



Kimbriki Environmental Enterprises Pty Ltd
ABN: 65 136 789 261

Preliminary Environmental Assessment

for the

Kimbriki Resource Recovery Project

“A Local Waste Solution for Local Waste”

Prepared by:



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March 2010

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EXECUTIVE SUMMARY

Introduction

This Preliminary Environmental Assessment introduces the Kimbriki Resource Recovery Project (the Project) to locally manage wastes generated within the Shore Region of Councils (SHOROC). Kimbriki Environmental Enterprises Pty Ltd (KEE), an incorporated business owned by the four SHOROC Councils (Mosman, Manly, Warringah and Pittwater), has accepted responsibility to develop plans and manage the municipal solid waste generated beyond about 2013-2014 when the Belrose Landfill closes.

This document reviews the need for the Project, the current SHOROC Waste Management Strategy and the current operations at the Kimbriki site. Two new facilities are outlined together with the environmental issues and a preliminary assessment of those issues. Details of the stakeholder and community engagement program are provided together with relevant socio-economic considerations.

Project Overview

KEE proposes to extend the range of waste management facilities on the Kimbriki Site through the construction and operation of two new facilities:

A Resource Recovery Facility (RRF) – an alternative waste technology to receive and process up to 100,000 tonnes per annum of both mixed residual waste and source-separated food and garden organics. This facility would comprise a substantial building for waste reception, processing and composting activities and covered maturation areas. The total facility will cover approximately 4.5 hectares. The excavation of the footprint of the RRF would yield a range of sand and sandstone products that can be sold in a similar manner to that currently underway elsewhere on the Kimbriki site.

A Materials Recovery Facility (MRF) to receive and process recyclable materials (currently managed at Chullora and the Central Coast). The facility would comprise a single enclosed building covering approximately 9,000m³ and have an annual throughput capacity of 60,000 tonnes.

It is proposed that the RRF and MRF would be constructed concurrently over a period of 18 months.

The waste processing operations would beneficially recover materials from the various waste streams and generate products suitable for direct sales to markets and as intermediate products for feed stocks to other operations on and off the site. Residual wastes would be stabilised and disposed of in the inert landfill at Kimbriki.

Whilst KEE will focus on kerb-side collected waste and recyclables from SHOROC residences, it is also intended to attract source-separated organic wastes and recyclables from within the SHOROC business community and possibly surrounding local government areas to increase throughput and financial returns without generating substantially more residual waste to the on-site landfill.

It is envisaged that approximately 350,000 tonnes of waste would be imported to the Kimbriki site annually (an increase of approximately 140,000 tonnes on current levels) and approximately 240,000 tonnes of products despatched (an increase of approximately 80,000 tonnes on current levels).



This would also result in an increase of material being land filled from 50,000 tonnes to 110,000 tonnes per annum. KEE would carry out other planned initiatives to recover more resources from the incoming waste streams to help offset this increase. Some wastes from the proposed facilities could be used for litter control and alternate daily cover on the landfill which would reduce the need for Virgin Excavated New Material (VENM) in the land fill, further offsetting this increase.

The transportation of additional waste to site and products from site would generate in the order of seventy additional loads (140 truck movements) during non-peak hours per day. Light vehicle movements would increase by fifty to sixty during both the morning and afternoon peak period reflecting the increased employment level for the two new facilities.

Environmental Issues and Preliminary Assessment

The Kimbriki site is very well situated from a topographic, geotechnical, surface water, groundwater, visual and Aboriginal heritage perspective. The two key environmental issues likely to influence the design and operation of the new facilities are ecology and traffic. The facilities have therefore been designed to reduce impacts in these areas.

Project Justification

The Project can be justified through the consideration of the following.

Project Need	The imminent closure of the Belrose Landfill clearly crystallises the need for a new system to manage municipal solid waste in the SHOROC region. Business as usual is not an option.
Biophysical Considerations	On-going land filling of untreated municipal solid waste and long-haul transport of wastes in the longer-term out of the Sydney Metropolitan Area simply transfers the waste and environmental problems to other communities and increases carbon dioxide emissions. The Project satisfies each of the principles of ecologically sustainable development.
Socio-economic Considerations	Improved management of wastes within the households of the community and within the geographical boundaries of the SHOROC region builds high-level self-sufficiency, reinforces individual responsibilities and creates local jobs. Importantly, the costs to establish and operate the new facilities would result in a lower cost per tonne of waste than if it were land filled without treatment.
Project Deliverables	The Project would deliver superior financial surety for the communities, greater levels of resource recovery, reduced environmental impacts, and greater community participation in the management of its waste.
Consequences of Not Proceeding	Failure to act in the manner proposed would create various environmental impacts across the greater Sydney Metropolitan Area through the long haul transportation of waste from the SHOROC area, combined with higher economic cost for the SHOROC community. The long haul landfill options would also result in significantly reduced resource recovery levels and increased greenhouse gas emissions compared to the proposed project.



Conclusion

The Kimbriki Resource Recovery Project would require the management of some localised environmental and amenity impacts. However the local community will benefit through increased long term employment opportunities and more sustainable waste management.

The proposed development would:

- Deliver on the State Government's target of 66% resource recovery from the municipal sector in the region.
- Support the business community in the region to achieve higher levels of resource recovery.
- Protect the northern beaches business and residential communities from the sharp increase in waste disposal costs that will occur over the next five years;
- Minimise environmental impacts from long haul waste transport by continuing to seek local solutions.
- Support neighbouring Councils in their pursuit of improving resource recovery from their municipal wastes.



COMMONLY USED ACRONYMS AND TERMS

Acronyms

AHD	Australian Height Datum.
AWT	Alternative Waste Technology.
C&D Waste	Construction and Demolition Waste.
C&I Waste	Commercial and Industrial Waste.
DECCW	Department of Environment, Climate Change and Water.
KEE	Kimbriki Environmental Enterprises Pty Ltd.
LGA	Local Government Area.
MRF	Materials Recovery Facility.
MSW	Municipal Solid Waste.
RRF	Resource Recovery Facility.
SHOROC	Shore Region of Councils incorporating Mosman, Manly, Warringah and Pittwater.
VENM	Virgin Excavated New Material

Terms

Kimbriki facility	The existing combined waste related activities operating within the Kimbriki site.
Kimbriki site	The entire land holding (64.53ha) leased by KEE (also referred to as “the site”).
MRF site	The 0.9ha footprint for the Materials Recovery Facility.
RRF site	The 4.5ha footprint for the Resource Recovery Facility.
the Project	Kimbriki Resource Recovery Project.



Section 1 Introduction and Context

1.1 INTRODUCTION

This Preliminary Environmental Assessment (PEA) provides an overview of the Kimbriki Resource Recovery Project (the Project) proposed by Kimbriki Environmental Enterprises Pty Ltd (KEE), a business owned by the four Shore Region of Councils-Mosman, Warringah, Manly and Pittwater (SHOROC). The Project focuses on locally generated waste providing resources for recycling / re-use whilst achieving the best environmental outcome for the local and wider environment.

This PEA has been prepared by RW Corkery & Co Pty Ltd in conjunction with Wright Corporate Strategy Pty Ltd to provide information to support the project approval. It describes the project and assesses the potential geographical, social and environmental impacts.

The PEA provides the basis of information to allow the Department of Planning and other relevant agencies to prepare Director-General requirements (DGRs).

1.2 THE PROPONENT

KEE was established as an incorporated business on the 1st of July 2009 and is owned by the four SHOROC Councils, Mosman, Manly, Warringah and Pittwater.

The business previously operated under the name Kimbriki Recycling and Waste Disposal Centre, an unincorporated business of the SHOROC Councils and managed by a Joint Services Committee comprised of representatives from each of the four Councils.

With the creation of the new company, the business activities were transferred to KEE, and the business is now directed by an independent board of directors appointed by the four SHOROC Councils.

1.3 BACKGROUND AND CONTEXT

The Kimbriki facility has been in operation for over 35 years, serving the Northern Beaches communities as a landfill for non-putrescible wastes and a resource recovery centre for unwanted materials to be recycled, reprocessed and re-used. The operations are conducted on land leased from Warringah Council.

KEE receives and processes all of the kerbside-collected garden waste and hard/clean-up waste from the four SHOROC Councils. The Kimbriki site is also the local resource recovery and disposal centre for self-haul patrons in the SHOROC and wider northern suburbs region for non-putrescible wastes and recyclables.

Kerbside collected municipal solid waste (MSW) from the SHOROC Councils is currently delivered to the Belrose landfill, under special contractual arrangements between SHOROC and WSN Environmental Solutions, the owner/operator of the Belrose facilities. However, Belrose landfill is nearing completion and the SHOROC Councils have investigated options for the future management of putrescible wastes that are collected in their Local Government Areas (LGA's) (see Section 3.5). Those investigations included an option to minimise land-based disposal by using locally located, well proven and emerging waste processing and resource recovery technologies to deliver better environmental, social and financial outcomes for the community.

The business at the Kimbriki site is now managed by a purpose-configured corporate entity, structured to assume and manage risk independently from the four Councils. The SHOROC Councils now have access to a site that has both the capacity to expand the range of waste-



related activities conducted, and a corporate vehicle to manage of all waste from the SHOROC community into the future.

1.4 PROJECT OVERVIEW

The Project involves two key waste processing activities to significantly increase resource recovery and reduce the carbon footprint of the communities in the region. It would also remove the need for the SHOROC community to export waste out of the region once the Belrose landfill closes.

The two new facilities proposed at the Kimbriki site are:

- Resource Recovery Facility (RRF) (an Alternative Waste Technology) to receive and process both mixed residual waste and source-separated food and garden organics;
- Materials Recovery Facility (MRF) to receive and process dry recyclable materials.

The waste processing operations will beneficially recover materials from the various waste streams and generate products suitable for both direct sales to markets and as intermediate products for feed stocks to other operations on and off the site. Residual wastes will be stabilised and disposed of to the landfill on the site.

1.5 THE NEED FOR THE PROJECT

The SHOROC Councils must address significant challenges to the on-going sustainability of the services they provide to their communities in solid waste management.

The Project is needed to overcome the following issues:

- **Available Landfill Space** – Disposal of residual putrescible waste from the SHOROC community currently takes place at the Belrose landfill, within the SHOROC region, under an exclusive arrangement between the owner-operator of the landfill, WSN Environmental Solutions, and the SHOROC Councils. With the closure of this landfill expected sometime in the 2013-2014 timeframe, this arrangement will cease and SHOROC residual putrescible wastes would need to be transferred to long-haul transport vehicles and carted to remote landfills, eventually as far away as Tarago near Goulburn in the southern highlands of NSW.
- **State Resource Recovery Targets** – The NSW Government has set 2014 as the year by which it seeks to achieve a 66 percent target for resource recovery from the municipal waste stream. Whilst the SHOROC community currently achieves around 47 percent resource recovery, meeting the target in 2014 will require an almost 50 percent increase over the current rate. This can only be achieved with the introduction of resource recovery processing systems and technologies in lieu of land-based disposal.
- **Financial Imperatives Approaching** – As part of the drive to achieve the State resource recovery targets, the Government has scheduled a rapid increase in the levy charged on landfill disposal of waste. Starting in 2009-10 and continuing through to 2015-16, the levy will increase at a rate of \$10 per tonne of waste land filled each year, plus annual adjustments for CPI. By 2015-16 the cost impost of the levy will exceed the underlying cost of landfill disposal, more than doubling the cost of landfill disposal by that time.

There is also a growing community demand for sustainable solutions which are efficient, innovative and located within the SHOROC region. The community is interested in



participating in providing domestic wastes in a form that better suits resource recovery and broadly supportive of the concept of local resource recovery solutions.

Avoiding the significant environmental impacts associated with long-distance transport of wastes and avoiding the impost of escalating landfill costs are key driving forces motivating the SHOROC Councils to seek an alternative future.

1.6 THE PART 3A PROJECT APPROVAL PROCESS

In December 2009 an application was submitted to the Department of Planning requesting the Minister's determination that the Project can be considered a "Major Development" in accordance with the Major Development SEPP 2005 and therefore be assessed under Part 3A of the *Environmental Planning and Assessment Act 1979 (EP&A Act)*. The basis for that request was that the development would involve waste management facilities, which would receive and process more than 75,000 tonnes of materials for the purpose of resource recovery (Schedule 1, clause 27).

Table 1.1 presents the stages of the approvals process for the Project and provides an indicative project timetable for the Project.

Table 1.1 - Approvals Process for the Project and Indicative Timing

Stage	Activity	Indicative Timing
1	A draft PEA for the Project is prepared and submitted to the Department of Planning for review.	Mid January 2010
2	KEE writes to the Department of Planning requesting: • Concept plan authorisation; • Opinion of the Minister that the development is a major development under Part 3A of the <i>EP&A Act</i>; • Director-General requirements; • Authorisation to submit Concept Plan and Major Development Environmental Assessment (EA). KEE lodges Project Application and the final PEA.	Late March 2010
3	A Planning Focus Meeting is convened for all relevant government agencies to attend a briefing about the Project and a site inspection.	Mid April 2010
4	The Department of Planning receives the written requirements of the government agencies consulted and issues the Director-General's requirements for the Project.	Late April 2010
5	KEE commences consultation with the local and wider community which continues throughout the entire process.	Late April 2010
6	A draft Concept Plan and EA is provided to the Department of Planning for consideration and assessment of adequacy (prior to it being placed on public exhibition).	Late July 2010
7	The Concept Plan and EA are lodged with modifications reflecting the comments provided by the various government agencies. The Department of Planning will place all documents on public exhibition and notify neighbours and other stakeholders about the Project and the exhibition period.	Mid August 2010
8	Review of the EA during the exhibition period by the community and government agencies.	Mid September 2010
9	KEE prepares a Response to Submissions Report and a revised Statement of Commitments.	End September 2010
10	The Department of Planning prepares its Assessment Report based on all documentation submitted by KEE, government agencies and the community. If considered appropriate by the Minister, the application may be referred to a Planning Assessment Commission.	End October 2010
11	Determination by the Minister for Planning.	End November 2010
Note: These are estimated timings only		

1.7 APPROVALS REQUIRED

The following approvals/licences/permits will be required for the Project to proceed.

- Project approval under Part 3A of the *EP&A Act 1979*. The approval authority is the Minister for Planning. The project approval would be confined to the area of the new RRF and MRF as all other ongoing activities on the Kimbriki site are appropriately covered by the existing approvals (see Section 4.5).
- An environment protection licence additional to those already held for the existing facility (see Section 4.5) will be required. The licence is a requirement under the *POEO Act 1997* and the issuing Department is the Department of Environment, Climate Change and Water – Environment Protection and Regulation Group.
- A permit under the Section 138 of the *Roads Act 1993* for the road works required at the intersection of Mona Vale Road and Kimbriki Road. The RTA is the authority responsible for the issue of the permit.

The Proponent intends to refer the Project to the Commonwealth Department of Environment Water Heritage and the Arts (DEWHA) in accordance with the provisions of the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) given that a listed threatened flora species (*Tetratheca glandulosa*) is present within the footprint of the RRF. Whilst it is considered the design of the RRF will avoid a significant impact on this species, should the Project be determined by the Minister for the Environment to be a controlled action under the *EPBC Act*, an approval would be required under the Act.

1.8 CONTENTS OF THE ENVIRONMENTAL ASSESSMENT

This PEA establishes a framework for the more comprehensive Environmental Assessment that will be prepared in response to the Director-General's requirements. It covers:

- The SHOROC Waste Management Strategy.
- The current operations at the Kimbriki Site.
- An outline of the Project.
- An outline of relevant environmental issues and a preliminary assessment.
- Stakeholder and community engagement plans.
- The socio-economic settings for the Project.
- A case for justification of the Project.



Section 2 The Statutory Framework

2.1 INTRODUCTION

The approvals process and statutory administration of the ongoing operation of the Project would involve a number of Commonwealth, State and local statutory instruments. Each of the legislation, policies or planning instruments relevant to the Project are outlined in the following sections.

