



Executive Summary

INTRODUCTION

Orange City Council is proposing an integrated plan for improved resource recovery and residual waste management for the Orange local government area (LGA), and to address the current situation where the landfill space at the Ophir Road site allocated for municipal and commercial wastes is predicted to be consumed by mid 2013.

The Project would improve diversion from landfill from the current 18%-20% to 58%, thereby contributing to achievement of the 2007 *NSW Waste Avoidance and Resource Recovery Strategy* targets for diversion of waste from landfill.

This Environmental Assessment has been prepared by GHD Pty Ltd (GHD) in accordance with the requirements of Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act). It has been prepared to support an application to the NSW Minister for Planning for approval of the Project and to address the requirements of the Director-General of the NSW Department of Planning (the Director-General's requirements) dated 14 April 2009.

THE PROPONENT

The proponent for the Project is Orange City Council. The council (established 1860) is a democratically elected local government body, responsible for providing services to the residential, industrial and commercial community of approximately 40,000 people and to visitors of the city and surrounding areas. Some 3,500 people from surrounding shires work in Orange. The council provides physical infrastructure as well as environmental, social and cultural services for use by the residents of both the City and the surrounding areas. Furthermore, the council aims to maintain the natural heritage of the area and strives to attract appropriate value-adding development and investment into the region.

THE PROJECT

The Project includes new operations at two separate sites owned by the Proponent:

- ▶ The existing Ophir Road Resource Recovery Centre (RRC) located approximately 5 km north east of Orange central business district; and
- ▶ The proposed Euchareena Road Resource Recovery Centre (RRC) located approximately 44 km from Orange and 5 km northeast of Molong. The Euchareena Road Site covers an area of 192.6 ha.

The location of the two sites within the regional context is shown at Figure 0-1.

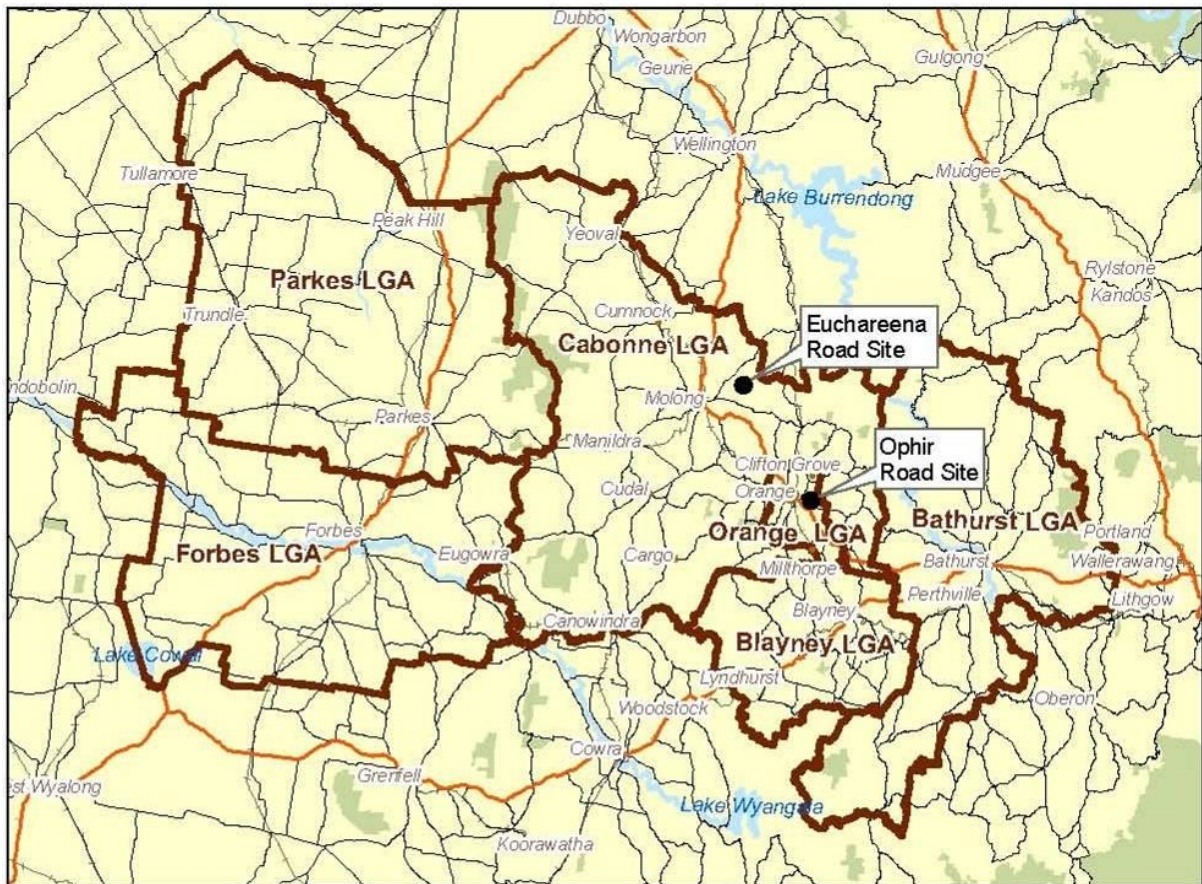


Figure 0-1 Regional context

The following new infrastructure, for which project approval is sought, would be provided at each site:

- ▶ Ophir Road RRC – A new materials recovery facility (MRF) building, for the existing or new MRF equipment to service Orange and five other regional councils under the current kerbside recycling arrangements, plus a waste baling operation within the existing MRF building, which would be modified to suit the equipment and permit short term storage of bales;
- ▶ Euchareena Road RRC – A new enclosed tunnel composting plant for separately collected food and garden organics with a biofilter, associated roads, outdoor compost maturation and refining areas, plus a landfill to receive bales of waste from Ophir Road and other regional sources (if required), and unbaled materials deemed unsuitable for baling, associated access roads, a weighbridge, site amenities, and vehicle parking areas.



