Appendix L

Air Quality Impact Assessment

Bromelton Compost Manufacturing Facility

Air quality impact assessment

SOILCO Pty Ltd

10 October 2024

→ The Power of Commitment

Project name	Bromelton Compost Manufacturing Facility					
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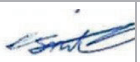
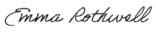
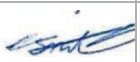
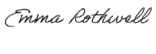
S3	A	Angus Rawle	Evan Smith		Emma Rothwell		25/06/2024
S4	B	Angus Rawle	Rebecca Wilson	On file	Emma Rothwell		15/08/2024
S4	0	Angus Rawle	Evan Smith		Emma Rothwell		23/08/2024
S4	1	Angus Rawle	Rebecca Wilson	On file	Emma Rothwell		10/10/24

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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 197*1.
– 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 5,000t 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 South East Queensland.

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

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

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

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

Table 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 utilizing Forced Aeration Pad system (ASP).
Construction disturbance area within Lot 4 RP85497	21 hectares

Project Component	Details
Operational footprint within Lot 4 RP85497	18.5 hectares
Proposed output of the compost facility and type of material to be received and processed	Receipt, processing, composting, and storage of up to 250,000 tpa of the following materials: Garden, Food and Wood wastes and manure. Receipt, processing, storage and blending of up to 150,000 tpa of sand and soil products for manufacturing (Virgin Excavated Natural Materials or VENM).
Technology used	Two composting technologies will be utilised to handle different feedstocks: 100,000 tpa of garden organics (GO) composted by Passive Open Windrow (OW) method. 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 – Asphalting – 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.

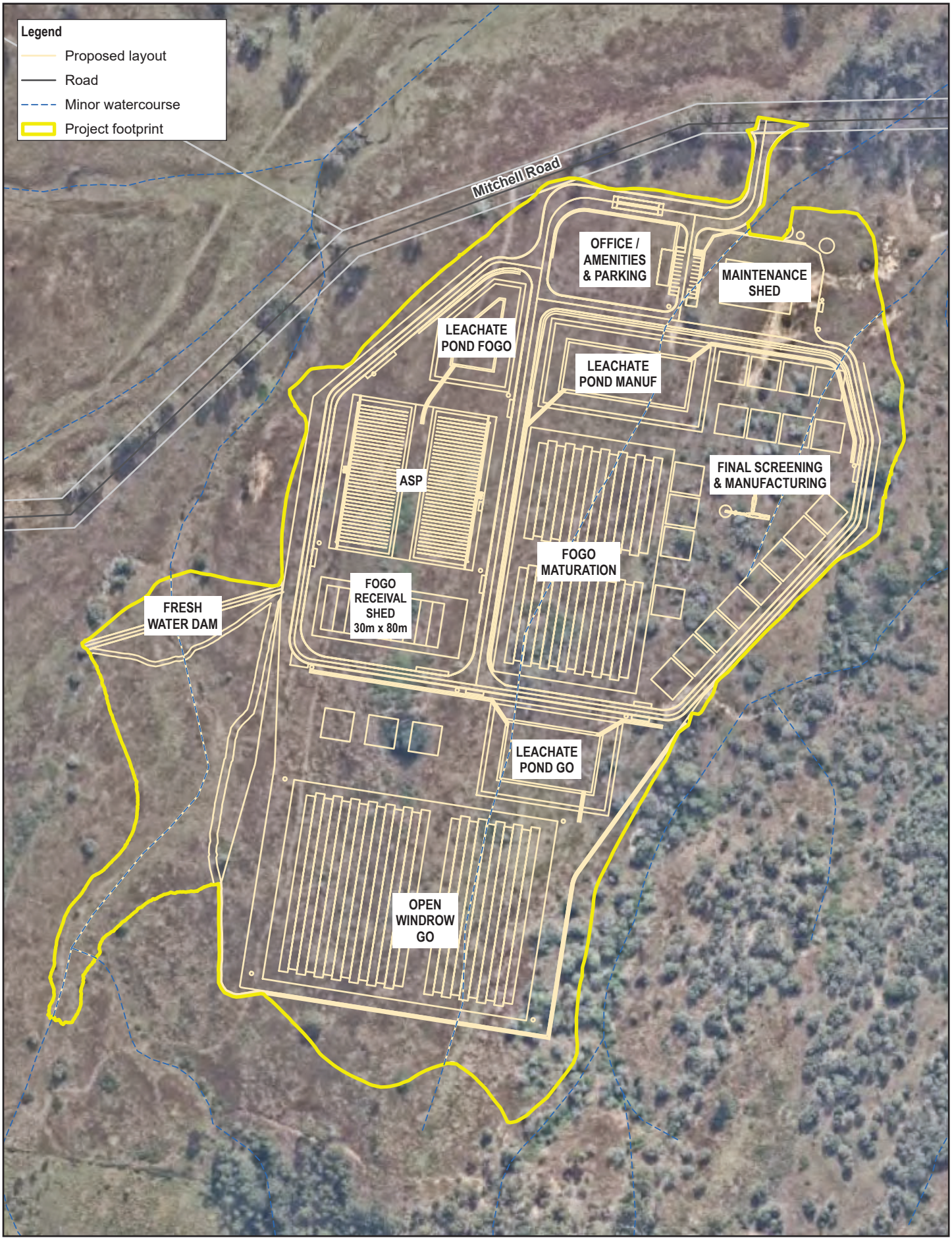
2.2 Operation

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
– Leachate Ponds (GO, FOGO and Manufacturing)

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



Paper Size ISO A4

0 25 50 75 100

Metres

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

GHD

SOILCO
The Life-Giving Soil Company

SOILCO Developments Pty Ltd
Bromelton Compost Manufacturing Facility
Air Quality Impact Assessment

Project No. **12626213**
Revision No. **A**
Date **26/08/2024**

Proposed site layout

FIGURE 2.1

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Print date: 26 Aug 2024 - 14:13

Data source: DoR: rail, watercourse, railway (2023), road (2021); SMEC: Proposed layout (2024); SOILCO: project area (2024); nearmap.com: extracted 26/08/2024 .
Created by: mvandermerwe

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 m^3/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 will also be mixed into finished GO compost as required.
- 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.

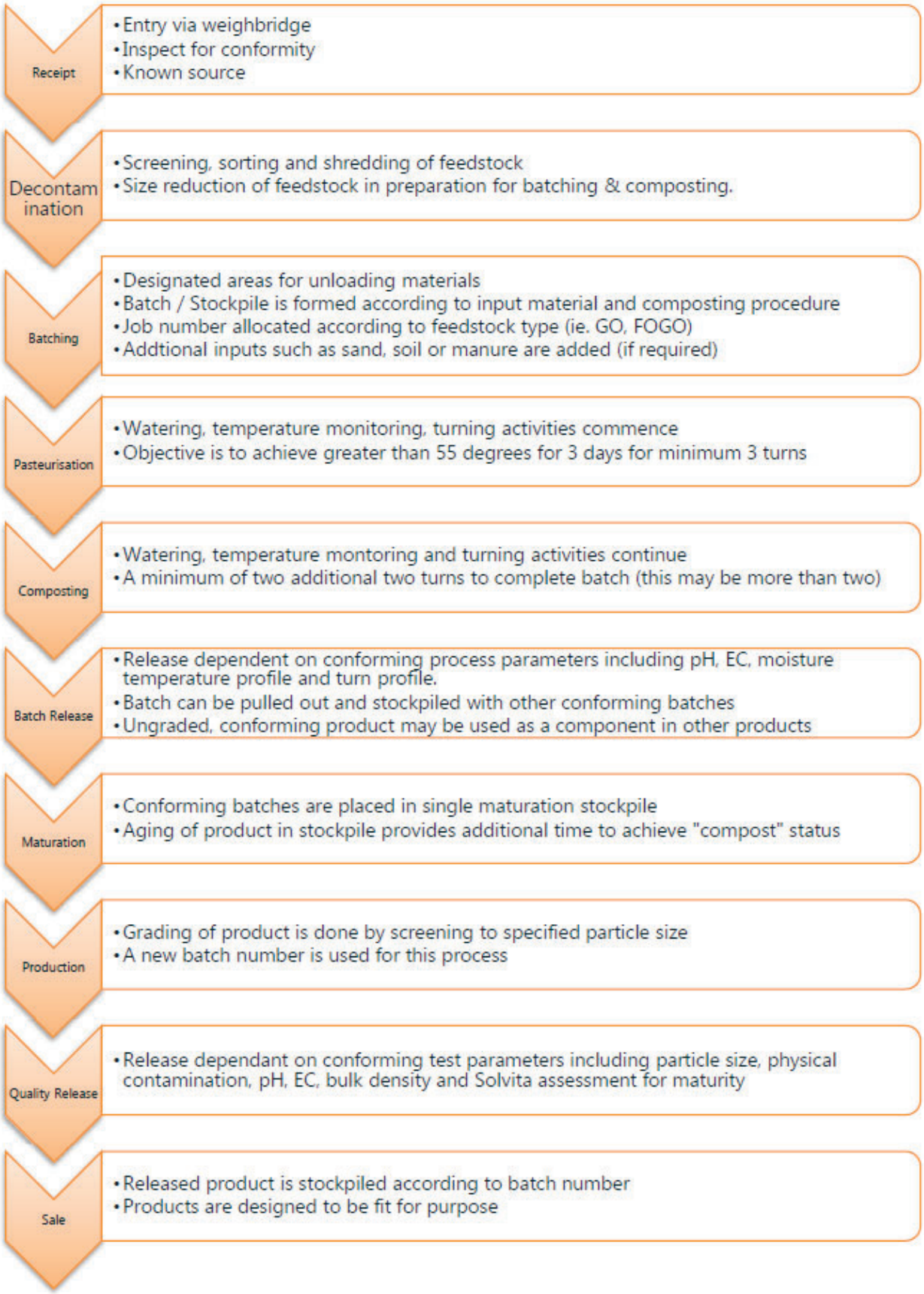


Figure 2-2 ***Bromelton compost manufacturing facility process flow***

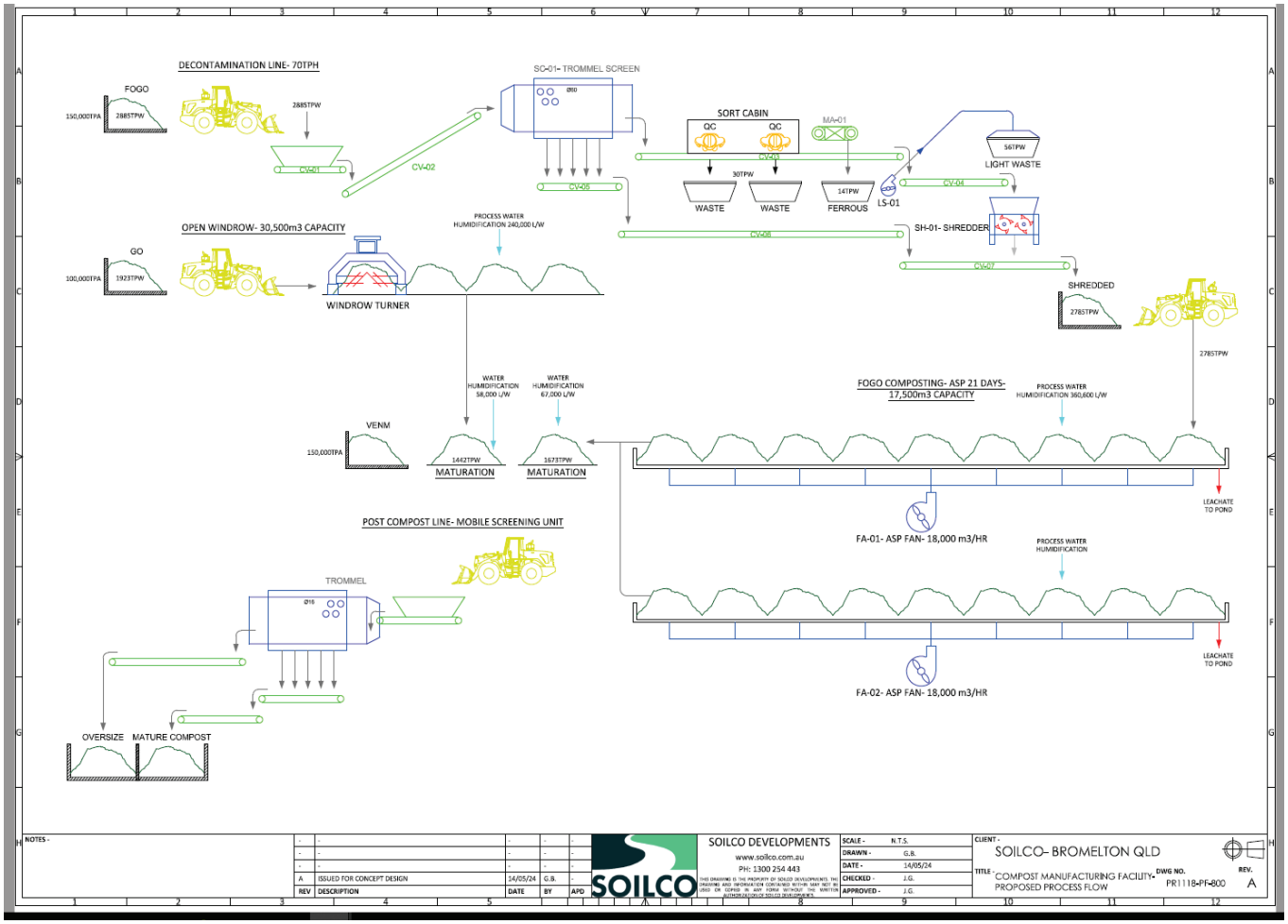


Figure 2-3 Bromelton compost manufacturing facility process flow diagram

2.2.3 Material throughput

Material receival 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 receival 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 feedstock 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 mud71, 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 has 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 site 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 seen 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 receival, 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 (Department of Environment and Resource Management) 2010 - *State Planning Policy 5/10 Air, Noise and Hazardous Materials.*	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 DESI

DESI 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 receival, 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

Relevance to assessment	Advice
	mitigation measures over composting windrows, etc. If 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.

GHD reviewed the proposed feedstocks to be accepted at the site 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 DESI is that where high or very high odour rated feedstocks are accepted, the operations are to be fully enclosed and incorporate air filtration systems. DESI 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.

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 windrows
Maturation and storage – FOGO (Area A)	Peak period material throughput	37,336 m^3 per eight weeks[1]	15,352 m^2	15,352 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	9,081 m^2	8,251 m^2
	Low period material throughput	8,800 m^3per three weeks		
	Average Material Throughput	11,400m^3 per three weeks		
Composting facility – GO (Area D)	Peak period material throughput	30,500 m^3 per eight weeks	24,438 m^2	17,914 m^2
	Low period material throughput	19,000 m^3 per eight weeks		
	Average Material Throughput	24,750 m^3 per eight weeks		

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. Prognostic TAPM data were used as an ‘initial guess field’ for the CALMET meteorological model as well as surface observations from the Beaudesert Drumley Street AWS (040983).

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

4.2.6 Dispersion modelling configuration

Beudesert falls within the Scenic Rim Regional Council, which has no specific dispersion modelling guidance. Consequently, predicted air quality impacts were modelled in accordance with the Brisbane City Council City 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.

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 200 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 B.

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 km of the site boundary. Other receptors below are industrial receptors and would not be considered sensitive under the DESI 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	492043	6906126	863 m Northeast	n
R02	Industrial	Quickcell Technology Products Pty Ltd, LOT 3 Beaudesert Boonah Rd	4926145	6905652	1,150 m East-northeast	n
R03	Industrial	SCT Logistics, 2603 Beaudesert Boonah Rd	492323	6906010	1000 m Northeast	n
R04	Industrial	Scenic Rim Regional Council Waste Facility, Waste Facility Rd	493114	6905850	1700 m Northeast	n
R05	Residential	388 Swan Gully Road Bromelton QLD 4285 Australia	489519	6903432	2000 m Southwest	y
R06	Residential	2572 Beaudesert - Boonah Road	490940	6906632	1100 m Northwest	y
R07	Industrial	28 Swan Gully Road	492703	6904019	1,700 m Southeast	n
R08	Industrial	Bush's Proteins QLD (A J Bush & Sons (Manufactures)	492401	6903487	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 2572 Beaudesert – Boonah Road is currently not in operation						