2.2 COMMONWEALTH LEGISLATION AND POLICIES

The principal Commonwealth legislation relevant to the Project is the EPBC Act. The EPBC Act requires approval from the Minister for the Environment if a project would have or is likely to have a significant impact on matters of national environmental significance. The Project would involve minor disturbance of a threatened plant (*Tetratheca glandulosa*) listed under the EPBC Act. Whilst the level of disturbance is considered unlikely to cause “a significant impact”, KEE intends to refer the Project to the Commonwealth to seek confirmation of this assessment.

2.3 NSW STATE LEGISLATION AND POLICIES

2.3.1 Legislation

- *Environmental Planning and Assessment Act 1979*

The EP&A Act defines the approval process for development proposed in NSW. Part 3A of the EP&A Act provides an approval process for major projects, which are either declared to be a major development by a SEPP or by order of the Minister published in the Gazette. Schedule 1 of SEPP (Major Development) describes development which requires approval under Part 3A of the EP&A Act.

In particular, Schedule 1, Group 9 (resource and waste related industries) of the SEPP (Major Development) provides that “resource recovery or waste facilities” are a class of development to which Part 3A applies. The listing in Schedule 1 of the SEPP that applies to this Project is:

27 Resource recovery or waste facilities

- (1) Development for the purpose of regional putrescibles landfills or an extension to a regional putrescible landfill that:
 - (a) has a capacity to receive more than 75,000 tonnes per year of putrescibles waste.

A request seeking the Minister’s opinion that the Project is a major development to which Part 3A of the Act applies was submitted to the Department of Planning in March 2010. If Part 3A is applicable, the Minister for Planning would be responsible for approving the Project.

Under section 75U of the EP&A Act, if the Project is granted approval under Part 3A of the Act, authorisations under the following Acts, which may otherwise have been relevant, would not be required to carry out the Project:

- *Fisheries Management Act 1994* – disturbance for works or structures within a waterway;



- *Heritage Act, 1977* – disturbance to an item listed in State Heritage Register or Interim Heritage Order;
- *National Parks & Wildlife Act, 1974* – s87 preliminary research permit. Section 90 consent to destroy relics;
- *Native Vegetation Act, 2003* – Consent for the clearing of native vegetation;
- *Threatened Species Conservation Act, 1995* – Licence to harm or pick threatened species, populations or ecological communities or habitat.

If the Project is granted approval under Part 3A of the EP&A Act, the following authorisations, which may be required for the Project, must not be refused by the relevant approval authority and must be substantially consistent with the terms of the Project approval:

- *Waste Avoidance and Resource Recovery Act 2001* - this Act promotes the most efficient use of resources, minimising land filling and the reduction in environmental harm in accordance with the principles of Ecologically Sustainable Development. The Project would be consistent with the key aims and objectives of this Act.
- *Protection of the Environment Operations Act 1997* - the proposed new facilities would require a new EPL to be issued by DECCW to provide for the construction and operation of the facilities.
- *Roads Act 1993* - the planned improvements to the intersection of Mona Vale Road and Kimbriki Road would require an approval from the RTA under Section 138 of the Act.

2.3.2 State Environmental Planning Policies

The following State environmental planning policies (SEPPs) may be relevant to the Project and would be addressed in more detail in the EA.

State Environmental Planning Policy (Major Development) 2005

SEPP (Major Development) 2005 identifies development to which the development assessment and approval process under Part 3A of the EP&A Act apply. As discussed in Section 2.3.1, the Project is a class of development listed in Schedule 1 of the SEPP and is therefore likely to be assessed under Part 3A of the EP&A Act.

State Environmental Planning Policy 33 (Hazardous and Offensive Development) 1992

SEPP (Hazardous and Offensive Development) (SEPP 33) requires the consent authority to consider whether an industrial proposal is a “potentially hazardous industry” or a “potentially offensive industry”. A hazard assessment is completed for potentially hazardous developments to assist the consent authority determine acceptability.

The Department of Planning has prepared a draft guideline, entitled “Applying SEPP 33” and dated July 2008, which is intended to provide guidance on how SEPP 33 is to be applied. The draft guideline provides the guidance as to when a project should be considered to be a “potentially hazardous industry” or a “potentially offensive industry”. In particular, the draft guideline:

- Makes it clear that “potentially hazardous industries” are to be limited to industries which pose a physical risk, such as explosives or fire; and
- States that any project which requires a “licence under any pollution control legislation” should be considered potentially offensive within the meaning of SEPP 33.



In light of the above, it can be determined that the Project is not a “potentially hazardous industry” as it does not pose any physical risk such as explosion or fire. However, the Project could be a “potentially offensive industry” as it would require an EPL under the POEO Act (refer to Section 2.3.1). Permissibility issues associated with this classification are described in Section 2.4.

State Environmental Planning Policy 44 (Koala Habitat Protection) 1995

SEPP 44 (Koala Habitat Protection) applies to the extent that in any LGA that is listed in the SEPP, the relevant council is restricted from granting development consent for proposals on land identified as core koala habitat without the preparation of a plan of management. The Warringah LGA is listed in Schedule 1 of the SEPP, however no areas identified as core koala habitats were identified in the project area. Therefore a koala plan of management is not required for the Project.

State Environmental Planning Policy 55 (Remediation of Land) 1995

SEPP 55 (remediation of Land) aims to provide a state wide planning approach to the remediation of contaminated land and to reduce the risk of harm to human health and the environment by consideration of contaminated land as part of the planning process. Under SEPP 55, the consent authority must not consent to the carrying out of development on land uses unless the consent authority has considered any potential contamination issues.

Both the proposed RRF and MRF would be constructed on land that is unlikely to have been contaminated by past or present operations. The land proposed for construction of the RRF is virgin bushland. Other than access tracks for fire management, the land is essentially undisturbed. The land proposed for the construction of the MRF is a hardstand area that is being used for the drop-off and dispatch of recyclables.

Further assessment of any potential land contamination issues would be completed as part of the EA.

State Environmental Planning Policy (Infrastructure) 2007

This SEPP was introduced to facilitate the delivery of infrastructure across the State by improving regulatory certainty and efficiency. In determining the Project, the consent authority must take into account a number of matters including whether a justifiable demand exists for the development, the appropriateness of the location and the views of the relevant public authorities and councils.

State Environmental Planning Policy (Mining, Petroleum Reduction and Extractive Industries) 2007

This SEPP aims to provide for proper management of extractive materials (e.g. sandstone on the Kimbriki site) and establish appropriate planning controls for extraction operations.

2.4 LOCAL ENVIRONMENTAL PLANNING INSTRUMENT

Under the provisions of the Warringah Local Environmental Plan 2000 (Amended) (LEP), the Kimbriki site is located within an area referred to as Locality B9 Mona Vale Road East. The desired future character of Locality B9 requires the present character of the locality to remain unchanged except in circumstances specifically addressed in the statement.

The LEP indicates the permissible and non-permissible land uses in Locality B9. It is arguable that the intended activities associated with the Project are prohibited under the land use categories of the LEP. KEE has been advised that there is a risk that any approval granted by the Minister for Planning to a project application made in relation to the Project under Part 3A of the EP& Act could be successfully challenged on the basis that it contravenes regulation



8O(1) of the *Environmental Planning and Assessment Regulation 2000* (more detailed legal advice on this issue was submitted to the Department of Planning in March 2010).

It should be noted that Warringah Council has recently exhibited the *Draft Warringah Local Environmental Plan 2009* (exhibition closed on 11 December 2009). Under this Draft instrument, the land zoning for the Kimbriki Site has been changed to SP2 Infrastructure "Special Purpose Zones" and the land is specifically classified as "Waste or Resource Recovery Project". When this instrument is gazetted, the Project would be permissible. **The Project is therefore entirely consistent with the future zoning of the site.**

Given the uncertainties relating to the permissibility of the Project under the current LEP, KEE has requested consent from the Minister to proceed with an application for approval of a concept plan for a project in accordance with Section 75O of the EP&A Act. The Concept Approval is required to overcome the short-term prohibition of the development under the current LEP.



Figure 2.1 - Land Zoning

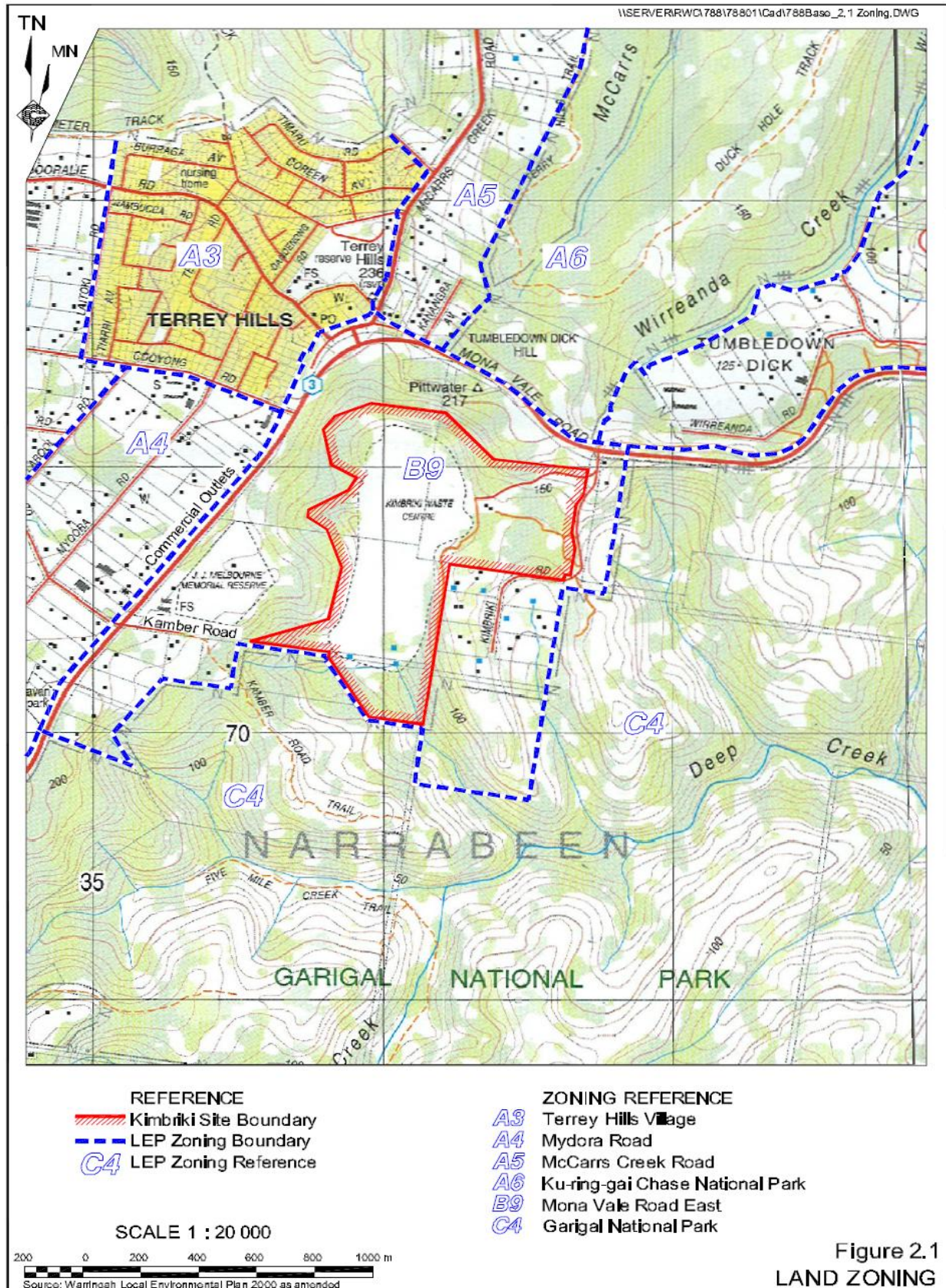


Figure 2.1
LAND ZONING



Section 3 SHOROC Waste Management Strategy

3.1 INTRODUCTION

Kimbriki Environmental Enterprises Pty Ltd (KEE) is a company limited by shares, with the shares held by the four SHOROC Councils. KEE has been delegated the business of conducting the waste management and resource recovery activities at the Kimbriki site for the four SHOROC Councils.

Whilst the board of KEE is comprised of independent parties i.e. neither officers nor elected representatives from any of the four SHOROC Councils – the shareholders of KEE are the four SHOROC Councils, and thus as the shareholders, the Councils have the final say in company affairs.

The constitution of KEE sets out protocols for consultation, notification and reporting requirements from KEE to its shareholders, and the respective roles and responsibilities of the parties in their various capacities as members of the company.

Notwithstanding these formal structures and arrangements between KEE and its shareholders, the working relationship between the parties is one of “customer and service provider”, with KEE the key service provider for the SHOROC Council customers in the provision of future waste management and resource recovery services.

The four Councils see KEE as their entity, doing their business of managing the waste from their communities within the SHOROC region for the benefit of the whole SHOROC community. They have entrusted to KEE the task of receiving and processing their non-putrescible wastes for over 35 years and going forward with the objective to extend that trust to receiving and processing their putrescible wastes as well.

3.2 CURRENT WASTE MANAGEMENT STATISTICS

The population and main housing demographics across the four SHOROC Councils are listed in Table 3.1.

Table 3.1 - Population and Housing in SHOROC

Demographics	Mosman	Manly	Warringah	Pittwater	SHOROC
Population	28,000	37,110	133,837	54,157	253,104
Households – Single	5,603	7,833	33,994	16,985	64,415
Households – MUDs	5,677	7,525	16,602	2,772	32,576
Percent MUDs	50%	49%	33%	14%	34%
Source: ABS Census 2006 MUDs = Multiple Unit Dwellings.					

Table 3.2 lists the waste generation and recycling performance rates for each of the four SHOROC Councils and the combined region, based on recent waste audits.



Table 3.2 - SHOROC Waste Generation and Recycling Rates, 2007-2008

Municipal Kerbside Collections	Mosman	Manly	Warringah	Pittwater	SHOROC
Residual Waste (tonnes)	6,195	6,954	26,000	11,255	50,404
Recyclables (tonnes)	4,452	6,214	18,500	9,388	38,554
Garden Organics (tonnes)	1,068	1,637	7,500	2,191	12,396
Clean-up (tonnes)	366	846	4,500	1,073	6,785
Resource Recovery Rate	46%	50%	46%	48%	47%
Waste Generated (kg/person)	418	399	389	422	400
Source: EC Sustainable (2007)					

3.3 CURRENT WASTE DISPOSAL AND RESOURCE RECOVERY ACTIVITIES

3.3.1 Current Waste Disposal Activities

The municipal solid waste from all four SHOROC Councils is currently delivered to the Belrose landfill, a facility operated by WSN Environmental Solutions, a statutory state-owned corporation. The facility, located 1.5km south of the Mona Vale Road/Forest Way intersection, is known to have limited remaining landfill capacity. It is understood that by 2013 or 2014, WSN will not be in a position to receive and landfill SHOROC kerbside-collected municipal solid waste at Belrose landfill.

Once the Belrose landfill is closed, there will be no licensed facilities for land filling putrescible wastes within the Sydney Metropolitan Area north of the east-west Sydney Harbour-Parramatta River line.

3.3.2 Current Resource Recovery Activities

The current resource recovery activities from kerbside collections provided by SHOROC Councils include:

- Collection of source-separated dry recyclables.
- Collection of source-separated garden organics.

These services capture over 50,000 tonnes per annum of recoverable resources and represent a resource recovery rate of 47%. In order to achieve the State Government target of 66% resource recovery for the municipal sector the SHOROC Councils would need to recover a further 21,000 tonnes per annum at current generation rates.

The EC Sustainable waste audits undertaken in 2007 identified that the SHOROC municipal solid waste bins contained:

- 43.54% (or 22,000 tonnes) of food or garden organics.
- 21.83% (or 11,000 tonnes) of dry recyclables.

This would indicate that further recovery of around two thirds of the materials contained in these two streams would see the SHOROC Councils attain the 66 percent recovery rate from kerbside collections alone.

