ENVIRONMENTAL IMPACT STATEMENT

VOLUME 1

Proposed Resource Recovery Facility

296 Mitchell Highway
Stewarts Mount
Lots 1 & 2 DP 1170456

Ambelli Environmental

montgomery planning SOLUTIONS URBAN RURAL

This Environmental Impact Statement was prepared by Robert Montgomery, Principal, Montgomery Planning Solutions and Luke Zambelli, Director, The LZ Environmental Company Pty Ltd, in accordance with the Environmental Assessment Requirements of SEAR No. 886 issued by NSW Planning and Environment under the provisions of Section 78A (8) of the *Environmental Planning and Assessment Act 1979*.

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Declaration pursuant to Schedule 2 of the Environmental Planning and Assessment Regulation 2000.

I declare that:

i) this statement has been prepared in accordance with Schedule 2 of the Environmental Planning and Assessment Regulation 2000,

ii) this statement and supporting specialist reports contain all available information that is relevant to the environmental assessment of the development, and

iii) the information contained in this statement is neither false nor misleading.

Robert Montgomery BApSc (Environmental Planning) MPIA

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Reference: 1447

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Specialist Consultants

The following specialists have contributed their expertise to this Environmental Impact Statement.

Name	Company	Field of Expertise
Luke Zambelli	LZ Environmental Company Pty Ltd	Water, soils, waste management, hazard assessment, noise.
Darlene Huff	Advanced Environmental Dynamics Pty Ltd	Odour Assessment
Shane Maloney	Envirotech Pty Ltd	Fauna Ecology
Laurel Fowler	Envirotech Pty Ltd	Living Systems, Botany
David Thompson	Thompson Stanbury & Associates	Traffic and transport planning

CONTENTS - VOLUME 1

Volume 2

Appendix 1: Environmental Assessment Requirements – SEAR No. 886
Issued 21 January 2015

Appendix 2: Consultation Appendix 3:

Traffic Impact Study Appendix 4:

Odour Assessment Appendix 5:

Biodiversity Assessment

Appendix 6: Site Contamination Assessment

Appendix 7: Validation Report

Volume 3

Appendix 8: Environmental Management Plan

Executive Summary

Project Description

The project subject to this Environmental Impact Statement (EIS) is the proposed development of an organics resource recovery facility principally within the former hard rock quarry located at 296 Mitchell Highway Stewarts Mount, Bathurst NSW.

The total land holding within which the former quarry is located is about 1,000 hectares in area[1]. The quarry floor is about 12 hectares in size and lays 15 metres below the remaining natural ground surface. This proposal is a beneficial use of the sterile environment which has resulted from many years of quarrying the subject site.

The proposed resource recovery facility would occupy the quarry floor and existing buildings, infrastructure and surrounding area. This area has been unused since the closure of the quarry in early 2014. The remainder of the land will continue to be used for sheep grazing.

Purpose of the Environmental Impact Statement

The purpose of this EIS is to describe the project and examine its environmental impacts during construction and operation. The EIS offers the community and stakeholders an opportunity to understand and comment on the project as part of the statutory planning and assessment approval process.

Consultation during EIS Preparation

The EIS incorporates preliminary comments on the project concept provided from the community and stakeholders.

The proposed project is not near any major towns, but does neighbour a number of rural properties. The owners of these properties and the local Aboriginal community were asked for any preliminary comments on the project concept.

Bathurst Regional Council was consulted and invited to provide its initial views about the project.

Key NSW government agencies with portfolio responsibilities affected by the project were also consulted and include Environmental Protection Authority, Department of Primary Industries, Office of Environment and Heritage and Roads and Maritime Services.

Environmental and Planning Requirements

This EIS complies with the Secretary's Environmental Assessment Requirements issued in relation to the proposed project by the NSW Department of Planning on 21 January 2015.

As the proposal is classified as a "waste management facilities or works" project it is a designated development in Schedule 3 of the *Environmental Planning and Assessment Regulation 2000*.

[1] Approximation due to lack of detail on Old Systems Title

The proposal is also an integrated development within the definition of Section 91 of the *Environmental Planning and Assessment Act 1979*, as a separate licence is required under the *Protection of the Environment Operations Act, 1997*.

Under Clause 8(c) of Schedule 4A of the Environmental Planning and assessment Regulation 2000 the Joint Regional Planning Panel will be the consent Authority

Project Proponent

The proposal is submitted by Bettergrow Pty Ltd, an Australian owned and managed company based in Windsor, NSW. The company specialises in and has 35 years' experience managing the kind of resources proposed for recovery at the facility. Experience includes the:

- Collection, transportation, handling, processing and beneficial use of organic resources including garden and food organics, bio-solids, animal wastes, drill mud and related resources;
- 100% conversion of organic resources into organic soil conditioning products for beneficial use in the agricultural and other markets; and
- Marketing, sales and product development of organic resources including value adding.

Bettergrow is contracted to manage the handling and processing of organic resources by various private and government organisations across Australia. For example Bettergrow:

- Has been contracted by Degremont Australia since 1995 to manage all water filtration sediment and materials at the Prospect Water Filtration plant. Bettergrow provides all equipment and personnel on site to achieve this. Prospect Reservoir supplies 97% of Sydney's water supplies;
- Has managed and transportation and beneficial use of up to 200,000 tonnes of bio-solids per annum for clients such as Brisbane City Council, Gold Coast City Council, Toowoomba City Council and the Sunshine Coast Council; and currently manages the transportation and beneficial use of biosolids from Hawkesbury City Council;
- Has been awarded the contract by Gosford City Council to manage the processing and beneficial use of the garden organics delivered to the Woy Woy landfill either by the general public or through the Council kerbside collection contractor

Bettergrow already operates a range of NSW EPA approved resource recovery facilities for organic resources including at, Ravensworth, Kelso (near Bathurst) and Vineyard (near Windsor).

In managing these facilities and performing its contractual obligations for clients, Bettergrow has experience complying with NSW and other state legislative requirements governing the collection, transportation, handling and beneficial use of resources, including environmental, health and safety requirements.

Proposed Capital Works and Operations

It is proposed that an Environmental Management Plan (EMP) will be used to govern the management of environmental issues during the construction and operating phases of the project. A draft EMP is attached to this EIS.

The final EMP would include detail on the processes and procedures for effective environmental management and all employees and sub-contractors accessing the project site would receive formal training about it and its application.

Construction phase

The proponents intend to spend a total of $5.2M to establish a state of the art resource recovery facility.

Construction works include:

- Drainage and retention ponds;
- Concrete-walled windrows;
- Re-grading of hard stand areas;
- Upgrading existing buildings, weighbridge, and wheel wash;
- Site rehabilitation and improvement works

Other capital expenditure includes:

- Purchase of new processing equipment;
- Purchase of new plant and machinery.

Operating phase – type and volume of waste received

The type and volume of resources proposed for recovery under the proposed development are as follows:

Waste Type	**Volume (Tonnes)**
Garden organics + food and garden organics	40,000
Food organics	10,000
Biosolids	20,000
Animal Wastes	5,000
Forestry Residues and Gyprock	15,000
Drill mud; fly ash; grease trap, oily water, water based inks and dyes, Clean Timber	9,000
TOTAL ANNUAL VOLUME	**99,000**

Operating phase – resource treatment

Incoming resource treatment would be governed by three key steps.

Operating phase – product development

The key purpose of the composting process is to create organic soil conditioning products for use in agricultural land improvement and as a base for other growing media.

At the end of Step 3 in the process the compost is screened to determine its suitability to be either sold directly for agricultural use or blended with other inert products before sale for use in wider agronomic applications.

Project Need, Objectives and Benefits

Reducing organic waste disposed to landfill

The proposed project seeks to contribute to the delivery of the Commonwealth and NSW Government's targets in relation to increasing the rates of organic waste recovery in municipal waste streams, reducing landfill use and reducing carbon emissions associated with landfill.

Increasing regional resource recovery options

There are limited resource recovery facilities in regional Australia or NSW that deploy controlled enclosed/covered and force aerated composting systems designed to compost food residuals and other organic waste materials.

The proposed project seeks to increase the availability of organic resource recycling and reuse in regional NSW.

Improving agricultural production

Soil degradation is a problem in agricultural areas and this affects land productivity. Carbon depletion, exposure to drought and salinity are major issues.

The organic soil conditioners and other products that would be produced by the proposed facility will help arrest and reverse carbon depletion in soil thereby improving the capacity of soils to support plant growth including crops and pastures.

Soil conditioners improve soil fertility which assists with drought-proofing and buffering against sodicity and dryland salinity.

Economic benefits

The project would inject over $35M into the local economy over its 20 year life cycle, including capital and operating expenditure.

It is estimated that the construction phase will create 20 new jobs and the operating plant will require up to 13 employees over the life of the plant. The majority of these positions will be sourced from within the Bathurst region.

Indirect employment opportunities will be created for local transport companies and other sub-contractors required to service the facility during its construction and particularly in the operating phases.

Cultural heritage and conservation

The proposal would ensure that the Aboriginal cultural significance and European Heritage significance of the land is protected.

Additionally, the provisions in the Environmental Management Plan will ensure that the existing native vegetation on the site is conserved and enhanced.

Environmental Risk Assessment

A comprehensive assessment of environmental risks as been conducted.

The environmental risks assessment concludes that potential impacts from the proposed project during its construction and operational phases are manageable and would not result in a significant impact to the environment.

The assessment also concludes that the proposed development satisfies the principles of Ecologically Sustainable Development.

The environmental risk assessment was conducted with the support and expertise of specialist consultants and special reports were prepared to examine three key risk areas - traffic, odour and biodiversity. These reports are attached to this EIS.

Also attached to this EIS is the site contamination and validation report prepared following the closure of the quarry.

The specialist reports are included at Appendices 3 – 7.

In addition to identifying risks the EIS has assessed relevant mitigation measures to address risks. These measures are detailed in the EMP attached to this EIS.

The experience of the proponents in relation to similar waste management processes elsewhere should support the effective application of the EMP and related mitigation measures.

Odour management

Offensive odour has historically been associated with poorly operated composting facilities.

Typically the greatest risk of generating sustained offensive odour is at the beginning of the composting process, particularly if windrows have not been created effectively.

The EIS considers that the risk of odour associated with this proposed project can be managed effectively because:

- The project includes the adoption of the Gore Cover system at the beginning of the composting process which will eliminate any potential malodour that could be released in the initial weeks of composting; and
- Appropriate control measures have been introduced within the EMP to ensure windrows are correctly prepared.

Nevertheless ongoing consultation with neighbouring properties should occur on a regular basis to ensure that odour is not reducing their amenity.

Summary of environmental impacts and mitigation measures

Potential Impact	Mitigation Measures	EMP Procedures
Air Quality (dust to receptors)	• Control of moisture content in compost windrows • Quarry walls provide initial barrier	Workplace Procedure 2 – Gore Covered System & Open Windrow Construction & Maintenance Workplace Procedure 8 – Spontaneous Combustion Prevention), Workplace Procedure 11 – Dust and Particulate Management)
Offensive Odour	• Maintaining aerobic activity within compost • Maintaining correct temperature of compost to achieve pasteurisation • Use of Gore-Tex covers to better control moisture, air and temperature • Ensure water in ponds is regularly tested for PH and oxygen levels • Careful control of resource deliveries and primary handling to prevent fugitive odours	Workplace Procedure 1 – Waste Receival and Unloading; Workplace Procedure 2– Gore Covered System & Open Windrow Construction & Maintenance; Workplace Procedure 4 – Finished Compost Stockpile Management. Workplace Procedure 12 – Odour Management Workplace Procedure 16 – Rain Induced Anaerobic Windrows
Noise	• Quarry walls provide significant passive noise attenuation	Workplace Procedure 17 - Noise Management Section 13.3.1 –

	• All plant and equipment maintained to ensure manufacturer's specifications are not exceeded • Non-compliant trucks will be refused entry to site until repaired • Additional physical noise barriers may be installed if necessary for use of trommel or shredder.	Daily Equipment Machinery Checklist
Traffic	• Average 35 heavy vehicle movements per day • Existing internal road and intersection with Mitchell Highway to be used for all traffic movement	N/A
Soil	• No soil disturbance other than ponds to be excavated within quarry void. • Any sediment from compost activity will be caught by ponds within quarry void. • Stormwater retention designed for 1in 100 year storm event ensuring no movement of soil. • Ongoing weed control. • Spill management procedures in place in case of waste or fuel spill.	Workplace Procedure 20 – Weed Management Emergency Procedure 3 – Spill Management Workplace Procedure 1 – Waste Receival and Unloading; Workplace Procedure 2 – Gore Covered System & Open Windrow Construction & Maintenance; Workplace Procedure 4 – Finished Compost Stockpile Management); Workplace Procedure 18 – Waste Management.
Water contamination	• Clean stormwater separated from process water and stored in separate ponds. • Contact stormwater will not be released from the site, but rather used for dust suppression on the pad itself and also as water for composting. • All drains and surface gradients designed for the transport of stormwater to the onsite ponds will be maintained in a state that is free of vegetation and debris, such that the flow of stormwater is not obstructed or impeded. • Groundwater testing prior to commencement to establish baseline, followed by six monthly testing during operation.	Workplace Procedure 14 – Dam Management Workplace Procedure 15- Ground Water Monitoring Emergency Procedure 3 – Spill Management Emergency Procedure 4 – Release to Groundwater
Biosecurity	• Best practice management employed in all parts of process. • Raw material separated from pasteurised compost • Equipment will be utilised to handle products in the order of most mature to least mature to prevent cross contamination. Where this does not occur, wash-down processes are detailed within the EMP.	Workplace Procedure 5 - Cross Contamination prevention and Clean down

Fire Source	• Moisture in compost generally prevents combustion • Careful temperature and air monitoring of windrows to prevent excessive temperature build up	Workplace Procedure 6 – Temperature Monitoring Workplace Procedure 8 – Spontaneous Combustion Prevention Emergency Procedure 2 – Fire Management
Waste, chemical or fuel spillage	• Only small amounts of chemicals and fuels stored on site for daily operation. • All chemicals stored and used as per manufacturer's specifications	Emergency Procedure 3 – Spill Management
Biodiversity	• Implementation of a vegetation management plan to conserve native vegetation and communities. • Implementation of a weed management plan. • Any vegetation removed from within the quarry area is to be replanted in a more suitable location either within the quarry or around the outskirts of the quarry	Workplace Procedure 20 – Weed Management
Visual	• All resource processing and compost manufacture will occur on the quarry floor, which is not visible from surrounding area. • No changes are proposed to existing internal road, workshop or office buildings, which can be partially viewed from the south-east.	N/A
Aboriginal Place	• The site is identified in the Environmental Management Plan (EMP) as a designated "no go" zone. • The EMP states that "no vehicle should be driven in this area and waste must not be disposed or stored in this area."	EMP page 45

EIS Conclusion

The EIS demonstrates that the proposed development satisfies the principles of ecologically sustainable development and will operate with appropriate mitigation measures to control environmental impacts.

The proposal satisfies all relevant statutory requirements and is an eminently suitable use for this highly modified area of the land.

It is submitted that the consent authority can be satisfied in relation to the environmental impacts, and the proposal is therefore recommended for approval.

1. Introduction

The purpose of this Environmental Impact Statement (EIS) is to describe the project and examine its environmental impacts during construction and operation. The EIS offers the community and stakeholders an opportunity to understand and comment on the project as part of the statutory planning and assessment approval process.

This EIS has been prepared in relation to a proposal by Bettergrow Pty Ltd to redevelop a disused quarry precinct at 296 Mitchell Highway Stewarts Mount, Bathurst NSW. Bettergrow proposes to convert the quarry site into a modern resource recovery facility for organic waste serving the Bathurst and other regions.

The proposal includes:

- The conversion of the existing quarry floor into a waste processing facility. The quarry floor is about 12 hectares in size and 15 metres below the remaining natural ground surface.
- The upgrading of the existing infrastructure such as workshop, office, weighbridge and wheel wash bay to support the facility.

The proposal allows for the receipt of up to 99,000 tonnes of organic waste material by the facility for processing and treatment per annum.

The organic residuals received by the facility would be subject to a composting process that includes both covered and open air treatment of waste material. The treatment process is a modern technique widely used in Australia and internationally to convert organic material into end products for reuse.

The facility would convert residual material into organic soil conditioner for the improvement of agricultural soils and other organic material for wider agronomic applications. The soil conditioner is a humified compost which is minerally fortified for the benefit of local and regional soils.

Humified products have been proven over many years to reverse carbon depletion in soil and reinvigorate soil's ability to support the growth of trees, crops and pastures of all kinds. Accordingly, these products boost the productivity of soil.

Bettergrow has been operating similar facilities in Australia and deploying the proposed waste treatment process to produce soil conditioner and related products for over 35 years. Current operations include an open windrow composting operation at Ravensworth in the Upper Hunter Valley. Previous operations included managing the beneficial use of biosolids for various NSW and Queensland utilities and Councils. Currently Bettergrow manages the beneficial use of biosolids generated by the Hawkesbury City Council.

This EIS demonstrates that the proposed development is eminently suitable for the land and will operate with appropriate mitigation measures to minimise environmental impacts. It is submitted that the proposal satisfies all relevant statutory requirements.

A number of technical terms and acronyms are used throughout this environmental impact statement. A dictionary of these terms is included at Section 15 at the end of this EIS.

2. Objectives of the Development

The objectives of the Facility are as follows:

1. To effectively utilise the ex-quarry site including the quarry floor and the consequent topography of the land plus the existing on site infrastructure and disturbed lands for a sustainable activity;
2. To divert various suitable organic resource streams away from landfill disposal through composting and the creation of soil conditioner products;
3. To effectively transform organic resources into soil improvement products without significant impact to the receiving environment;
4. To facilitate viable agricultural soil improvement in the region by creating organic soil conditioners at an affordable cost; and
5. To encourage sustainable practices within the region by promoting best practice in resource recovery.

3. Relevant Guidelines

The proposal is identified as designated development in Schedule 3 of the *Environmental Planning and Assessment Regulation 2000*, as it falls within the category of "Waste Management Facilities or Works". The proposal is also integrated development as defined by Section 91 of the *Environmental Planning and Assessment Act 1979*, as a separate licence is required under the *Protection of the Environment Operations Act, 1997*.

The following is a list of the relevant guidelines which were taken into consideration in preparing this EIS and supporting information.

- NSW Department of Environment and Conservation (DEC) (2005): Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales.
- NSW Department of Environment and Conservation (DEC) (2006): Assessment and Management of Odour from Stationary sources in New South Wales.
- NSW Department of Environment and Conservation (DEC) (2009): Interim Construction Noise Guideline
- NSW Industrial Noise Policy (EPA) (2000)
- NSW Road Noise Policy (EPA) (2011)
- Soil and Landscape Issues in Environmental Impact Assessment (DLWC 2000).
- ANZECC (2000) Guidelines for Fresh and Marine Water Quality
- Waste Classification Guidelines (DECC 2009)
- Guide to Traffic Generating Development (RTA 2002)
- Hazardous and Offensive Development Guidelines - Applying SEPP 33 (NSW Planning 2011)

4. Consultation

During the preparation of this EIS, the following agencies and persons were consulted.

Agencies

NSW Environmental Protection Authority, Central West Office, Bathurst
NSW Department of Primary Industries, Orange
NSW Office of Environment and Heritage, Dubbo
NSW Roads and Maritime Services, Parkes

Responses were received from NSW OEH, NSW DPI and NSW RMS. OEH advised that they require an adequate assessment of the impacts on flora, fauna, threatened species, populations, communities and their habitats, and the impacts to Aboriginal Cultural Heritage Objects.

The OEH matters are assessed in sections 13.6 and 13.8.

DPI required that consideration be given to biosecurity risk, weeds containment, pest management, dust, soil erosion, sedimentation, noise and traffic impacts from access routes, visual and lighting impacts, stock management and bushfire management.

DPI matters are assessed in sections 13.2, 13.3, 13.4.1, 13.5.1, 13.5.2 and 13.7.

RMS confirmed its previous requirements included within the Secretary's Environmental Assessment Specifications.

Land Owners

Letters were sent to the owners of 26 nearby properties inviting them to comment. A copy of the letter is included as Appendix 2. At the time of preparing this EIS, three responses have been received. In all submissions concern was expressed about the lack of detail available. Also it was expressed that the matters identified for assessment in the EIS will be critical issues.

The properties were selected based on likely perceived visual, noise and odour impacts.

Council

A letter was sent to Bathurst Regional Council inviting comment on matters for consideration in the EIS. The Council responded that it has no additional matters for inclusion in the EIS beyond those matters previously raised by NSW Planning, NSW EPA and NSW RMS.

Aboriginal Communities

The applicant and a representative from Bettergrow met with both the Bathurst Local Aboriginal Land Council and the Bathurst Wiradyuri and Aboriginal Community Elders at Bathurst on 13 November 2014.

The project was outlined by the applicant. The Aboriginal representatives were asked how they would like the applicant and operator to treat the known sites of cultural significance which are located near the top of the existing quarry wall.

The Bathurst Local Aboriginal Land Council raised no objection to the proposal as long as the Community Elders are satisfied. At the meeting with the Community Elders, Dinawan Dyirribang (Bill Allen Jr) explained the significance of the site and the importance of the site in Aboriginal Culture. It was agreed that there should be no disturbance and no access to the site during construction and operation of the resource recycling facility.

Bettergrow undertook to provide access to the site for the Aboriginal Elders or community representatives when and if required. Support was expressed for the proposal, particularly on the basis that the material produced will "give back" to the land, as it will be used for agricultural soil improvement.

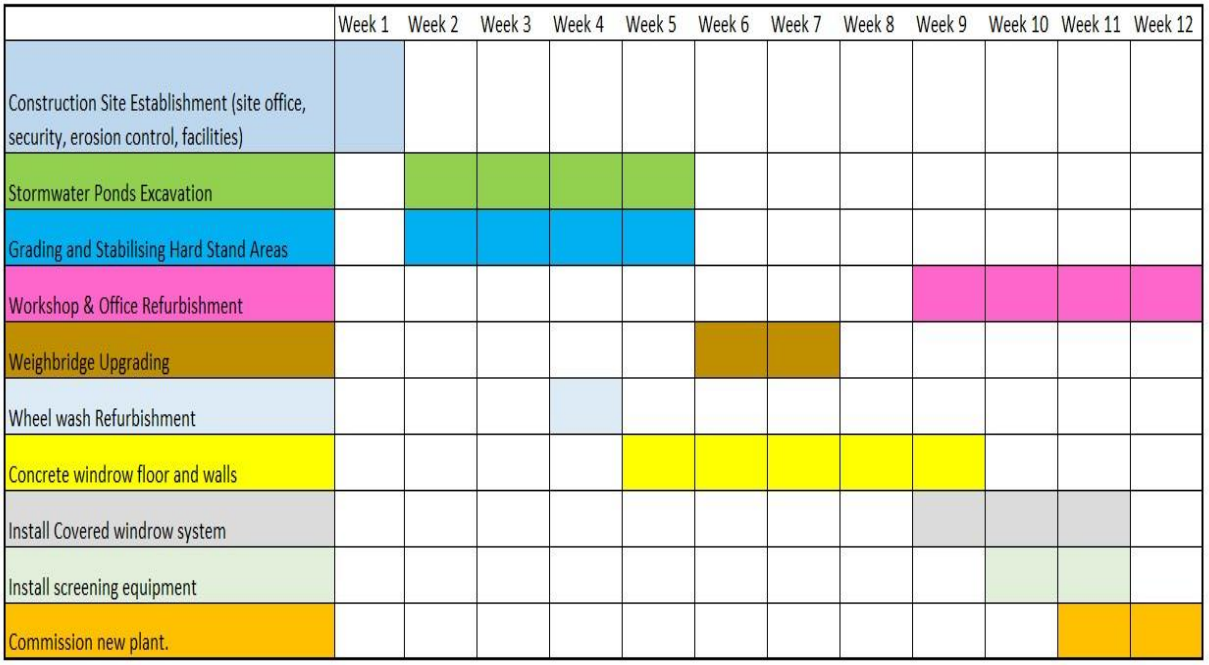
5. Development Detail

5.1 Overview

This section details the proposed development of the project during construction and operational phases. Alterations to what is proposed here may occur as a result of the planning and assessment approval process.

Construction phase

Figure 1: Estimated Construction Timeframe



It is anticipated that construction will occur over a twelve week period. The following table is a summary of the main components involved in establishing the facility and the likely timing.

Operation phase

Operating hours

The facility would operate from 5:00am to 6:00pm Monday to Friday, and 7:00am to 1:00pm on Saturdays. No operations would occur on Sundays.

Traffic movements

All vehicles accessing the facility to deliver waste material or transport end products will enter and exit via the existing entrance on the Mitchell Highway. It is expected that there will be approximately 35 truck movements per day.

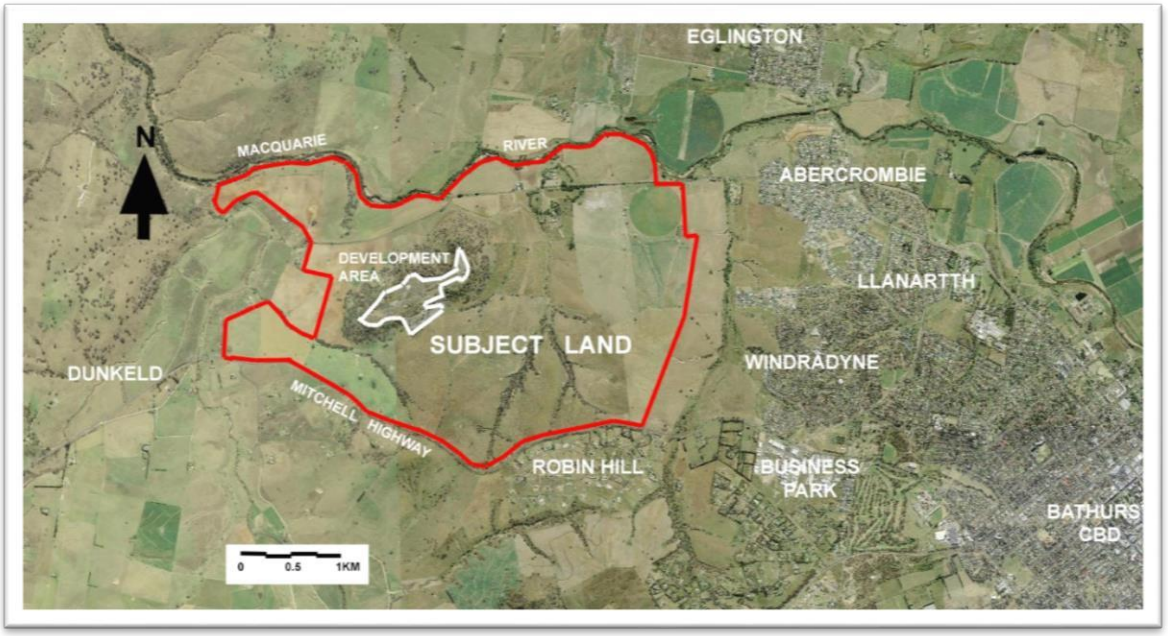
Lighting

Security lighting will be provided for the office and workshop complex. This lighting will be pointed towards the ground and will be fitted with suitable shrouds to prevent any possible light nuisance.