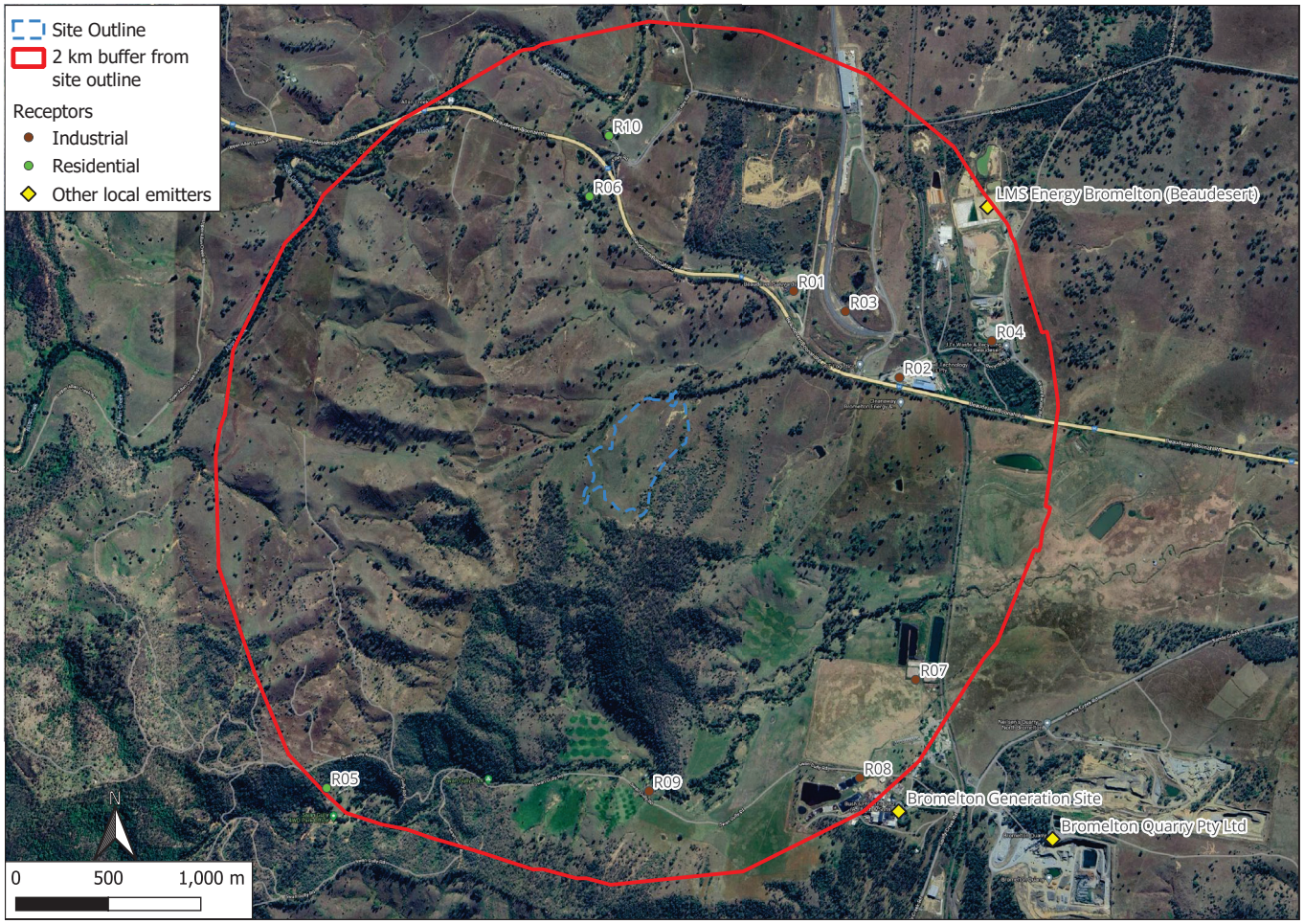
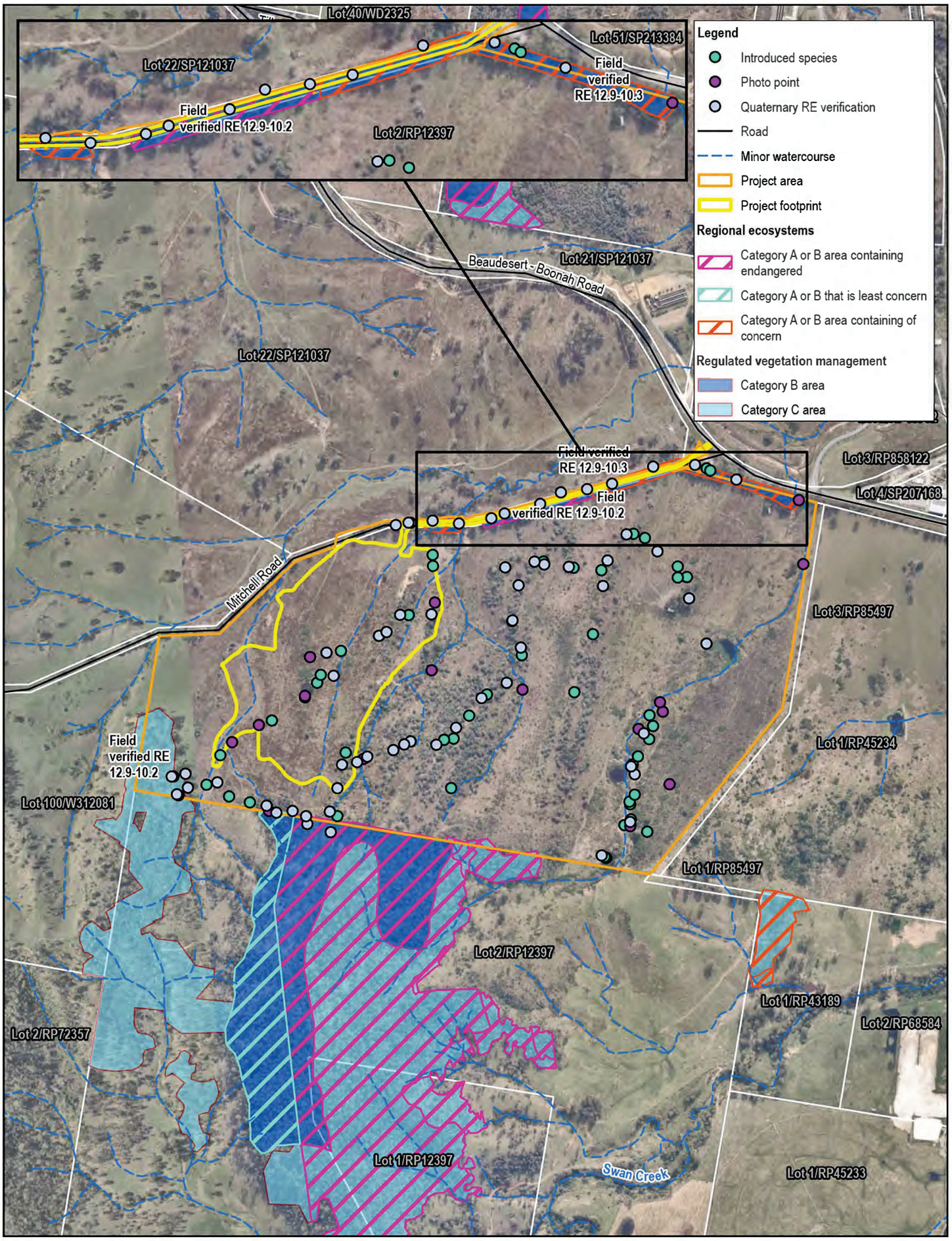


Figure 5-1 Receptors within 2km of the site boundary

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.



Paper Size ISO A4

0 50 100 150 200

Metres

N

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

GHD

SOILCO
The Life-Giving Soil Company

SOILCO Pty Ltd
Bromelton Compost Manufacturing Facility
Terrestrial Ecology Assessment

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

Flora survey effort and results

FIGURE 5-2

\\ghdnet\GHD\AU\Brisbane\Projects\41\12626213\GIS\Maps\Deliverables\12626213_BromeltonCompostManufacturingFacility\12626213_BromeltonCompostManufacturingFacility.aprx - 12626213_102_FloraSurveyEffort_RevA
Print date: 14 Aug 2024 - 17:10

Data source: GHD: flora survey effort (2024); DoR: watercourse (2023), regulated vegetation management, cadastre (2024), road (2021); SOILCO: project area(2024); DES: regional ecosystems (2024),nearmap.com: extracted 14/08/2024
Created by: mvandermerwe

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 6.9 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.

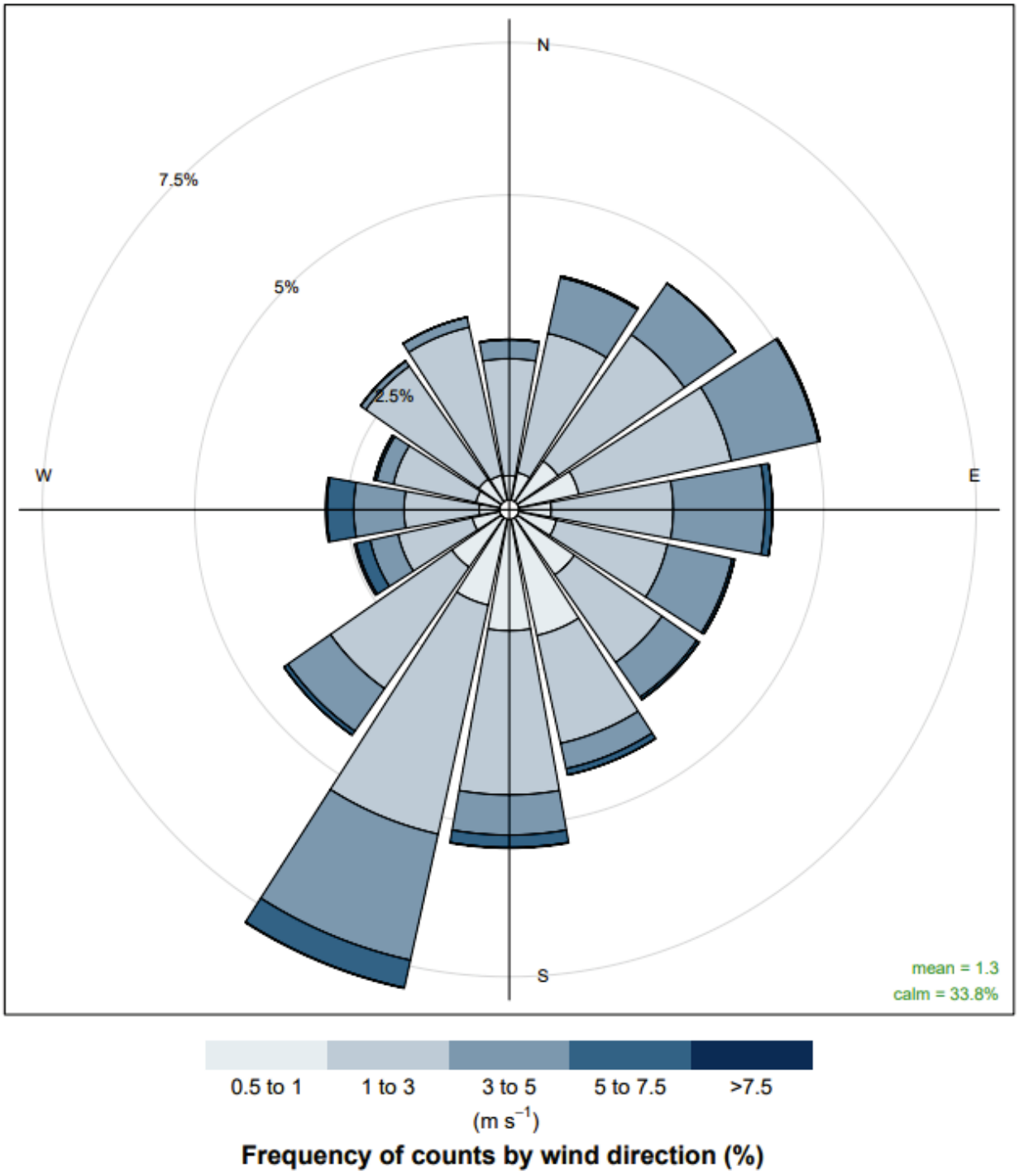


Figure 5-3 Average winds at Beaudesert Drumley Street BoM AWS (2019-2023)

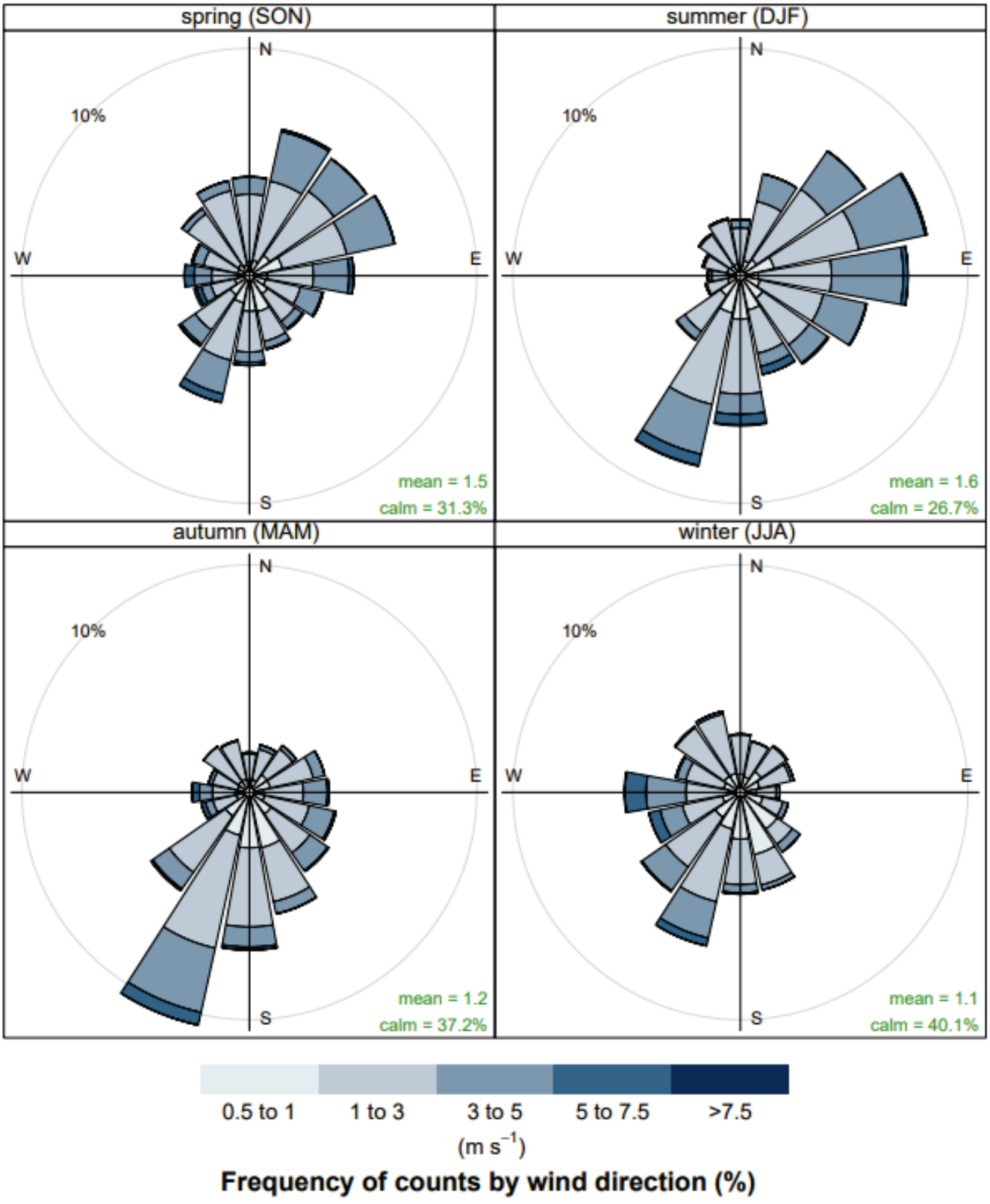


Figure 5-4 Seasonal winds at Beaudesert Drumley Street BoM AWS (2019-2023)

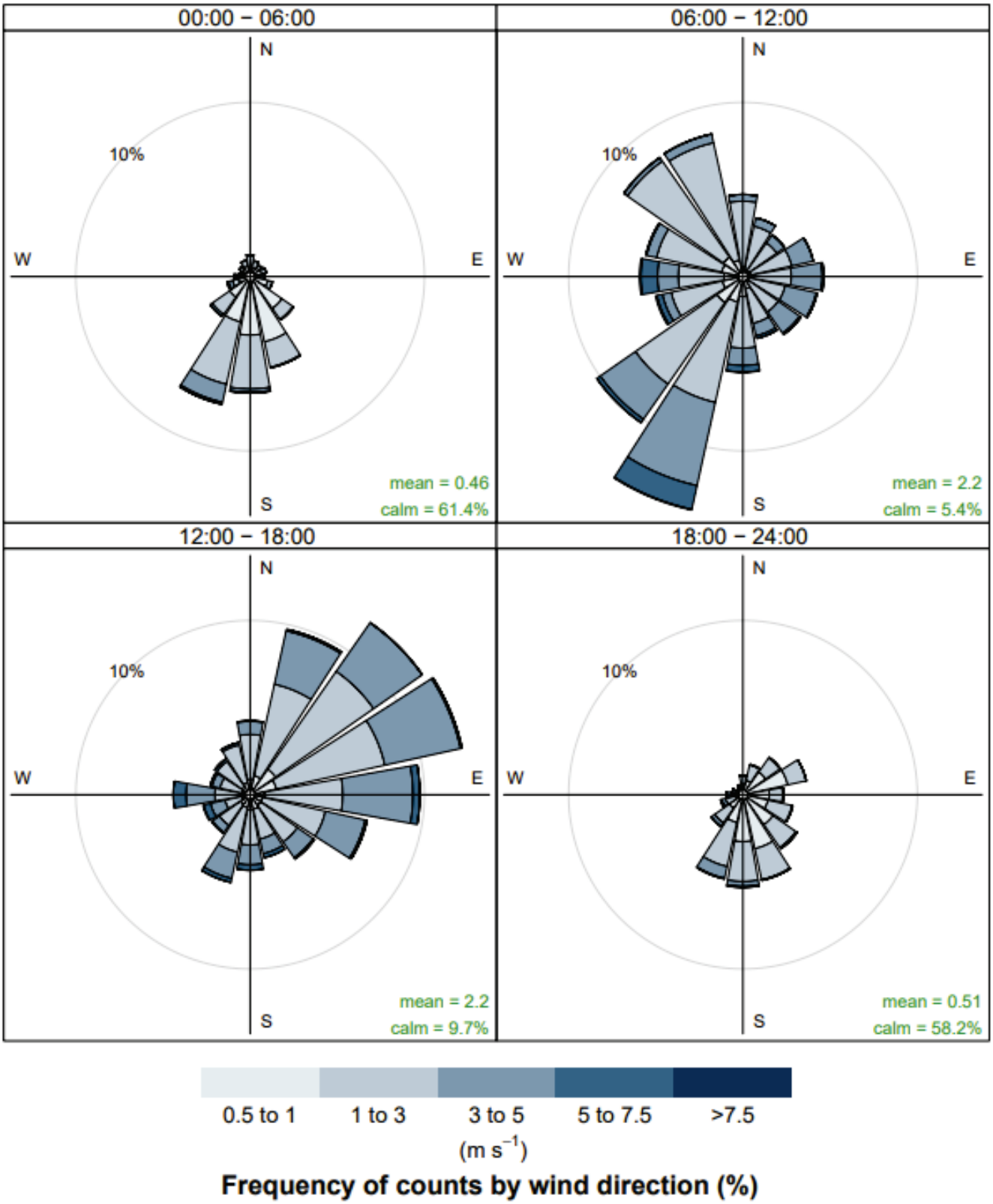


Figure 5-5 Diurnal winds at Beaudesert Drumley Street BoM AWS (2019-2023)

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.

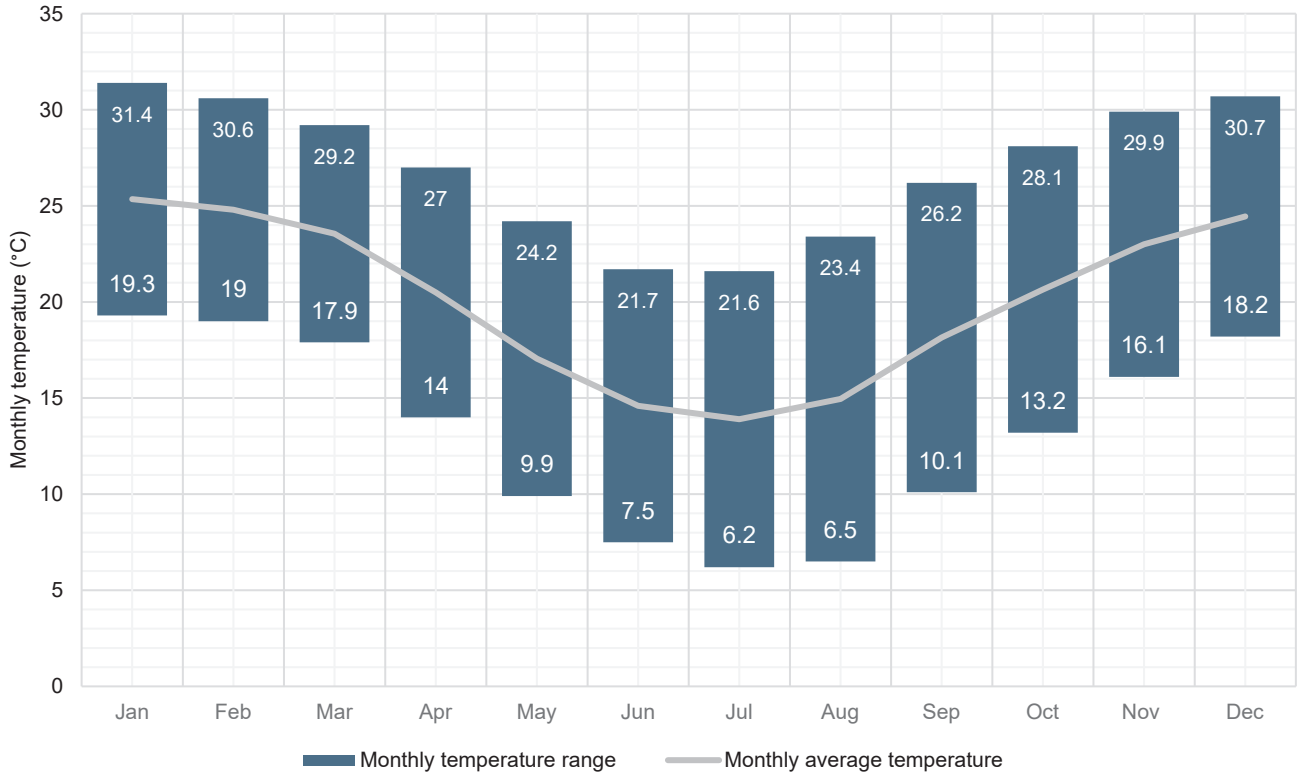


Figure 5-6 Monthly average temperatures from Beaudesert Drumley Street BoM AWS (2007-2023)

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.