In addition to these kerbside efforts the four SHOROC Councils are making a significant contribution to resource recovery efforts across the wider northern suburbs region by providing



a cost-competitive option for residents and businesses to bring their unwanted materials to the Kimbriki facility for recycling and resource recovery.

At the Kimbriki facility an impressive 63% resource recovery rate was achieved in 2008-2009, based on material delivered to the site and materials exported. This material comes from all three traditional waste sectors, municipal, commercial and industrial (C&I) and construction and demolition (C&D). These streams represent further resource recovery for SHOROC community than just the results of the kerbside efforts.

3.4 SHOROC COLLABORATION

The four SHOROC Councils have a long history of collaboration and cooperation on many fronts, including initiatives targeting the environment.

In addition, the Councils have demonstrated a strong and trusting financial relationship with their collaborative business activity at Kimbriki – a business that turns over in excess of \$17 million per annum on behalf of the four Councils. In recent years, the Councils have collectively acquired neighbouring properties to the Kimbriki Site to improve non-project related buffer distances and to establish collective financial reserves against long term rehabilitation/closure/monitoring requirements and future uncertain waste infrastructure related costs.

The four Councils have been united in their desire for an independent organisation to run the activities at the Kimbriki facility and collectively supportive of the initiatives that KEE is developing for future waste processing and resource recovery activities at the site.

3.5 FUTURE WASTE AND RESOURCE RECOVERY OPTIONS

The SHOROC Councils have an externally imposed decision-making milestone around 2013-2014 when the Belrose landfill closes and SHOROC putrescible wastes will no longer be received at that facility. For management of their putrescible waste beyond 2013-2014, the Councils face a choice between the following six possible options.

- Transfer waste at Belrose Transfer Station and road haul to a landfill at either Eastern Creek or Lucas Heights, until those facilities are closed, which is reasonably expected some time before 2020.
- Transfer waste at Belrose Transfer Station and road haul to Clyde Intermodal Transfer Station for rail haulage to the landfill at Woodlawn.
- Transfer waste at Belrose Transfer Station and road haul to Eastern Creek where the UR3R™ AWT facility may be positioned to receive and process the waste.
- Transfer waste at Belrose Transfer Station and road haul to Lucas Heights where the proposed Ecolibrium™ AWT facility may be positioned to receive and process the waste.
- Transfer waste at Belrose Transfer Station and road haul to Clyde Intermodal Transfer Station for rail haulage to Woodlawn where a future AWT might be built that could receive and process the waste.
- Develop AWT facilities within the SHOROC region at either the Kimbriki or Belrose Sites and manage resource recovery and residual waste disposal entirely within the region.

The first five options all involve the export of waste from the region and are dependent on relatively short term contractual arrangements in a dynamic, transitional industry. The sixth



option involves local processing, stabilisation and local disposal and can provide a guaranteed disposal option at a fixed price for at least fifteen years.

Several reports prepared on behalf of the SHOROC Councils have confirmed that of the two potential local sites, the Kimbriki site is eminently suitable to host an alternative waste technology facility. The Belrose site is unlikely to have long-term disposal capacity for the residual inert materials generated by the AWT, which would need to be transported to a suitable landfill for disposal. This would result in additional transport costs and environmental risks. These risks would be avoided if the Kimbriki site hosts the resource recovery facility as the site would allow residual inert materials to be easily moved within the property to the existing landfill.

A further advantage of the Kimbriki Site hosting the resource recovery facility is that procurement and construction of the proposed facilities could commence without delay. If the Belrose site was utilised construction could not commence until the landfill is filled and capping commenced. If this is stretched beyond 2014, then the facility could be delayed and the waste disposal risk would re-emerge.

KEE believes that by selecting the option to process putrescible wastes locally at the Kimbriki site, the Councils would be able to commit to moving their communities forward with their resource recovery effort from the current level of 47% to a position above the State Government target of 66% for municipal waste. At the same time, the Councils will be able to make a significant contribution to increasing the resource recovery achieved in both the commercial and industrial and construction and demolition sectors of the region.

This proposed initiative at the Kimbriki site builds on a long-standing collaborative and productive relationship between the Councils in waste and environmental management in the region. The existence of the business entity KEE (which is directed by an independent board of directors appointed by the four SHOROC Councils) provides the ideal corporate vehicle to manage all of the waste from the SHOROC community into the future.

3.6 SUSTAINABLE WASTE MANAGEMENT STRATEGY

Having considered the preferred option for future resource recovery and waste management for the region, KEE has prepared a specific business case for managing all waste disposal and resource recovery for the SHOROC Councils at the Kimbriki site.

Councils, in conjunction with KEE, have continued developing their internal waste management and resource recovery strategies.

Councils have:

- Worked towards synchronising collection contracts across the region.
- Rolled out similar collection systems and bin configurations across the region.
- Developed and distributed common-theme waste education material to the communities.
- Agreed to contract KEE as the resource recovery and waste processing service provider for the four Councils.

The overall strategy has been shaped by the collective efforts of KEE and the Councils and will see the potential introduction of waste processing at the Kimbriki Site to increase the level of resource recovery from the municipal sector and to stabilise residual wastes to render them suitable for disposal at Kimbriki's inert landfill.



The strategy aspires to deliver long-term surety to the SHOROC Councils and their communities, high-level resource recovery, and an extended life for the landfill at the Kimbriki Site to serve SHOROC communities in future generations.



Section 4 Current Operations at the Kimbriki Site

4.1 SITE LOCATION

The Kimbriki Site is located off Mona Vale Road, in the Terrey Hills area within the Shire of Warringah as shown in Figure 4.1.

The operational site is bordered by private land holdings, public land and the Garigal National Park.

The parcels of land and associated titles for the Kimbriki site are:

- Lot 200/DP104460.
- Lot 2/DP255466.
- Lot 4/DP244566.
- Lot 100/DP822376.
- Lot 3/DP794191.

These lots are owned by Warringah Council and leased on a long term basis to KEE for the purpose of running the business of KEE for the benefit of the SHOROC community.

4.2 SITE HISTORY

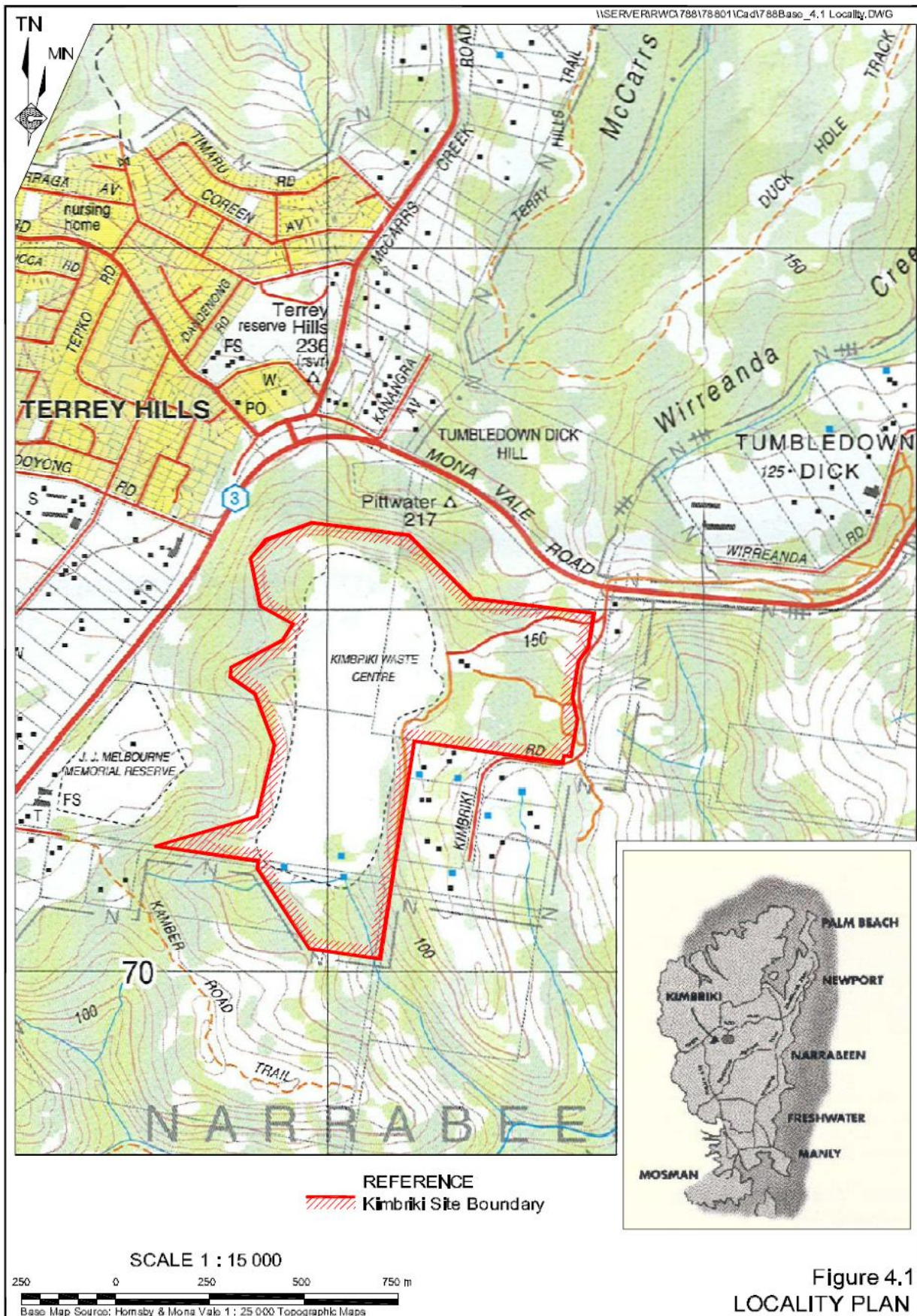
The Kimbriki Recycling and Waste Disposal Centre was established in 1974 replacing a landfill that operated in the location now occupied by the JJ Melbourne Hills Memorial Reserve, which is located to the immediate west of the Kimbriki Site.

Council records indicate the following history for the Kimbriki Site.

- | | |
|---------|---|
| 1967 | The Joint Services Committee of the three Councils – Manly, Mosman and Warringah, confirmed its commitment to manage the disposal of waste for the three Councils. |
| 1974 | Kimbriki commenced operations as non-putrescible landfill site. |
| 1974 | Kimbriki Site rezoned to 6(a) Existing Recreation. Site fell within the provisions of Interim Development Order No. 51. |
| 1985 | Site rezoned to 1(a1) Non Urban and 6(a) Existing Recreation. |
| 1988 | Sydney Regional Environmental Plan No. 15 Terrey Hills (amendment No. 1) came into force. The operation of a waste disposal depot was permissible use subject to Council consent. |
| 1989-90 | Resource recovery operations commenced on site reducing the amounts of material disposed at the landfill. |
| 1992 | Pittwater Council joined and formed the Joint Services Committee. |
| 1993 | Environment Protection Licence issued by EPA. |
| 1994 | Development application and accompanying EIS lodged with Council. |
| 1997 | Consent approved by Warringah Council with 78 consent conditions. One objection to the development application was lodged. Matter referred to NSW Land and Environment Court. |



Figure 4.1 - Locality Plan



- 1997 Development Application approved by NSW Land and Environment Court with slight amendments to the 78 conditions.
- 2000 Warringah Local Environmental Plan 2000 came into force and the site rezoned to category Locality B9 Mona Vale Road East.
- 2009 Kimbriki Environmental Enterprises Pty Ltd formed to own and operate the Kimbriki Recycling and Waste Disposal Centre with Warringah, Manly, Mosman and Pittwater Councils as shareholders.

4.3 OPERATING PHILOSOPHY

Disposal of non-putrescible waste at the Kimbriki facility has been reduced significantly over the years, as the focus on resource recovery has markedly increased. Table 4.1 records the clearly evident shift from waste disposal to resource recovery since the early 1990s.

Table 4.1 - The Growth in Resource Recovery at Kimbriki

Year	Tonnes Received	Tonnes Exported	Tonnes Landfilled	Comment
1990-91	248,500	1,800	234,000	Before formal recovery commenced.
2000-01	235,500	71,500	130,100	Receivals included 61,000 tonnes of clean fill.
2008-09	209,400	156,850	55,550	Exports include 22,000 tonnes of excavated rock.
Source: KEE				

KEE aims to be a leader in waste management education and practice, through the use of innovative technologies and management systems that maximise resource recovery. KEE's focus is to divert waste from landfill in line with State Government waste targets and SHOROC waste management objectives by maximising the recovery of resources. Resource recovery is undertaken as far as is economically, socially and ecologically sustainable.

The benefit to the SHOROC community from this significant shift from waste disposal to resource recovery is that the current remaining life of the landfill within approved capacity limits now exceeds sixty years at the present rate.

This philosophy of continuous improvement in the extent and scope of resource recovery, coupled with an approach that values the remaining landfill capacity as a critical asset for future generations, has been passed on from the SHOROC Councils to KEE in their charter for business, and will remain as a key underpinning tenet for future business decision making.

4.4 WASTE AND RESOURCE FLOWS

In 2008-2009, the Kimbriki facility received over 200,000 tonnes of materials and exported almost 157,000 tonnes of recovered and recycled materials back into the productive economy. Approximately 56,000 tonnes of material was disposed of within the Kimbriki landfill. Table 4.2 presents the indicative 2008-2009 tonnages of material inflows and outflows at the Kimbriki site.

Table 4.2 - Material Flows at the Kimbriki Facility 2008-2009 (tonnes p.a.)

Material Class	In Flows	Out Flows
Excavated sandstone	nil	22,000
Virgin Excavated Natural Materials (VENM)	11,000	nil
Mixed waste (non-putrescible waste)	53,000	nil
Green waste organics	67,500	60,750



Construction and demolition wastes	70,000	66,500
Dry recyclables	3,000	2,700
Metals	4,500	4,500
Batteries and oils	400	400
Total In Flows & Out Flows	209,400	156,850
Total Tonnes Land filled	52,550	
Source: KEE		

Note: Tonnage inflows, outflows and disposals will not balance due to sandstone excavation from the site, recovery of materials from incoming waste and evaporation losses from mulching of green organic wastes.

4.5 EXISTING STATUTORY APPROVALS

Operations at the Kimbriki Site are conducted under a number of approvals and licences covering the various activities. The key instruments under which operations are undertaken are summarised below.

- *Development Consent 96/371* issued by Warringah Council – a consent under Section 91 of the *Environmental Planning and Assessment Act 1979*, with an effective date of 10 July 1997 following upholding of an appeal by the NSW Land and Environment Court.
- *Environment Protection Licence Number 13090* issued by DECC (now DECCW) under the *Protection of the Environment Operations Act 1997* covering the Scheduled Activities: - Composting.
- *Environment Protection Licence Number 13091* issued by DECC (now DECCW) under the *Protection of the Environment Operations Act 1997* covering the scheduled activities: Extractive Activities; Waste Storage; Waste processing (non-thermal treatment); and Waste disposal (application to land).

4.6 DESCRIPTION AND LAYOUT OF CURRENT ACTIVITIES

The main waste management related activities currently conducted at the Kimbriki site include:

- Extraction of virgin sandstone rock (by ripping and hydraulic hammer) to create material for sale, materials for engineering applications on site, and to create void space for landfill activities.
- Receipt of mixed non-putrescible wastes destined for landfill disposal, with some materials such as steel and pallets recovered from the tipping area for export from site for beneficial reprocessing.
- Receipt of source-separated green waste for processing and sale direct from site.
- Receipt of source-separated construction and demolition wastes that are beneficially processed to recover metals and produce aggregates, landscaping products, sand and soil etc. for sale direct from site.
- Receipt of used building products and materials that are sorted and presented for sale directly from the site.
- Receipt of lead-acid batteries and engine oils for aggregation and export off-site for beneficial reprocessing.



- Receipt of self-haul drop-off dry recyclables (paper, cardboard, containers) for aggregation and export off site for beneficial reprocessing.
- Delivery of waste education at the Kimbriki Eco Garden facility.

All of these activities will continue in conjunction with the Project.