Use of site

The proposed facility is located within a small portion of the 1,000 hectare property. The operational area is located considerable distances from adjacent properties.

Figure 2: Location of Proposed Facility



The proposed facility will occupy the former quarry floor are and the associated buildings, driveway entry, facilities and hard stand areas. The remainder of the land does not form part of the facility and will continue to be used for stock grazing

.

Figure 3: Proposed Development Area

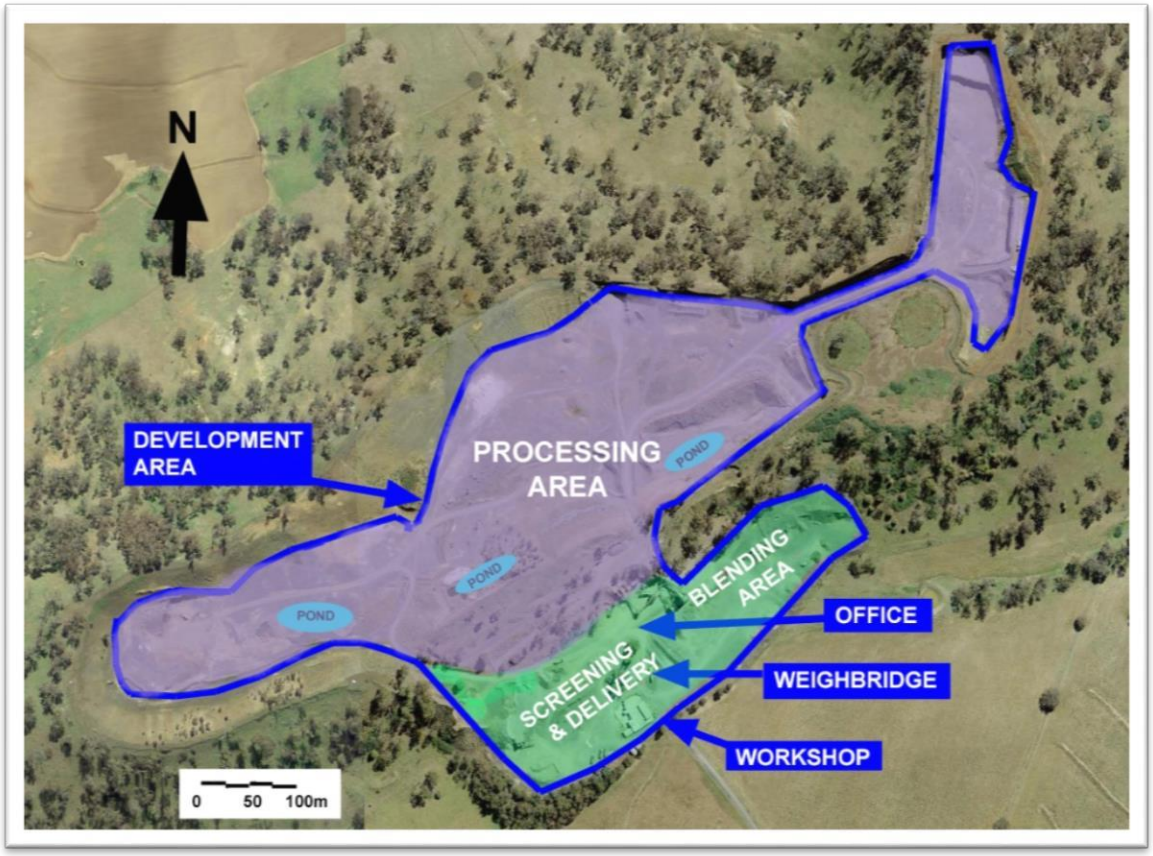
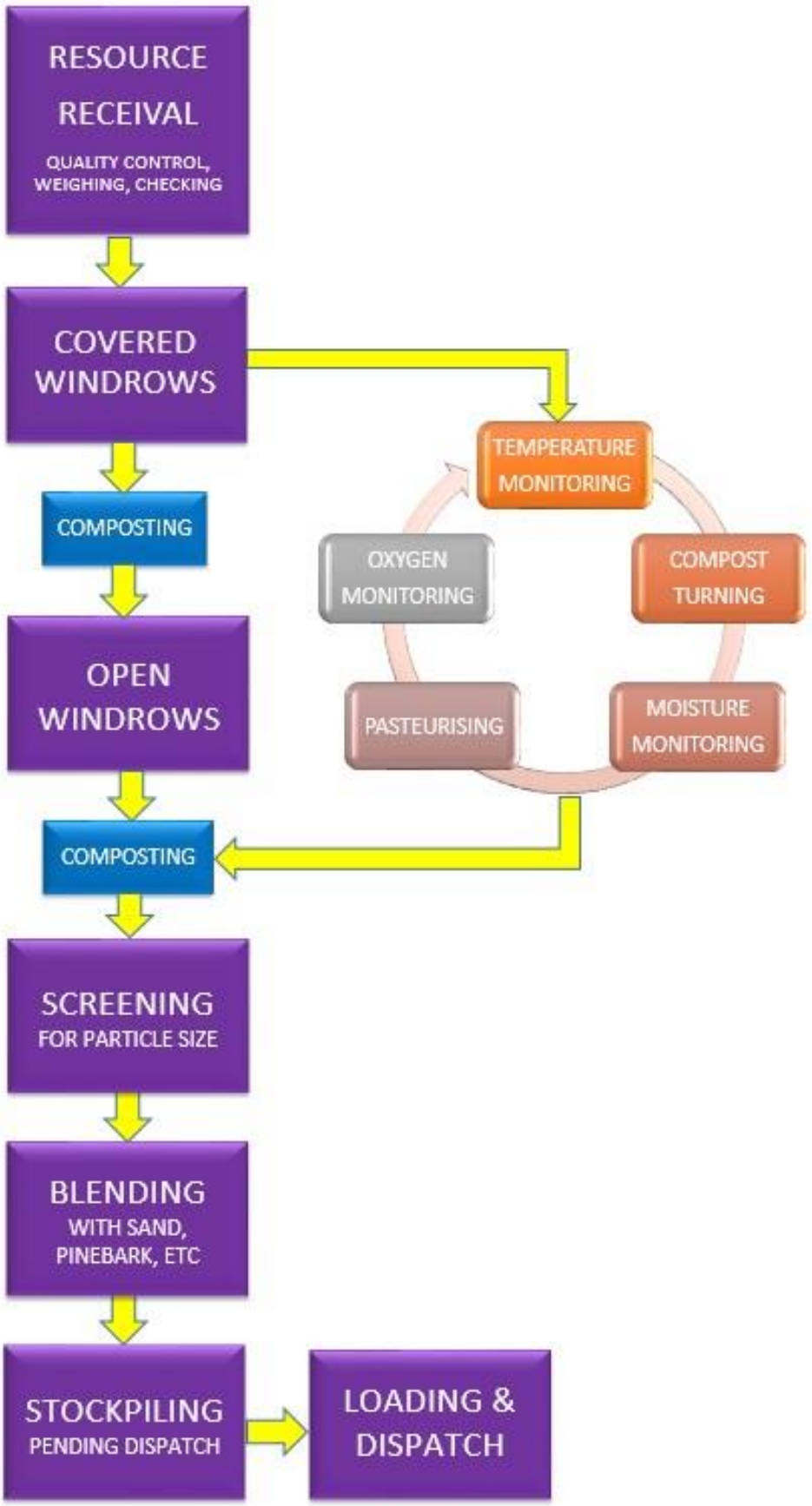


Figure 4: Operating Process



5.2 Type and Volume of Resources

The following Table describes the resource types and estimated annual volume to be received by the resource recovery facility. The ratio of solid to liquid resource may change from time to time, however the annual total volume of resources received will not exceed 99,000 tonnes.

Resource Type	**Volume (Tonnes)**
Garden organics + food and garden organics	40,000
Food organics	10,000
Biosolids	20,000
Animal resources	5,000
Forestry Residues and Gyprock	15,000
Any combination of the following: Drill mud; Fly ash; grease trap, oily water, water based inks; and dyes, Clean Timber	9,000
TOTAL ANNUAL VOLUME	99,000

Bettergrow has many years of experience in the management handling, processing and beneficial use of the resource types listed in the above table. Attached as section 17 of this EIS is Bettergrow's capability statement and details of other facilities operated by the Company.

The characteristics of the incoming materials listed in the table above are well known. Processing and mixing will be in accordance with previous extensive experience with these resources and tried and tested formulas used by Bettergrow over many years.

The composting facility will be operated in accordance with best practice principles for composting, the Gore technology manufacturers recommendations, the NSW EPA Compost Guidelines, with all steps of the process being designed to comply with the requirements for the manufacture of products capable of being certified to either AS4454 Composts, Soil Conditioners and Mulches or AS4419 Blended Soils.

From time to time demand may exist for the processing and management of different products as they become available from the resource stream. Prior to receiving any new or unfamiliar products at the site a rigorous testing and evaluation process will apply as detailed in the environmental management plan. All inputs will be rigorously tested and inspected to ensure the incoming material is not contaminated and meets the pre-determined quality standard.

5.3 Procedure for Receiving Resource

Bettergrow understands that it is essential that the resource is effectively vetted to ensure that prohibited wastes are not accepted. Therefore, the Site Supervisor will undertake a visual inspection of the resource being delivered to ensure that the load is in accordance with the relevant acceptance criteria. This will also ensure that the resource matches the description of the product provided in relevant documentation.

A sample of all liquid resources received at the facility will be stored and refrigerated for 30 days onsite. The holding period will provide Bettergrow with the ability to analyse received resources for possible contamination with prohibited substances if composting efficacy is compromised for some unknown reason and/or if unanticipated odour nuisance is experienced.

After all relevant documentation has been exchanged and completed, and the initial inspection has been undertaken, the transporter will be directed to the relevant Unloading and Mixing Area. Access to the composting pad for all delivering vehicles will be via the north western edge of the pad. Importantly, where necessary, further instruction as to how and where resource(s) should be unloaded will also be provided to the transporter by the Site Supervisor at this time.

All incoming materials will be unloaded as specified within the relevant workplace procedures (refer to the EMP, Appendix 1, Section 2, Workplace Procedure 1 – Waste Receival and Unloading, Workplace Procedure 3 – Receival of Drilling Muds/Fluids and Workplace Procedure 18 – Receival of Oily Water).

All unloading activities will be monitored by a Bettergrow employee who will scrutinise the unloading of resources at the Facility to further ensure that all prohibited wastes are prevented from being accepted. Once unloaded, empty trucks will exit the delivery area via the same route they entered.

In the event that prohibited wastes are discovered after unloading has occurred, the offending transporting company will be contacted with the expectation that the waste will be collected and transported to a facility that can legally accept such waste. If required, the EPA will be notified.

All stockpiles will be labelled and the maximum height for materials in the receival area will be 4 metres. All resources will then be mixed to create a blend specifically suited for composting, as defined within Workplace Procedure 2 – Gore Cover System & Open windrow Construction & Maintenance of the EMP, i.e. < 50% moisture content (w/w), carbon: nitrogen (C: N) ratio 30-25:1 and homogenously mixed (refer to the EMP, Appendix 1, Section 2 – Workplace Procedures).

5.4 Composting Process

The composting process comprises two phases. The first phase involves placing the blended material in a Gore covered windrow where air is injected into the compost. The second phase involves moving the material into open windrows to allow the compost to reach maturation.

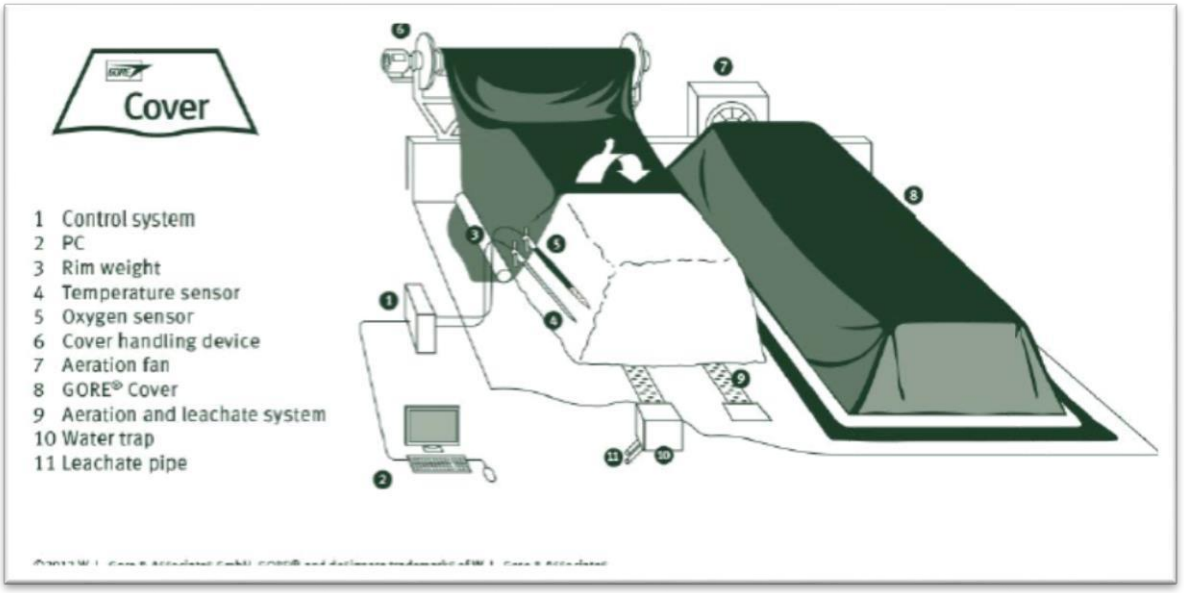
All windrows will be labelled with a unique identification number and date which facilitates the tracking of resources and ongoing monitoring.

5.4.1 Gore Covered Windrows

Typically the greatest risk of generating sustained offensive odour is at the beginning of the composting process, particularly if windrows have not been created efficiently. Whilst appropriate control measures have been introduced within the EMP to ensure windrows are correctly prepared, the adoption of the Gore Cover system within the composting to be

performed at the Facility will eliminate any potential malodour that could be released in the initial weeks of composting. As such the technology is considered to be representative of best practice environmental management

Figure 5: Gore Covered Composting Process



While the image above highlights the essential items of the process, this proposal incorporates the addition of solid concrete side walls to the windrows, as shown below in Figure 6.

Figure 6: Image of Concrete Bays and Gore Covers

The adoption of the Gore covered composting process greatly minimises the potential to release offensive odour due to the semi impermeable membrane cover. The cover

membrane has a pore structure sized to selectively influence the composting process. The system allows carbon dioxide to pass through the membrane but prevents odour from escaping.

The membrane will not allow rain water to pass through to the compost, thus eliminating the potential for anaerobic activity after extended periods of rainfall during the initial stages of composting. The cover also minimises loss of water from the compost media. The Gore Cover System could be thought of as akin to “in vessel” composting.

Once the cover is placed over compostable material and secured, temperature and oxygen probes are installed through the cover into the composting material. The blowers are controlled by a Programmable Logic Controller (PLC) to optimise the composting process using readings from temperature and oxygen sensors under the cover. The blower system maintains pressure under the cover ensuring homogeneous air distribution through the composting material.

5.4.2 Open Windrow Composting

As shown in section 17, Bettergrow has the necessary skill and experience to perform open windrow composting and understands that open windrow composting uses heat generated from microbial activity to reach pasteurising temperatures of above 55°C to effectively kill weed seeds. Whilst this is not considered critical due to the first phase of composting that will occur at the Facility (i.e. Gore Covered Composting), it is likely that pasteurising temperatures will still be experienced during open windrow composting. This will only act as further safeguarding the product for human contact. Therefore, adherence to temperature and carbon dioxide levels will be an essential component of ensuring final quality.

At successively higher temperatures pathogenic bacteria and microorganisms are also destroyed. Bettergrow realises also that aerobic decomposition is more desirable as the aerobic decomposition process employed provides a favourable balance of beneficial aerobic bacteria and fungi that will bring multiple benefits to end users through the conservation of valuable nutrients. Bettergrow recognises that this is an important process that results in aerobic microbes outnumbering undesirable anaerobic and often pathogenic microorganisms that are the cause of malodour.

Aerobic processes will amongst other things, determine whether a final blend can be utilised for unrestricted or restricted use in normal commercial composting.

It should be noted that as the compost product created at the Facility will be utilised offsite, prescribed levels are applicable to its suitability for use. The EMP provides Workplace Procedure 9 - Quality Limits Sampling which denotes the suitability for the final compost or soil conditioner products to be utilised on or offsite (unrestricted and restricted uses) (refer to the EMP, Appendix 1, Section 2 – Workplace Procedures).

The personnel at the Facility will be trained to understand that it is essential to ensure that temperatures within open windrows do not exceed 67°C as exceedance of this limit will result in the destruction of beneficial microorganisms, including bacteria, fungi, protozoa and beneficial nematodes [Is there a qualification or course or accreditation the staff must complete? If yes – name the course and the governing authority. If not – refer to existing training packages in place at other Bettergrow facilities]. If the windrow exceeds this temperature, even for a short period of time, the bulk of beneficial microorganisms could be

killed off and subsequently this could lead to anaerobic conditions predominating in the compost windrow. This in turn may give rise to the release of unpleasant odours associated with anaerobic microorganisms, which may cause environmental nuisance, and will detrimentally impact the composting process.

Accordingly, emphasis will be given to creating a windrow that has an appropriate amount of moisture and oxygen to support aerobic conditions.

In order to maintain the correct composting temperature, temperature profiles will be taken every day, in part to ensure that the treatment of garden organics potentially contaminated with phylloxera from the PIZ is treated effectively.

5.5 Screening, Stockpiling and Dispatch

Prior to dispatch, the finished compost material will be screened to the appropriate particle size required for the end use of the product. Depending on the product required, the screened compost may also be blended with proprietary products such as sand, pine bark or other suitable products.

The finished product, which is now stable, will be stockpiled on site for short periods in two separate areas pending loading onto trucks and dispatch from the Facility. Stockpile area 1 will be located on the quarry floor, while stockpile area 2 will be located near the weighbridge.

6. Justification for the Development

6.1 Project Needs and Benefits

The need and benefits of the project include:

- The recovery of significant volumes of valuable resources from the municipal waste stream (MSW);
- Providing opportunities for agricultural improvement in the region through the manufacture and supply of soil conditioning products produced from that waste;
- Providing regional investment and local direct and indirect employment opportunities during the construction and operation phases of the project;
- Ensuring that the existing Aboriginal cultural significance site is protected; and
- Promoting the conservation and enhancement of native vegetation which exists on the land.

6.2 Reducing Organic Waste Disposal to Landfill

Nationally between 30 and 46 per cent of organic waste is disposed to landfill[3]. In NSW about 40 per cent of organic household waste is disposed to landfill[4].

Reducing the disposal of organic waste to landfill can help to reduce greenhouse gas emissions. For example it is estimated that every tonne of food and garden waste that is recycled for reuse, rather than disposed to landfill, reduces carbon dioxide emissions by 0.25 tonnes[5].

Both the NSW and Commonwealth governments are committed to reducing carbon emissions as part of Australia's international obligations.

The NSW Government is also committed to reducing the use of landfill through its Waste Avoidance and Resource Recovery (WARR) Strategy. The WARR strategy sets the following key targets for 2021–22:

- Increasing recycling rates to 70% for municipal solid waste and 80% for construction and demolition waste; and
- Increasing waste diverted from landfill to 75%.

The WARR Strategy specifically identifies that in the municipal solid waste (MSW) stream the recovery and reuse of food and garden organics remains an untapped opportunity and concern, particularly because this waste represents almost half of the average household waste. To address this the WARR Strategy makes increasing the recovery and reuse of organic waste a clear priority[6].

[3] Australian Government, National Waste Reporting 2013
[4] NSW Government, Waste Avoidance and Resource Recovery Strategy 2014-2021
[5] Australian Government, National Waste Reporting 2013
[6] NSW Government, Waste Avoidance and Resource Recovery Strategy 2014-202; p16

The proposed project seeks to contribute to the delivery of the commonwealth and NSW Government's targets in relation to organic waste recovery, reducing landfill use and reducing carbon emissions.

6.3 Increasing Regional Resource Recovery Options

There are limited resource recovery facilities in regional Australia or NSW that deploy enclosed/covered and force aerated composting systems designed to compost biosolids and other putrescible solid waste materials. Those that do exist are located in coastal population centres on the east coast of Australia, namely Port Stephens, Cairns, Port Macquarie, and Coffs Harbour[7].

The proposed project seeks to increase the availability of organic waste recycling and reuse in regional NSW.

6.4 Improving Agricultural Production

Soil degradation is a problem in agricultural areas and this affects land productivity. Carbon depletion, exposure to drought and salinity are major issues.

The organic soil conditioner which would be produced by the proposed facility is proven to help arrest and reverse carbon depletion in soil thereby improving the capacity of soil to support trees, crops and pastures.

The soil conditioner also improves soil fertility which assists with drought-proofing and buffering against sodicity and dryland salinity.
The specific benefits to regional agriculture include:

Increased fertility of agricultural soils

Australia has very old soils. Conventional farming methods are creating further deterioration to the soil structure. Deep ripping is responsible for the enhanced oxidation of organic matter that is present within the soil, resulting in increased carbon emissions to the atmosphere and potentially contributing to the worsening of the greenhouse effect. Heavy hoofed animals further compact soil making passive aeration of soils limited. Australian soils are often not dominated by calcium but rather sodium or magnesium which bring physical dysfunction to soils. By introducing humified compost soil fertility can be enhanced, including the soil structure.

It is recognised that stable humus stores 90 to 95% of the nitrogen in the soil, 15 to 80% of phosphorus and 50 to 20% of sulphur in the soil. It also stores cations, such as calcium, magnesium, potassium and all holds all these nutrients, minerals and trace elements in a non-leachable form. Furthermore, organic acids found in humus (humic, fulvic, ulmic and others) help make minerals available by dissolving locked up minerals.[8]

[7] Recycled Organics Unit, Organics Recycling in Australia: Industry Statistics 201; p30
[8] Zimmer, Gary, The Biological Farmer - – A Complete Guide to the Sustainable and Profitable Biological System of Farming – Acres USA, 2000 pg 47

Increased water holding capacity of soils

The water holding capacity of soil is enhanced by good levels of humus being present. Humus can hold up to 20 times its weight in water and is stored for use by plants and micro-organisms. *(Handrek; 1990; Zimmer; 2000).*

The following table demonstrates that with an increase in organic carbon, retained water dramatically increases. This can have a significant effect in drought proofing Australian agricultural soils.

Humus Increase	Increased Volume of Water retained / ha (to 30 cm) (litres)
0.5 %	80,000
1.0 %	160,000
2.0 %	320,000
3.0 %	480,000
4.0 %	640,000
5.0 %	800,000

Table Source: Water-holding Capacity Increase for One Hectare for Varying Levels of Humus Increase (Biodynamic Agriculture Australia; August 2006)

Increased Biological Activity

Humus provides foods and habitat for a wide range of beneficial micro-organisms including bacteria, fungi, protozoa, nematodes and arthropods like earthworms. It can be used to inoculate agricultural soils with humus building micro-organisms. The interactions between these micro-organisms create the soil 'food-web' or complete food chain. This in turn, can suppress soil pathogens, produce plant available nutrients and minerals for any plant system or landscape application.

Increased Organic Carbon Levels

A major benefit from the application of humified compost to degraded soil is the increase in organic carbon levels that will result from increased nutrient cycling by micro-life. Further to this, Bettergrow believes that through the enhancement of soil biology, more efficient use of the already applied nutrients like phosphorous can occur. Nutrient cycling will most certainly result with an increase of microbial protoplasm being created and hence organic carbon.

Minimisation of Sodicity Dry-land Salinity Effects

The creation of humus rich soils will buffer against the effects of sodicity and dryland salinity, particularly fluctuations in electrical conductivity levels. Bettergrow will fortify humified compost with calcium so as to assist farmers correcting basic cation imbalances. According to *Book 4 – Dryland Salinity* published by the NSW Government any agricultural practice that improves groundcover, soil structure, organic matter, soil chemical health, nutrient balance

and pH will have a positive effect on salinity. It is further recommended that this principle should be applied to the whole farm including salt affected areas. Bettergrow believes the humified compost that will be created at the Bathurst Facility will assist in rectifying these problems experienced by so many farmers.

6.5 Economic Benefits

In addition to the capital expenditure of $5.2M to establish the facility, the proponents estimate that the facility will cost $1.55M to operate annually.

The facility would be leased to operate for 20 years and therefore its cost of operation would exceed $30M over that period, not allowing for inflation.

In terms of direct employment, it is estimated that the construction phase will create 20 new jobs and the operating plant will require 9 new employees at initiation and rising to 13 over the life of the plant. The majority of these positions will be sourced from within the Bathurst region, with only specialist agronomist skills being drawn from Bettergrow's existing staff complement.

Indirect employment opportunities may be created for local transport companies and other sub-contractors required to service the facility during the construction and operating phases.

The net economic benefit of the project would be the impact of this expenditure and employment creation minus the opportunity cost for other projects in the region requiring similar services and employment. As there is no detail about other similar projects it is difficult to quantify the final economic benefit of the proposed project.

6.6 Protection of Heritage and Native Vegetation

The proposal would ensure that the Aboriginal cultural significance of the site is protected. Discussion with the Bathurst Wiradyuri and Aboriginal Community Elders reveals that a place of Aboriginal cultural significance exists within the land. It is understood that the site is both significant in terms Aboriginal men's and women's culture. The site is located on the plateau above the wall of the northern quarry and is not included within the development area.

