Period)}$) ⁽¹⁾				Ambient noise descriptors ($L_{Aeq(Period)}$) ⁽²⁾			
	Morning Shoulder ³	Day ³	Evening ³	Night ³	Morning Shoulder ³	Day ³	Evening ³	Night ³
ML1	41	37	25	23	54	55	47	47
ML2	38	31	23	22	49	46	41	41

¹ Background noise descriptors determined as the L_{A90} in line with the QLD Department of Environment and Science Noise Measurement Manual (v4.01).

² Ambient noise descriptors determined as the as the energy average of the L_{Aeq} noise levels over the period.

³ Morning Shoulder 6:00 am to 7:00 am, Day time: 7:00 am to 6:00 pm, evening: 6:00 pm to 10:00 pm. Night time: 10:00 pm to 7:00 am.



Figure 3.1 Identified receivers and noise logging locations

Table 3.5 *Unattended noise monitoring details*

Noise Logger ML1	
Location	2430 Beaudesert Boonah Road
Equipment type (serial)	SVAN 977 (s/n 98420)
Measurement started	19/6/24, 12:45 pm
Measurement ceased	26/06/24 ,8:45 am
Frequency weighting	A-weighted
Photo	
Noise Logger ML2	
Location	Tilley Road
Equipment type (serial)	SVAN 977 (s/n 98418)
Measurement started	19/06/24, 1:30 pm
Measurement ceased	26/06/24, 10:15 am
Frequency weighting	A-weighted
Photo	

3.2.2 Deemed minimum background noise levels

The noise levels measured for the area around the Project site are considered to be very low, as they are below the minimum background noise levels for isolated rural areas (from Table 2 ESR/2016/1935, Version 2.04, effective: 21/02/2024). The minimum background noise levels presented in Table 3.6, are to be adopted as the background levels for assessment where the measured background noise level is lower than the deemed minimum background noise level. This ensures that in quiet areas, a noise producing activity would not require unreasonable (and possibly impractical) levels of noise attenuation to comply with the existing noise levels in the area.

Table 3.6 *Deemed background noise levels for isolated rural areas*

Time	Deemed background noise level (L_{A90}) dBA
Morning period (6am to 7am)	30
Day period (7am to 6pm)	35
Evening period (6pm to 10pm)	30
Night period (10 pm to 7 am)	25

4. Assessment criteria

4.1 Construction

4.1.1 TMR Code of Practice Volume 2

The Department of Transport and Main Roads (TMR) *Code of Practice Volume 2* (CoP Vol 2) prescribes external noise criteria for general construction works. Table 4.1 presents the work periods for construction activities (including construction-related traffic).

The determination of construction noise criteria is typically based on the background noise level of the surrounding area; however, the noise monitoring conducted for this assessment yielded low background noise levels (refer to Section 3.2.1). The minimum noise criteria set out in CoP Vol 2 have been adopted for this Project, as the evaluation of the criteria based on the measured background noise level would be below the minimum noise criteria. The Project's noise criteria are presented in Table 4.2.

Table 4.1 Project work periods

Work period	Schedule for general construction and construction traffic
Standard hours	Monday–Friday: 7:00 am to 6:00 pm Saturday: 8:00 am to 1:00 pm
Non-Standard hours – day/evening	Monday–Friday: 6:00 pm to 10:00 pm Saturday: 1:00 pm to 10:00 pm Sunday (or public holidays): 7:00 am to 10:00 pm
Non-Standard hours – night time	Monday–Sunday: 10:00 pm to 7:00 am

Table 4.2 Project noise criteria

Receiver type	External noise criteria ($L_{Aeq,adj,15min}$ dB(A)) ¹			
	Standard hours (when in use)		Non-standard hours	
	Lower limit	Upper limit	Evening	Night
Residential	50 ³	65	45 ³	45 ³

¹ Noise levels will be adjusted to account for distinct noise characteristics (tonality, low frequency, impulsiveness, etc).

² For a single short event in a 24-hour period, the upper limit may be increased by:

For standard hours:

- 2 dB(A) for event of 6 minutes to 15 minutes
- 10 dB(A) for event of 1.5 minutes to 6 minutes
- 15 dB(A) for event of less than 1.5 minutes.

For non-standard hours:

- 5 dB(A) for event of less than 1.5 minutes.

This single short event adjustment is designed to account for unusual and one-off events and does not apply to regular high-noise levels that occur more frequently than once per day.

³ Minimum lower limit is 50 dB(A) for standard hours and 45 dB(A) for non-standard hours

4.2 Operation

4.2.1 Environmental Protection Act 1994

In Queensland, the environment is protected under the *Environmental Protection Act 1994* (EP Act). The objective of the EP Act is to protect Queensland's environment while allowing for development that improves the total quality of life, both now and in the future, in a way that maintains the ecological processes on which life depends ('ecologically sustainable development').

4.2.2 Environmental Protection (Noise) Policy 2019

In relation to noise, the EP Act is supported by the *Environmental Protection (Noise) Policy 2019* (EPP Noise). The EP Act establishes a number of environmental protection policies. The key environmental values for the acoustic environment are outlined within Section 7 of the EPP Noise as detailed below:

The environmental values to be enhanced or protected under the EPP Noise are:

- a. *the qualities of the acoustic environment that are conducive to protecting the health and biodiversity of ecosystems*
- b. *the qualities of the acoustic environment that are conducive to human health and wellbeing, including by ensuring a suitable acoustic environment for individuals to do any of the following:*
 - i. *sleep*
 - ii. *study or learn*
 - iii. *be involved in recreation, including relaxation and conversation*
- c. *the qualities of the acoustic environment that are conducive to protecting the amenity of the community.*

Acoustic quality objectives

The site is required to comply with requirements of the Policy, which states the following Acoustic quality objectives that are to be maintained and achieved and are outlined in Table 4.3.

Table 4.3 Acoustic quality objectives

Sensitive receivers	Time of day	Acoustic quality objectives (dB(A)) (measured at the receivers)			Environmental value
		L _{Aeq,adj,1hr}	L _{A10,adj,1hr}	L _{A1,adj,1hr}	
Residence (outdoors)	Daytime and evening	50	55	65	Health and wellbeing
Residence (indoors)	Daytime and evening	35	40	45	Health and wellbeing
	Night-time	30	35	40	Health and wellbeing, in relation to the ability to sleep
Commercial and retail activity (indoors)	When the activity is open for business	45	-	-	Health and wellbeing, in relation to the ability to converse

Note: daytime = 7:00 am to 6:00 pm, evening = 6:00 pm to 10:00 pm. Night time = 10:00 pm to 7:00 am.

Background creep

The site is required to comply with requirements of the *Environmental Protection (Noise) Policy 2019* (EPP Noise). Section 9, Subsection 2 of the EPP Noise states:

1. *To the extent it is reasonable to do so, noise must be dealt with in a way that ensures–*
 - a. *The noise does not have any adverse effect, or potential adverse effect, on an environmental value under this policy; and*

- b. Background creep in an area or place is prevented or minimised.

It is recommended that to control background creep, noise that is continuous (such as from a mechanical plant) (measured by $L_{Aeq,T}$) should be no more than 5 dB greater than that of the existing environment (measured by $L_{A90,T}$) during the day and evening; and no more than 3 dB greater than that of the existing environment (measured by $L_{A90,T}$) during the night.

4.2.3 Project-specific noise targets

The project specific noise targets for the Project are summarised in Table 4.4.

Table 4.4 Project specific noise targets

Receiver type	Time	Noise limit (external) ^{1,2} ($L_{Aeq, adj, 1hr}$) dBA
Residential (R01, R04, R06b)	Morning shoulder period (6am to 7am)	41
	Day period (7am to 6pm)	40
	Evening period (6pm to 10pm)	35
	Night period (10 pm to 7 am)	28
Residential (R02, R03)	Morning shoulder period (6am to 7am)	44
	Day period (7am to 6pm)	42
	Evening period (6pm to 10pm)	35
	Night (10 pm to 7 am)	28
Industrial	When in use	N/A

¹ A +7 dB adjustment to the indoor acoustic quality objective has been applied to convert the indoor level to an outdoor level, by accounting for the transmission loss through a partially open window.

² Project target noise limit (preservation of amenity) is based on existing background level + 5 dB(A) during day/evening and + 3 dB(A) during night and morning shoulder (not exceeding quality objectives), where the background level is greater than the deemed minimum backgrounds.

4.3 Road traffic noise

4.3.1 TMR Code of Practice Volume 1

TMR's *Code of Practice Volume 1* (CoP Vol 1) prescribes external noise criteria for road traffic noise. Table 3.2(a) of CoP Vol 1 summarises the road traffic noise criteria for the different sensitive receivers for different road categories. The road categories and associated noise criteria applicable to the Project is shown in Table 4.5.

Table 4.5 Road traffic noise criteria

Category	Criteria		
	Existing residences (façade corrected)	Educational, community and health buildings (façade corrected)	Outdoor educational and passive areas (including parks) (free field)
New Road – Access Controlled	63 $L_{A10(18hr)}$, existing level >55 $L_{A10(18hr)}$ 60 $L_{A10(18hr)}$, existing level ≤55 $L_{A10(18hr)}$	58 $L_{A10(1hr)}$,	63 $L_{A10(12hr)}$,
Upgrading Existing Road	68 $L_{A10(18hr)}$	65 $L_{A10(1hr)}$,	63 $L_{A10(18hr)}$,

Note: Time periods are defined as 18hr: 6:00 am to 10:00 pm, 12hr: 6:00 am to 6:00 pm, 1hr: during operation hours.

5. Noise impact assessment

5.1 Construction

5.1.1 Noise modelling methodology

Noise modelling was undertaken using CadnaA 2023 MR2, to predict the effects of noise generated by the anticipated construction works associated with the Project.

CadnaA is a computer program for the calculation, assessment and prognosis of noise propagation. Computer modelling has been undertaken according to *ISO 9613-2 (1996), Acoustics - Attenuation of Sound During Propagation Outdoors*, Part 2: General Method of Calculation prediction algorithm; as implemented in the CadnaA software. The noise model predicts sound pressure levels under meteorological conditions favourable to propagation (mild temperature inversion with slight downwind) from sources of known sound emission.

The general noise model parameters used in CadnaA are presented below in Table 5.1.

Table 5.1 Noise model parameters

Variable	Parameters
Calculation method	ISO 9613 prediction algorithm
Meteorology	Average temperature of 10°C Average humidity of 70% The ISO 9613-2 algorithm assumes a noise-enhancing source to receiver wind or a moderate temperature inversion.
Ground absorption coefficient	0.8 = mix of hard and soft ground (0 represents hard ground, and 1 represents soft ground)
Reflection from surfaces	Order of reflection = 0
Ground topography	A digital terrain model with a 2.0 metre resolution has been used
Receiver heights	1.5 m above ground level
Shielding	The model doesn't take into account shielding from nearby buildings or structures

5.1.2 Noise sources and scenarios

Noise levels at the site will be dynamic and vary based on the construction activities being undertaken. To understand the operational noise impacts of the site on the surrounding area, the construction scenarios included in Table 5.2 were modelled to predict potential noise impacts.

Indicative and conservative sound power levels for all anticipated mobile plant and equipment have been sourced from GHD's database and manufacturer's technical datasheets. The noise model will be based on noise sources that are moving around the site with an average noise emission height of 2 metres above ground level.

Table 5.2 Anticipated construction scenarios and associated noise sources (Project site)

Scenario ID	Activity	Equipment	Qty	Sound power level (dB(A))	Equivalent sound power level (dB(A))
S1	Earthworks	D10 dozer	1	116	119
		20T excavator	1	99	
		5T excavator	1	93	
		Skid steer loader	1	96	
		Tipper truck	1	109	

Scenario ID	Activity	Equipment	Qty	Sound power level (dB(A))	Equivalent sound power level (dB(A))
		Vibratory roller	1	105	
		Grader	1	115	
		Drum roller	1	103	
S2	Slab construction	Concrete pump	1	96	107
		Concrete truck	1	107	
S3	Building construction	50T slew crane	1	110	112
		25T franna crane	1	98	
		Boom lift	1	95	
		Forklift	1	100	
		Delivery vehicles	1	108	
S4	Other	Water cart	1	109	109

Table 5.3 Anticipated construction scenarios and noise sources (Mitchell Road)

Scenario ID	Activity	Equipment	Qty	Sound power level (dB(A))	Equivalent sound power level (dB(A))
S5	Embankment/pavement works	Dump truck	2	108	119
		Vibratory roller	2	103	
		Tracked excavator	2	107	
		Grader	2	115	
		Compactor	1	106	
S6	Sealing works	Tracked excavator	1	107	120
		Drum roller	1	108	
		Dump truck	2	108	
		Front end loader	2	114	
		Aggregate spreader	2	95	
		Bitumen sprayer	2	106	

5.1.3 Results

Construction noise levels have been predicted at the identified receivers within the study area. The predicted $L_{Aeq(15min)}$ noise levels at the most-affected sensitive receivers are presented in Table 5.4 and Table 5.5. The noise modelling assumes that all pieces of equipment in the scenario are operating at maximum capacity simultaneously at the closest distance between the construction works and the receiver. As such, the predicted noise levels are often highly conservative and actual noise levels are likely to be lower than those the levels presented below for most of the time.

Table 5.4 Predicted construction noise levels (Project site)

Receiver ID	Criteria	S1	Compliant?	S2	Compliant?	S3	Compliant?	S4	Compliant?
R01	50	32	Y	18	Y	24	Y	20	Y
R02	50	36	Y	24	Y	30	Y	24	Y
R03	50	40	Y	27	Y	33	Y	27	Y
R04	50	20	Y	<10	Y	12	Y	<10	Y

Receiver ID	Criteria	S1	Compliant?	S2	Compliant?	S3	Compliant?	S4	Compliant?
R05	N/A	21	Y	<10	Y	13	Y	<10	Y
R06a	N/A	27	Y	14	Y	20	Y	17	Y
R06b	50	25	Y	12	Y	18	Y	14	Y
R07	N/A	28	Y	14	Y	20	Y	17	Y
R08	N/A	35	Y	22	Y	28	Y	24	Y
R09	N/A	30	Y	17	Y	22	Y	19	Y
R10	N/A	44	Y	32	Y	37	Y	32	Y

Table 5.5 Predicted construction noise levels (Mitchell Road)

Receiver ID	Criteria	S5	Compliant?	S6	Compliant?
R01	50	36	Y	35	Y
R02	50	34	Y	34	Y
R03	50	37	Y	36	Y
R04	50	19	Y	20	Y
R05	N/A	22	Y	23	Y
R06a	N/A	27	Y	27	Y
R06b	50	25	Y	25	Y
R07	N/A	28	Y	28	Y
R08	N/A	50	Y	50	Y
R09	N/A	35	Y	34	Y
R10	N/A	53	Y	53	Y

The noise modelling indicates that:

- Noise levels during the construction phase of the Project complies with the established noise criteria at all identified receivers.
- Noise levels during the construction of Mitchell Road complies with the established noise criteria at all identified.

Although the construction works are expected to comply at all identified receivers, the application of reasonable and feasible mitigation measures at the source is considered best practice and will be implemented.

5.1.4 Construction road traffic noise

The site will generate additional traffic into the road network, which may cause noise impacts on sensitive receivers along the road network near the site.

It is anticipated that the site will generate the following daily construction road traffic:

- Day period (6am to 10pm) – 12 light vehicle and 2 heavy vehicle movements

Beaudesert Boonah Road

Beaudesert Boonah Road is an arterial road which will have a high traffic volume compared to that generated from the construction of the Project. As such, the additional volume generated by the construction of the Project is not anticipated to increase the existing road traffic noise generated by Beaudesert Boonah Road.

Mitchell Road

The construction of Mitchell Road forms a part of the overall Project construction. As such, no road traffic is expected on Mitchell Road during the construction phase.

5.2 Operation

5.2.1 Noise modelling methodology

Acoustic modelling was undertaken using CadnaA 2023 MR2 and was conducted with the same methodology as that detailed for construction noise (refer to Section 5.1.1). Operational noise modelling is based on the layout shown in Figure 2.1.

5.2.2 Noise sources

The noise model includes noise sources that are modelled moving point sources around the site.

The A-weighted sound power levels for the major noise sources associated with the site and a description of their location on the site in each scenario are presented in Table 5.6 below.

Sound power levels are based on information provided by SOILCO. Where additional information was required, information was sourced from GHD's database and manufacturer's technical datasheets.

Table 5.6 Operational noise sources

Source	Sound power level (dBA)	Qty	Relative noise height above ground (m)	Location
Volvo L90	105	2	2	All over site
Volvo L150	108	2	2	All over site
Cat 323 excavator	101	2	2	Manufacturing, Maturation and Storage
Dump truck 25T capacity	109	1	2	All over site
Eggersmann A75 Windrow turner	108	1	2	Manufacturing, Maturation and Storage Open Windrow
Komptech Multistar XXL2	97	1	1.5	Manufacturing, Maturation and Storage
Komptech Nemus 2700 Trommel screen	98	1	1.5	Manufacturing, Maturation and Storage
Conveyors	93	9	1.5	FOGO Receival and Sort
Trommel screen	93	1	1.5	FOGO Receival and Sort
Overbelt magnet	93	1	1.5	FOGO Receival and Sort
Lights recovery separator	79	1	1.5	FOGO Receival and Sort
Shredder (E50 or similar)	115	1	2	FOGO Receival and Sort
ASP fans	97	2	0.5	ASP Pad
Fresh water pump	73	2	0.5	Bore and freshwater dam
Leachate pump	88	2	0.5	Leachate ponds

5.2.3 Modelling scenarios

Noise levels on the site will be dynamic and varies based on the activities being undertaken. To understand the operational noise impacts of the site on the surrounding area, two scenarios were modelled to predict the potential noise impacts.

- Worst case business hours operations with the time outlined in Table 5.7:
 - All equipment listed above operating simultaneously
- 24/7 plant operations:
 - 2 x ASP fans only

5.2.4 Results

Operational noise levels have been predicted at the sensitive receivers within the study area, with consideration to the project specific noise criteria. The predicted $L_{Aeq(15min)}$ noise levels at the identified receivers are presented in Table 5.7.

Table 5.7 Predicted operational noise levels

Receiver ID	Worst-case business hours operations (Day period – 7am to 6pm)			Worst-case business hours operations (Morning shoulder period – 6am to 7am)			24/7 plant operations		
	Criteria	Predicted noise level ($L_{Aeq, 15min}$)	Compliant?	Criteria	Predicted noise level ($L_{Aeq, 15min}$)	Compliant?	Criteria	Predicted noise level ($L_{Aeq, 15min}$)	Compliant?
R01	40	27	Y	41	27	Y	28	<10	Y
R02	42	30	Y	44	30	Y	28	10	Y
R03	42	32	Y	44	32	Y	28	13	Y
R04	40	19	Y	41	19	Y	28	<10	Y
R05	40	18	Y	41	18	Y	28	<10	Y
R06a	N/A	26	Y	N/A	26	Y	N/A	<10	Y
R06b	40	22	Y	41	22	Y	28	<10	Y
R07	N/A	26	Y	N/A	26	Y	N/A	<10	Y
R08	N/A	31	Y	N/A	31	Y	N/A	11	Y
R09	N/A	26	Y	N/A	26	Y	N/A	<10	Y
R10	N/A	35	Y	N/A	35	Y	N/A	15	Y

The noise modelling indicates that:

- Noise levels during the worst case business hours operations are expected to comply with the established Project noise criteria at all receivers during the day.
- Noise levels during the worst case business hours operations are expected to comply with the established Project noise criteria at all receivers during the morning shoulder period (6am to 7am).
- Noise levels of the 24/7 plant operations are expected to comply with the established Project noise criteria at all receivers during the evening and night.

5.2.5 Operational road traffic noise

The site will generate additional traffic into the road network, which may cause noise impacts on sensitive receivers along the road network near the site.

It is anticipated that the site will generate the following daily operational road traffic:

- Day period (6am to 10pm) – 15 light vehicles and 81 heavy vehicles

Beaudesert Boonah Road

Since Beaudesert Boonah Road is an arterial road which will have a high traffic volume compared to that generated from the Project. As such the additional volume generated by the Project is not anticipated to increase the existing road traffic noise generated by Beaudesert Boonah Road.

Mitchell Road

Based on the fact that the road is not yet built and will be primarily servicing the Project, the assessment has been conducted based on the traffic at the site for the purposes of the Project only.

The road traffic noise has been predicted using US Federal Highway Administration's Traffic Noise Model (v3.2). The nearest sensitive receiver is approximately 1 km away from Mitchell Road. The predicted noise level for receiver is shown in Table 5.8. The Project is predicted to comply with the established road noise criteria for all receivers.

Table 5.8 Predicted operational road traffic noise levels at receiver closest to the road

Scenario	Criteria ($L_{A10,18hr}$)	Predicted noise level (dBA) ¹ (L_{A10})	Compliant?
Day period	60	20	Yes

¹ Predicted noise level includes a +2.5 façade correction.

6. Discussion and recommendations

The results from the construction noise assessment conducted (refer to Section 5.1) indicate that construction works are expected to comply with the established noise criteria. Although the construction activities are predicted to comply, a number of mitigation measures will be implemented as part of the Project (refer to Section 7.2).

The results from the operational noise assessment conducted (refer to Section 5.2) indicates that the site 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 will be the dump trucks, loaders and shredder.

Section 7.3 provides operational noise mitigation and management measures that should be implemented, where reasonable and feasible. It also provides examples of best practice environmental management measures to be implemented to minimize noise impacts.

A Noise Management Plan (NMP) for the site will be prepared prior to the site being operational. Section 7.3 contains details of information that is to be captured in the site's NMP.

7. Mitigation and management measures

7.1 In-principle noise control methods

The measures provided below are considered best practice, and will be implemented to minimise potential noise and vibration impacts, where reasonable and feasible.

In-principle, there are three approaches to controlling noise and vibration:

- Control at the source
- Control on the source-to-receiver pathway
- Control at the receiver

7.1.1 Control at the source

Control at the source is considered to be the most cost-effective in the reduction of noise and vibration levels and as such should be given highest priority when considering mitigation options. The solutions available include:

- Substitution of equipment:
 - Substitution involves where reasonably practicable the use of less noisy or vibration intensive. Equipment should be selected to meet the needs of the project or process it is required for, and not be excessive.
- Modification of existing equipment:
 - Modification of equipment involves the addition of acoustic treatments to parts of the machinery. These include but are not limited to improved mufflers, stiffening of panels and surface coating of resonance dampening material. These options would often require discussion with the supplier and manufacturer of the equipment.
- Use and siting of equipment:
 - Plant should always be used in accordance with the manufacturer's instructions. Where possible, the location of equipment should be away from noise and vibration sensitive areas. This includes taking into consideration the emission direction of equipment and directing this away from sensitive receivers. Plant used intermittently should be shut down during the intervening periods or throttled down to a minimum.
- Regular and effective maintenance:
 - Maintenance should be carried out regularly to ensure equipment is running at optimal conditions.

7.1.2 Control along the path

There are two ways of mitigating noise along the transmission path:

- Increasing the distance between the source and receiver.
- Where distance is limited, screening of noise may be considered. In some circumstances it may also be possible to enclose the equipment during the operation.

Table 7.1 provides typical noise attenuation provided by noise control methods.

Table 7.1 Typical attenuations for source to receiver noise control methods

Control method	Nominal noise reduction possible (dB) (total A-weighted sound pressure level (LpA))
Distance	Approximately 6 for each doubling of distance
Screening	Normally 5 to 10, maximum of 15
Enclosure	Normally 15 to 25, maximum of 50

7.1.3 Control of noise at the receiver

Reasonable and feasible mitigation measures at the receivers for this Project are limited to effective community consultation at this stage of the design. It is envisioned that design focused mitigation measures (i.e. control at the source) will help the Project achieve compliance at all receivers during all time periods.

In the event that there are exceedances at sensitive receivers after all reasonable and feasible mitigation measures are implemented at the site, noise treatments at the receiver property may need to be considered.

7.2 Construction noise mitigation and management measures

The noise mitigation measures detailed in Table 7.2 are recommended where reasonable and feasible to reduce the impact on the surrounding receivers and sensitive land uses during the construction phase.

Table 7.2 Mitigation measures for construction noise and vibration

Action required	Details
General controls	
Site inductions	All employees, contractors and subcontractors are to receive an environmental induction. The induction should include: – All relevant project-specific and standard noise and vibration mitigation measures – Relevant licence and approval conditions – Permissible hours of work – Location of nearest sensitive receivers – Construction employee parking areas – Designated loading / unloading areas and procedures – Site opening / closing times (including deliveries) – Environmental incident procedures
Behavioural practices	– No swearing or unnecessary shouting or loud stereos / radios on-site – No dropping of materials from height, throwing of metal items and slamming of doors
Implement community consultation measures	Contact will be established with the local residents, as deemed necessary, and the construction program and progress communicated on a regular basis, particularly when noisy or vibration generating activities are planned. This may include local community update letters for specific construction activities and a Project information line.
Implement complaints management measures	Complaints will be managed in accordance with the procedure outlined below. Signage on-site will visibly provide a contact number and name to receive complaints / enquiries about construction. Potential complaints specific to these works could include: – A cluster of noise complaints In this instance, the response would be to: – Verbally respond to the complainant; or provide a written response within seven (7) calendar days, if the complaint cannot be resolved verbally – Log the complaint, and any actions taken with regards to the complaint within a complaints register – Undertake monitoring at the complainant's residence(s), where appropriate – Investigate the nature and causes of the impact – Investigate and implement further mitigation measures to minimise the impact

Action required	Details
Source controls	
Construction hours and scheduling	– Comply with the recommended standard construction hours outlined in Section 4.1.1, unless out of hours work has been approved. – No truck movements before 7.00 am or after 6.00 pm. – For any work that would take place outside of normal construction hours: – Undertake an assessment of the potential noise and vibration impacts associated with the proposed activities and outline specific mitigation measures. – Minimise consecutive night activities in the same locality and provide periods of quiet if activities occur for extended periods during the night. – Conduct activities in a manner that eliminates or minimises the need for audible warning alarms.
Equipment selection	Use quieter and less vibration emitting construction methods where reasonable and feasible.
Use and siting of plant	– Simultaneous operation of noisy plant within discernible range of a sensitive receiver is to be avoided. – The offset distance between noisy plant and adjacent sensitive receivers is to be in accordance with this report. – Plant used intermittently to be throttled down or shut down. Noise-emitting plant to be directed away from sensitive receivers, where possible.
Plan worksites and activities to minimise noise and vibration	Plan traffic flow, parking and loading unloading areas to minimise reversing movements within the site.
Minimise disturbance arising from delivery of goods to construction sites	– Loading and unloading of materials/deliveries is to occur during standard construction hours. – Contractors are to avoid dropping materials from height where practicable, during loading and unloading. – Delivery vehicles to be fitted with straps rather than chains for unloading, wherever possible.