The Kimbriki site is fenced in the immediate area of the access road and gates are positioned to control vehicular access to and from the site. Natural bush land around the perimeter of the site makes foot access difficult if not impossible around the remainder of the site boundary.

Located within the Kimbriki site are built facilities for site management, monitoring and recording vehicle movements, tracking waste, general administration and staff amenities. Mains power is connected to the administration centre, nearby buildings, and various points around the site. Town water is used in the administration centre and nearby buildings whilst all on-site amenities are served by a pump-out style septic system.

In addition to waste management activities, KEE hosts and resources an educational facility called the Kimbriki Eco House and Garden. The Eco Garden was constructed using around 435 tonnes of recycled soil, 20 tonnes of rock, 400 used tyres, 30 used railway sleepers, 80 tonnes of recycled road base, 8 tonnes of recycled terracotta tile, 6 pallets of pavers, 4 bathtubs and a spa. The Eco House function centre was constructed from 95% reclaimed materials from landfill.

The Kimbriki Eco House and Garden centre was created to teach community members to minimise garden and kitchen waste and to use recycled materials for gardening and construction. This is achieved by re-using or recycling many products that have traditionally been thrown in the garbage.

Figure 4.2 presents a plan of the Kimbriki site showing the locations of all of the existing waste management activities, access roads and fixed infrastructure, and the Kimbriki Eco House and Garden.

4.7 KIMBRIKI SITE OPERATIONS MANAGEMENT

4.7.1 Gatehouse, Weighbridge and Vehicle Management

All vehicles enter the Kimbriki Site via a manned weighbridge or small vehicle entry point where loads are assessed and a colour coded ticket issued to identify the class of waste on board. Segregated wastes such as vegetation, concrete and brick, metal and other household recyclables are directed to designated areas for reprocessing or recycling. A combination of clear communication and ticketing at the initial contact, the locating of staff at key areas throughout the site and clear directional signage ensure vehicles are directed safely to their desired destination. KEE staff at unloading areas also ensure the correct waste classification has been applied and conduct on the spot sorting of recoverable materials and contaminants. The use of a computerised weighbridge system and colour coded ticketing system ensures all transactions are logged, which is especially important for managing wastes coming onto the site or reprocessed products leaving that may be exempt from the Section 88 Waste and Environment Levy.

KEE have prepared a traffic management plan to ensure key areas of risk within the local road network have been identified and appropriately managed. As a result a number of measures involving signage and speed management devices have been installed.

4.7.2 Utilities and Services

The site is supplied with pressurised water from the mains supply which is only used for amenities and is supplemented by tank water from on site. Water intensive applications



including dust suppression and gardens are supplied by water obtained from sedimentation and surface water capture dams on site.

Effluent from the amenities is disposed of via a pump-out style septic system on site.

Phone services are supplied by aerial cable, data services by sub-surface fibre-optic cables.

4.7.3 Water Management

Surface water management primarily consists of a system of perimeter drains to ensure clean runoff entering the site is intercepted before it becomes contaminated by waste materials. Surface water runoff from the interim capped and revegetated landfill area is collected by two inner perimeter drains. The drains terminate in settling dams near the southern boundary of the site. Water collected in these dams is used for dust suppression on site.

Groundwater quality is monitored within the Kimbriki Site in five bores installed to provide representative groundwater information across the site. KEE is planning to install two further monitoring bores in 2009-2010 to provide further information on groundwater quality and depth. Routine testing of groundwater quality is conducted on a quarterly basis for a specific set of water quality parameters and on an annual basis for an expanded set of water quality parameters set out in the environment protection licence requirements.

4.7.4 Leachate Management

Leachate is managed using a subsurface leachate collection drain that transfers leachate to a sub-surface leachate reservoir at southern end of the site. The leachate is contained by the very low permeability underlying sandstone units and is recirculated by pumping from the reservoir into dry wells located in the upper waste mass, from where the leachate percolates back through the waste mass. The biological activity stimulated by this recirculation reduces the total nutrient content of the leachate.

4.7.5 Landfill Gas Management

There are no specific licence conditions relating to landfill gas monitoring at the Kimbriki Site due to the low organic content of the waste. However, for future purposes KEE has embarked on a rigorous program of field testing for methane emissions from the entire site, within the active landfill and previously filled areas currently revegetated and under intermediate cover. Follow-up tests have been conducted to confirm the results and on-going monitoring of potential methane emissions will be conducted on an annual basis.

There is a requirement for quarterly testing of the area utilised for storage of composting organic matter for potential methane emissions. KEE engages a suitable experienced and equipped consultant to conduct this testing and any non-conformances are reported to the responsible contractor and KEE management ensures they undertake appropriate remediation activities.

Figure 4.2 - Existing Kimbriki Site Layout

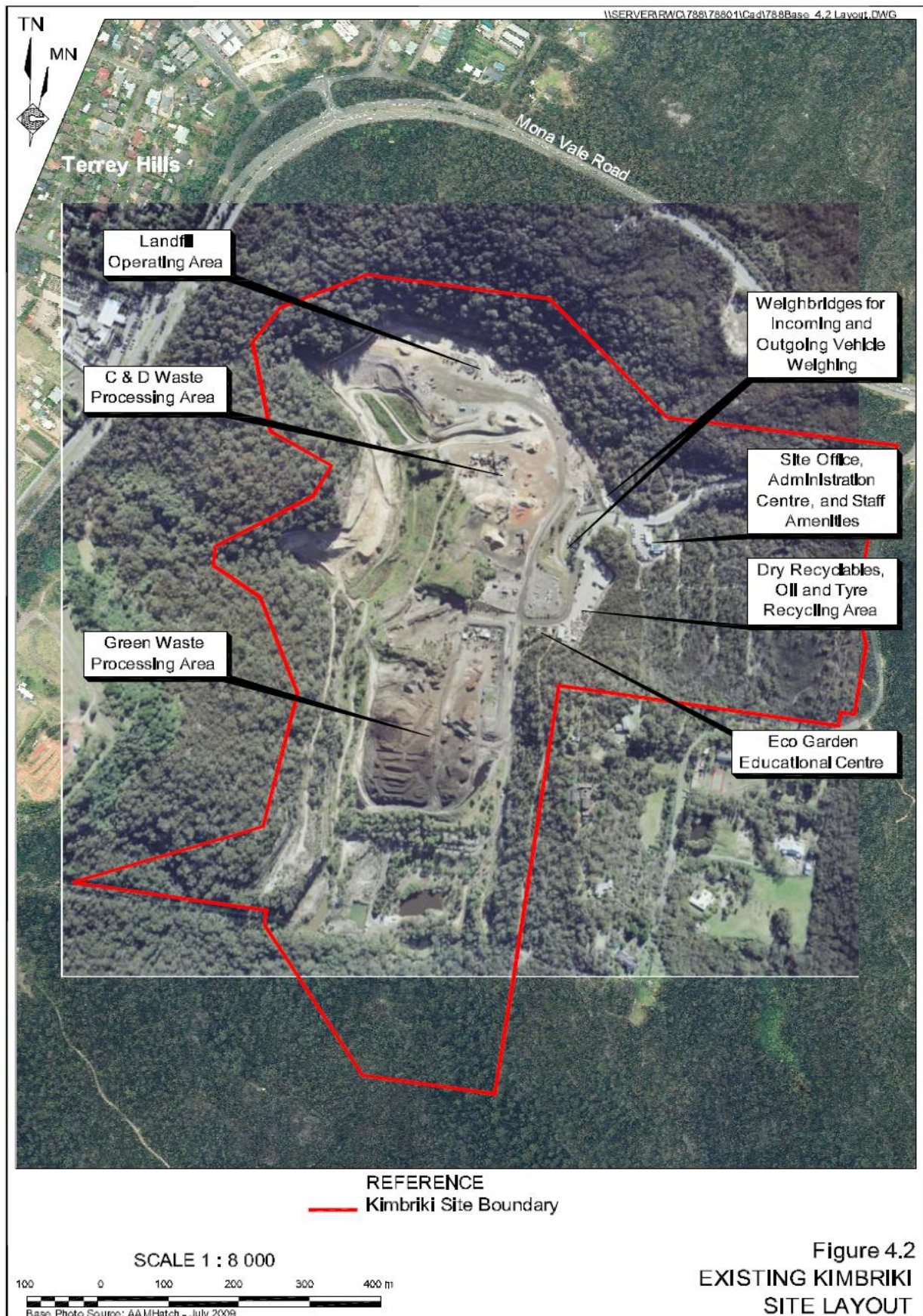


Figure 4.2
EXISTING KIMBRIKI
SITE LAYOUT



4.7.6 Fire Management

There are two key areas for fire management at the Kimbriki Site, namely:

- The early detection and assessment of bushfires in the adjoining public lands and national parks.
- Fire events within either the active landfill or organic wastes in the composting area.

The on-site Occupational Health and Safety System incorporates evacuation provisions in the event of bushfires and regular communications with the Warringah/Pittwater Rural Fire Service (a beneficiary of Kimbriki sponsorship) to ensure KEE Management are informed about potential threats.

Early detection of any fire events on site within the waste is managed by a system of daily inspections over the entire site and continual inspections of the landfill and organic composting areas by operational staff. In most cases, fires within the waste are minor, localised events easily managed with earthmoving equipment and the on-site water spray truck. Obligations of all staff in the event of a major fire within the waste or materials on site are outlined in the site's Occupational Health and Safety System.

4.7.7 Hours of Operation

The Kimbriki facility is open to the public from 7:00am to 5:00pm, seven days a week including all public holidays except Good Friday and Christmas Day.

KEE personnel and contractors are on site between 6:00am and 6:00pm, ie. one hour before and after the hours the facility is open to the public.

4.7.8 Environmental Performance

Noise

Noise emissions are managed by a combination of vehicle controls and the strict enforcement of operating hours. All vehicles on site including those supplied by contractors are required to supply and maintain their equipment so that it complies with Australian Standards for vehicle noise emissions.

Dust

Dust emissions from the waste-related activities on site are generated from four distinct sources:

- Landfill operations.
- Site access roads.
- The composting of organics.
- The crushing and screening of concrete, bricks and tile.

Both the composting and crushing operations are conducted by contractors who have their own systems of management for dust in place, although it is noted that the inherent moisture in the composting organics and sandstone limits dust generation. KEE checks compliance daily and any breaches are immediately rectified and reported then discussed during monthly contractor evaluations conducted by KEE management.

Dust generated from the landfill and access roads is managed by use of the water spray truck which is deployed across the site on a continuous basis, spraying collected surface water on any areas likely to be of concern for potential dust generation.



Odour

Due to the low level of organic materials within the majority of the incoming wastes, potential sources of odour from the site are restricted to the area utilised for the composting of organic wastes. The contractor conducting these operations has a management plan to ensure that as far as possible all organics are maintained in an aerobic state and that any activities involving significant movements of stockpiles and other potentially odorous activities are only conducted when prevailing weather conditions are unlikely to cause dispersion of odours from the immediate working area.

4.8 PERFORMANCE OF CURRENT OPERATING ACTIVITIES

Current operations at the Kimbriki Site are conducted under conditions set out in the development consent and the two environmental protection licences.

A total of 78 conditions are included in the development consent covering activities at the site and relating to management issues and practices including:

- Site fencing, security and maintenance of records.
- Traffic management measures.
- Environment management measures that address potential to disrupt amenity and/or harm the environment.
- Surface water management measures designed to minimise uncontrolled run-off and contamination of surface waters through contact with wastes.
- Landscaping measures to secure the site against fire and ensure compatibility with the adjoining Garigal National Park.
- Controls on operating hours to minimise amenity impacts on neighbours.

The environment protection licences incorporate four specific monitoring programs and a number of generic conditional requirements.

Both Warringah Shire Council and the DECCW have been satisfied with KEE's performance and compliance record to date indicating solid control of site operations and the activities of on-site contractors.



Section 5 The Kimbriki Resource Recovery Project

5.1 INTRODUCTION

The Project involves two new key waste processing activities that would over time significantly increase resources recovered from waste in the SHOROC region and help reduce the carbon footprint of the SHOROC community. It would also remove the need for the SHOROC community to export waste out of the region once the Belrose landfill is closed.

This section introduces the proposed project components on the Kimbriki site and the changes to traffic travelling to and from the site.

5.2 PROJECT DESCRIPTION

The Kimbriki Resource Recovery Project would involve the construction and operation of two best practice facilities to manage wastes generated by the SHOROC community. Both facilities would complement the existing facilities on the Kimbriki Site and assist the SHOROC community to manage its wastes locally.

The first facility referred to as a RRF is an Alternative Waste Technology (AWT) specifically designed to receive and process both municipal solid waste and source-separated food and garden organics collected at kerbside by the four SHOROC Councils. The objective of this 100,000 tonne per annum facility is to recover compost products for beneficial use in land applications, recover some recyclables and other materials discarded in the residual waste bin, and reduce the amount of waste placed in the landfill. In addition, the process would ensure that any material that does not find a market is stabilised to the extent that it meets DECCW General Solid Waste Landfill (formerly Class 2) requirements and can be disposed of within the Kimbriki landfill.

The second facility would be a 60,000 tonne per annum capacity MRF for the receipt and sorting of dry recyclables collected at kerbside and/or dropped-off at the site by self-haul customers. These materials would be sorted to type, baled and despatched to various markets in the Sydney region.

The waste processing operations would have the capacity to beneficially recover materials from the waste streams and generate products suitable for both direct sales to markets and as intermediate products for feed stocks to other operations on and off the site.

Both facilities would contribute to reducing the cost and environmental impact of transporting SHOROC wastes and reducing the amount of waste disposed from the SHOROC community.

5.3 CONSIDERATIONS OF SITE LAYOUTS

KEE has developed a master plan for the Kimbriki Site that takes into account the final design for the landfill, long-term site access, vehicle management and site logistics. This plan also considers a range of potential future resource recovery activities and looks at how the new facilities could be integrated with the existing facilities and operations and the physical/environmental attributes of the Kimbriki site.



The Kimbriki site is dynamic with land filling activities, stockpiles of incoming and outgoing materials and the extraction of sandstone for surface water management all being conducted within the one footprint. The proposed new facilities need to fit within an optimal area and co-exist with the dynamic areas of the site. While areas earmarked for future land filling would need to be vacated when required, there would be opportunity for temporary occupation of future fill areas for transitory resource recovery facilities prior to that need.

Options are available for some of the planned resource recovery activities, such as maturation of composts, to be on currently unused but previously disturbed areas or on land designated as future landfill areas. A similar situation would occur with site roads and corridors for material flows, allowing for considerable flexibility in planning and operations. However, for the items of major fixed plant that require substantial foundations and are not suited to periodic re-location, sites underlain largely by solid sandstone are a financial necessity.

The landforms and native vegetation within the Kimbriki site beyond the existing areas of disturbance are recognised as potential constraints to the future development of new facilities on site. The planning for the new facilities focussed on areas with suitable topography but recognising some extraction of underlying sandstone would be required. A constraints assessment was undertaken for both ecology and Aboriginal heritage across the Kimbriki Site to assist in the selection and layout of the preferred sites for the new facilities.

On this basis, a number of layout possibilities were tested as part of the site master planning, prior to arriving at the preferred site layout shown on Figure 5.1. The outcomes of the ecological and Aboriginal heritage assessments are discussed further in Section 6.5 and 6.6.

5.4 PROPOSED SITE LAYOUT

Figure 5.1 displays the current site layout and the proposed locations for the two new facilities (the RRF and MRF). The internal road network and logistic controls would be modified on site to manage the additional material flows and new facilities.

The RRF would be located in a 4.5ha area immediately south of the Kimbriki Site entrance road. This area currently slopes gradually to the southwest and south.

The MRF would be located immediately west of the existing administration office in a 0.9ha area currently used for separating recyclables within concrete bunkers. The western side of the building would be constructed over previously filled areas.



Figure 5.1 - Proposed Site Layout



5.5 FORECAST MATERIAL FLOWS

Upon commencement of the Project KEE would be in a position to receive kerbside-collected wastes from the four SHOROC Councils that are currently delivered to other facilities, including:

- Kerbside-collected source-separated garden and food organics.
- Kerbside-collected mixed residual waste.
- kerbside-collected dry recyclables.