The key components of the Project are summarised in the following table:

Key components of the Project

Aspect	
Ophir Road Resource Recovery Centre	
Proposed key infrastructure	Baling facility Relocated MRF
Proposed ancillary infrastructure	Internal roads
Proposed baling facility throughput	Approximately 20,000- 26,000 t/yr
Proposed relocated MRF throughput	Approximately 10,000 – 13,000 t/yr
Hours of operation	Public access: 8 am – 5 pm, 7 days Operation: 7 am – 6 pm, 7 days Waste receipt: 7 am – 6 pm, 7 days
Number of employees	Current: 7 (landfill, gatehouse, resource recovery), 34 (material recovery facility and collections) Proposed during operation: 7 (baling plant, landfill, gatehouse, resource recovery), 34 (material recovery facility and collections) Proposed during construction: 20
Euchareena Road Resource Recovery Centre	
Proposed key infrastructure	Baled waste landfill Enclosed tunnel composting facility
Proposed ancillary infrastructure	Weighbridge and gatehouse External roads and intersection Stormwater management Leachate management Fences Power supply Internal roads Amenities Car parking
Proposed Euchareena Road landfill capacity	1.5 million m ³
Proposed Euchareena Road landfill filling rate	Approximately 30,000 – 45,000 t/yr
Proposed composting facility capacity	Approximately 15,000 – 20,000 t/yr



Aspect

Hours of operation	No public access Landfill operation: 7 am – 6 pm, Monday to Friday Enclosed tunnel composting facility operation: 7 am – 6 pm, Monday to Friday Enclosed tunnel composting process: continuous (no moving parts) Waste receipt: 9 am – 3 pm (+after 4:30 pm – 6 pm), Monday to Friday (except in cases of emergency)
Number of employees	Current: 0 Proposed during operation: 6 Proposed during construction: 20

OVERALL STRATEGY

The project forms part of the overall strategy for resource recovery and waste management for Orange, which involves five new activities:

1. New residential food/garden organics waste collection service

The new kerbside collection service would be provided to all households in Orange, as well as the villages of Spring Hill and Lucknow, to capture domestic food and garden organics in a single special purpose mobile garbage bin. Some defined capacity for regional councils to access a similar service is included in the Project.

2. Processing of food/garden organics at the Euchareena Road RRC

Food and garden organics from domestic and commercial services would be delivered direct to the Euchareena Road RRC and composted using a new Alternative Waste Technology (AWT) facility to produce high grade compost for use in regional and local farms and gardens. Food waste generated by businesses would also be diverted to the AWT facility, for composting in combination with the residential organic stream.

3. Recovery of dry recyclable materials at the Ophir Road RRC

The existing Orange City and regional kerbside recycling system would be maintained and improved by securing beneficial use of a proportion of glass fines produced in MRF processing of recyclables and by extending the application of event-based recycling. Recyclables would be sorted at a new MRF to be constructed within the Ophir Road RRC.

Streamed recyclable commercial and industrial (C&I) and construction and demolition (C&D) materials would be consolidated and stored according to material type pending aggregation of sufficient quantities for efficient transport to markets.

4. Baling of mixed residual waste at the Ophir Road RRC

Mixed residual domestic waste (with most of the food and garden organics removed) would be delivered to a new facility at the Ophir Road RRC for consolidation and primary sorting/recovery of gross recyclable materials. The primary-sorted waste would then be compacted and baled for transport to the Euchareena Road RRC and safe disposal.

Mixed dry residual C&I and C&D waste from which no further value can be efficiently gained would be loaded into skips for transport to the Euchareena Road RRC and safe disposal. Some defined capacity for regional councils to access a similar service is included in the Project.

5. Disposal of mixed residual waste at Euchareena Road RRC

The baled mixed residual waste delivered to the Euchareena Road RRC would be disposed of in a specially designed landfill. Wastes loaded into skips, and other wastes unsuited to baling, would be separately transported to the Euchareena Road RRC also for landfill disposal.

Key resource recovery outcomes from implementation of the Orange City *Resource Recovery and Waste Management Strategy* are summarised in Box 1.

Box 1 Key resource recovery outcomes of the Resource Recovery and Waste Management Strategy for Orange

Waste recovery and diversion from landfill – 58% overall:

- ▶ 63% of municipal waste generated.
- ▶ 53% of C&I waste generated.
- ▶ 53% of C&D waste generated.

Organic waste diverted from landfill for production of high quality compost:

- ▶ 9,100 t/yr of municipal food/garden organics.
- ▶ 2,061 t/yr of C&I food/garden organics.
- ▶ 3,650 t/yr of sewage biosolids.

Dry recyclable materials captured and recycled:

- ▶ 2,883 t/yr of kerbside collected municipal paper/cardboard, container recyclables and glass fines.
- ▶ 4,053 t/yr of C&I and C&D recyclables – paper/cardboard, timber, glass, steel, etc.

Garden waste processing for production of mulch:

- ▶ 3,000 t/yr of municipal garden waste.
- ▶ 471 t/yr of C&I garden waste.

Virgin excavated natural material diverted from landfill:

- ▶ 12,050 t/yr of VENM for Ophir Road landfill capping and remediation, and blending into soil products.

REGIONAL INITIATIVE

This Project is a regional initiative for central west New South Wales, utilising new facilities located in the Orange City and Cabonne local government areas. It involves relocating the MRF on the current site, which is currently utilised by five other Regional Councils for processing their kerbside recyclables. The materials rejected from the MRF as unsuitable for recycling currently go into the Ophir Road landfill. In future those rejected materials will be disposed of to the proposed new landfill at the Euchareena Road RRC. An available landfill is an essential component of an effective recycling facility and the Euchareena Road RRC will perform that important function in the continuation of recycling for the LGAs in the region.