7.3 Operational noise mitigation and management measures

7.3.1 Site specific mitigation and management measures

The following noise mitigation and management measures are recommended where reasonable and feasible to reduce the impact on the surrounding receivers and sensitive land uses during operations.

- A Noise Management Plan (NMP) is to be prepared for the Project. It should contain (but not be limited to):
 - A noise complaints management system is to be implemented whilst the completed facility is in operation. The following process should be established to ensure all complaints are dealt with in an appropriate manner:
 - A staff member will be nominated to deal with complaints from the community. Contact details of nominated staff member will be displayed at entry point of the site.
 - All complaints will be logged within a complaint register. An archive of complaints will be maintained, documenting the nature of the complaint and the actions implemented for resolving the complaint.
 - SOILCO will endeavour to attend to these complaints within 48 hours of receipt.
 - The complaint log should be reviewed at regular intervals to identify common complaints and recurring issues. The review can be used to adjust operations to reduce the number of complaints moving forward.
 - The complaints log will be made available to relevant regulatory authorities on request.
 - Details of the noise mitigation measures implemented by the site.
- Clear signage should be erected at site entrances advising people that they must not generate excessive noise and leave the site in a quiet and sensible manor to minimise any potential impacts of the surrounding amenity.

7.3.2 Best practice environmental management practices

Best practice environmental management practices are measures implemented to mitigate the impact of activities associated with high noise levels, as outlined below:

- All works to be within nominated hours of operation.
- Switch off equipment when not in use.
- Select the quietest machinery and equipment available and find quieter processes or ways of performing tasks (e.g. investigate whether there are suitable alternatives to reversing alarms on vehicles and select vehicles with low noise emissions), where possible.
- Ensure that roads have a suitable and well-maintained surface and limit the amount, type, times and speed of vehicle movements.
- Start plant and vehicles sequentially rather than all at the same time.
- Use existing screens or site features to their advantage to reduce noise.
- If the noise is directional, point the source away from noise-sensitive locations, where possible.
- Ensure that equipment, vehicles and acoustic screens or other noise mitigation devices are properly maintained.
- Ensure that each staff member is aware of their responsibilities to reduce noise emissions, and how this can be achieved.

Noise at the sensitive and commercial places should be periodically monitored to ensure that noise mitigation strategies are effective. Monitoring is to be undertaken at a sufficient frequency (e.g. after 12 months of operating) to demonstrate that the activity is not causing or likely to cause environmental harm. This may include background monitoring of a sufficient period to demonstrate a background level, taking into consideration natural and seasonal variations.

Best practice environmental management practices include the implementation of an environmental management system as per *AS/NZS ISO 14001:2016 Environmental management systems – Requirements with guidance for use*.

8. Conclusion

GHD has been engaged by SOILCO to prepare an acoustic assessment of the construction and operational phases of the Project to support the SDA development application and the environmental authority application for environmentally relevant activities. This acoustic assessment has determined potential impacts on the nearby sensitive receivers, and has discussed specific mitigation measures to be implemented by the Project.

The applicable noise criteria for the different noise generating aspects of the Project were established with respect to:

- *Environmental Protection Act 1994*
- *Environmental Protection (Noise) Policy 2019*
- TMR Code of Practice – Volume 1 and 2

The results of the acoustic assessment indicate that the following noise generating aspects of the Project will comply with the established noise criteria at all identified receivers:

- Construction noise
- Construction road traffic noise
- Operational noise
- Operational road traffic noise

Although compliance is expected, it is still recommended that noise mitigation and management measures (refer to Section 7) should be considered and implemented where reasonable and feasible as part of best practice to reduce the noise impacts.

9. References

AS/NZS ISO 14001:2016 Environmental management systems – Requirements with guidance for use. Standards Australia, 2016.

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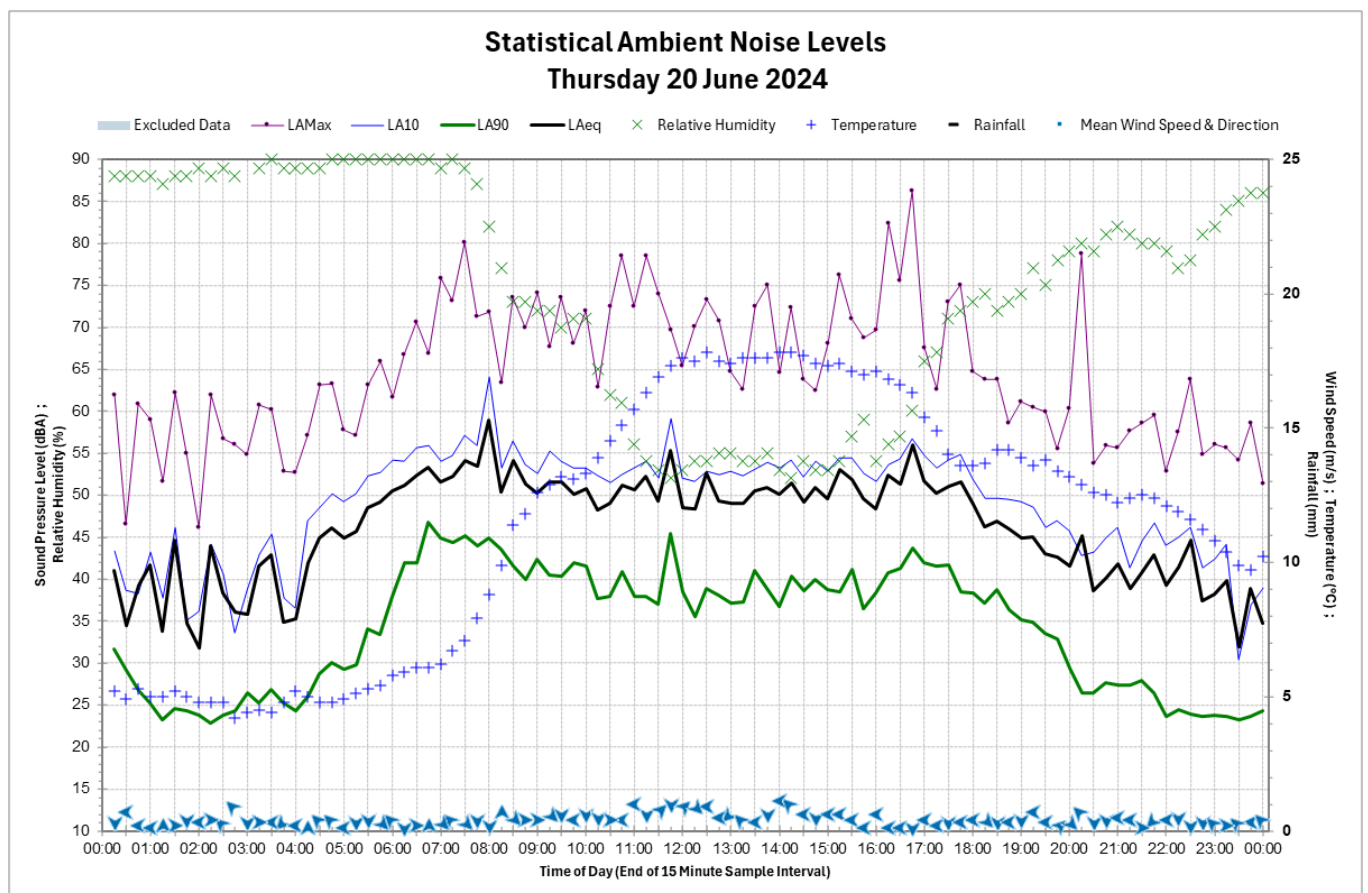
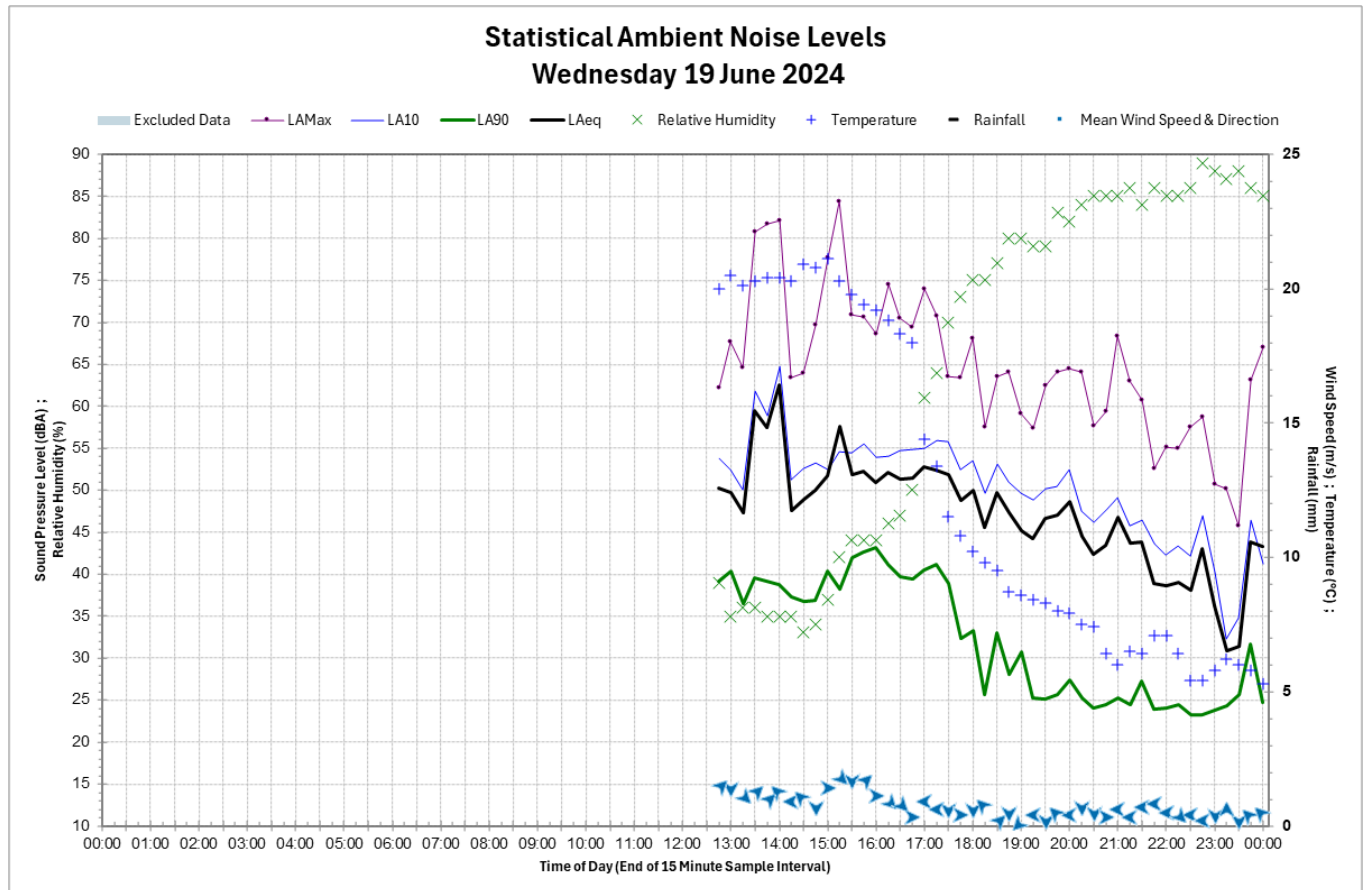
Transport Noise Management Code of Practice Volume 2 – Construction Noise and Vibration (CoP Vol 2). Department of Transport and Main Roads (TMR), 2023.