In addition, it is anticipated that selected wastes from the following sources might also be received at the Kimbriki Site, once the new facilities are operating.

- SHOROC Council wastes from litter bins and street sweeping.
- Source-separated food organics from commercial businesses.
- Source-separated garden and food organics from neighbouring Councils.
- Kerbside-collected dry recyclables from neighbouring Councils.

These additional wastes would supplement the SHOROC kerbside-collected wastes, improve the economic viability of the Project and add to the tonnes of product that can be sold from the site. The additional wastes would contribute very little towards the additional landfill demand at the Kimbriki site.

Table 5.1 lists the possible incoming waste flows together with an indication for each stream of existing and new materials received at the site.

Table 5.1 - Waste In-flows Possible at the Kimbriki Site (tonnes p.a.)

Material Class	Waste In Flows		
	Current	New	Total
VENM	11,000	-	11,000
Mixed waste (non-putrescible waste)	53,000	-	53,000
Kerbside collected SHOROC wastes ¹	-	76,000	76,000
Mixed waste (putrescible) – litter bins & sweeping	-	5,500	5,500
Kerbside collected organic waste – other Councils	-	7,800	7,800
Source-separated organic waste – C&I	-	10,500	10,500
Garden organics	67,500	(12,500) ²	55,000
Dry recyclables – SHOROC kerbside ¹	-	46,200	46,200
Dry recyclables – C&I & drop-off	3,000	8,900	11,900
Construction and demolition wastes	70,000	-	70,000
Metals	4,500	-	4,500
Lead-acid batteries and engine oils	400	-	400
Total In Flows to Kimbriki	209,400	142,400	351,800

- Notes:**
1. These tonnages include estimates for growth in waste generation
 2. The current Garden Organics tonnes received at the Kimbriki site includes 12,500 tonnes collected at kerbside by the SHOROC Councils. This material will be included with the source-separated food and garden waste in the future.

With the new resource recovery and waste processing facilities at the Kimbriki Site, the amount of materials recovered and exported from the site would also increase. These increases would be a result of:



- Composts produced from the source-separated garden and food organics.
- Compost-like products produced from the organic fraction of the mixed residual waste.
- Paper, cardboard, metals, and plastics recovered from the dry recyclables and kerbside mixed waste.

The possible outgoing material flows are shown in Table 5.2, with an indication for each stream of existing and new materials being exported from the site.

Overall, there would be an increase in product outflows of 79,600 tonnes per annum over the current inflows, as set out at Table 4.2 for 2008-2009.

Table 5.2 - Product Out-flows Possible at the Kimbriki site (tonnes p.a.)

Material Class	Product Out Flows		
	Current	New	Total
Excavated sandstone	22,000	-	22,000
Composts - mixed waste	-	8,200	8,200
Composts and compost-like products	-	33,000	33,000
Dry recyclables – SHOROC kerbside	-	41,600	41,600
Dry recyclables – C&I & drop-off	2,700	8,000	10,700
Compost products from garden waste	60,750	(11,200)	49,550
Aggregates, sands, and other C&D products	66,500	-	66,500
Metals	4,500	-	4,500
Batteries and oils (exist)	400	-	400
Total Out Flows to Kimbriki p.a.	156,850	79,600	236,450

Note: Tonnage inflows, outflows and disposals will not balance due to sandstone excavation from the site, recovery of materials from incoming waste, and evaporation losses from processing organic wastes.

5.6 RESOURCE RECOVERY FACILITY

5.6.1 Introduction

The first new item of infrastructure for the Kimbriki Site would be a RRF, an enclosed structure for processing municipal solid waste and source-separated food and garden waste.

The processing systems would be housed in a fully enclosed building, with negative air pressure maintained throughout the building at all times to minimise the potential for fugitive odours to escape. All air entering the building would be cleaned with appropriate scrubbing technology before being released to atmosphere.

Incoming wastes would be unloaded from collection vehicles in separate areas, one each for the residual waste and for the source-separated organic waste. Each waste stream would be visually screened and obvious contaminants, bulky and hazardous wastes would be extracted for suitable disposal, either in the landfill on site or to a suitable disposal facility off site in the case of hazardous substances.

For the municipal solid waste, KEE plans to adopt the widely accepted European best practice of combined mechanical and biological treatment to produce two main fractions; a fine fraction of organic rich material and a coarse fraction of predominantly inorganic material:

- The organic rich fraction would be stabilised through a composting process to produce various grades of soil conditioning products for a variety of markets, or a stabilised waste suitable for landfill disposal at the site as a final resort.



- The coarse, predominantly inorganic, fraction would be subjected to further sorting to recover salvageable materials, before the residuals are shredded, stabilised and disposed to the landfill on site.

Processing of source-separated food and garden waste in the RRF would involve preliminary sorting and shredding, followed by a composting process using proven aerobic technologies to produce high-grade composts that are suitable for sale in the local Northern Beaches market and use by the SHOROC member Councils.

Product streams from both production lines would require maturation following composting to yield fully stabilised products. The maturation would commence within an area to be covered to the north and east of the RRF to minimise transport and materials handling, and in the area where maximum control can be exercised in aspects such as surface water, leachate, dust and odour. The extent and type of coverage of the maturation area will be detailed in the EA.

The two organics streams would be maintained as separate flows throughout the processing and maturation phases. However during the refining phase selective blending may be used to develop products that suit the needs of the various markets.

5.6.2 Site Preparation

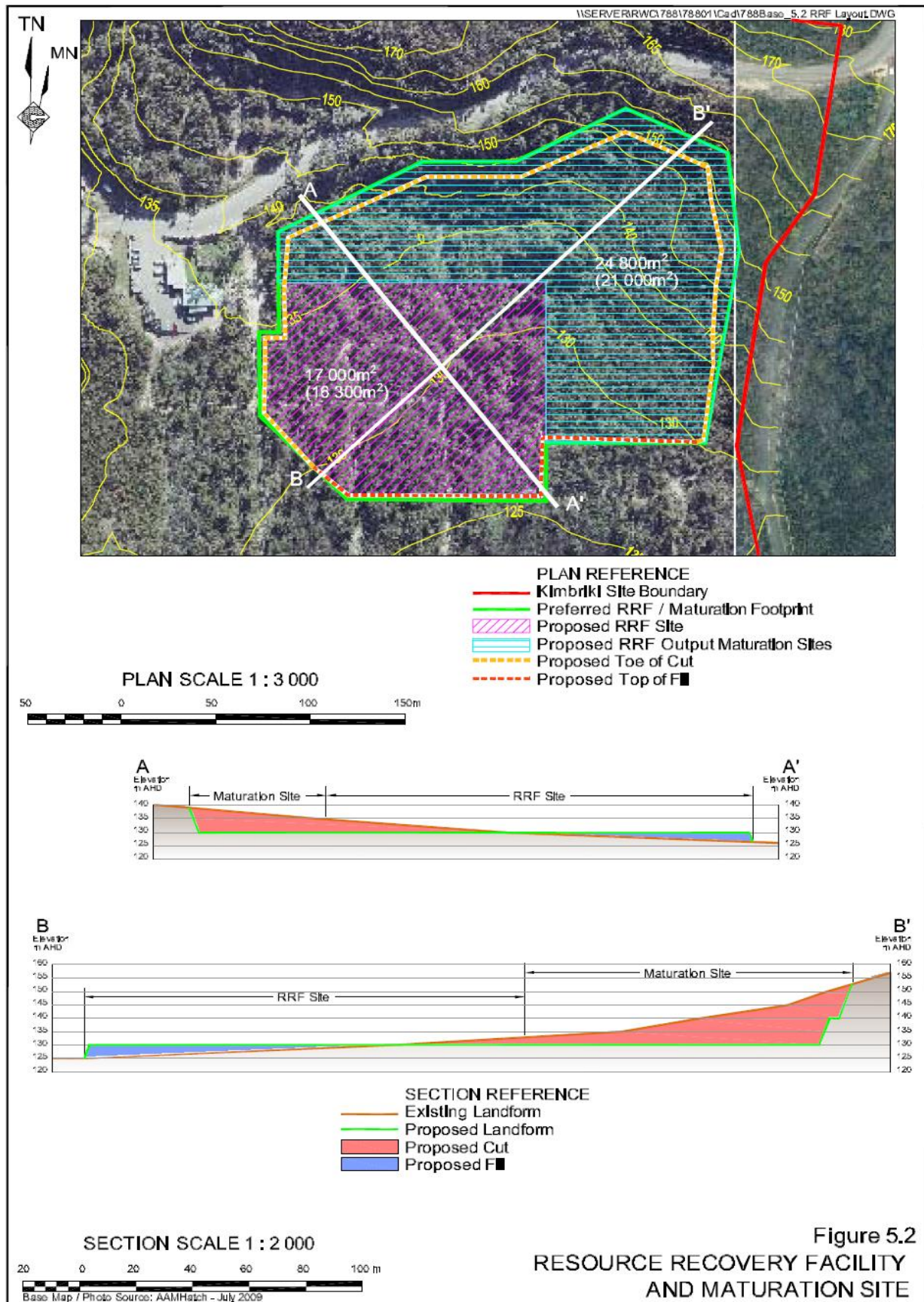
It is proposed to locate the RRF on land to the east of the existing administration buildings, where sound footings can be achieved and long-term stability ensured. Figure 5.2 presents the footprint of both the RRF (17,000m²) and maturation site (24,800m²). The usable surface area within the RRF and maturation site would be 16,300m² and 21,000m² respectively. It is proposed to excavate the bulk of the area required for the RRF with only limited fill required (see Sections AA¹ and BB¹ on Figure 5.2). Approximately 190,000m³ of soil, sand and rock would need to be excavated and 14,000m³ placed (and compacted) as fill. Excavating the area would:

- Yield valuable natural resources, such as loam, sand and sandstone products, that can be used productively both on and off site.
- Create a very stable underlying platform for the facility.
- Establish natural rock containment walls around three sides of the facility.
- Ensure the facility is set at a relative low elevation (approximately 130m AHD) to minimise potential visual and noise amenity issues with the near residential neighbours.
- Facilitate road construction to and from the facility with moderate grades.
- Permit separate weighbridge and control systems to manage incoming wastes separately from wastes destined for the landfill.

All extraction would be undertaken in a similar fashion to the current excavation activities at the site through ripping and pushing/hydraulic hammer with the extracted material either processed on site to yield mortar sand or transported to an intermediate stockpile before being used or despatched off site.



Figure 5.2 - Resource Recovery Facility and Maturation Site



5.6.3 Product Flow from Site and Markets

The products expected to be derived from the RRF include:

- Recyclables and metals recovered before the composting activities.
- High-grade composts from source-separated organics.
- Compost-like products from the organics recovered from the mixed residual waste.

The metals and recyclables would be combined with other similar product streams captured elsewhere on the site, and the composts of various grades would be exported for sale to the most available markets.

5.6.4 Residuals Management

Three potential residual streams are likely to be produced:

- At the initial screening as wastes are received, bulky wastes and hazardous wastes would be extracted and despatched to suitable disposal facilities on site or off site as the case may be.
- The mixed residual waste oversize fraction, which is largely inorganic, would be screened to facilitate recovery of recyclable materials such as plastics and metals, shredded and stabilised to render any adhering organic matter inert, then disposed to landfill on the site.
- In the product refining stage for both the compost products and the compost-like products, contaminating materials would be screened out and disposed to landfill after stabilisation.

With the exception of any hazardous or dangerous materials recovered at the initial screening stage, all waste streams would be disposed to the landfill on site after any remaining organic material contained with the waste has been stabilised.

5.7 MATERIALS RECOVERY FACILITY

5.7.1 Introduction

An enclosed MRF is a well proven technology for sorting kerbside-collected and self-haul drop-off dry recyclables. This would be the second new major facility within the Kimbriki Site, eliminating the export of unsorted recyclables from the SHOROC region to MRFs at Gosford and Chullora.

The nominal capacity for this facility would be 60,000 tonnes per annum with materials sourced from the kerbside collections by the SHOROC Councils, small business self-haul drop-off and some sorted recyclables from the commercial sector in the SHOROC region. Kerbside collected recyclables from some neighbouring Councils may also be brought to the site for beneficiation with SHOROC recyclables.

The materials recovered in the MRF would be baled and exported from site to markets for reprocessing.



5.7.2 Process and Technology Description

The processes to be adopted in the MRF are standard and consistent with other MRFs around NSW and Australia. The process would involve:

- Recovery of oversize/unsuitable materials.
- Use of hoppers, feeders and conveyors.
- Use of screens, sorting and picking stations.
- Baling and stockpiling products for despatch.
- Storage and removal of residual waste (for disposal on site).

5.7.3 Site Preparation

The new MRF would be located on solid natural ground to the west of the current administration building on a platform of natural rock that is currently used for receipt and aggregation of drop-off recyclables. The natural rock platform was created many years previous as part of the development of the Kimbriki site for landfilling. This location provides a solid foundation for the facility and equipment, plus substantial shielding via natural rock walls over 4m in height to the north, east and to a lesser extent to the south.

5.7.4 Product Flow from Site and Markets

Recovered materials would be aggregated and baled for export from the site, destined to various markets around Sydney, regional NSW in the case of newspaper, and some export in the case of some plastics and mixed paper.

5.7.5 Residuals Management

The audited level of contamination in kerbside collected recyclables for SHOROC Councils is low and recovery rates in the MRF are forecast to be in the order of 90%, when kerbside recyclables are combined with self-haul drop-off and commercial delivered recyclables.

It is expected that up to 6,000 tonnes per annum of contaminants may be extracted from the dry recyclables stream and disposed of within the landfill on site. If the nature of the contaminant material is such that excess organic or food matter is included, then this reject material would be stabilised at the RRF prior to disposal within the Kimbriki landfill.

5.8 TRANSPORTATION

The construction and operation of the new facilities would result in changes in traffic levels in the vicinity of the Kimbriki site. The principal changes would relate to:

- Increased numbers of inbound heavy vehicles for deliveries of waste and outbound heavy vehicles with recycled/processed products.
- Reduced numbers of light vehicles self-hauling organics (due to increased kerb-side collection of organics).
- Increased numbers of light vehicles due to the increased employment on the Kimbriki site.

There would be an increase in the number of heavy vehicles travelling to and from the Kimbriki site of 70 loads (140 truck movements) outside of peak hours daily.

The number of light vehicle movements carrying the new operational staff would increase by between 50 and 60 during both the morning and afternoon peak period.



The reduction in self-haul organic waste delivery traffic is expected to cause a reduction of up to 300 light vehicle movements on each weekend day.

The implications of the above traffic movements on the existing road network are discussed further in Section 6.9.

5.9 CONSTRUCTION TIMETABLE

KEE proposes the RRF and MRF would be constructed concurrently over a period of approximately 18 months.

5.10 HOURS OF OPERATION

It is proposed the two new facilities at the Kimbriki Site would receive waste and despatch products within the current hours the facility is open to the public, namely 7:00am to 5:00pm but only from Monday to Friday all year including public holidays. Some products, particularly compost, would also be despatched on weekend days during these hours.

Operational personnel would be on site between 6:00am and 6:00pm on those days and on weekends. The early morning period, 6:00am to 7:00am, would be used for preparation and organisation, pre-start checks on equipment and administration. The late afternoon period, 5:00pm to 6:00pm, would be used for routine maintenance, finalising administration, etc.

The weekend time would be for general repairs and maintenance activities as well as for the reception of SHOROC vehicles carrying waste from street litter bin collections.

5.11 WORKFORCE

The construction workforce would vary throughout the construction period depending on the activities underway. Typically, the workforce would vary between 80 and 100 persons.

Once fully operational, the new facilities and additional activities within the on-site landfill and other site components would generate a total of 59 full time permanent jobs.