The enclosed tunnel composting plant at Euchareena Road RRC would also be available for these other councils, who may not otherwise be in a position to fund such technology, due to their significantly lower waste quantities. Without such affordable AWT technology, these councils may not be able to achieve significant diversions of waste from landfill, and meet their obligations under the NetWaste Strategy and in accordance with NSW State Government Waste Strategy targets or targets set out in the Draft *NSW State Plan* (2009). Sending food/garden organics to the enclosed tunnel composting plant would allow these councils to reduce their greenhouse gas emissions, and also extend the time before they run out of landfill space.

The Project is therefore critical to the Orange and the Central West region making significant progress towards meeting the NSW Waste Strategy targets. The baling plant and baled waste landfill are also available for other councils, including Cabonne (which was formerly a joint venture partner from 2000 - 2009), to access on a commercial basis. For councils that are predicted to run out of landfill space over the next few years, the Euchareena Road RRC would provide them with a state of the art facility that would meet Department of Environment, Climate Change and Water (DECCW) requirements and minimise their environmental liabilities.

THE ENVIRONMENTAL ASSESSMENT PROCESS

On 25 September 2008, the NSW Director-General of Planning as delegate for the NSW Minister for Planning formed the opinion that the proposed Orange Resource Recovery and Waste Management Project is a major project to which Part 3A of the EP&A Act applies.

The NSW Minister for Planning is the approval authority for the Project, and an Environmental Assessment (this document) is required to support the application for project approval in accordance with the requirements of Section 75 of the EP&A Act.

CONSULTATION

Statutory consultation was undertaken, according to the Director-General's requirements, during preparation of the Environmental Assessment. Stakeholder comments have been addressed in the Environmental Assessment. In addition, consultation was undertaken with the local and wider community to create awareness in the community about the Project. This was achieved through a range of methods including information newsletter distribution, media releases, advertisements in local newspapers and television, community information days, community focus groups, two 'Bang the Table' forums, development of a project website and a project 1800 number.

NEED AND JUSTIFIABLE DEMAND

Capacity/demand position at the Ophir Road landfill

Remaining capacity of the Ophir Road Landfill at end June 2009 is estimated as 230,000 m³ or 230,000 t. Landfill capacity is currently being drawn down at a waste input rate of around 54,000 t/yr (2007/08). At the current waste input rate, the remaining life of the Ophir Road landfill facility is less than four years, with closure likely in mid 2013.

The Project would increase the level of resource recovery to 58%¹. Despite this very high level of resource recovery, nearly 28,000 t/yr of residual waste would require disposal.

¹ This exceeds the current level of resource recovery for Sydney – which is assisted by a waste disposal and environment levy currently at nearly \$47/tonne.



A further consideration is the need to reserve a measure of landfill capacity for emergency disposal requirements such as natural disasters. Contingency capacity is a critical requirement for any community waste facility.

Alignment with the provisions of the NSW Waste Avoidance and Resource Recovery Strategy

The Project is fully aligned with the NSW Government's direction for waste as expressed in the *NSW Waste Avoidance and Resource Recovery Strategy 2007*. The Project is built around a high level of food/garden organics recovery (from both municipal and C&I sectors) in order to maximise diversion of organics from landfill. The Project assists in meeting the Draft *NSW State Plan (2009)* greenhouse gas reduction targets. It also features improved recovery and recycling of household paper and containers collected through the kerbside recycling scheme. The Proponent's *Resource Recovery and Waste Management Strategy* will also focus on improving of business sector resource recovery (both C&I and C&D) to recycle paper, timber, metals and plastics.

Alternative existing waste disposal landfill sites

Alternatives involving transportation of residual waste, after separate collection of organics and composting at Euchareena Road RRC (as per the Project), or all wastes (excluding virgin excavated natural material) to an existing landfill already in operation at a regional centre, have been explored. A landfill facility with significant future airspace exists at Dubbo, some 150 km from Orange (a 300 km round trip). Transportation of residual wastes to Dubbo for disposal by either road or rail is disadvantaged by the prohibitive transport distances involved, the foregone opportunity for beneficial waste processing and resource recovery in Orange and the surrounding region, and the consequent scale of the residual waste transport task.

The scheme is further disadvantaged by the probable need for the landfill host to gain appropriate statutory approvals to receive substantially increased waste tonnages. The current approval for the Dubbo facility was obtained many years ago, and the ability of the host to use this approval for substantially increased tonnages is uncertain. A proposal to utilise a former gold mine at Parkes has similar disadvantages (a distance of over 100 km each way) coupled with the fact that it has no approval to operate as a landfill, and would likely remain in private ownership during and after use as a landfill.

Potential to crowd-out resource recovery actions

The facilities provided by this project would provide a greatly improved level of resource recovery compared to current facilities. However, with this and other advanced resource recovery schemes, landfill based disposal arrangements are necessary for residual wastes from which no further value can be efficiently gained. This includes process residuals and those materials which are unsuited for processing.

The proposed new landfill facility at Euchareena Road RRC for disposal of residual waste is an integral part of the multi-faceted waste strategy. The landfill is the final activity in an integrated set of resource recovery initiatives comprising the waste strategy.

Protection of the environment

The Proponent recognises the importance of improving environmental standards for landfill design and management. This Environmental Assessment demonstrates a landfilling philosophy based on the idea of actively avoiding landfill disposal of much of the greenhouse gas-forming food/garden organics generated by the community and business. Processing of this organic material to create compost averts



its potential to form harmful greenhouse gases during biodegradation in a landfill. In addition, responsible management of the landfill by the Proponent would enable landfill gas management measures to be implemented to minimise the emissions of methane to the environment, and thereby minimise the likelihood that Orange residents would be liable for purchasing Carbon Pollution Reduction Scheme (CPRS) permits under the scheme being considered by the Commonwealth Government.

Removal of organics from the residual waste stream and separate processing would also minimise the biologically active content of leachate in the landfill. Any leachate created through rainfall on the active cell areas would be captured and transferred to the Orange Wastewater Treatment Plant for processing.