Appendices

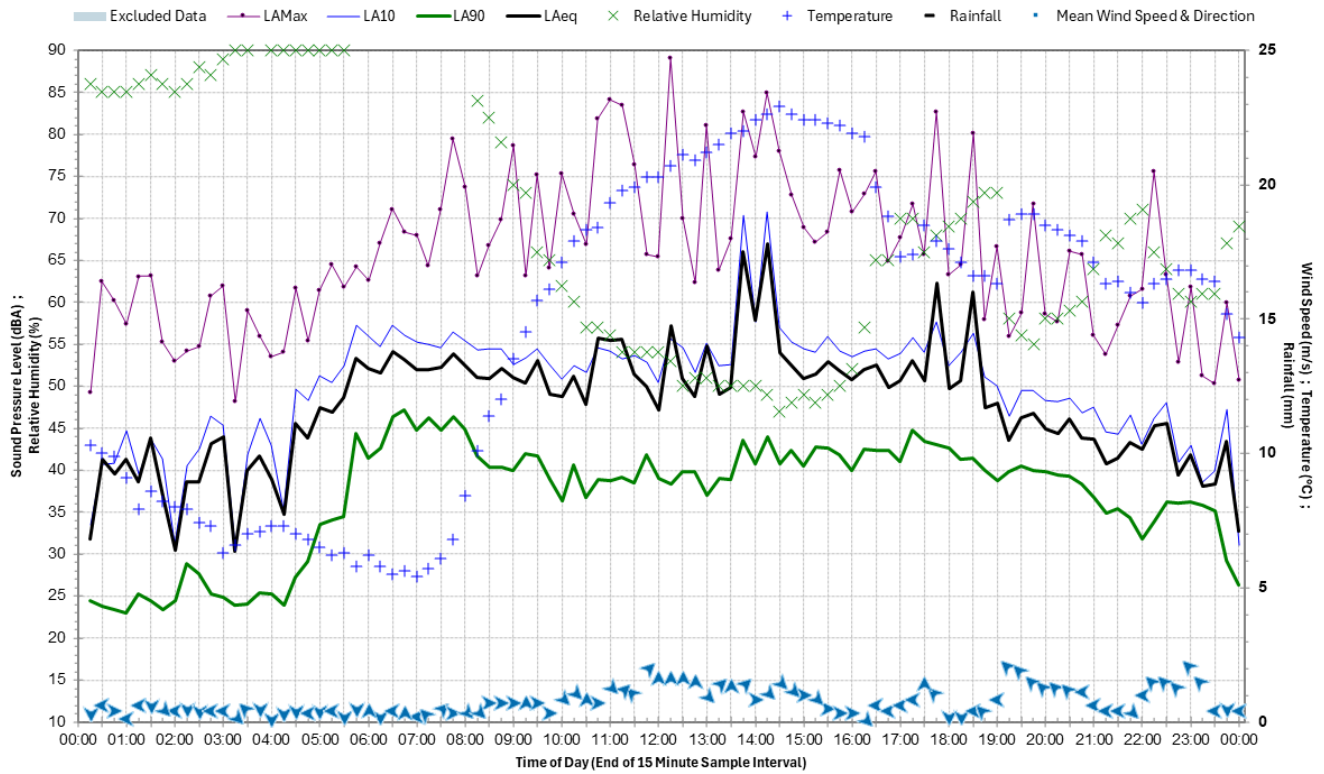
Appendix A

Noise monitoring charts

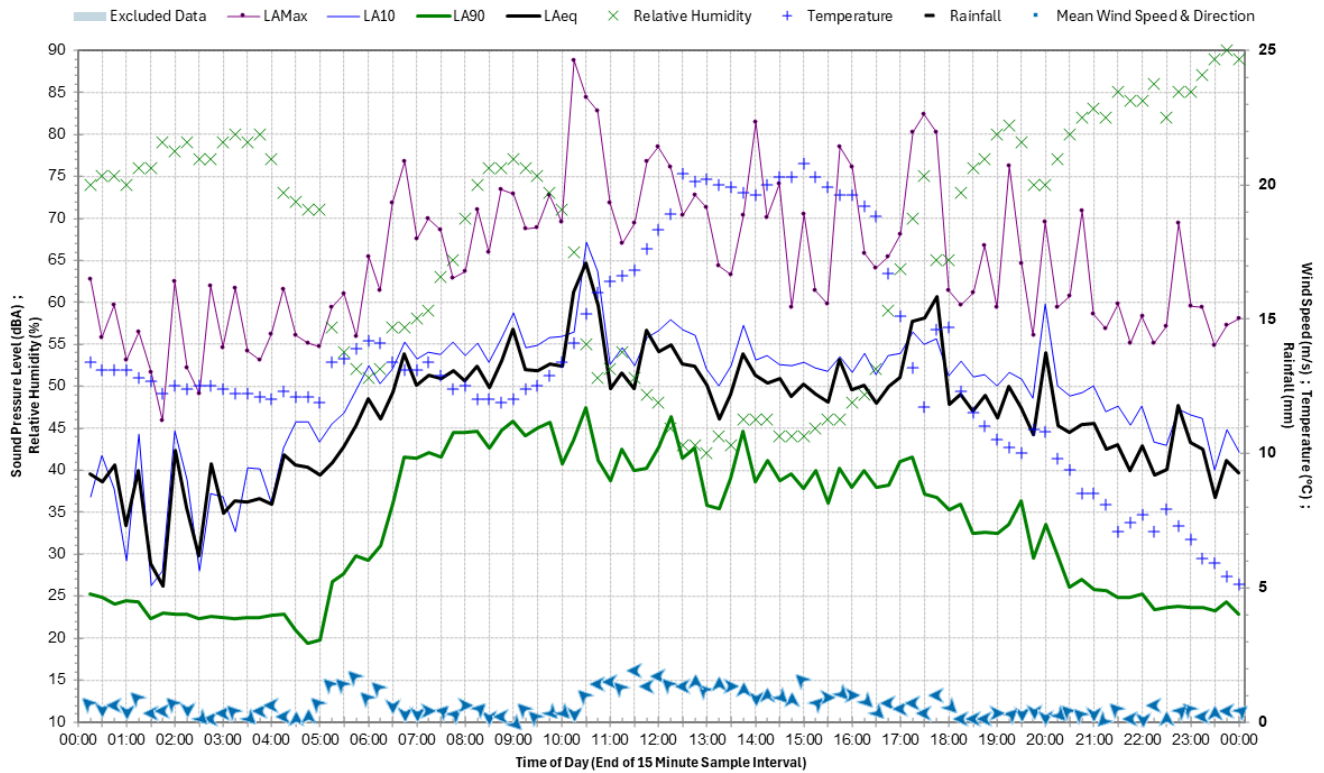
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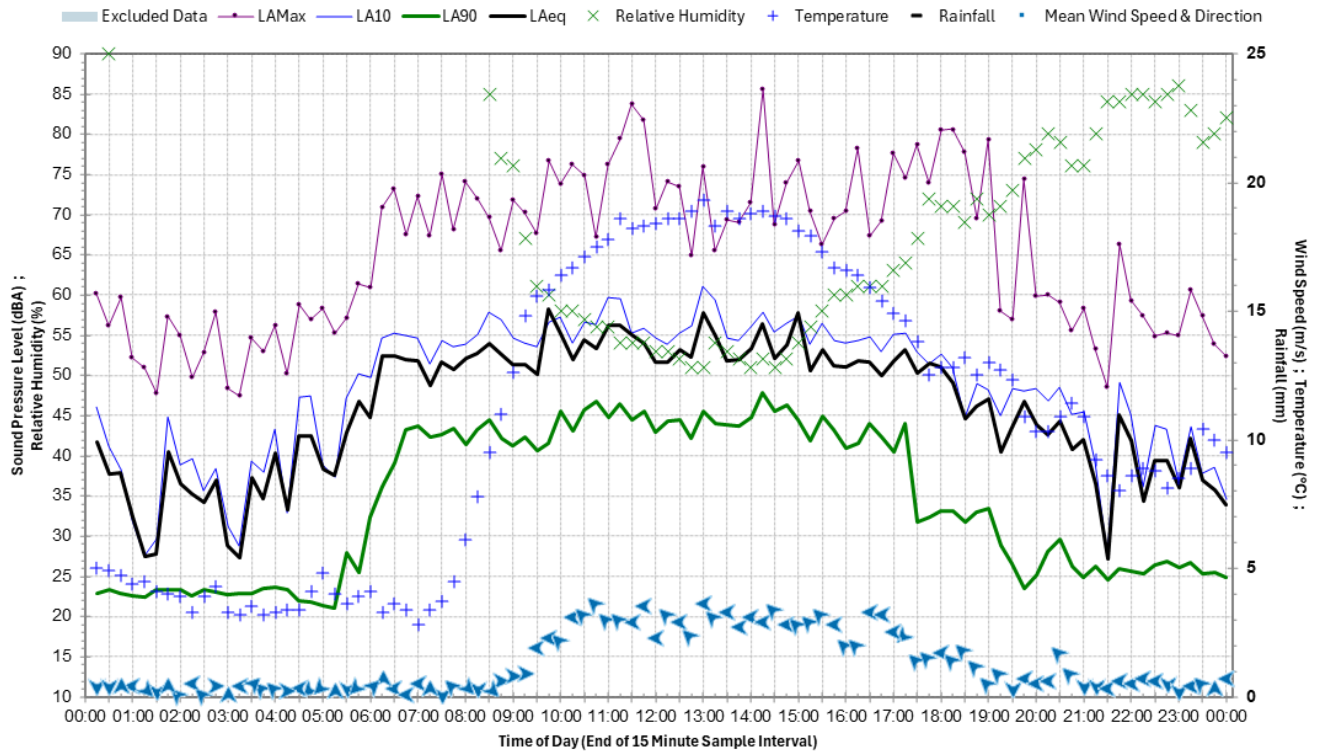
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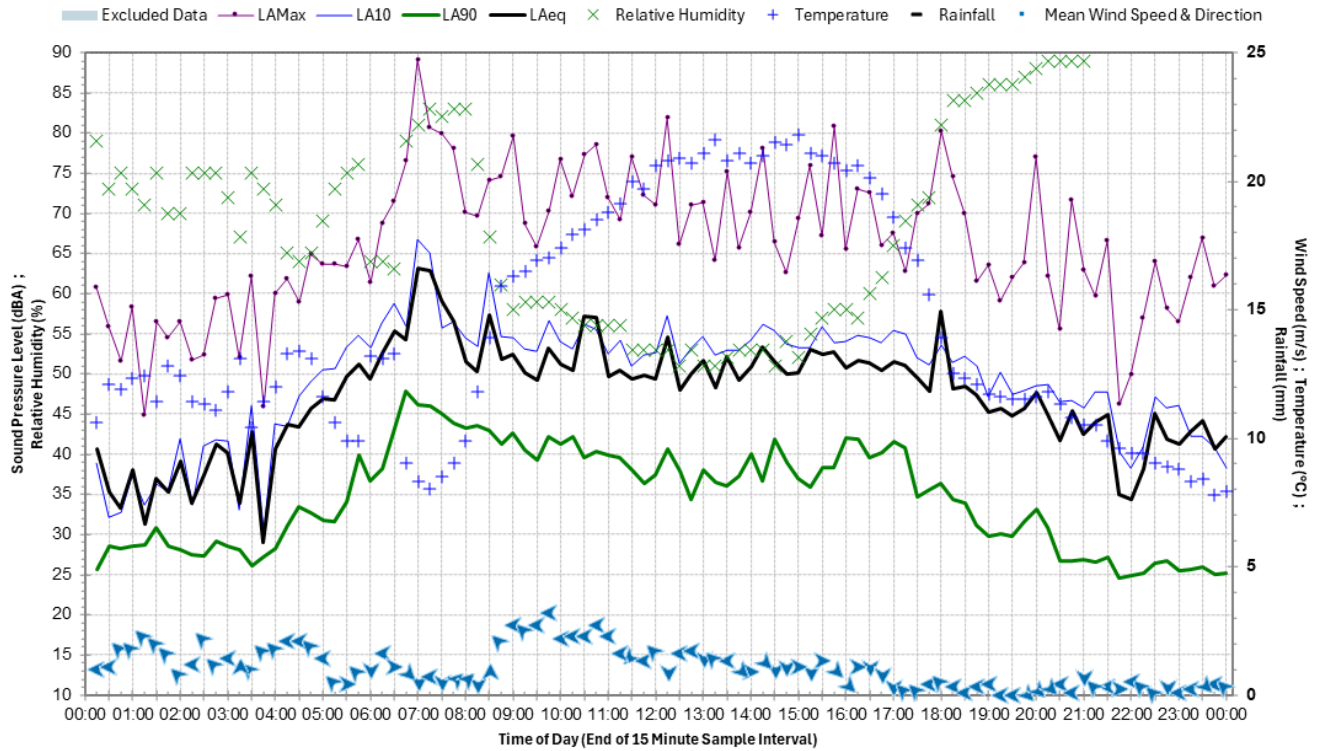
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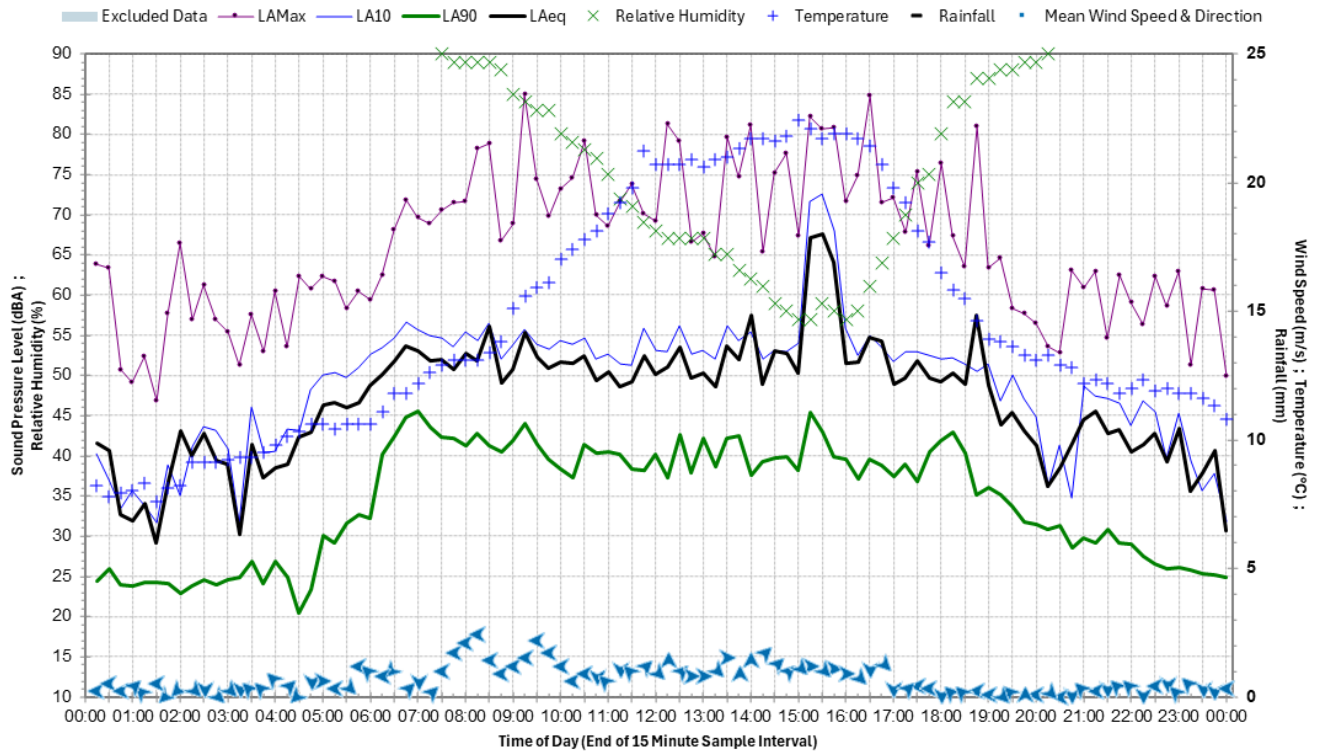
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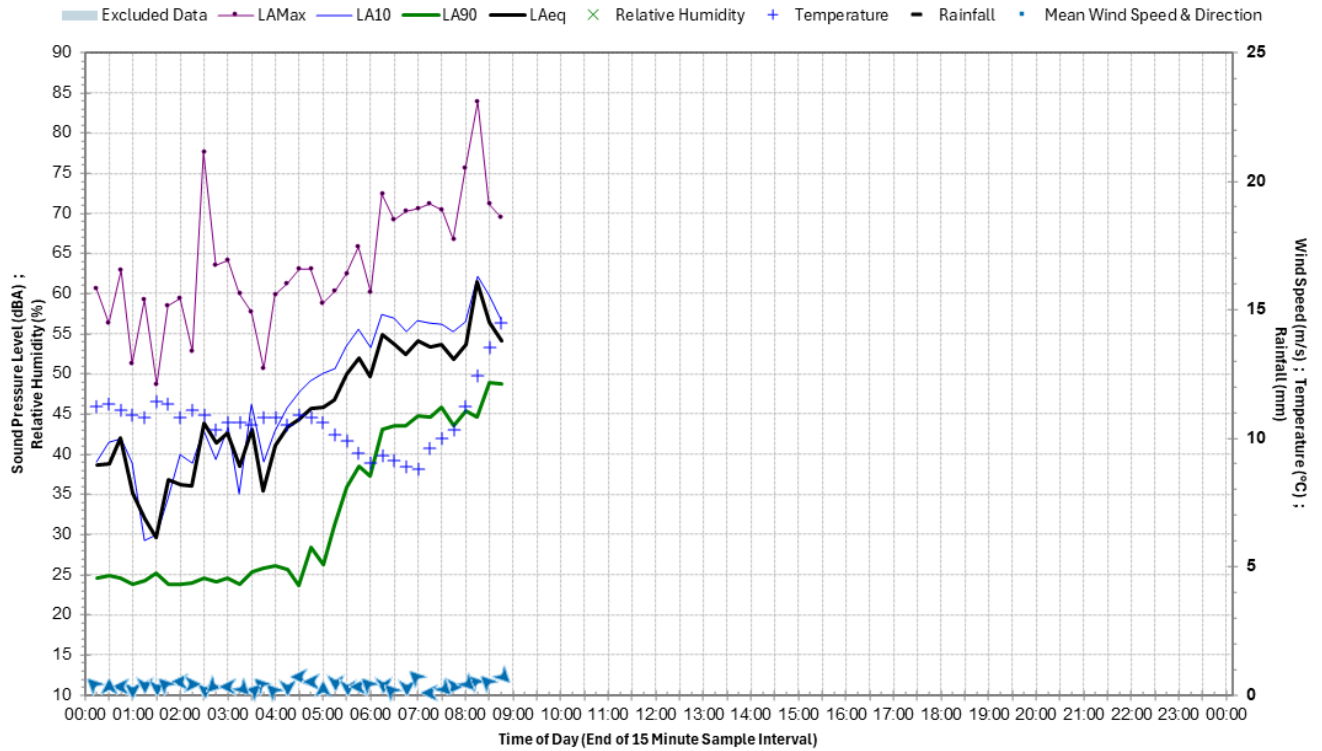
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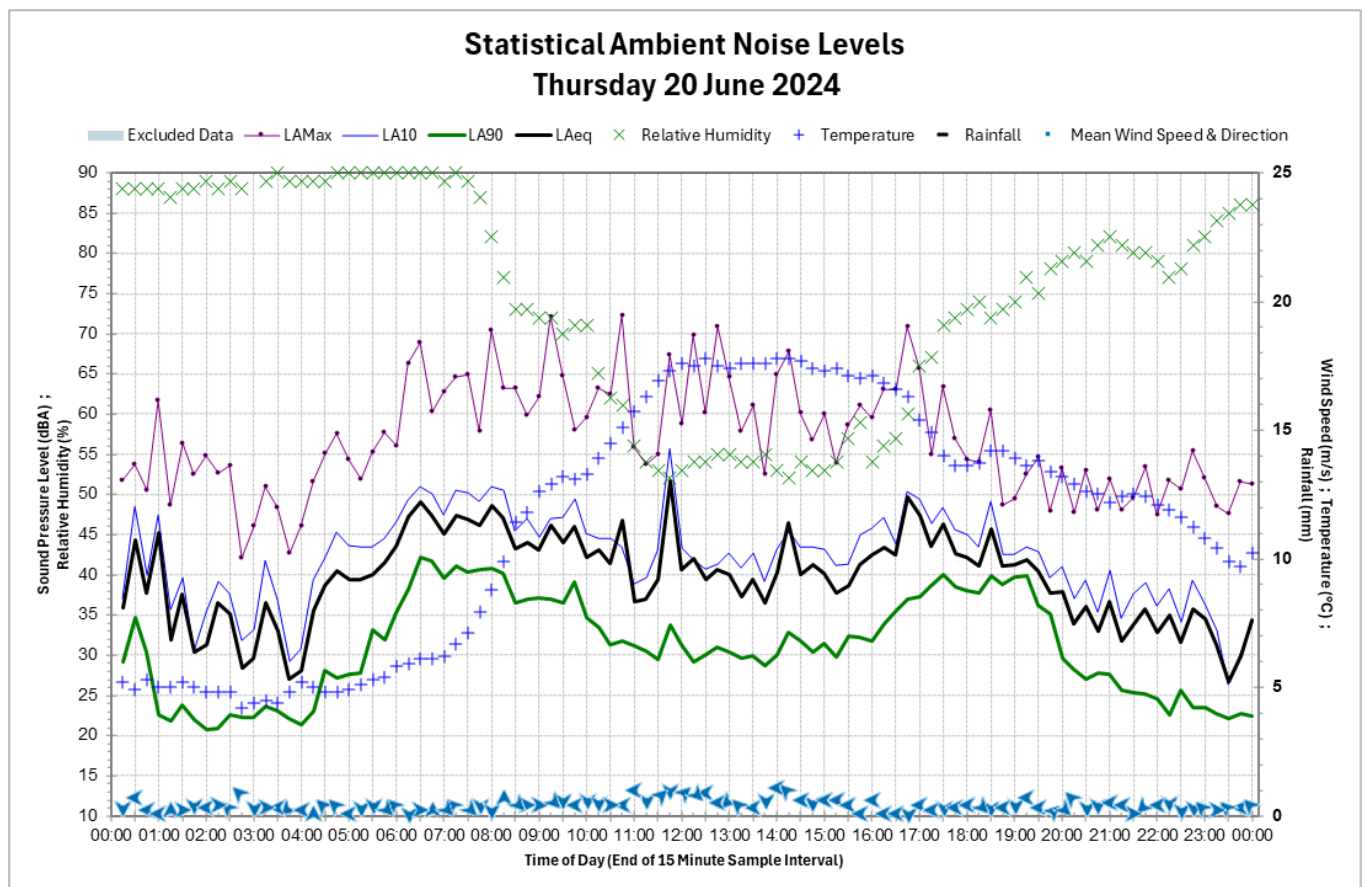
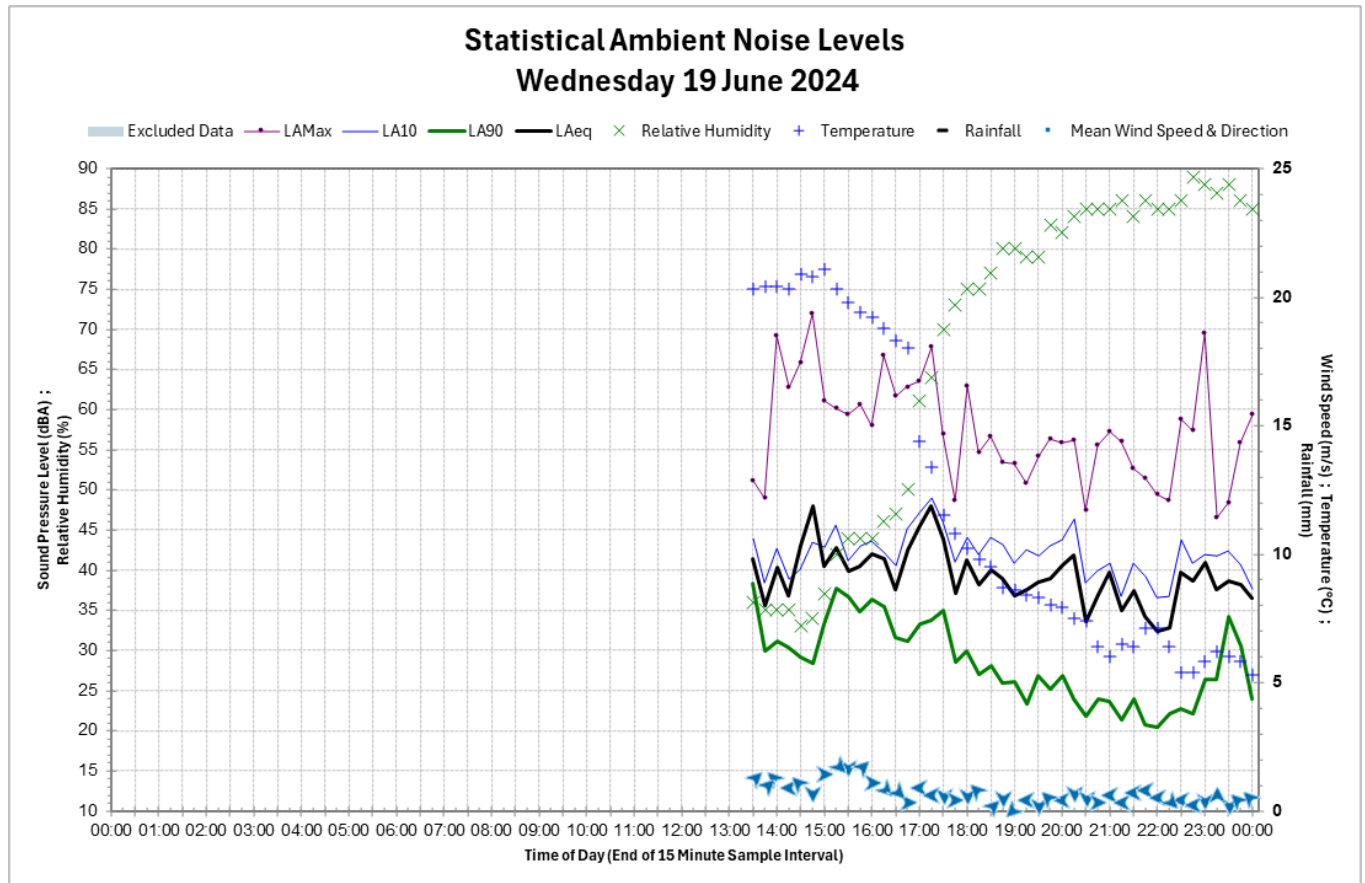
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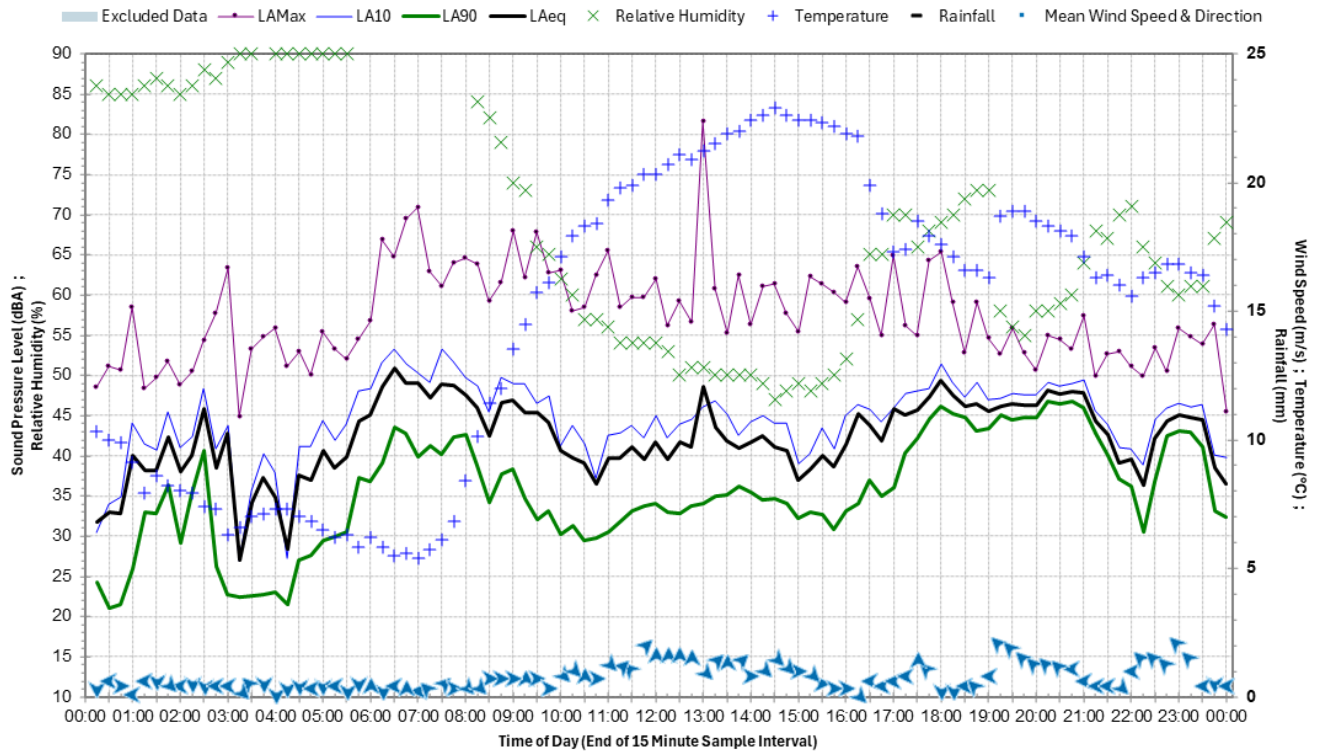
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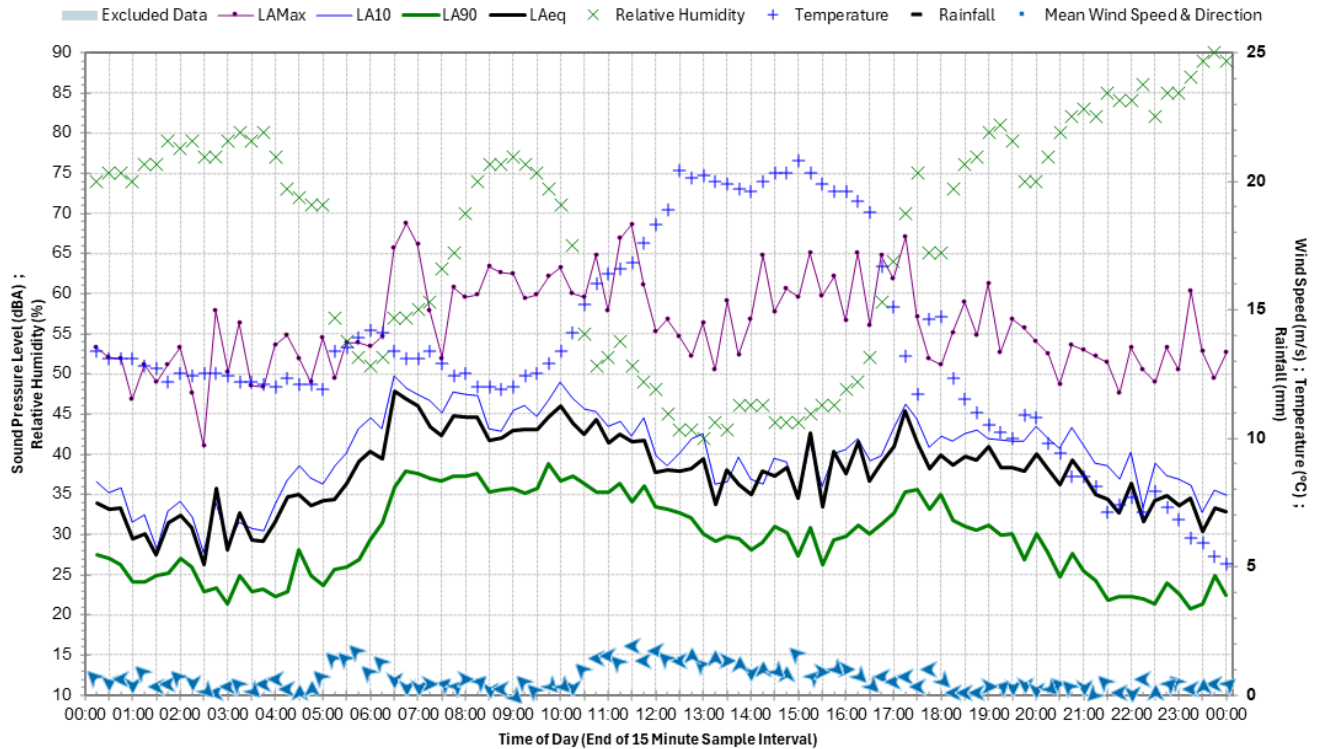
ML2 – Tilley Road



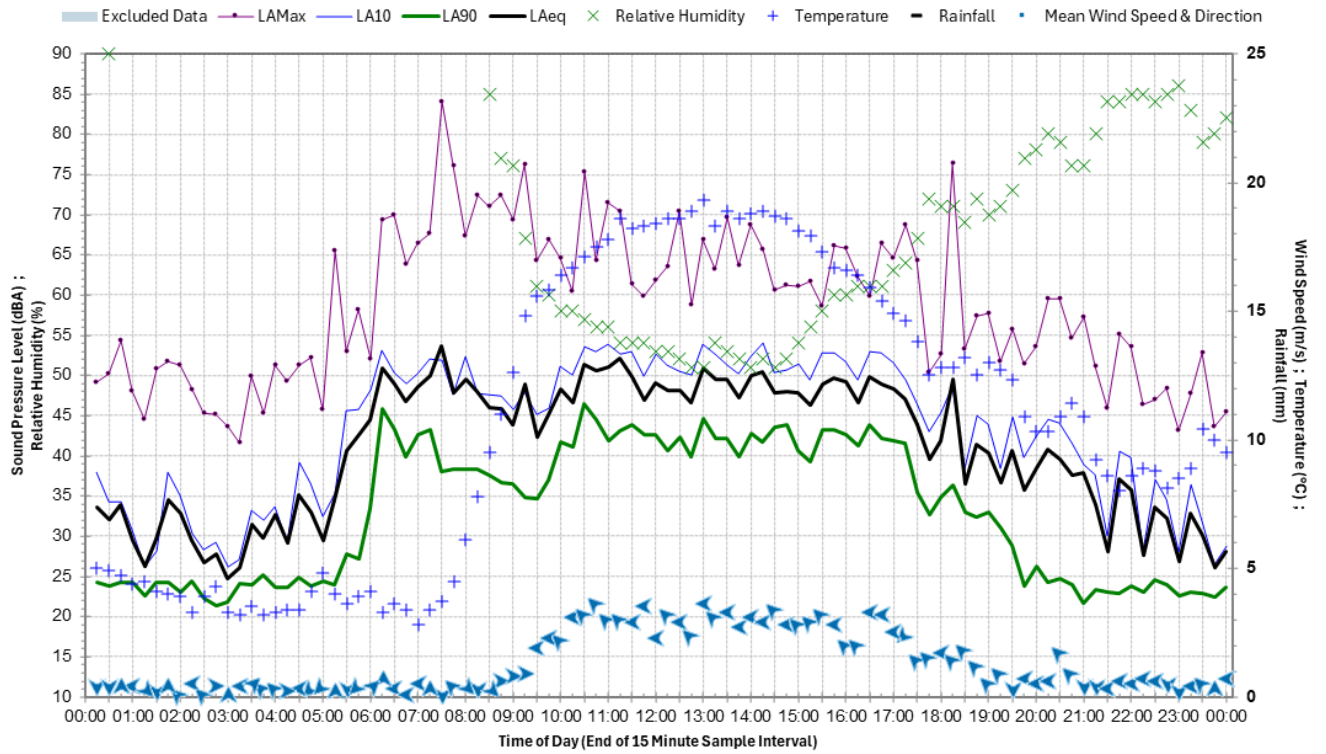
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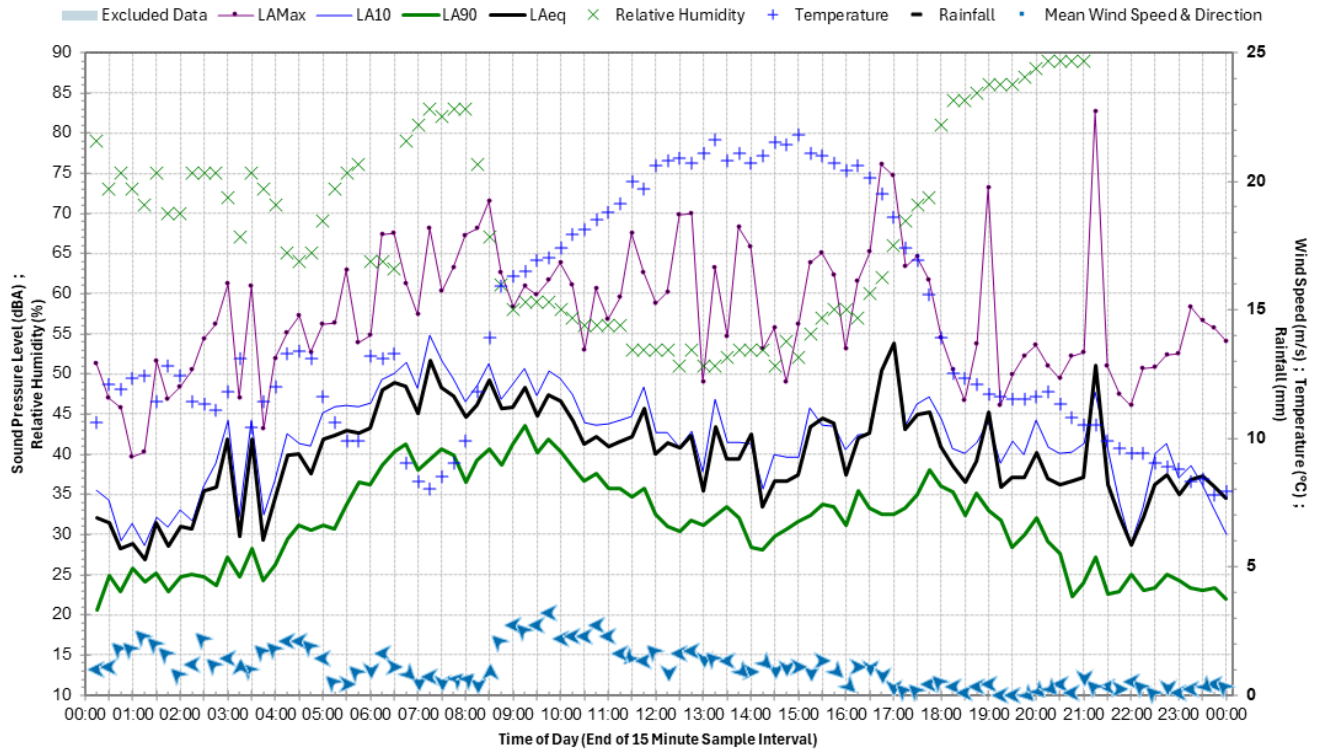
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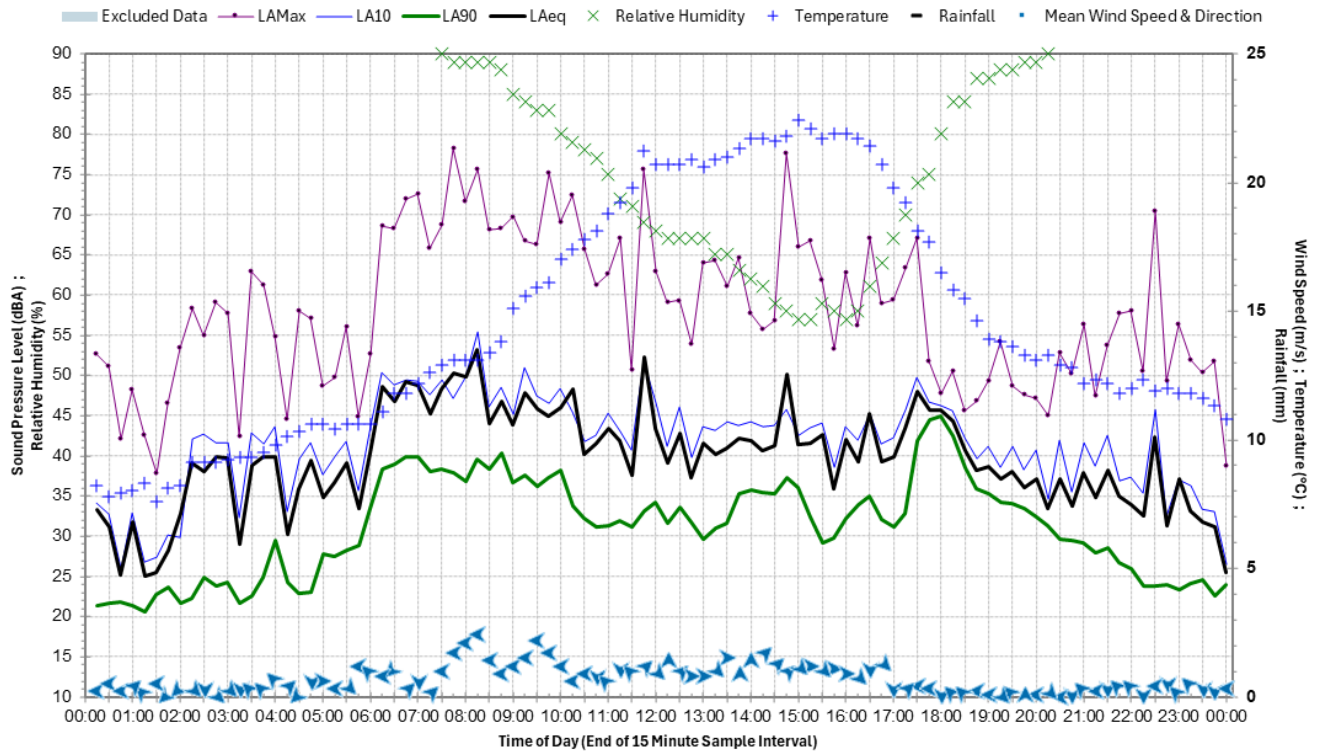
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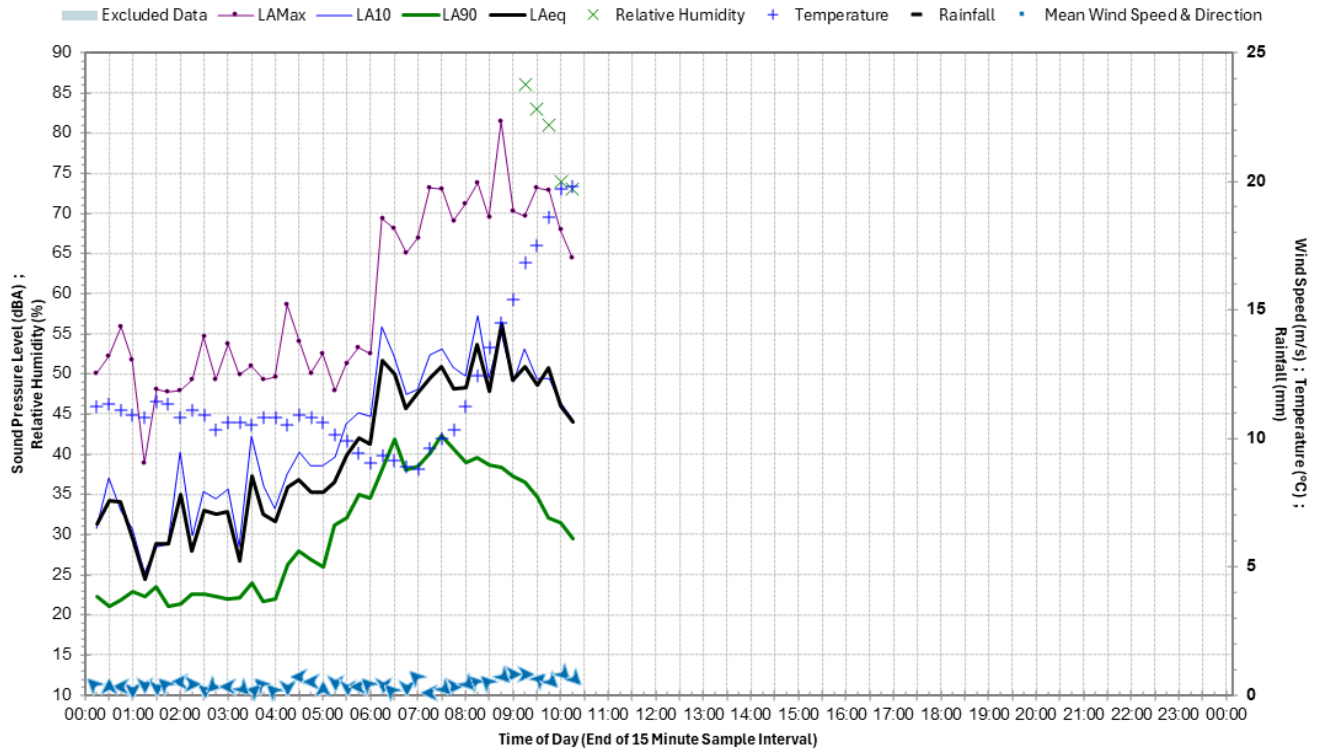
Statistical Ambient Noise Levels Monday 24 June 2024