Section 6 Environmental Issues and Preliminary Assessment

6.1 INTRODUCTION

The Kimbriki site is located in the north western section of Warringah LGA immediately south and east of Mona Vale Road and on the boundaries of the suburbs of Terrey Hills and Ingleside. The entire Kimbriki site covers an area of 64.53ha of which approximately 40ha has been disturbed by extraction operations and waste management activities. Access to the Kimbriki site is from Kimbriki Road via a single entrance off Mona Vale Road.

This section provides a brief description of the existing environmental characteristics of the site, in particular the land proposed for construction and operation of the RRF and MRF. The potential impacts and avoidance measures proposed to minimise impacts are discussed and summarised in *italics* at the end of each subsection.

6.2 TOPOGRAPHY AND DRAINAGE

The Kimbriki site is situated within a valley open to the east-southeast with relatively undisturbed vegetation abutting all boundaries. The site is located in the upper reaches of Deep Creek, a tributary of the Narrabeen Lagoon catchment.

The southern side of the site is bounded by the Garigal National Park. Mona Vale Road follows a ridgeline and the catchment boundary approximately 100m to the north and above the landfill area and encloses the site to the west and the north.

The ground within the Kimbriki Site slopes from a level of approximately 160m AHD along the northern and western boundaries to approximately 70m AHD adjacent to the southern boundary. The working area of the landfill is currently situated at approximately 115m AHD.

Existing elevations within the RRF site vary from approximately 125m to 155m AHD with natural slopes from 3° to 20°. Natural runoff within the RRF site flows generally in a southerly direction within a separate sub-catchment to the current area of waste management. No defined streams are present in the RRF site, however, minor localised drainage lines are evident south of the RRF site.

Elevations within the MRF site vary from 119m to 122m AHD. The bulk of the site is flat with an elevation of 120m AHD. Approximately 20% of the MRF site (on the south western side) has elevations of approximately 122m AHD in an area previously subject to landfill activities.

Runoff from the MRF site currently flows generally in a south westerly direction and is managed within the main site catchment.

The topography and drainage patterns within the RRF site are suited to the proposed facility. The topography has considerably lower slopes than other areas around the margin of the current waste management area. The modified topography required for the site would create negligible drainage impacts. The location of the RRF site within a single catchment with little upslope catchment would assist in the management of surface water. Surface water management would need to satisfy ecological constraints (see Section 6.5.4).

6.3 GEOLOGY AND SOILS

The Kimbriki site is underlain by the Hawkesbury Sandstone formation which is a massive sedimentary formation varying in thickness from 60m to 270m. Beneath the Kimbriki site, the



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formation consists of essentially near-horizontal sandstone beds with occasional discontinuous lenses and inter beds of shale and unconsolidated weathered materials.

Sandstone strata predominate beneath the RRF site with individual layers commonly up to 2m in thickness, and occasionally thicker. The sandstone is typically weathered for the first 2m to 3m with the weathered material principally silty fine sand. Drilling of groundwater monitoring bores at the site found that the extensive deep beds of sandstone were essentially impervious.

The bulk of the MRF site is underlain by concrete poured directly onto excavated sandstone. A small section of the MRF site comprises previously land filled wastes (placed on the essentially impervious bedrock sandstone).

The geology of the RRF site offers an excellent base for building foundations constructed largely on solid rock. Compaction of backfilled areas would be necessary for the southern section of the site. The excavation of the silty fine sand and ripped/hydraulically hammed sandstone would yield a range of saleable products including mortar sand, fill sand and possibly armour stone or gabion rock. Limited processing would be required to produce these products.

It is noted that an arbitrary level of 130m AHD has been set at the PEA stage for the single level of the RRF site. This will be reviewed and adjusted (if necessary) to reflect the preferred quantity to be extracted / backfilled, i.e. cut and fill. Subject to the quantity of material that could be reasonably extracted during the construction period, it may be appropriate to adopt a two-tier landform).

The bulk of the MRF site would be suited for placement of load-bearing equipment within the MRF building. Previously filled areas would need to be avoided when positioning equipment and used for waste/product storage.

The topsoil and its seed bank would need to be carefully stripped and managed.

6.4 GROUNDWATER

Previous hydrogeological investigations have established that the Kimbriki site is predominantly underlain by sandstone with a low permeability typical in the range of 0.001 to 0.00001 m/day (AGC, 1993).

Three groundwater investigation holes were drilled by R. Amaral within and adjacent to the RRF site. These established groundwater conditions are variable in that permeability measurements ranged from low levels $<1 \times 10^{-9}$ m/s to higher levels in the highly pervious zones.

Amaral (2006) concluded the drill results confirmed that the groundwater table is comparatively deep and protected largely by impervious sandstone beds and on deep unsaturated zones of rock.

The groundwater resources beneath both the RRF site and MRF site would not constrain the Project. Given the depths to groundwater it is unlikely that the Project would adversely impact on this resource.

6.5 FLORA AND FAUNA

6.5.1 Introduction

A comprehensive survey and constraints assessment of the entire Kimbriki site was undertaken during September and October 2009 by Ecotone Ecological Consultants Pty Ltd (Ecotone). Ecotone recorded the types and condition of vegetation, threatened flora species, endangered ecological communities and threatened / migrating fauna species and habitat. The survey and constraints assessment was undertaken in three components:

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- Review of all relevant recent literature and threatened species databases.
- Detailed survey of the entire site over 10 days.
- Constraints assessment focusing on the north eastern sector of the Kimbriki site in the area of the RRF site.

The survey and assessment provided an thorough understanding of the ecological values of the site and the opportunities, if required, for the provision of on-site offsets for the disturbance of native vegetation or impacts upon any threatened species or endangered ecological communities on the site.

6.5.2 Literature and Database Review

Three previous flora and fauna assessments have been undertaken to record flora and fauna on and around the Kimbriki site (reports dated 1994, 2005 and 2007).

A total of 58 rare or threatened flora species, which are listed on State and Commonwealth databases, were recorded at locations within 2km of the Kimbriki site. Recorded threatened ecological communities around Sydney, and which may occur on the Kimbriki site, were also identified.

A total of 35 threatened terrestrial fauna species listed on the NSW database have previously been recorded within 10km of the Kimbriki site - 11 of which have been recorded within 2km of the centre of the Kimbriki Site. A review of the database established that up to 17 threatened and/or migratory fauna species may occur or have most potential to forage within and/or immediately surrounding the site.

All recorded and listed species and communities were noted and considered during the constraints assessment.

6.5.3 Survey Results

Flora

Six natural vegetation communities were defined across the Kimbriki site, none of which are listed as threatened ecological communities. A total of 238 flora species were identified during the field surveys, 48 of which were introduced species. Three rare or threatened plant species were identified, only one of which (*Tetratheca glandulosa*) is listed within NSW and Commonwealth Legislation. Figure 6.1a & b presents the distribution of the vegetation communities present in the north-eastern corner of the Kimbriki site, together with the condition of the vegetation and the locations of the recorded rare or threatened flora. The MRF site is located in an area of the Kimbriki Site where no remnant native vegetation occurs. Limited vegetation has been established in this area for landscaping purposes.

Fauna

A total of 74 fauna species were identified on the Kimbriki Site, two of which were introduced species. Only one threatened fauna species (a heath monitor) was positively identified near the southern boundary of the Kimbriki site. A feather of a powerful owl was located in the north western corner of the Kimbriki Site. A further ten threatened fauna species have potential to occur on the Kimbriki Site, seven of which may occur within the northeastern sector in the area proposed for the RRF.

6.5.4 Constraints Assessment

The results of the flora and fauna assessment have been used to design footprint layouts for both facilities that avoid significant impact on native vegetation.



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Figure 6.1a & b illustrate the results of the Constraints Assessment and the proposed location of the MRF and RRF. The MRF would be constructed on 0.9ha of land immediately to the west of the existing administration office. This land has been previously cleared and contains no native vegetation.

The RRF and associated maturation area are proposed to be located in an area immediately south of the Kimbriki site entrance road. They would require the removal of 4.2 hectares (ha) of native vegetation, the majority of which (2.8ha) is in a moderately disturbed condition with numerous vehicle and foot tracks throughout. The remainder of the disturbance footprint (1.4ha) contains intact, good quality native vegetation.

None of the native vegetation proposed to be removed consists of communities that are listed as either an endangered ecological community (EEC) or critically endangered ecological community (CEEC) as defined by the NSW TSC Act and the EPBC Act, respectively.

However, the clearing footprint would remove one known individual and 0.6ha of habitat area from a small population of *Tetratheca glandulosa*, which is listed as a threatened species on the TSC Act (coloured yellow on Figure 6.1b). The footprint would also clear 0.1 ha of a community which contains a species *Eucalyptus leuhmanniana* (Yellow-top Ash), which has non-legislative conservation significance but is listed in the national ROTAP database of rare and threatened Australian plants (Briggs & Leigh, 1996) (coloured blue on Figure 6.1b).

6.5.5 Biodiversity Offsets

Overall, the Project has been planned to minimise ecological impacts. The opportunity exists for on-site offsets to compensate for the clearing of natural vegetation within the RFF site.

Table 6.1 provides a summary of the area proposed as an offset for the native vegetation to be cleared as part of the Project. The offset covers an area of 8.7 ha within the Kimbriki site. As shown in Figure 6.2, the land is located to the south and south-west of the proposed facilities.

The offset area:

- Contains vegetation communities which exhibit similar characteristics as the communities to be cleared.
- Provides a long-term buffer between the proposed operations and the rural-residential properties to the south.
- Provides connectivity to the Garigal National Park.
- Provides offset ratios of 1:2.2 for native vegetation, 1:2.2 for *Tetratheca glandulosa* habitat (including 19 plants to offset the loss of 1) and 1:4 for the *Eucalyptus leuhmanniana* community.

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Figure 6.1 - Vegetation Communities, Threatened Species and Preferred Footprint

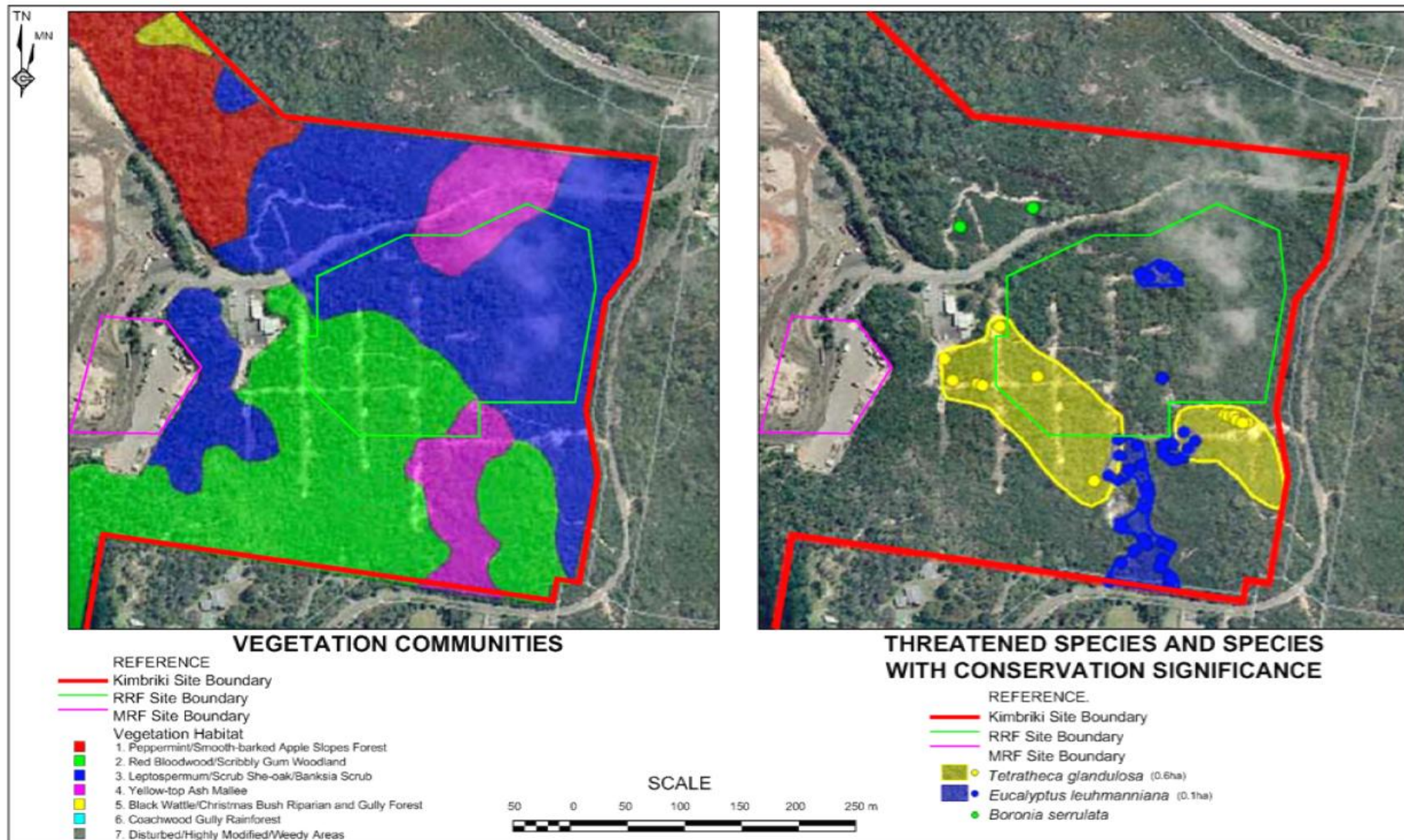


Figure 6.2 - Offset Areas

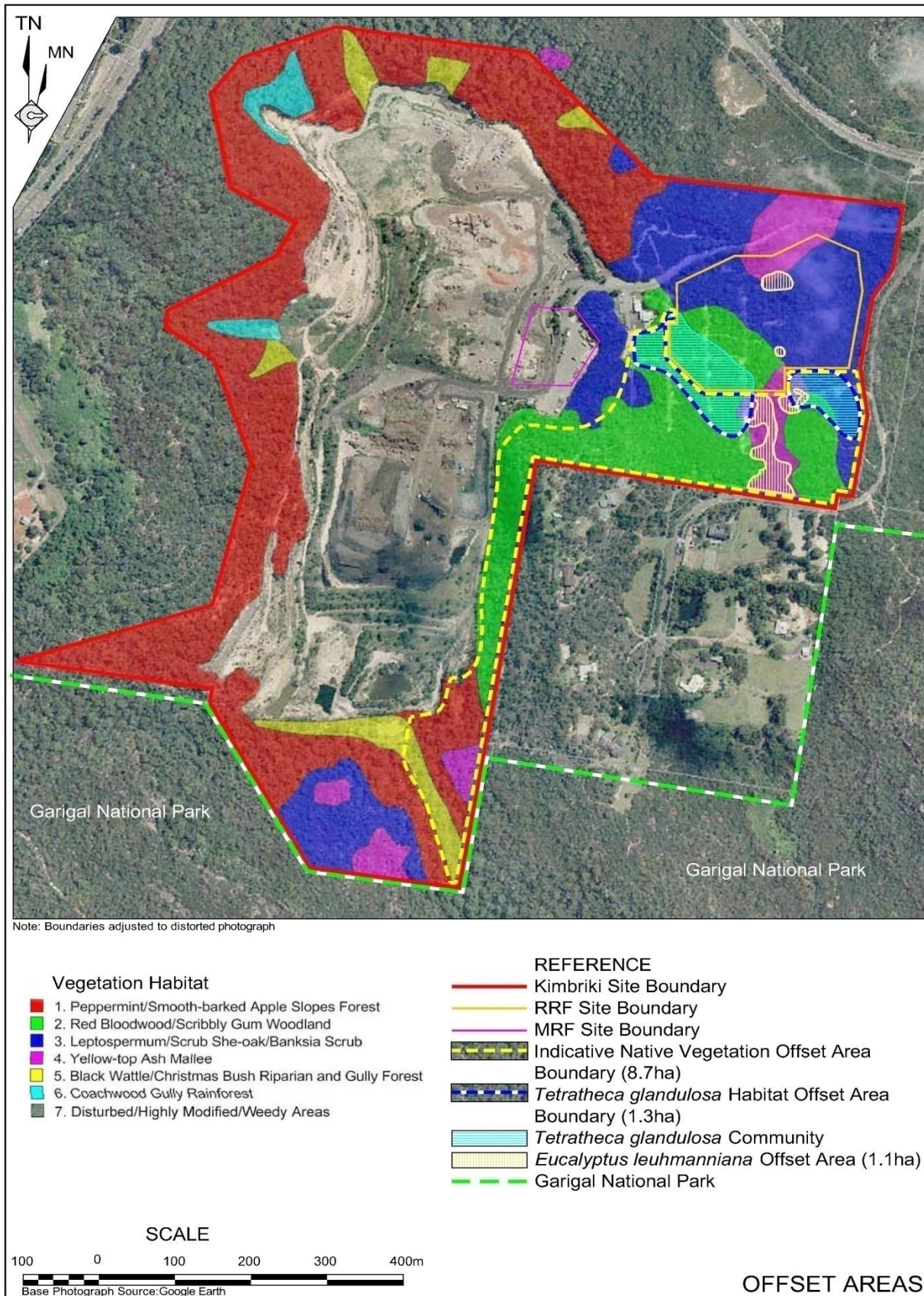


Table 6.1 - Proposed Biodiversity Offset

Vegetation / Community	To be cleared (ha)	To be retained in perpetuity (ha)	Offset Ratio
<i>Tetratheca glandulosa</i> habitat* (plants)	0.6 (1)	1.3 (19)	1 : 2.2 (1:19)
<i>Eucalyptus leuhmanniana</i> **	0.1	0.4	1 : 4
Native Vegetation (general)	3.2	7.0	1 : 2.2
TOTALS	4.2	8.7	1: 2.1
* Listed as vulnerable in the <i>Threatened Species Conservation Act, 1995</i> and the <i>Environment Protection and Biodiversity Conservation Act, 1999</i>			
** Non-legislative conservation significance, however, considered rare or threatened species listed on the ROTAP database			

KEE is committed to ensuring that the offset area will be secured for long-term conservation. The mechanism for securing the conservation of the nominated area will be determined in consultation with the Department of Planning and DECCW.