This environmentally sound landfilling philosophy is also distinguished by the decision that household and commercial residual wastes would be compacted and baled for transport from Orange to the proposed Euchareena Road RRC. This would minimise the number of truck movements associated with the transfer of these wastes from the Ophir Road RRC to the Euchareena Road RRC, minimising traffic impacts. The waste would be buried while still in the compacted state, largely eliminating the risk of propolis foraging by honey bees and protecting the local environment from the potential effects of wind-blown litter, odour, and vermin/vector strike.

ENVIRONMENTAL ASSESSMENT

Soils and Land Capability

Ophir Road RRC

Construction works impacting on soils would comprise earthworks for the new MRF building, batters and associated manoeuvring area and access road. The Project would not affect current site activities such as continuation of the existing landfilling activities on site and would therefore not have any adverse impacts on land capability. The soils of the site are not considered to be restrictive to the Project by virtue of exhibiting qualities that would be adversely impacted by the Project.

Euchareena Road RRC

The identification of the topsoil and subsoil resources on site and their properties and the adoption of the proposed mitigation measures would enable the planned disturbance of topsoil and subsoil to proceed without any adverse impacts. The use of correct stripping, stockpiling and replacement methods would ensure that the overall impacts on the soil resources is minimal.

Progressive replacement of topsoil and subsoil on completed landforms would enable the land capability of the disturbed area to ultimately be similar to those of the existing land. Revegetation of the final surface of the landfill in the manner proposed would enable improved pasture and ongoing grazing across the entire landfill surface, i.e. once it is fully stabilised. The opportunity would exist for selected cropping of low-rooted shrubs and grasses, particularly those suited for nectar production. Overall, the changed practices on the Euchareena Road Site and increase in native vegetation would have some beneficial ecological impacts, whilst retaining comparable land capability and agricultural suitability.

Surface water

Ophir Road RRC

The additional road and hardstand areas and new MRF building would create additional runoff. This runoff would be captured and piped to the existing gross pollution trap and disposed of to the surface



water pond in the north eastern corner of the site. There is sufficient capacity within the existing system to support the additional stormwater generated.

Euchareena Road RRC

The surface water management and maintenance controls proposed for the Euchareena Road RRC would provide a high level of impact mitigation. The location of the Euchareena Road site in a depression on the crest of a ridge and the gently sloping topography would minimise the potential environmental impacts from surface water runoff. There would be no runoff from external catchments into the operational areas of the site, meaning that the water management facilities only need to cater for runoff generated within the site. The main facilities are located where runoff would not drain to other parts of the site or can be easily controlled. Sufficient surface water would be able to be collected for on-site use.

Groundwater

There are no groundwater impacts of the proposed MRF building at Ophir Road RRC.

At the Euchareena Road RRC, the existing natural clays beneath the landfill site on the Euchareena Road Site exhibit very low permeability (5×10^{-10} m/s to 2×10^{-8} m/s). However, the landfill floor would be excavated and re-compacted to achieve a permeability of $<1 \times 10^{-9}$ m/s (9×10^{-5} m/d) for a depth of at least 0.9 m. Beneath this compacted zone, a further 15 m to 20 m of in-situ saprolitic clay exists that would act as an additional barrier to leachate migration.

No leachate ponds would be used at the Euchareena Road RRC. Instead, leachate would be stored below the landfill, in a specially lined sump area. The potential for leachate infiltration to groundwater from the landfill would be minimal due to the presence of a high density polyethylene (HDPE) liner within the landfill sump area, and the underlying low permeability of the compacted clay layer, and in-situ saprolitic clay, as described above.

Groundwater simulation modelling of two different scenarios was carried out. This predicted that under design conditions (Scenario 1), a groundwater mound would develop beneath the Euchareena Road Site and if infiltration/seepage were to continue for 100 years, the mound would be approximately 5 m high and contained totally within the Euchareena Road Site perimeter. In the unlikely event of a potential breach in one part of the low permeability compacted clay floor (Scenario 2), the modelling predicted a slightly larger groundwater mound extending approximately 100 m further than the Scenario 1 prediction.

Biodiversity

Ophir Road RRC

No vegetation would be required to be removed to construct the new MRF, adjacent manoeuvring area, access roads, or stockpile areas. In this regard, there is unlikely to be any impact on the habitat for any threatened fauna species. The Project is not expected to have an impact on any threatened flora species or endangered ecological communities at the Ophir Road Site, as none are present.

Euchareena Road RRC – Flora

The Euchareena Road Site has previously been highly modified from its original condition and habitat values as a consequence of its use as a grazing and farming property over many years.

There is no suitable habitat present at the site for many of the threatened flora species likely / predicted to occur there. Field observations have failed to record any threatened flora species and there are no



past records of any threatened flora species at the site. There are no endangered flora populations or occurrences of critical habitat recorded for the site.

However, two remnants of the White Box, Yellow Box, Blakely's Red Gum Community [Endangered] [NSW Threatened Species Conservation Act] or the White Box – Yellow Box – Blakely's Red Gum Grassy Woodland and Derived Native Grassland [Critically Endangered] [Commonwealth Environment Protection and Biodiversity Conservation Act] occur at the Euchareena Road Site. These remnants would not be affected by the Project. Moreover, they would be linked again by proposed revegetation works. Some isolated paddock trees that are typical components of the tree layer within the endangered ecology and are in varying states of health would be removed.

The assessments and field survey observations concluded that it is unlikely that there would be any impact on any of the threatened flora species recorded or predicted to occur in the wider region within the boundaries of the Molong 1: 100 000 scale map sheet area.

Euchareena Road RRC – Fauna

The connectivity and conductivity of the existing habitat on the Euchareena Road Site would be enhanced through the planting of vegetative screens and the 13.6 ha of rehabilitated woodland (hence a net increase of habitat) linking the two remnant areas. No further habitat fragmentation or isolation of habitat would occur as a result of the Project. Given that no significant habitat on the Euchareena Road Site is to be adversely impacted, it is concluded that the Project is:

- ▶ Unlikely to significantly affect any of the listed threatened species, fauna populations or communities;
- ▶ Unlikely to augment or significantly contribute to any of the Federal or State listed key threatening processes, if the appropriate safeguards regarding the control of potential vertebrate pests are effectively applied;
- ▶ Unlikely to significantly affect any Ramsar wetland or any CAMBA or JAMBA listed species;
- ▶ Unlikely to significantly affect any of the creeks if adequate water run-off safeguards and possible seepage from the site are adopted; and
- ▶ Consistent with ESD principles with regards to fauna and would not adversely affect the local biodiversity and no issue of inter-generational or value added matters are relevant in this instance.