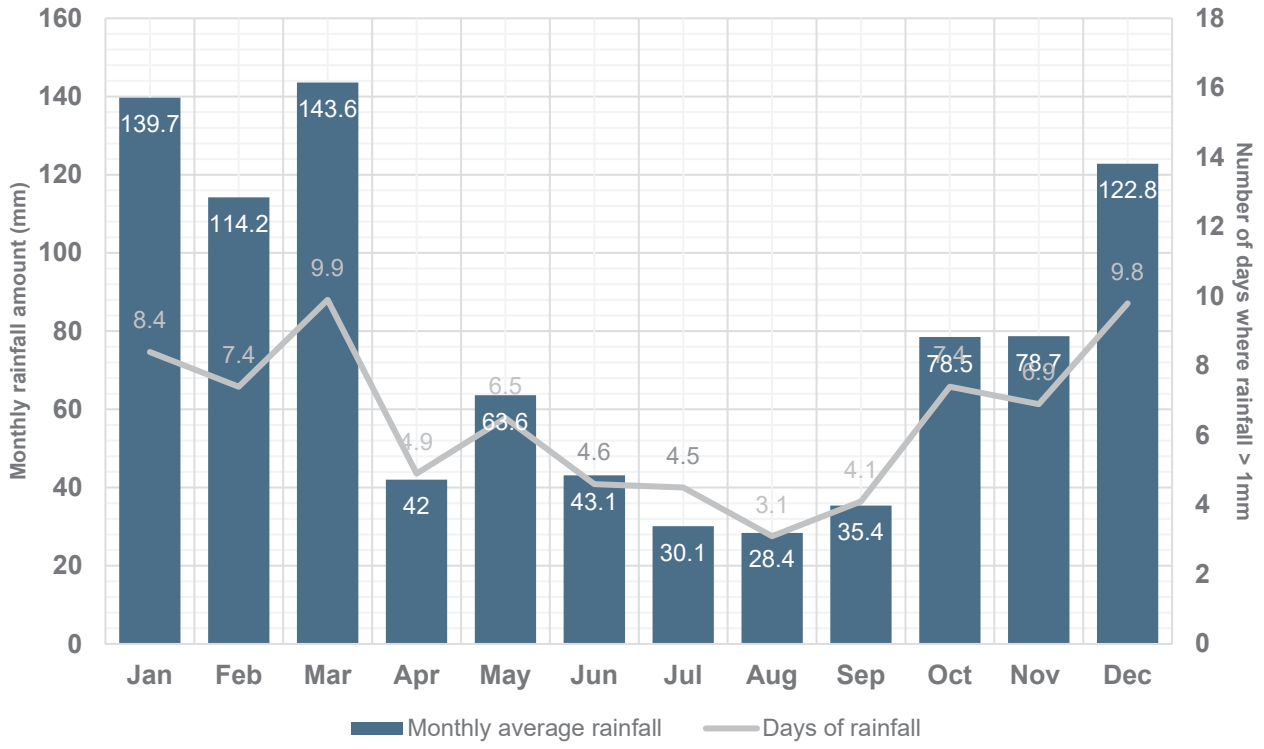


Figure 5-7 Monthly average rainfall (amount and days of rainfall) from Beaudesert Drumley Street BoM AWS (2007-2023)

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. PM_{10} 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/m³)		
		2021	2022	2023
PM_{10}	Maximum 24-hour average	49.4	29.7	25.4
	70th 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/m^3)		
		2021	2022	2023
	70th 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 PM_{10} 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.

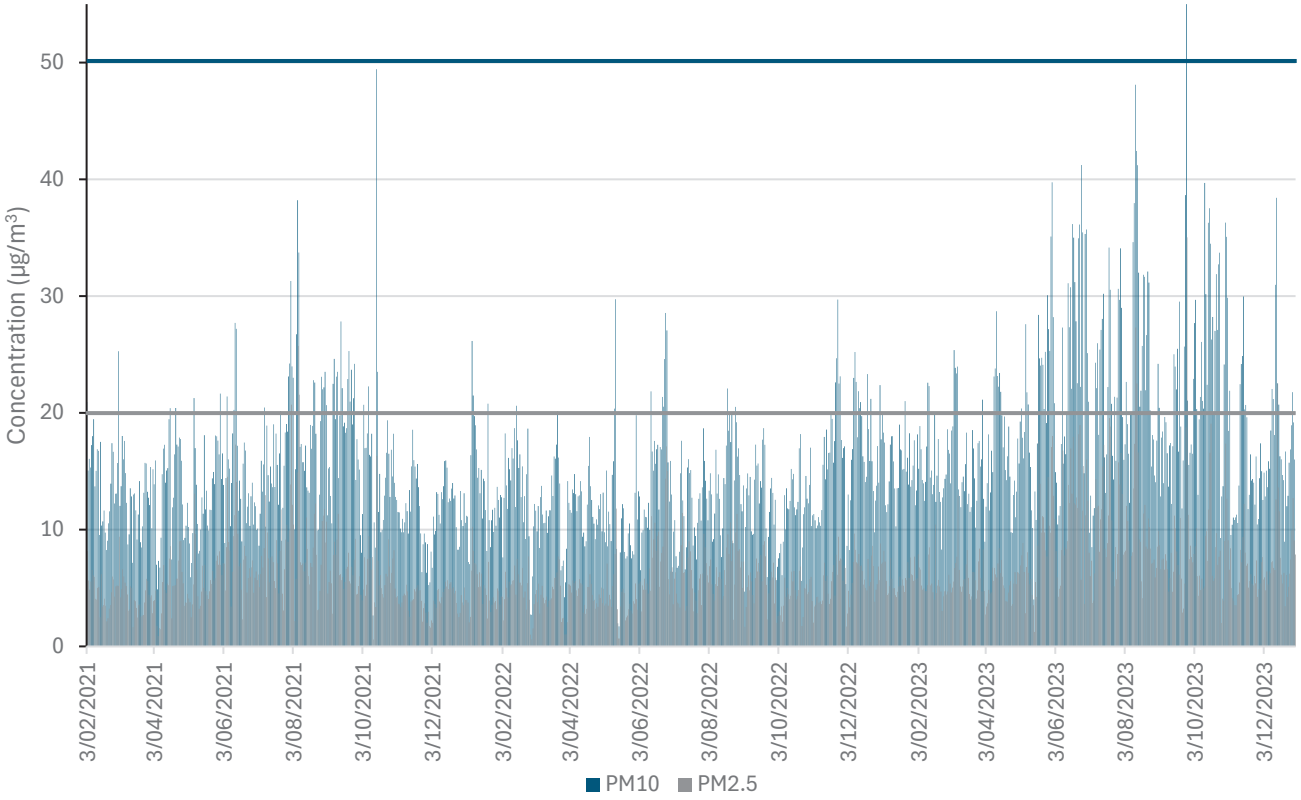


Figure 5-8 Background air quality monitoring data collected from North Maclean DESI AQMS

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.

Potential for cumulative impacts surrounding industry are 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

6. Construction impact assessment

6.1 Construction dust risk assessment

Expected construction activities are defined in Section 2.1.

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 m^2, 18,000-110,000 m^2, and >110,000 m^2 respectively), soil type, number of heavy earth moving vehicles, formation of bunds.
– Construction: Total building volume (small, medium and large thresholds of <12,000 m^3, 12,000-75,000 m^3 and >75,000 m^3 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.

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).

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 Bromelton, there may be variations in feedstock and climate which would change the odour profile from the Project site. We do also note 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 Bromelton.

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 B-2.

The odour emissions inventory for the Project is presented in Table 7-1. The locations of each source are shown in

.

Table 7-1 Odour emissions inventory

Source	Area (m^2)	SOER ($OUV/m^2/s$)	Odour Emission Rate (OU/s)	Reference
Maturation and storage - open windrows (FOGO)	16430	0.6	9398	UNSW, 2012 GHD, 2009
Aerated static pad emissions	8251	1.7	13917	UNSW, 2012
Decontamination/material processing	4198	1.7	7137	UNSW, 2012
Shredding and screening of organic material	N/A	N/A	N/A	URS, 2008
Composting facility - open windrows - GO	17914	1.6	28663	GHD, 2009
Composting Facility - Open Windrows - GO - Windrow Turning Factor	6109	1.6	9775	GHD, 2016
Leachate Pond GO Quiescent	5983	0.15	897	Holmes Air Sciences, 2006
Leachate Pond GO Aerated	5983	1	5983	Ektimo, 2014
Leachate Pond FOGO Quiescent	3431	0.15	515	Holmes Air Sciences, 2006
Leachate Pond FOGO Aerated	3431	1	3431	Ektimo, 2014
Leachate Pond Manufacturing Quiescent	6704	0.15	1006	Holmes Air Sciences, 2006
Leachate Pond Manufacturing Aerated	6704	1	6704	Ektimo, 2014
Total			**87,425**	

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 45% 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	2.3
R02	Industrial	Quickcell Technology Products Pty Ltd, LOT 3 Beaudesert Boonah Rd	1.1
R03	Industrial	SCT Logistics, 2603 Beaudesert Boonah Rd	1.1
R04	Industrial	Scenic Rim Regional Council Waste Facility/Transfer Station – Beaudesert, Waste Facility Rd	0.7

Receptor ID	Receptor type	Address	Predicted odour concentration at receptor
R05	Residential	388 Swan Gully Road Bromelton QLD 4285 Australia	0.4
R06	Residential	2572 Beaudesert - Boonah Road	0.8
R07	Industrial	28 Swan Gully Road	0.5
R08	Industrial	Bush's Proteins QLD (A J Bush & Sons (Manufactures) Pty Ltd), 358 Sandy Creek Rd	0.7
R09	Industrial	194 Swan Gully Road	0.6
R10	Residential	15 Tilley Rd	0.7

The highest predicted 99.5th percentile odour impact is 2.3 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 0.8, which is below the odour criteria of 2.5 OU.

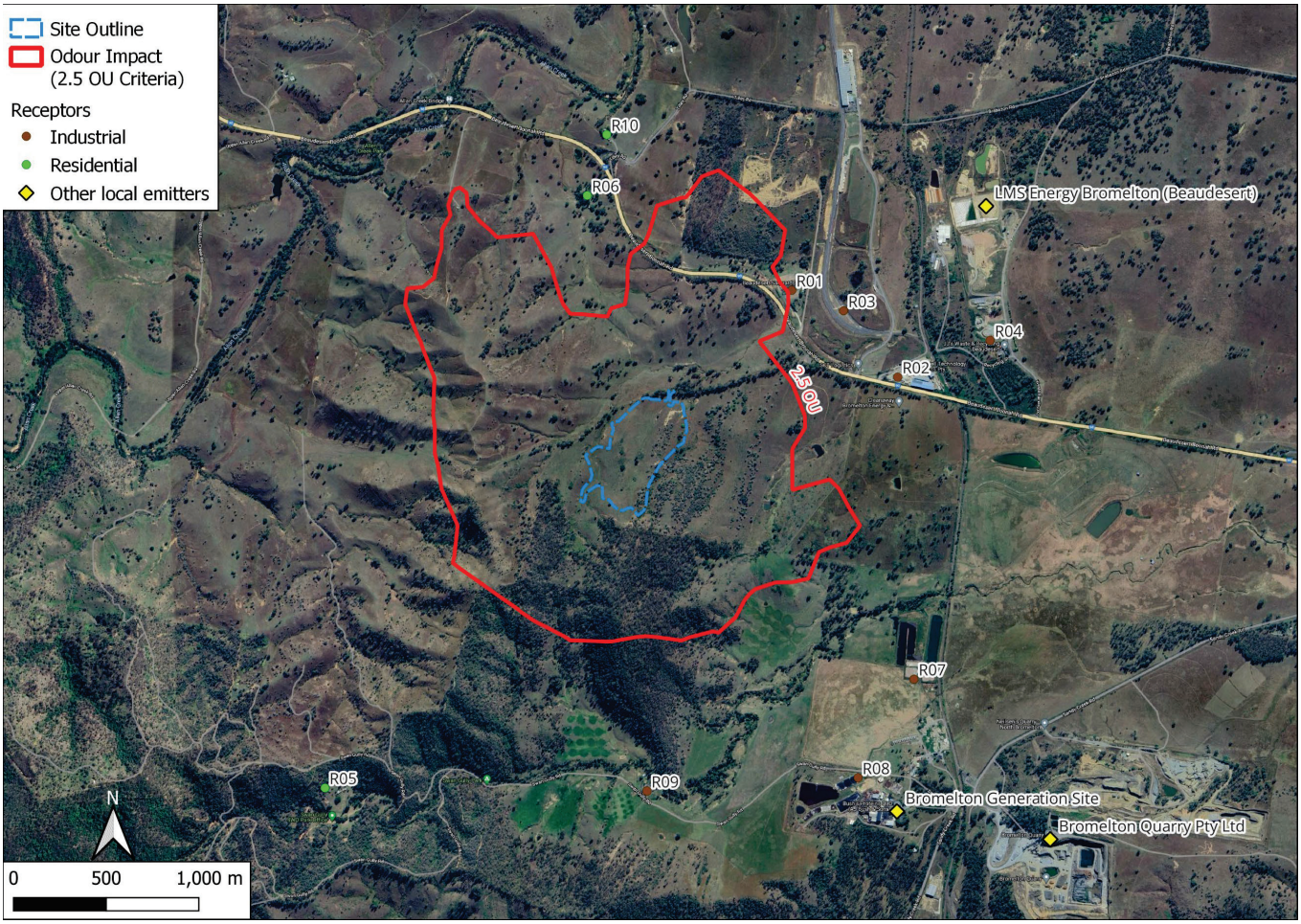


Figure 7-1 Predicted 99.5th percentile odour impact from the Project

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 of 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 Bush's Proteins, 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.

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 1100 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.	

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 45% 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 0.8 OU and the maximum predicted at an industrial receptor (R01) is 2.3 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 8.9 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

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 01 January 2022
Domain centre	UTM zone 55S Easting: 492,148 m Northing: 6,905,146 m
Domain grid spacing	1 x 1 km, 3 x 3 km, 10 x 10 km
Domain size	30 x 30 km, 90 x 90 km, 300 x 300 km
Number of vertical levels	25

A-3 CALMET modelling

CALMET (Version 7) was used to resolve the wind field around the subject site to 200 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.

Upon completion of the TAPM runs, a CALMET simulation was set up to run for the model period using the three-dimensional gridded data output from TAPM as an initial guess field. This approach is consistent with guidance documentation.

CALMET was run using the 'Hybrid' mode (i.e., both observational data and prognostic data were used) using surface data collected from the Beaudesert Drumley Street AWS (040983), cloud data and upper air data were generated using TAPM.

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 origin of the CALMET domain was located at UTM Zone 56S coordinates 484 kilometres east and 6879 kilometres north. The CALMET domain extended 20 kilometres to the east and north.

The CALMET domain consisted of 80 grids in both the east and north directions, with a grid resolution of 0.2 kilometre.