In order to supplement this offset, KEE would also regenerate the cleared areas within the offset area that have been used for vehicle and pedestrian tracks. This would be achieved by spreading topsoil from the development area onto the existing disturbed tracked areas. Ecotone indicated that this topsoil is likely to contain seeds of *Tetratheca glandulosa*, which could regenerate in the new habitat and assist the natural regeneration process.

Other planned mitigation measures reflected in the overall project design arising from the constraints assessment include the following.

- Fencing would be erected to exclude vehicle and human access to areas of native vegetation on the Kimbriki site thereby preventing rubbish dumping and other disturbance.
- Retained natural vegetation remnants would not be isolated.
- The larger trees cleared within the footprint of the RRF would be placed on the ground in remnant areas to enhance habitat values.
- Regular weed monitoring and control programs would be undertaken to limit weed invasion in areas of native vegetation within the Kimbriki site.
- Surface water within and around the RRF site would be managed to avoid any substantial increases or decreases in flow to the areas of recorded *Tetratheca glandulosa*. Similarly, nutrient-rich runoff would be directed away these plants.

With the establishment of the proposed biodiversity offset, the Project would meet “like for like” and “maintain and improve” biodiversity objectives.

6.6 ABORIGINAL HERITAGE

A preliminary archaeological investigation was undertaken of the Kimbriki site by Archaeological Surveys and Reports Pty Ltd in conjunction with a representative of the Metropolitan Local Aboriginal Land Council (LALC) to identify any sites of Indigenous cultural significance. The investigation comprised a literature review of the Aboriginal Sites Register and previous archaeological surveys on and around the site. An on-site survey was also



undertaken on 30 September 2009 of potential areas of Aboriginal occupation / use. Emphasis was placed during the survey upon the northeastern sector of the Kimbriki site in the area intended for development of the RRF.

The search of the Aboriginal Sites Register established 20 sites have previously been recorded within a 4km x 4km area centred on the Kimbriki site. None of the listed sites were recorded on the Kimbriki site.

A previous survey of the Kimbriki site in 1993 did not locate any sites particularly as no rock surfaces suitable for engraving or shelters were found (Koettig, 1993). No sites of Indigenous origin or places of potential archaeological interest were identified during the 2009 investigation of the Kimbriki site. In light of this outcome from the survey, the Metropolitan LALC recorded in writing that it has no objections or concerns with the Project.

In the event any Aboriginal sites, cultural materials or relics are located during any stage of the Project, all work would stop in the area of the find and the Metropolitan LALC and DECCW contacted immediately.

Whilst the proposed area of additional disturbance relating to the Project has been surveyed with the involvement of the Metropolitan LALC, it remains for the final footprint of the proposed disturbance to be surveyed in accordance with the DECCW Interim Community Consultation Requirements. This requirement is mandatory for Part 3A projects and would involve public advertising and approaching nominated stakeholders to invite participation of interested Aboriginal stakeholders in the survey of the area considered for development.

Aboriginal heritage issues would not constrain the construction and operation of the two new facilities on Kimbriki site.

6.7 CLIMATE AND METEOROLOGY

The Bureau of Meteorology maintains a weather monitoring station No. 066059 at Terrey Hills within the J.J. Melbourne Memorial Reserve approximately 500m west of the Kimbriki site. Between December 2008 and November 2009 the data within Table 6.2 was recorded.

Table 6.2 - Weather Statistics near the Kimbriki Site 2008-2009

Statistics		Value	Month
Minimum Temperature (daily)	- lowest	3.1°C	July
	- mean	13.6°C	
	- highest	25.3°C	January
Maximum Temperature (daily)	- lowest	12.7°C	June
	- mean	22.2°C	
	- highest	39.2°C	January
Rainfall (daily)	- lowest	0 mm	
	- highest	182.8 mm	May
Annual Rainfall		1045.6 mm	
Source: Bureau of Meteorology Weather Station 066059			

A long term summary of relevant monthly weather data will be included in the EA, together with appropriate wind roses.



6.8 SURROUNDING LAND OWNERSHIP AND LAND USE

6.8.1 Land Ownership and Residences

Figure 6.3 displays the existing land ownership surrounding the Kimbriki site. The land is either in public ownership (National Park/Warringah Shire Council) or private ownership. Two areas of rural / residential housing are located in close proximity to the Kimbriki site.

- Kimbriki Road – Three non-project related residences are located on the southern side of Kimbriki Road. The residences are located between 300m and 500m south of the RRF site. Four additional rural/residential properties adjoin the western and northern side of Kimbriki Road. The latter four properties are owned by the SHOROC Councils to provide a buffer between site operations and the three non-project related residences south of Kimbriki Road.

Two residences are located on the eastern side of Kimbriki Road near the entrance to the site. The residence closer to Mona Vale Road is somewhat dilapidated whereas the southern residence is a comparative new substantial residence.

- Kamber Road – Three residences are present on the southern side of Kamber Road on two lots. These residences are between 800m and 1,150m southwest of the existing waste management activities and in excess of 1.2km from the RRF site.

It is noted that all land between the northern and western boundaries of the Kimbriki Site and Mona Vale Road is owned by Warringah Council and zoned “Public Open Space”. Hence, this land is unlikely to be built upon and will remain a buffer to the existing and proposed development.

The presence of the surrounding residences would be a constraint upon on-site activities, particularly with respect to the three residences south of Kimbriki Road and two residences east of Kimbriki Road. These residents may experience construction and traffic noise impacts. Mitigation measures to reduce impacts on neighbouring residents are discussed in the following sections.

6.8.2 Surrounding Land Uses

Figure 6.4 displays the current land uses surrounding the Kimbriki Site comprising the following.

- Garigal and Ku-ring-gai National Parks.
- Mona Vale Road and local roads.
- Rural/residential housing (discussed in Section 6.8.1).
- Residential housing in Terrey Hills.
- Retail/wholesale stores on the western side of Mona Vale Road focusing on nursery/landscaping/equestrian supplies.

All off-site impacts would be managed to avoid / minimize impacts on the surrounding land uses. Particular emphasis would be placed on protecting the downstream environment in the Garigal National Park



Figure 6.3 - Land Ownership

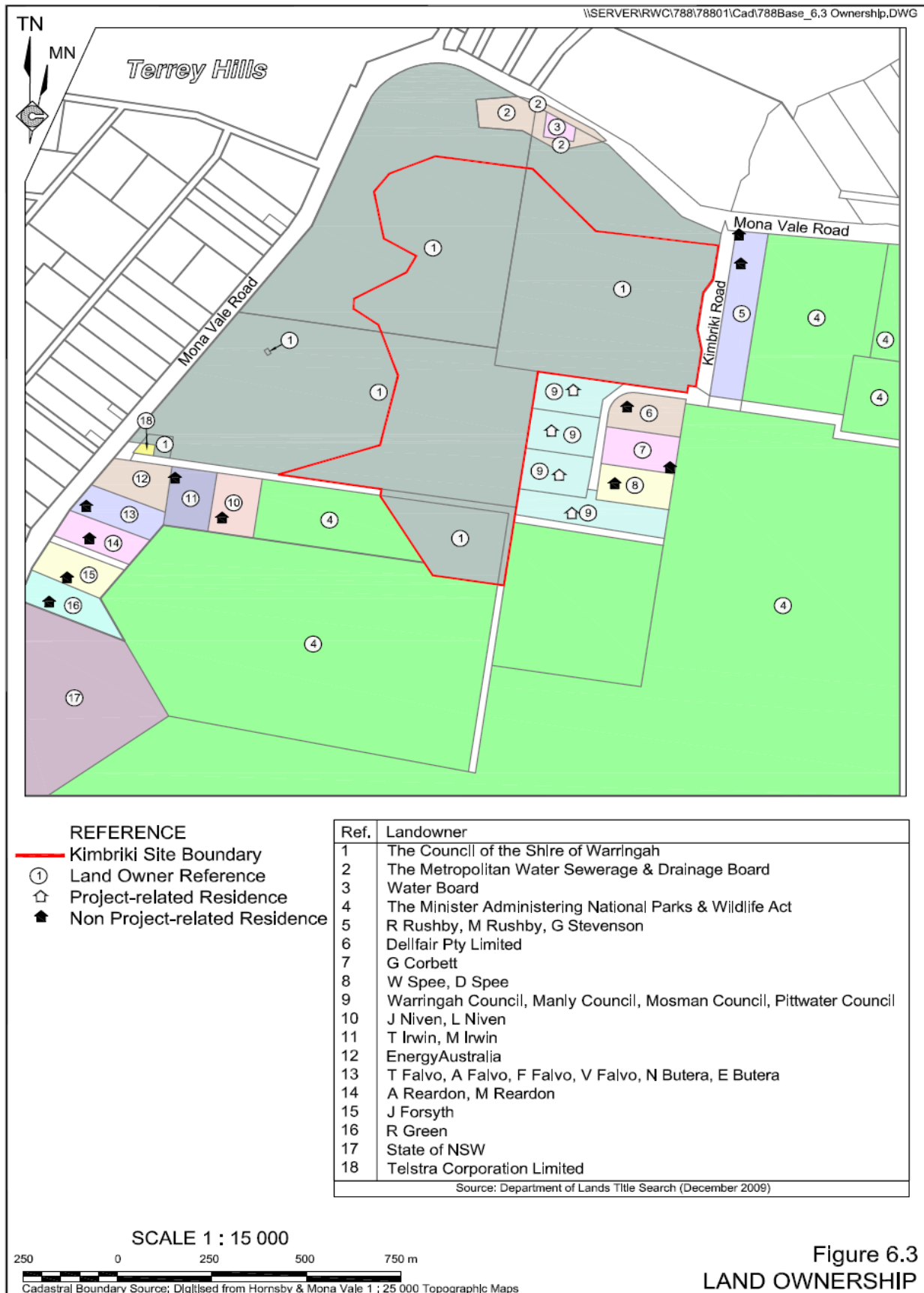


Figure 6.4 - Land Use

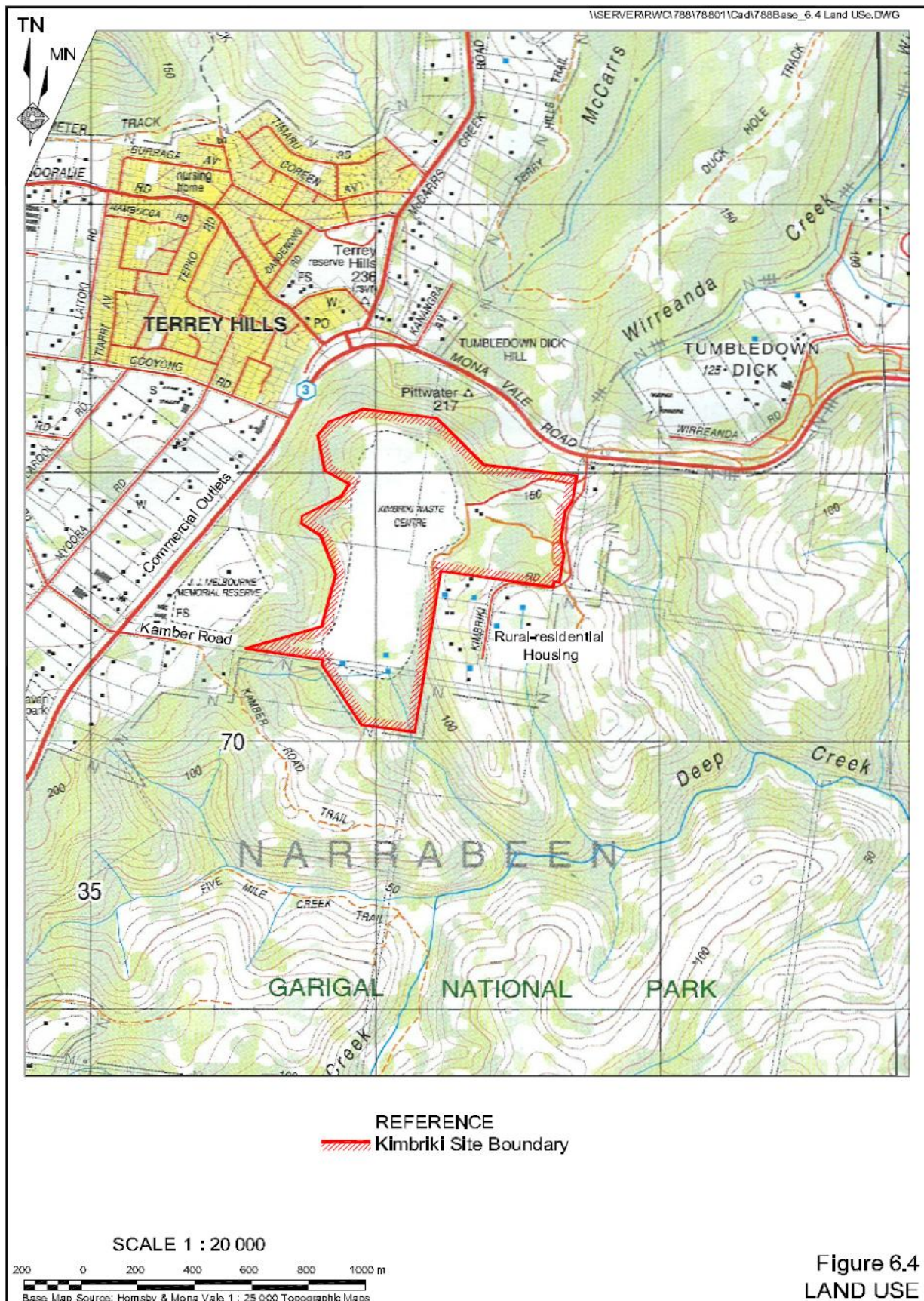


Figure 6.4
LAND USE

6.9 TRAFFIC AND TRANSPORT

The existing road network and traffic levels in the vicinity of the Kimbriki site have been studied by GTA Traffic Consultants to establish the status of the existing roads and intersections.