Apiary industry issues

The level of impact(s) of the Project upon the local apiary industry has been assessed through a statistical assessment conducted by Emphron Informatics Pty Ltd and review of the Project and proposed measures by a former Department of Primary Industries apiary inspector, Mr Bob Gulliford. A critical outcome from the risk assessment relates to the occurrence of American Foul Brood (AFB) spores in honey sold in the Orange City and Cabonne LGAs. Analyses of 38 honey samples collected at a range of retail and other outlets identified that whilst approximately 70% of honey sampled contained AFB spores, the spore burden is too small for there to be any meaningful risk of AFB contamination from retail honey residues.

In order to undertake the statistical assessment of risk of AFB being transmitted from the Euchareena Road Site, probability of infection was established to be dependent upon a combination of the following:

1. The distribution of the number of contaminated honey jars reaching the landfill site in each load or bale.



2. The number of bales that are compromised or broken potentially exposing honey jars.
3. The distribution of the length of exposure for each contaminated honey container.
4. The probability that foraging bees will be active during the exposure period for a contaminated honey container (this is driven by temperature).
5. The probability that an active foraging bee will locate any exposed honey container.
6. The probability that such an exposed honey container will be contaminated with AFB spores.
7. The probability of infection of the hive arising from contact with a single bee.
8. The probability that a foraging bee will successfully recruit other bees to the contaminated exposed honey container.
9. The relevance of access opportunities to propolis.

The detailed computer simulations reflecting each of the above nine considerations when evaluated collectively show that the yearly probability of AFB infection of bee hives would effectively be zero whilst the average time for a bee hive to become infected at distances of 500 m is one in 890 years. At a distance of 3 km the infection interval would be in the order of one in 1 million years.

The overall impact of the Project would be beneficial to the apiary industry throughout the region, as it provides an opportunity for closure of many of the local council-operated unsupervised landfills in the region that are currently capable of allowing bees access to honey containers. Further, the improved supervision/signage and separation of wastes at regional waste transfer stations that would replace these landfills would reduce the potential for any foraging bees gaining access to residue honey in containers. Banning disposal of honey production products to the Euchareena Road landfill (as is already the case at the Ophir Road RRC) would reduce risks across the entire region, once many small landfills cease to operate.

Overall, the biosecurity safeguards associated with the Project (baling of waste, banning disposal of honey containers at Euchareena Road) would minimise the potential impacts upon the local apiary industry. According to the Department of Primary Industries, the standard of management proposed would be far superior to practices currently adopted at the existing landfills throughout the region and elsewhere in country NSW. The detailed assessment of this issue has led to the development of a range of specific mitigation measures (previously described) that would reduce the risk of transmission of AFB spores to a level that virtually removes all opportunities for bees contracting the AFB disease or access to propolis. Each of the mitigation measures has been developed to provide a high level of certainty that practices at the Euchareena Road RRC would not adversely affect surrounding apiarists.

Aboriginal heritage

Ophir Road RRC

As outlined throughout this Environmental Assessment, the Ophir Road Site is highly disturbed. Throughout all activities previously undertaken on site there are no items of Aboriginal heritage significance have been uncovered. There are no known Aboriginal Heritage sites located on the Ophir Road Site.



Euchareena Road RRC

A field survey conducted in 2003 identified evidence of Aboriginal use of the local area. Some artefacts (an axe and muller) were found on the site in an area that would be disturbed by the Project. A scarred tree, which has some significance, survived clearing due to its location amongst large boulders at the base of a short steep slope. This tree is located within the woodland vegetation area, which has been designated for conservation and enhancement; hence there would be no impacts on the tree from the Project activities.

The original location of the artefacts is uncertain, but provided the consultation process is conducted as recommended and the relocation of the artefacts is conducted under a Permit, the impact of the Project on these items of Aboriginal heritage is considered acceptable.

Based on the impact assessment for the two identified sites, and in the absence of any defined artefactual context or places of Indigenous cultural significance within the footprint of the proposed impact area, there would be no archaeological or cultural impacts caused by the Project.

European heritage

No items of European heritage significance are located at the Ophir Road RRC, or in the vicinity of the Euchareena Road Site. Only two items are located adjacent to the proposed transport route to the Euchareena Road Site. As this is already used by trucks, with implementation of the proposed management controls, no impact is anticipated.

Hazards

State Environmental Planning Policy No. 33 – Hazardous and Offensive Development aims to ensure that appropriate measures are employed to minimise the impacts of developments that are deemed to be either 'hazardous' or 'offensive'. Under SEPP 33, the Project is considered to be potentially offensive because waste related activities could potentially impact on the surrounding localities, even after measures are taken to reduce or minimise the potential impacts.

However, the Project is not considered hazardous, as environmental controls proposed for the Project would limit the potential health risk to workers and nearby residents and risk to the biophysical environment. Mitigation measures for these risks are outlined in the various sections of this Environmental Assessment.

SEPP 33 requires that potentially hazardous or offensive developments are publicly advertised under the same requirements as for designated developments. Community consultation has been carried out as per these requirements and in accordance with the EP&A Act.

Ophir Road RRC

The proposed baling plant at Ophir Road would result in no net increase in the level of hazards that local residents would be exposed to. As residents would not be permitted to deliver waste and recyclables to any area other than the Resource Recovery Centre, or to bulk drop-off areas (garden organics or separated concrete) this would minimise the level of hazards that they would be exposed to.

As there would be less commercial vehicles delivering waste to the site than in the past, the level of hazard associated with heavy vehicles for local residents in the vicinity of the site, or using the site to drop off wastes or recyclables, would be significantly reduced.