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	Hybrid (NOOBS = 1)
UTM zone	56S
Domain origin	Easting: 484.1480 km Northing: 6879.1460 km
Domain size	80 x 80 at 0.20 km resolution (16.0 km x 16.0 km)
Number of vertical levels	11
Vertical levels (m)	0, 20, 40, 80, 160, 320, 640, 1200, 2000, 3000, 4000,
CALMET settings for hybrid mode Settings selected in accordance with (OEH, 2011)	TERRAD = 3 km
Initial guess field	TAPM .m3d file used as an initial guess field for CALMET
Surface data	N/A
Upper air data	No site-specific upper air data is used. Upper air data is included within the TAPM .m3d initial guess field.
Land use and terrain data	Land use data was manually developed through assessment of aerial imagery to accurately reflect the land use in the area. High-resolution terrain data was sourced from the STRM 1-second (~30 m) database.
Minimum Radius of Influence	0.1 km
Relative weighting of Step 1 Field vs Observations	R1: 3.5 km, R2: 3.5 km
Maximum radius of Influence	RMAX1: 8 km, RAX2: 8km

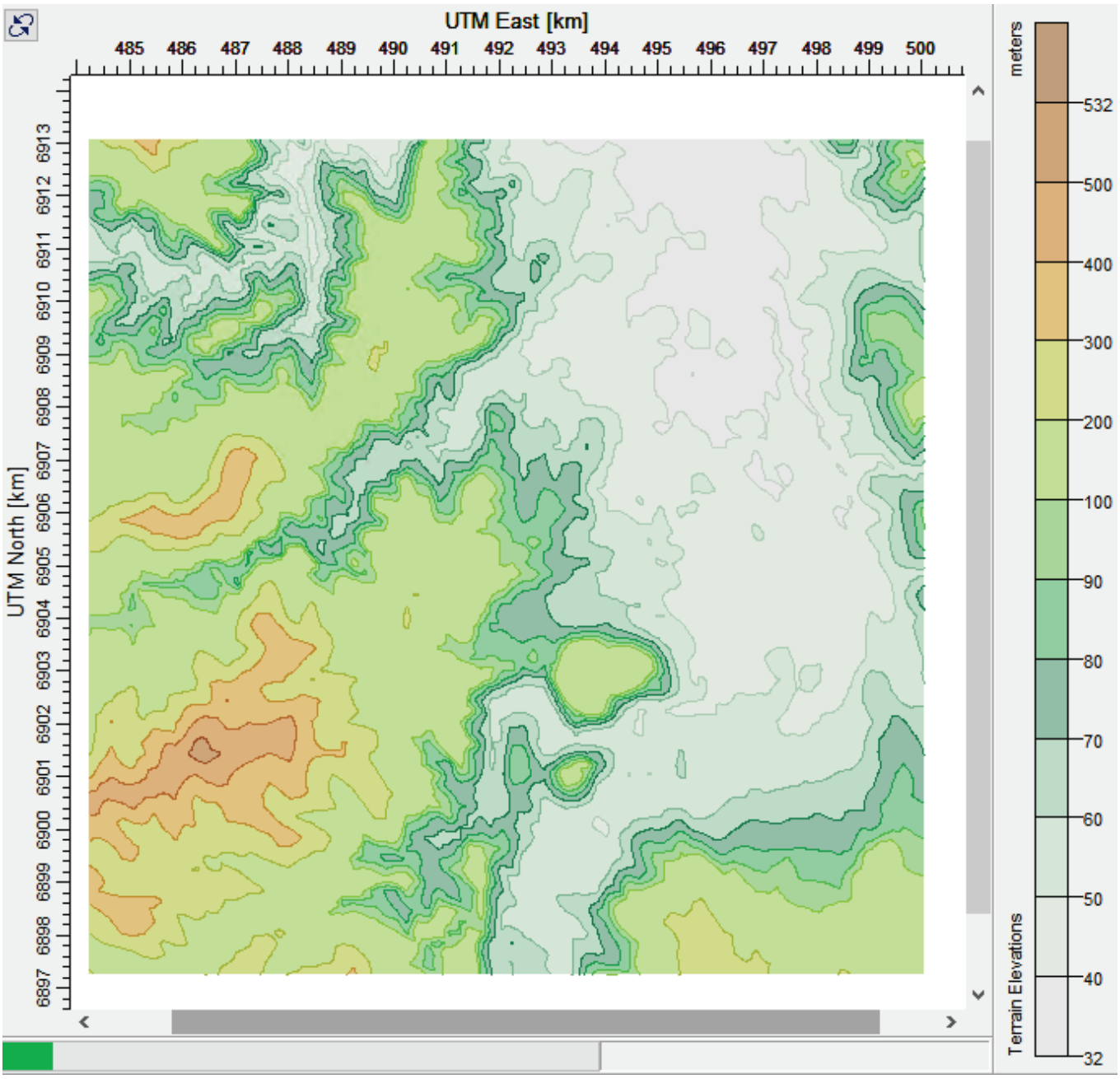


Figure A.1 Terrain data used for CALMET modelling

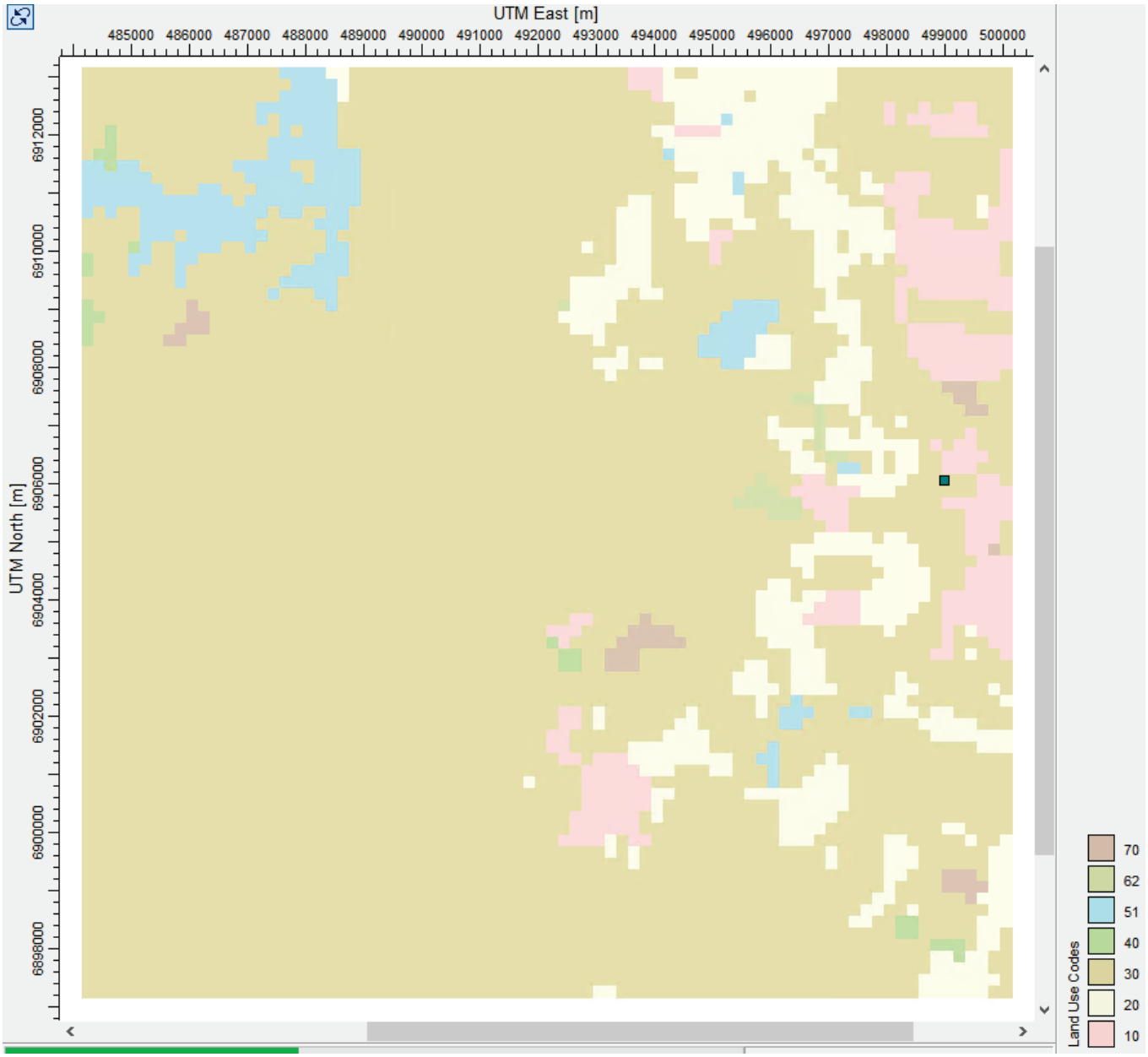


Figure A.2 Land use data used for CALMET modelling

The local meteorology largely determines the pattern of off-site air quality impact on receptors (houses, businesses and industry). The effect of wind on dispersion patterns can be examined using the wind and stability class distributions at the site from the dataset that is produced by CALMET. The winds at the site are most readily displayed by means of wind rose plots, giving the distribution of winds and the wind speeds from these directions.

The features of particular interest in this assessment are (i) the dominant wind directions and (ii) the relative incidence of stable light wind conditions that yield minimal mixing (defines peak impacts from ground-based sources).

A-3-1 Annual wind patterns

The wind rose for the entire data period taken at the Project site is shown in Figure A.8 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 1.73 m/s.
- Calm conditions (wind speeds less than 0.5 m/s) occurred 6.48% 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.

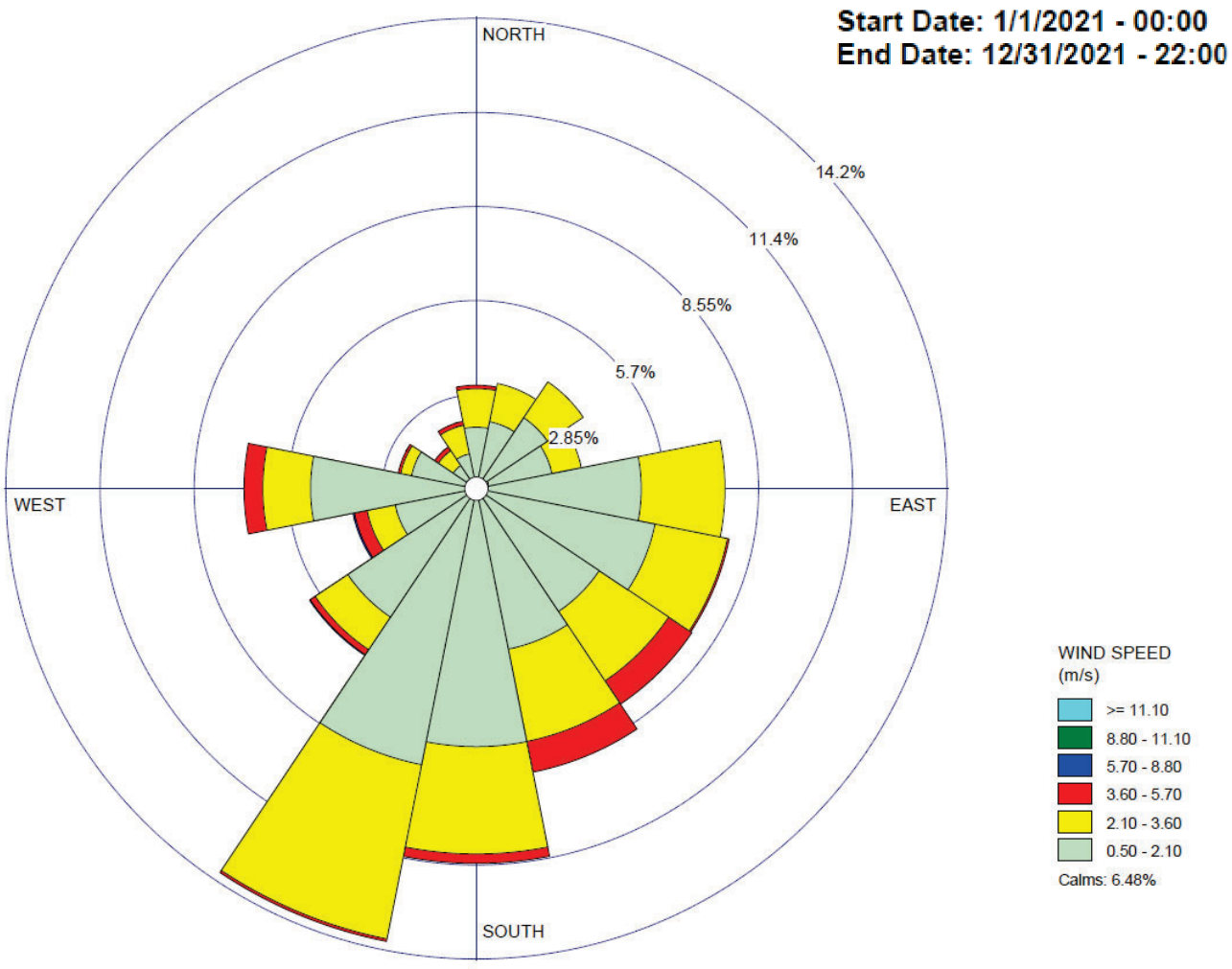


Figure A.3 Wind rose at site from CALMET (2021)

Appendix B

Emissions Inventory Additional Information

B-1 Operational Parameters

Parameter	Descriptor	Value	Source
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 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	
	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	

Parameter	Descriptor	Value	Source
	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	
Area D Open Windrows	GO Material density	0.45 t/m^3	SOILCO
	Compost produced during peak period	13725.0 tonnes per 8 weeks	Source
		2375.0 tonnes per week	
	Compost produced during low period	8550.0 tonnes per 8 weeks	
		1068.8 tonnes per week	
	Compost produced during average period	11,137.5 tonnes per 8 weeks	
		1392.2 tonnes per week	

B-2 Odour Emissions Inventory

Source	Area of source	Windrow Area	Assumed SOER (OUV/m²/s)	Emission scaling factor[1]	Modelled SOER (OUV/m²/s)	OER (OU/s)	Report Reference	Notes
Maturation and Storage - Open Windrows (Food and Garden Organics) (Area A)**	16430	16430	0.6	1.0	0.6	9398	Maturation and Storage - Open Windrows (Food and Garden Organics) (Area A)**	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 composting (SOER 0.38). Emissions factors were then scaled in order to represent the expected 100,000 tpa and 150,000 tpa of GO and FOGO respectively. Emissions factor has been adjusted by predicted surface area of windrows, as seen in Section 4.2.3.
Aerated static pad emissions (Area B)	9135	8251	1.7	1	1.5	12571	Aerated static pad emissions (Area B)	ASP emissions factor is derived from the average of measurements taken across composting of food. Due to negligible difference between the area modelled, and the area adjusted for the windrows surface area, the full area was modelled for ASP entirely as a conservative approach. organics undertaken at UNSW.
Aerated static pad windrow turning emissions (Area B)	9135	2284	1.7	0.3	0.4	963	Aerated static pad windrow turning emissions (Area B)	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.
Decontamination/material processing (Area C)	4198	4198	1.7	1	1.7	7137	Decontamination/material processing (Area C)	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.
Shredding and screening of	22	22	N/A	1	N/A	5740	Shredding and screening of	Odour emission rate for shredding and screening of organic matter was taken from a measurement of shredding decomposing garden organic.

Source	Area of source	Windrow Area	Assumed SOER (OUV/m^2/s)	Emission scaling factor[1]	Modelled SOER (OUV/m^2/s)	OER (OU/s)	Report Reference	Notes
organic material (Area C)*							organic material (Area C)*	Modelled as a volume source (21.5m^3). Shredding is assumed to take place 6 hours per day as a worst case scenario.
Composting Facility - Open Windrows - Garden Organics (Area D)	24438	17914	1.6	0.7	1.2	21012	Composting Facility - Open Windrows - Garden Organics (Area D)	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 windrow's, as seen in Figure 2.3
Composting Facility - Open Windrows - Garden Organics - Windrow Turning Factor (Area D)	24438	6109	1.6	0.3	0.4	2444	Composting Facility - Open Windrows - Garden Organics - Windrow Turning Factor (Area D)	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	5983.1	5983.1	0.15	1	0.15	897	Leachate Pond GO Quiescent	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 GO Aerated	5983.1	5983.1	1	1	1	5983	Leachate Pond GO Aerated	
Leachate Pond FOGO Quiescent	3430.5	3430.5	0.15	1	0.15	515	Leachate Pond FOGO Quiescent	
Leachate POND FOGO Aerated	3430.5	3430.5	1	1	1	3431	Leachate POND FOGO Aerated	
Leachate Pond Manufacturi	6703.6	6703.6	0.15	1	0.15	1006	Leachate Pond Manufacturing Quiescent	

Source	Area of source	Windrow Area	Assumed SOER (OUV/m^2/s)	Emission scaling factor[1]	Modelled SOER (OUV/m^2/s)	OER (OU/s)	Report Reference	Notes
ng Quiescent								
Leachate Pond Manufacturing Aerated	6703.6	6703.6	1	1	1	6704	Leachate Pond Manufacturing Aerated	

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.

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→ The Power of Commitment

Appendix M

Visual Impact Assessment

Bromelton Compost Manufacturing Facility

Visual Impact Assessment

SOILCO Pty Ltd

22 August 2024

→ The Power of Commitment

Project name		Bromelton Compost Manufacturing Facility					
Document title		Bromelton Compost Manufacturing Facility | Visual Impact Assessment					
Project number		12626213					
File name		12626213-RPT_VIA_BromeltonCompostManufacturingFacilityRev01					
Status Code	**Revision**	**Author**	**Reviewer**		**Approved for issue**		
			Name	**Signature**	**Name**	**Signature**	**Date**
S3	Rev 1	F. Mofrad	E. van der Velde	DRAFT	E. Rothwell	DRAFT	12/06/2024
S4	0	F. Mofrad	S Elton		E. Rothwell		22/08/2024

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Acknowledgement of Country

GHD acknowledges Aboriginal and Torres Strait Islander peoples as the Traditional Custodians of the land, water and sky throughout Australia on which we do business. We recognise their strength, diversity, resilience and deep connections to Country. We pay our respects to Elders of the past, present and future, as they hold the memories, knowledges and spirit of Australia. GHD is committed to learning from Aboriginal and Torres Strait Islander peoples in the work we do.

Executive summary

Introduction

SOILCO Pty Limited (SOILCO) engaged GHD Pty Ltd (GHD) to prepare a Visual Impact Assessment (VIA) for the proposed development of the Bromelton Compost Facility (the Project).

The Study Area for this assessment is generally confined to the likely extent of visibility of the Project, within the surrounding context, being approximately 5 km in each direction of the Project footprint. Situated within the Study Area is a focus area of 2km.

The purpose of this report is to provide a VIA of the Project to inform and assist SOILCO in obtaining relevant development and environmental approvals. This assessment will include the following considerations in association with the Project:

– Potential impact to the landscape character of the Project surrounds
– Assessment of visual impact to sensitive receptors
– Mitigation and management measures.

The Project has been assessed and considered against the relevant planning and environmental regulatory framework applicable to landscape and visual impact.

Method

The VIA assessment was informed by a desktop review, site inspection (24th of February 2024), identified landscape character values, and a review of previous studies within a similar landscape context. It includes an assessment of potential visual impacts from seven viewpoints (sensitive receptor locations). Reflective of assessment findings the report concludes with mitigation and management measures, to reduce negative impacts of the Project, related to the landscape character appraisal and viewpoints.

Project summary

The Project is the construction and operation of an open Compost Manufacturing Facility (CMF) at 260 Mitchell Road, Lot 4, Bromelton, QLD.

Visual impact assessment findings

Utilising data gathered via the desktop study and site inspection a character appraisal was prepared, the outcome of which indicates that the Project may impact the existing rural landscape character. These impacts, however, could be managed through landscape design and mitigation.

A VIA was also undertaken with seven representative viewpoints selected for assessment. The outcome of this process indicates that the visual impacts of the Project are anticipated to be high-moderate to negligible. Overall, the site is well-screened by intervening landform and vegetation, however, the construction of Mitchell Road would be visible from Beaudesert Boonah Road and surroundings especially the views to the north and west of the Project.

Mitigation and management measures

Visual consideration, as itemised in Section 7 including appropriate built form, mitigation and the retention of existing vegetation and visual screening will assist in limiting the visual impacts of the Project.

Concluding remarks

This report is subject to, and must be read in conjunction with, the limitations set out in Section 1.2 and the assumptions and qualifications contained throughout the Report.