Statistical Ambient Noise Levels Tuesday 25 June 2024



Statistical Ambient Noise Levels Wednesday 26 June 2024





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Ecological Assessment Report

Mitchell Road, Bromelton, Queensland
December 2021



Citation: Redleaf Environmental (2023) Ecological Assessment Report: Mitchell Road, Bromelton, Queensland.

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Cover Photo: General site photo (Credit: Ryan Fritsch)

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Signature		Signature	
Name	Ryan Fritsch	Name	Sarah Horton
Title	Environmental Scientist	Title	Regional Manager

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1 Introduction

ACS Engineers engaged Redleaf Environmental to conduct an ecological site assessment for the proposed works to be undertaken on Mitchell Road, Bromelton, QLD, 4285. Specifically, the report notes observations in relation to flora, koala habitat and fauna breeding places within the works footprint area.

1.1 Site description and study area

SEGPART – 14488024

SEGPART – 11233086

SEGPART – 11233085

SEGPART – 11233005

SEGPART – 11233072

SEGPART – 11233015

LOTPLAN - 4RP85497 to the south

LOTPLAN - 22SP121037 to the north

LOTPLAN - 100W312081 to the west

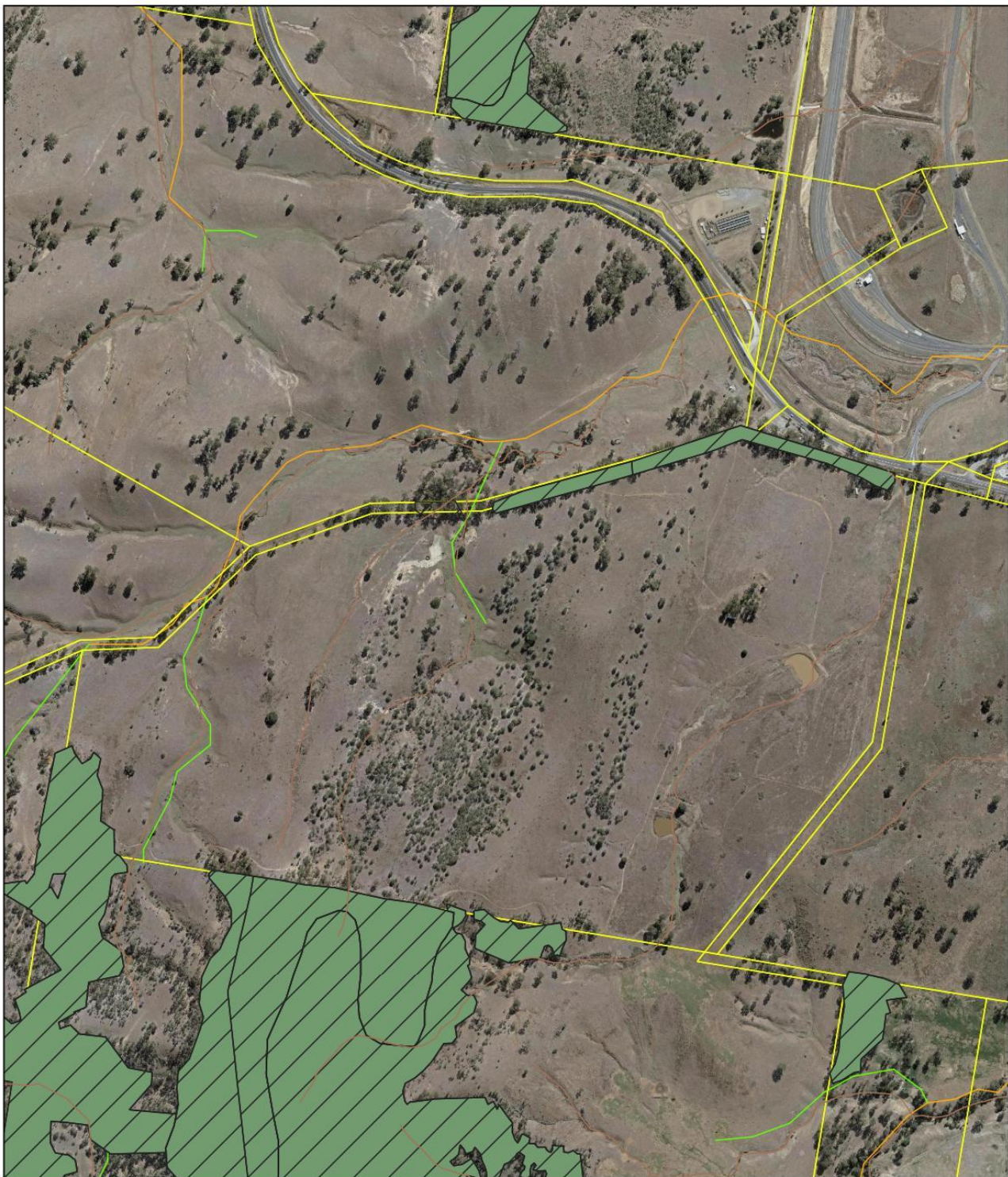
LOTPLAN - 3RP85497

The area surveyed is located across four (4) Lot plans and six (6) Road parcels. Five of the road parcels form part of the widening of Beaudesert – Boonah Road for the installation of a turning lane into Mitchell Road (14488024), Bromelton.

Upon field investigation, the road parcel (14488024) for Mitchell Road was populated with various *Eucalyptus* species, with the majority being large mature trees. There was also a significant stand of mature *Eucalyptus* species along the road verge of Beaudesert – Boonah Road. Ground cover consisted of grasses (predominantly invasive grass species) with some other weeds present. Very limited shrubbery or understory existed within the survey area. The study area is delineated in Figure 1.

1.2 Proposed Activities at the Site

The proponent is proposing to clear *Eucalyptus* trees to construct a new/upgraded road along Mitchell Road as well as widening Beaudesert – Boonah Road to allow for a new turning lane into Mitchell Road.



Legend

- Essential Habitat
- Core Koala Habitat Areas
- Cadastral DCDB Data

Queensland Waterways For Waterway Barrier Works

- 1
- 2
- 3
- 4

CRS: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



Scale (A4)

0 100 200 300 m

Figure 1: Works Area Including Koala Habitat Areas

Ecological Assessment Report: Mitchell Road, Bromelton
ACS Engineers

O	Issued for use	RF	DF	19/09/2023
A	Issued for review	RF	DF	19/09/2023
Rev	Description	Drawn	Approved	Date

Job Number 23463

2 Desktop Methodology

The assessment involved the interrogation of the following data sources and mapping:

- Commonwealth Department of Agriculture, Water and the Environment (DWE) Protected Matters Search Tool;
- Queensland Department of Natural Resources, Mines and Energy (DNRME) Regulated Vegetation Management Maps (Regional Ecosystem (RE) Mapping (version 11.0));
- NRME Property Map of Assessable Vegetation (PMAV);
- NRME Essential Habitat Mapping (version 4.0);
- Queensland Department of Environment and Science (DES) Wildlife Online Search Tool Wildlife Online Database;
- Queensland DES Protected Plants Flora Survey Trigger Map;
- Atlas of Living Australia interactive mapping.
- Scenic Rim Planning Scheme 2023

3 Field methodology

A field survey was undertaken by Redleaf staff on 29th August 2023 to ground truth the desktop data and to note additional features of environmental significance.

3.1 Flora Assessment

Redleaf Environmental conducted a rapid field habitat assessment. Environmental values identified in the field were documented with photographs, GPS coordinates, and note taking. This included capturing data on:

- Floristic values, including the presence of threatened species, and weeds of national significance;
- Habitat values (e.g., habitat trees, burrows, significant threatened species habitat);
- Matters of National Environmental Significance (MNES); and
- Matters of State Environmental Significance (MSES).

Fauna survey and pre-clearance habitat assessment

Survey methodologies involved walking the entire property and identifying key features likely to provide habitat for native wildlife. The GPS location of all trees scheduled for removal was recorded and any habitat features in or around the trees were documented. Habitat features (e.g., hollows) were observed for a minimum of one (1) minute to determine any potential activity. Any incidental fauna recorded on site were noted.

3.2 Koala habitat survey

Koala Spot Assessment Technique (SAT) surveys were undertaken on-site to determine koala and koala habitat presence. The survey was undertaken in accordance with the methodology developed by the Australian Koala Foundation (as per Phillips & Callaghan 2011). The SAT method is an assessment of Koala activity involving a search for any Koalas and signs of Koala usage. The SAT involves identifying a non-juvenile tree of any species within the site that is either observed to have a Koala or scats or is known to be a food tree or otherwise important for Koalas and recording any evidence of Koala usage of that tree including presence, identifiable scratches or scats. The nearest non-juvenile tree is then identified, and the same data recorded. The next closest non-juvenile tree to the first tree is then assessed and so on until 30 trees have been surveyed.

3.3 Incidental sightings

During the field survey, an incidental species list was compiled to record any additional fauna observations outside of the designated survey techniques listed above. A full list of the fauna species observed during these surveys is provided in Appendix C.

3.4 Survey Limitations

Ecological surveys have inherent biases because of the cryptic nature of some species, search effort, time-of-year (seasonal variations in flora and fauna) and the climatic conditions under which the surveys were conducted. Seasonal searches over the course of a year may reveal a range of additional species inhabiting these sites. However, the collection of true presence / absence data is difficult and time-consuming requiring extensive resourcing. The results of these ecological surveys should not be regarded as conclusive evidence that certain protected flora or fauna do not occur within the study sites.

In stating these limitations, the efficacy of the ecological survey carried out at these sites is highly effective. Consequently, the data and recommendations made here provide a reliable and true representation of the values of the site.

3.5 Legislation terminology interpretation

3.5.1 'In the wild'

The Queensland Government's key piece of environmental legislation for the protection of wildlife is the *Nature Conservation Act 1992* (NC Act). The NC Act aims to protect and manage Matters of State Environmental Significance which include state important flora, fauna, ecological communities and protected areas. Under the Act it is an offence to knowingly clear protected plants that are 'in the wild', and clearing activities of protected plants are regulated by the *Nature Conservation (Plants) Regulation 2020*. The NC Act defines "in the wild" as being "in an independent state of natural liberty"; therefore, for the purpose of environmental assessment, Redleaf interprets the legislation such that an EVNT individual will be considered in the wild if it meets the following criteria:

- It is independent – its establishment was unassisted (unless a part of a planting/offset/conservation program) and no exogenous forces are maintaining it (except natural forces e.g., rain).
- It is natural – it is occurring within its natural distribution range and growing in its typical condition(s).
- It is at liberty – it is free to perform all lifetime physiological functions (e.g., reproduction and seeding) as no exogenous forces are preventing the physiological processes.

3.5.2 'Breeding places'

For the purposes of this report, the definition of "breeding places" follows that provided in Schedule 7 of the *Nature Conservation (Animals) Regulation 2020*.

Habitat features that were considered significant for assessing the presence of breeding places and/or breeding habitat value of protected species include but are not limited to:

- Presence of hollow-bearing trees that are being used by birds, reptiles or arboreal mammals for the purposes of incubating or rearing offspring;
- Presence of bowers, nests, dreys or other structures commonly used by birds or mammals to incubate or rear offspring;
- Presence of cracking clay soils or other soil characteristics required for some species, particularly reptiles and amphibians;
- Presence of caves, mounds, ground hollows, coarse woody debris or other structures commonly used by birds, mammals, reptiles or amphibians to incubate or rear offspring; and
- Presence of permanent water, ephemeral ponding, depressions and/or, seasonally inundated areas that may be used for breeding by aquatic species or amphibians, or that may provide intermittent breeding habitat for opportunistic species.

4 Desktop Results

4.1 Local planning framework

The proposed works area falls within the Bromelton State Development Area (SDA). The Bromelton SDA encompasses an area of approximately 15,610 hectares.

State Development Areas (SDA) are defined areas of land established by the Coordinator General under the State Development and Public Works Organisation Act 1971 to promote economic development in Queensland. The Coordinator-General is responsible for the planning, establishment and ongoing management of SDAs including:

- controlling land-use, infrastructure, economic and environmental planning;
- implementing a development scheme for each SDA; and
- assessing and deciding all SDA applications and requirements that can be made under the development scheme.

As environmental impacts are considered for development within an SDA under the State Development and Public Works Organisation Act 1971, development within an SDA is exempted development.

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4.2 Matters of State Environmental Significance (MSES)

Matters of State Environmental Significance (MSES) are an element of the biodiversity state interest defined under the State Planning Policy 2017 (SPP).

The works area and the area within a 2km radius was used to identify any potential MSES. Table 2 lists the potential MSES's identified.

Table 1 MSES

MSES Value	Area	Percentage
Koala habitat area - core (SEQ)	94.64 ha	7.5%
Regulated Vegetation - Endangered/Of concern in Category B (remnant)	26.97 ha	2.1%
Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	60.57 ha	4.8%
Regulated Vegetation - Essential habitat	92.51 ha	7.4%
Regulated Vegetation - intersecting a watercourse	28.5 km	Not applicable

4.2.1 Regulated vegetation

The Queensland Herbarium RE vegetation mapping indicates that the scope of works will impact the following RE's presented in the table below and Figure 1.

Table 2 Mapped REs

Vegetation type	VMA Class	Status	Relative location
12.9-10.3	Of Concern	Category B	Southern verge of Beaudesert Boonah Road. Mitchel Road intersection, continuing east for approximately 300m from intersection.
12.8.24	Endangered	Category B	Joining from the above RE on Mitchell Road and continuing in the same direction for approximately 280m.

4.2.2 Essential habitat

Mapped essential habitat occurs within the works area (approximately 23450m² Essential habitat), along Mitchell Road and will be impacted (Appendix D, MSES report).

4.2.3 Koala habitat (Planning Regulation 2017)

Queensland's Koala regulations involving Koala Priority areas, Koala habitat areas and Rehabilitation areas are present in South-East Queensland, and therefore apply to this works area.

A search by Lot and Plan through DES concluded that the subject site:

- is in Koala district A;
- is in Core Koala Habitat Area (approximately 23450m² of Core Koala habitat);
- is outside Koala Priority Area;
- is outside Identified Koala Broad-Hectare Area; and
- is outside Koala Habitat Restoration Area (KHRA) or Locally Refined Koala Habitat Area (LRKHA) mapping.

However, there are sections within the Planning Regulation 2017 that describe any exempted development in koala habitat areas. Works that are exempted development in koala habitat areas on all land tenures are:

- Exempted development in koala habitat areas - land dedicated as a road under the Land Act 1994.
- State Development Areas (SDA) State Development Areas (SDA) are defined areas of land established by the Coordinator General under the State Development and Public Works Organisation Act 1971 to promote economic development in Queensland. The Coordinator-General is responsible for the planning, establishment and ongoing management of SDAs including:
 - o controlling land-use, infrastructure, economic and environmental planning;
 - o implementing a development scheme for each SDA; and
 - o assessing and deciding all SDA applications and requirements that can be made under the development scheme.

As environmental impacts are considered for development within an SDA under the State Development and Public Works Organisation Act 1971, development within an SDA is exempted development.

The works area falls under the Bromelton State Development Area (SDA). Works within a SDA are exempted development. Therefore, no further actions are required by the State under the Nature Conservation (Koala) Conservation Plan 2017. There may, however, be other requirements under the Federal government legislation.

4.3 Matters of National Environmental Significance

Table 3 lists the MNES under the EPBC Act and comments on their relevance to this study.

Table 3 Matters of National Environmental Significance relevant to the proposed works

MNES	Relevance	Explanation
Listed threatened species and ecological communities	Relevant	The PMST report identifies that the study area potentially contains listed species and/or communities, and/or supporting habitat.
Listed migratory species	Relevant	The PMST report identifies that the study area potentially contains supporting habitat for migratory species.
Wetlands of International Importance	Relevant	The PMST report identified the nearest wetland is Moreton Bay which is 30 – 40 km upstream from RAMSAR site. Given the scope of works, there will be no downstream impacts to this MNES.
The Commonwealth Marine Park	Not applicable	The PMST report did not identify this MNES.
World Heritage properties	Not applicable	The PMST report did not identify this MNES.
National Heritage places	Not applicable	The PMST report did not identify this MNES.
Nuclear Actions	Not applicable	The proposed works are not a nuclear action.
Great Barrier Reef Marine Park	Not applicable	The PMST report did not identify this MNES.

4.3.1 Threatened Ecological Communities

A search of the EPBC Act Protected Matters Search Tool indicates that the seven (7) threatened ecological communities (TEC's) may occur within the area of the works footprint (see search results in Appendix B). Additional desktop analysis indicate that one (1) of these communities are likely to be found on site as presented in Table 2.

Table 4 TEC's likely to occur in works area

TEC	Description	EPBC
Grey box-grey gum wet forest of subtropical eastern Australia	Occurs on inland hills at elevations between 100 and 600 m ASL, typically on escarpment slopes and foothills. It is typically associated with areas where mean annual rainfall is between 1000 and 1260 mm. Occurs on relatively fertile, well-draining soils, derived from fine-grained sedimentary rocks. It does not occur on alluvial landforms. Limited to NSW north coast and southeastern Queensland IBRA Bioregions (DCCEEW 2022).	E

4.3.2 Threatened Flora and Fauna

The EPBC Act PMST report indicated that habitat for 50 threatened species and 16 migratory species may potentially occur within 5 km of the project area. The search results attached in Appendix B.

A likelihood of occurrence assessment was not included in the scope of this assessment.

The DES flora trigger mapping indicates that the project area does not fall within the mapped high-risk areas and as such a protected flora survey is not required (see search results in Appendix D, Flora Survey Trigger Mapping).

4.3.3 Koala habitat

As the proposed development is likely to require the removal of koala habitat trees, a habitat assessment and significant impact assessment have been undertaken to assess whether the clearing works will require referral to the Federal Government under the EPBC Act 1999.

Koalas are listed as Vulnerable in Australia, and therefore koalas and their habitat are protected under the EPBC Act 1999. To determine if a referral is required under the EPBC Act for the vulnerable species, an assessment is required against the Matters of National Environmental Significance significant impact guidelines 1.1 (DEWHA 2013). These guidelines outline a 'self-assessment' process, including detailed criteria, to assist persons in deciding whether referral may be required.

- A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context or intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment, which is impacted, and upon the intensity, duration, magnitude, and geographic extent of the impacts. Consideration is given to whether the potential impacts are serious or irreversible.
- An important population is a population that is necessary for a species' long-term survival and recovery.

5 Field results

5.1 Vegetation

Field assessment confirmed the mapped Regional Ecosystems (RE's) matched the desktop assessment with both Remnant Of Concern and Remnant Endangered stand of Eucalypt along the road reserve. Detailed surveying of the proposed work area with a suitably qualified person (SQP) failed to identify any of the NCA listed species that have the potential to inhabit the regional ecosystems.

5.1.1 Threatened ecological communities

No TECs were identified within the study area.

5.1.2 Threatened flora

No threatened flora was identified within the study area.

5.1.3 Weeds

From the botanical inspections, eight (8) species were identified as a 'Restricted invasive plant' under the *Biosecurity Act 2014* (Table 5). Under the Act, corporations, like persons, are obliged to take all reasonable and practical steps to minimise biosecurity risks posed by their activities. This is known as a general biosecurity obligation (GBO). Restricted invasive plants (*Biosecurity Act 2014*) require weed control practices to avoid spreading them off-site during construction activities.

Table 5 Restricted Invasive Plants within the Works Area

Family	Scientific Name	Common Name
Asparagaceae	Asparagus africanus*	climbing asparagus fern
Cannabaceae	Celtis sinensis	Chinese celtis
Onagraceae	Chamaenerion angustifolium*	Fireweed*
Verbenaceae	Lantana camara	lantana
Oleaceae	Ligustrum lucidum	broad leaf privet
Cactaceae	Opuntia stricta*	Common pear*
Cactaceae	Opuntia tomentosa*	Velvety tree pear*
Poaceae	Sporobolus jacquemontii	American Rats Tail Grass

5.2 Fauna

5.2.1 Fauna Habitat/Animal Breeding places

A number of birds were observed on site (See appendix D) and numerous scratches were observed on several of the trees on site. One (1) termite mound, six (6) log pile and numerous habitat trees which have potential to be fauna habitat/breeding places were found on site. A detailed pre-clearance assessment should be completed within 2 weeks of the clearing date to assess active breeding places more accurately.