The applicant consulted with Bathurst Wiradyuri and Aboriginal Community Elders and the Local Aboriginal Land Council prior to preparing this EIS. No objection was raised to the proposal, as long as no general access is available to this cultural site. Accordingly the site is identified in the Environmental Management Plan as a designated "no go" zone. The EMP states that "no vehicle should be driven in this area and waste must not be disposed or stored in this area."

The Mount Stewart private cemetery is located at the northern-most point of Mount Stewart. The obelisk and exotic plantings are visible from Ophir Road, but not from the development area. Access to the Item is via the existing road system within and surrounding the existing quarry. The cemetery is not visible from the quarry floor or from any part of the development area. Therefore there are no impacts in relation to European heritage on the land

Additionally, the provisions in the Environmental Management Plan ensure that the existing native vegetation on the site is conserved and enhanced.

6.7 Project Alternatives

Currently there are a range of organic resources which are generated within the region that are either recycled using individual processes and sites or are disposed of at landfill sites. Not all resources are put to their highest and best environmental and economic end use.

The Greenspot Bathurst proposal will endeavour to be one of the few facilities in regional NSW which can process the majority of organic residuals sourced from both local and metropolitan centres, on one site. The composting process selected will assist in ensuring state of the art environmental controls are in place during the production of saleable organic soil conditioning products. The high level of process control combined with strict input product quality control, provides the highest level of value adding, while using minimal energy to recover valuable organic resources.

Individual product recovery processes are generally much higher energy users, which usually create waste products for landfill in addition to a recovered product. The proposed facility will remove up 99,000 tonnes per annum from the waste stream, with minimal waste materials being generated.

This project is focused on delivering rural regional solutions for urban problems by diverting recycled organics away from relatively saturated markets into regional agricultural markets thereby supporting regional outcomes and building on the closed loop concept of returning valuable nutrients to the soil and consequently to sustainable food production. The high quality composts and soil conditioners manufactured by the project will repair nutrient depleted agricultural soils and increase the lands capacity to retain carbon. While the diversion of organics from landfill will reduce greenhouse gas generation and conserve landfill space.

6.7.1 Alternative Locations within the Bathurst Region

Bettergrow has investigated other rural properties within the Bathurst local government area, including the proposed purchase of a property at Raglan. Ultimately terms could not be agreed, and the proposal did not proceed.

The current property became available during 2014 and has proven to be a superior site due to the specific characteristics resulting from the former quarry excavation and its relative isolation from large urban areas.

6.7.2 Alternative Locations in NSW

Bettergrow already operates 2 licenced facilities one in Vineyard near Windsor in western Sydney and the other in the upper Hunter valley at Ravensworth just south of Muswellbrook. Alternative locations have been investigated by Bettergrow for the proposed facility. The Bathurst area is preferred due to Bettergrow's existing presence in the region through the recycling facility at Kelso and the established client base within the region. Operating this facility outside of the Bathurst region would add considerable transport costs, therefore reducing the economic viability of removing some products from the waste stream.

The environmental costs of transporting waste products out of the region for processing are also high in terms of energy use, heavy vehicle movements, fuel usage and additional air pollution. The Stewart Mount site is ideally located on one of the major transport routes west being the Mitchell Highway. The facility will endeavour to capture as many currently

empty freight carriers going west as possible enabling finished product to be transported west to meet demand in western farm lands.

Bettergrow operate similar sites in Queensland and in the Hunter region, and a site at Wetherill Park in Western Sydney has recently been secured to act as a capture point for additional feedstock for the Bathurst site. Bettergrow has also established a network of distribution sites and agricultural properties in rural regional NSW to receive some of the soil conditioning products.

The proposed facility at Stewarts Mount will service local waste generators and Councils both within the Bathurst Region as well as metropolitan Sydney through the Bettergrow operated Wetherill Park receival site.

6.7.3 Do Nothing

Both the Western Suburbs of Sydney and the Central West region of NSW have significant levels of unemployment ranging from between 7 and 9%, well over the current national average of 5.9%. The Greenspot Bathurst facility is expected to create up to 12 new positions providing entry level meaningful employment opportunities that are fully supported by professional development resources and opportunities for career advancement.

No facilities similar to that which is proposed currently exists within the Bathurst Region and most likely would not be built

None of the benefits would be achieved in terms of reducing waste to landfill, providing organic agricultural soil improvement products, and economic opportunity which would be provided by the facility. Also the former quarry site would remain unused, the buildings would continue to deteriorate and invasive weed species would likely overtake the native vegetation within and around the quarry site.

Local Councils would struggle to meet the NSW waste diversion targets by 2021 due to lack of appropriate infrastructure.

6.7.4 Preferred Option

The subject site has been chosen as the preferred option as it is eminently suitable for a number of reasons including:

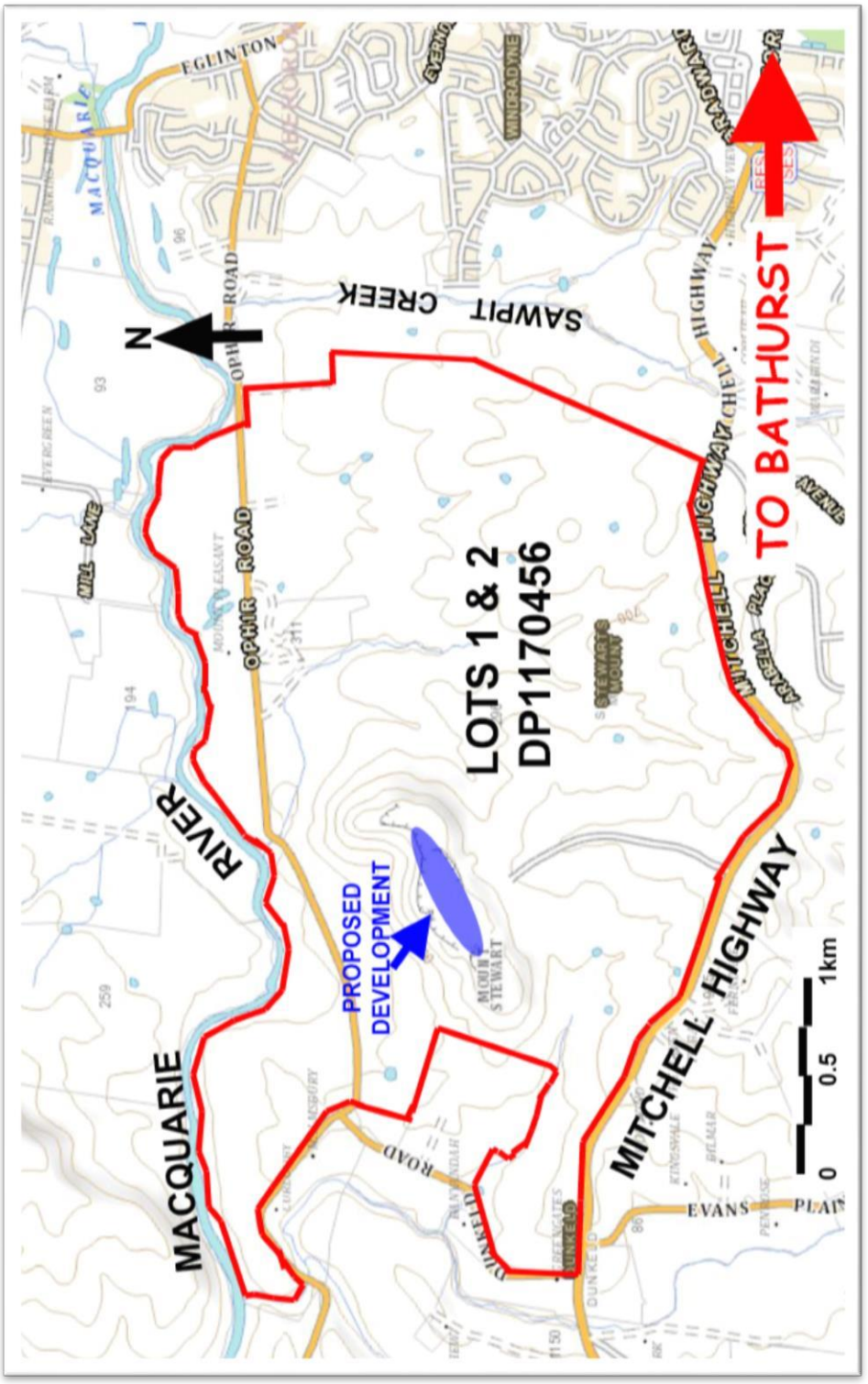
- the site's separation from residential areas;
- existing disused infrastructure on site including buildings and driveway access to Mitchell Highway;
- the noise and visual attenuation characteristics of the former quarry excavation;
- the site's central location within the region and close proximity to input resources;
- the site's close proximity to agricultural land which would benefit from soil improvement products; and
- the ability to utilise the sterile environment which has resulted from many years of quarrying on the site.

Greenspot Bathurst will host field tours by visiting schools, industry and agricultural research agencies to showcase proven technology and provide educational opportunities to encourage behaviour change around resource consumption and waste management. The project will participate in field trials for agricultural research where appropriate.

7 The Land

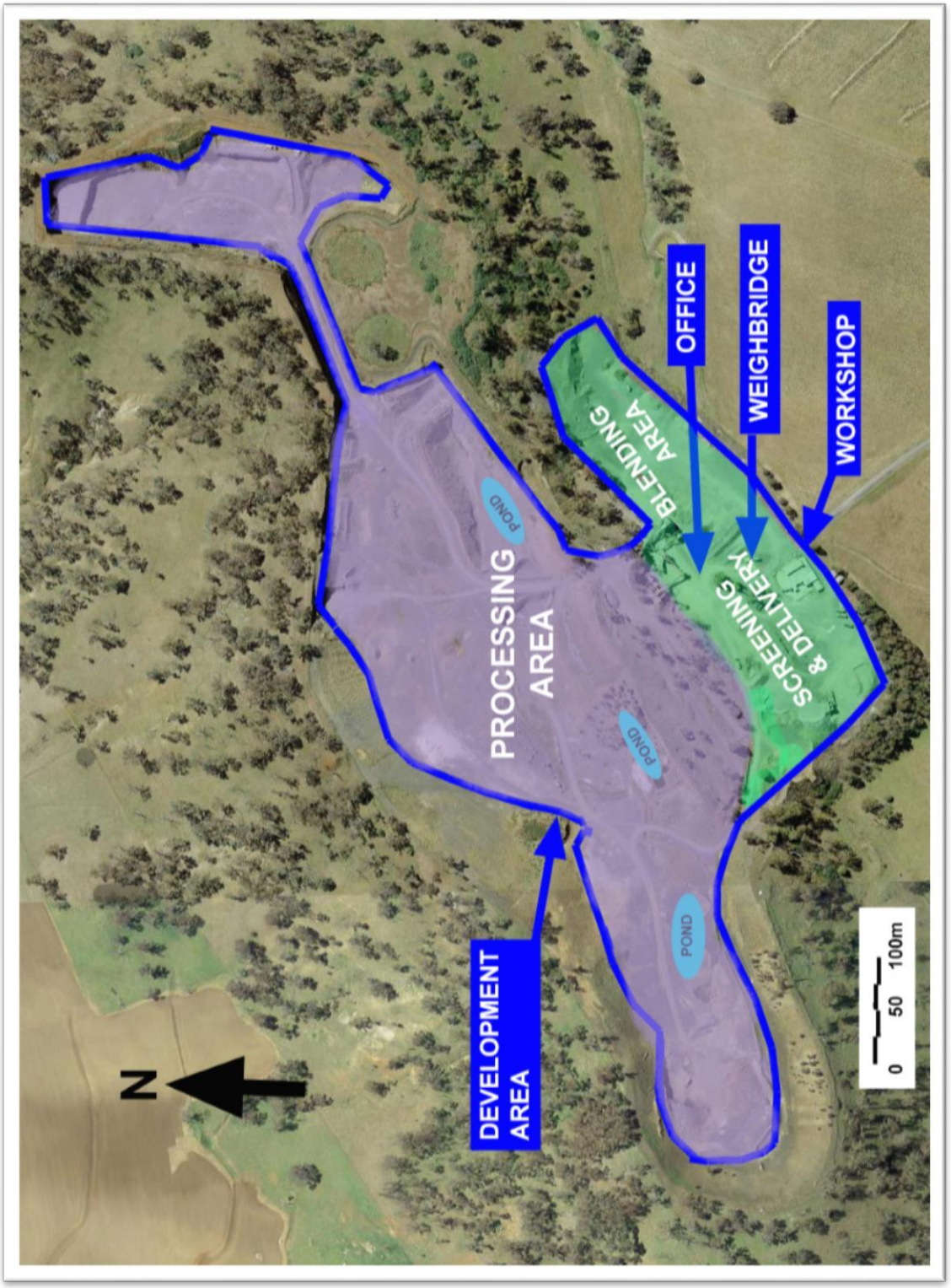
The land is described as Lots 1 & 2 DP1170456 (No. 296) Mitchell Highway Stewarts Mount. The total land holding comprises approximately 1,000 hectares, and is generally bounded by the Macquarie River to the north, Dunkeld Road to the west, Mitchell Highway to the south and has an eastern boundary to the west of Sawpit Creek.

Figure 7: Locality Plan Source: NSW LPI SIX Maps



Part of the land was, until recently, used as a hard rock quarry. The quarry closed, leaving an area of quarry floor of approximately 12 hectares, some 15 metres below the remaining natural ground surface. A separate cleared area of approximately 4 hectares, with a mostly all-weather surface, including, workshop, office, weighbridge and wash bay, was also utilised by the quarry.

Figure 8: Satellite Image Showing Extent of Previous Quarry Activity including associated infrastructure and disturbed land which is to be utilised as part of the proposed activities. Source: NSW LPI SIX Maps



The remainder of the land is comprised of undulating pastures with scattered trees which is used for sheep grazing. The highest point of the land, Mount Stewart has an elevation of some 750m AHD and is the south-eastern point of a ridgeline which runs to the north-east for a distance of approximately 1,200 metres. The north-eastern point of the ridgeline is marked by the Mount Stewart Private Cemetery. The quarry was excavated from within the ridgeline which has created a quarry floor some 15 metres below the remaining rim around the ridge. This topographic feature of the land is visible from all directions, forming a prominent local landmark.

Access to the land is via the existing sealed driveway and entry from Mitchell Highway, which was constructed to accommodate heavy vehicle movements to and from the previous quarry activity.

Figure 9: Entry Driveway from Mitchell Highway (looking east)

Figure 10: Internal Road/Driveway

Figure 11: Storage / Workshop Area/ part of the western side product storage area

Figure 12: Office and Weighbridge

Figure13: Quarry Floor – Area for proposed composting (looking north-east)

Figure 14: Main Quarry Floor - Area for proposed Composting (looking south-west)

Figure 15: Quarry Walls (northern excavation)

Figure 16: View over Subject Land to south-east from rim of quarry

Figure 17: View over Subject Land to east from rim of quarry

Figure 18: View over Subject Land to south from rim of quarry (Mitchell Highway in background)

Figure 19: View over Subject Land to west from internal road

8 The Surrounding Environment

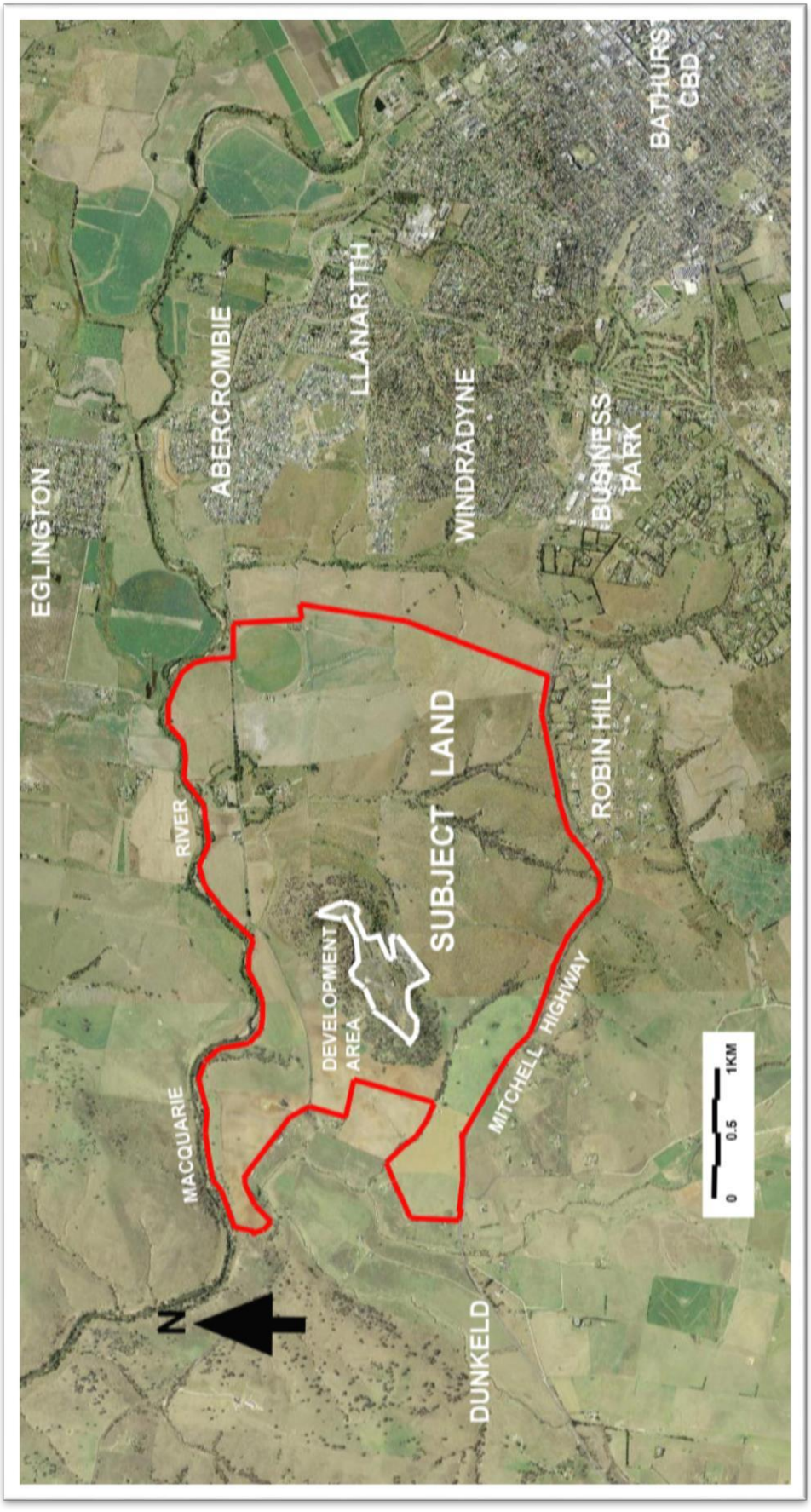
8.1 Surrounding Land Use

The proposed development area is located some 7 kilometres to the west of the Bathurst CBD. The development area is buffered by the remainder of the subject land which comprises some 1,000 hectares of grazing land. This buffer is comprised of the following approximate distances to the adjoining properties in each direction:

- North: 800 metres
- East: 2,300 metres
- South: 1,100 metres
- West: 1,000 metres

The surrounding land has been used historically for grazing. However, the residential areas of Eglington, LLanarth and Windradyne have moved the urban footprint of Bathurst to the west. It is understood that Sawpit Creek is the western boundary for future urban development. Figure 20 below shows the land in context with the surrounding environment.

Figure 20: Surrounding Environment. Source: NSW LPI SIX Maps



Land to the north of the Macquarie River comprises smaller holdings of between 40ha and 100ha which are used for grazing, rural-residential and some cropping. Land adjoining to the west and on the western side of Dunkeld Road comprises a mix of rural-residential small holdings and grazing land in holdings up to 70 ha in area.

Land on the southern side of Mitchell Highway comprises the Robin Hill large lot residential development, a large grazing holding of approximately 250 hectares, and a number of smaller rural-residential properties.

Land adjoining to the east is a long narrow parcel which adjoins Sawpit Creek. Land on the eastern side of Sawpit Creek is currently pasture land, however is zoned *General Residential R1* under Bathurst Regional LEP 2014. Following development of this land the closest residence will be some 3 kilometres from the development area.

Figure 21: View of Mount Stewart from Ophir Road looking west

Figure 22: View of Mount Stewart from Ophir Road looking south-east

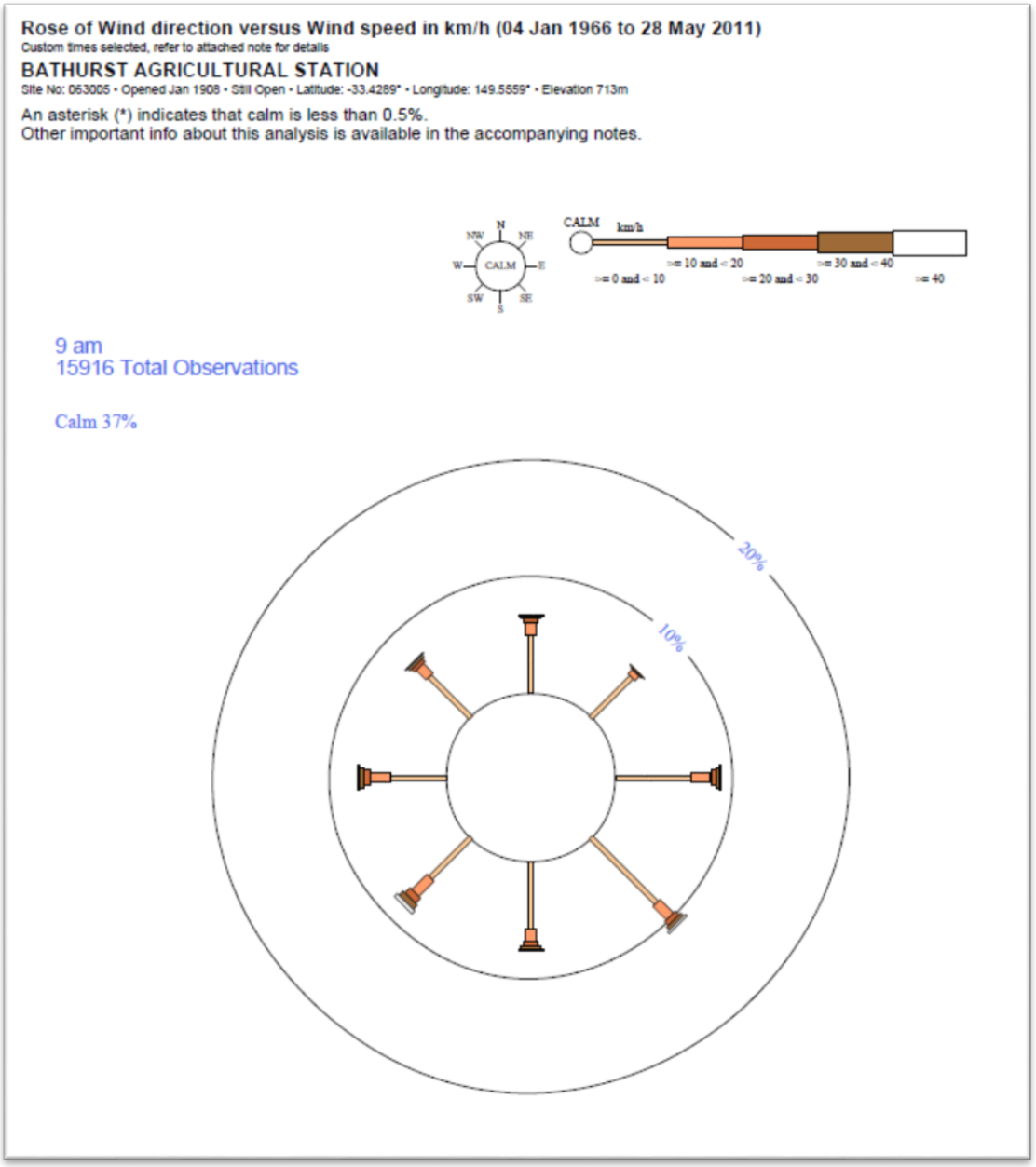
Figure 23: View of Mount Stewart from Arabella Place Robin Hill looking north-west

8.2 Climate

The following information was collected from the climate statistics for the Bathurst Agricultural Station (site # 063005). Data collection commenced in 1908 and the current status is that it is still open. The mean maximum annual temperature is 19.8°C and the annual mean minimum annual temperature is 6.7°C. These temperatures do not pose any antagonism to composting windrows albeit that the rate of composting during winter maybe slower.