Euchareena Road RRC

There would be two separate facilities on the site – an enclosed tunnel composting plant, and a new landfill. Neither of these facilities would be considered as hazardous. Normal levels of hazard and risk associated with industrial sites and many construction sites would exist for site workers. These would be managed through development and implementation of a site operations plan.

No dangerous goods would be stored on site, apart from small quantities of paints and solvents, used for equipment maintenance, and herbicides used for controlling weeds on site. However, all such chemicals would be stored within a building in accordance with standard dangerous goods storage practices. Diesel fuel for on-site machinery would be stored in a double skin tank, located near the landfill site.

Air quality and odour

Ophir Road RRC

Air quality modelling indicates that the Project would meet the project air quality goals for particulate matter during both construction and operation. At all assessment locations, the odour concentrations associated with the proposed operations at the Ophir Road RRC are predicted to be significantly below the project goal of 6 OU. The air quality assessment report concluded that construction and operation of the proposed Ophir Road RRC would have a negligible impact on local air quality.

Cumulative odour impacts are predicted approximately 1.2 km from the wastewater treatment plant site, however these are driven by odour attributable to the wastewater treatment plant.

Given this comparatively small increase in local traffic, the air quality assessment did not anticipate that product transportation would impact significantly on the local air shed's capability to achieve the air quality goals associated with vehicle emissions (principally NO₂, SO₂ and hydrocarbons).

Euchareena Road RRC

The air quality assessment concluded that the Project would meet the project air quality goals for particulate matter during both construction and operation. The results of odour modelling for the Euchareena Road Site indicate that the odour concentration associated with the Project is predicted to be significantly below the project goal of 6 OU.

The relatively low volume of traffic along Euchareena Road (58 heavy vehicle movements) is not anticipated to impact significantly on the local air shed's capability to achieve the air quality goals associated with vehicle emissions (principally NO₂, SO₂ and hydrocarbons). Additionally, since all roads on the transportation route to the Euchareena Road Site are sealed, wheel-generated dust emissions off-site were assessed to be negligible.

The proposed activities within the Euchareena Road Site would be the only 'industrial' activity in the vicinity of the Site that has potential to emit air quality contaminants and as such, no cumulative impact assessment was required.

Traffic and transport

Ophir Road RRC

Approximately 20 construction workers would be travelling to and from the Ophir Road Site during the construction period. Using an estimated average of one vehicle per construction worker, this translates to 40 vehicle movements a day (20 in + 20 out). It has been assumed that up to 8 heavy vehicles would



need to access the site per day during construction. This would result in the generation of 16 truck movements on a typical weekday.

Impacts of construction traffic on the road network surrounding the site would be temporary and would be limited to the 12 month construction period.

An estimated 88 truck movements per day would be generated by operation of the facility (or 44 in/44 out), compared to current 80 truck movements (40 in/40 out) per day. This would be in addition to 72 light vehicle trips per day from employee/staff and residents (60 trips for residents + 12 for staff), which would be very similar to current levels. This translates to a total of 44 truck trips and 36 light vehicle trips to and from the site, compared to an estimated 40 truck trips and 36 light vehicle trips currently. .

In terms of additional traffic on Ophir Road due to the Project, this is a minor increase compared to current traffic volumes. Hence the current level of service of Ophir Road would remain at Level of Service C.

The traffic and transport assessment concludes that the Project would have no adverse traffic-related environmental implications on traffic amenity, safety or traffic service levels, provided the proposed mitigation measures are undertaken. The Project, including the proposed access provisions, would meet the requirements and guidelines of the Roads and Traffic Authority in terms of road safety and network efficiency.

Euchareena Road RRC

Euchareena Road is an undivided two-lane rural road linking the towns of Molong and Euchareena that carries approximately 191 vehicles per day on average (95 northbound and 96 southbound).

Approximately 6.5% of these are heavy vehicles. The total traffic generated during the construction phase is estimated to be approximately 50 trips per day (25 in/ 25 out). The additional traffic volume generated during the construction phase is less than the traffic volume during the operational phase and therefore would have a lesser traffic impact on the surrounding road network.

Future traffic volumes based on a review of AADT traffic volume growth on adjoining roads within Cabonne LGA (1988 to 1999) suggested traffic flows on Euchareena Road would be expected to grow on average at around 2.5% annually, under favourable economic conditions within the region. This is considered to be a high estimate of likely average growth rate considering the effects of the recent economic slowdown.

An estimated 58 truck movements (representing 29 trucks) and 16 light vehicle movements (representing 8 light vehicles) per day would result from the Project on a typical day during the operational stage. Approximately 80% of the trucks would have their origins / destinations in Orange. These additional vehicles attributable to operation of the Euchareena Road RRC would increase total vehicle movements by approximately 30% based on current traffic levels. There are currently an estimated 220 vehicle movements per day along Euchareena Road (representing 110 vehicles), with 6.5% of this comprising heavy vehicles. Overall, the total number of vehicle movements predicted along Euchareena Road (294 movements per day, representing 147 vehicles) would remain at only 59% of the typical maximum for a minor rural road (500 vehicle movements per day).

With implementation of the proposed road improvements, commitment to ongoing road maintenance and a drivers' Code of Conduct, the Project is not expected to have adverse traffic-related impacts on traffic safety. Furthermore, the Project would meet the requirements and guidelines of the Roads and Traffic



Authority in terms of road safety and network efficiency. Orange and Cabonne Councils have recently agreed that the need for upgrades to the road would be independently assessed.

Noise

Ophir Road RRC

Construction activities would occur during the daytime period only. Normal activities would continue at the Ophir Road Site while construction of the new MRF building is being undertaken. The predicted LA_{10(15minute)} noise emissions at the nominated residences from noise modelling indicates that noise emissions from construction activities under calm daytime conditions would be below the Ophir Road Site specific criteria at the nominated residences, which are about 300m from the proposed relocated MRF building.