Table 6 Habitat features present within the clearing area

Habitat type	Latitude/Longitude	
Koala habitat tree (Scat and/or Scratches Present)	-27.9741	152.9171
	-27.9743	152.9165
	-27.9744	152.9163
	-27.9744	152.9161
	-27.9744	152.916
	-27.9745	152.9159
	-27.9745	152.9158

-27.9745 152.9158
-27.9745 152.9157
-27.9745 152.9157
-27.9746 152.9156
-27.9746 152.9156
-27.9746 152.9155
-27.9746 152.9154
-27.9746 152.9154
-27.9746 152.9153
-27.9747 152.9151
-27.9747 152.915
-27.9747 152.9148
-27.975 152.9135
-27.9749 152.9134
-27.9749 152.9133
-27.975 152.9128
-27.9749 152.9127
-27.9749 152.9125
-27.975 152.9125
-27.975 152.9125
-27.9749 152.9122
-27.975 152.9121
-27.975 152.9119
-27.9751 152.9114
-27.9753 152.9107
-27.9754 152.9103
-27.9757 152.9095
-27.976 152.9092
-27.9763 152.9088
-27.9771 152.9077
-27.9771 152.9077
-27.9734 152.9191
-27.9732 152.9191
-27.9731 152.9191
-27.9743 152.9226
-27.9744 152.9229
-27.9744 152.9229
-27.9745 152.9228
-27.975 152.9111
-27.9737 152.92
-27.9742 152.9164
-27.9744 152.9159
-27.9773 152.9071
-27.974 152.9138
-27.9748 152.9121
-27.9766 152.9082
-27.9768 152.9081

Log pile	-27.9744	152.9163
	-27.9749	152.9143
	-27.975	152.9136
	-27.9749	152.9129
	-27.9778	152.9051
	-27.9773	152.9066
Termite mound	-27.9741	152.9168
Stag	-27.9738	152.9188
	-27.9738	152.9184
	-27.9739	152.9181
	-27.9743	152.9165
	-27.9744	152.916
	-27.9745	152.9157
	-27.9746	152.9153
	-27.9746	152.9153
	-27.9747	152.915
	-27.9747	152.9149
	-27.9749	152.9135
	-27.9749	152.9133
	-27.9771	152.9076
	-27.9779	152.9058
	-27.9742	152.9223
	-27.9743	152.9224
	-27.9743	152.9225
	-27.9742	152.9221
	-27.9748	152.9138
	-27.9736	152.9188
	-27.9748	152.9131
	-27.9748	152.912
	-27.977	152.9077
	-27.9771	152.9076
	-27.9773	152.9068
	-27.9773	152.9068
	-27.9774	152.9066
	-27.9774	152.9065
	-27.9774	152.9063
	-27.9774	152.9063
	-27.9738	152.9185
	-27.9774	152.9056
	-27.9774	152.9056
	-27.9776	152.9054
	-27.9775	152.9054
	-27.9775	152.9054
	-27.9775	152.9054
	-27.9738	152.9204
	-27.9739	152.9207

-27.974	152.9211
-27.974	152.9213
-27.9737	152.9218
-27.9737	152.9218
-27.9737	152.9218
-27.9737	152.9217
-27.9736	152.9192
-27.9747	152.9148
-27.9747	152.9146
-27.9748	152.9143
-27.9743	152.9143
-27.9746	152.9135
-27.9747	152.9134
-27.9748	152.914

5.2.2 Threatened fauna

Scratches were located on a number of smooth bark *Eucalyptus* along the road parcel. These scratches appear to be from koalas. The bases of these trees were searched for koala scat. A large amount of scat was found but nothing fresh. Koala presence is expected to be likely. A suitably qualified and experienced koala spotter/fauna spotter is required to be present on-site during tree clearing activities.

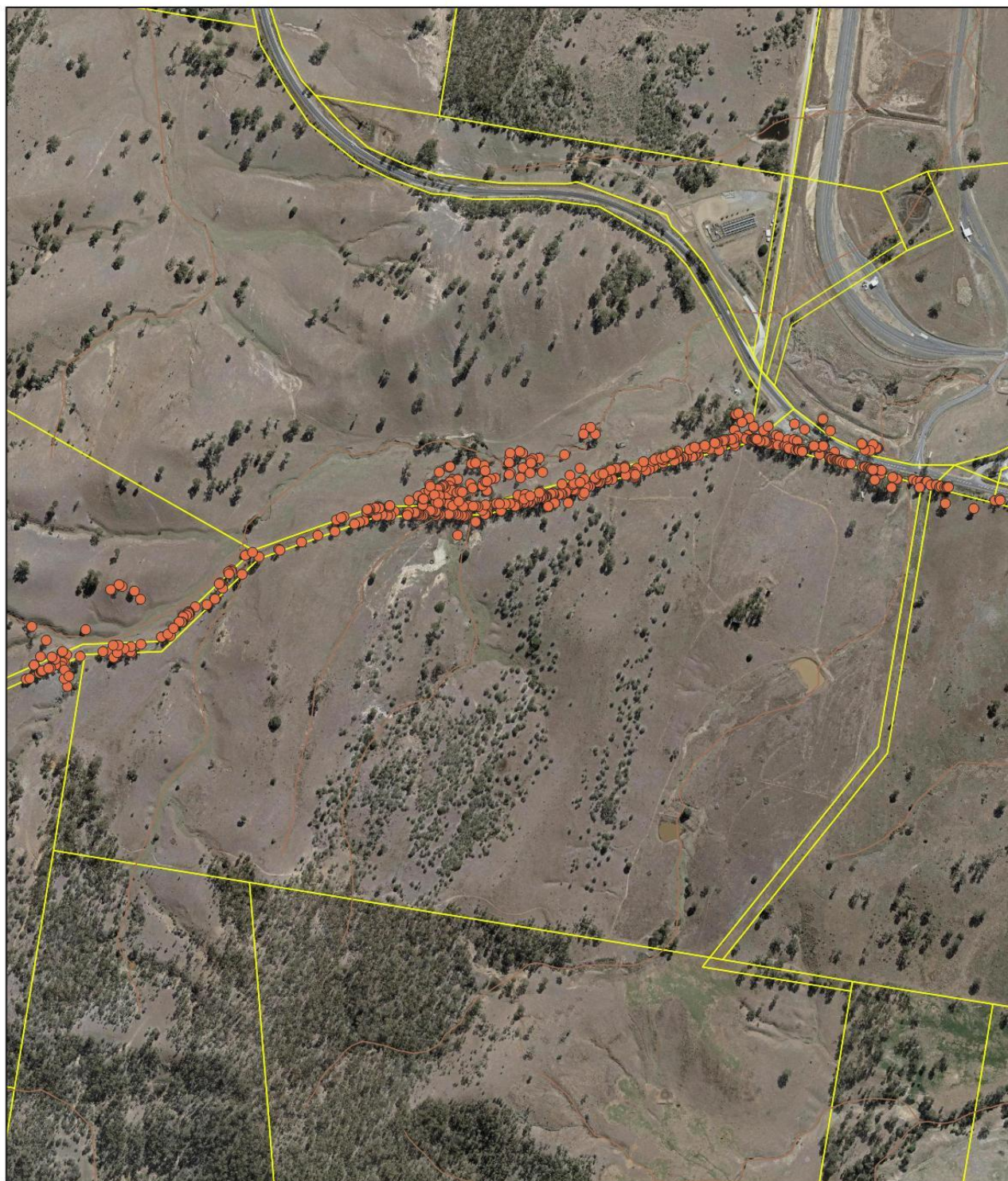
5.2.3 Koalas

Under the 'EPBC Act referral guidelines for the Vulnerable koala', koala habitat is defined as "any forest or woodland containing species that are known koala food trees, or shrubland with emergent food trees." A Non-juvenile koala habitat tree (NJKHT) is a 'species of tree whose leaves are consumed by koalas and trees generally of the following genus: *Corymbia*, *Eucalyptus*, *Lophostemon* and *Melaleuca* that are more than 4 m high or has a trunk with a circumference of more than 31.5cm at 1.3m above the ground.

All vegetation within the property containing NJKHT species listed above should be assumed as koala habitat. The field assessment identified NJKHT koala feed trees within the property boundary as shown in Figure 2.

All NJKHTs were inspected for scat. A large number of scats were recorded indicating a moderate level of activity. The results indicate that koalas are currently using the site, and it is significant koala habitat due to the presence of koala food trees and abundance of scat within the area.

Based on our assessments of koala habitat, the proposed works and the results of the significant impacts habitat assessment tool (score of 7), the proposed works have a moderate risk of resulting in significant impact. However, referral is not needed under state legislation as the area of works falls within the Bromelton SDA. An assessment of impact to this area is recommended to determine if proposed clearing is a significant impact under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and requires a referral to the Federal government.



Legend

- Non Juvenile Koala Habitat Trees (NJKHT) □ Cadastral DCDB Data

CRS: GDA 1994 MGA Zone 56
Projection: Transverse Mercator



Scale (A4)

0 100 200 300 m

Figure 2: NJKHT Identified Along Works Area

Ecological Assessment Report: Mitchell Road, Bromelton
ACS Engineers

O	Issued for use	RF	DF	19/09/2023
A	Issued for review	RF	DF	19/09/2023
Rev	Description	Drawn	Approved	Date

Job Number	23463

6 Legislative requirements

6.1.1 *Vegetation Management Act 2000 (Qld)*

The clearing area along the proposed roadway is mapped Category B (remnant vegetation). The same Category B vegetation is listed as Essential habitat. The remaining area within the Lot plan is mapped as Category X. Clearing in this area is an exempt activity under the Act.

The proposed development is within a State development area and is exempt and therefore, no further action is required under the VM Act.

6.1.2 *Nature Conservation (Plants) Regulation 2020 (Qld)*

The area does fall within the High-Risk Trigger Mapping for Protected Flora. No threatened plants were identified within the study area during the survey.

Therefore, no further action under the Nature Conservation (Plants) Regulation is required.

6.1.3 *Nature Conservation (Animals) Regulation 2020*

A Low-Risk Species Management Program (SMP) will be required where an animal breeding place has been identified and activities are required to tamper with the breeding place in order to complete the scope of works. Animal breeding places include obvious structures such as bird nests and tree hollows, as well as more cryptic places such as amphibian or reptile habitat where breeding takes place. None of the habitat features on site appeared to contain active breeding fauna, however multiple stick nests were observed during the field survey. A pre-clearance survey should be undertaken prior to removing any of the trees.

6.1.4 *Environment Protection and Biodiversity Conservation Act 1999 (Cth)*

The koala is listed as an endangered species and is listed as a Matter of National Environmental Significance. There was evidence of the species being present within the works area.

An assessment of impact to this area is recommended to determine if proposed clearing is a significant impact under the Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act) and requires a referral to the Federal government.

6.1.5 *Nature Conservation (Koala) Plan 2017.*

The development is exempt from Schedule 11 assessment benchmarks stated within Schedule 11 of the Planning Regulation 2017 as the proposed development is in a State development area. However there are specific requirements as part of this plan for clearing koala habitat trees within SEQ, these are:

(a) clearing of the koala habitat trees is carried out in a way that ensures koalas on the area being cleared (the clearing site) have enough time to move out of the clearing site without human intervention, including, in particular, for clearing sites with an area of more than 3ha, by—

(i) carrying out the clearing in stages; and

(ii) ensuring not more than the following is cleared in any 1 stage—

(A) for a clearing site with an area of 6ha or less—50% of the site's area;

(B) for a clearing site with an area of more than 6ha—3ha or 3% of the site's area, whichever is the greater; and

(iii) ensuring that between each stage and the next there is at least 1 period of 12 hours starting at 6p.m. on a day and ending at 6a.m. on the following day during which no trees are cleared on the site;

(b) clearing of the koala habitat trees is carried out in a way that ensures, while the clearing is carried out, appropriate habitat links are maintained within the clearing site and between the site and its adjacent area, to allow koalas living on the site to move out of the site;

(c) no koala habitat tree in which a koala is present, and no koala habitat tree with a crown overlapping a tree in which a koala is present, is cleared.

7 Impact Assessment

The ecological values on site are considered to be moderate. The assessment of vegetation on site determined that the site vegetation along Mitchell Road is Core Koala Habitat, Essential Habitat and mapped as category B. No threatened species were found during the site assessment. There were signs (scratches and scat) of koala activity. Fauna habitat/breeding places including koala habitat trees, a termite mound and log pile were recorded on site.

Potential impacts on the environmental matters are direct and indirect:

- the loss of food source for common and endangered wildlife;
- the loss of potential wildlife habitat/breeding places;
- injury or mortality of fauna species through the vegetation clearing;
- increase of edge effects along Mitchell Road (in particular weed invasion).

8 Mitigation measures

The client should:

- limit the clearing of native vegetation where possible (i.e., remove limbs rather than felling the whole tree);
- a Low Risk SMP is required in any animal breeding places are removed/tampered with;
- a suitably qualified fauna spotter/koala spotter is required to be on site during tree clearing;
- follow sequential clearing requirements for koala as listed in section 6.1.5;
- remove and dispose of Restricted invasive plants correctly to avoid spread;
- replace topsoil where possible and follow erosion sediment controls to avoid runoff into creek;
- avoid disturbance in proximity to creek to reduce indirect impacts.

9 Conclusions

This ecological assessment report identifies ecological values associated with the vegetation on site. No threatened flora species were observed on site. Evidence of endangered koalas were observed on site. Multiple stick nests were observed during the field survey, a fauna spotter is recommended to be onsite for any clearing works.

While the proposed road upgrade along Mitchell Road falls under the SDA and doesn't require referral to the state government. Under the EPBC act it is likely that the construction of the road along Mitchell Road will reduce the area of occupancy of the Koala as well as modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. Therefore, it is Redleaf's recommendation that a significant residual impact assessment be undertaken to determine if a referral under the EPBC Act is required.

10 References

- Commonwealth of Australia (2013) *Matters of National Environmental Significance Significant impact guidelines 1.1. Environment Protection and Biodiversity Conservation Act 1999*. Department of the Environment. Canberra, Australia.
- Commonwealth of Australia (2020) *EPBC Act Protected Matters Report*. [website] Compiled September 2023. Department of Environment. Brisbane, Australia. URL <http://www.environment.gov.au/epbc/pmst/index.html>.
- Phillips S and Callaghan J (2011) *The Spot Assessment Technique: a tool for determining localised levels of habitat use by Koalas Phascolarctos cinereus*. Australian Zoologist: 2011, Vol. 35, No. 3, pp. 774-780.
- Queensland Government (2009) *Guide to Exemptions from the Vegetation Management Framework*, Department of Environment and Resource Management, Brisbane, Australia.
- Queensland Government (2014) *Significant Residual Impact Guideline: For matters of state environmental significance and prescribed activities assessable under the Planning Act 2016*, Department of State Development, Infrastructure and Planning, Brisbane, Australia.
- Queensland Government (2020) *Wildlife Online. (Database)*. Compiled December 2021, Department of Environment and Science, Brisbane, Australia. URL <https://www.qld.gov.au/environment/plants-animals/species-list>
- Queensland Government (2017) *Information Sheet - Planning Regulation 2017*, Department of Environment and Science, Brisbane, Australia. URL https://environment.des.qld.gov.au/__data/assets/pdf_file/0022/255451/is-exempted-development-all-land-tenures.pdf [Accessed 19 Sep. 2023].

Appendix A – Site Photos



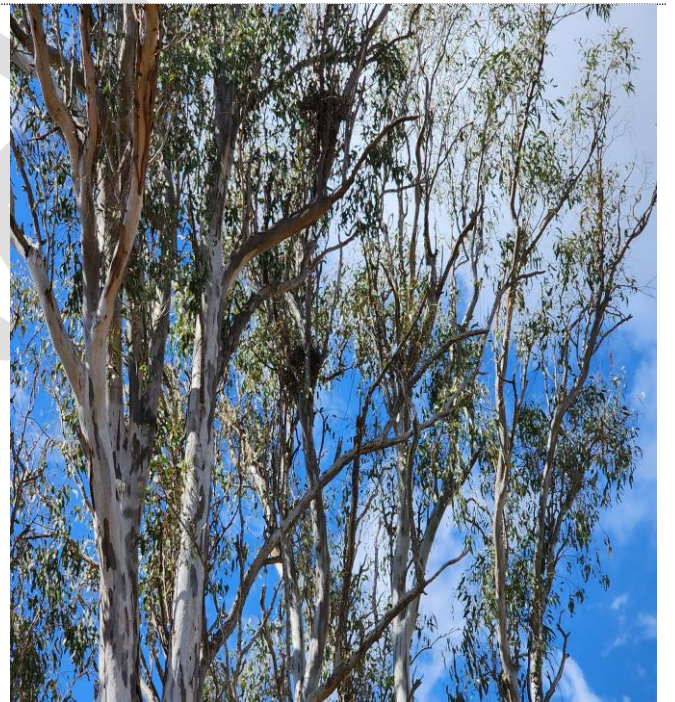
Koala scat found on-site at the base of a *Eucalyptus* tree.



Restricted weeds (*Opuntia tomentosa*) found on-site.



Koala habitat trees.



Stick nests unconfirmed if currently being used as breeding place for fauna.



Log pile that could provide habitat/breeding place for fauna



Large hollow that could provide habitat/breeding place for fauna.



Large stag tree may provide habitat/breeding place for fauna.



Bearded Dragon (*Pogona barbata*) observed on-site.

Appendix B – Flora list

Family	Scientific Name	Common Name	Introduced	Status + Q
Mimosaceae	Acacia aulacocarpa	New Guinea wattle		LC
Mimosaceae	Acacia disparrima	southern salwood		LC
Mimosaceae	Acacia Leiocalyx	black wattle		LC
Rhamnaceae	Alphitonia excelsa	soap tree		LC
Loranthaceae	Amyema spp	Mistletoe		LC
Myrtaceae	Angophora Subvelutina	broad-leaved apple		LC
Asparagaceae	Asparagus africanus	climbing asparagus fern	Y	
Asteraceae	Bidens pilosa	Cobblers Peg	Y	LC
Poaceae	Bothriochloa decipiens	Pitted Bluegrass		LC
Cannabaceae	Celtis sinensis	Chinese celtis	Y	
Onagraceae	Chamaenerion angustifolium	Fireweed	Y	LC
Poaceae	Chloris gayana	Rhodes grass	Y	
Asteraceae	Cirsium virgata	Spear Thistle	Y	
Myrtaceae	Corymbia citriodora	Spotted gum		LC
Myrtaceae	Corymbia intermedia	pink bloodwood		LC
Myrtaceae	Corymbia tessellaris	Moreton Bay ash		LC
Poaceae	Cymbopogon refractus	Barbed Wire Grass		LC
Asphodelaceae	Dianella caerulea	Blue Flax Lily		LC
Poaceae	Dichanthium sericeum	Blue grass		LC
Convolvulaceae	Dichondra repens	Kidney Weed		LC
Rosaceae	Eriobotrya japonica	Loquat	Y	
Myrtaceae	Eucalyptus crebra	narrow-leaved ironbark		LC
Myrtaceae	Eucalyptus moluccana	gum-topped box		LC
Myrtaceae	Eucalyptus tereticornis	forest red gum		LC
Moraceae	Ficus coronata	Sandpaper fig		LC
Moraceae	Ficus opposita	Sandpaper Fig		LC
Moraceae	Ficus rubiginosa	Port Jackson fig		LC
Apocynaceae	Gomphocarpus physocarpus	Balloon Cotton Bush	Y	
Poaceae	Heteropogon contortus	Speargrass		LC
Poaceae	Hyparrhenia hirta	Coolatai grass	Y	
Poaceae	Imperata cylindrica	blady grass		LC
Bignoniaceae	Jacaranda mimosifolia syn Jacaranda mimosaeifolia	Jacaranda	Y	
Verbenaceae	Lantana camara	lantana	Y	
Fabaceae	Leucaena leucocephala	Leucaena	Y	
Fabaceae	Libidibia ferrea	Leopard Tree	Y	
Oleaceae	Ligustrum lucidum	broad leaf privet	Y	
Laxmanniaceae	Lomandra longifolia	Lomandra		LC
Myrtaceae	Lophostemon suaveolens	swamp box		LC
Poaceae	Megathyrsus maximus	green panic	Y	

Poaceae	Melinis repens	red natal grass	Y
Cactaceae	Opuntia stricta	Common pear	Y
Cactaceae	Opuntia tomentosa	Velvety tree pear	Y
Poaceae	Pennisetum alopecuroides	Swamp foxtail grass	Y
Picrodendraceae	Petalostigma pubescens	Quinine Bush	LC
Solanaceae	Solanum mauritianum	Wild tobacco	Y
Poaceae	Sporobolus jacquemontii	American Rats Tail Grass	Y
Asteraceae	Tagetes minuta	Stinking Roger	Y
Fabaceae	Trifolium repens	Clover	Y
Verbenaceae	Verbena africana	Purpletop	LC
Verbenaceae	Verbena aristigera	Mayne's Pest	Y
Asteraceae	Vittadinia sulcata	Native Daisy	LC

+ Status: Q - Indicates the Queensland conservation status of each taxon under the Nature Conservation Act 1992. The codes are LC (Least Concern), Near Threatened (NT), Vulnerable (V), Endangered (E), Critically Endangered (Cr).

Appendix C – Incidental fauna list

Scientific Name	Common Name	Type	Status+
			Q
<i>Gymnorhina tibicen</i>	Australian magpie	Bird	LC
<i>Trichoglossus chlorolepidotus</i>	Scaly Breasted Lorikeet	Bird	LC
<i>Platycercus adscitus</i>	Pale Headed Rosella	Bird	LC
<i>Eolophus roseicapilla</i>	Galah	Bird	LC
<i>Alisterus scapularis</i>	King Parrot	Bird	LC
<i>Pogona barbata</i>	Bearded Dragon	Reptile	LC
<i>Macropus giganteus</i>	Eastern Grey Kangaroo	mammal	LC

+ Status: **Q** - Indicates the Queensland conservation status of each taxon under the Nature Conservation Act 1992. The codes are LC (Least Concern), Near Threatened (NT), Vulnerable (V), Endangered (E), Critically Endangered (Cr).

Appendix D – Wildnet



Queensland Government

WildNet species list

Search Criteria: Species List for a Specified Point

Species: All

Type: All

Queensland status: All

Records: All

Date: Since 1980

Latitude: -27.9735

Longitude: 152.9206

Distance: 5

Email: levi@redleafenv.com.au

Date submitted: Monday 21 Aug 2023 11:15:56

Date extracted: Monday 21 Aug 2023 11:20:01

The number of records retrieved = 186

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Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	amphibians	Bufonidae	<i>Rhinella marina</i>	cane toad	Y			2
animals	amphibians	Hylidae	<i>Cyclorana alboguttata</i>	greenstripe frog		C		1
animals	amphibians	Hylidae	<i>Litoria caerulea</i>	common green treefrog		C		2
animals	amphibians	Hylidae	<i>Litoria fallax</i>	eastern sedgefrog		C		1
animals	amphibians	Hylidae	<i>Litoria latopalmata</i>	broad palmed rocketfrog		C		1
animals	amphibians	Hylidae	<i>Litoria nasuta</i>	striped rocketfrog		C		1
animals	amphibians	Hylidae	<i>Litoria wilcoxii</i>	eastern stony creek frog		C		1
animals	amphibians	Limnodynastidae	<i>Limnodynastes peronii</i>	striped marshfrog		C		1
animals	amphibians	Limnodynastidae	<i>Limnodynastes tasmaniensis</i>	spotted grassfrog		C		1
animals	birds	Acanthizidae	<i>Acanthiza chrysorrhoa</i>	yellow-rumped thornbill		C		9
animals	birds	Acanthizidae	<i>Gerygone olivacea</i>	white-throated gerygone		C		5
animals	birds	Acanthizidae	<i>Sericornis frontalis</i>	white-browed scrubwren		C		6
animals	birds	Accipitridae	<i>Accipiter cirrocephalus</i>	collared sparrowhawk		C		2
animals	birds	Accipitridae	<i>Accipiter fasciatus</i>	brown goshawk		C		5
animals	birds	Accipitridae	<i>Aquila audax</i>	wedge-tailed eagle		C		3
animals	birds	Accipitridae	<i>Aviceda subcristata</i>	Pacific baza		C		2
animals	birds	Accipitridae	<i>Haliastur sphenurus</i>	whistling kite		C		7
animals	birds	Acrocephalidae	<i>Acrocephalus australis</i>	Australian reed-warbler		C		1
animals	birds	Alcedinidae	<i>Ceyx azureus</i>	azure kingfisher		C		4
animals	birds	Alcedinidae	<i>Dacelo novaeguineae</i>	laughing kookaburra		C		6
animals	birds	Alcedinidae	<i>Todiramphus sanctus</i>	sacred kingfisher		C		6
animals	birds	Anatidae	<i>Anas gracilis</i>	grey teal		C		10
animals	birds	Anatidae	<i>Anas superciliosa</i>	Pacific black duck		C		25
animals	birds	Anatidae	<i>Aythya australis</i>	hardhead		C		1
animals	birds	Anatidae	<i>Chenonetta jubata</i>	Australian wood duck		C		14
animals	birds	Anatidae	<i>Dendrocygna eytoni</i>	plumed whistling-duck		C		5
animals	birds	Anhingidae	<i>Anhinga novaehollandiae</i>	Australasian darter		C		6
animals	birds	Apodidae	<i>Hirundapus caudacutus</i>	white-throated needletail		V	V	3
animals	birds	Ardeidae	<i>Ardea alba modesta</i>	eastern great egret		C		8
animals	birds	Ardeidae	<i>Ardea intermedia</i>	intermediate egret		C		7
animals	birds	Ardeidae	<i>Ardea pacifica</i>	white-necked heron		C		6
animals	birds	Ardeidae	<i>Bubulcus ibis</i>	cattle egret		C		11
animals	birds	Ardeidae	<i>Egretta novaehollandiae</i>	white-faced heron		C		15
animals	birds	Ardeidae	<i>Nycticorax caledonicus</i>	nankeen night-heron		C		5
animals	birds	Artamidae	<i>Artamus leucorhynchus</i>	white-breasted woodswallow		C		2
animals	birds	Artamidae	<i>Cracticus nigrogularis</i>	pied butcherbird		C		16
animals	birds	Artamidae	<i>Cracticus torquatus</i>	grey butcherbird		C		4
animals	birds	Artamidae	<i>Gymnorhina tibicen</i>	Australian magpie		C		14
animals	birds	Artamidae	<i>Strepera graculina</i>	pied currawong		C		5
animals	birds	Cacatuidae	<i>Cacatua galerita</i>	sulphur-crested cockatoo		C		3
animals	birds	Cacatuidae	<i>Eolophus roseicapilla</i>	galah		C		16
animals	birds	Cacatuidae	<i>Nymphicus hollandicus</i>	cockatiel		C		4
animals	birds	Campephagidae	<i>Coracina novaehollandiae</i>	black-faced cuckoo-shrike		C		10
animals	birds	Campephagidae	<i>Coracina papuensis</i>	white-bellied cuckoo-shrike		C		4
animals	birds	Campephagidae	<i>Edolisoma tenuirostre</i>	common cicadabird		C		1
animals	birds	Charadriidae	<i>Elseyaornis melanops</i>	black-fronted dotterel		C		9