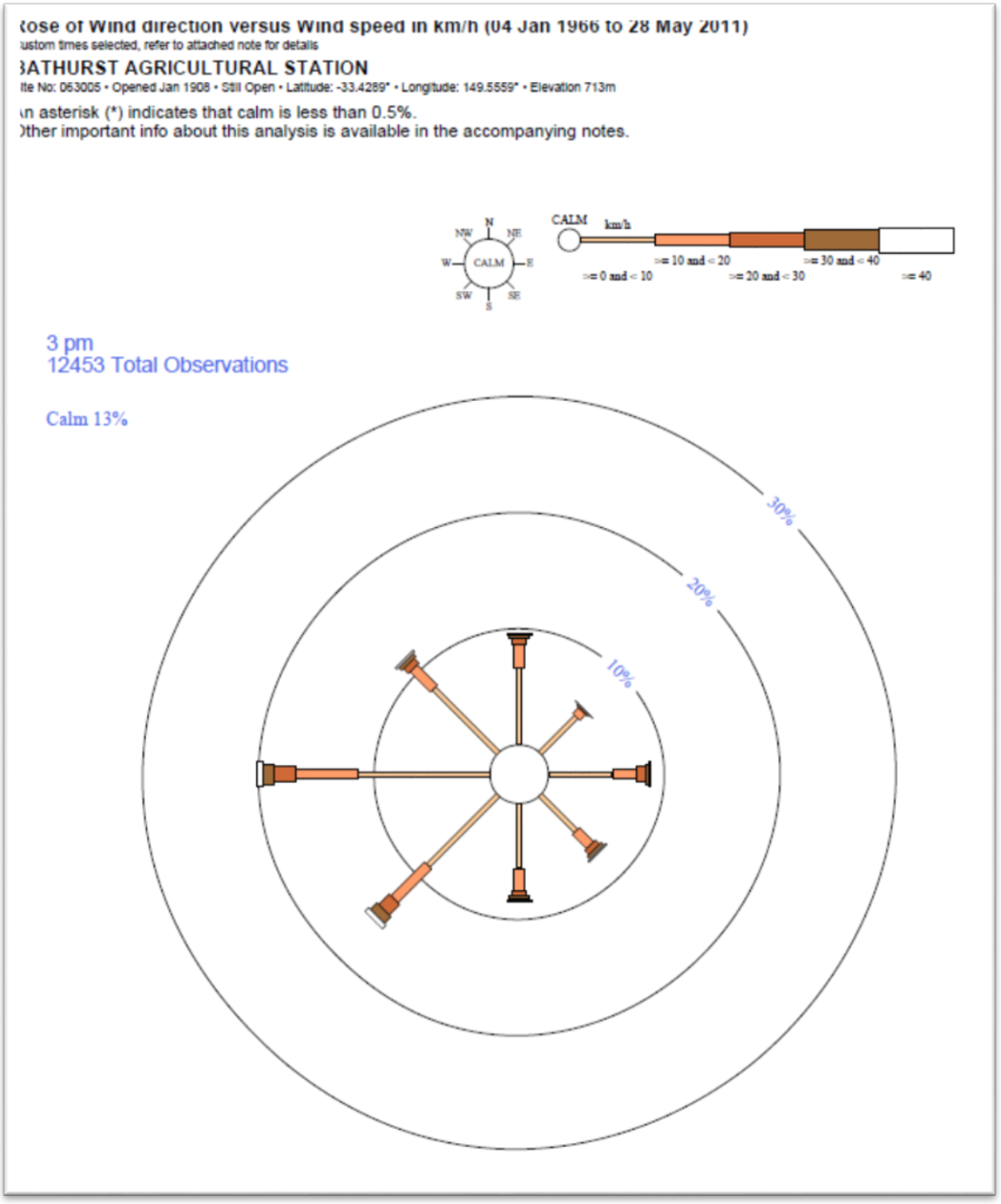
The mean 9 am annual temperature is 12.9°C and the mean 9 am annual relative humidity is 71 %. The mean annual rainfall is 637.3mm for the region and the mean 9 am wind speed is 6.3 km/hr. The following image is provided which highlights the 9 am annual wind speed vs direction plot.

Figure 24: 9am annual wind rose. Source: BOM – Australian Government



Similar to the above, the mean 3pm annual temperature is 18.8ºC and the mean 3pm annual humidity is 50%. The mean 3pm annual wind speed is 10.1 km/hr and the following image highlights the 3 pm wind speed vs direction plot.

Figure 25: 3pm annual wind rose. Source: BOM – Australian Government



As can be seen westerly and south westerly breezes dominate the afternoon.

8.3 Soils

According to the, publication – "Soil Landscapes of the Bathurst 1:250000 Sheet Report" (Kovac, Murphy and Lawrie 1990), the site is located within the Panorama Kraznozem group which is often stony. On the lower slopes there exists non-cracking clay, subplastic clays and black cracking clays in drainage depressions. The Bathurst City Council's Vegetation Management Plan, prepared by Terra Consulting (Aust) Pty Ltd, indicated that the krasnozems are well-drained that have a high water holding capacity and are moderately fertile. The soils have a low erodibility, though the erosion hazard is moderate due to the degree of slope. Topsoils are friable loams to clay loams with clay loam to light clay subsoils. The soils are moderately fertile and are acidic.

Surrounding the site, the soil type changes to Bathurst Non-calcic Brown Soils group with Non-calcic Brown Soils with Yellow Solodic Soils located on the lower slopes and in drainage lines. Terra Consulting (Aust) Pty Ltd, indicated that the Non-calcic Brown topsoils range from sandy loam to loam and the Yellow Solodic topsoil are sandy loams to fine sandy loams.

According to W.S Semple of the former Department of Land and Water Conservation in the publication titled – "Native and Naturalised shrubs of the Bathurst Granites: past and present. Cunninghamia 5(1): 803-827, the Non-calcic Brown Soils have good drainage, a moderate water holding capacity, displays a top soil pH of 6 pH units and are considered to be moderately fertile. Terra Consulting also highlighted that the Non-calcic Brown Soils are nitrogen, phosphorous and molybdenum deficient and display a moderate erosion hazard. Semple indicates that the Yellow Solodics display poor drainage, a high water holding capacity, a topsoil pH of 6.5 pH units and has a low fertility. Terra Consulting indicated that the sub soil is particularly erodible.

Further to the north, the soil type changes into Alluvial Soil as part of the Macquarie River system whereby Prairie Soils are the dominant soils on the floodplain where fertility is considered high. Terra Consulting indicated that the soils are moderately well structured loam to clay loam topsoils. The subsoils have alkaline light to medium clays. Semple indicated that soils have moderate drainage and have a high water holding capacity.

8.4 Geology

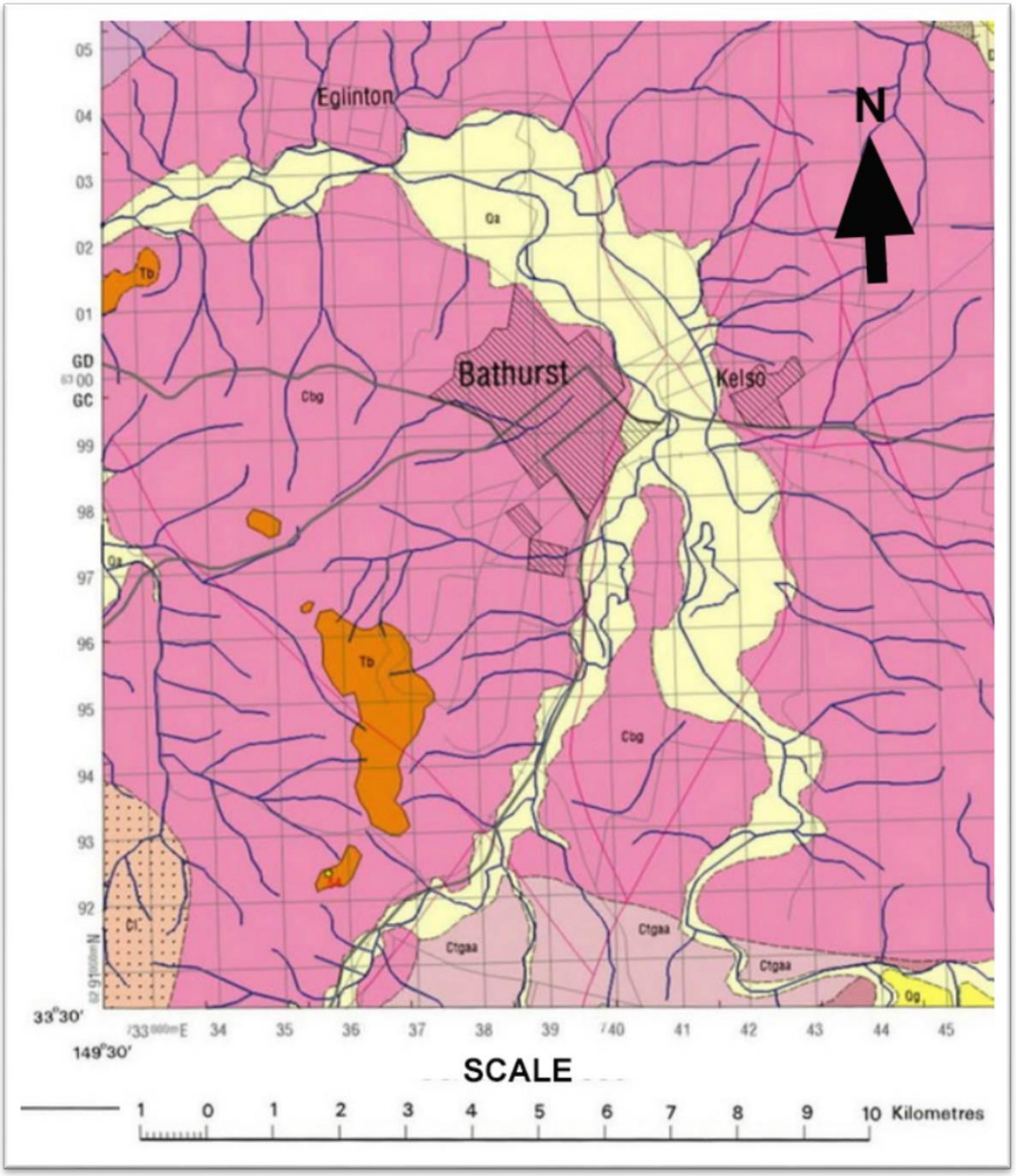
The dominant underlying geology of Bathurst is the Bathurst Granite with basalt occurring at Mount Panorama and Mount Stewart. According to W.S Semple, the Bathurst region is dominated by granite that extends west of the Blue Mountains plateau from the vicinity of Katoomba to the west of the Bathurst region.

The following image sourced from the NSW Government shows the extent of the Bathurst Granite (Bathurst Batholith). According to Semple, the 'Bathurst (or Kanimbla) Batholith' was formed by intrusion of acid magma into Ordivician, Silurian and Devonian sediments during the Carboniferous period. Uplift associated with the intrusion created a region of net erosion which still continues.

The surrounding sediments, including the metamorphic aureole, were generally more resistant to erosion than the granite, resulting in a rim of elevated country around much of the exposed batholith. The effect was the creation of a basin centred on Bathurst. The lowest point according to Semple is 620 m and is where the Macquarie River exits the

exposed batholith. The Image below also shows the basalt intrusion (tb) of Mt Stuart which occurred in the Cainozoic period.

Figure 26: Geological Map of Bathurst Area. Source: NSW Government



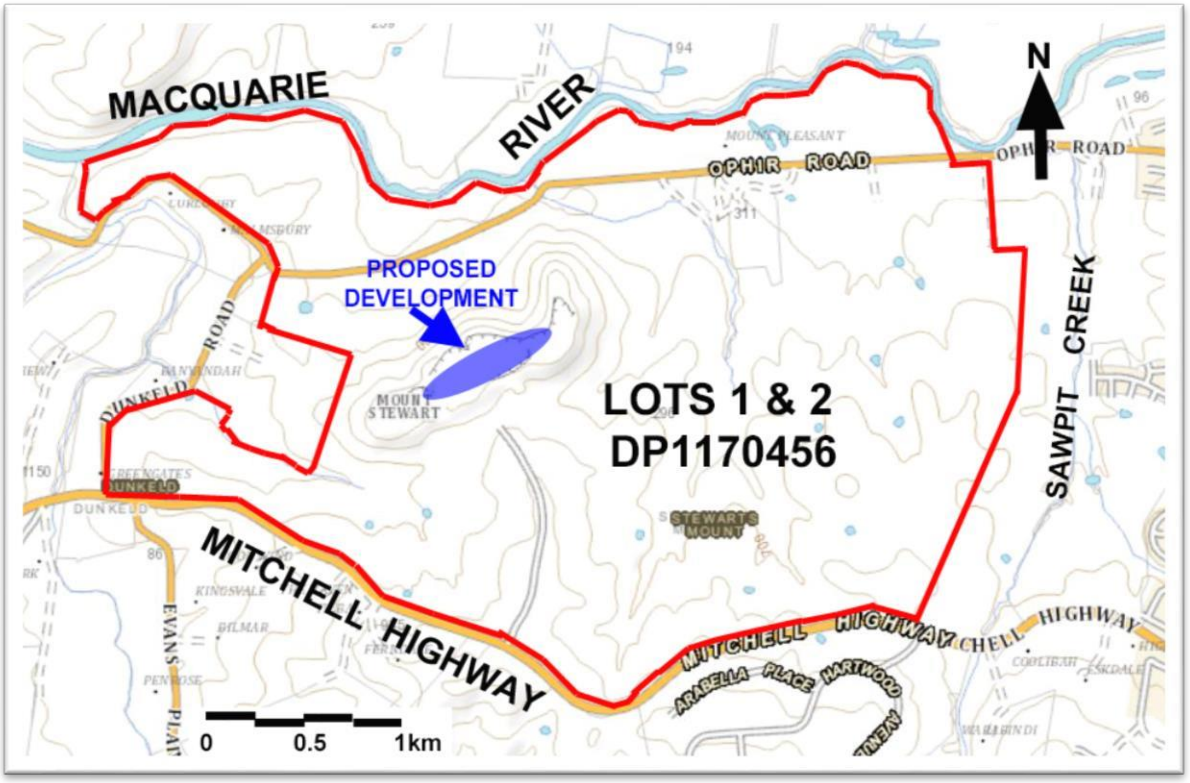
(http://www.resourcesandenergy.nsw.gov.au/miners-and-explorers/geoscience-information/products-and-data/maps/geological-maps/1-100-000/bathurst-1100-000-geological-map)

8.5 Topography and Vegetation

According to the NSW government, publication – "Soil Landscapes of the Bathurst1:250000 Sheet Report", the Panorama Kraznozem group are comprised of narrow rolling to steep slopes and narrow level crests, 760-780 m above sea level. The landscape of the Non-calcic Brown Soils are considered to be undulating to rolling hills around Bathurst with elevations of 650-850 m and most slopes from 6-10%.

Slopes lengths can vary from 400-800 m, but can range up to 2000 m. Drainage is of a convergent nature with drainage lines from 500-1000 m apart. Savannah woodland with a yellow box community is dominant. The following image is provided indicating the topography surrounding Mount Stewart and also of Sawpit Creek.

Figure 27: Topographical image. Source: NSW LPI SIX Maps



According to Semple, apart from rocky hills, most of the area is classified as having sparse tree cover. Semple highlighted that historical material suggested that shrubs were also infrequent at the time of European settlement in the early 1800s. Semple highlights that the diversity of native shrubs was generally higher on hilly sites, granite or non-granite. Landscapes with a long history of disturbance such as the fertile alluvial soils, had a higher proportion of exotic species present.

Envirotech Environmental and Engineering Consultancy Services were engaged to assess the biodiversity of the site. Following inspection on 24 March 2015, Envirotech described the existing vegetation as follows:

The development site contains very little vegetation as it was previously used as a quarry. There has been some attempted regeneration on the batters within the quarry footprint with approximately 2000m2 of juvenile *Eucalyptus viminalis* (white gum) being planted. Further plantings are already approved and planned.

Other vegetation that exists on the quarry site is largely made up of invasive exotic species such as *Rubus fruticosis (blackberry), Circium vulgare (spear thistle) and Echium plantagineum (Paterson's curse)*.

The desktop survey revealed that two (2) vegetation communities have been mapped surrounding the site (Figure 3); these are:-

i) Stringybark – Box Gum Woodland and

ii) Blakely's Red Gum – Yellow box Open Woodland.

There are areas on the outer edges of the site that are rich with eucalypts and acacias and after considering relevant guidelines regarding identifying Endangered Ecological Communities, it is considered parts of these communities represent degraded remnants of two Endangered Ecological Communities:

(1) Tablelands Basalt Forest in the Sydney Basin and South Eastern Highlands Bioregion, and

(2) White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland.

It is highly unlikely that these areas will be affected by the proposal. This is due to the operations being undertaken within the footprint of the old quarry, and not where these vegetation communities are found around the perimeter of the quarry.

Overall 37 flora species were recorded 17 introduced and 20 native, the high percentage (46%) of introduced species indicates a high level of modification to the landscape. This modification is indicative of the site being used as a quarry and past disturbances from clearing and farming, within the landscape. The Envirotech Biodiversity Assessment Report is included as Appendix 5 to this EIS.

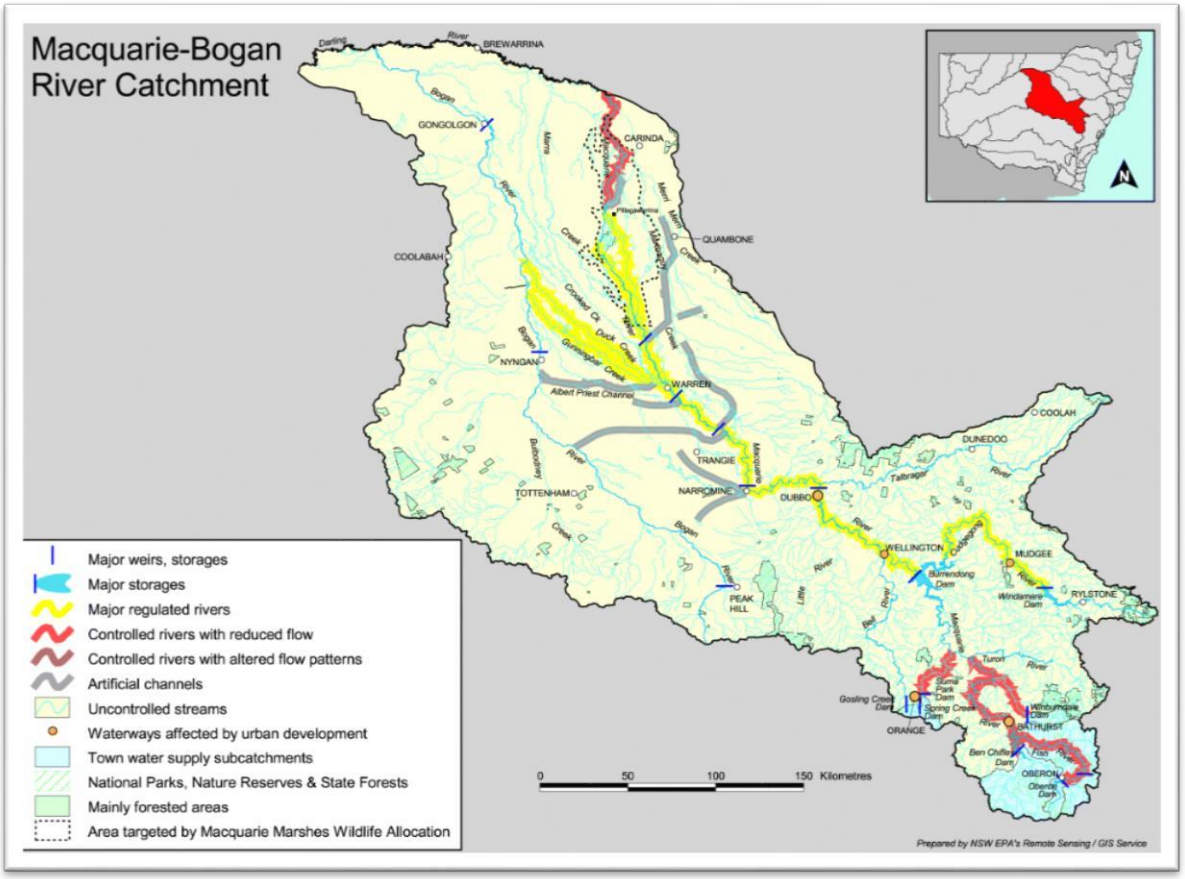
8.6 Hydrology

The proposed activity is located between two unnamed drainage channels within the Sawpit Creek Catchment that leads into the Macquarie River located to the east. The Macquarie River is part of the Macquarie-Barwon catchment within the Murray-Darling basin and is considered one of the main inland rivers of NSW. The primary source of the river is Campbells River near Oberon.

At the location of the proposed activity the Macquarie River is to be considered a controlled river with reduced flows as it represents a section of the river that is immediately located below a major town water supply dam where water is diverted directly from the dam (Bathurst town water supply offtake). Due to this, water quality will vary, particularly in times of reduced flow and elevated temperature.

Compounding this, is the fact that the Macquarie River is also considered to be of a type that is affected by urban development which has been substantially modified and generally displays a poor-quality stormwater.

Figure 28: Macquarie-Bogan River Catchment Map



Source: (http://www.environment.nsw.gov.au/ieo/MacquarieBogan/map.htm)

The Macquarie River is considered to be a 3rd order watercourse type and the unnamed tributary to the east of the site is considered to be a 3rd order watercourse type, the unnamed watercourse to the west of the site is considered to be a 2nd order watercourse type.[9]

To the east of Mount Stewart, the Sawpit Creek catchment has been substantially modified since European settlement and minimal riparian vegetation exists.

[9] Classified under NSW Office of Water, Guidelines for riparian corridors on waterfront land, July 2012

9 Environmental Planning Instruments and Policies

9.1 State Environmental Policy (Infrastructure) 2007

The development has direct access to Mitchell Highway, a classified road which is controlled by the NSW Roads and Maritime Services (RMS).

The NSW RMS was consulted before and during the preparation of this EIS and their requirements are included in Appendix 1 to this EIS. A traffic impact study was prepared by Thompson Stanbury Associates in response to RMS requirements and is included as Appendix 3 to this EIS.

Clause 101 of the SEPP is reproduced below with comments in relation to the proposal.

101 Development with frontage to classified road

(1) The objectives of this clause are:

(a) to ensure that new development does not compromise the effective and ongoing operation and function of classified roads, and

The proposed development will utilise the existing driveway connection to Mitchell Highway, which has been used for a number of years by the previous occupant, Hanson Quarry. The Thompson Stanbury report found that the proposed development is expected to generate significantly less heavy vehicle trips than the previous quarry activity.

The Thompson Stanbury report clearly demonstrates that the proposal will not compromise the effective and ongoing operation and function of classified roads.

The proposal satisfies this objective.

(b) to prevent or reduce the potential impact of traffic noise and vehicle emission on development adjacent to classified roads.

The development will only add a very small percentage to existing heavy vehicle movements on this section of the Mitchell Highway.

The number of movements will be much lower than the previous quarry activity on the land.

The proposal satisfies this objective.

(2) The consent authority must not grant consent to development on land that has a frontage to a classified road unless it is satisfied that:

(a) where practicable, vehicular access to the land is provided by a road other than the classified road, and

The land has an existing access to Mitchell Highway, which has been constructed to satisfy RMS specifications for heavy vehicles. The access and the internal road is sealed and was established by the previous quarry activity. It is considered both impractical and undesirable to provide access to a local road as it would create unnecessary visual impact on the site and direct heavy vehicles through the local rural road system.

(b) the safety, efficiency and ongoing operation of the classified road will not be adversely affected by the development as a result of:

(i) the design of the vehicular access to the land, or

The Thompson Stanbury report concludes that the access driveway design is satisfactory.

(ii) the emission of smoke or dust from the development, or

The classified road will not be affected by the emission of smoke or dust as a consequence of the proposed development.

(iii) the nature, volume or frequency of vehicles using the classified road to gain access to the land, and

The Thompson Stanbury report considers this matter in detail and concludes that the proposal is satisfactory.

(c) the development is of a type that is not sensitive to traffic noise or vehicle emissions, or is appropriately located and designed, or includes measures, to ameliorate potential traffic noise or vehicle emissions within the site of the development arising from the adjacent classified road.

The development site is located a minimum of 800 metres from Mitchell Highway. Notwithstanding, the proposed development is not sensitive to traffic noise or vehicle emissions.

The development is defined as "Traffic Generating Development" in Schedule 3 of the SEPP. Clause 104 is reproduced below.

104 Traffic-generating development

(1) This clause applies to development specified in Column 1 of the Table to Schedule 3 that involves:

(a) new premises of the relevant size or capacity, or

(b) an enlargement or extension of existing premises, being an alteration or addition of the relevant size or capacity.

*(2) In this clause, **relevant size or capacity** means:*

(a) in relation to development on a site that has direct vehicular or pedestrian access to any road—the size or capacity specified opposite that development in Column 2 of the Table to Schedule 3, or

(b) in relation to development on a site that has direct vehicular or pedestrian access to a classified road or to a road that connects to a classified road where the access (measured along the alignment of the connecting road) is within 90m of the connection—the size or capacity specified opposite that development in Column 3 of the Table to Schedule 3.

(3) Before determining a development application for development to which this clause applies, the consent authority must:

(a) give written notice of the application to the RTA within 7 days after the application is made, and

(b) take into consideration:

(i) any submission that the RTA provides in response to that notice within 21 days after the notice was given (unless, before the 21 days have passed, the RTA advises that it will not be making a submission), and

(ii) the accessibility of the site concerned, including:

(A) the efficiency of movement of people and freight to and from the site and the extent of multi-purpose trips, and

(B) the potential to minimise the need for travel by car and to maximise movement of freight in containers or bulk freight by rail, and

(iii) any potential traffic safety, road congestion or parking implications of the development.

(4) The consent authority must give the RTA a copy of the determination of the application within 7 days after the determination is made.

It is submitted that both Council and the RMS can be satisfied in relation to the relevant matters to be addressed for traffic generating development.

9.2 State Environmental Policy No. 33 – Hazardous and Offensive Development

SEPP 33 presents a systematic approach to planning and assessing proposals for potentially hazardous and offensive development for the purpose of industry or storage.

The NSW Department of Planning issued guidelines to applying SEPP 33 in 2011. These guidelines assist in understanding the relationship to SEPP 33:

"Whether SEPP 33 applies to a particular proposal depends on whether the proposal falls within the definition of 'industry' as defined in the planning instrument which applies.

Developments such as cattle feedlots may not fit within this definition (for example where they are separately defined as "animal establishments, rural industry or something similar). It is, however, a matter for the consent authority to interpret its own planning instruments in deciding whether any proposal is affected by SEPP 33.

Should the consent authority decide that SEPP 33 does not apply to a development because it is not an 'industry' or 'storage establishment', the degree of hazard or offence should still be considered as a matter under section 79C of the EP&A Act. In such cases the SEPP 33 methodology may still be applicable, even if the policy itself does not strictly apply."[10]

This proposal is for a resource recovery facility, and is not defined as 'industry' under the provisions of Bathurst Regional Local Environmental Plan 2014. It is submitted therefore that Council would form the view that SEPP 33 does not apply. However, in accordance with the guidelines quoted above, the SEPP 33 methodology may be applicable.

The development does not involve the storage of hazardous materials other than for the routine operation and maintenance of plant and equipment used in processing organic resource material. The following table is an extract from the Environmental Management Plan prepared by LZ Environmental. It is clear that the volume of materials to be stored on site do not constitute a hazardous storage establishment pursuant to the SEPP.

[10] NSW Department of Planning, Hazardous and Offensive Development Application Guidelines, Applying SEPP 33, January 2011, ISBN 978-1-74263-154-7

Appendix 2 – Table 1: Chemicals to be stored at the GRP and the associated maximum limits

Chemical Description	Maximum Limits
Cleaning products for various uses[1]	20 litres per product
Diesel	2,000 litres[2]
Petrol	15 litres
Hydraulic oil	20 litres
Transmission oil	20 litres
Engine oil	20 litres
Concentrated radiator coolant	20 litres
Glyphosate or similar	20 litres
Grease	200 litres
Proprietary products that are utilised in composting, including bacterial inoculum and bio-stimulants:	
• humates and/or fulvates;	100 litres
• Effective Microorganisms (EM); and	100 litres
• BioAktiv.	50 kilograms
Notes: [1] Cleaning product must be non-toxic and biodegradable whenever possible.	