Mona Vale Road carries approximately 34,000 vehicles per day, of which approximately 2,080 travel on Kimbriki Road of a weekday and 2,300 on a weekend day. The bulk of this traffic is destined to or leaving from the Kimbriki Facility with only a small number accessing residences fronting onto Kimbriki Road.

A program of automated traffic counts and observations at the Mona Vale Road / Kimbriki Road intersection was conducted by GTA Traffic Consultants. The program identified current traffic levels and provided the basis for a preliminary assessment impact on Mona Vale Road traffic flows as a result of the proposed traffic increases resulting from the project. GTA also identified three components of the intersection that could be upgraded to accommodate future traffic levels.

- Improved line marking and lengthening of the westbound departure lane from Kimbriki Road.
- Localised road widening on the northern side of Mona Vale Road to improve the capacity of the right hand storage bay for eastbound traffic.
- Improved line marking and physical protection could be undertaken at the intersection to improve safety for eastbound through traffic.

The improvements to the Mona Vale Road/Kimbriki Road intersection would be considered further during the preparation of the Traffic Assessment and overall EA.

Resolution of the above three issues in conjunction with the overall Traffic Assessment would ensure the new facilities would not cause any unreasonable impacts to traffic travelling on Mona Vale Road.

6.10 AIR QUALITY

Existing air quality around the Kimbriki site is largely influenced by the on-site activities and the level of control upon these activities.

As required under KEE's current consent conditions, dust monitoring is undertaken for the on-site operations. This has established a historical record of compliance with relevant air quality goals. Future works associated with the construction and operation of the new facilities would also need to satisfy the air quality goals.

The following measures would be adopted to ensure the two new facilities don't create significant dust impacts above and beyond existing levels.

- Both facilities would be enclosed.
- The RRF site would be situated at a lower level than the existing heights.
- The moisture content of some end products like composts and soil ameliorants would be maintained.

Historically, odour generation and management has not been a major issue due largely to the inert nature of incoming wastes i.e. organic wastes with the potential to generate significant odour have been excluded. The proposed RRF would be designed to operate with a comprehensive odour management system. The principal controls for the RRF would include the following.



- Full enclosure of the waste reception and processing areas.
- Covering (as a minimum) of active composting operations.
- Filtration of all process air from the process building prior to its release.
- Installation of industry best practice odour control equipment.
- Maintaining all stockpiled organic materials in an aerobic condition.

Controls would be adopted to limit odour from the RRF, maturation activities and MRF. The controls required are well proven and hence odour-related impacts should be negligible.

6.11 NOISE

Existing noise levels experienced at the residences around the Kimbriki site are attributable principally to traffic on Mona Vale Road, with some contributions from the existing activities on the Kimbriki site. The most notable noise originating on the Kimbriki site is the reversing alarms on the on-site equipment and various delivery trucks.

The equipment to be used for the RRF and MRF would be located within buildings, which would substantially attenuate noise levels. A continuous wall would be constructed on the southern side of the RRF building to limit noise propagated to the south. Site vehicles would all be required to conform to Australian Standards for noise emissions. Lower frequency reversing alarms would be fitted to all on-site earthmoving equipment. All fixed equipment (balers, screening plant etc) would be contained inside a fully enclosed building to further assist in attenuating noise emissions.

Construction, operational and traffic noise levels associated with the Project would need to be managed. A detailed construction, operational and traffic noise assessment would be undertaken during the preparation of the EA. This would determine the appropriate mitigation measures required to reduce impacts to acceptable levels. KEE would commit to property mitigation measures or acquisition if required.

6.12 VISUAL IMPACTS

The existing activities on the Kimbriki site and the RRF site are well shielded from the surrounding non-project related residences largely due to topography and the vegetation around the perimeter of the site. Distant views (>5km) are possible from the Oxford Falls area, however, the impacts at those distances are assessed to be negligible.

The proposed structures constructed for the new facilities would be clad in a green hue to limit visual impacts when viewed from external vantage points.

Visual impacts would be minimised by the appropriate design of the proposed buildings and by retaining existing vegetation buffer zones.

6.13 SUMMARY OF ENVIRONMENTAL ISSUES AND RISKS

Information collected during the PEA process has determined that the Project would have negligible impacts on surrounding topography, geotechnical, surface water, ground water, visual and Aboriginal heritage. The four key issues likely to influence the design and operation of the new facilities are biodiversity, traffic, air quality (odour) and noise. In each case, design and operational mitigation and control measures should be sufficient to ensure acceptable impacts are achieved.

Section 7 Stakeholder and Community Engagement

7.1 APPROACH

KEE is actively engaged with its immediate neighbours and major stakeholders as well as the broader community across the surrounding local government areas of the four shareholder Councils. The communication and engagement being undertaken for this project is designed to:

- Create awareness of KEE's proposed project and provide information to residents and businesses across the four local government areas.
- Ensure information about KEE's proposed project is easily accessible to all stakeholders and sectors of the community.
- Provide opportunities and mechanisms for feedback and comments.
- Afford close liaison with KEE's immediate neighbours.
- Provide opportunities for information dissemination, consultation and feedback throughout the planning process.

7.2 SHOROC COUNCILS

The Kimbriki Resource Recovery Project has been developed in close consultation with the four shareholder Councils at both officer and elected representative levels. Detailed briefings of Councillors and General Managers have been conducted with each of the four Councils.

The briefings of Councillors included an overview of progress in establishing the KEE business and development of business plans, progress with the planning for the long-term activities at the Kimbriki site, progress with the preparation of the application to the Department of Planning for project approval, and progress with community consultation and engagement.

KEE also conducted two workshops with officers of all four Councils in the areas of waste management, communications and community relations. For the waste managers, the workshop covered the issues relating to kerbside services, schedules for renewal of current collection contracts, issues to consider in respect of new services for source separation of food and garden waste, and planning issues concerning future growth in the region and changing demographics that will need to be considered.

With the communications and community relations managers, the workshop canvassed options for communications tools, methods to capture and identify interested stakeholder groups and the Council communication and engagement opportunities that are on the horizon into which the KEE communications might be linked. Monthly meetings will continue to be conducted with the SHOROC communications managers throughout the planning process.

7.3 KEE'S NEIGHBOURS

A letter was delivered to each of the seven residential neighbours in January 2010 providing an overview of the general objectives of the proposed project, offering individual meetings with KEE staff, and a commitment from KEE for personal follow-up and to set up meetings where individual neighbours are interested.

KEE representatives met with a number of its neighbours during January 2010, the principal issues they raised related to potential odour and impacts on real estate values.



KEE will continue to liaise closely with its rural-residential neighbours throughout the process to gain project approval.

7.4 KEE'S STAKEHOLDERS

With input from the communications and community relations managers of the four Councils, KEE has identified at least 60 stakeholder and interest groups across the four LGAs. Letters are being distributed to the following groups accompanied by a project information sheet.

SHOROC Waste Managers	Mosman Groups (2).
State Agencies (4).	Wider Groups and NGO's (8).
MP's (4 x State/2 x Federal).	Neighbouring Councils (5).
Manly Groups (7).	Current Customers and Users.
Pittwater Groups (10).	Potential Future Customers and Users.
Warringah Groups (12).	Waste Industry Service Providers (5).

7.5 SHOROC COMMUNITY

The project information sheet was prepared to provide details of the Project to the community. The project information sheet is on KEE's website and has also been made available to each Council to place on their website or to link with the KEE website. Printed copies have been supplied to all Councils and are available on request directly from KEE.

A log recording all contacts regarding the project is maintained by KEE and provided to the Board and the SHOROC communications managers.

KEE regularly updates its website and provides similar updates for each Council.

Media releases have also been distributed to local and state media.

7.6 NEXT STEPS IN ENGAGEMENT PROGRAM

A communications management plan has been developed to manage engagement throughout the planning and approvals process. This plan identifies an array of stakeholders and specifies the appropriate levels of engagement for the various stakeholder groups. KEE will continue to engage with its neighbours, stakeholders, shareholder Councils and the broader community about the Project in accordance with this communications plan.



Section 8 Socio-Economic Considerations

8.1 WASTE MANAGEMENT AND RESOURCE RECOVERY CHARGES

The cost of disposal of MSW to landfill will escalate rapidly as both the transport distances to landfill and the Section 88 Waste and Environment Levy increase. The Section 88 Waste and Environment Levy is scheduled to increase annually at a rate of \$10 per tonne, up to 2016, plus an annual CPI increase.

Once the Belrose Landfill is closed, SHOROC MSW is likely to be transported to Eastern Creek, then Lucas Height and possibly onto Woodlawn once both Eastern Creek and Lucas Heights are closed to putrescible waste some time before 2020. The cost of this transport is set to increase through both the extended distance for transporting the waste and the potential introduction of a price for carbon associated with national climate change measures.

The combined impact of these cost increases is expected to push the cost of on-going landfill disposal of SHOROC MSW to in excess of \$250 to \$300 per tonne by around 2018 or 2020.

With the introduction of the new facilities at the Kimbriki site it is estimated that the cost to SHOROC Councils over the life of the Project will be below the landfill cost estimate, perhaps in the range of \$175 to \$225 per tonne, with the exact benefit depending on the selected technologies and the availability of markets for composts and compost-like products from the RRF.

8.2 LOCAL EMPLOYMENT

Municipal Solid Waste

Local employment at the Belrose landfill will decline as that facility is closed, this decline will occur irrespective of the developments at the Kimbriki site. The planned employment intensity at the upgraded Kimbriki facility would be almost an order of magnitude greater than that for the landfill. On this basis, there will be a net increase in local employment associated with the Project.

Recyclables

The establishment of the MRF at the upgraded Kimbriki facility will create new employment opportunities within the SHOROC region, without significant reduction in employment at the distant MRFs.

Table 8.1 presents an estimate of the employment impacts arising from the closure of the Belrose landfill and operation of the two new facilities at the Kimbriki site. There would be a net increase in jobs in the order of 56 full time equivalent positions.

Table 8.1 - Waste Management Activity Employment Levels

Waste Management Activity	Jobs Lost	Jobs Created
Belrose Landfill	(3)	
Kimbriki RRF		26
Kimbriki MRF		30
Kimbriki landfill		3
Total Changes in Employment	(3)	59



8.3 IMPACTS ON SHOROC BUSINESSES

For businesses in the SHOROC region the primary change arising from the Project would be the opportunity for greater local disposal of a wider range of source-separated wastes, meaning lower costs for disposal and improved resource recovery.

Whilst KEE does not intend to receive mixed putrescible waste from the local business community, there will be a strong financial incentive for local industry to implement the source separation of organic wastes and deliver that waste stream to the RRF on the Kimbriki site. This additional feedstock would supplement the source-separated organics from the kerbside collections and boost the productivity of the facility improving the financial viability of the facility for the whole SHOROC community.

For businesses that achieve good levels of source separation of organic wastes e.g. restaurants, fast food outlets, clubs, hotels etc., the residual waste generated by those facilities will be significantly less contaminated with food organics. This creates the opportunity for higher levels of recovery of dry recyclables and packaging from this mixed waste that might otherwise be spoilt by the food organics.

KEE will encourage local businesses to maintain these recoverable resources clean and uncontaminated and to arrange for them to be collected and delivered to the MRF at the Kimbriki site.

It is likely that for businesses that choose to introduce source separation and recovery of dry recyclables and packaging, the total cost of waste disposal will fall in spite of additional collections. This is due to the materials being beneficially processed and recycled rather than being land filled. Additional savings would be generated as a result of the materials not being transported out of the region.

8.4 AMENITY IMPACTS

The proposed upgraded Kimbriki Facility is well located in that few residents within non-project related residences are within close proximity of the facility and the surrounding vegetation and topography substantially shields the facility from those residents. The generated noise, dust and odour would be sufficiently controlled to limit contributions to amenity impacts. The modest increase in traffic levels would continue to impact upon the amenity of those residents fronting onto Kimbriki Road.

The Kimbriki site will be contained by a chainmesh fence and landscaping of the surrounding earth embankments and road accesses will help maintain the site's visual amenity to customers on their way to using the various publicly – accessible activity areas on site. Only delivery trucks and trucks collecting commodities will access the proposed new facilities. These areas would not be accessible by the general public without prior arrangements.

8.5 PROVIDING ACCEPTABLE FEEDSTOCK ARRANGEMENTS

For the residents of SHOROC the proposed facilities would not require any major change to the current bin configurations, since all four Councils currently have kerbside collections for MSW, recyclables and garden organics.

The combination of the RRF and MRF means that the Project would be extremely flexible about the types of feed stocks that can be received and processed although there are significant benefits from a processing perspective to receiving the majority of food and garden wastes separated from mixed residual waste.

Prior to going to tender, KEE will present SHOROC with a range of price and resource recovery outcomes based on different bin configurations to ensure all Councils are able to make an informed choice regarding their preferred system.



KEE will ensure through its contractual arrangements that the selected operator is heavily involved both financially and with providing staffing and educational facilities at the site to assist SHOROC waste educators in providing the best community engagement with SHOROC's selected bin configurations.

8.6 OTHER SOCIAL IMPACTS

The Project provides SHOROC members and their constituents with a great opportunity to become a part of a local, integrated waste management solution at the Kimbriki site. Currently KEE operates an Eco House and Garden complex which includes a food garden to demonstrate the use of source separation of organic wastes, worm farms, composting and gardening with recycled organics. The Eco House education centre, constructed from 95% waste materials, is used to demonstrate ways in which schools and households can proactively manage their wastes to maximise resource recovery.

A proportion of the income received from the sale of products from both the RRF and MRF would be set aside to provide funding to assist in the expansion of these programs to enable greater community involvement with the facilities. Transferring customers out of the "old dump" mentality and making them more aware of the range of services available at the site not only increases resource recovery but also engenders a sense of ownership by the community, particularly when it is recognised that the regions waste is being managed within the region.



Section 9 Project Justification and Conclusion

9.1 PROJECT JUSTIFICATION

The Kimbriki Resource Recovery Project can be justified through the consideration of the following.

Project Need	The imminent closure of the Belrose landfill clearly crystallises the need for a new system to manage municipal solid waste in the SHOROC region. Business as usual is not an option.
Biophysical Considerations	On-going landfilling of untreated municipal solid waste and long-haul transport of wastes in the longer-term out of the Sydney Metropolitan Area simply transfers the waste and environmental problems to other communities and increases carbon dioxide emissions. The Project satisfies each of the principles of ecologically sustainable development.
Socio-economic Considerations	Improved management of wastes within the households of the community and within the geographical boundaries of the SHOROC region builds high-level self-sufficiency, reinforces individual responsibilities and creates local jobs.
Project Deliverables	The Kimbriki Resource Recovery Project would deliver superior financial surety for the communities, greater levels of resource recovery, reduced environmental impacts, and greater community participation in the management of its waste.
Consequences of Not Proceeding	Failure to act in the manner proposed would create various environmental impacts across the greater Sydney Metropolitan Area through the long haul transportation of waste from the SHOROC area, combined with higher economic cost for the SHOROC community. The long haul landfill options would also result in significantly reduced resource recovery levels and increased greenhouse gas emissions compared to the proposed project. If the MSW were to be land filled with no resource recovery a significant volume of resources would be buried rather than recovered for re-use.

9.2 CONCLUSION

This document highlights the strategic waste management justification and need for the SHOROC Councils to develop and operate resource recovery infrastructure at the Kimbriki site in Terrey Hills.

The proposed development would:

- Deliver on the State Government's target of 66% resource recovery from the municipal sector in the region.
- Support the business community in the region to achieve higher levels of resource recovery.



- Protect the northern beaches business and residential communities from the sharp increase in waste disposal costs that will occur over the next five years.
- Minimise environmental impacts from resource management in the region by continuing to seek local solutions.
- Support neighbouring Councils in their pursuit of improving resource recovery from their municipal wastes.

There are clear indications that the environmental and financial outcomes for both the local community and the wider Sydney community will be better served through the SHOROC community taking greater control and responsibility for managing its own waste with this local solution.



Section 10 References

AGC Woodward-Clyde Pty Ltd. 1993. *Geotechnical investigation for the proposed water quality management area*. Report prepared for Joint Services Committee.

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