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Charadriidae	<i>Erythrogonys cinctus</i>	red-kneed dotterel		C		1
animals	birds	Charadriidae	<i>Vanellus miles</i>	masked lapwing		C		3
animals	birds	Charadriidae	<i>Vanellus miles novaehollandiae</i>	masked lapwing (southern subspecies)		C		9
animals	birds	Charadriidae	<i>Vanellus tricolor</i>	banded lapwing		C		3
animals	birds	Ciconiidae	<i>Ephippiorhynchus asiaticus</i>	black-necked stork		C		10
animals	birds	Cisticolidae	<i>Cisticola exilis</i>	golden-headed cisticola		C		9
animals	birds	Columbidae	<i>Columba livia</i>	rock dove	Y			2
animals	birds	Columbidae	<i>Geopelia humeralis</i>	bar-shouldered dove		C		6
animals	birds	Columbidae	<i>Geopelia placida</i>	peaceful dove		C		6
animals	birds	Columbidae	<i>Ocyphaps lophotes</i>	crested pigeon		C		10
animals	birds	Coraciidae	<i>Eurystomus orientalis</i>	dollarbird		C		7
animals	birds	Corvidae	<i>Corvus orru</i>	Torresian crow		C		27
animals	birds	Cuculidae	<i>Centropus phasianinus</i>	pheasant coucal		C		2
animals	birds	Cuculidae	<i>Chalcites lucidus</i>	shining bronze-cuckoo		C		4
animals	birds	Cuculidae	<i>Scythrops novaehollandiae</i>	channel-billed cuckoo		C		3
animals	birds	Dicaeidae	<i>Dicaeum hirundinaceum</i>	mistletoebird		C		6
animals	birds	Dicruridae	<i>Dicrurus bracteatus</i>	spangled drongo		C		4
animals	birds	Estrildidae	<i>Lonchura castaneothorax</i>	chestnut-breasted mannikin		C		2
animals	birds	Estrildidae	<i>Taeniopygia bichenovii</i>	double-barred finch		C		6
animals	birds	Eurostopodidae	<i>Eurostopodus mystacalis</i>	white-throated nightjar		C		1
animals	birds	Falconidae	<i>Falco berigora</i>	brown falcon		C		2
animals	birds	Falconidae	<i>Falco cenchroides</i>	nankeen kestrel		C		16
animals	birds	Falconidae	<i>Falco longipennis</i>	Australian hobby		C		2
animals	birds	Falconidae	<i>Falco subniger</i>	black falcon		C		1
animals	birds	Hirundinidae	<i>Cheramoeca leucosterna</i>	white-backed swallow		C		1
animals	birds	Hirundinidae	<i>Hirundo neoxena</i>	welcome swallow		C		11
animals	birds	Hirundinidae	<i>Petrochelidon ariel</i>	fairy martin		C		6
animals	birds	Hirundinidae	<i>Petrochelidon nigricans</i>	tree martin		C		6
animals	birds	Jacanidae	<i>Irediparra gallinacea</i>	comb-crested jacana		C		3
animals	birds	Locustellidae	<i>Cincloramphus mathewsi</i>	rufous songlark		C		1
animals	birds	Locustellidae	<i>Cincloramphus timoriensis</i>	tawny grassbird		C		5
animals	birds	Maluridae	<i>Malurus cyaneus</i>	superb fairy-wren		C		11
animals	birds	Maluridae	<i>Malurus melanocephalus</i>	red-backed fairy-wren		C		8
animals	birds	Meliphagidae	<i>Caligavis chrysops</i>	yellow-faced honeyeater		C		1
animals	birds	Meliphagidae	<i>Lichmera indistincta</i>	brown honeyeater		C		8
animals	birds	Meliphagidae	<i>Manorina melanocephala</i>	noisy miner		C		11
animals	birds	Meliphagidae	<i>Meliphaga lewinii</i>	Lewin's honeyeater		C		6
animals	birds	Meliphagidae	<i>Melithreptus albogularis</i>	white-throated honeyeater		C		10
animals	birds	Meliphagidae	<i>Myzomela sanguinolenta</i>	scarlet honeyeater		C		2
animals	birds	Meliphagidae	<i>Philemon citreogularis</i>	little friarbird		C		3
animals	birds	Meliphagidae	<i>Philemon corniculatus</i>	noisy friarbird		C		2
animals	birds	Meliphagidae	<i>Plectorhyncha lanceolata</i>	striped honeyeater		C		2
animals	birds	Meropidae	<i>Merops ornatus</i>	rainbow bee-eater		C		4
animals	birds	Monarchidae	<i>Grallina cyanoleuca</i>	magpie-lark		C		23
animals	birds	Monarchidae	<i>Myiagra inquieta</i>	restless flycatcher		C		1
animals	birds	Monarchidae	<i>Myiagra rubecula</i>	leaden flycatcher		C		2

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	birds	Motacillidae	<i>Anthus novaeseelandiae</i>	Australasian pipit		C		4
animals	birds	Neosittidae	<i>Daphoenositta chrysoptera</i>	varied sittella		C		4
animals	birds	Oriolidae	<i>Oriolus sagittatus</i>	olive-backed oriole		C		6
animals	birds	Oriolidae	<i>Sphecotheres vieilloti</i>	Australasian figbird		C		6
animals	birds	Pachycephalidae	<i>Colluricincla harmonica</i>	grey shrike-thrush		C		6
animals	birds	Pachycephalidae	<i>Colluricincla megarhyncha</i>	little shrike-thrush		C		2
animals	birds	Pachycephalidae	<i>Pachycephala rufiventris</i>	rufous whistler		C		6
animals	birds	Pardalotidae	<i>Pardalotus striatus</i>	striated pardalote		C		13
animals	birds	Passeridae	<i>Passer domesticus</i>	house sparrow	Y			3
animals	birds	Pelecanidae	<i>Pelecanus conspicillatus</i>	Australian pelican		C		2
animals	birds	Petroicidae	<i>Eopsaltria australis</i>	eastern yellow robin		C		2
animals	birds	Petroicidae	<i>Petroica rosea</i>	rose robin		C		4
animals	birds	Phalacrocoracidae	<i>Microcarbo melanoleucos</i>	little pied cormorant		C		6
animals	birds	Phalacrocoracidae	<i>Phalacrocorax carbo</i>	great cormorant		C		4
animals	birds	Phalacrocoracidae	<i>Phalacrocorax sulcirostris</i>	little black cormorant		C		9
animals	birds	Phasianidae	<i>Synoicus ypsilophorus</i>	brown quail		C		3
animals	birds	Podargidae	<i>Podargus strigoides</i>	tawny frogmouth		C		4
animals	birds	Podicipedidae	<i>Tachybaptus novaehollandiae</i>	Australasian grebe		C		8
animals	birds	Pomatostomidae	<i>Pomatostomus temporalis</i>	grey-crowned babbler		C		4
animals	birds	Psittaculidae	<i>Alisterus scapularis</i>	Australian king-parrot		C		2
animals	birds	Psittaculidae	<i>Platycercus adscitus</i>	pale-headed rosella		C		11
animals	birds	Psittaculidae	<i>Platycercus eximius</i>	eastern rosella		C		1
animals	birds	Psittaculidae	<i>Trichoglossus chlorolepidotus</i>	scaly-breasted lorikeet		C		7
animals	birds	Psittaculidae	<i>Trichoglossus moluccanus</i>	rainbow lorikeet		C		13
animals	birds	Psophodidae	<i>Psophodes olivaceus</i>	eastern whipbird		C		6
animals	birds	Rallidae	<i>Fulica atra</i>	Eurasian coot		C		1
animals	birds	Rallidae	<i>Gallinula tenebrosa</i>	dusky moorhen		C		5
animals	birds	Rallidae	<i>Porphyrio melanotus</i>	purple swamphen		C		6
animals	birds	Rallidae	<i>Zapornia tabuensis</i>	spotless crane		C		2
animals	birds	Recurvirostridae	<i>Himantopus leucocephalus</i>	pied stilt		C		3
animals	birds	Rhipiduridae	<i>Rhipidura albiscapa</i>	grey fantail		C		5
animals	birds	Rhipiduridae	<i>Rhipidura leucophrys</i>	willie wagtail		C		14
animals	birds	Scolopacidae	<i>Calidris acuminata</i>	sharp-tailed sandpiper		SL		1
animals	birds	Scolopacidae	<i>Gallinago hardwickii</i>	Latham's snipe		SL		3
animals	birds	Strigidae	<i>Ninox boobook</i>	southern boobook		C		6
animals	birds	Sturnidae	<i>Acridotheres tristis</i>	common myna	Y			4
animals	birds	Sturnidae	<i>Sturnus vulgaris</i>	common starling	Y			9
animals	birds	Threskiornithidae	<i>Platalea flavipes</i>	yellow-billed spoonbill		C		1
animals	birds	Threskiornithidae	<i>Platalea regia</i>	royal spoonbill		C		5
animals	birds	Threskiornithidae	<i>Threskiornis molucca</i>	Australian white ibis		C		10
animals	birds	Threskiornithidae	<i>Threskiornis spinicollis</i>	straw-necked ibis		C		17
animals	birds	Zosteropidae	<i>Zosterops lateralis</i>	silveryeye		C		4
animals	insects	Nymphalidae	<i>Danaus petilia</i>	lesser wanderer				2
animals	insects	Nymphalidae	<i>Danaus plexippus</i>	monarch	Y			4
animals	mammals	Canidae	<i>Canis familiaris (dingo)</i>	dingo				2
animals	mammals	Cervidae	<i>Cervus elaphus</i>	red deer	Y			1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
animals	mammals	Leporidae	<i>Lepus europaeus</i>	European brown hare	Y			3
animals	mammals	Macropodidae	<i>Macropus giganteus</i>	eastern grey kangaroo		C		2
animals	mammals	Macropodidae	<i>Notamacropus rufogriseus</i>	red-necked wallaby		C		1
animals	mammals	Muridae	<i>Mus musculus</i>	house mouse	Y			2
animals	mammals	Peramelidae	<i>Isodon macrourus</i>	northern brown bandicoot		C		1
animals	mammals	Phalangeridae	<i>Trichosurus vulpecula</i>	common brushtail possum		C		2
animals	mammals	Phascolarctidae	<i>Phascolarctos cinereus</i>	koala		E	E	3
animals	mammals	Pteropodidae	<i>Pteropus poliocephalus</i>	grey-headed flying-fox		C	V	2
animals	mammals	Tachyglossidae	<i>Tachyglossus aculeatus</i>	short-beaked echidna		SL		2
animals	ray-finned fishes	Ambassidae	<i>Ambassis agassizii</i>	Agassiz's glassfish				13
animals	ray-finned fishes	Anguillidae	<i>Anguilla australis</i>	southern shortfin eel				12
animals	ray-finned fishes	Anguillidae	<i>Anguilla reinhardtii</i>	longfin eel				42
animals	ray-finned fishes	Cichlidae	<i>Oreochromis mossambica</i>	Mozambique mouthbrooder	Y			5
animals	ray-finned fishes	Cyprinidae	<i>Cyprinus carpio</i>	European carp	Y			41
animals	ray-finned fishes	Eleotridae	<i>Gobiomorphus australis</i>	striped gudgeon				18
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris compressa</i>	empire gudgeon				10
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris galii</i>	firetail gudgeon				32
animals	ray-finned fishes	Eleotridae	<i>Hypseleotris klunzingeri</i>	western carp gudgeon				29
animals	ray-finned fishes	Eleotridae	<i>Philypnodon grandiceps</i>	flathead gudgeon				5
animals	ray-finned fishes	Eleotridae	<i>Philypnodon macrostomus</i>	dwarf flathead gudgeon				1
animals	ray-finned fishes	Gobiidae	<i>Awaous acritosus</i>	roman-nose goby				1/1
animals	ray-finned fishes	Melanotaeniidae	<i>Melanotaenia duboulayi</i>	crimsonspotted rainbowfish				37
animals	ray-finned fishes	Mugilidae	<i>Mugil cephalus</i>	sea mullet				26
animals	ray-finned fishes	Mugilidae	<i>Trachystoma petardi</i>	pinkeye mullet				5
animals	ray-finned fishes	Percichthyidae	<i>Macquaria novemaculeata</i>	Australian bass				11
animals	ray-finned fishes	Plotosidae	<i>Tandanus tandanus</i>	freshwater catfish				12
animals	ray-finned fishes	Poeciliidae	<i>Gambusia holbrooki</i>	mosquitofish	Y			43
animals	ray-finned fishes	Pseudomugilidae	<i>Pseudomugil signifer</i>	Pacific blue eye				8
animals	ray-finned fishes	Retropinnidae	<i>Retropinna semoni</i>	Australian smelt				23
animals	ray-finned fishes	Scorpaenidae	<i>Notesthes robusta</i>	bullrout				12
animals	ray-finned fishes	Terapontidae	<i>Leiopotherapon unicolor</i>	spangled perch				35
animals	reptiles	Agamidae	<i>Intellagama lesueurii</i>	eastern water dragon		C		8
animals	reptiles	Agamidae	<i>Pogona barbata</i>	bearded dragon		C		3
animals	reptiles	Boidae	<i>Morelia spilota</i>	carpet python		C		2
animals	reptiles	Chelidae	<i>Chelodina longicollis</i>	eastern snake-necked turtle		C		5
animals	reptiles	Chelidae	<i>Emydura macquarii macquarii</i>	Murray turtle		C		1
animals	reptiles	Colubridae	<i>Boiga irregularis</i>	brown tree snake		C		3
animals	reptiles	Colubridae	<i>Dendrelaphis punctulatus</i>	green tree snake		C		2
animals	reptiles	Elapidae	<i>Pseudechis porphyriacus</i>	red-bellied black snake		C		2
animals	reptiles	Elapidae	<i>Pseudonaja textilis</i>	eastern brown snake		C		2
animals	reptiles	Scincidae	<i>Cryptoblepharus pulcher pulcher</i>	elegant snake-eyed skink		C		2
animals	reptiles	Scincidae	<i>Lampropholis guichenoti</i>	pale-flecked garden sunskink		C		2
animals	reptiles	Scincidae	<i>Lygisaurus foliorum</i>	tree-base litter-skink		C		1
animals	reptiles	Scincidae	<i>Tiliqua scincoides scincoides</i>	eastern bluetongue		C		2
fungi	Agaricomycetes	Agaricaceae	<i>Chlorophyllum</i>					1/1
plants	land plants	Lamiaceae	<i>Coleus alloplectus</i>			C		1/1

Kingdom	Class	Family	Scientific Name	Common Name	I	Q	A	Records
plants	land plants	Leguminosae	<i>Vachellia nilotica</i>	prickly acacia	Y			2/2
plants	land plants	Poaceae	<i>Phalaris aquatica</i>	australian phalaris	Y			1/1

CODES

I - Y indicates that the taxon is introduced to Queensland and has naturalised.

Q - Indicates the Queensland conservation status of each taxon under the *Nature Conservation Act 1992*.

The codes are Extinct (EX), Extinct in the Wild (PE), Critically Endangered (CR), Endangered (E), Vulnerable (V), Near Threatened (NT), Special Least Concern (SL) and Least Concern (C).

A - Indicates the Australian conservation status of each taxon under the *Environment Protection and Biodiversity Conservation Act 1999*.

The values of EPBC are Extinct (EX), Extinct in the Wild (XW), Critically Endangered (CE), Endangered (E), Vulnerable (V) and Conservation Dependent (CD).

Records - The first number indicates the total number of records of the taxon (wildlife records and species listings for selected areas).

This number is output as 99999 if it equals or exceeds this value. A second number located after a / indicates the number of specimen records for the taxon.

This number is output as 999 if it equals or exceeds this value.

Appendix E – MSES Report



Queensland Government

Department of Environment and Science

Environmental Reports

Matters of State Environmental Significance

For the selected area of interest

Longitude: 152.920739 Latitude: -27.973421 with 2 kilometre radius

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.



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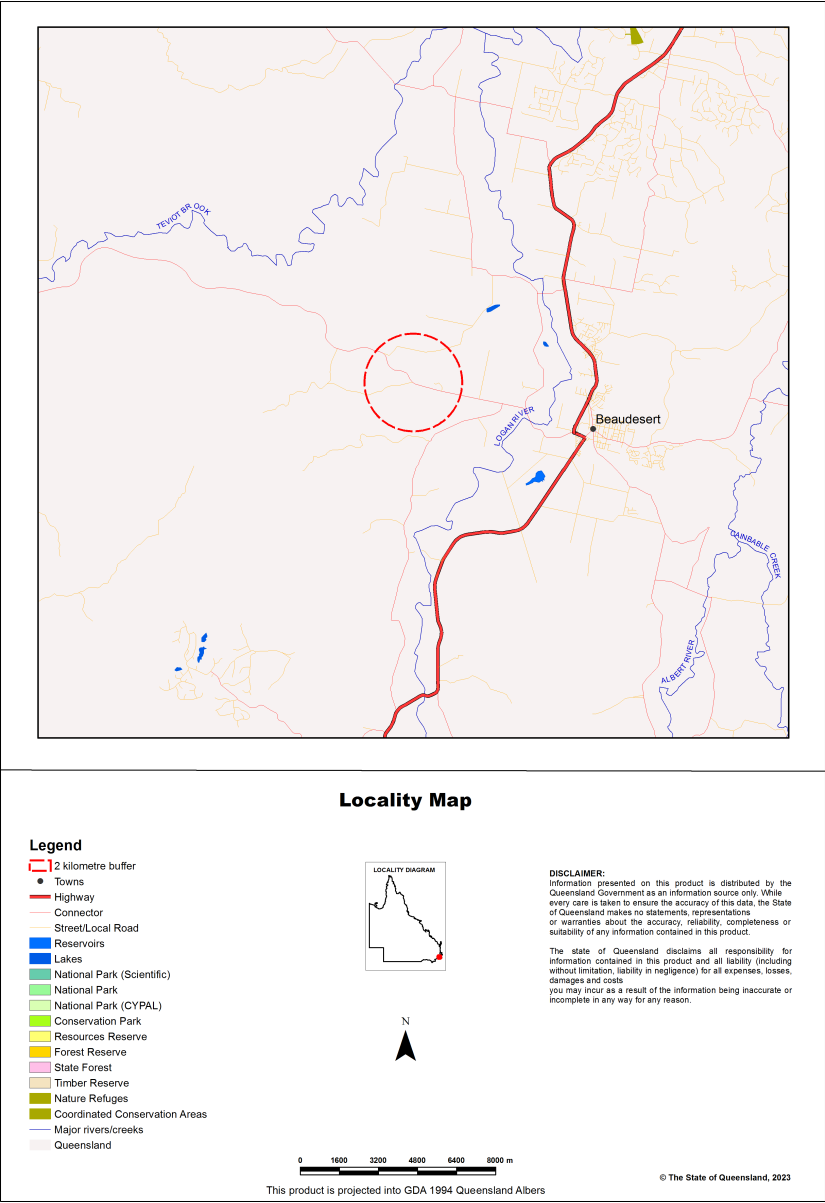
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Assessment Area Details

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 Longitude: 152.920739 Latitude: -27.973421

Size (ha)	1,256.55
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	0.0 ha	0.0 %
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	0.0 ha	0.0 %
7b Special least concern animals	0.0 ha	0.0 %
7c i Koala habitat area - core (SEQ)	94.64 ha	7.5%
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)	26.97 ha	2.1%
8b Regulated Vegetation - Endangered/Of concern in Category C (regrowth)	60.57 ha	4.8%
8c Regulated Vegetation - Category R (GBR riverine regrowth)	0.0 ha	0.0 %
8d Regulated Vegetation - Essential habitat	92.51 ha	7.4%
8e Regulated Vegetation - intersecting a watercourse	28.5 km	Not applicable
8f Regulated Vegetation - within 100m of a Vegetation Management Wetland	0.0 ha	0.0 %
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	0.0 ha	0.0 %

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

(no results)

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

Not applicable

7b. Special least concern animals

Not applicable

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>		V	None
<i>Calyptorhynchus lathamii</i>	Glossy black cockatoo	V	None
<i>Casuaris 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>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>		V	None
<i>Melaleuca irbyana</i>		E	None
<i>Petaurus gracilis</i>	Mahogany Glider	E	None
<i>Petrogale persephone</i>	Proserpine rock-wallaby	E	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

(no results)

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
12.3.3	E-dom	rem_end
12.9-10.3	O-dom	rem_oc
12.8.24	E-dom	rem_end

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

Regional ecosystem	Vegetation management polygon	Vegetation management status
12.9-10.3	O-dom	hvr_oc
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

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

Not applicable

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

MSES - Offsets

9a. Legally secured offset areas - offset register areas

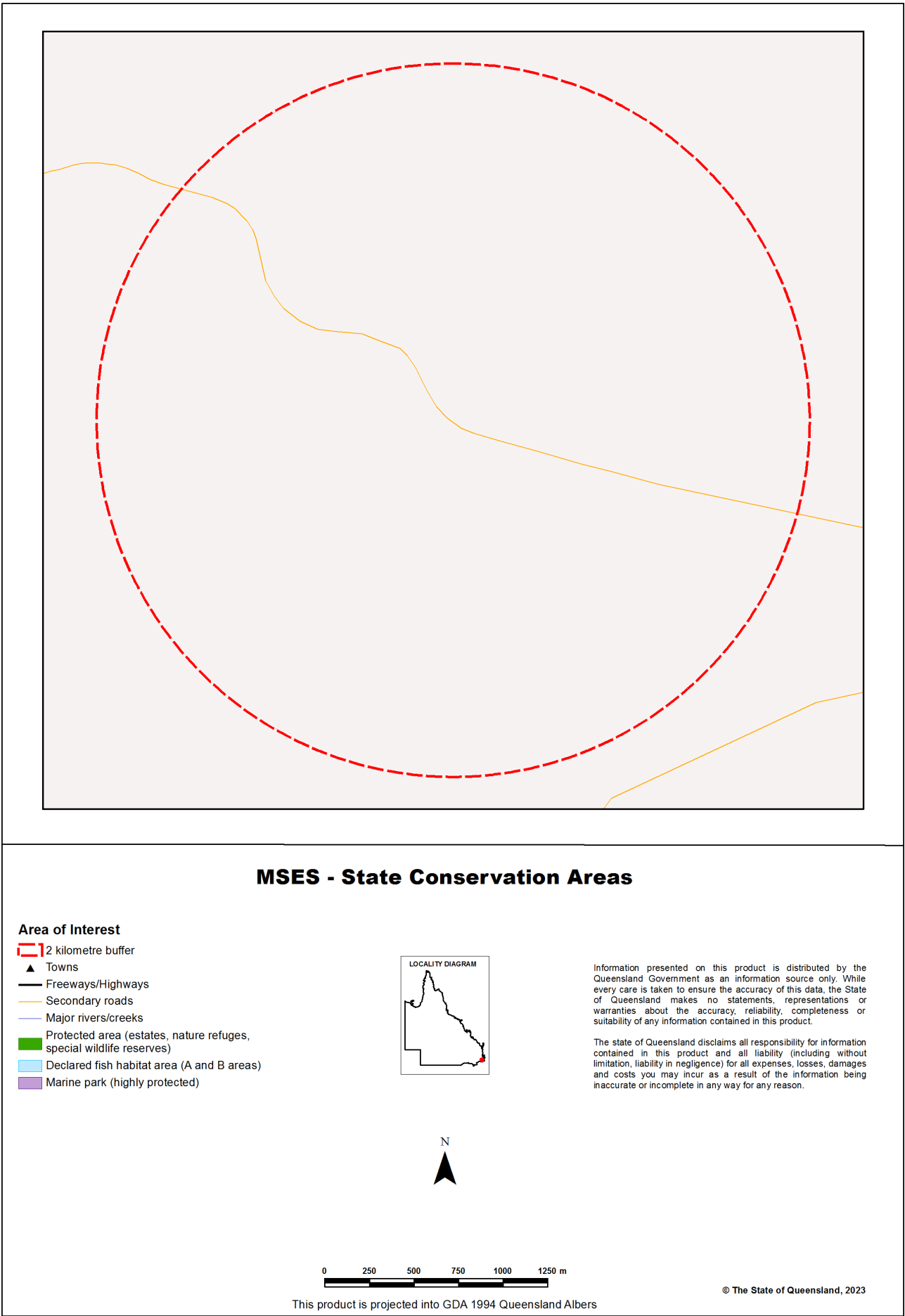
(no results)

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

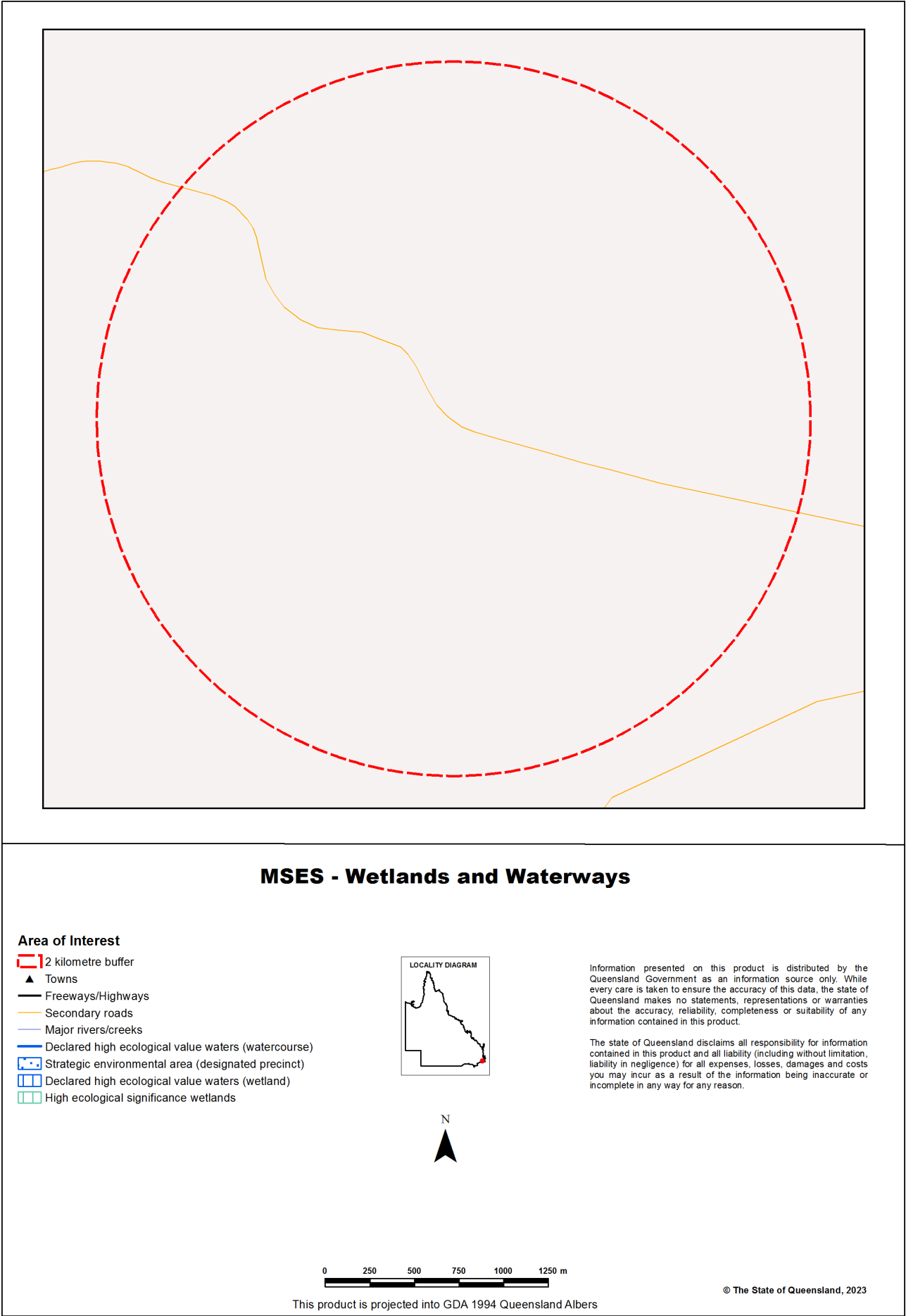
(no results)