The composting process has the potential to give rise to the emission of offensive odours if not managed appropriately. It is noted that the premises would qualify as scheduled activities under the *Protection of the Environment Operations Act 1997* and are required to be licensed by the NSW EPA, should development consent be granted.

A comprehensive odour assessment of the proposal was prepared by Advanced Environmental Dynamics (Appendix 4 to this EIS). The report concludes:

> *"The odour dispersion modelling predicts that there will be no residential locations for which regulatory odour criteria will be exceeded.*
>
> *Results of odour assessment of the Greenspot Recycling Plant suggest that the mitigation measures and management strategies proposed for the operation of the facility will be sufficient to comply with regulatory requirements for odour."*

Accordingly, it is submitted that Council can be satisfied in relation to the provisions of SEPP 33.

9.3 State Environmental Planning Policy No. 55 – Remediation of Land

Clause 7 (1) of State Environmental Planning Policy 55 – Remediation of Land (SEPP 55) provides that:

> *(1) A consent authority must not consent to the carrying out of any development on land unless:*
>
> *(a) it has considered whether the land is contaminated, and*
>
> *(b) if the land is contaminated, it is satisfied that the land is suitable in its contaminated state (or will be suitable, after remediation) for the purpose for which the development tis proposed to be carried out, and*
>
> *(c) if the land requires remediation to be made suitable for the purpose for which the development is proposed to be carried out, it is satisfied that the land will be remediated before the land is used for that purpose.*

Following the closure of the former quarry, Hanson Construction Materials Pty Ltd commissioned Martens and Associates to prepare a site contamination assessment and a validation report following remediation. These reports are attached to this EIS as Apendices 5 and 6.

The assessment identified that the following areas have potential for contamination:

- Office building, maintenance shed and weighbridge
- Fuel storage area and wash-down bay
- Site transformer
- Former crushing plant area

The site contamination assessment concluded as follows:

> Site investigations indicate hydrocarbon soil contamination was observed near surface at levels above ESL and Management Limits provided in ASC NEPM (1999, amended 2013).
>
> Minor soil contamination is likely to be isolated and is not expected to pose a risk to ongoing site use for commercial/industrial site. Observed levels are well below direct contact SAC and do not pose significant health risk to future users. ASC NEPM (1999, amended 2013) suggests that observed levels may limit or adversely affect vegetation growth in this small area.
>
> If future site use changes, then we would recommend additional testing and assessment of risk in areas of proposed development and where direct contact with soil is anticipated.

The subsequent validation report confirms that the identified areas of contamination have been remediated. It is submitted that Council can be satisfied in respect of SEPP 55 and no further assessment is required for the purposes of the proposed development.

9.4 State Environmental Planning Policy (Rural Lands) 2008

The aims of this Policy are reproduced below with comments in relation to the proposal.

(a) to facilitate the orderly and economic use and development of rural lands for rural and related purposes,

It is considered that the proposal satisfies this objective by utilising the previous quarry area for an appropriate use, ie to create products for agricultural soil improvement in the region.

(b) to identify the Rural Planning Principles and the Rural Subdivision Principles so as to assist in the proper management, development and protection of rural lands for the purpose of promoting the social, economic and environmental welfare of the State,

The Rural Planning Principles listed in clause 7 of the SEPP are to be applied by Councils in exercising their functions relating to local environmental plans. It is considered that the proposal is an appropriate use of rural lands.

(c) to implement measures designed to reduce land use conflicts,

The topography of the site and surroundings provides the appropriate conditions to prevent land use conflicts. In particular, the composting process is carried out on the floor of the former quarry, which is surrounded by 15m high walls. The odour assessment prepared for the proposal demonstrates that no residential areas are expected to be affected.

(d) to identify State significant agricultural land for the purpose of ensuring the ongoing viability of agriculture on that land, having regard to social, economic and environmental considerations,

The SEPP does not identify any land as State significant agricultural land.

(e) to amend provisions of other environmental planning instruments relating to concessional lots in rural subdivisions.

This is a matter for Council and has no relevance to the proposal.

9.5 Bathurst Regional Local Environmental Plan 2014

The land is zoned RU1 Primary Production under the provisions of the Bathurst Regional LEP 2014 (BRLEP 2014).

The proposal is defined as a resource recovery facility as described in the Dictionary to BRLEP 2014:

> ***"resource recovery facility*** means a building or place used for the recovery of resources from waste, including works or activities such as separating and sorting, processing or treating the waste, composting, temporary storage, transfer or sale of recovered resources, energy generation from gases and water treatment, but not including re-manufacture or disposal of the material by landfill or incineration."

Resource recovery facilities are permitted with the consent of Council in the RU1 zone. The objectives of the zone are reproduced below with commentary relating to the proposal.

- *To encourage sustainable primary industry production by maintaining and enhancing the natural resource base.*

The quarry floor, which was created by the previous hard rock mining operation, presents a suitable platform for the proposed recycling facility. The land has no inherent agricultural value. However, the use of the area to create soil improvers from resource products for agricultural land in the region satisfies this objective by assisting to maintain and enhance the existing resource base.

- *To encourage diversity in primary industry enterprises and systems appropriate for the area.*

The proposal encourages diversity in primary industry by:

- Being diverse in itself, in that it takes products out of the resource stream to create a valuable agricultural resource; and
- Providing an agricultural soil improvement product for use within the area and the region.

- *To minimise the fragmentation and alienation of resource lands.*

The proposal does not fragment or alienate resource lands. The activities are confined to the existing quarry floor, while the remainder of the land remains available for animal grazing, as it has been used for many years.

- *To minimise conflict between land uses within this zone and land uses within adjoining zones.*

The various mitigation measures detailed within this EIS and the Environmental Management Plan prepared by LZ Environmental Company will ensure that there will be no conflict within this zone or adjoining zones.

- *To maintain the rural and scenic character of the land.*

The proposal is not visible from surrounding properties or public places. There will no impact on the rural and scenic character.

- *To provide for a range of compatible land uses that are in keeping with the rural character of the locality, do not unnecessarily convert rural land resources to non-agricultural land uses, minimise impacts on the environmental qualities of the land and avoid land use conflicts.*

The proposal is in keeping with the rural character of the locality and does not convert rural land resources to non-agricultural use. It is submitted that there is minimal environmental impact and that land use conflicts are avoided by the mitigation measures proposed.

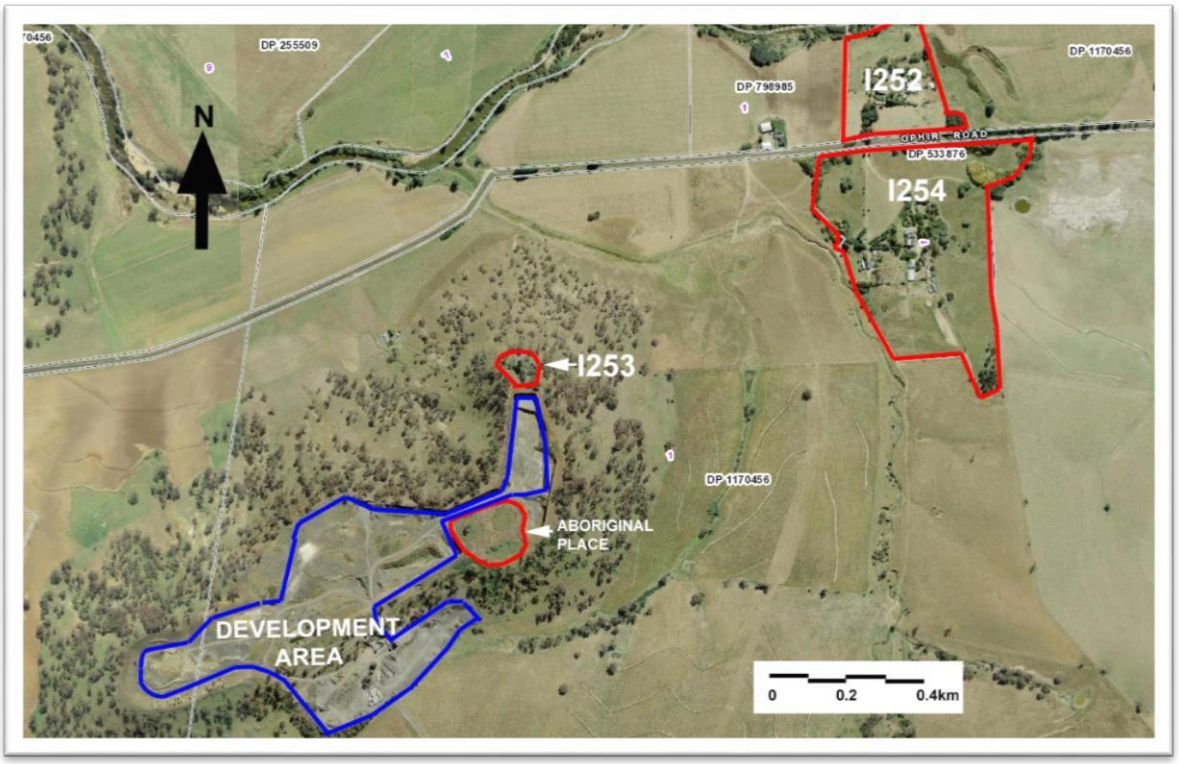
Clause 5.10 Heritage conservation

The subject land contains two items of local heritage significance as listed in Schedule 5:

- Item I253: “Mount Stewart Private Cemetery”; and
- Item I252: “Strath”

An Aboriginal place of significance is also located on the land.

Figure 29: Relationship to Heritage Items. Source LPI SIX Maps, BRLEP 2014 Heritage Map – Sheet HER_005C



The provisions of subclause 4 apply to the heritage items which are located on the subject land.

(4) Effect of proposed development on heritage significance

The consent authority must, before granting consent under this clause in respect of a heritage item or heritage conservation area, consider the effect of the proposed development on the heritage significance of the item or area concerned. This subclause applies regardless of whether a heritage management document is prepared under subclause (5) or a heritage conservation management plan is submitted under subclause (6).

Item I253: “Mount Stewart Private Cemetery”

This item is located at the northern-most point of Mount Stewart. The obelisk and exotic plantings are visible from Ophir Road, but not from the development area. Access to the Item is via the existing road system within and surrounding the existing quarry. The cemetery is not visible from the quarry floor or from any part of the development area.

Item I252: “Strath”

Although located on the same title as the development, this item is physically located on a separate parcel of land, some 1.5 kilometres to the north-east of the development area on

the northern side of Ophir Road. It is considered that the relationship of the development to this Item is more correctly described as within the vicinity. The following section relating to Abercrombie House is also relevant to Item 252 given the proximity of the two Items relative to the proposed development.

Aboriginal Place

Discussion with the Bathurst Wiradyuri and Aboriginal Community Elders, reveals that a place of Aboriginal cultural significance exists within the land. It is understood that the site is significant in terms Aboriginal men's and women's culture.

The site is located on the plateau above the wall of the northern quarry and is not included within the development area.

The applicant consulted with Bathurst Wiradyuri and Aboriginal Community Elders and the Local Aboriginal Land Council prior to preparing this EIS. No objection was raised to the proposal, as long as no general access is available to this cultural site.

The site is identified in the Environmental Management Plan (EMP) prepared by LZ Environmental Company as a designated "no go" zone. The EMP states that "no vehicle should be driven in this area and resource must not be disposed or stored in this area."

Abercrombie House

The subject land is also located within the vicinity of Abercrombie House, which is located some 1.2 kilometres to the north-east of the development area. Abercrombie House is listed in Schedule 5 as an item of local heritage significance, Item I254. Therefore the provisions of subclause 5(c) apply.

> ***(5) Heritage assessment***
>
> *The consent authority may, before granting consent to any development:*
>
> *(a) on land on which a heritage item is located, or*
>
> *(b) on land that is within a heritage conservation area, or*
>
> *(c) on land that is within the vicinity of land referred to in paragraph (a) or (b),*
>
> *require a heritage management document to be prepared that assesses the extent to which the carrying out of the proposed development would affect the heritage significance of the heritage item or heritage conservation area concerned.*

It is submitted that the Council can be satisfied that a heritage management document is not required in this instance, nor is there any impact on the heritage significance of the item due to the following:

i. The Item is located some 1.2 kilometres from the closest part of the development area;

ii. The development area (quarry floor) is located at an elevation of approximately 730m, and is surrounded by a perimeter wall at an elevation of approximately 745m.

iii. Abercrombie House is situated on land with an elevation of 660-670m, some 900m horizontal distance to the nearest quarry wall.

iv. The terrain between the development area and Abercrombie House traverses a 15m high quarry wall, a downslope from the top of the quarry wall of approximately 50 metres, a gentle slope to Sawpit Creek of approximately 40 metres, then an upslope of 10-20 metres to Abercrombie House.

Figure 30 below is an image taken from Abercrombie House looking west/south-west towards the development area. It is clear that there is no physical or visual connection between the Item and the development area due to the distance and topography. Therefore the heritage significance of the item will not be affected.

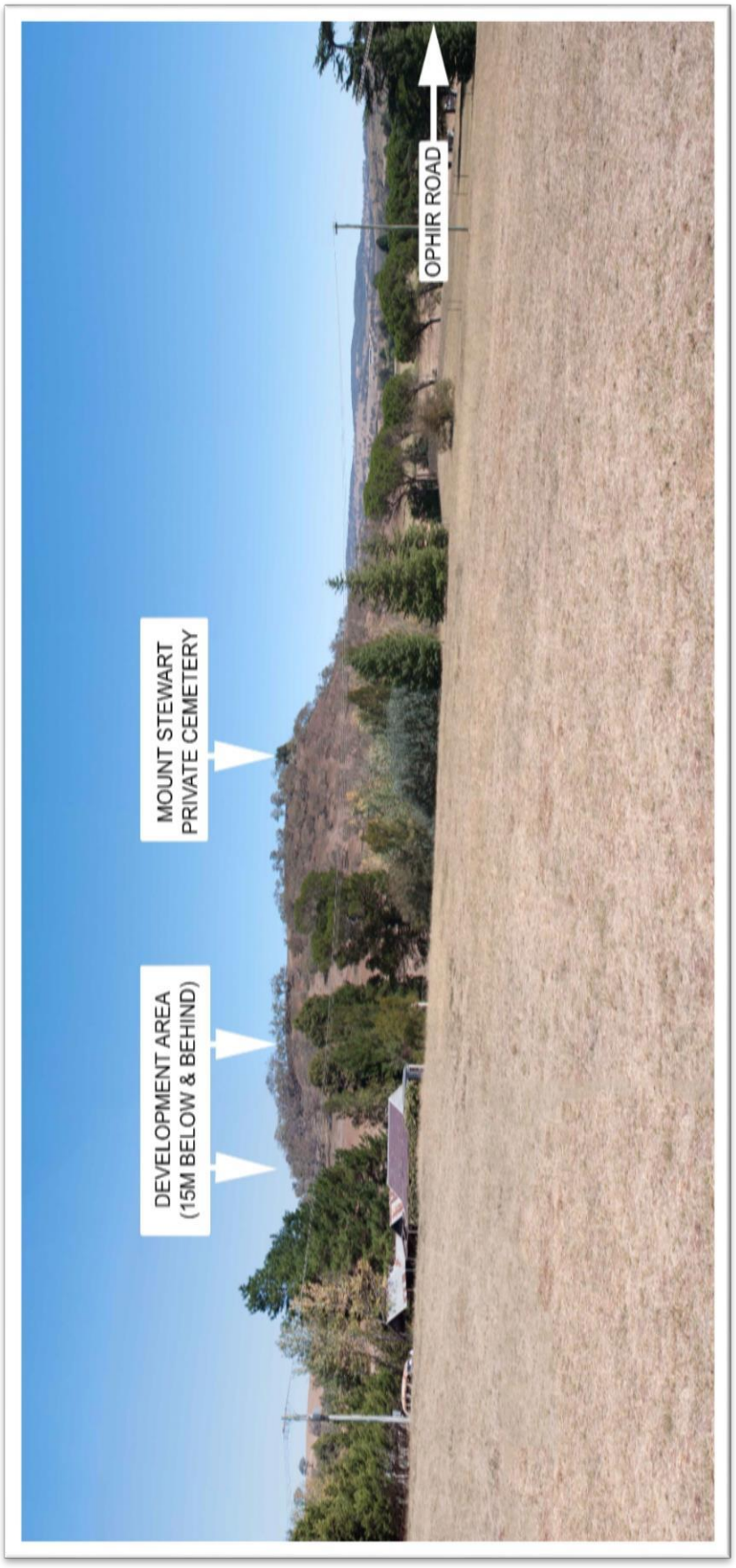
Subclause 6 provides:

(6) ***Heritage conservation management plans***

The consent authority may require, after considering the heritage significance of a heritage item and the extent of change proposed to it, the submission of a heritage conservation management plan before granting consent under this clause.

No change is proposed to any heritage item, and there are no impacts on any of the Items as a consequence of the proposal. Accordingly it is considered that it is not necessary for Council to require the submission of a heritage conservation management plan. It is submitted that Council can be satisfied on the information provided in this EIS that there is no heritage impact.

Figure 30: View from Abercrombie House towards development area



Subclause 8 provides:

(8) ***Aboriginal places of heritage significance***

The consent authority must, before granting consent under this clause to the carrying out of development in an Aboriginal place of heritage significance:

(a) consider the effect of the proposed development on the heritage significance of the place and any Aboriginal object known or reasonably likely to be located at the place by means of an adequate investigation and assessment (which may involve consideration of a heritage impact statement), and

(b) notify the local Aboriginal communities, in writing or in such other manner as may be appropriate, about the application and take into consideration any response received within 28 days after the notice is sent.

The applicant consulted with Bathurst Wiradyuri and Aboriginal Community Elders and the Local Aboriginal Land Council prior to preparing this EIS. No objection was raised to the proposal, as long as no general access is available to the cultural site.

In accordance with subclause 8(b), the Council is required to notify the local Aboriginal communities and take into consideration any response which is received within 28 days.

Clause 7.5 Essential Services

Clause 7.5 is reproduced below with comments in respect of the proposal.

7.5 Essential services

Development consent must not be granted to development unless the consent authority is satisfied that any of the following services that are essential for the development are available or that adequate arrangements have been made to make them available when required:

(a) the supply of water,

Rainwater is collected in the dams within the quarry floor. This water is utilised in the composting process and for dust suppression on the internal roads. In the event that rainfall is not sufficient, the existing on-site bore will provide a supplementary supply for these purposes. Roof water is collected from the office and workshop buildings for potable use and for staff amenities.

(b) the supply of electricity,

Electricity is currently supplied to the office and workshop. No electricity is used in the recycling and composting processes.

(c) the disposal and management of sewage,

Wastewater from staff amenities is treated by an existing on-site wastewater management facility.

(d) stormwater drainage or on-site conservation,

All stormwater within the quarry floor is collected and stored within the three storage dams.

(e) suitable vehicular access.

The proposal will utilise the existing internal road and the existing access to Mitchell Highway which was constructed for the previous quarry operation. Appendix 3 to this EIS is a traffic

impact statement study which demonstrates that there is suitable vehicle access for the proposal.

10 Strategies and Plans

10.1 Bathurst Region Rural Strategy 2010

This strategy is a high level strategic document which has informed the preparation of Bathurst Local Environmental Plan 2014. It is relevant to note the following sections.

2.2.6 Rural Landscapes and Features

Mount Stewart is listed as a mountain, among others, with important scenic qualities. The proposed development does not involve any change to the landform or the landscape and will have no impact.

2.2.10 Dark Night Sky

The LGA is gazetted as part of the Siding Springs Observatory Dark Skies Region, which relates to the preservation of astronomical conditions for this observatory at Coonabarabran. The proposal does not involve any night time activity and will have no impact in this regard.

A review of the key strategic objectives reveals that the proposal is consistent with the strategic direction of the Strategy.

10.2 Bathurst Regional Development Control Plan 2014

The relevant sections of the DCP are reproduced below with comments relating to the proposed development.

6.3 ACCESS, ENTRANCES AND FENCING

6.3.1 Objectives

a) To maintain a standard of fencing and entrances compatible with the rural landscape.

b) To minimise the visual impact of rural lifestyle developments on major and minor roads including the gateway approaches to the City.

c) To provide adequate access for Rural Fire Service resources.

6.3.2 Development standards

Access

a) A vehicular access shall not be created or used to give access directly onto a classified road or highway, without the consent of the Roads and Maritime Service (RMS).

b) A vehicular access shall not be created or used to give access onto a minor road closer than 20 metres to any intersection of that minor road with a major road or highway.

c) A vehicular access shall not be created or used to give access onto a road specified by a relevant DCP Map as "access restriction".

Entrances

a) Entrances are to be setback a minimum of 10m from the boundary of the subject land with the public road, in accordance with Council's *Guideline to Engineering Works*. Entrance setbacks to a highway or classified road must meet RMS standards.

b) Entrances required to accommodate semi-trailers and heavy vehicles (e.g. to mines and intensive livestock activities etc.) are to be set back a minimum of 20m from the boundary of the subject land with the public road, in accordance with Council's *Guideline to Engineering Works*.

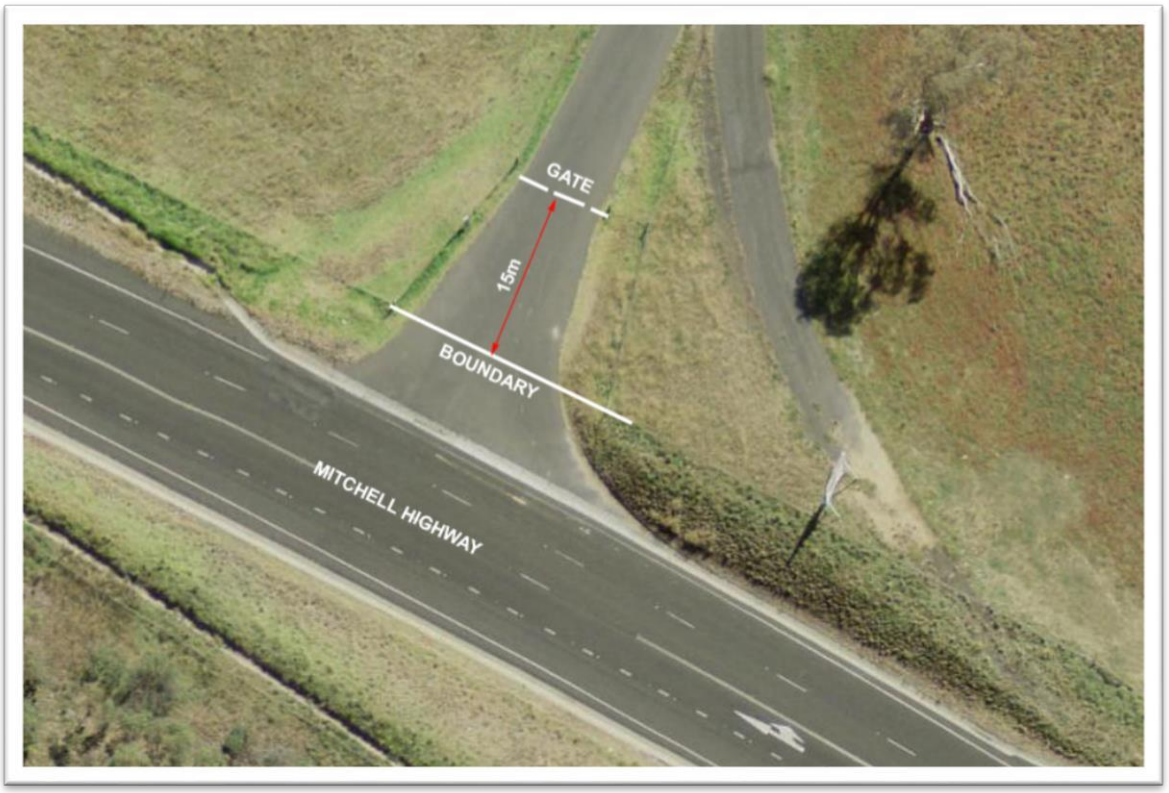
c) Entrances are to have a 2 coat bitumen seal if the public road is sealed. Driveways are to otherwise be constructed to an all weather surface.

d) Entrances are to be a minimum 4m wide to enable access by Rural Fire Service resources.

The proposal is to use the existing access to Mitchell Highway, which was constructed for the former quarry use of the land. A traffic impact statement prepared by Thompson Stanbury Associates is Appendix 3 to this EIS. This statement satisfies the requirements of the NSW Roads and Maritime Services as specified in the Secretary's Environmental Assessment Requirements for this application.

Figure 31 below is a satellite image showing the existing intersection.

Figure 31: Existing access to Mitchell Highway. Source LPI SIX Maps



Fencing

a) Fencing is to be of a rural nature using traditional rural fencing materials, or of pipe, wire, timber, masonry or the like. Pre-coloured metal sheet fencing is not permitted.

b) Fencing is to be constructed so that it does not prevent the natural flow of storm water drainage.

Figure 32 below shows the existing rural fencing which will remain on the boundaries.

Figure 32: Boundary Fencing

Driveways and property access roads

a) Driveways and property access roads are to be constructed of an all weather surface.

b) Driveways and property access roads are to be constructed to comply with Section 4.1.3 (2) of the Planning for Bushfire Protection Guidelines (2006).

The proposal will utilise the existing all weather access and internal road system which was constructed for the previous quarry use.

10.3 Section 94 Development Contributions Plan – Bathurst Regional Traffic Generating Development

The primary purpose of this plan is to require a contribution to ensure that the existing community is not burdened by the costs of road works resulting from damage caused by heavy vehicles associated with Traffic Generating Developments within the Bathurst Regional LGA.

The subject land has direct access to Mitchell highway, which is a classified road under the control and management of the NSW RMS. It is submitted that the proposed development will not create additional heavy vehicle movements on local roads under the control of Council. Therefore no Section 94 contributions will apply to the development.

11 Ecologically Sustainable Development Principles

The Principles of ecologically sustainable development are listed in the *Environmental Planning and Assessment Regulation 2000*.[11] The principles are listed below with comments in relation to the proposal.