The predicted LA_{eq(15minute)} noise emissions from the operations on the site from noise modelling indicate that noise emissions from the daytime operational scenario under calm daytime conditions would be below the Ophir Road Site specific criteria at the nominated residences. Similarly, the predicted LA_{eq(15minute)} noise emissions from occasional night-time operations on the site indicate that noise emissions from the night-time operational scenario under adverse conditions would be below the Ophir Road Site specific criteria at the nominated residences.

As there is no significant industrial noise from other developments in the locality, the cumulative noise emissions from the Ophir Road Site and other developments would be below the relevant acceptable amenity criteria for industrial noise (i.e. non-traffic related) during the daytime, evening and night-time periods.

Since the estimated number of vehicles travelling to and from the Ophir Road Site in the future would remain similar to existing numbers, the traffic noise levels would therefore remain generally the same for all the receivers in the vicinity of the Ophir Road Site.

Euchareena Road RRC

Construction activities during the site development phase would be undertaken during the daytime period only. Predicted construction noise for the Euchareena Road Site would be below the nominated criteria at the three closest residences (which are approximately 1 km from site operations), hence at all surrounding residences.

Predicted noise levels during operation of the Project would also be below project noise criteria. All predicted traffic noise at the residences adjacent to Euchareena Road complies with the daytime DECCW ECTRN criteria of 60 dB(A) for all stages of the Project.

Visual

Ophir Road RRC

The proposed MRF building would initially be visible from the abovementioned locations. However from these distances it would appear as a small building adjacent to those already existing. Further, once landfilling has been finalised, the central ridge of the site would obscure the MRF building from any external views. The other proposed improvements on site would not be visible external to the site.

In this regard, the proposed improvements and operation of the Ophir Road RRC would not have an adverse visual impact for the locality.



Euchareena Road RRC

Motorists travelling along both Euchareena Road and Shades Creek Road would be able to observe the various construction activities during the site establishment phase. The impacts of such observations would be minor given the relatively short construction period.

The construction of the northern visual amenity bund would immediately shield all activities from motorists travelling along Shades Creek Road and the more distant residences 'Maupus' and 'Meru' to the north. The progressive extension of the landfill area perimeter bund would also successfully shield the landfill area, such that there would be negligible visual impact.

In the longer term as the tree screens grow in height and thicken out, their effectiveness as screens for the landfill in the surrounding area would improve. In the longer term, the landfill may be visible from some distant vantage points, as it would rise to approximately 18 m above the current ground level. By this time, the trees would be well established with the rejuvenating woodlands and tree screens would contribute to a visually acceptable facility.

Financial assessment

A financial assessment of the Project has been undertaken. This has focussed on analysis of the extra costs that would be incurred as a result of proceeding with the Project, compared with two alternatives. The assessment did not include the costing of practices that would continue whether the Project proceeded or not, such as collection of municipal wastes and recyclables from residents, sorting of recyclables, nor did it include any revenues associated with the project – annual resident waste charges, gate fees from commercial wastes or revenue from sale of compost or recovered recyclables. Instead, a zero value was assumed for these items, on the basis that the purpose of the financial assessment was to compare the long-term costs incurred by the Project against the two possible alternatives, using a discounted cashflow approach.

Alternative 1 is for the Proponent to proceed with the separate organics collection system, and build and operate an enclosed composting plant at the Euchareena Road Site. It would also build a new waste transfer station at Ophir Road RRC, by relocating the current MRF. Residual wastes would be bulked up at the new transfer station and transported in B doubles to the Dubbo Council landfill some 150 km away.

Alternative 2, which is considered to be a “do nothing” or base case, is for the Proponent to construct a waste transfer station at the Ophir Road RRC, to bulk up all wastes (including garden and food organics currently contained in the municipal and commercial waste streams). There would be no separate collection of this material as is currently proposed. All wastes would be compacted as much as possible at the new waste transfer station, and transported to Dubbo in B double trailers.

The results of the assessment show that the Project would have a lower initial capital cost than Alternative 1 (landfilling only residuals at Dubbo) but higher than Alternative 2 (landfilling all wastes at Dubbo). However, when converted to an equivalent annual cost over 40 years, the Project would be cheaper than the two alternatives. There would also be lower annual costs per tonne of waste handled for the Project, compared to the two alternatives.

Financial analysis of the Project vs alternatives (at 7% discount rate)

	Initial capital cost	Total annualised cost	Average cost per tonne handled	Waste landfilled per annum	Total cost over 40 yrs	Net Present Value (cost) ¹
	\$M	\$M/annum	\$	t	\$M	\$M
The Project	14.6	6.7	52.08	29,740 ²	210	-89
Alternative 1 – Residual waste to Dubbo	15.9	9.6	75.28	25,740	342	-125
Alternative 2 – All waste to Dubbo	7.0	8.1	70.44	36,901	312	-125

Note:

¹ Does not include cost of garbage collection services, recycling collection services or MRF operations, nor continuing Ophir Road RRC recycling and special waste disposal operations.

² Includes 4,000 t/yr of VENM used for landfill completion works

As mentioned above, for both Alternatives 1 and 2, there would need to be a new waste transfer station at Ophir Road RRC with a compactor, which would be more expensive than a baling plant located within the existing MRF building, and there would also be a need to purchase a number of dedicated prime movers and B double trailers for hauling waste to Dubbo. The initial capital costs of Alternative 2 are estimated to be the lowest of all the scenarios analysed, since this alternative would have limited infrastructure associated with it (only a new transfer station at Ophir Road RRC).

Alternative 2 would include a larger capacity waste transfer station than Alternative 1 and require more prime movers and B double trailers, due to greater quantities of waste being handled. There would be no separate collection and composting of organics with Alternative 2. All organics would be transported to Dubbo, mixed with other wastes.

In terms of operational costs, the costs associated with establishing and operating a separate food/garden waste collection system and enclosed composting plant (both the Project and Alternative 1) would be higher than transporting all wastes to Dubbo (Alternative 2). However the quantity of waste landfilled for the Project and Alternative 1 would be lower, hence landfill levies payable (on all waste), and CPRS liabilities (on waste likely to generate landfill gas) would also be lower.