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

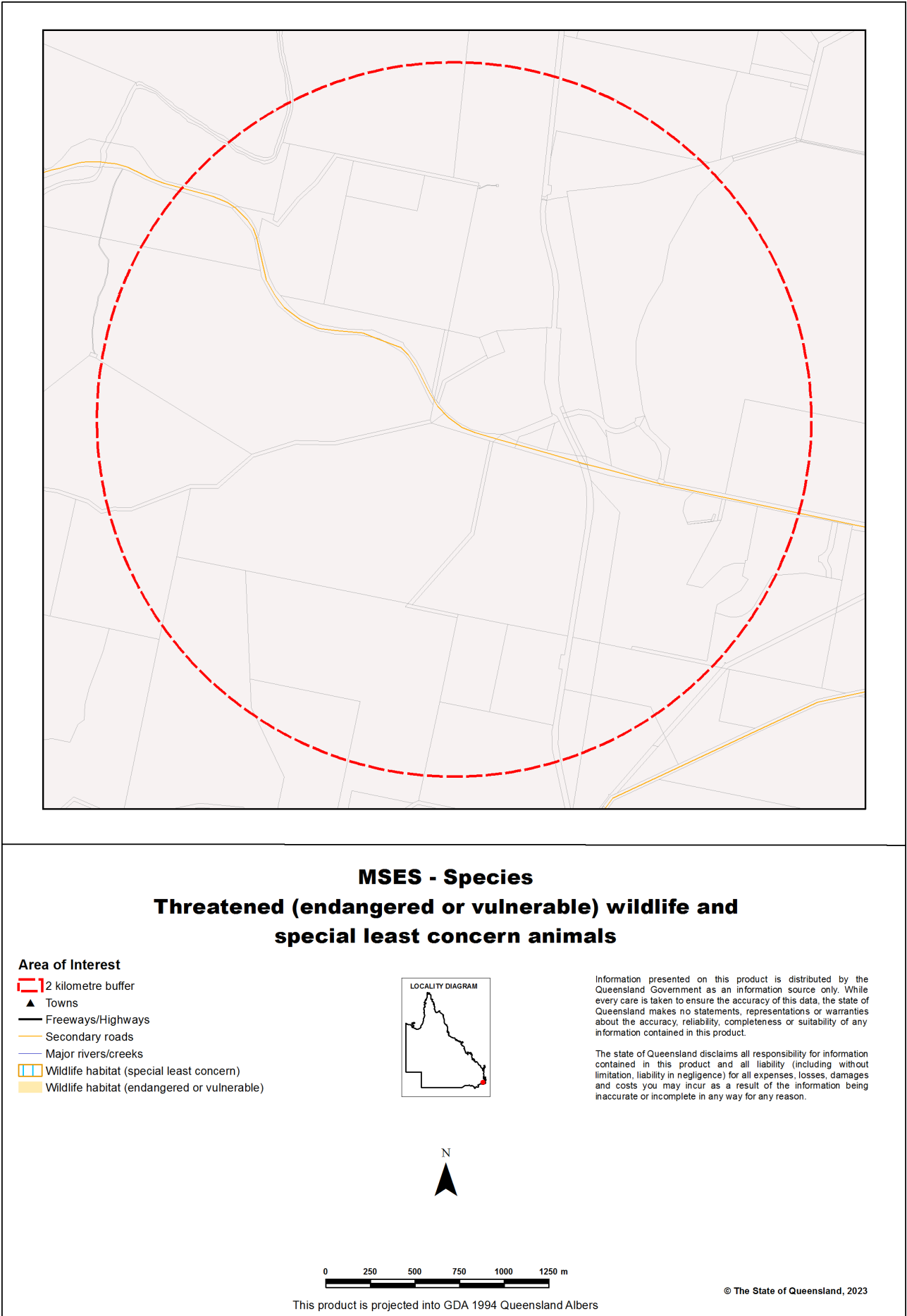
Map 1 - MSES - State Conservation Areas



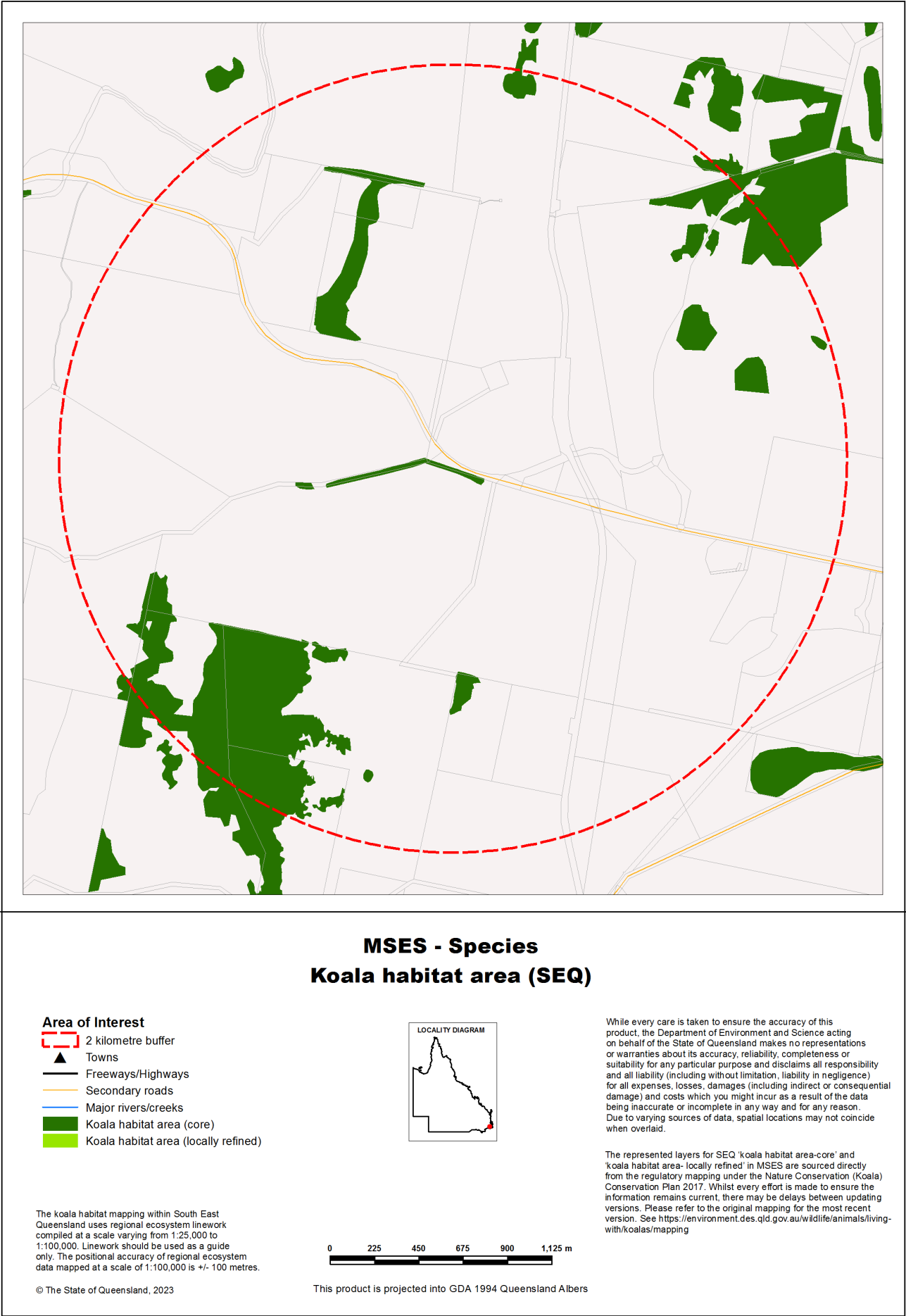
Map 2 - MSES - Wetlands and Waterways



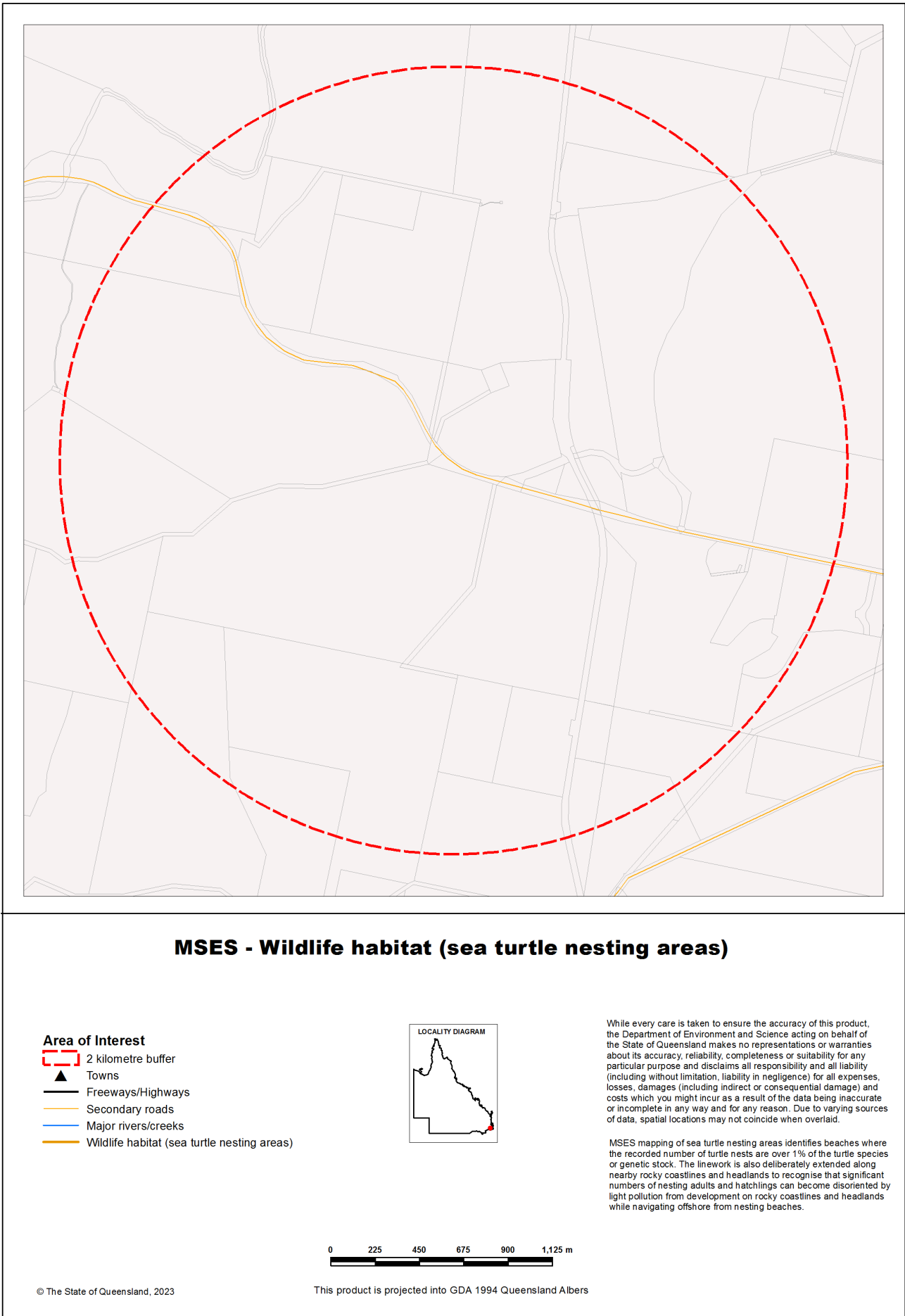
Map 3a - MSES - Species - Threatened (endangered or vulnerable) wildlife and special least concern animals



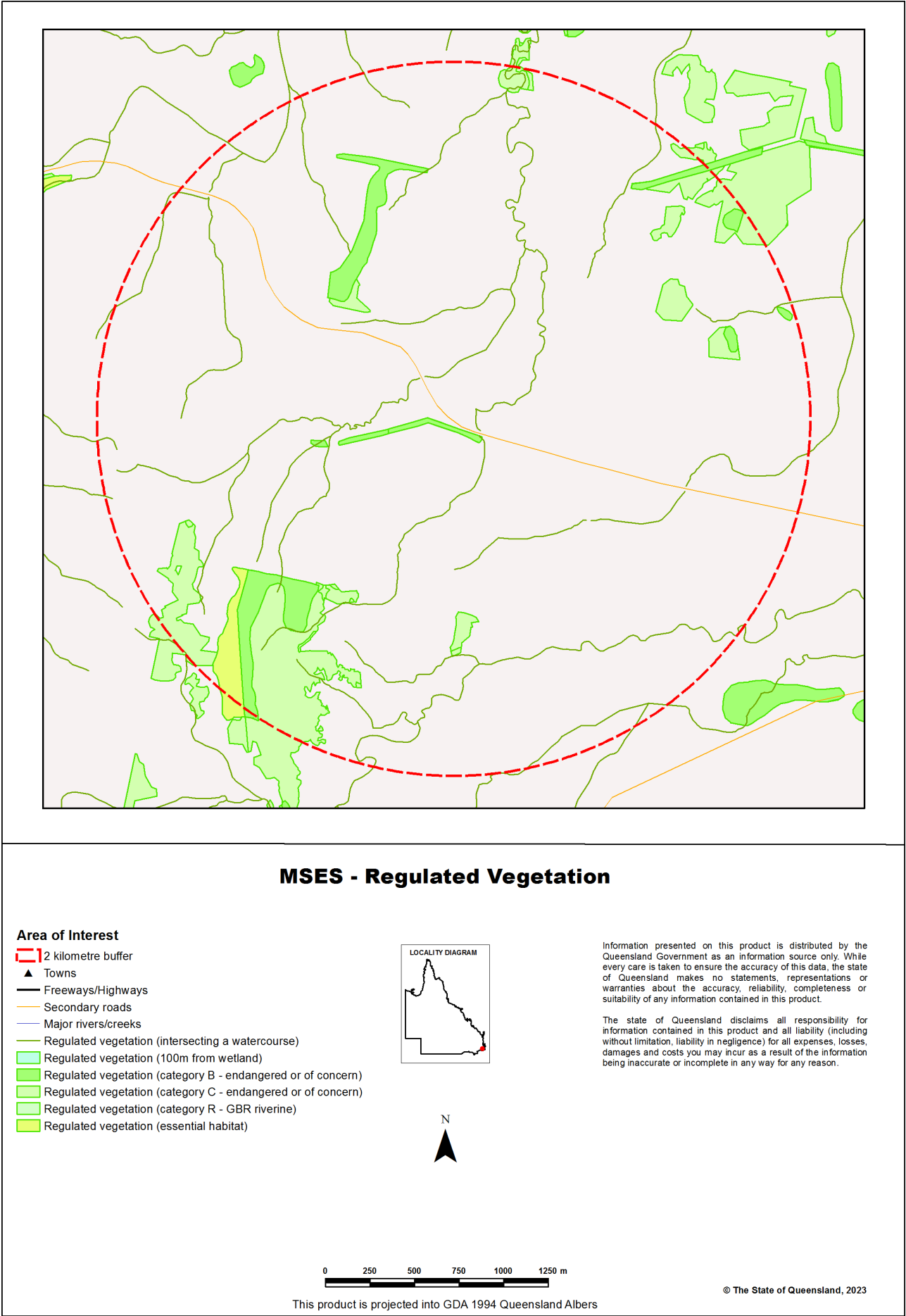
Map 3b - MSES - Species - Koala habitat area (SEQ)



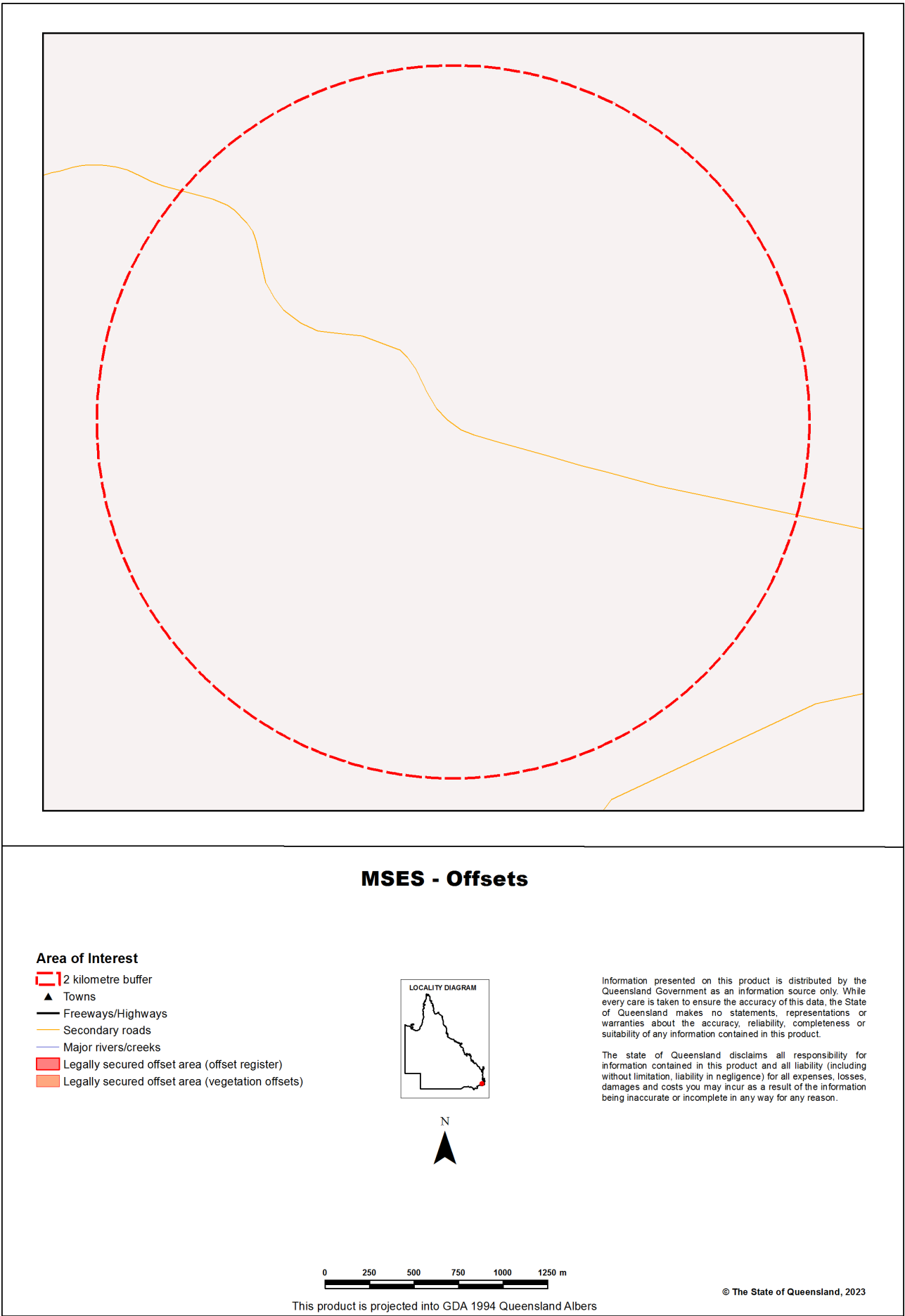
Map 3c - MSES - Wildlife habitat (sea turtle nesting areas)



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>

Appendix F – MNES Report



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-Sep-2023

[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:	6
Listed Threatened Species:	47
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:	5
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
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 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 may occur within area	In feature area
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
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

Scientific Name	Threatened Category	Presence Text	Buffer Status
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat may occur within area	In feature area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	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
Turnix melanogaster Black-breasted Button-quail [923]	Vulnerable	Species or species habitat likely to occur within area	In feature area
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
MAMMAL			
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Foraging, feeding or related behaviour known to occur within area	In feature area
PLANT			
Arthraxon hispidus Hairy-joint Grass [9338]	Vulnerable	Species or species habitat may 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 may occur within area	In feature area
Dichanthium setosum bluegrass [14159]	Vulnerable	Species or species habitat likely to occur within area	In feature area

Scientific Name	Threatened Category	Presence Text	Buffer Status
Fontainea venosa [24040]	Vulnerable	Species or species habitat may occur within area	In feature area
Notelaea ipsviciensis Cooneana Olive [81858]	Critically Endangered	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
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
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 buffer area only
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area	In feature area

REPTILE

Scientific Name	Threatened Category	Presence Text	Buffer Status
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

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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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]		Species or species habitat may 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
Gallinago hardwickii			
Latham's Snipe, Japanese Snipe [863]		Species or species habitat likely to occur within area	In feature area
Numenius madagascariensis			
Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
Tringa nebularia			
Common Greenshank, Greenshank [832]		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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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]		Species or species habitat may 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
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]		Species or species habitat likely to occur within area overfly marine area	In feature area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Species or species habitat likely 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

Scientific Name	Threatened Category	Presence Text	Buffer Status
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
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat may occur within area	In feature area
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]		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 feature area
Controlled action				
Casino Ipswich Pipeline	2007/3877	Controlled Action	Completed	In feature area
Wyaralong Dam	2006/3157	Controlled Action	Post-Approval	In buffer area only
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
Upgraded sewerage infrastructure in the Helensvale/Coomababah catchment	2004/1427	Not Controlled Action	Completed	In feature area
Bioregional Assessments				
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](#)
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- [-Australian Government, Department of Defence](#)
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- [-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 G – Koala Significant Impact Assessment

Attribute	Score	Coastal Habitat Zone	Subject Site Attributes	Subject Site Score
Koala occurrence	+2 high	Evidence of one or more koalas within the last 2 years.	Koala scats were recorded along proposed roadway within the property boundary. Wildnet records within 5 km of the property	2
	+1 medium	Evidence of one or more koalas within 2 km of the edge of the impact area within the last 5 years.		
	0 low	None of the above.		
Vegetation Composition	+2 high	Has forest or woodland with 2 or more known koala food tree species, OR 1 food tree species that alone accounts for >50% of the vegetation in the relevant strata.	During field investigations it was noted that koala food trees were present on site.	2
	+1 medium	Has forest or woodland with only 1 species of known koala food tree present.		
	0 low	None of the above		
Habitat Connectivity	+2 high	Area is part of a contiguous landscape ≥ 500 ha.	The area of works is mapped as core koala habitat; however, this exists in a highly fragmented landscape and is less than 300ha.	0
	+1 medium	Area is part of a contiguous landscape < 500 ha, but ≥ 300 ha.		
	0 low	None of the above		
Key Existing Threats	+2 high	Little or no evidence of koala mortality from vehicle strike or dog attack at present in areas that score 1 or 2 for koala occurrence.	The assessment area is on a rural block. Given the locality of a major road, and the presence of industrial facilities, for the purposes of this habitat assessment predation was rated as a 1, as it is acknowledged that mortalities from roads or dog could be occurring.	1
	+1 medium	Evidence of infrequent or irregular koala mortality from - vehicle strike; or - dog attack at present in areas that score 1 or 2 for koala occurrence.		

Attribute	Score	Coastal Habitat Zone	Subject Site Attributes	Subject Site Score
	0 low	Evidence of frequent or regular koala mortality from • vehicle strike or • dog attack in the study area at present, or • Areas which score 0 for koala occurrence and have a significant dog or • vehicle threat present.		
Recovery Value	+2 high	Habitat is likely to be important for achieving the interim recovery objectives for the relevant context.	The interim recovery objectives identify that large areas, disease free areas, areas that facilitate breeding; and maintain habitat connectivity facilitating koala movement are priority areas for recovery. It is likely that the proposed site will aid in achieving these goals; therefore, the Recovery Value is scored as 2.	2
	+1 medium	Uncertainty exists as to whether the habitat is important for achieving the interim recovery objectives for the relevant context.		
	0 low	Habitat is unlikely to be important for achieving the interim recovery objectives for the relevant context.		
Overall Score				7



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28 August 2024
SoilCo Developments Pty Ltd
C/O: Angela Harlen
ACS Engineers (Aust) Pty Ltd

SELF ASSESSMENT: SIGNIFICANT IMPACT ASSESSMENT ON THE KOALA UNDER THE EPBC ACT FOR THE PROPOSED ROAD NETWORK EXTENSION, MITCHELL ROAD, BROMELTON

Dear Angela,

The following provides a self-assessment in order to determine whether a referral must be submitted to the Department of Climate Change, Energy, the Environment and Water (DCCEEW) for impacts on a protected matter under the *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act). As per the project scope, this comprises a review of ecological assessments and reports completed to date, with a specific focus on the Terrestrial Ecology Assessment Report, and the EPBC-Matters of National Environmental Significance (MNES) Significant Impact Self-assessment Reports prepared by GHD; and the results of a site assessment which aimed to assess and ground-truth findings of the afore-mentioned reporting and assessments.