(a) ***the precautionary principle****, namely, that if there are threats of serious or irreversible environmental damage, lack of full scientific certainty should not be used as a reason for postponing measures to prevent environmental degradation. In the application of the precautionary principle, public and private decisions should be guided by:*

(i) careful evaluation to avoid, wherever practicable, serious or irreversible damage to the environment, and

(ii) an assessment of the risk-weighted consequences of various options,

It is submitted that the proposal poses no threat of serious or irreversible environmental damage. This is confirmed by the following detailed assessment of likely environmental impacts.

(b) inter-generational equity, namely, that the present generation should ensure that the health, diversity and productivity of the environment are maintained or enhanced for the benefit of future generations,

[11] Environmental Planning and Assessment Regulation 2000, Schedule 2, Part 3, Clause 7(4).

The proposal intends to utilise a part of the land which has been severely degraded by the previous mining activity. Notwithstanding, the proposal will ensure that that the remaining biodiversity and health of the environment will be maintained by appropriate amelioration and ongoing management through the environmental management plan.

It is submitted that the current state of the land will be improved by this proposal, and the health, diversity and productivity of the environment in general will be enhanced.

(c) ***conservation of biological diversity and ecological integrity****, namely, that conservation of biological diversity and ecological integrity should be a fundamental consideration,*

A biodiversity assessment prepared by Envirotech Consulting (Appendix 5) concludes that the proposal is unlikely to have a significant effect on threatened species, endangered populations, ecological communities or their habitats. Envirotech makes a number of recommendations, including implementing a vegetation management plan, weed management and replacement of any vegetation removed from the quarry floor with suitable species within the quarry or within the identified endangered ecological communities.

(d) ***improved valuation, pricing and incentive mechanisms****, namely, that environmental factors should be included in the valuation of assets and services, such as:*

(i) polluter pays, that is, those who generate pollution and waste should bear the cost of containment, avoidance or abatement,

(ii) the users of goods and services should pay prices based on the full life cycle of costs of providing goods and services, including the use of natural resources and assets and the ultimate disposal of any waste,

(iii) environmental goals, having been established, should be pursued in the most cost effective way, by establishing incentive structures, including market mechanisms, that enable those best placed to maximise benefits or minimise costs to develop their own solutions and responses to environmental problems.

The proposal is for a resource recovery facility. The very nature of the proposal satisfies this principle. That is; the generators of organic waste will pay to deposit their waste at the site, the waste is processed using a natural, low energy composting process, and the finished product is a valuable resource which goes back to the land in the form of soil improvers.

It is submitted that the proposal satisfies the ecologically sustainable development principles as listed in the *Environmental Planning and Assessment Regulation 2000.*

12 Assessment of Likely Environmental Impacts

12.1.1 Air Quality

Bettergrow recognises that if not properly managed, the activities at the Facility have the potential to cause environmental harm or nuisance as a result of uncontrolled emissions to air that leave the Facility and which are deposited at an odour or dust sensitive receptor

It is also recognised by Bettergrow that the time of day and prevailing wind conditions play major roles in whether or not dust and particulates or odour emissions will result in environmental harm or nuisance at a remote sensitive receptor.
The environmental impacts that may result following a release to the air environment and which should be noted by onsite personnel are listed below:

- Reduction in the aesthetics of the air environment at the location of a sensitive receptor;
- Potential health impacts to onsite personnel or at the location of a sensitive receptor;
- Environmental harm or nuisance at the location of a sensitive receptor; and
- Reduction in the health and biodiversity of ecosystems.

Open windrows will be constructed and maintained in accordance with the relevant workplace procedures (refer to EMP, Appendix 1, Section 2, Workplace Procedure 2 – Gore Covered System & Open Windrow Construction & Maintenance and Workplace Procedure 8 – Spontaneous Combustion Prevention), i.e. moisture content <50% (w/w) which reduces the propensity for dust and particulate liberation, as well as minimising the likelihood of spontaneous combustion, which would result in the release of particulates, smoke, ash and potentially noxious vapours to the receiving environment.

The relevant workplace procedure contained within the EMP outlines the abovementioned issues and others in relation to the management of dust and particulate liberation at the Facility and provides further detail of management (refer to EMP, Appendix 1, Section 2, Workplace Procedure 11 – Dust and Particulate Management). Adherence with the procedure will ensure compliance is achieved.

Whilst it is unlikely that offsite dust nuisance will be caused, Bettergrow is committed to monitoring dust deposition if requested by the administering authority acting upon the receipt of an offsite complaint from an affected person at a sensitive receptor location.

Dust deposition monitoring at the sensitive receptor will be in accordance with the Australian Standard AS 3580: Methods for Sampling and Analysis of Ambient Air.

12.1.2 Odour

The composting process has the potential to give rise to the emission of offensive odours if not managed appropriately. It is noted that the premises will qualify as scheduled activities under the *Protection of the Environment Operations Act 1997* and are required to be licensed by the NSW EPA, once development consent is granted.

The proposal includes an aerated composting component which is based on the automated forced aeration system used as part of the Gore-Tex covered windrow system. This system is used throughout the world and has been demonstrated to be associated with very low emissions of offensive odour.

Advanced Environmental Dynamics Pty Ltd (AED) was commissioned by Bettergrow to undertake a comprehensive odour assessment of the proposal. (Appendix 4). For the purpose of assessing odour impacts AED assessed an odour emission scenario involving the most likely combinations of potentially odorous activities being conducted simultaneously, ie worst case scenario.

The assessment identifies a number of sensitive receptors including Abercrombie House to the east and rural homesteads to the south and south-west. Odour modelling was undertaken in accordance with the NSW Department of Environment and Conservation document; *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (NSW DEC, 2005). Modelling also followed discussions with the NSW EPA concerning the appropriate measures.

The AED assessment concludes that:

> *"The odour dispersion modelling predicts that there will be no residential locations for which regulatory odour criteria will be exceeded.*
>
> *Results of odour assessment of the Greenspot Recycling Plant suggest that the mitigation measures and management strategies proposed for the operation of the facility will be sufficient to comply with regulatory requirements for odour."*

To ensure that environmental nuisance is prevented, it is essential that when identified, offensive odour is minimised or prevented from proliferating. Contrary to popular belief, offensive odour does not need to be associated with a composting and soil conditioner manufacturing facility, if all windrows, ponds and stormwater drains are maintained in an aerobic state and not allowed to turn anaerobic. Similarly, areas of resource receival should be kept clean and free of residual organics that have the propensity to putrefy. This type of environment will prevent odorous gases such as hydrogen sulphide (rotten egg gas), amines, ammonia and other volatile organic compounds (VOCs) or a mixture of all from becoming the predominant odour experienced at the Facility.

Bettergrow understands the importance of establishing and maintaining aerobic activity so that offensive odour conditions do not arise, and has the necessary experience to ensure odorous conditions do not occur.

All Facility Employees will be educated to understand that certain control measures are in place to ensure that aerobic activity remains and as such any deviation without management clearing the change first will not be acceptable behaviour.

Further to the above, Bettergrow understands that a 'healthy' pond is one where it is deemed to be aerobic and/or oxidised. Bettergrow understands that if pond water is maintained in an

oxygen-rich state, the likelihood of any offensive odour being released or travelling offsite by the prevailing wind to any sensitive receptor is avoided.

Bettergrow understands that pond health essentially depends on the load transferred to it. Due to the types of resource received at the Facility, and the nature of activities conducted on the Composting Pad, oxygen demanding substances, such as substances with a high biochemical oxygen demand (BOD) or a high chemical oxygen demand (COD), may be generated and transported by stormwater. Stormwater which has come in contact with processing areas will drain to a separate contact water containment pond. Proprietary products will be applied as necessary to ensure that the pond remains in an odour free state.

As the name suggests, aerobic microorganisms digest organic matter via the respiration of oxygen. As these microorganisms consume oxygen from the water column, oxygen levels decrease and if excessive can result in the aquatic environment becoming anaerobic (oxygen-deprived) and prone to the liberation of offensive odours.

It is understood that proteins, fats, oils, organic matter and ammonia in animal manures or biosolids are typically classed as high BOD substances, effectively meaning that a large amount of oxygen will be required for their decomposition aerobically. The impact they have on the oxygen levels in an aquatic environment can be significant if large quantities of these substances enter waters. As such, Bettergrow realises that it is essential not to allow large quantities of these materials to enter onsite ponds or receiving waters (unlikely due to no free drainage existing).

Bettergrow is also aware that changes in pH can liberate offensive odours such as hydrogen sulphide (if low pH is experienced in the water column) or ammonia (if high pH is experienced in the water column) and as such will maintain relatively neutral conditions in onsite pond(s). It is therefore essential that the pond water is kept in an oxidised state to prevent generation of any offensive odour. While it is unavoidable that some liquid resource containing high levels of BOD and/or COD will be transported to the onsite ponds via stormwater or contact water, the proper management of these types of resource will ensure that the level of contamination is kept to a minimum and should entry to onsite containment occur, then necessary methods of rectification will occur, by implementing ordinary chemistry rules and principles.

Putrefying waste will be actively excluded from the Facility through effective vetting at the initial point of inspection, and during and after unloading. In the event that particularly odorous resource is accepted at the Facility it will be inoculated with proprietary products, such as bio-stimulants and or inoculums, as soon as possible to minimise odour proliferation. Further to this, it may also be necessary to inoculate the resource as it is incorporated into a windrow to ensure stability whilst undergoing the initial detoxification phase or pasteurisation phase.

Bettergrow understands that ordinarily it is essential that pasteurising temperatures of at least 55°C is attained for three consecutive days prior to the first turning of a windrow. Primarily, a windrow needs to pass through what is called the detoxification phase and this is achieved when the temperature is held at 55°C for three consecutive days. Whilst this helps with the destruction of pathogens and weed seeds, it also assists greatly in allowing volatile organic compounds (VOCs) to be assimilated within the windrow matrix. As Bettergrow understands that this phase of the composting cycle represents a risk to operations with regards to generating odour nuisance, the introduction of the Gore Cover Composting System eliminates this.

Bettergrow will ensure that initial mixing is homogeneous and has set recipes to ensure that appropriate portions of various materials are combined so that putrefying conditions do not develop.

Adherence to the relevant workplace procedures by Facility Employees through different stages of the composting operations will ensure that odour releases do not occur or if they do, that they are promptly minimised (for further detail, readers should refer to the EMP, Appendix 1, Section 2), namely:

- Workplace Procedure 1 – Resource Receival and Unloading;
- Workplace Procedure 2– Gore Covered System & Open Windrow Construction & Maintenance; and
- Workplace Procedure 4 – Finished Compost Stockpile Management.

Furthermore, Workplace Procedure 12 – Odour Management and Workplace Procedure 16 – Rain Induced Anaerobic Windrows of the EMP incorporates the abovementioned issues and others in relation to the management of odour liberation as a result of carrying out the activity and readers are again referred to Appendix 1, Section 2 – Workplace Procedures of the attached EMP for further detail).

The NSW EPA has raised specific concerns in relation to the potential for odour generation from the receipt, transfer and storage of various liquid resources and biosolid materials. The following procedural detail is provided in response to those concerns.

Appropriate control measures have been provided within the environmental management plan (EMP) that adequately manage potential impacts from odours. In particular, various Workplace Procedures have been generated to manage various aspects that could produce odour such as from the receival and mixing of organic resources, composting windrows, mixing areas, storage of stormwater and contact water.

Bettergrow will require that both liquid and solid resources are not be received in an advanced state of decay or received in a putrefactive state. All clients will be advised of this requirement. Prior to unloading, incoming resources will be scrutinised for odour generation. Resources that exhibit odour will be promptly managed and incorporated into compostable mixtures to prevent any odour nuisance.

Bettergrow will utilise proprietary products to inoculate compostable mixtures so that the proliferation of anaerobic activity does not predominate throughout windrows.

The EMP requires that regular cleaning occur within mixing and processing areas and that resources that have the tendency to putrefy are not to be stored for any length of time in the open.

Tanks utilised to store liquid resources to be injected into windrow mixtures will have proprietary products added such that offensive odour is not generated. Liquids will not be stored for any extensive amount of time. An understanding of the inherent physico-chemical characteristics of liquid resources such as its pH, dissolved oxygen content and redox potential will be attained such that amendments can occur should they be needed.

For example it is known that hydrogen sulphide is released very easily when the pH of the liquid is less than 6.5 pH units. Therefore ensuring a pH of stored liquids is above 6.5 pH units will mitigate any potential for significant sulphide release. Similarly it is known that

liquids containing ammonia will release ammonia easily when the pH is above 9.5 pH units. Therefore ensuring that liquids that contain ammonia do not increase in pH above 9.5 will also occur.

By ensuring the above, the transfer of liquid resources for incorporation into windrows should not create odour nuisance. Liquid resources will be injected into the windrow matrix and not on its surface. Biosolids will be promptly mixed upon receipt.

It is believed that the odour impact assessment performed by AED supports this EIS and shows that the proposal is able to meet acceptable environmental outcomes for odour. The modelling considered site specific and local terrain constraints so that appropriate practices could be adopted during unfavourable weather conditions such as the requirement not to turn windrows early in cool mornings or when increasingly stable meteorological conditions occur.

The EMP also identifies the importance of climatic conditions when considering performing activities that are potentially odourous and recommends that potentially odourous activities are not performed during unfavourable weather conditions.

It is considered that the odour model accurately defines the respective spatial areas that could contribute to an odour emission profile so as to provide worst case scenarios. The model accurately recorded the proposed tonnages of the various resources being applied for so that modelled scenarios represented realistic volumes during worst case scenarios.

The EMP also incorporates recommendations that were provided subsequent to the odour assessment performed by Advanced Environmental Dynamics Pty Ltd.

It is considered that provided all operations are carried out in accordance with the Environmental Management Plan, the potential hazard and risk is acceptable.

12.2 Noise and Vibration

When considering the amount of potential noise that could be generated during the proposed operating hours, it is likely that the impact will be low when compared to the previous use of the site. The proposed development presents a low noise risk to surrounding residents as activities will be confined to the quarry void.

The traffic movements will be much lower than the quarry use and the noise associated with composting will be much less than the inherent noise associated with hard rock quarrying.

It is noted that there is no apparent history of complaints regarding the previous quarry operation. Accordingly, it was considered that noise prediction modelling was not required as it would only confirm that the proposal will generate significantly lower noise levels than the quarry.

The amount of vehicular traffic that will be visiting the site on a daily basis is relatively small whereby an average of 35 heavy vehicle movements (comprising both ingress and egress movements) will occur. A total of six staff, employed from local residents, will also enter and exit the site on a daily basis Monday to Friday. This is substantially less than the traffic movements associated with the previous quarry activity (i.e. 60-65 heavy vehicle trips over an 8 hour period).

Bettergrow believes that correctly operating and functioning vehicles will not produce noise at a level that will be clearly audible at any of the sensitive receptors located along the Mitchell Highway.

The supporting Traffic report prepared by Thompson Stanbury Associates indicates that the amount of vehicular movements will not impact on the surrounding road network when considering the existing volume of road traffic along the Highway currently. Therefore one can conclude that the frequency of traffic movements will not add to the noise experienced along the Highway under current conditions.

Any defective vehicles or inappropriately silenced vehicles will not be allowed to return to the facility. As exit and entry to the site is through only one common access point (located on the south western side of the facility), it is considered that transport noise associated with the activity will not create nuisance for any other receptors located to the north, north –east, east and south-south south –easterly directions.

The only part of the development which is not located within the quarry void is the existing office/workshop complex. Construction noise generated outside the void area will therefore be negligible.

Prior to the commencement of composting, some construction is required within the void as follows:

- creation of contact water and stormwater retention dams utilising an excavator and dozer, compactor / roller;
- construction of the compost hardstand pads utilising a dozer, compactor /roller, dump trucks;
- construction of Gore cover concrete bay/pads and side walls as shown below utilising power tools for formwork and concrete trucks for the delivery and pumping of

Figure 33: Image of Concrete Bays and Gore Covers

Due to the depth of the void it is unlikely that noise nuisance will be caused at the nearest sensitive receptor during construction activities. It is believed that the void walls will reflect a significant amount of the sound pressure level emitted from the steady state noise sources that will operate on the void's floor and will likely facilitate a transmission loss of 35 dB (considered conservative).

Observation shows that the majority of the noise transmission from a source located on the floor of the void will be intercepted by the void walls and this was considered a design positive for the facility proceeding during initial site selection. The reflection afforded by the void side walls will ensure that background levels will not be exceeded.

The Amenity Criteria contained within Table 2.1 of the NSW EPA Industrial Noise Policy, states that the LAeq maximum value stipulated against day time hours for a rural residence must be no greater than 55 dB(A). The plant and equipment used, coupled with the attenuation afforded by the high void walls, will ensure that this value will not be exceeded.

It is considered that the noise amenity for the surrounding land uses will be maintained when composting operations commence. Appropriate control measures have been provided within the EMP (Appendix 8) which are outlined for onsite employees to adhere to. Bettergrow employees will be made aware that the surrounding acoustic environment, particularly to the north-north east of the site is likely to be dominated by natural sounds where road traffic is minimal and that tonal components, impulsiveness, intermittency, irregularity and dominant low-frequency noises could interrupt the normal acoustic environment.

Bettergrow is committed to maintaining and servicing all plant and equipment such that prominent tonal components, impulsiveness, intermittency, irregularity and dominant low-frequency noises do not occur.

With regards to noise generation when performing composting activities, one or two front end loaders will be operating, either mixing resources or turning and or moving compost windrows. A screening deck or trommel will be operated from time to time and will be loaded by one of the front end loaders.

Pumps transferring water will be utilised from time to time as will a water cart. Due to the location of the proposed pumps and distance from sensitive receptors, noise attenuation enclosures are considered unnecessary.

From time to time a shredder will be utilised to grind timber/wood or oversize organics. Prior to allowing a shredder to operate, Bettergrow will establish the noise level of the machine and if considered necessary, a physical noise barrier will be established.

The Site Manager will ensure that wherever possible, activities that utilise noisy equipment will be scheduled so that the combined noises do not occur concurrently.

With the attenuation advantage provided by the quarry void and with the above operational controls in place, it is considered that the intrusiveness criterion provided within the NSW EPA Industrial Noise Policy, January 2000, (namely that the level of continuous noise measured as the LAeq, 15 minute does not exceed the background noise level + 5 dB(A)) can be achieved.

Bettergrow is aware that in the event of a noise complaint, the EPA may ask for noise monitoring to occur. Bettergrow understands that it is important to note the wind speed and direction, cloud cover and other factors such as traffic or other significant noise if required to

perform noise monitoring by the EPA. If requested by the EPA, the Site Manager will be responsible for ensuring that noise monitoring is conducted.

Further detail on the above issues and others related to noise management at the Facility are provided in the relevant workplace procedure (refer to the EMP, Appendix 1, Section 2, Workplace Procedure 17 - Noise Management).

12.3 Traffic and Transport

The subject land accommodates a series of outbuildings previously associated with a quarry owned and operated by Hanson Pty. Ltd. The quarry has since been closed, but the remaining buildings will continue to be used to accommodate activities associated with the proposed recycling facility. The quarry development provided a supply of aggregates and other raw materials used for construction projects across NSW. On average, 2000 tonnes of rock/minerals was moved from the site over a typical daily period.

The existing vehicular driveway connecting an internal roadway and associated heavy vehicle parking area with Mitchell Highway (previously used for the quarry), will also be utilised by the proposed development. Vehicular connectivity between the development and the adjoining public road network is proposed to be facilitated by an existing 32m wide combined ingress / egress driveway connecting with Mitchell Highway, adjoining the southern site boundary.

An average of 35 heavy vehicle trips per day (comprising ingress and egress movements) will be generated during Monday to Saturday. A total of six staff members, recruited from local residents, will be based at the facility, each generating two vehicle trips per day.

Thompson Stanbury Associates was engaged to prepare a traffic impact study in accordance with the requirements of the NSW Roads and Maritime Services. (Appendix 3). The report concludes:

- *"The proposed access arrangements are capable of providing for safe and efficient vehicular movements during peak times. Access to the site from the westbound Mitchell Highway lane is readily facilitated by an existing right turn lane and a deceleration lane to allow through bound vehicles to pass the stationary vehicles wanting to turn right;*

- *The existing parking provision is sufficient in accommodating the proposed parking demand which is less than the parking requirements of the previous quarry development;*

- *The immediately adjoining road network currently operates with a good level of service during peak periods;*

- *The proposed development is expected to generate 35 daily heavy vehicle trips to and from the site. being significantly less than that capable of being generated by the previous development occupying the site; and*

- *The subject development is therefore not projected to have any unreasonable impacts on the level of safety and efficiency afforded by the surrounding road network."*

Accordingly, the proposal is unlikely to have any impacts in terms of traffic and transport.

12.4 Soil and Water

12.4.1 Soil

When considering the Department of Land and Water Conservation publication, Soil and Landscape Issues in Environmental Impact Assessment, Technical Report No. 34, second edition, it is acknowledged that the disturbance of soil and land resources during development or other land use activities has the potential for major impacts on the quality of the environment. Environmental problems raised within the above publication such as soil erosion, stream sedimentation, mass movement, soil pollution and altered hydrological regimes have been considered with this proposal and the following information is provided.

The proposed activity is to be located within the void of the former Mount Stewart quarry, with access already provided in the form of a bitumen haulage road from the Mitchell Highway, and with an amenities, office and workshop complex already in place. It is therefore unlikely that the abovementioned environmental problems will manifest themselves upon the receiving environment as bulk earthworks outside the void are not required.

The proposal does not include any releases of stormwater from the void where compost manufacturing is to be performed, as rainfall events up to and including a 1 in 100 year 24 hour rainfall event are accommodated within the water storage dams. As such, it is not expected that sediment laden waters will be released from the void nor is there any likelihood of water release which could cause the mass movement of soil.

In assessing the suitability of the site for the proposed activity, it is considered that manufacturing compost within the void space is a design positive when considering soil erosion and the mass transport of soil, with low soil and landscape limitations being presented.

The outer flanks of Mount Stewart do not pose a potential soil erosion or mass soil movement scenario and it is unlikely that the proposed activities will increase that risk. Good grass coverage is evident surrounding the mount and there is no indication of the surrounding soil being dispersive in nature. There is no evidence of sheet, rill, gully or tunnel erosion.

The site is not located within a flooding zone and as such compounding effects are unlikely to occur when such an event occurs on flood prone land.

The activity will not result in the sterilisation of surrounding land with manufactured products being tailored for the agricultural sector. In essence, poor soil conditions that exist within the immediate local area could in fact be rectified through the application of compost that is created. Manufacturing compost at the proposed location could very well result in local soils being enhanced reducing such pressures as soil salinity, sodicity and poor drainage and nutrient status.

In the immediate area, there is no evidence of salinity or sodicity. The indicator utilised for this assertion was the consistent growth of grassland surrounding the site with no evidence of salt accumulation.

Minimal soil movement and reshaping will be required within the void to construct a functional facility, another reason why the site was selected as being appropriate. Discrete soil

sampling was not considered as being necessary as the proposal does not include the irrigation of effluent or contaminated stormwater to land. It is to be noted that acid sulphate soil does not occur in the former quarry nor is there any evidence of acid mine drainage from the quarrying that has occurred.
Following the closure of the former quarry, Hanson Construction Materials Pty Ltd commissioned Martens and Associates to prepare a site contamination assessment and a validation report following remediation. These reports are attached to this EIS as Appendices 6 and 7.

The assessment identified that the following areas have potential for contamination:

- Office building, maintenance shed and weighbridge
- Fuel storage area and wash-down bay
- Site transformer
- Former crushing plant area

The site contamination assessment concluded as follows:

> Site investigations indicate hydrocarbon soil contamination was observed near surface at levels above ESL and Management Limits provided in ASC NEPM (1999, amended 2013).
>
> Minor soil contamination is likely to be isolated and is not expected to pose a risk to ongoing site use for commercial/industrial site. Observed levels are well below direct contact SAC and do not pose significant health risk to future users. ASC NEPM (1999, amended 2013) suggests that observed levels may limit or adversely affect vegetation growth in this small area.
>
> If future site use changes, then we would recommend additional testing and assessment of risk in areas of proposed development and where direct contact with soil is anticipated.

The subsequent validation report confirms that the identified areas of contamination have been remediated.

When considering the design of the hardstand pads, Bettergrow is confident that mass movement of soil and or compost will not occur. The gradient of the hardstand pads will be such that stormwater velocity will not be excessive and will conform to a slope of 1% and no greater. Similarly the drainage channels will not be constructed such that stormwater flowing within its confines is erosive. The slope of drainage channels will be no greater than 1.5 %. This will ensure that stormwater and contact water containment ponds are not filled unnecessarily with sediment.

Compost windrows will be positioned parallel to the gradient of the hardstand pad such that mass movement of product does not occur in times of stormwater generation.

12.4.2 Water

Whilst the Facility is not considered to be free draining, Bettergrow will segregate clean and dirty water. Clean stormwater will be utilised for dust suppression outside the compost hardstand pad. Clean stormwater will also be utilised to irrigate internal and external batter slopes to maintain vibrancy in grass and trees planted as part of site beatification works.

It is unlikely however that clean stormwater will be released under controlled conditions to the rock lined drainage channel leading in a north-easterly direction from the eastern batter slope of the void where water would disperse across contoured grazing paddocks.

Contaminated stormwater generated on the compost pad will not be released from the site, but rather used for dust suppression on the pad itself and also as water for composting. In some instances when the leachate dam is dry any contained clean water will be utilised for these purposes To ensure that matured compost maintains an appropriate level of moisture, uncontaminated stormwater will be utilised from time to time so as to keep micro-life alive.

Bettergrow is committed to ensuring that ponding and pooling of stormwater and leachate does not occur on the surface of the hardstand pad. Therefore, where larger obvious and easily accessible pools or ponds of leachate are observed on the surface of the hardstand pad this leachate will be contained and collected (utilising additional compost, garden organics, sawdust or soil) such that it can be reincorporated into compost mixes.

All drains and surface gradients designed for the transport of leachate and stormwater to the onsite ponds will be maintained in a state that is free of vegetation and debris, such that the flow of stormwater or leachate is not obstructed or impeded. Therefore, all drains and surface gradients will be regularly inspected to ensure their integrity.

Section 13.3 Maintenance Practices and Procedures of the EMP provides further information regarding the maintenance of stormwater drains, the hardstand pad area and the bed and banks of onsite ponds for the benefit of onsite Employees. It illustrates the importance of early observation and the need for efficient operation of equipment and machinery to minimise damage to the hardstand pad as a way of demonstrating Bettergrow's commitment to the safeguarding of such infrastructure. As a special note, clay will be contained onsite and will be used for minor repair work that may need to occur from time to time to drains, pads, or the containment dams.