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Appendices

Terminology

Terminology	Definition
Aesthetics	Relating to the sense of the beautiful or science of aesthetics, i.e. the deduction, from nature and taste, the rules, and principles of beauty.
Impact	The effect of a project, which can be adverse or beneficial, when measured against an existing condition.
Landscape	All aspects of a tract of land, including landform, vegetation, buildings, villages, towns, cities and infrastructure.
Landscape character	The combined quality of built, natural and cultural aspects which make up an area and provide its unique sense of place.
Magnitude	The measurement of the scale, form and character of a development project when compared to the existing condition. In the case of visual assessment this also relates to how far the project is from the viewer. Combined with sensitivity, magnitude provides a measurement of impact.
Project area	The Project area includes all of Lot 4 on RP85497 and Mitchell Road (road parcel)
Project footprint	The Project footprint refers to the part of Lot 4 on RP85497 that contains all project components.
Scenic amenity	A measure of the relative contribution of each place in the landscape to the collective appreciation of open space as viewed from places that are important to the public (AILA, 2018).
Scenic amenity areas	Landscape areas identified by the SEQ South East Queensland regional amenity methodology as having scenic amenity value (Queensland Government, 2023b)
Sensitivity	The sensitivity of a landscape character area or view and its capacity to absorb change. In the case of visual impact, this also relates to the type of viewer and number of viewers. Combined with magnitude, sensitivity provides a measurement of impact.
Significance of impact	The combination of sensitivity and magnitude determines the significance of the impact on the landscape character or representative viewpoint.
Study area	Consists of land in the vicinity of, and including, the Project area. The Study area is a wider area surrounding the Project as defined in this assessment, including land that has the potential to be indirectly impacted by the Project.
The Project	The construction and operation of Bromelton Compost Manufacturing Facility.
Receptors	A place, route, viewer audience or interest group which may receive an effect and require assessment.
View	The sight or prospect of a landscape or scene.
Viewpoint	The point from which a view is observed that represents a visual receptor.
Viewshed	The area within which a project can be seen at eye level above ground. Its extent will usually be defined by a combination of landform, vegetation and built elements.
Visibility	The state or fact of being visible or seen.
Visual impact	The impact on the views from residences, workplaces and public places.

Abbreviations

Abbreviations	
3D	Three dimensional
AHD	Australian Height Datum
CMF	Compost Manufacturing Facility
DCP	Development Control Plan
EIA	Environmental Impact Assessment
GHD	GHD Pty Ltd
GIS	Geographic Information System
IUBs	Inter-Urban Breaks
km	Kilometre
LGA	Local Government Area
m	Metre
SDA	State Development Area
SEQ	South East Queensland
SOILCO	SOILCO Pty Limited
VIA	Visual Impact Assessment
VP	Viewpoint

Introduction

1. Introduction

GHD Pty Ltd (GHD) acting on behalf of SOILCO Pty Limited (SOILCO) has prepared this report in support of the proposed development of the Bromelton Compost Facility (the Project). SOILCO is an Illawarra-based company established in 1982, with its head office located in Kembla Grange, NSW. SOILCO is a producer of organic soil improvers, manufacturing a range of soil, compost and mulch products. SOILCO proposes to develop and operate a compost manufacturing facility in Bromelton, South East Queensland (SEQ) at a greenfield site purchased by SOILCO.

The site sits within Bromelton State Development Area (SDA). Bromelton SDA promotes economic development by providing for the growing demand for greenfield land in SEQ which is suitable for medium to large-scale industrial activities of regional, state, and national significance. The site is located approximately 80 km south-west of Brisbane, and 62 km west of the Gold Coast at 260 Mitchell Road, Lot 4, Bromelton, QLD. Figure 1.1 shows the Project location.

This report provides a Visual Impact Assessment (VIA) for the Project. The following sections provide the purpose, scope and the structure of this report.

1.1 Purpose of this report

The purpose of this report is to provide a VIA of the Project to inform and assist SOILCO in obtaining relevant development and environmental approvals.

This assessment will include the following considerations in association with the Project:

– Potential impact to the landscape character of the Project surrounds
– Assessment of visual impact to sensitive receptors
– Mitigation and management measures

The Project has been assessed and considered against the relevant planning and environmental regulatory framework applicable to landscape and visual impact.

1.2 Scope and limitations

This report: has been prepared by GHD for SOILCO Pty Ltd and may only be used and relied on by SOILCO Pty Ltd for the purpose agreed between GHD and SOILCO Pty Ltd as set out in section 1.1 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 1.3 of this report). GHD disclaims liability arising from any of the assumptions being incorrect.

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.

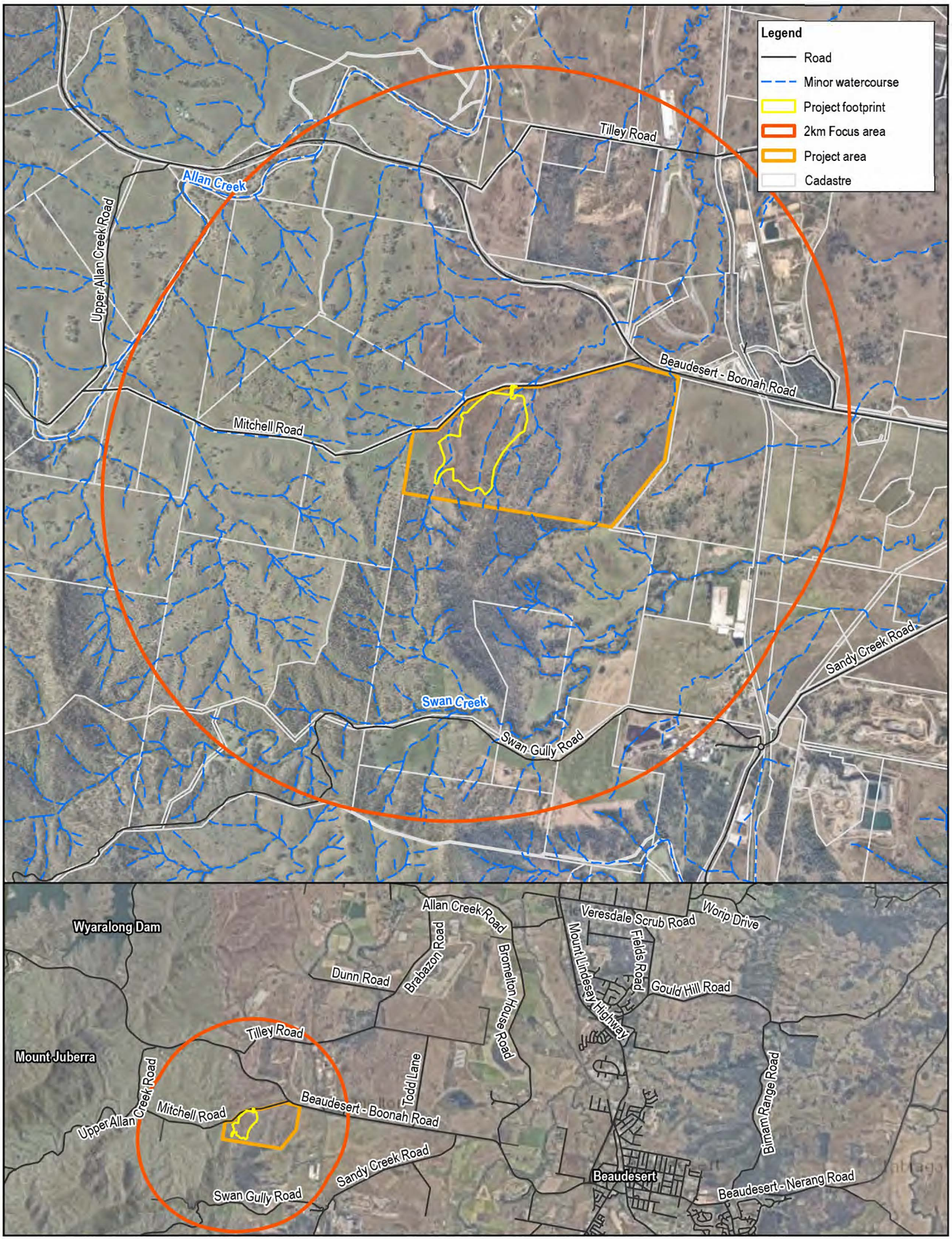
Accessibility of documents

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.

1.3 Assumptions

The methodology includes the following assumptions and limitations:

– there is no national guidance on the assessment of landscape and visual impacts specific to Australia, however, the industry typically refers to the guidelines as outlined in section 2.1.
– the assessment aims to be objective and describe any changes factually. While potential changes resulting from the Project are defined, the significance of these changes requires qualitative (subjective) judgements. This assessment's conclusion therefore combines objective measurement and professional interpretation. While this assessment aims to be objective, it is recognised that visual impact assessment can be subjective, and individuals are likely to associate different visual experiences to the Study area.
– the assessment is based on the information provided to GHD at the time of writing.
– this assessment does not include landscape and visual impacts from lighting.
– at the time of the site inspection, the Study area was viewed during the wet season and described as such within this report.
– construction activities have not been provided at the time of writing. Standard construction practices have therefore been assumed to complete the assessment.
– Architectural 3D renders of the Project were provided by a subconsultant engaged by SOILCO Pty Ltd (Elevation Architecture) solely for the purpose of visualising the proposed facilities within the site.



Paper Size ISO A4

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Metres

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

GHD

SOILCO
The Life-Giving Soil Company

SOILCO Pty Limited
Bromelton Compost Manufacturing Facility

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

Project location plan

FIGURE 1.1

\\ghdnet\GHD\AU\Birtinya\Projects\41\12626213\GIS\Maps\Deliverables\12626213_BromeltonCompostManufacturingFacility\12626213_BromeltonCompostManufacturingFacility.aprx - 12626213_201_ProjectLocationPlan_RevA
Print date: 14 Aug 2024 - 16:10

Data source: GHD: study area (2024); DoR: watercourse (2023), cadastre (2024),place names, road (2021); SOILCO: project footprint (2024); World Topographic Map: NPSR, Esri, © OpenStreetMap contributors, HERE, Garmin, USGS, NGA nearmap.com: extracted 14/08/2024 . Created by: mvandermerwe

1.4 Report structure

This report comprises of the sections listed in Figure 1.2.

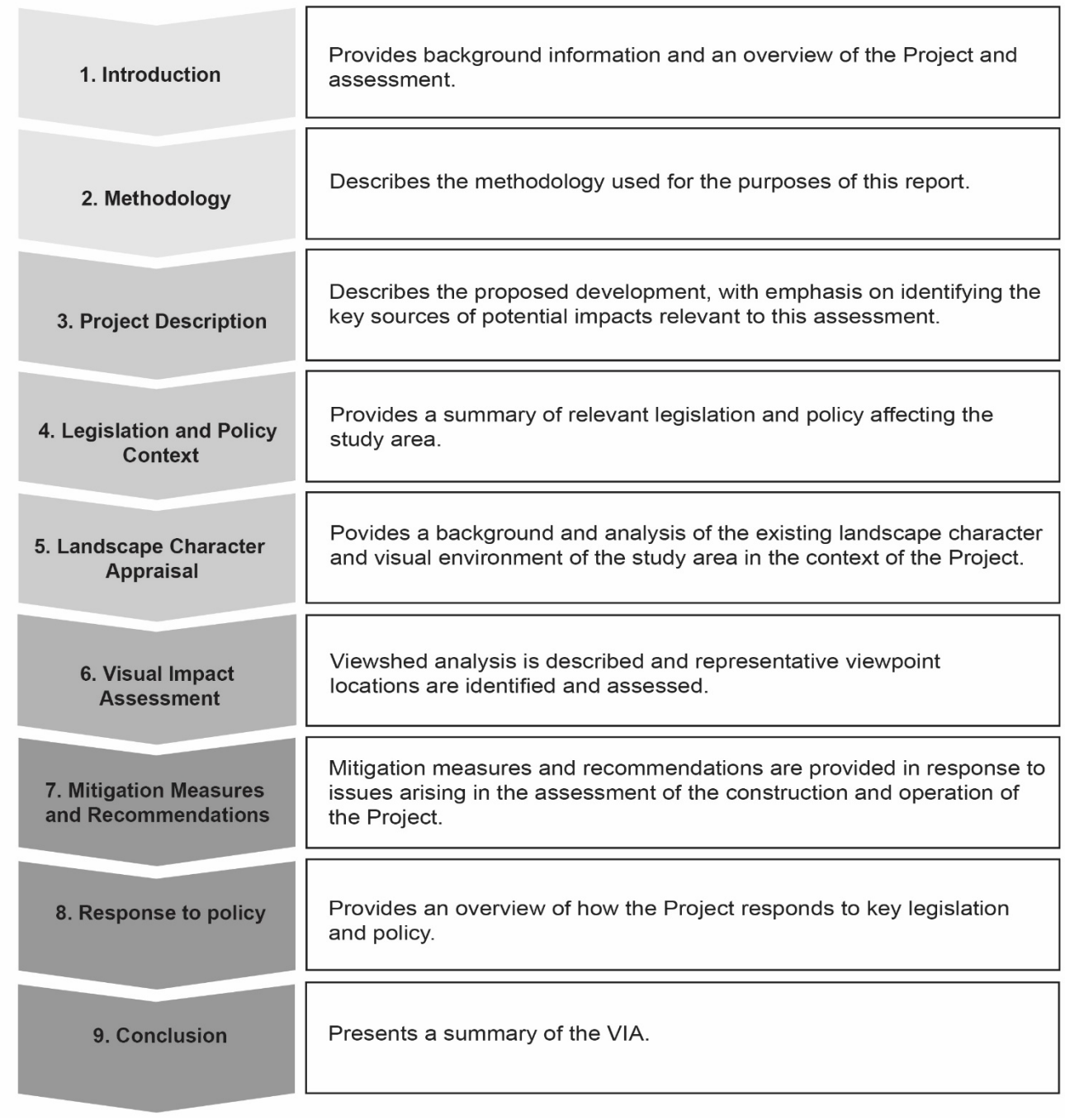


Figure 1.2 Report structure

2. Methodology

2.1 2.1 Standards and guidance

This landscape and visual impact assessment has been prepared in accordance with the following:

– *Guidelines for Landscape and Visual Impact Assessment, 3rd Edition* (Landscape Institute and Institute of Environmental Management & Assessment, 2013)
– Guidance Note for Landscape and Visual Impact Assessment, (Australian Institute of Landscape Architects, 2018).

2.2 Study area

The Study area is based on the Project description, potential visual catchment of the Project and a review of similar assessments. The Study area used for this assessment is generally confined to the likely extent of visibility of the Project, within the surrounding context, being approximately 5 km in each direction of the Project area (as indicated in. Figure 1.1). Situated within the Study area is a focus area of 2km.

2.3 Existing landscape and visual environment

2.3.1 Review of legislation and policy

A review of key planning designations, policies and guidance was undertaken in relation to landscape and visual amenity within the Study area. The emphasis of the review was to identify elements outlined within legislation, policy and planning documents relevant to the landscape and visual character within the Study area.

2.3.2 Desktop analysis landscape and visual resources

Existing data was gathered and reviewed, including:

– the Project design information and site photographs
– topography, land use, and vegetation maps
– Google Earth and Google Street View.

Using this data, a preliminary assessment of the landscape and visual environment was undertaken to inform the site inspection.

2.3.3 Site inspection

A site inspection was undertaken by a landscape architect and a landscape planner on the 24th of February 2024. The weather condition was mostly cloudy and foggy and partially rainy throughout the day.

The purpose of the inspection was to:

– inspect the site and appreciate views to / from sensitive visual receptors
– inspect publicly accessible locations identified in the desktop study as likely to provide views of the Project
– identify sensitive visual receptor locations
– assess the landscape character of the Study area and identify landscape sensitivities
– undertake site photography suitable for viewpoint assessment.

The coordinates of each viewpoint were recorded during the site inspection.

2.3.4 Definition of existing landscape and visual environment

An evaluation of the existing landscape and assessment of the visual environment was undertaken to determine the existing natural, cultural and visual features within the Study area. This includes determination of key landscape and spatial elements, features and values. Aspects considered include:

– land use and built form
– landform, topography and hydrology
– vegetation
– historical features
– key visual features
– the Project's viewshed and sensitive receptors

2.4 Landscape character appraisal

Landscape character considers typical features and characteristics identified during the desktop assessment and site inspection. The analysis of landscape character identifies environmental or cultural qualities or pattern such as topography, vegetation, hydrology, land use and settlement, built form, scale and character in addition to cultural and recreational characteristics.

Analysis has been provided of the existing landscape character within the Study area including:

– defining landscape elements that contribute to character
– defining landscape character attributes
– the quality and condition of the landscape and its features

Anticipated changes to landscape character

Potential changes to landscape character due to the Project have been described and analysed. Appraisal of landscape character deals with the potential change of the development on the landscape as a resource. The concern is with how the Project will affect the elements that make up the landscape, the aesthetic and perceptual aspects of the landscape and its distinctive character.

An appraisal has been provided on the potential constraints of the project on the landscape character defined within the Study area.

2.4.1 Viewpoint selection

Assessment of visual impacts deals with the effects of change and development on the views available to people and their visual amenity. It assesses how the surroundings of individuals or groups of people may be specifically affected by changes in the context and character of views as a result of the change or loss of existing elements of the landscape and / or the introduction of new elements.

Visual receptors have been considered in terms of the views they are likely to experience from within the Study area including consideration of any key vantage points, such as lookouts, where there is particular interest in the view. Visual receptors are identified based on:

– proximity of the receptors to the Project, as the most affected visual receptors are anticipated to be located closest to the Project, unless located at an elevated vantage point.
– type of receptor, as different viewer types would have different perceptions of the change.

Based on the analysis of the existing landscape and visual environment, viewpoint locations were selected for assessment as representative of sensitive visual receptor locations. To best illustrate the likely visual impacts of the Project, where appropriate, viewpoint locations chosen for assessment aim to represent a balance of:

– the most sensitive visual receptors
– a range of visual receptor types
– a range of distances from the Project
– a range of view directions towards the Project within the Study area.

2.4.2 Visual impacts

The evaluation of potential impacts on visual amenity is based on the sensitivity of the viewpoint (and the visual receptor it represents) to change, and the magnitude of change that is likely to occur. The assessment considers the likely impacts of the Project. The level of effects on a view depends on factors such as the extent of visibility, degree of obstruction of existing features, degree of contrast with the existing view, angle of view, duration of view and distance from the Project.

The sensitivity and magnitude of visual effects addresses the following specific criteria:

– the sensitivity of the viewpoint to proposed change considers the importance of the view, its existing scenic qualities and the presence of other existing man-made elements in the view; type of visual receptor and their likely interest in the view; susceptibility of visual receptors to change, and value attached to views (refer to Table 2.1)
– the magnitude of change to views and visual amenity considers the size or scale of change; geographical extent of effects, and duration and reversibility of effects (refer to Table 2.2). It also depends on the loss, change or addition of any feature in the field of view of the receptor including an assessment of the level to which the change contrasts with the existing view or expected view of the landscape.

An assessment is made of the overall level of significance of the visual impacts in relation to the existing view (refer to section 2.4.3).

Table 2.1 Sensitivity criteria (visual)

Rating	Criteria
High	Occupiers of residential properties, at home or going to or from, with long viewing periods, within close proximity to the proposed development; Communities that place value upon the landscape and enjoyment of views of their setting.
Moderate	Outdoor workers who have a key focus on their work who may also have intermittent views of the Study area; Viewers at schools, or similar, when outdoor play and recreation areas are located within close proximity but viewing periods are limited; Occupiers of residential properties with long viewing periods, at a distance from or screened from the Study area.
Low	Road users on local roads in motor vehicles, trains or on transport routes that are passing through or adjacent to the Study area and therefore have short term views; Viewers indoor at their place of work, schools or similar.
Negligible	Viewers from locations where there is screening by vegetation or structures where only occasional screened views are available and viewing times are short; Road users in motor vehicles, trains or on transport routes that are passing through/adjacent to the Study area and have partially screened views and short viewing times.