Review of previous assessments

A number of ecological assessments have been previously prepared for the greater project area incorporating the compost manufacturing facility, including an *Ecological Assessment Report* prepared by Redleaf Environmental in September 2023, a further draft *Terrestrial Ecological Assessment Report* prepared by GHD and issued June 2024; an *Aquatic Ecology Assessment Report* by GHD issued May 2024, and a draft *MNES Significant Impact Self-Assessment* issued July 2024. In summary:

- Evidence of one endangered species being the Koala (*Phascolarctos cinereus*) comprised of koala scats and scratches indicative of this species were noted by Redleaf Environmental in 2021 with usage considered as 'moderate'. The GHD reports do not mention whether scats or scratches indicative of this species were sighted during surveys, however SAT surveys and call playback was utilised to detect koala with no direct sightings of koala recorded.
- No evidence of other threatened terrestrial or aquatic species was identified during previous surveys, however, stick nests, termite mounds, minor hollows, spouts, flowering Eucalypts and other habitat features were noted by Redleaf Environmental and GHD.
- The reports completed to date did not identify the presence of any other MNES such as Threatened Ecological Communities (TEC), Ramsar wetlands etc.
- Redleaf Environmental stated that 'the construction of the road along Mitchell Road will reduce the area of occupancy of the Koala as well as modify, destroy, remove, isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline. Therefore, it is Redleaf's recommendation that a significant residual impact assessment be undertaken to determine if a referral under the EPBC Act is required'.
- The Terrestrial Ecological Report by GHD in 2024 identified 7 species that have potential to occur or likely occur in the study area which are:
 - White-throated needletail (*Hirundapus caudacutus*)
 - Latham's snipe (*Gallinago hardwickii*)
 - Koala (*Phascolarctos cinereus*)
 - Grey-headed flying fox (*Pteropus poliocephalus*)
 - Brush-tailed rock wallaby (*Petrogale penicillata*)



- o Yellow bellied glider (*Petaurus australis australis*)
 - o Greater glider (*Petauroides volans*)
- The Terrestrial Ecological Assessment report concluded that Habitat for these MNES species primarily occurs in surrounding areas and is not directly impacted by the Project - with the exception of the presence of dispersal habitat for the koala and very limited foraging tree species for the grey-headed flying fox. The assessment against the *Significant Impact Assessment Guidelines* (DOE, 2013) determined that there is unlikely to be a residual, significant impact to any of these seven species as a result of the Project.
- The subsequent *MNES Significant Impact Self-Assessment* prepared by GHD (2024) determined that of the above species, the following were likely to occur: White-throated needletail (*Hirundapus caudacutus*), Koala (*Phascolarctos cinereus*) and Grey-headed flying fox (*Pteropus poliocephalus*); with two other glider species having the potential to occur: the Yellow-bellied glider (*Petaurus australis australis*) and Greater glider (*Petauroides volans*).
- Further assessment against the *Significant Impact Assessment Guidelines* (DOE, 2013) determined that there is unlikely to be a residual, significant impact on the above species - with the exception of the impact on the koala which was considered likely to result in a significant residual impact - despite earlier reporting by GHD suggesting that a significant residual impact would not occur for this species; and the project footprint described as 'not impacting extensive tracts of suitable dispersal and foraging habitat'. The reasoning for the impact was that the Project footprint supports habitat critical to the survival of the species for the koala with foraging habitat present in the Mitchell Road reserve Eucalypt woodland. However, this habitat was also described as isolated, with marginal connectivity to areas of suitable habitat in the broader landscape. Suitable dispersal habitat adjacent to the road reserve was described as previously cleared areas with isolated canopy trees. Furthermore, the project area was not considered to include refuge habitat, with the area impacted within road reserve described as supporting key threats to the species including the known presence of foxes, feral dogs, and road traffic.
- Despite this GHD concluded that a Significant Impact was likely referral is required for the project with offsets likely to be required as a result of significant impact to the koala.

Results of ENSC site assessment

A site assessment was conducted within the road expansion impact area with 130 trees assessed for presence of koala scat and other habitat features of note. Of these, koala scats were located under 4 trees, however no direct sightings occurred. Possum scats were identified under 17 trees, and minor hollows of a diameter of around 15-25 cm were also noted within 4 trees. Trees with minor spouts indicative of early hollow formation were identified in 10 trees.

The impact area was considered to be as described by GHD and Redleaf, with advanced regrowth Eucalypt woodland dominated by *Eucalyptus moluccana* with *Eucalyptus tereticornis*, *Corymbia citriodora*, and *Eucalyptus crebra* at heights of 25-30 m and 30-50% cover. Adjacent areas to the road reserve were predominantly cleared areas subject to grazing of open grassland and scattered Eucalypts and Acacias.

Whilst the impact area is clearly being utilised by koalas and contains koala habitat trees, due to its isolation and relatively small size, it is considered to represent a stepping stone function in the landscape rather than core habitat for this species. Additionally, due to the presence of threatening factors including road traffic and feral animals that are known to predate koala including dogs and foxes, the project area is considered to be of lower utility for koalas.



Significant Impact Assessment

The purpose of this self-assessment is to determine whether the proposed road network expansion could significantly impact the koala, which is listed as endangered under the EPBC Act. Under the provisions of the EPBC Act, an action will require approval if the action has, will have, or is likely to have a 'significant impact' on a 'Matter of National Environmental Significance' including any species listed that is listed as endangered. A 'significant impact' is an impact which is important, notable, or of consequence, having regard to its context and intensity. Whether or not an action is likely to have a significant impact depends upon the sensitivity, value, and quality of the environment, which is impacted, and upon the intensity, duration, magnitude and geographic extent of the impacts.

We have assessed the project with reference to the *Matters of National Environmental Significance Significant Impact Guidelines 1.1* under the *Environment Protection and Biodiversity Conservation Act 1999* published by the (former) Department of Environment, 2013. Additionally, we have considered the referral guidance for koalas as provided on the DCCEE website, which states:

In self-assessing the potential negative impacts of your action on the koala, you must consider:

- *the scale of the action and its impacts*
- *the intensity of the action and its impacts*
- *the duration and frequency of the action and its impacts*
- *the environmental context, for example, the sensitivity, value, quality and size of the environment, the site's connectivity to other habitats in the broader landscape and its importance in the conservation of the environment*
- *the nature of the potential impacts that are likely to result from your actions*
- *whether mitigation measures will avoid or reduce these impacts.*

The table in Attachment 1. provides an Significant Impact Assessment (SIA) for the proposed development on the koala. The koala is listed as endangered under the EPBC Act, so has been assessed against the SIA criteria for endangered species outlined in the MNES Guidelines. Note that no other MNES were identified to be likely impacted by the proposed development.

In summary, our self-assessment indicates that the development proposal will not result in a Significant Impact to the Koala based on assessment against the MNES Significant Assessment Guidelines.

However, please note that legal certainty can only be obtained by submitting a referral for assessment by the Minister under the EPBC Act in order to determine whether the matter is a 'controlled action' under the EPBC Act.

If you have any questions regarding this letter, please feel free to contact the undersigned.

Yours sincerely
Steve Towner

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Attachments:

- 1. Significant Impact Assessment**
- 2. Images of vegetation within proposed road alignment**
- 3. Koala impacts summary map**



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ATTACHMENT 1. SIGNIFICANT IMPACT ASSESSMENT

Background

On 12 February 2022, the koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) was listed as endangered under the EPBC Act. The koala was previously listed as vulnerable. The change in conservation status was a result of the cumulative impacts of prolonged drought, black summer bushfires, disease, urbanisation and habitat loss over the preceding 20 years. The new listing ensures that '*all assessments under the EPBC Act will be considered in terms of their local impacts and regarding the wider koala population*'.

The koala (*Phascolarctos cinereus*) is an arboreal herbivorous marsupial and one of Australia's most iconic animals. The species' range extends from north-eastern Queensland south to the New South Wales–Victoria border. The koala occurs in both coastal and inland areas, with the extent of its range dictated by temperature and leaf moisture. The species generally occurs at elevations below 800 m, and densities are typically greater in coastal populations. Within Queensland, the highest population densities have been recorded in south-east Queensland, with lower density populations occurring throughout northern and western areas (Menkhorst and Knight 2010). Significant declines in the koala population of south-east Queensland have been reported, with estimates of a 75 percent decrease in total population numbers across the region since 1990.

Throughout the koala's range, it inhabits wet sclerophyll forest, open forest and woodland mostly dominated by *Eucalyptus* species. Suitable habitat can broadly be defined as any forest or woodland community containing known koala food trees from *Eucalyptus* and related genera, or shrubland with an emergent layer of food trees. At the regional scale, koalas show a preference for a small group of favoured food trees. In south-east Queensland, these species include forest red gum (*Eucalyptus tereticornis*), tallowwood (*E. microcorys*), and red stringybark (*E. resinifera*). Koalas are also known to occur in vegetation communities where *Melaleuca* and/or *Casuarina* species are the dominant canopy trees. There is growing recognition of the importance of non-food trees utilised for shelter, which may be of equal importance to food trees (DoE 2019).

A search of the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) Protected Matters database included records of koalas within a 2 km radius. Additionally, records of this species exist within 5 km of the impact area as derived from the Qld Government WildNet database, the most recent from 2023. Within the proposed development site suitable koala habitat persists in the form of a combination of modified and/or degraded and regrowth Regional Ecosystems containing suitable habitat for koala, as well as individual koala habitat trees.

Koala Surveys and Results

In summary, no direct sightings of koala within the proposed road extension have occurred during recent surveys in 2023 and 2024, and no WildNet records for koala exist within a 1 km radius of Lot 4 on RP85497, however there are records within a broader 5 km radius of the site with the most recent from 2023. Whilst GHD undertook koala SAT surveys and call playback, signs of koala are not included within their reporting. Scats and scratches indicative of koala presence were noted by Redleaf Environmental in 2023 with usage considered as 'moderate'. ENSC also recorded signs of koala usage comprised of scats under 4 trees, and scratches noted on some smooth barked Eucalypts though again no direct sightings of koalas occurred.



Habitat Quality

Regional ecosystems in Qld are vegetation communities in a bioregion that are consistently associated with a particular combination of geology, landform, and soil. Regional ecosystem mapping identifies the majority of the site as **non-remnant** vegetation (Category X). Within the proposed road extension, two regional ecosystems are mapped as occurring: RE 12.8.24 *Corymbia citriodora* subsp. *variegata*, *Eucalyptus crebra* +/- *E. moluccana* open forest which is endangered under the *Vegetation Management Act 1999* and RE 12.9-10.3 *Eucalyptus moluccana* open forest which is Of concern under the *Vegetation Management Act 1999*. It should be noted that the extent and composition of Regional Ecosystems was considered to be similar to that presented in Qld Regional Ecosystem mapping (in terms of structure and floristic composition) though virtually all of the site has been modified and/or degraded by historical clearing and significant weed incursion.

Koala Habitat Areas in Qld are areas of vegetation that have been determined to contain Koala habitat that is essential for the conservation of a viable koala population in the wild based on the combination of habitat suitability and biophysical variables with known relationships to Koala habitat such as landcover, soil, terrain, climate and ground water. Core Koala habitat areas represent the best quality koala habitat areas, based on modelling of biophysical measures including climate, suitable vegetation for both food and shelter, and koala sighting records. Locally refined Koala habitat areas include areas of mature vegetation that might not meet the Queensland Government's criteria for core koala habitat areas. the parts of the subject site that are identified as a **Core Koala Habitat Area** are analogous with the mapped remnant and regrowth Regional Ecosystems mapped over the site.

Vegetation assessment undertaken by Redleaf Environmental and GHD was confirmed by ground-truthing from Envirosphere Consulting. The assessment demonstrated that the vegetation within the site comprises advanced regrowth vegetation dominated by native Eucalypt and allied genera with the following species most commonly encountered: *Eucalyptus moluccana*, *Eucalyptus tereticornis*, *Corymbia citriodora*, and *Eucalyptus crebra*. The majority of the species found on site are listed by the Department of Environment and Science as medium utility for koalas – with one higher utility species: *E. tereticornis*.

Minimum koala home ranges in high quality habitat in South East Queensland are approximately one hectare for female koalas and two hectares for male koalas, however this is variable dependent on the quality of habitat, with poorer quality habitat tending to result in larger home ranges (McAlpine *et al.* 2005). Therefore, given the presence of koala feed trees and scats, koalas could utilise the site or vegetation proximal to the site for feeding and shelter on a regular or intermittent basis. The presence of scat and scratches indicates a population of koalas whose range includes the subject site. However, given the absence of mapped koala habitat immediately adjacent, with koala habitat in the landscape consisting predominantly of isolated patches and scattered individual trees, the majority of koala activity in this region is expected to be confined several kilometres to the west and south.

Proposed Development and Impacts

The proposed development comprises an upgrade to Mitchell Road as well as widening of Beaudesert – Boonah Road to allow for a new turning lane into Mitchell Road to support the development of large-scale organics recovery facilities at the site. This will require the clearing of advanced regrowth including several *Eucalyptus* trees within the current Mitchell Road reserve.



The area being proposed to be cleared results in approximately 38% of the total mapped and ground-truthed core koala habitat/remnant Regional Ecosystems mapped by the Qld State Government within the site. This was ground-truthed to comprise advanced regrowth (mapped as remnant) and non-remnant vegetation, resulting in an area of 1.1734 ha of core koala habitat removed as a result of the development.

Unimpacted koala habitat areas comprises 1.8766 ha of mapped core koala habitat or approximately 62% of the core koala habitat on site.

It should be noted, the proposed impact areas do not contain a high density of higher utility tree species with most trees medium utility for koalas. However, sources of permanent surface water - which appear to be a fairly important component of high-quality koala habitat are present in the form of a number of minor tributaries on the site. Koalas are known to select leaves with adequate moisture content particularly in dry periods (Wu, 2012; Seabrook *et al.* 2012; 2014, and Dique *et al.* 2004).

The proposed development will cause a low to moderate impact to koala habitat, given the number of trees to be removed, the relatively small size of the patch of vegetation to be removed within the site, and absence of forested connectivity to neighbouring habitat areas. The site is considered likely to form part of the home range of a localised population of koalas, although it is considered likely to be utilised on a transitory basis due to the presence of higher quality, less fragmented habitat in the region further west and south.

As these impacts cannot reasonably be avoided or minimised further, restoration activities are proposed to be suitably located in the immediately adjacent lot to the west which is owned by SoilCo Developments – see **Figure 1** in **Attachment 3** for the proposed location - to achieve a net gain in native vegetation, and to rehabilitate degraded areas with native vegetation whilst discouraging native fauna to be channelled towards the road corridor where the potential for vehicle strike is high. It is suggested that the area of rehabilitation commence from the edge of the existing mapped koala habitat within this lot to expand and consolidate upon existing koala habitat.

Please refer to the attachments for further information in regard to ground-truthed vegetation communities and koala impacts.

Guideline Criteria	Assessment
<i>Lead to a long-term decrease in the size of a population</i>	Koala activity during the site assessment was deemed by Redleaf Environmental to be moderate within the study area, and this was supported by ENSC's assessment in which a number of trees bearing scratches, as well as scats were observed under 4 of the 150 trees surveyed. This indicates a population of koalas whose range includes the subject site. It is considered probable that the site forms part of a larger home range for between one to three koalas; that is likely to include the larger, more extensive tracts of contiguous vegetation to the west and south. For reference, a survey by Planit (2017) in support of the Coomera Woods Development, indicated a likely population of 5 individual



	koalas in a site of 147 ha (slightly larger than the subject site which is just below 120 ha and is predominantly cleared). However, given the absence of larger connected patches of vegetation, the majority of koala activity in this region is expected to occur to the larger areas of mapped koala habitat to the west and south. Consequently, given the existing habitat quality, lack of connectivity, and low number of koalas likely to be utilising the site, the development site is not considered to be a key source populations either for breeding or dispersal, nor a population that are necessary for maintaining genetic diversity, or a population that is near the limit of the species range. It must also be considered that a number of constructed and natural barriers to movement exist adjacent or in close proximity to the site including roads and fencing typical of rural properties. It is acknowledged that the proposal will result in the loss of non-juvenile koala habitat trees (NJKHT's) from the site. It is also acknowledged that increased traffic associated with the development could potentially result in increased rates of mortality from vehicle strike. However, with consideration to the scale and location of this activity, the development is not considered to lead to a long-term decrease in the size of a population.
<i>Reduce the area of occupancy for the species</i>	It is acknowledged that the proposal will result in the loss of NJKHT's from the site as well as areas mapped and ground-truthed as koala habitat. The proposal will result in the removal of Koala food trees in localised areas over the subject site but on the majority is restricted to areas within the road reserve that are currently modified or degraded due to historical clearing and grazing. It should also be noted the majority of Koala habitat mapped by the Qld Government is considered advanced regrowth vegetation as opposed to mature remnant vegetation.
<i>Fragment an existing population into two or more populations</i>	Given that the impact area likely forms part of a larger home range for a small number of koalas, it is not considered likely that the development will fragment an existing population into two or more populations. The movement 'corridors' on the site are considered to be present in the central section of the site to the south of Mitchell Road in a north-south orientation, where connectivity to larger patches of contiguous vegetation to the south are present and will not be impacted by the proposed works.



	Connectivity to the east/north-east is considered compromised due to the presence of roads. Additionally, it is noted there are other barriers to movement over and adjacent to the site, cleared areas, heavy weed biomass and fencing. Significant parts of the adjacent lot will be rehabilitated to provide north to south movement corridors in perpetuity allowing koalas to move through and beyond the development's boundaries. Fencing (either koala friendly, or koala exclusion, where appropriate) will be included and is proposed to be addressed in a Rehabilitation Management Plan prepared for the site. Weed removal and planting of koala habitat trees is also proposed to be addressed in this plan. This is to include koala habitat tree planting in the adjacent lot to the west at a ratio for 3 trees planted for every one tree removed as part of the works.
<i>Adversely affect habitat critical to the survival of a species</i>	The development is acknowledged to result in the removal of koala habitat; however, this habitat is not considered critical to the survival of the species due to the size and isolation of the patch, and absence of broader connectivity across the site, as well as retention of most of the remaining mapped core koala habitat and koala habitat trees on the site. The historical land uses have had significant impacts on the long-term persistence of koalas in this part of the Scenic Rim region and the habitat to be impacted by the proposed road extension is not considered critical to the survival of the Koala population in this locality.
<i>Disrupt the breeding cycle of an important population</i>	The peak koala breeding season in south-east Queensland is considered to be from August to February. Koalas will move around significantly more at this time, as juvenile males seek to establish their own home range and breeding adults seek a mate. The construction of the proposed development may temporarily impact the breeding cycle of this species on a very local scale; however, this would be a temporary impact. A Koala and Fauna Management Plan is recommended to be prepared prior to construction outlining all fauna management activities including the presence of a 'spotter-catcher' during tree removal.
<i>Modify, destroy, remove, isolate, or decrease the availability or quality of habitat to the extent that the species is likely to decline</i>	Most of the subject site is currently heavily degraded from historical clearing, grazing, and subsequent weed incursion. The subject site is already suffering from significant edge effects resulting in large scale weed incursion and colonisation from exotic fauna species.



	The site condition and land uses are considered to have had a significant impact on the sites carrying capacity for koalas. The site is not considered to represent a large, contiguous area of habitat. Whilst the corridors on site can facilitate movement on and off site, conditions over much of the site and immediately adjacent do not promote immigration and recruitment. Therefore, in the long term, it is considered unlikely that retention of the vegetation within the road reserve to be subject to removal will result in long-term persistence of a localised koala population. Nonetheless, negative impacts to koala movement between patches of koala habitat have also been considered in the development. The development does not significantly impact movement opportunities for koala habitat, as north to south movement is possible via movement corridors, with the most favourable corridor located to the south of the proposed road extension, where connectivity to other areas of koala habitat is possible. It should be noted that movement toward the road corridor would be discouraged as this would result in potential vehicle strike due to high volumes of traffic. Rehabilitation works are proposed to be undertaken within degraded areas of the site as part of the applicants obligations to mitigate impacts on koala habitat. It is considered that environmental rehabilitation works including weed control, reconstruction planting and supplementary koala habitat tree planting will form the basis of the rehabilitation works on site. This will enhance the existing movement corridors in perpetuity as well as expanding the area of koala habitat; allowing koalas to move through and beyond the development's boundaries.
<i>Result in invasive species that are harmful to an endangered or critically endangered species becoming established in an endangered or critically endangered species' habitat</i>	The development may provide additional vectors for the spread of weed seed into remnant native vegetation. Weed control as part of the proposed rehabilitation works will reduce density and diversity of exotic flora. Measures to prevent the introduction or spread of pest species or weeds during construction would be specified in a Rehabilitation Management Plan. Given the location of the study site, there is potential for pest animals such as wild dogs, cane toads, cats and foxes, some of which have been previously documented at the site by other consultants. The applicant could proactively manage pest animals though this is typically not a legislative



	requirement. It is also considered that rehabilitation works will improve habitat quality and help exclude exotic fauna.
<i>Introduce disease that may cause the species to decline</i>	Disease also threatens koalas. Loss of habitat, including loss of food and shelter, is a major stress for koalas. During times of stress, koalas are prone to outbreaks of the disease <i>Chlamydia</i>. <i>Chlamydia</i> is a bacterial infection which affects almost all koalas in south-east Queensland. The disease weakens the immune system and causes various problems, including blindness and female infertility. In severe cases, it can cause death. Infertility from <i>Chlamydia</i> is a contributing factor to the current decline in koala numbers. As the disease is already present in the broader south-east Queensland population, the development is not considered to be result in introduction of disease.
<i>Interfere with the recovery of the species</i>	It is acknowledged that the development will result in removal of a relatively minor area of koala habitat and koala habitat trees. It is further acknowledged that increased traffic associated with the development could potentially result in increased rates of mortality from vehicle strike. However, the scale, duration and intensity of the proposed development are not considered to be of a scale that will interfere with recovery of the species. The main threat to this species is habitat loss, other predominant include vehicle strike, disease (<i>Chlamydia</i>), and mortality from dog attack. Mitigation measures including signage, fauna friendly and fauna exclusion fencing, and traffic controls have been included as part of the development proposal. Additionally, the retention of 62% of the mapped core koala habitat and rehabilitated fauna movement corridors will improve existing environmental condition and habitat quality. These works are considered to further reduce the likelihood of overall environmental harm and degradation, and the likelihood of a significant impact.
Conclusion	
<i>The development will not result in an Significant Impact on the koala given the relatively small scale of impacts, isolation and small patch size of the impacted area. This assessment has also had consideration to mitigation including environmental rehabilitation of koala movement corridors and expansion of existing koala habitat.</i>	



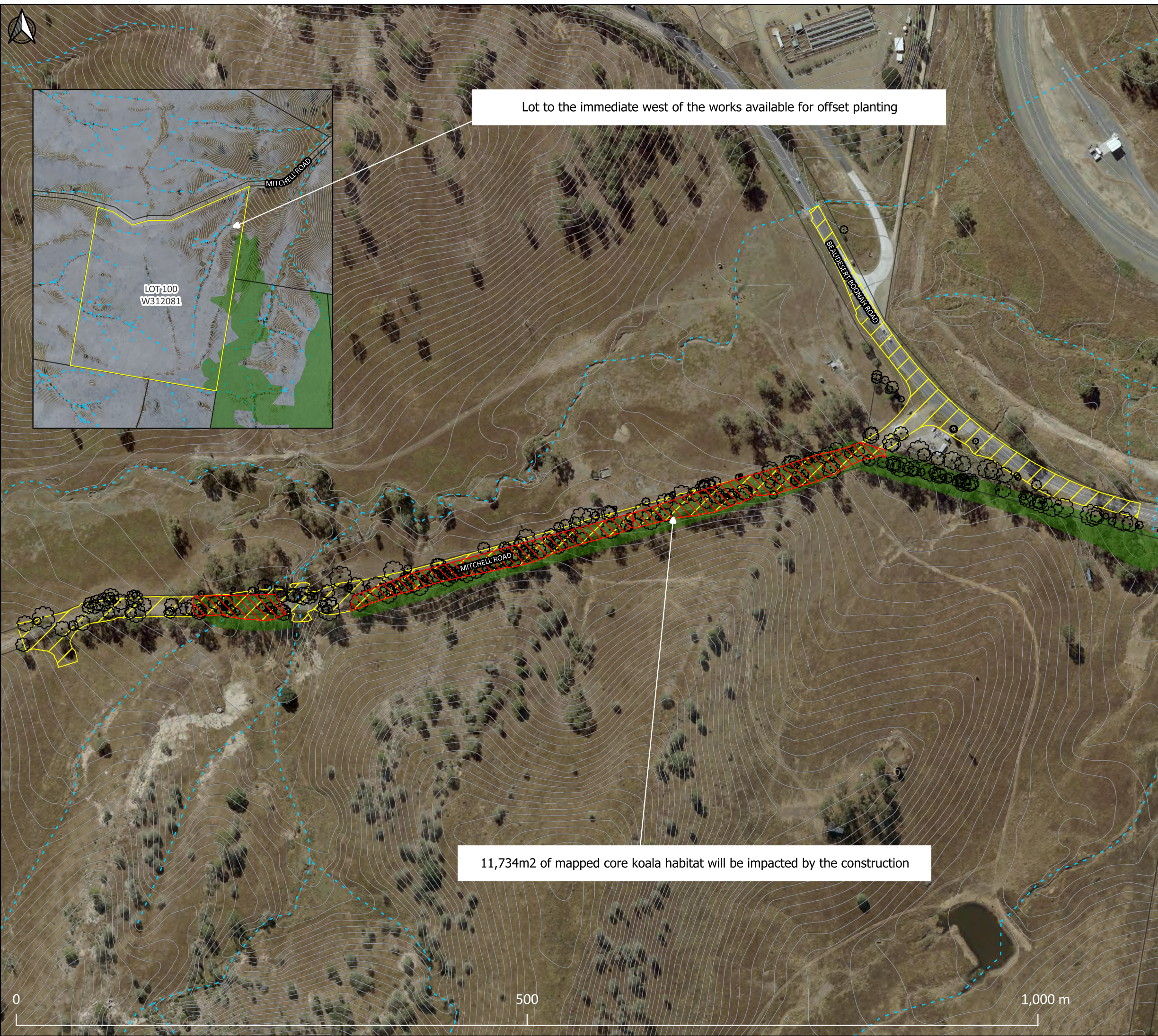
ATTACHMENT 2. IMAGES OF VEGETATION WITHIN PROPOSED ROAD ALIGNMENT







ATTACHMENT 3. KOALA IMPACTS SUMMARY MAP



Lot to the immediate west of the works available for offset planting

11,734m2 of mapped core koala habitat will be impacted by the construction

FIGURE 1
KOALA HABITAT IMPACT SUMMARY

- LEGEND
- 1 m contours
 - Surveyed trees
 - Watercourses
 - Cadastral data
 - Core koala habitat area
 - Impact area from construction
 - Impacted core koala habitat

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