Further to the above the importance of keeping contained stormwater in an aerobic or facultative state so as to minimise the incidence of creating offensive odour is also recognised. Contained stormwater management at the Facility is largely affected by the contaminants that may or may not be contained within the water column.

Workplace Procedure 14 –Dam Management located in Appendix 1 Workplace Procedures, Section 2 of the EMP highlights possible issues that may arise resulting in the contamination and the subsequent requirement to manage stormwater in a certain manner and the procedures that need to be implemented to avoid these situations from occurring. Importantly, this procedure highlights the need for all onsite ponds to have various parameter checks conducted regularly (refer to Section 10.2 Containment Pond Monitoring below for list of parameters) to inform Facility management and the necessary authorities of any contaminants or levels recorded that could have adverse effects if released to the environment.

When considering section 5.2 – Waste Disposal and Reuse Activities[12], all resources will be managed on an impermeable pad so as to minimise any leaching. Groundwater could be affected due to uncontrolled releases of contaminants through the bed and banks of onsite ponds or through ill-maintained hardstand pads. However, it is extremely unlikely that contaminants will be released to groundwater as a result of the proposed operations to be

[12] Department of Land and Water Conservation, Soil and landscape Issues in Environmental Impact Assessment, Technical Report No. 34, second edition

conducted at the Facility, because of the direction and containment of all stormwater to onsite dams, the monitoring of these ponds and maintaining the structural integrity of these ponds.

Notwithstanding the above, regular groundwater monitoring will occur to ensure that contamination does not occur. Accordingly, Bettergrow will test the existing bore located on the land prior to commencement for the following contaminants.

Parameter	Frequency
Biochemical oxygen demand (BOD) (mg/l)	Every 6 months
Conductivity (mS/cm)	
Faecal Coliforms (CFN/ 100 ml)	
Nitrogen (total) (mg/l)	
pH (pH units)	
Phosphorus (total) (mg/l)	
Total copper, chromium, zinc, selenium, nickel, lead and mercury (mg/l)	
Total organic carbon (mg/l)	
Electrical conductivity (mS/cm)	
pH	

The results of the initial testing will be used as a baseline for comparison with tests to be conducted very six months following commencement of the facility.

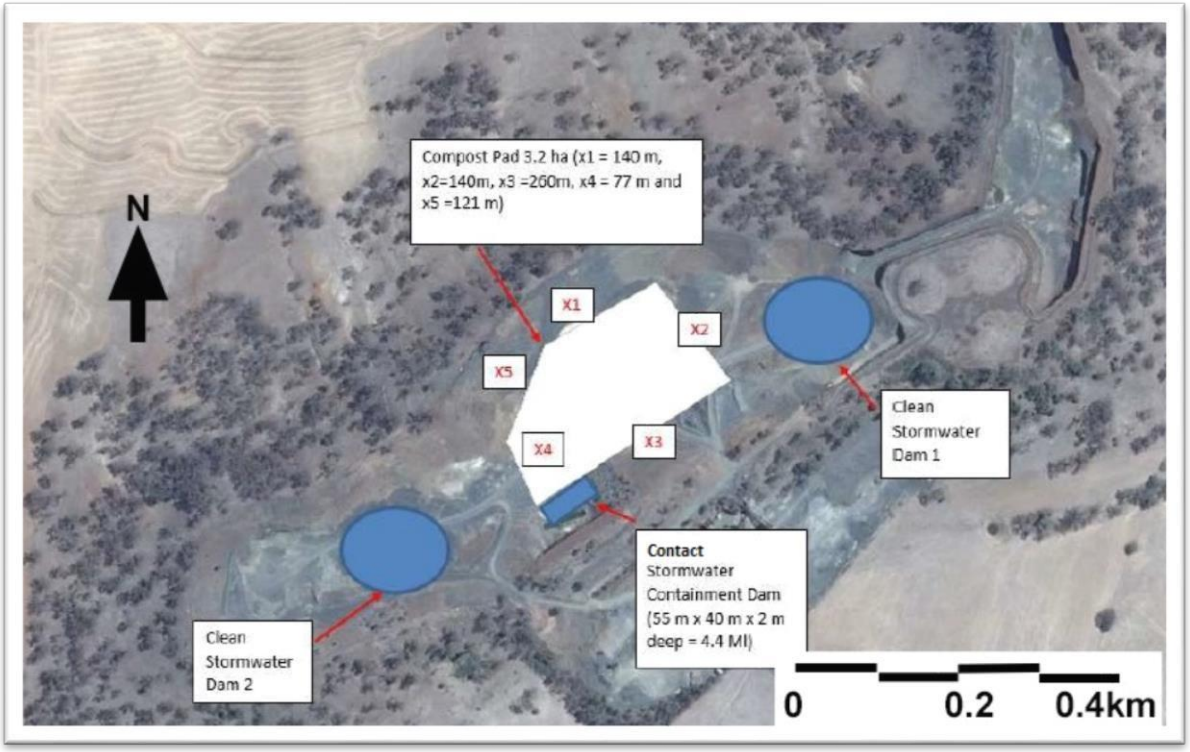
During operation of the facility if an employee makes an observation that the structural integrity of a drain, a dam or the hardstand area has been compromised, the Site Manager will be notified so as to enact prompt attention. The Site Manager will then ensure necessary steps are taken to rectify the issue and ensure the structural integrity of the ponds, drains or hardstand pads are maintained in the future.

12.4.3 Water Balance

It is to be noted that ordinarily no releases will occur from the void. The following information is provided in respect of water volume that will be generated by annual average rainfall, storage capacity of the proposed dams and water usage.

When considering the annual average rainfall that occurs, 114 ML of water will be generated within the void (The void is 19 ha). As described within the EMP two clean stormwater dams will retain stormwater that is generated within the void and which is external to the pad.

Figure 34: Stormwater Catchment within quarry floor- Indicative locations only



The quarry void is considered as two areas where the western side represents 11.8 ha and the eastern side represents 7.2 ha. Within these two areas, operational areas are subtracted as water that falls in this area will drain to the contact water containment dam.

Operational areas will be surrounded by an earthen bund directing clean waters away from the operational area.

Therefore for the western section:

- 11.8 – (0.52 + 1.5) = 9.78 ha will drain to the western stormwater containment pond.

Therefore the eastern section:

- 7.2-1.8 = 5.4 ha will drain to eastern stormwater containment pond.

Stormwater generated within the 0.56 ha area utilised for the storage of finished product will be contained within the eastern stormwater containment dam as it is considered to be stable.

The sizes of both the western and eastern stormwater containment dams are as follows:

- Western dam – 90m x 40m x 3 m deep = 10,800 m3.
- Eastern dam – 50m x 50m x 3 m deep = 7,500 m3

When considering that ~ 132 mm of rain will fall during a 1 in 100 year 24 hour event, the western dam in such an event would spill over 2.12 ML of water to the surrounding void floor as it could only contain 10.8 ML of the 12.91 ML produced. As the hardstand pads will be slightly raised, inundation in such an event will not occur.

The dimensions for the eastern dam can accommodate a 1 in 100 year 24 hour event, considering that 132 mm falling in the 5.4 ha space will generate 7.13 ML of stormwater.

The contact water storage dam is to service 3.82 ha of hardstand. The said dam has been design to cater for a 1 in 100 year 24 hour rainfall event. The dimensions of the contact water storage dam are as follows:

- 45 m x 40 m x 3 m deep = 5,400 m3

When considering a 1 in 100 year 24 hour event, ~ 5.04 ML will be generated within the 3.82 ha area.

To check the balances for a 1 in 100 year 24 hour event then all areas should equate to 25.08 ML:

> Western side 12.91 ML + Eastern side 7.13 ML + contact water dam 5.04 ML = 25.08 ML

When considering the total amount of water generated within an average year, Bettergrow will effectively utilise this amount for the purposes of dust control, moisture control within windrows, clean down and wash-out waters.

When considering the monthly water use, 114 Ml/ 12 months equates to a monthly water usage of 9.5 ML of water or ~ 316,666 l / day assuming 30 days.

The BOM highlights that there are on average 70.5 days/ year of rain (rainfall > 1 mm) or 5.88 days / month on average. Commensurate with this, there is ~ 24.54 days of no rain / month on average.

Keeping in mind on average, there will be 4 Sundays / month where the facility is closed. Therefore that leaves ~ 20 days / month where water will be required.

Assuming that there is 20 days / month where water is required, then ~475,000 litres will be required for use on a dry day.
Utilising 5 l / m2/day for dust suppression on average and the fact that the total area requiring dust suppression is ~ 74,040 m2, then ~ 370,200 litres of water will be utilised / day.

A 20,000 litre water cart would make 18.51 trips / day or 1.851 trips / hour for a 10 hour day. After this amount is taken into account, there would be ~ 104,800 litres remaining for other uses.

When considering the approximate amount of evaporation that would occur from onsite stormwater and contact water containment ponds (estimated to be ~39,170.83 litres), there would be ~65,629.167 litres remaining.

Approximately 40,000 litres / day would be utilised for the wash out of containers and wash down of trucks, leaving ~ 25,629.167 litres of water. This remaining water would be utilised in compost moisture addition. On average, ~ 4 windrows / day would have moisture addition to maintain efficient composting.

It is to be noted that the wash waters would also be injected into compost windrows. Approximately 6.35 windrows would have moisture injected at 5l / m3/ day.

The following water balance table summarises the above and demonstrates that based on a daily usage, all stormwater generated within a year could be successfully utilised for onsite operations. It is likely that during some months, water from the onsite bore will be utilised.

Water Balance Summary

		Notes
Average Yearly rainfall (mm)	604	BOM Stats
Average Annual # of Days of Rain > 1mm	70.5	BOM Stats
Average Annual # of Days of No rain	294.5	BOM Stats
Average Annual Total Volume of stormwater produced in void (L) ~19 ha	114,000,000	19 ha x 10000 x 0.604
Average monthly # of Days of rain	5.88	
Average monthly # of Days of no rain	24.54	
Average monthly Stormwater Produced in void (L)	9500000	B5/12
Avergae daily amount to be used on dry days (assuming 30 day months - 4 Sundays - 6 days for rain)	475000.00	B8/B11
Water requirment for dust supression		
Average # of days / month for dust supression use (assuming 30 day months - 4 Sundays - 6 days for rain)	20	
Area of operation requiring dust supression (square meters)	74040	
Amount of water applied on a daily basis for dust supression (~5 L / m^2/ day)	370200.00	
Amount of truck movements	18.51	
Residual amount of water not utilsed for dust supression / day	104800	
Evaporation from ponds		
Total surface area of stormwater and contact water containment ponds (metres^2)	7900	
Evaporation (mm) annually	1700	
Average monthly evaporation (mm)	141.67	
Average monthly evaporation * (0.7 correction factor for ponds) (mm)	99.17	
Average monthly evaporation from ponds (metres^3)	783.417	B20/1000xB17
Average monthly evaporation from ponds (litres)	783416.67	B21 x 1000 l/m^3
Average daily evaporation from ponds (litres)	39170.83	B22/20
Remaining daily water (after evaporation) (litres)	65629.167	B15-B23
Water requiremnts for wash outs and wash downs		
Avergae daily water usage for wash outs and wash downs (litres)	40000	
Remaining daily water (after wash outs and Wash downs) (litres)	25629.167	
Water requirement for windrows @ 5 litres / cubic metre		
Total volume of windrow (m^3)	1,260	
Total injected water / windrow (litres)	6300	
# windrows that can have onsite water applied	4.07	
# of windrows that can have wash down and wash out waters applied	6.35	
Residual water remaining after daily usage	0	475,000-370,200-39,170.83-40,000-(4.07x6,300)=-11.83 litres

12.5 Hazards and Risk

To ensure that the receiving environment is protected, an Environmental Management Plan (EMP) that accurately describes how the Site will be managed must be implemented. The attached EMP, including Appendix 1 and Appendix 2 provides adequate information with regards to the protection of the receiving environment for when site personnel are performing various tasks.

The EMP describes routine procedures and provides contingency plans for the different aspects of the Facility to ensure that the receiving environment is protected. The EMP demonstrates Bettergrow's capacity to manage possible environmental impacts that may arise whilst carrying out the various activities.

Bettergrow is committed to ensuring that all employees are aware of the importance of following the workplace and emergency procedures contained within EMP, including an understanding of how the workplace and emergency procedures are to be implemented and the expectations placed upon them with regard to the management of onsite activities. Accordingly employees will receive specific training in all aspects of the activities. In some cases this may involve using specialists to deliver training.

The EMP also provides procedures on emergency situations such as releases to waters and how Bettergrow will respond to an environmental incident.

12.5.1 Biosecurity

The NSW Department of Primary Industries (DPI) advises that for composting facilities there is the potential for both plant and animal diseases to cause a biosecurity risk to agriculture. Possible pest and animal disease risks include Queensland fruit fly, potato cyst nematode and American Foulbrood disease. Although not specifically mentioned by DPI in their response to the EIS preparation, there is also potential for grapevine phylloxera (a small aphid-like insect that lives and feeds on the roots of grapevines) to be present in material which may be brought to the Facility.

The composting process described within this EIS and the Environmental Management Plan (EMP) incorporates best practice environmental management methods for the stabilisation and transformation of various organics into a stabilised clay humified compost. The EMP has been created to also manage host plant material that is potentially infested with phylloxera in accordance with Compliance Arrangement CA-05 'Biosecure transport and treatment of host plant material destined for recycling or waste'.

The initial composting under the gore-covered windrows will also effectively manage organics contaminated with the potato cyst nematode (PCN) even though it can be stated at this time that no such material has been identified as an ongoing resource at the proposed facility. The fact that composting with forced aeration will occur initially for a number of weeks will ensure that the PCN would be destroyed as it would be exposed to consistent elevated temperatures.

From the methods to be adopted at the proposed facility, it is remote that biosecurity risks to surrounding agricultural uses will occur.

The EMP requires that products are created in accordance with the AS4454-2012 Composts, Soil Conditioners and Mulches. Control measures and methods of management are provided within the EMP whereby if adhered to, a low to non-existent biosecurity risk will be

created. Appropriate contingency plans are provided within the EMP and take the form as Workplace Procedures.

All fruit and vegetables will be processed promptly upon receival such that Queensland Fruit Fly will not be allowed to proliferate.

The composting process involves a variation in pH of material, extensively hot temperatures within the windrows and a significant turning regime. Accordingly, it is unlikely that organic matter infested with American Foulbrood disease would survive a composting environment.

Weeds, seeds and propagules will be effectively destroyed due to the composting regime that is proposed. For the management of weeds that establish on site, including any soil stockpiles, a detailed workplace procedure has been provided that requires various controls to be implemented.

Vector and Pest attraction management is also provided for within the EMP. The EMP requires that effective sanitation occurs on site.

All delivery vehicles being required to be effectively tarped, sealed and or contained. Therefore it is remote that any pests or diseases will be transported far and wide throughout the receiving environment.

Livestock will be prevented from entering the Facility.

12.5.2 Fire

Due to the composting regime adopted, it is remote that a fire could be started within the Facility. The yearly rainfall within the void space will be effectively utilised throughout the Facility for various activities as described within this EIS and the EMP. One of the uses will be for dust control on hardstand and haulage road surfaces and moisture control within windrows.

Notwithstanding the above, there is a risk of spontaneous combustion within compost if not correctly managed. Workplace Procedure 8 – Spontaneous Combustion Prevention details the correct control measures to prevent such an incident.

12.5.3 Chemical and Fuel Storage

The development does not involve the storage of hazardous materials other than for the routine operation and maintenance of plant and equipment used in processing organic resources. The following table is an extract from the Environmental Management Plan.

Appendix 2 – Table 1: Chemicals to be stored at the GRP and the associated maximum limits

Chemical Description	Maximum Limits
Cleaning products for various uses[1]	20 litres per product
Diesel	2,000 litres[2]
Petrol	15 litres
Hydraulic oil	20 litres
Transmission oil	20 litres
Engine oil	20 litres
Concentrated radiator coolant	20 litres
Glyphosate or similar	20 litres
Grease	200 litres
Proprietary products that are utilised in composting, including bacterial inoculum and bio-stimulants:	
• humates and/or fulvates;	100 litres
• Effective Microorganisms (EM); and	100 litres
• BioAktiv.	50 kilograms
Notes: [1] Cleaning product must be non-toxic and biodegradable whenever possible.	

It is clear from the volume of materials to be stored on site that there are no specific hazards to surrounding properties. All chemicals will be stored and handled according the manufacturers specifications.

12.6 Biodiversity

Envirotech Environmental and Engineering Consultancy Services were engaged to assess the biodiversity of the site.

In summary, the endangered ecological communities Tableland Basalt Forest, and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland were observed on or near the site in a degraded condition. The proposal will not remove any portion of these vegetation communities, as they are situated on the external perimeter of the active site and not within the footprint of the proposed operational areas.

The complete Biodiversity Assessment Report is included as Appendix 5 to this EIS.

The Envirotech report makes the following conclusions:

> *This report assesses whether any threatened flora and fauna species, endangered populations, endangered ecological communities and groundwater dependent ecosystems (GDEs), are likely to be impacted upon by the proposed compost and soil conditioner manufacturing operation. It addresses the Threatened Species Conservation Act (1995), the Environmental Protection and Biodiversity Conservation Act (1999) and the Secretary's environmental Assessment Requirements (SEAR) for biodiversity for this development.*
>
> *No threatened flora or fauna species were observed on the site during the flora and fauna surveys. No Groundwater Dependent Ecosystems will be affected by the proposal.*
>
> *The endangered ecological communities Tableland Basalt Forest in the Sydney Basin and South Eastern Basin Bioregions, and White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland were observed on or near the site.*
>
> *No other threatened species, endangered populations or endangered ecological communities listed on the schedules of the NSW Threatened Species Conservation Act 1995, or the Commonwealth Environment Protection and Biodiversity Conservation Act 1999 were recorded in the study area.*
>
> *Following the application of the seven factors from Section 5A of the NSW Environmental Planning and Assessment Act 1979, as required by the NSW Threatened Species Conservation Act 1995, in accordance with relevant assessment guidelines, it is concluded that the proposal is unlikely to have a significant effect on threatened species, endangered populations, ecological communities, or their habitats. A Species Impact Statement is not required for the proposal.*
>
> *Following consideration of the administrative guidelines for determining significance under the Commonwealth Environment Protection & Biodiversity Conservation Act 1999, it is concluded that the proposal is unlikely to have a significant impact on matters of National Environmental Significance or Commonwealth land, and a referral to the Commonwealth Environment Minister is not necessary.*
>
> *A number of impact mitigation and amelioration strategies have been recommended for the proposal. These strategies mitigate the effects of the proposal on threatened species, endangered populations, ecological communities, or their habitats and minimise the impacts of the proposal on the flora and fauna values of the study area in general.*

The report also makes the following recommendations:

A Construction Environmental Management Plan (CEMP) should be generated, to ensure that correct construction practices with respect to Environmental management of the site, are undertaken. After construction the recommendations should be followed through in an Environmental Management Plan. These plans should include the following:-

Training

- *Personnel involved in construction practices should be trained in environmental management practices for the site. In particular, protection mechanisms should be put in place to prevent any possible degradation to the onsite EEC's as a result of construction practices.*
- *Speed limits to stop interaction with fauna and machinery.*

Vegetation:

- *Where possible, clearing for the proposal should be undertaken such that areas of native vegetation to be retained are not impacted during construction works.*
- *A vegetation management plan should be implemented to conserve native vegetation and communities.*
- *A weed management plan should be implemented.*
- *The extent of vegetation removed from the quarry floor is to be replanted in a more suitable location either within the quarry or around the outskirts of the quarry within the identified endangered ecological communities.*

Offsetting the Impacts:

- *If any fauna is injured during construction works WIRES should be called immediately.*
- *Appropriate sediment control measures should be established before the commencement of work on the proposal and retained in place until all work is completed.*
- *Vehicles and machinery should only be driven/parked on existing roads and restricted areas in order to protect the off-site habitat surrounding the study site.*

The Environmental Management Plan (Appendix 8 to this EIS) adopts the recommendations of the Envirotech report. Based on the detailed assessment carried out by Envirotech, it is submitted that the proposal will have no impact in terms of biodiversity.

12.7 Visual Impacts

The total land holding comprises approximately 1,000 hectares, and is generally bounded by the Macquarie River to the north, Dunkeld Road to the west, Mitchell Highway to the south and has an eastern boundary to the west of Sawpit Creek.

The land was, until recently, used as a hard rock quarry. A separate cleared area of approximately 4 hectares, with a mostly all-weather surface, including, workshop, office, weighbridge and wash bay, was also utilised by the quarry.

The remainder of the land is comprised of undulating pastures with scattered trees which is used for sheep grazing. The highest point of the land, Mount Stewart, has an elevation of some 750m AHD and is the south-eastern point of a ridgeline which runs to the north-east for a distance of approximately 1,200 metres. The north-eastern point of the ridgeline is marked by the Mount Stewart Private Cemetery.

The quarry was excavated from within the ridgeline which has created a quarry floor some 15 metres below the remaining rim around the ridge. Mount Stewart is visible from all directions, forming a prominent local landmark.

The main composting activities, ie windrows, mixing, turning, plant and equipment will be located within the existing quarry floor, some 15 metres below the Mount Stewart Ridgeline and will not be visible on the landscape from any surrounding vantage points. The following photographic study confirms that the main area of activity will not be visible.

Figure 35: Location from which images were taken

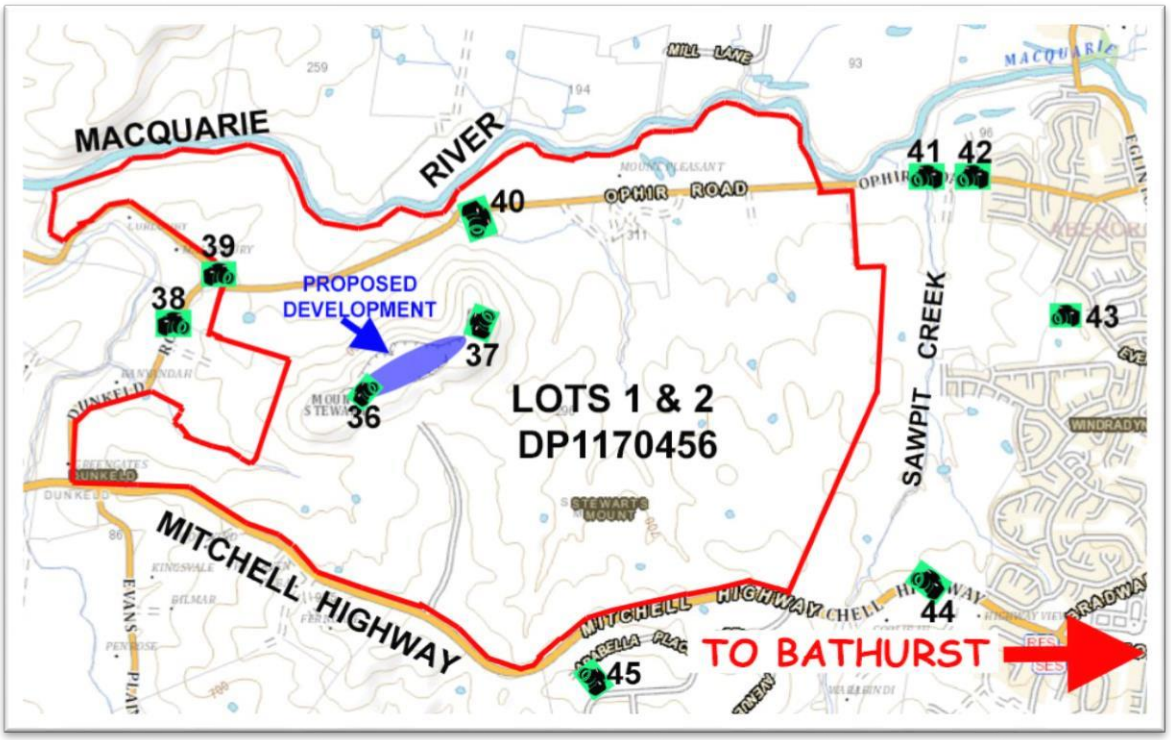


Figure 36: View of Main Quarry Floor – Proposed composting area (looking north)

Figure 37 below demonstrates the relationship between the quarry floor, the surrounding rim of the ridge and the surrounding landscape.

Figure 37: View of Northern Quarry Wall – (looking north-west)

Figure 38: View of Mount Stewart from Dunkeld Road (looking east/south-east)

Figure 39: View of Mount Stewart from Dunkeld Road/Ophir Road Intersection (looking south-east)

Figure 40: View from Ophir Road (looking south)

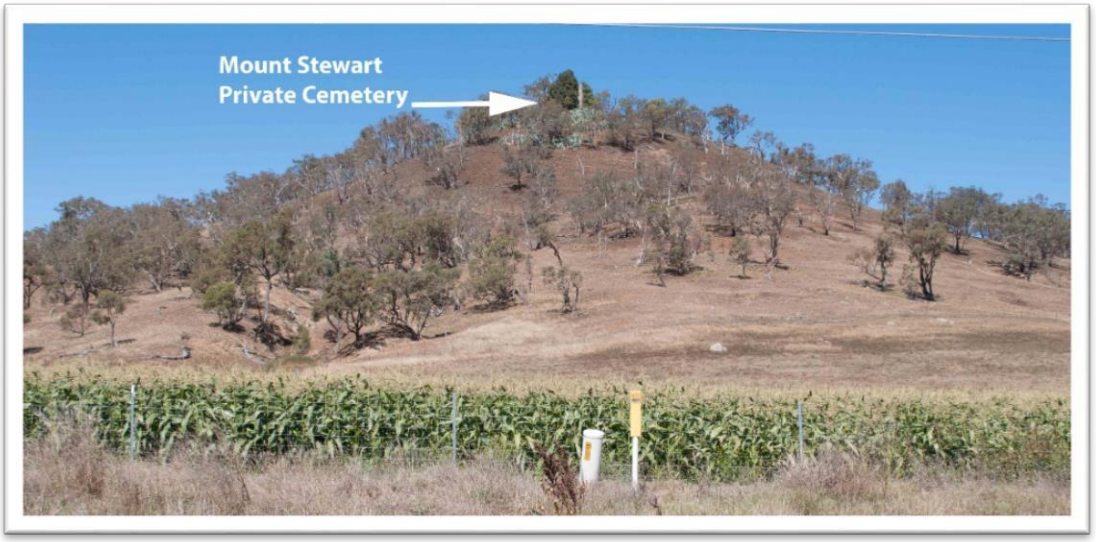


Figure 41: View from Abercrombie House (looking west/south-west)

Figure 42: View from Ophir Road / Howarth Close (looking south to west)

Figure 43: View from Evernden Drive (looking west)

Figure 44: View from Mitchell Highway (looking north-west)

Figure 45: View from Arabella Place (looking north-west)

It is clear from the photographic survey that the activities proposed within the existing quarry floor will not be visible from any surrounding properties or public places.