Table 2.2 Magnitude of change criteria (visual)

Rating	Criteria
High	A substantial/obvious change to the existing view due to total loss of, or change to, elements, features or characteristics of the view which would cause a view to be permanently changed and its quality diminished.
Moderate	Discernible changes in the existing view due to partial loss of, or change to elements, features or characteristics of the view, however, have potential to be partly mitigated. The change would be out of scale with the existing view and would leave an adverse impact on the view.
Low	Minor loss or alteration to one or more key view elements, features or characteristics, or the introduction of components that may be visible but may not be uncharacteristic within the existing view.
Negligible	Almost imperceptible or no change in the view as there is little or no loss of/or change to the elements, features or characteristics of the view.

2.4.3 Significance of impacts

The combination of sensitivity and magnitude determines the significance of the impact on the landscape character or representative viewpoint. Refer to Table 2.3 for the matrix used to determine the significance of impact.

Table 2.3 Significance of impact matrix

		Magnitude of impact			
		High	Moderate	Low	Negligible
Sensitivity	High	High	High-moderate	Moderate	Negligible
	Moderate	High-moderate	Moderate	Moderate-low	Negligible
	Low	Moderate	Moderate-low	Low	Negligible
	Negligible	Negligible	Negligible	Negligible	Negligible

2.4.4 Viewpoint panoramic photography

All photographic images were captured using a 50 millimetre fixed focal length lens on a 35 millimetre full frame format camera at a camera height of 1.7 metres. All photograph locations were recorded and mapped.

A series of seven viewpoint locations were chosen and existing views were represented using a panorama technique. This technique involves the stitching together of a number of adjoining images using the Adobe Photoshop software program.

2.5 Mitigation measures

Mitigation measures were developed in response to the impacts identified within Section 6. Potential mitigation measures are found in Section 7 and typically include:

– Adopting alternative designs or revisions to the basic engineering and architectural design to prevent and/or minimise negative impacts.
– Remedial measures such as colour and textural treatment of structural features.
– Compensatory measures such as landscape design to compensate for unavoidable negative impacts and to attempt to generate long-term positive impacts.

3. Project description

The following section provides a summary of the Project and includes the details relating to the main visual components that have potential to affect the landscape character and visual amenity of the Study area.

3.1 The Project

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

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

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

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

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

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

Table 3.1**Error! Reference source not found.** summarises and depicts the key Bromelton CMF Project components.

Table 3.1 Project component details

Project Component	Details
Lot on Plan	Lot 4 on Plan RP85497 and Mitchell Road (Local government road parcel)
Summary of proposed works	– Construct and operate a Compost Manufacturing Facility (CMF) at 260 Mitchell Road, Bromelton for the sale and distribution of finished compost, mulch & soil products – The site will be split into 3 different processing areas: Receival, decontamination and composting utilizing Forced Aeration Pad system (ASP).

Project Component	Details
Construction disturbance area within Lot 4 RP85497	21 hectares
Operational footprint within Lot 4 RP85497	18.5 hectares
Proposed output of the compost facility and type of material to be received and processed	Receipt, processing, composting, and storage of up to 250,000 tpa of the following materials: – Garden, Food and Wood wastes and manure. Receipt, processing, storage and blending of up to 150,000 tpa of sand and soil products for manufacturing (Virgin Excavated Natural Materials or VENM).
Technology used	Two composting technologies will be utilised to handle different feedstocks: – 100,000 tpa of garden organics (GO) composted by Passive Open Windrow (OW) method. – 150,000 tpa of Food Organics and Garden Organics (FOGO) is to be processed on a Forced Aeration Pad system (ASP). Wood wastes and manure will make up a small portion of the composting feedstocks and will be blended with the GO & FOGO based on onsite capacity. VENM will be received and stored as required based on demand of finished products. Due to the seasonal nature of feedstock generation, up to 15% of the total annual waste may be received in any one month. This would typically occur around spring and autumn.
Key infrastructure and structures	– Access from Mitchell Road – Weigh bridges – Internal road network – Maintenance and storage shed – Final screening and manufacturing area – Water tanks – Aeration Pad system – Office, carparking and amenities – FOGO receival area – 3 x leachate ponds – 1 x freshwater dam – Open windrows pad – FOGO maturation pad – Hardstand areas – Retaining wall – Upgrade of Mitchell Road
Hours of Operation	Monday – Friday 6am to 6pm Saturday – 6am to 4pm Sunday and public holidays 9am - 4pm
Operational Staff	22 employees
Access arrangements	Mitchell Road will connect the Bromelton CMF Project to the road network. Mitchell Road will be upgraded to accommodate the traffic from the Bromelton CMF Project.
Timeframe	Construction and Commissioning 7th April 2025 – 30th January 2026

3.2 The Project area

The Project is located at 260 Mitchell Road, Lot 4, Bromelton, QLD. The Project area fronts Beaudesert-Boonah Road. Further frontage exists to a currently unformed, gazetted, road corridor along the property's northwest boundary known as Mitchell Road which will be constructed along with an intersection to Beaudesert-Boonah Road to provide access to the CMF.

The existing land has been previously used for grazing of native vegetation and the topography is a series of undulating hills and valleys. The proposed new CMF area of approximately 21ha would be constructed & graded to provide the appropriate area and water control measures to successfully operate and manage the facility. The selected area has been chosen as it is located towards the rear of the property away from the main road and will provide for an elevated area large enough to incorporate all the required infrastructure for the CMF operations. Refer to Figure 3.1 and Figure 3.2 for the proposed site layout.

3.3 Facility overview

In developing the layout, SOILCO considered the site conditions, current industry best practice, and SOILCO's experience at its existing facilities. The facility has been designed for all heavy vehicles to access the site using the entry & exit weighbridges with bypass lanes if weighing is not required.

It is proposed that entry and exit to the site will be controlled via boom gates and control CCTV that includes a stop-go traffic light system.

Upon entering the site via access from Mitchell Road an access road for staff and visitor passenger vehicles will provide access to the office and amenities reducing the traffic on the weighbridges and the interaction onsite between passenger and heavy vehicles. A maintenance and storage shed will be located adjacent to the office for under cover parking of machinery and maintenance activities to be carried out.

The site will be split into 3 different processing areas - receival, decontamination and composting utilising forced aeration pad. Garden organics composting utilising an open windrow composting method and a maturation and manufacturing pad for production of finished compost and soil products. A two-way road through the centre of the site will provide access for heavy vehicles to the different areas of the site while one way circulation roads around the edge of the site will be utilised by exiting vehicles to minimise vehicle manoeuvring and manage traffic onsite.

Leachate dams will be constructed to manage stormwater runoff from the three different areas. The captured water will be utilised in the pasteurisation phase of composting or managed through evaporation. An onsite storage dam for freshwater collection is also proposed to provide enough water for onsite operations. Current locations are indicative and will be located to best suit the site grading during design phase (Refer to Appendix A for the Architectural 3D renders provided by SOILCO).

3.4 Site infrastructure description

3.4.1 Site access and weighbridge

The Project area will be accessed via the Beaudesert-Boonah Road and its intersection with Mitchell Road. The intersection with Beaudesert-Boonah road and approximately 800m of Mitchell Road will be constructed as a class4b rural collector road to Scenic Rim Regional Council Standard to handle heavy vehicles prior to commencement of the facility operation. Mitchell Road will connect the Project to the road network. It will be upgraded to accommodate the traffic from the Bromelton CMF Project.

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

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

3.4.2 Office, amenities and parking

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

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

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

3.4.3 Receival building and decontamination area

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

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

3.4.4 Static pile composting area (Food organics garden organics)

The forced aeration pad consists of a 9,000m^2 concrete pavement arranged with 18 bays that house a series of parallel PVC pipes laying lengthwise, incorporated in the concrete. The pipes have tapered plastic nozzles (spigots) that provide the mechanism for the supply of air and collection of leachate known as the “aeration floor”. Two fresh air supply fans are connected to the PVC pipes by a series of ducts, each servicing 9 bays. The system is controlled from a technical area contained within a prefabricated shipping container immediately to the rear of the pad.

3.4.5 Passive open windrow composting area (turned aeration) (Garden organics)

The open windrow pad will be approximately 24,000m^2 with an area of 9,000m^2 for garden organics receival and finished compost transfer. Compacted crushed rock will be used to form the hardstand area and the pad will be graded to drain water run off to the leachate collection dam. A number of water supply connections from the leachate dam and the fresh water supply will be positioned around the area for irrigation of the piles.

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

3.4.6 Maturation, manufacturing and distribution area

A proposed hardstand area of 51,000m^2 will be utilised to mature and store the compost, receive and store virgin excavated natural materials (VENM), screen and blend finished compost, mulches and soils. The pad will be constructed from crushed compacted rock and will be graded to drain water run off to the leachate collection dam.

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

3.4.7 Workshop and fuel storage area

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

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

3.4.8 Surface water and leachate management

The CMF will have a designated leachate management system. Leachate ponds are proposed to manage dirty water generated within the receivals building, as well as from the Aerated Composting Pad Area, the Passive Open Windrow Composting Area and the Manufacturing Storage and Distribution Areas. Three ponds are proposed to handle the leachate runoff from the site and will be sized according to Department of Environment, Science and Innovation requirements.

To prevent leachate stored in the ponds from percolating into the groundwater system, the ponds will be lined according to the DESI Best Practice Environmental Management Guideline ERA 53(a) Organic material processing by composting, Version 1.02:

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

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

3.4.9 Freshwater storage dam

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

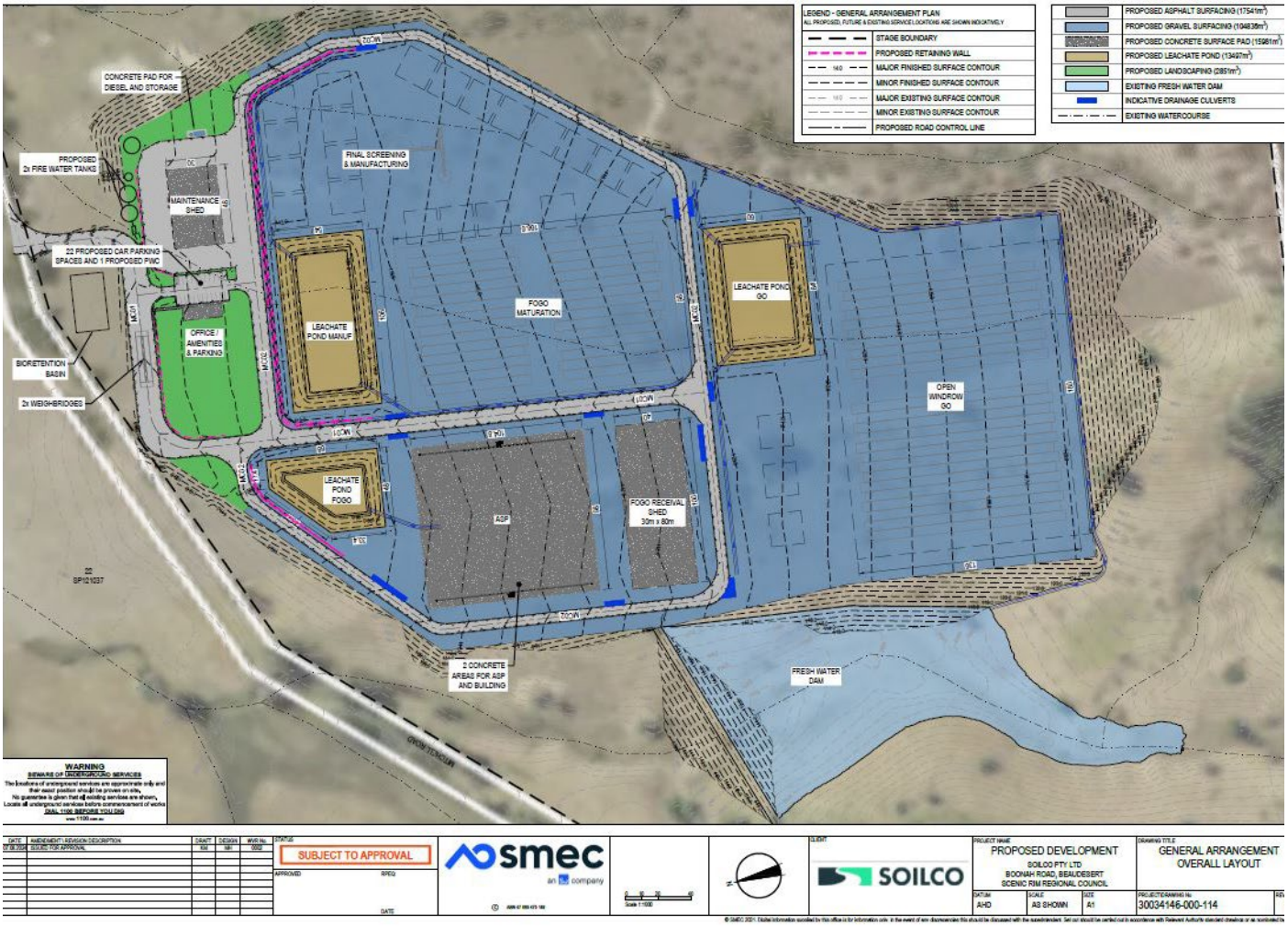


Figure 3.1 Project layout, Adapted from Smec provided by SOILCO Pty Ltd

Figure 3.2 3D render of the Project, Adapted from Elevation Architecture design provided by SOILCO Pty Ltd

4. Legislation and policy

The following section provides an overview of applicable legislation and policy objectives relevant to landscape and visual considerations within the Study area.

This is not intended to be a thorough review of the planning scheme, mechanisms and planning-related triggers. The emphasis of the review was to identify designations, protections, values, and objectives relevant to the landscape and visual environment of the Study area, including scenic amenity values.

Summary of findings

The assessment of relevant legislation, policies and guidelines has identified that the Study area's existing landscape character and views are valued. A review of these key values informed the understanding of the existing landscape and the overall impact assessment.

A key value, derived from this assessment, is that rural areas maintain a traditional rural aesthetic consisting of expanses of rural farmlands and forested mountain ranges that contribute to the regions iconic scenic backdrop.

4.1 State legislation and framework

Bromelton State Development Area-Development Scheme (Department of State Development, 2017)

Section 2.5.3 within the development scheme document addresses character and amenity. It emphasises the importance of minimising the visual effects of development by carefully considering building design materials, and landscaping, when seen from prominent public spaces such as main roads (Department of State Development, 2017, p.11).

Section 2.5.14 of the development scheme states that landscaping should be utilised to minimise the visual impacts of the development and incorporate at least 50% local species. (Department of State Development, 2017; p.14).

Under section Environment, cultural heritage and community it was stated that:

– "Environmental values, cultural heritage values and community values of the site on which the development is undertaken, and immediate surrounds are identified and protected, consistent with current best practice." (p.13)

Also, it was noted that development should avoid the clearing of regulated vegetation if possible.

– Where avoidance is not possible, minimise clearing to:

"(a) avoid land degradation

(b) avoid the loss of biodiversity and

(c) maintain ecological processes.

– Development is designed and sited to:

(a) minimise impacts on matters of local and state environmental significance

(b) maintain ecological connectivity and avoid fragmentation of matters of local and State environmental significance

(c) avoid or minimise impacts to the movement of fish (fish passage) along waterways.

– Where the development requires a buffer to mitigate the environmental impacts of the development, that buffer must be accommodated within the development site.
– Development avoids significant adverse environmental impacts on matters of national or State significance, or where significant impacts cannot be reasonably avoided, they are minimised. Any residual significant adverse impacts are offset in accordance with the relevant Commonwealth or Queensland environmental offset framework.

– The ecological values associated with the Logan River, Allan Creek and Sandy Creek shall be protected and enhanced." (p.13)

4.2 Regional legislation and policy

South East Queensland Regional Plan 2005-2026 (Queensland Government, 2007)

The SEQ Regional Plan, released in June 2005, outlines joint policy directions by the Queensland Government and local authorities in SEQ for managing growth in the region. It covers various aspects including sustainability, the environment, rural development, transportation, water management, and landscape preservation.

Part F, section 3.2 of this document addresses the scenic amenity of the regional landscape and highlights the necessity to protect and manage significant scenic amenity areas and features.

The related policies include:

– *"Identify and manage areas of high scenic amenity in the regional landscape.*
– *Improve knowledge and understanding of the region's scenic amenity and its contribution to the liveability and sense of place for residents and the attraction for visitors and tourists.*
– *Retain and enhance public access to significant and popular viewpoints and protect important views from intrusive development.*
– *Inform regional and local planning and decision making by adopting a common method of assessing scenic amenity, including design and siting of prominent developments and infrastructure."*

Shaping SEQ. South East Queensland Regional Plan 2023 (Queensland Government, 2023a)

Shaping SEQ is the Queensland Government's 25-year strategic plan designed to direct the future development of the South East Queensland region.

In the 'Outcomes and strategies' section, outcome 4 addresses regional landscapes, noting the environmental, social, and cultural values of regional landscapes and functions. The associated strategies include:

"4.1 Protect the values of IUBs (Inter-Urban Breaks)*, while providing for a range of activities compatible with their predominantly rural or natural character.*

4.2 Protect regional scenic amenity areas from development that would compromise their value.

4.3 Protect and enhance the regional greenspace network, including through innovative approaches such as encouraging consideration of stocking and fishing, to meet the recreational and outdoor needs of the community."

4.3 Local legislation and policy

Scenic Rim Planning Scheme 2020 (Scenic Rim Regional Council, 2023)

This scheme sets the policy direction and forms the basis for ensuring appropriate development occurs in the planning scheme area for the life of the planning scheme.

The scheme specifies that rural areas retain their distinctive and attractive rural and natural landscape qualities including, but not limited to expanses of productive rural farmland, forested mountain ranges contributing to the region's iconic scenic backdrop, scenic views experienced within forested hills and valley settings and waterways and dams set amongst a varying landscape from forested, steep upper reaches to open floodplains. In addition, the scheme specifies that the level of amenity expected in rural areas is predominantly representative of a traditional rural environment.

In regards to Bromelton SDA the scheme specifies that this area will be developed into an industrial area of regional, state and national significance with the primary intent on accommodating logistics operations and rail-dependent

industries. The rural areas of the SDA surrounding the industrial precinct will provide for the continuation of low impact rural and agricultural activities that are compatible with and able to operate near intensive industrial activities.

Scenic Rim Growth Management Strategy 2041(Scenic Rim Regional Council, 2021)

This strategy aims to manage growth efficiently and holistically while addressing the needs of the community and aligning with the Queensland Government's regional plan. It identifies preferred growth areas, aims to diversify residential options, and increases housing supply to accommodate the growth. The Strategy also emphasises protecting the natural environment and biodiversity.

Landscape character appraisal

5. Landscape character appraisal

The following section provides a summary of the existing landscape and visual environment of the Study area and an appraisal of anticipated changes as a result of the Project.