Since the Proponent would have no control over landfill charges at Dubbo landfill or any other external landfill site, the long term costs associated with Alternatives 1 and 2 could be much higher than for the Project if gate fees rose due to: (1) increases in the waste levy, (2) operational cost increases, or if a significant allowance was made for CPRS charges by the host council or landfill owner.

The distances and associated transport costs mean that the two Dubbo landfill alternatives would incur significantly higher costs than the Project, over a 40 year period. Even when discount rates and waste levy rates are varied, the Project is more economic than the modelled alternatives.

Agricultural capability of the Euchareena Road Site and the region

The land proposed for the landfill site, buildings associated with composting, screening bunds, vehicle access roads and existing cleared land (67.3 ha) would obviously result in substantial changes to its current land use.



If the whole of the 67.3 ha area was removed from agricultural production, this would represent a very small percentage of the total area for agricultural use in Cabonne LGA (67.3 ha out of 511,436 ha or about 0.01%) and a smaller percentage across the shires of Cabonne and Blayney and Orange City. Within the Cabonne LGA, there is approximately 78,320 ha of crop and fallow land. Therefore as a percentage of crop and fallow land Cabonne LGA, this 67.3 ha represents about 0.1%.

However, it is considered that during construction and operation of the Euchareena Road RRC, part of this 67.3 ha area could be grazed by livestock, as long as fencing was erected to contain stock in suitable locations. Also, during progressive rehabilitation of the landfill site and after closure of the Euchareena Road RRC when its useful life is completed, agricultural production could be resumed. It is likely that livestock grazing on improved pastures would be the best use of the land after site closure as the contours of the final landform would not be conducive to regular cropping.

For Cabonne LGA, there would be a loss of \$8,300 per year, which compares to the total value of agricultural production of about \$160 million per year, or about 0.005% per year. It is unlikely that such a loss would have any significant socio-economic impacts for agriculture in Cabonne and surrounding councils.

The change in land use would not be cumulative. Development of the Euchareena Road RRC would not encourage additional similar developments in the vicinity and add to the decline in prime crop and pasture land. The change in land use for the proposed Euchareena Road RRC is for a single, definable and necessary development. This would not lead to a continuous decline in the area of prime agricultural land and subsequent decrease in the socio-economic outcomes for residents.

In addition, the Proponent is proposing to offer compost produced from the tunnel composting facility to local farmers free of charge (based on assessed 'beneficial program' applications) for the first two years. This initiative would contribute to enhanced agricultural productivity in the surrounding areas.

Comparative sustainability assessment

The environmental sustainability of the Project has been assessed using a Life Cycle Assessment methodology. This approach has enabled the Project to be assessed and benchmarked against a base case option. Environmental impact categories that are common to waste management systems analysis are reported against including:

- ▶ Global warming potential,
- ▶ Solid waste to landfill;
- ▶ Resource use benefits (soil structure and water use); and
- ▶ Air and water pollutant loads (considered for a limited range of transport air toxins and landfill).

The assessment found that the Project delivers a net environmental benefit, over the business-as-usual option, of \$56/t. These benefits would translate to a net annual benefit of \$3.1 million/yr.

The greatest benefits arise from the stabilisation of landfill emissions to air and water as a result of removal of organics from waste. The next most significant benefits would arise from compost application, including soil property benefits such as improved water retention in soil, reduced salinity and soil structure decline, as well as the benefits from products avoided by the use of compost including fertiliser and pesticides.



Mineral resources

The proposed Euchareena Road RRC would not adversely impact on any potential future development centred on the former Copper Hill Mine because of the distance between the Euchareena Road Site and the defined mineralisation. Further, in the event that mineralisation at the Power Anomaly can be economically mined, it is likely that the proposed Euchareena Road RRC and any proposed mining operation could co-exist. Such a coexistence would not impact negatively on the economic benefits arising from the venture on the Molong community.

Scope 1 and 2 greenhouse gas assessment

Considering scope 1 and 2 emissions, the Project is expected to generate 19,265 t CO₂-e of greenhouse gas emissions annually. The total annual NSW emissions for 2007 was 151.6 Mt CO₂-e. Hence, the estimated annual Scope 1 and 2 emissions from the Project would equate to approximately 0.01 % of the state's total emissions.

Implementation of the Project would result in diversion of a significant quantity of waste, including organic waste, from the landfill, which would otherwise have contributed to landfill gas generation.

PROJECT JUSTIFICATION AND CONCLUSIONS

The justification for the Project is based on a number of factors:

- ▶ The Project is consistent with the strategic direction for waste management in the NSW Government (2009) *Draft NSW State Plan* and the Proponent's corporate objectives and strategic drivers;
- ▶ The Project meets a need for alternative waste technologies;
- ▶ The Project would assist in satisfying regional demand for sustainable waste management facilities;
- ▶ The Project would enable councils to reduce waste management costs and access financial incentives for using alternative waste technologies;
- ▶ The sites are suitable for the proposed uses;
- ▶ The Project uses proven technology; and
- ▶ The Project provides opportunities for regional cooperation.

This Environmental Assessment has considered the potential impacts of the Project at the Ophir Road RRC and the proposed Euchareena Road RRC.

The Environmental Assessment has examined a number of key issues surrounding the Project, including identification of potential negative impacts. There are no major environmental issues with this project.

The main potential impacts requiring normal levels of environmental management are:

- ▶ Air quality and odour;
- ▶ Noise;
- ▶ Traffic and transport; and
- ▶ Surface water.

The Environmental Assessment concludes that many of the potential issues identified would be effectively managed through project design features. To manage other issues, and in some cases eliminate them completely, a number of mitigation and management measures (commitments) would be undertaken. The construction and operation of the Project would be undertaken in accordance with all



relevant legislative guidelines. It is recommended that the Project be approved subject to the implementation of the mitigation measures and commitments identified in this Environmental Assessment.