Figure 37 demonstrates that part of the receiving area (ie existing office, workshop, weighbridge and parking area) may be visible from some of the residences in Arabella Place. However, it is pointed out that this area occupies a very small portion of the view from this aspect as the area is located a distance of some 1.5 kilometres from the closest residence in Arabella Place. The application proposes no buildings or structures in this location. Rather, the proposal will utilise the existing facilities. Therefore the view will not change as a consequence of the proposal.

It is considered therefore that the proposal will have no visual impact at private receptors and public vantage points.

12.8 Heritage

The subject land contains two items of local heritage significance as listed in Schedule 5 of Bathurst Regional LEP 2014:

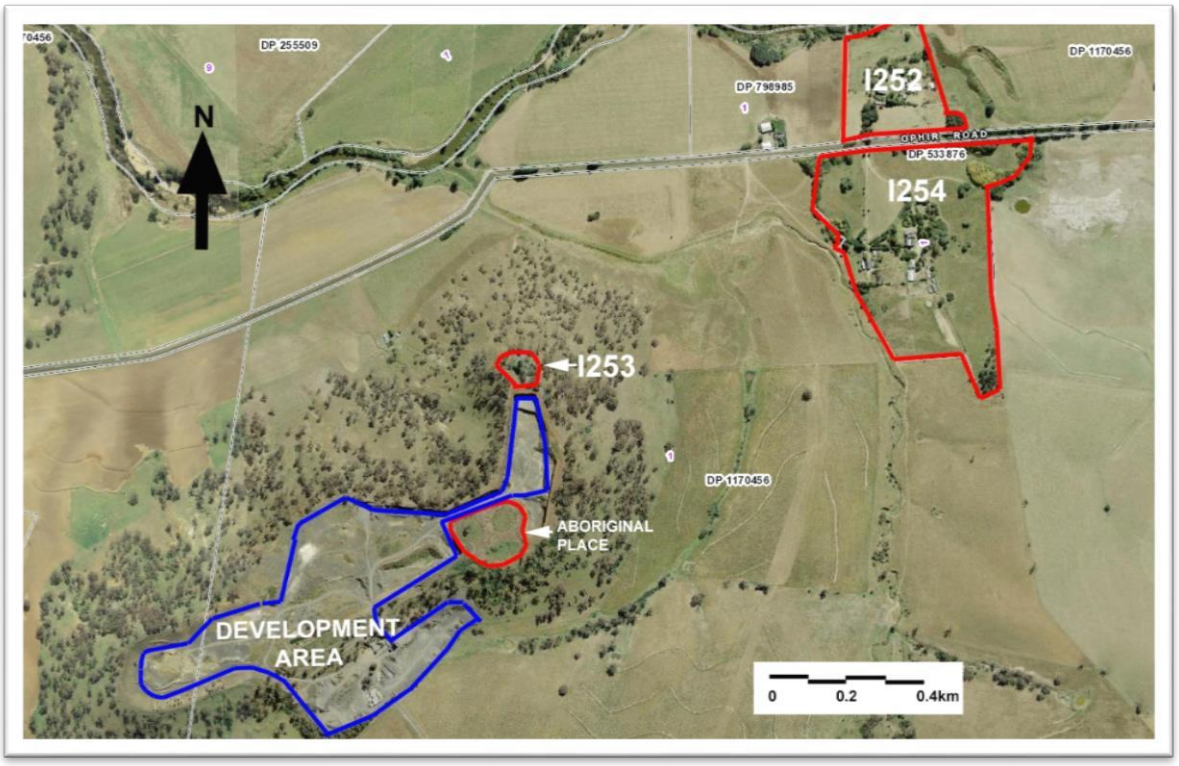
- Item I253: “Mount Stewart Private Cemetery”; and
- Item I252: “Strath”

An Aboriginal place of significance is also located on the land.

Abercrombie House (Item 254) is located adjacent to the eastern boundary of the land.

Figure 46 is a satellite image which shows the relationship of the proposal to the heritage items.

Figure 46: Relationship to Heritage Items. Source LPI SIX Maps, BRLEP 2014 Heritage Map – Sheet HER_005C



Item I253: “Mount Stewart Private Cemetery”

This item is located at the northern-most point of Mount Stewart. The obelisk and exotic plantings are visible from Ophir Road, but not from the development area. Access to the Item is via the existing road system within and surrounding the existing quarry. The cemetery is not visible from the quarry floor or from any part of the development area.

Item I252: "Strath"

Although located on the same property this item is located on a discrete parcel which is physically separated from the main property, some 1.5 kilometres to the north-east of the development area on the northern side of Ophir Road. There is no physical relationship.

Item I254: Abercrombie House

The subject land is located within the vicinity of Abercrombie House, which is located some 1.2 kilometres to the north-east of the development area. Abercrombie House is listed in Schedule 5 as an item of local heritage significance, Item 254.

Aboriginal Place

Discussion with the Bathurst Wiradyuri and Aboriginal Community Elders reveals that a place of Aboriginal cultural significance exists within the land. It is understood that the site is both significant in terms Aboriginal men's and women's culture. The site is located on the plateau above the wall of the northern quarry and is not included within the development area.

The applicant consulted with Bathurst Wiradyuri and Aboriginal Community Elders and the Local Aboriginal Land Council prior to preparing this EIS. No objection was raised to the proposal, as long as no general access is available to this cultural site.

The site is identified in the Environmental Management Plan as a designated "no go" zone. The EMP states that "no vehicle should be driven in this area and waste must not be disposed or stored in this area."

Additional detail and assessment of heritage impact is included within Section 8.5 of this EIS.

It is considered that the proposal will have no impact in terms of identified items of European and Aboriginal heritage.

13 Summary of Measures to Mitigate Adverse Effects

As required by clause 7 (1) (e) of the Schedule 2 of the *Environmental Planning and Assessment Regulation 2000*, the following table is a compilation of measures proposed to mitigate any adverse effects. The EMP procedures column provides references to the relevant operational responses within the Environmental Management Plan.

Potential Impact	Mitigation Measures	EMP Procedures
Air Quality (dust to receptors)	• Control of moisture content in compost windrows • Quarry walls provide initial barrier	Workplace Procedure 2 – Gore Covered System & Open Windrow Construction & Maintenance Workplace Procedure 8 – Spontaneous Combustion Prevention), Workplace Procedure 11 – Dust and Particulate Management)
Offensive Odour	• Maintaining aerobic activity within compost • Maintaining correct temperature of compost to achieve pasteurisation • Use of Gore-Tex covers to better control moisture, air and temperature • Ensure water in ponds is regularly tested for PH and oxygen levels • Careful control of resource deliveries and primary handling to prevent fugitive odours	Workplace Procedure 1 – Waste Receival and Unloading; Workplace Procedure 2– Gore Covered System & Open Windrow Construction & Maintenance; Workplace Procedure 4 – Finished Compost Stockpile Management. Workplace Procedure 12 – Odour Management Workplace Procedure 16 – Rain Induced Anaerobic Windrows
Noise	• Quarry walls provide significant passive noise attenuation • All plant and equipment maintained to ensure manufacturer's specifications are not exceeded • Non-compliant trucks will be refused entry to site until repaired • Additional physical noise barriers may be installed if necessary for use of trommel or shredder.	Workplace Procedure 17 - Noise Management Section 13.3.1 – Daily Equipment Machinery Checklist
Traffic	• Average 35 heavy vehicle movements per day • Existing internal road and intersection with Mitchell Highway to be used for all traffic movement	N/A
Soil	• No soil disturbance other than ponds to be excavated within quarry void. • Any sediment from compost activity will be caught by ponds within quarry void.	Workplace Procedure 20 – Weed Management Emergency Procedure 3 – Spill Management

	• Stormwater retention designed for 1in 100 year storm event ensuring no movement of soil. • Ongoing weed control. • Spill management procedures in place in case of waste or fuel spill.	Workplace Procedure 1 – Waste Receival and Unloading; Workplace Procedure 2 – Gore Covered System & Open Windrow Construction & Maintenance; Workplace Procedure 4 – Finished Compost Stockpile Management); Workplace Procedure 18 – Waste Management.
Water contamination	• Clean stormwater separated from process water and stored in separate ponds. • Contact stormwater will not be released from the site, but rather used for dust suppression on the pad itself and also as water for composting. • All drains and surface gradients designed for the transport of stormwater to the onsite ponds will be maintained in a state that is free of vegetation and debris, such that the flow of stormwater is not obstructed or impeded. • Groundwater testing prior to commencement to establish baseline, followed by six monthly testing during operation.	Workplace Procedure 14 – Dam Management Workplace Procedure 15- Ground Water Monitoring Emergency Procedure 3 – Spill Management Emergency Procedure 4 – Release to Groundwater
Biosecurity	• Best practice management employed in all parts of process. • Raw material separated from pasteurised compost • Equipment will be utilised to handle products in the order of most mature to least mature to prevent cross contamination. Where this does not occur, wash-down processes are detailed within the EMP.	Workplace Procedure 5 - Cross Contamination prevention and Clean down
Fire Source	• Moisture in compost generally prevents combustion • Careful temperature and air monitoring of windrows to prevent excessive temperature build up	Workplace Procedure 6 – Temperature Monitoring Workplace Procedure 8 – Spontaneous Combustion Prevention Emergency Procedure 2 – Fire Management
Waste, chemical or fuel spillage	• Only small amounts of chemicals and fuels stored on site for daily operation. • All chemicals stored and used as per manufacturer's specifications	Emergency Procedure 3 – Spill Management
Biodiversity	• Implementation of a vegetation management plan to conserve native vegetation and communities. • Implementation of a weed management plan. • Any vegetation removed from within the quarry area is to be replanted in a	Workplace Procedure 20 – Weed Management

	more suitable location either within the quarry or around the outskirts of the quarry	
Visual	• All resource processing and compost manufacture will occur on the quarry floor, which is not visible from surrounding area. • No changes are proposed to existing internal road, workshop or office buildings, which can be partially viewed from the south-east.	N/A
Aboriginal Place	• The site is identified in the Environmental Management Plan (EMP) as a designated “no go” zone. • The EMP states that “no vehicle should be driven in this area and waste must not be disposed or stored in this area.”	EMP page 45

14 Conclusion

This Environmental Impact Statement addresses the potential impacts of a proposed resource recovery facility to be established within the former hard rock quarry located at 296 Mitchell Highway Stewarts Mount.

The Facility will remove up to 99,000 tonnes of material each year from the waste stream to create natural organic soil conditioning products for use in agricultural land improvement within the region.

There is a need for the Facility and it has been justified in that it will remove a considerable amount of material from the waste stream to produce a natural agricultural soil improver through a low impact composting process.

The previous quarrying activity has left the legacy of a highly modified landscape which provides advantages for the proposed development. In particular, the existing quarry floor and the resultant basin effect will shield the activities from view from surrounding lands and vantage points. The modified landform also assists in managing and minimising other potential environmental impacts.

Bettergrow recognises that adopting BPEM methods means that money is spent efficiently to gain beneficial environmental outcomes. As demonstrated in this EIS, the proposal will utilise the current best technology available for composting and provides a strong commitment to ongoing process improvement and training to ensure effective and efficient management of resources and environmental management.

This proposal is an excellent use of the sterile environment which has resulted from many years of quarrying the subject site. The proposal also has a number of benefits in terms of the broader environment, including:

- the recovery of significant volumes of valuable resources from the waste stream;
- providing opportunities for agricultural improvement in the region through the manufacture and supply of soil conditioning products;
- providing local employment opportunities on-site for operation of the Facility and off-site through transporting materials to and from the site;
- ensuring that the existing Aboriginal cultural significance site is protected;
- the conservation and enhancement of native vegetation which exists on the land.

The EIS demonstrates that the proposed development satisfies the principles of ecologically sustainable development and will operate with appropriate mitigation measures to minimise environmental impacts. The Environmental Management Plan (Appendix 8) is a key document which provides confidence for authorities that the Facility will be properly managed.

The proposal satisfies all relevant statutory requirements and is an eminently suitable use for this highly modified area of the land.

It is submitted that the consent authority can be satisfied in relation to the environmental impacts, and the proposal is therefore recommended for approval.

15 Dictionary

A number of technical terms and acronyms are used throughout this environmental impact statement. The following is a list of those terms and their meanings.

BPEM	Best Practice Environmental Management
Contact Water:	Stormwater which comes into contact with compost material. Contact water is collected by a separate drainage system and pond.
dB	Decibel. The unit used to measure the intensity of a sound sound level. The smallest audible sound is 0dB. A sound 10 times more powerful is 10dB, while a sound 100 times more powerful is 20dB. Examples: Near total silence = 0dB A whisper = 15dB Normal conversation = 60dB A lawnmower = 90dB
dB(A)	Unit used to measure "A-weighted" sound pressure levels. A-weighting is an adjustment made to sound-level measurement to approximate the response of the human ear.
EIS	Environmental Impact Statement (prepared in accordance with the *Environmental Planning and Assessment Regulation 2000*)
EMP	Environmental Management Plan prepared by the operator of the facility. This document is essentially an operations and procedures manual for employees, which covers all aspects of the process and provides procedures for monitoring and emergencies.
Humified Compost	Humified compost is a highly complex product, which incorporates beneficial microbes to create consistent high quality compost.
MPN/gram	Scientific sampling measure used in microbiology. A mathematical formula is used to determine the "Most Probable Number" of microorganisms present in any particular sample.
PCN	Potato cyst nematode. Soil-borne microscopic worms which feed on roots of potato plants. Root development and tuber yield is reduced and plant growth is stunted.
Residuals	Non-hazardous organic waste material produced as a result of manufacturing, commercial food production or consumption, household garden organics collection and various processes. The residuals may be in liquid or solid form and may include paper pulp, commercial grease trap waste, disposal of food products, fly ash, drill mud and a range of organic materials.

16 Bettergrow Capability Statement

BetterGROW

CAPABILITY STATEMENT

ABOUT BETTERGROW

The company was formed by the owner and Managing Director Mr Neil Schembri in 1978. With its head office in Industry Road, Vineyard near Windsor NSW the company still has close ties to the Hawkesbury City Council Local Government area. The head office is just down the road from the original poultry farm still owned by the Schembri family.

Bettergrow under the guidance and entrepreneurial expertise of Neil Schembri has grown and diversified over the years providing innovative and leading edge solutions to the resource recovery industry in NSW and QLD. Among other things the company specialises in creating innovative organic resource recovery solutions. The company incorporates and continues to trial and develop a range of processes and technologies, and its systems are built on many years of industry experience.

OPERATING LOCATIONS

NEW SOUTH WALES

- **Vineyard**

The Vineyard site not only is the head office for the Bettergrow organisation it also contains the Drillers Mud separating business. Bettergrow was the first company in Sydney to gain approvals from the NSW EPA for the receival, processing and beneficial reuse of various drill slurries including hydro-excavation muds and horizontal directional drilling slurries.
Bettergrow are the innovators in this field and currently process in excess of 30,000 tonne per annum at the Vineyard site. EPA Lic. No. 5487.

- **Kelso**

In 2014 Bettergrow acquired a 20,000 tonne per year EPA licenced liquid recycling business at Kelso near Bathurst in central western NSW. The facility is licenced to receive Grease Trap Waste, Oily Water, Drillers Muds, Pre consumer food waste and a number of other liquid organic waste products. All products are re processed and sent for beneficial use to both composting and direct soil injection applications

- **Ravensworth**

Bettergrow has secured a long-term supply and operational agreement to establish a large composting operation and beneficial re-use program on the Ravensworth/ Hunter Valley ex Coal Mine site, now owned by AGL Macquarie. Bettergrow has commenced composting garden organics on the 70 hectare site and will bring in various organic by-products including biosolids and garden organics for either co-composting or blending to produce high quality soil amendment products.

The annual capacity and production on site will commence at 50,000 tonne per annum but is expected to grow to in excess of 100,000 tonnes supplying end products for use in rejuvenation of degraded lands as well as exporting into the viticulture and agricultural

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markets. The Ravensworth site is managed in accordance with Bettergrow's EPA composting licence No 7654.

- **Farming Enterprises**

The Bettergrow group of companies owns and operates significant rural regional landholdings totalling in excess of 5000 acres and is expanding its farming activities. The nutrient requirements for both cropping and pasture management are being designed and managed based on the use of purpose selected and blended recycled organic and mineral compounds. Bettergrow has its own internal full time agronomist who is responsible for managing the various nutrient requirements. The aim is to achieve a significant reduction in demand for the use of artificial fertilisers into our farming enterprises.

One example of the range of varied farming enterprises Bettergrow is developing is "Mallee Park" where Blue Mallee Trees will be planted across approximately 10,000 acres. The Mallee Trees will be harvested approximately five years after planting and every three years thereafter. The Mallee Biomass will be processed and pelletised in to Australia's first real commercial fuel pellet products and marketed in various pack sizes across Australia.

The foundation of the Bettergrow business is based on the beneficial use of recycled organics as the major nutrient input into the companies farming enterprises.
Landholdings include properties at Parkes, Cudal, Hampton, Colo Heights. In addition Bettergrow has a network of landholders already either using or interested in the concept of incorporating organics into their farm nutrient budget requirements.

- **Gosford**

Bettergrow in August 2015 was awarded the contract for the management, marketing, sales and distribution of the garden organics currently received by Gosford City Council through its waste collection and waste transfer site operations. Dedicated plant, equipment and staffing have been allocated to the Woy Woy site to manage the incoming material and ensure this is decontaminated and processed to enable the production of a clean and saleable finished product.

- **Windsor**

Bettergrow successfully tendered for the full services management of Hawkesbury City Council in 2013. The contract is a five year contract and Bettergrow provide all plant & equipment, personnel and reuse sites to cater for all of Hawkesbury City Council's dewatered biosolids.
Biosolids are used in a range of applications depending on each batches classification and grading, including agricultural land revitalisation, quarry rehabilitation and mine site rehabilitation

- **Wetherill Park**

As part of the establishment of a network of operational facilities Bettergrow has recently secured the lease on a site in Wetherill Park suitable for the operation of a resource recovery facility. Bettergrow is proposing to develop the site to capture a range of organic feedstocks within the Sydney market. All materials received will be subject to a primary processing step prior to being transferred to our network of composting sites in regional NSW. The primary aim again is to convert organic inputs into soil ameliorants for use in farming enterprises as well as developing a range of high quality soil amendment products for resale into the home garden, landscape and intensive agricultural markets.

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- **Bathurst**

Bettergrow has secured the long term lease of an ex-hard rock quarry, 7km's west of Bathurst on the Mitchell Highway. A development application and Environmental Impact Statement have been lodged for the establishment of a Greenspot Recycling Park which will include a 100,000 tonne per annum partially enclosed composting operation.

The location of this facility is ideal and will be Bettergrow's main facility for manufacturing and composting various organic inputs. The primary aim again is to convert organic inputs into soil ameliorants for use in farming enterprises as well as developing a range of high quality soil amendment products for resale into the home garden, landscape and intensive agricultural markets.

- **North Mulgrave**

Occupying 4 of the 8 industrial units owned by Bettergrow at North Mulgrave are a number of niche market processes aimed once again at capturing and recovering valuable organic inputs. The operations at Mulgrave include secure product destruction, bonded storage, fertiliser storage and fertiliser repackaging. Bettergrow is currently considering the reintroduction of a small scale bagging operation for specific higher value blended products.

- **Distribution centres**

Bettergrow has secured the long term lease on two ex-grain storage facilities in western NSW. The sites include good access rail sidings and significant storage facilities. The combination of enclosed and open storage at both sites is ideally suited to the establishment of bulk product handling and distribution centres. Products which will be distributed from these facilities include organic soil amendments and other bulk fertilisers. The sites are at **Bogan Gate and Kiacatoo.**

- **Prospect**

Suez Environment known previously as Degremont is contracted to Sydney Water to operate the Prospect Water Filtration plant for Sydney Water.
Bettergrow has been contracted by Degremont since 1995 to manage all water filtration sediment and materials on site. Bettergrow provides all plant & equipment and personnel to carry out the total services for this vital infrastructure project. Prospect Reservoir supplies 97% of Sydney's water supplies.
Since 1995 Bettergrow has committed and delivered 100% of the residuals into beneficial use programs including the Bettergrow Top Ten range of products marketed to the home garden and landscaping market.

Bettergrow has exceeded all expectations of Degremont including in 2013 and 2014, when residual volumes quadrupled due to conditions in Warragamba Dam, Bettergrow was able to provide an uninterrupted service to Degremont. In 2014, Bettergrow air dried on site and beneficially used off site approximately 30,000 tonne of material. Bettergrow has a further four years until 2019 on its existing contract.

- **Wallerawang**

The Wallerawang Power station which is now closed presents a wonderful opportunity for a number of uses. Bettergrow is in dialogue with the owners, Energy Australia and another party regarding options for various parts of the site.
The power station site presents opportunities for business activities whist the ash emplacements and ash dam provide significant opportunities for rehabilitation and

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conversion back to product lands either for pasture or passive recreation for the local community.

QUEENSLAND

- Swanbank

On the 1st July 2015 the Greenspot Recycling Park and residuals landfill at Swanbank near Ipswith Queensland was officially opened to commence receiving waste and recycling building products. With in excess of 10 million m3 of landfill space the Swan Bank site will be progressively expanded as the demand for resource recovery in Queensland increases and landfill space increases in value.

PROCESSES AND TECHNOLOGIES

- **Drillers mud separation**

Bettergrow process the various materials they receive on site through a range of separation and screening systems separating liquid materials from solids materials of which both fractions are converted to products for beneficial reuse. Bettergrow was instrumental in rationalisation of the liquid slurry waste streams from this market sector with the NSW EPA.

- **Composting**

The 70 hectare Ravensworth composting facility in the Upper Hunter Valley known as Greenspot Ravensworth, is the first large scale composting operation Bettergrow has recently established utilising tried and tested open windrow agitated composting. The facility will receive garden organics, clean timber, biosolids and other organic inputs which will be composted and blended with other on site and imported ingredients to produce purpose formulated growing media.

Bettergrow also plans to open the Greenspot Recycling Park at Bathurst where the composting operation will be carried out partially enclosed using a cover system for the first phase of the composting operation. With in house staff expertise in both conventional open windrow composting through to fully enclosed tunnel composting Bettergrow has a significant level of in house composting expertise. This expertise is further supported by a close network of environmental and technical specialists providing back up to Bettergrow.

- **Liquid Injection Program**

Bettergrow was the first company in NSW in the 1990's to establish the liquid injection solution for food manufacturing companies. Various organic based liquid by-products suitable for land application were matched with the agronomic requirements of agricultural soils in the Sydney Basin area to be land applied under newly developed EPA regulations.

Bettergrow initiated this industry and grew the business to cater for 6,000 tonnes of liquid per month at its Badgerys Creek facility. Bettergrow imported purpose built equipment – the first of its kind in Australia to maximise the nutrient value in the various liquids. The products included excess and off spec milk and dairy products, treated grease trap liquid, various beverage and liquid food residuals.

- **Lime Stabilisation**

Bettergrow was instrumental in the introduction of the N-Viro process demonstrating its ability to deliver innovation. The N-Viro Soil process which Bettergrow pioneered in Australia in the 1990's was used successfully at both Malabar and North Head for almost 3 years for the lime stabilisation of bio-solids which were sold to farmers for agricultural applications.

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- **Water filtration residuals management**

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- **Liquid Lime management**

Bettergrow is contracted to collect the Lime Gas Slurry from the Yennora facility on a daily basis. Lime slurry must be removed continuously in order to prevent production interruptions. The Lime slurry is transported in purpose designed and modified tankers and taken to a number of different farm locations for direct soil injection as an alternative to the use of conventional quarried lime. This material is covered by its own EPA exemption.

- **Transport and Logistics**

Bettergrow has engaged the services of a full time transport and logistics manager. One of the most significant costs to any bulk materials handling business is transport. With over 35 years' experience in transport and logistics and a vast network of approved subcontractors and transport providers Bettergrow can now offer a secure and efficient transport service to move materials anywhere around the state

In addition to the services that Bettergrow can offer outlined above we also have the technical capability, equipment, facilities and knowhow to provide the following additional services to our customers should they be required. The additional service offerings include:

- **Secure Product destruction**
- **Bonded storage**
- **Fertiliser blending, sales and marketing**
- **Fertiliser spreading**
- **Farm agronomy services**

EXPERIENCE

- **Product branding and marketing**

Between 1985 and 1990 Bettergrow developed a range of home garden composts and soil conditioners manufactured from various recycled organic products. The sales of Bettergrow branded products, which were suitable for the home garden market, grew within four years to 1.5 million bags of potting mixes, soil conditioners and mulches being sold to the NSW Nursery Industry. This was at a time when the industry was at its infancy and Bettergrow was a pioneer in this market.

- **Product development**

In order to be able to create markets for recycled organics one must understand the plants or crops needs and the customer's needs. Bettergrow staff and senior management have well over 45 years of combined experience in product development, testing and manufacture.

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With its network of operating sites and technology options Bettergrow is now well positioned to take advantage of the expected significant growth in the generation and requirement for the recovery and beneficial use of organics.

Over the last 3 years Bettergrow has purchased or secured several properties to be farmed with organic amendments being the main fertiliser component to be utilised. The opportunity to include organic inputs as part of the on farm nutrient management program is part of the motivation for Bettergrow to purchase the properties. Our aim is to extract maximum value out of the any organic amendments resulting in a significant reduction in the requirement for synthetic fertiliser inputs.

Bettergrow will continue to expand its operational base and service offering to Councils, waste generators and the community at large always looking for organic inputs that can be converted or processed and be put to beneficial use either in the home garden, landscape or agricultural markets. Similarly Bettergrow proposes to expand its farming base focusing on sourcing alternative nutrient inputs rather than relying on traditional artificial fertiliser based farming practices. Bettergrow is walking the talk and acting rather than waiting for subsidies or other artificial financial support mechanisms.

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