5.1.1 Existing landscape character

Land use and built form

The Project encompasses approximately 21 hectares (ha) and is located at 260 Mitchell Road, Lot 4, Bromelton, QLD. The Project is within the Scenic Rim Regional Council Regional Area. The Scenic Rim area lies in the southeastern part of Queensland, about 50 km south of Brisbane's Central Business District (CBD), 60 km west of Gold Coast, and 70 km south of Ipswich. The population of this regional area was recorded as 41,000 in 2016 and 44,000 in 2021 and is projected to exceed 67,000 by the year 2041. The Scenic Rim area is crucial for Southeast Queensland due to its rural production, biodiversity, water catchment and landscape amenity. Maintaining these features is a key goal for future planning of this area (Scenic Rim Regional Council, 2022).

The Study area is located on the land of Danggan Balun (Five Rivers) People. Based on census 2021, the Bromelton locality has a population of 129 people. The Project sits within the Bromelton State Development Area (SDA) which promotes economic development by providing land for medium to large-scale industrial activities.

Beaudesert is the nearest townsite to the Project, situated in a rural setting, with the Birnam Range to the northeast and the Logan River floodplain to the west. The surrounding land is used for a range of rural activities such as dairy farming, agriculture and equine activities. Beaudesert is a regional town that hosts essential services such as the Council administration centre, public hospital, courthouse, emergency services, schools, sporting clubs and community organisations. There are numerous European heritage registered sites in Beaudesert including the Beaudesert Racecourse and Grandstand.

Built form within the Study area is mostly industrial and pastoral with one rural dwelling and a few sheds. Refer to Figure 5.1 for existing landscape conditions. Beaudesert Boonah Road (State Route 90) (Photo 1) is the main road traversing through the Study area. It is a non-continuous 49.9 km road that connects Beaudesert to Boonah and traverses through Bromelton SDA, undulating farmlands and the scenic locations of Mount Juberra and Wyaralong Dam. Local roads within the Study area include Sandy Creek Road and Swan Gully Road. The Sydney to Brisbane rail corridor (Photo 2) bisects the eastern extent of the Study area from north to south. This is predominantly a freight line; however, daily passenger trains also operate along the line.

Photo 1 Beaudesert Boonah Road looking west

Photo 2 Sydney to Brisbane Railway

Topography and hydrology

The Study area and its surrounding landscape setting present diverse landscape features and landforms. The Project is positioned on the fringe of elevated uplands to the west and lower lying plateaus to the east. Mount Juberra (+433 m AHD) is located about 4 km to the west and Mount Joyce (+469 m AHD) is roughly 9km to the northwest of the Project area. Meandering creeks and streams with a network of ponds and tributaries flow through the Study area, most significantly Sandy Creek, Swan Creek, Clay Gully, and Allan Creek, which has cut a deep but narrow channel through the landscape. These hydrological features provide an environment for riparian vegetation corridors and biodiversity linkages.

Vegetation and bio-regions

The Study area is located within the SEQ bioregion, Moreton Basin subregion. The SEQ bioregion encompasses diverse climates ranging from subtropical to temperate, including a mountainous area in the southwest. It features a wide array of soils, vegetation, and topography inclusive of approximately 23.7% remnant vegetation recorded within Moreton subregion (EHP, 2016). The Study area includes elevated slopes of native forest and trees, tree lined riparian corridors and trees scattered across undulating and lower lying plateaus.

Undulating rural farmlands

Rural farmlands are the predominant landscape type within the Study area and the topography is characterised by undulating plateaus and valleys. The farmland features include broad parcels of land which have been cleared for livestock grazing (Photo 3-4). Fencing is mostly simple post and wire fencing around paddocks and property boundaries. The rural features and undulating hills provide a scenic backdrop that is typical in the Scenic Rim Region.

Photo 3 *A view from the Project area to Mitchell Road in the middle ground and a grazing property in the background*

Photo 4 *A view to the grazing property adjacent to the Project from Mitchell Road.*

Industrial landscape

Beaudesert Boonah Road traverses through the Study area from the east-west and Sandy Creek Road on the east of the Study area. Several industrial land uses are located adjacent or in close proximity to these two roads with businesses including SCT Logistics, Quickcell Technology Products Pty, Bush's Proteins QLD, Bromelton Quarry and Neilsen's Quarry (Photo 5). Built form within these areas is characterised by large scale industrial buildings, bold signage and advertising, material stockpiles, and car parks. Vegetation consists of occasional rows of native and non-native trees on roadsides, grasslands, and patches of native vegetation. Between the industrial buildings, the surrounding hills and elevated uplands provide a scenic backdrop, however, views are limited due to the rolling landform and tree-lined roads.

Elevated uplands and ridges

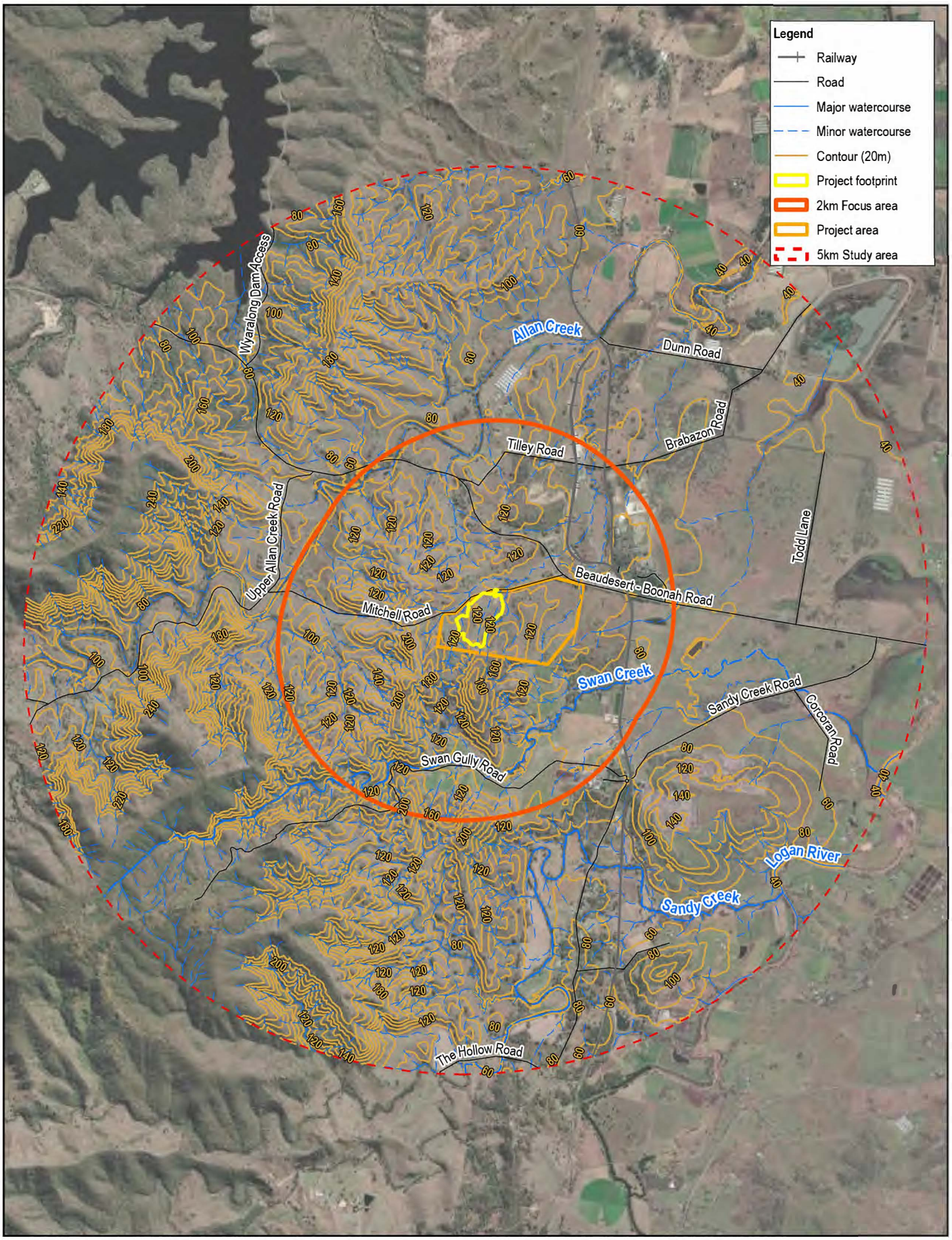
The elevated uplands located west of the Study area provide a vegetated backdrop to Bromelton. The uplands include diverse, dense areas of forested vegetation and can be viewed rising above the lower lying plateaus below (Photo 6). The Wyaralong Dam is located north-west of Bromelton on the Teviot Brook, nestled at the base of Mt Joyce. The lake and surrounding areas provide recreation facilities including kayaking, paddle boarding and camping.

Photo 5 An industrial site along Beaudesert – Boonah Road

Photo 6 Scattered trees and views of elevated uplands

5.1.2 Anticipated changes to landscape character

The Project area is located on an elevated slope on the boundary of uplands to the west and the lower lying and undulating farmland located within Bromelton to the east. The natural topography and vegetation enclose the Project particularly to the west. The character of the existing site and its surrounds is undulating rural farmland with small pockets of industrial use to the north and east of the Project area. Anticipated changes during construction works will include the delivery of materials and construction of new structures, as well as temporary storage areas, fencing and signage. During operation, the introduction of new infrastructure and buildings and related activities would impact the existing landscape character. These impacts could be managed through landscape design and mitigation to ensure the blending of the development into the existing landscape and the slopes of the elevated uplands beyond.



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

GHD

SOILCO
The Life-Giving Soil Company

SOILCO Pty Limited
Bromelton Compost Manufacturing Facility

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

Existing landscape conditions

FIGURE 5.1

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Print date: 14 Aug 2024 - 17:57

Data source: GHD: study area (2024); DoR: watercourse , local government areas (2023), road (2021); GA: contour (2011); SOILCO: project footprint (2024); World Imagery: Earthstar Geographics extracted 14/08/2024 . Created by: mvandermerwe

Visual impact assessment

6. Visual impact assessment

6.1.1 Project viewshed and sensitive visual receptors

Through the site inspection it was identified that the likely viewshed for the Project would primarily be confined to areas within close proximity to the Project area, such as road users on Beaudesert Boonah Road, adjacent or nearby land uses, and elevated areas within the Study area. The forested and highly vegetated areas and undulating topography are likely to impede views from the surrounding landscape.

6.1.2 Visual analysis

Based on the desktop review and site inspection, a visual analysis of the Study area was conducted including identification of key visual features and sensitive visual receptors. Table 6.1 provides a brief analysis of potential impacts to key visual features and potential sensitive receptors.

Table 6.1 Key visual features analysis and sensitive receptors

Key visual features and sensitive receptors	Potential impact analysis
Swan Gully Park	Provides opportunity for 4WDing, camping, hiking and cycling. Swan Gully Park located in the southern extent of the Study area is situated on the foot of steep sided and densely vegetated slope. Due to the landform and vegetation screening, it is unlikely that the Project would be visible from this location.
Beaudesert Boonah Road	Beaudesert Boonah Road is a State-controlled road that has state significance. It is likely that there would be a glimpsed view of the Project from the road. Due to the intervening vegetation, topography and distance from the Project, direct views would be limited and transient.
Sandy Creek Road	Sandy Creek Road is a local road that has local significance. It is likely that there would be glimpsed views of the Project from this road. Due to the intervening vegetation, topography and distance from the Project direct views would be limited and transient.
Surrounding industrial land uses such as SCT Logistics, Bush's Proteins QLD, Bromelton Quarry and Neilsen's Quarry	The Project is located within Bromelton SDA. Any change in the view for industrial land uses workers would not be uncharacteristic of other industrial land uses. Due to the intervening vegetation, topography and distance from the Project direct views would be unlikely.
Railway line	Express passenger train (XPT) from Brisbane to Sydney travels through the eastern part of the Study area. There is potential for glimpsed views of the Project as the train crosses Swan Creek and traverses through the low lying farmland to the east of the site. The potential impacts would be low as the train passes by at high speeds, giving passengers only brief, indirect, and partially screened views of the site. Impacts could be mitigated through additional landscape design and vegetation screening.
Study area residents	It is unlikely that there would be a direct impact to the view of residents. Due to the intervening vegetation, topography and distance from the Project direct views would be unlikely. There may, however, be glimpsed views of the Project through trees and topography for nearby individual residential properties.

6.1.3 Sensitive receptors

Based on the existing environment analysis, sensitive visual receptors were identified, and viewpoint locations selected for assessment.

Sensitive visual receptors within the Study area include the following:

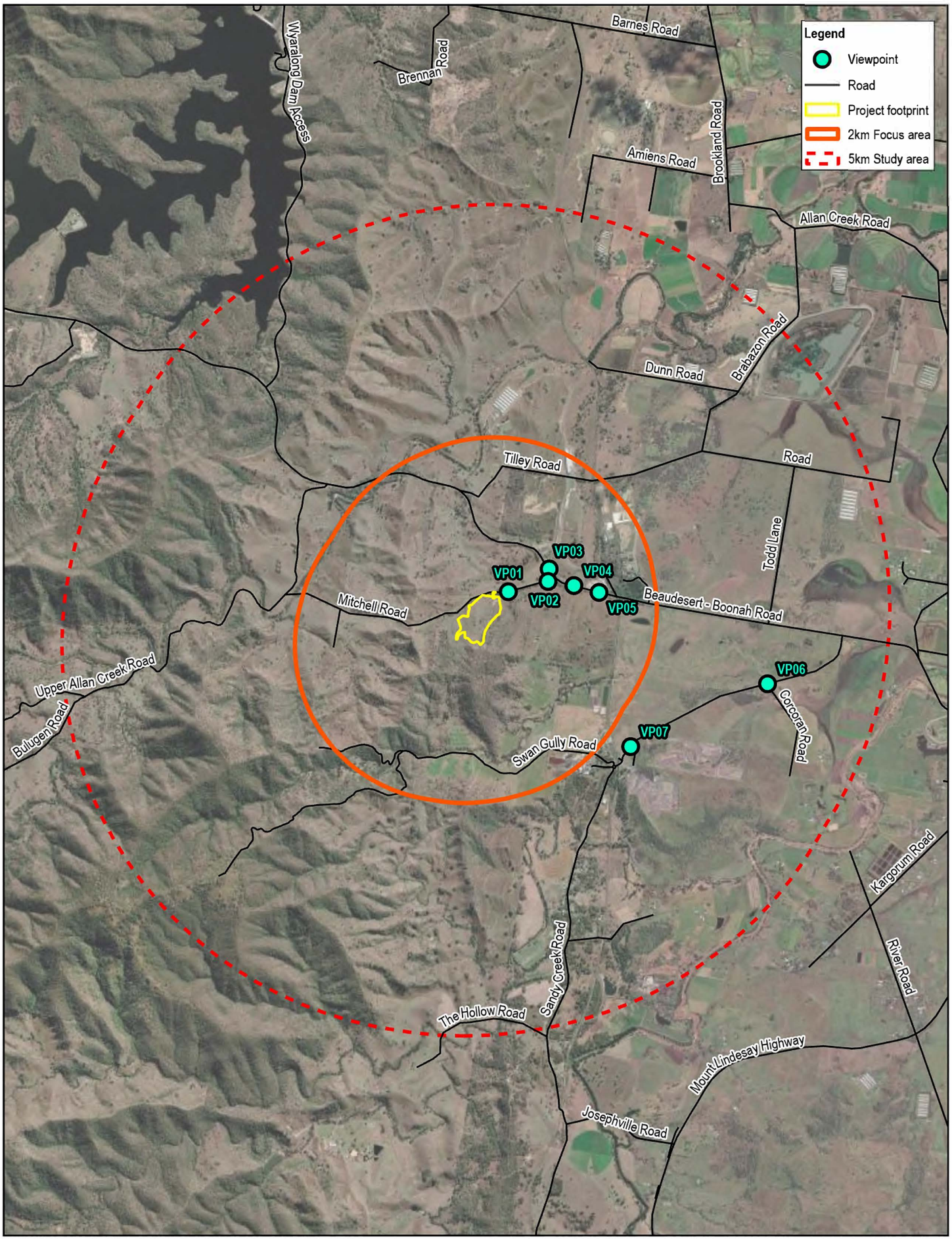
– residents in dwellings with potential views to the Project
– road users of Beaudesert Boonah Road
– road users of local roads adjacent or in close proximity to the Project area
– nearby workers
– users of interstate railway.

6.2 Viewpoint locations

The following section provides a visual impact assessment of the Project from the following selected representative viewpoint locations as shown in Table 6.2 and Figure 6.1. Viewpoints have been selected to appropriately represent the sensitive visual receptors identified in section 6.1.3.

Table 6.2 Viewpoint locations

Viewpoint	Location
Viewpoint location 1 (VP01)	Mitchell Road
Viewpoint location 2 (VP02)	Mitchell Road-Beaudesert Boonah Road
Viewpoint location 3 (VP03)	Beaudesert Boonah Road 01
Viewpoint location 4 (VP04)	Beaudesert Boonah Road 02
Viewpoint location 5 (VP05)	Beaudesert Boonah Road 03
Viewpoint location 6 (VP06)	Swan Creek
Viewpoint location 7 (VP07)	Sandy Creek Road



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

GHD

SOILCO
The Life-Giving Soil Company

SOILCO Pty Limited
Bromelton Compost Manufacturing Facility

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

Viewpoints

FIGURE 6.1

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Print date: 14 Aug 2024 - 16:08

Data source: GHD: viewpoints, study area (2024); DoR: road (2021); SOILCO: project footprint (2024).World Imagery: Earthstar Geographics extracted 14/08/2024 . Created by: mvandermerwe

6.2.1 Viewpoint location 01: Mitchell Road

VP01 is located on Mitchell Road (currently unsealed road) and is facing south-west. The existing view can be seen in Photo 7. Refer to Table 6.3 for assessment.

Photo 7 VP01 Mitchell Road

Table 6.3 Viewpoint location 1 assessment

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°54'51.39"E, 27°58'29.06" S Elevation: 123 m VP01 is situated approximately 100 m from the Project and faces in a southwest direction. This viewpoint is representative of views experienced by nearby pastoral workers and existing and future road users of Mitchell Road.
Description of existing view	The foreground includes a grassed and uneven terrain with an unsealed road (Mitchell Road) on the right side of the view. In the right of the middle ground, the unsealed Mitchell Road extends into the background. There is a cluster of large, native trees across the middle ground view which partially screens views to the farmland beyond. The landform in the background is elevated and covered with pasture and dense vegetation to the left with trees visible on the skyline.
Anticipated change to view	During construction, visual impacts may be associated with vegetation clearance for the establishment of new infrastructure. Construction vehicles, machinery and work crews may be temporarily visible on and travelling to and from the Project. During this time, storage, stockpile and laydown areas, administration buildings, fencing, barricades and lighting may also be visible. There may also be dust generated as a result of construction works which may have a visual impact. During operation, maintenance and storage shed, office and amenities, in addition to parking will be visible in the middle ground view potentially screening the long range views to the elevated ridgeline in the background. Mitchell Road will be constructed as a class4b rural collector road to Scenic Rim Regional Council Standard. The impacts associated with the construction of Mitchell Road include roadway widening and sealing as well as likely removal/replacement of existing eucalypt trees within the road reserve. The existing grasses and the gravel covering Mitchell Road would be replaced by the construction of a sealed road.
Sensitivity to change	The sensitivity is **Low**, as this is currently an unsealed track used infrequently and only with a suitable vehicle. However, it will be constructed as a class4b rural collector road to Scenic Rim Regional Council Standard and will function as a commuter and transport route with the purpose of collection and distribution of traffic from local areas to the broader road network including access to the adjacent properties.

Criteria	Comments
Magnitude of change	The magnitude of change is **High**, as the introduced facility would be visible, and would be uncharacteristic within the existing rural view. The Project may obscure long range views to the elevated uplands to the west. Additionally, the construction of Mitchell Road will likely result in removal/replacement of existing eucalypt trees within the road reserve. The existing grasses and the gravel currently evident within the road reserve would be replaced by a sealed road which would significantly impact the view.
Significance of impact	The significance of impact is **Moderate**, as the sensitivity is low and the magnitude is high.

6.2.2 Viewpoint location 02: Mitchell Road-Beaudesert Boonah Road

VP02 is located at the intersection of Mitchell Road Reserve and Beaudesert Boonah Road and is facing southwest. The existing view can be seen in Photo 8. Refer to Table 6.4 for assessment.

Photo 8 *VP02: Mitchell Road-Beaudesert Boonah Road*

Table 6.4 *Viewpoint location 2 assessment*

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°55'9.89"E, 27°58'25.21"S Elevation: 129 m VP02 is situated approximately 630 m east of the Project and faces in a southwest direction. This viewpoint is representative of views experienced by road users on Beaudesert Boonah Road and users of the industrial areas in addition to, local residents.
Description of existing view	The foreground is grassed and uneven and features a simple post and wire fence with a wooden gate, delineating the boundary of private rural land and access to the unconstructed Mitchell Road. There are two timber transmission poles on the left of the view. The middle ground is characterised by gently undulating grassed farmland and isolated trees, tree clumps continuing into the background and skyline. There is a dense area of trees on the right of the view limiting long range views to the west.
Anticipated change to view	During construction, visual impacts may be associated with vegetation clearance for the establishment of new infrastructure. Construction vehicles, machinery and workers may be temporarily visible while travelling to and from the site. During this time, filtered views of storage, stockpile and laydown areas, administration buildings, fencing, barricades and lighting may also be visible. There may be additional dust generated as a result of construction works which may also have a visual impact.

Criteria	Comments
	During operation, filtered views of the Project, including taller structures such as the receival shed, may be achieved in the background, as well as ancillary infrastructure and vehicles along Mitchell Road. Most components would be screened by intervening vegetation and topography. Mitchell Road will be constructed as a class4b rural collector road to Scenic Rim Regional Council Standard. The impacts associated with the construction of Mitchell Road includes roadway widening and sealing as well as likely the removal/replacement of existing eucalypt trees within the road reserve. The existing grasses and the gravel covering Mitchell Road would be replaced by the construction of a sealed road.
Sensitivity to change	The sensitivity is **Moderate**, as Beaudesert Boonah Road has State significance however drivers pass by at high speeds and have brief, indirect, views of the site.
Magnitude of change	The magnitude of change is **High**. Other than the construction of Mitchell Road the remaining introduced infrastructure would be a minor alteration to the existing view. Although the introduced facility may be partially visible, it would be significantly screened by vegetation in the foreground and middle ground and the elevated landform in the centre of view. Impacts could be mitigated through landscape design and additional screening. The construction of Mitchell Road will likely result in removal/replacement of existing eucalypt trees within the road reserve and the intersection with Beaudesert-Boonah Road to allow for a new turning lane into Mitchell Road. The existing grasses and the gravel currently evident within the road reserve would be replaced by a sealed road which would significantly impact the view
Significance of impact	The significance of impact is **High- Moderate**, as the sensitivity is moderate and the magnitude is high.

6.2.3 Viewpoint location 03: Beaudesert Boonah Road 01

VP03 is located on the intersection of Beaudesert Boonah Road and an access road to Beaudesert Saleyards and is facing south west. The existing view can be seen in Photo 9. Refer to Table 6.5 for assessment.

Photo 9 *VP03: Beaudesert Boonah Road 01*

Table 6.5 *Viewpoint location 3 assessment*

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°55'10.41" E, 27°58'19.97"S Elevation: 100.7 m

Criteria	Comments
	VP03 is situated approximately 700 m northeast of the Project and faces in a south west direction. This viewpoint is representative of views experienced by road users on Beaudesert Boonah Road, rural residents and nearby industry workers.
Description of existing view	The foreground shows the intersection of Beaudesert Boonah Road and a local access road to Beaudesert Saleyards. Beaudesert Boonah Road extends from the right to left of the view. On the left side of the middle ground, there are trees aligning the road with clusters of trees in the background. A small shed can be seen in the middle ground in the centre of the view. The centre and right side of the middle ground view is open grassland with a few scattered trees. The landform in the background of the right side of the view is elevated and trees are visible on the skyline.
Anticipated change to view	During construction, visual impacts may be associated with in-situ concrete pouring and the establishment of new structures. Construction vehicles, machinery and workers may be temporarily visible while travelling to and from the site. During this time, filtered views of storage, stockpile and laydown areas, administration buildings, fencing, barricades and lighting may also be visible. During operation, limited filtered views of the Project may be achieved in the centre of the background, as well as ancillary structures and vehicles. Views of new components would be significantly screened by two rows of trees along Mitchell Road.
Sensitivity to change	The sensitivity is **Moderate**, as Beaudesert Boonah Road has State significance however drivers pass by at high speeds and have brief, indirect, views of the site.
Magnitude of change	The magnitude of change is **Moderate**. Other than the construction of Mitchell Road the remaining introduced infrastructure would be a minor alteration to the existing view. Although the introduced facility may be partially visible, the impacts would be minimal due to the distance from the Project and the buildings and infrastructures would be significantly screened by vegetation and the topography. Impacts could be mitigated through landscape design and additional screening. However, the construction of Mitchell Road will likely result in removal/replacement of existing eucalypt trees Within the road reserve, in the centre of middle ground. The existing grasses and the gravel currently evident within the road reserve would be replaced by a sealed road which would impact the view.
Significance of impact	The significance of impact is **Moderate,** as the sensitivity to change is moderate and magnitude to change is high.

6.2.4 Viewpoint location 04: Beaudesert Boonah Road 02

VP04 is located on the intersection of an access road to STC Logistics and Beaudesert Boonah Road and is facing south west. The existing view can be seen in Photo 10. Refer to Table 6.6 for assessment.

Photo 10 VP04 Beaudesert Boonah Road 02

Table 6.6 Viewpoint location 4 assessment

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°55'22.07" E, 27°58'26.93" S Elevation: 118.3 m VP04 is situated approximately 930 m to the east of the Project and faces in a south west direction. This viewpoint is representative of views experienced by road users on Beaudesert Boonah Road as well as nearby industry workers, rural residents and tourists.
Description of existing view	Beaudesert Boonah Road is located in the foreground, aligned by trees along its southern extent. Streetlights and transmission lines are aligned to the road. The left of the middle ground includes gently undulating farmland. A building is nestled beyond the foreground trees, accessible via a treelined road that branches off from Beaudesert Boonah Road. Glimpsed views through the trees in the middle ground of the elevated uplands are visible in the background view. The skyline in the left of the background view is sloped terrain with scattered trees.
Anticipated change to view	The Project is at a distance of approximately 1.2 km, due to the intervening vegetation and topography the Project would unlikely be visible from this view.
Sensitivity to change	The sensitivity is **Moderate**, as Beaudesert Boonah Road has State significance however drivers pass by at high speeds and have brief, indirect, views of the site.
Magnitude of change	The magnitude of change is **Negligible** as there is no change to the key elements, features or characteristics of the existing view.
Significance of impact	The significance of impact is **Negligible**, as the sensitivity to change is moderate and magnitude of impact is negligible.

6.2.5 Viewpoint location 05: Beaudesert Boonah Road 03

VP05 is located adjacent to Beaudesert Boonah Road and is facing south west. The existing view can be seen in Photo 11. Refer to Table 6.7 for assessment.

Photo 11 VPO5 Beaudesert Boonah Road 03

Table 6.7 Viewpoint location 5 assessment

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°55'33.91" E, 27°58'29.81" S Elevation: 90.04 m VP05 is situated approximately 1.25 km from the Project and faces in south west direction. This viewpoint is representative of views experienced by road users, train users, as well as nearby industry workers, rural residents and tourists.
Description of existing view	The foreground is characterised by the gently undulating farmland, delineated by trees and a post and wire fence. On the right side of the foreground, Beaudesert Boonah Road can be seen, extending into the background. The middle ground features a grass verge with a gentle slope. Trees delineate the southern extent of Beaudesert Boonah Road as seen on the left side of the view. Elevated uplands are visible across the background view, including sloped terrain and dense trees.
Anticipated change to view	The Project is at a distance of approximately 1.25 km. Due to the intervening vegetation and topography it is unlikely that the Project would be visible from this viewpoint.
Sensitivity to change	The sensitivity is **Moderate**, as Beaudesert Boonah Road has State significance however drivers pass by at high speeds and have brief, indirect, views of the site.
Magnitude of change	The magnitude of change is **Negligible** as there is no change to the key elements, features or characteristics of the existing view.
Significance of impact	The significance of impact is **Negligible**, as the sensitivity to change is moderate and magnitude of impact is negligible.

6.2.6 Viewpoint location 06: Swan Creek

VP06 is located on Sandy Creek Road and is facing north west. The existing view can be seen in Photo 12. Refer to Table 6.8 for assessment.

Photo 12 VP06 Swan Creek

Table 6.8 Viewpoint location 6 assessment

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°55'10.41"E, 27°58'19.97"S Elevation: 100.7 m VP06 is situated approximately 3.5 km to the southeast of the Project and faces in a north west direction. This viewpoint is representative of views experienced by nearby industry workers, and road users and 4WD tourists.
Description of existing view	Sandy Creek Road stretches across the foreground view. On the opposite side of the road, in the middle ground, the view is characterised by pastureland with scattered trees and cattle visible. The pasture boundary is delineated by simple post and wire fencing, nearly concealed by vegetation. To the right of the view, Swan Creek can be seen, meandering through the pastureland. Single trees and clusters of trees can be seen across the low-lying landform in the background view. Elevated uplands are visible in the left of the background view.
Anticipated change to view	The Project is at a distance of approximately 3.5 km. Due to the intervening vegetation and topography, it is unlikely that the Project would be visible from this viewpoint.
Sensitivity to change	The sensitivity is **Low**, as this is a local road of local significance and views are transient and indirect.
Magnitude of change	The magnitude of change is **Negligible** as there is no change to the key elements, features or characteristics of the existing view.
Significance of impact	The significance of impact is **Negligible**, as the sensitivity to change is low and magnitude of impact is negligible.

6.2.7 Viewpoint location 07: Sandy Creek Road

VP07 is situated 2.5 km from the Project on the Sandy Creek Road and faces in a northwest direction. The existing view can be seen in Photo 13. Refer to Table 6.9 for assessment.

Photo 13 VP07 Sandy Creek Road

Table 6.9 Viewpoint location 7 assessment

Criteria	Comments
Location and view direction	Location (MGA Zone 55); 152°55'48.78"E, 27°59'34.35"S Elevation: 84.5 m VP07 is situated 2.5 km from the Project and faces in a northwest direction. This viewpoint is representative of views experienced by road users on Sandy Creek Road, passengers of the Sydney to Brisbane railway, nearby industry workers, local residents and 4WD recreational users accessing Swan Gully Park.
Description of existing view	Sandy Creek Road stretches across the field of view in the foreground with an overhead powerline aligned to the road. On the opposite side of the road, in the middle ground, the view is characterised by pastureland with scattered trees. The boundary of pastureland is delineated by simple posts and wire fencing, nearly concealed by vegetation. Railway tracks of the Sydney to Brisbane rail corridor are visible across the middle ground view with single trees and clusters of trees across the low-lying landform. An industrial site can be seen in the left side of the middle ground partially screened by scattered trees. The background view is dominated by the elevated topography of the uplands to the west including tree lined slopes and rolling skyline.
Anticipated change to view	During operation, limited filtered views of the Project including the taller shed structures may be achieved in the centre right side of the background view. Views of new components would be screened by the intervening vegetation and topography and the distance of approximately 2.5 km would mean any infrastructure visible would be diminished.
Sensitivity to change	The sensitivity is **Moderate**, as views are representative of tourists accessing Swan Gulley Park and railway passengers of the Sydney to Brisbane railway.
Magnitude of change	The magnitude is **Negligible**, as from this location the site is screened by intervening vegetation and topography and any views of the infrastructure would be diminished.
Significance of impact	The significance of impact is **Negligible**, as the sensitivity to change and magnitude of impact are both negligible.

6.2.8 Visual impacts summary

Table 6.10 below provides a summary of the visual impacts for the Project.

Table 6.10 Summary of visual impacts

Viewpoint	Location	Sensitivity to change	Magnitude of change	Overall rating
VP01	Mitchell Road	Low	High	**Moderate**
VP02	Mitchell Road-Beaudesert Boonah Road	Moderate	High	**High- Moderate**
VP03	Beaudesert Boonah Road 01	Moderate	Moderate	**Moderate**
VP04	Beaudesert Boonah Road 02	Moderate	Negligible	**Negligible**
VP05	Beaudesert Boonah Road 03	Moderate	Negligible	**Negligible**
VP06	Swan Creek	Low	Negligible	**Negligible**
VP07	Sandy Creek Road	Moderate	Negligible	**Negligible**

7. Mitigation measures

The following section recommends mitigation measures that respond to issues arising within the assessment that have potential to adversely impact on:

– The character of the landscape.
– Views from nearby sensitive visual receptors.

The following mitigation recommendations address the most visual elements of the Project as well as referencing any relevant considerations drawn from the legislation and policy review outlined in Section 4.

7.1 Mitigation recommendations

7.1.1 Design materiality

General considerations for the detailed design phase include:

– Ensure the Project form, material and finishes are of high quality and are in keeping with the surrounding setting as to positively contribute to existing rural landscape character values.
– Avoid or minimise the use of shiny or reflective materials to reduce associated visual impacts on surrounding sensitive receptors.
– Consider specifying neutral colours such as dark grey for the cladding of external walls and roof that complements the rural landscape setting.
– If required, specify boundary fencing that is sensitive to the rural aesthetic of the site and avoid large areas of opaque, metal fencing.

7.1.2 Landscaping

– Additional screen planting using shrubs and trees along Mitchell Road, will assist to preserve the landscape character of surrounding farmlands whilst minimising views from Beaudesert Boonah Road.
– Increasing the density of planting along the site boundaries, to minimise visual impacts of the additional infrastructure and taller building within the Project.

– Plant screening vegetation within the Project footprint, to minimise visual impacts experienced from Beaudesert Boonah Road, Sandy Creek Road and the railway corridor.
– Avoid the clearing of trees, especially mature and regulated trees, where possible, to retain existing character values.
– Where possible, consider planting and vegetation throughout the Project to break up hardstand areas and to aid successful blending of the Project into the surrounding rural landscape.
– Revegetate Mitchell Road, adjacent to the newly constructed road utilising eucalyptus trees and understory plants (e.g. shrubs) to enhance visual screening.

7.1.3 Signage and services

Considerations for the detailed design phase include:

– Where possible, minimise visual impacts of signage by:
  - Minimising signage dimensions.
  - Avoiding brightly illuminated signage.
  - Employing high-quality signage design.
  - Locating signage on buildings rather than freestanding.

7.1.4 Construction activity and storage

General considerations for construction activity and storage include:

– Take all practical measures to ensure construction equipment, storage areas, and other visible elements are located away from key views to or from the sensitive visual receptors identified in this assessment.
– Ensure general tidiness of the site is maintained during construction.
– Avoid conducting work in evenings and nights where possible, to minimise impacts from lighting.
– Where construction activity cannot be located away from trees, provide tree protection to ensure they are not damaged.
– Natural areas, which may be required to be disturbed during construction, to be rehabilitated to the previous condition.

8. Conclusion

This VIA has been prepared to assess the possible effect of the Project on the surrounding landscape and views. The purpose of this report is to inform and assist SOILCO in obtaining relevant planning and environmental approvals.

The Project has been thoroughly assessed in relation to the relevant planning and environmental regulations concerning landscape and visual impact and amenity. The scope of the assessment is limited to the expected distance in which the Project would likely be visible in its surrounding environment which in this case resulted in a Study area of approximately 5 km in each direction of the Project footprint. Situated within the Study area is a focus area of 2km.

The Project is located in the SEQ bioregion within the Scenic Rim regional council area which is situated about 50 km south of Brisbane's CBD. The landscape within the Study area contains the Bromelton SDA, heavy and high-impact industries, undulating farmland, recreational areas, and elevated uplands and ridges.

The topography of the Study area is a landscape characterised by gently undulating and rolling hills, ridges and valleys. It encompasses various major and minor creeks such as Swan Creek, Sandy Creek and Allan Creek. The

Study area has a diverse array of vegetation, featuring native woodlands and forests, grasslands and revegetation native trees.

Utilising data gathered via the desktop study and site inspection, a character appraisal was prepared, the outcome of which indicates that the Project may impact the existing rural landscape character. These impacts, however, could be managed through landscape design and mitigation.

A VIA was also undertaken with seven representative viewpoints selected for assessment. The outcome of this process indicates that the visual impacts of the Project are anticipated to be High-Moderate to Negligible. Overall the site is well-screened by intervening landform and vegetation, however, the construction of Mitchell Road would be visible from Beaudesert Boonah Road and the surroundings especially the views to the north and west of the Project.

Visual consideration, as itemised in Section 7 including appropriate built form, mitigation and the retention of existing vegetation and visual screening will assist in limiting the visual impacts of the Project.

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Appendices

Appendix A

Architectural 3D renders

1 SIte View from Mitchell Road

2 Site Entry

DA
NOT FOR CONSTRUCTION

elevation architecture

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Revision

A	Preliminary DA Set	19/07/2024

Project
Bromelton Compost Manufacturing Facility
Lot 4 Mitchell Road Bromelton 4285

Client
SOILCO

Stage
DA

Status
Peliminary
NOT FOR CONSTRUCTION

Architect
GA

Drawn
ZB

Project No.
1384-02

Scale
at A1

3D Views 1

A-DA-22.01 **A**

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1 Site View 1

2 Site View 2

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P:\Data 1\1384-02 Bromelton Compost Manufacturing Facility\5.2 Development Application\5.2.1 ArchiCAD\1384-02_Site Master SD 27.pln

1 Office and Amenities - View 1

2 Office and Amenities - View 2

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Revision

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Client
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Stage
DA

Status
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Architect
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Project No.
1384-02

Scale
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3D Views 3

A-DA-22.03 **A**

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1 Maintenance and Storage Shed

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Revision

A	Preliminary DA Set	19/07/2024

Project
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Client
SOILCO

Stage
DA

Status
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Architect
GA

Drawn
ZB

Project No.
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Scale
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3D Views 4

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