Additions to Awaba Waste Disposal Facility

Preliminary Environmental Assessment

Lake Macquarie City Council

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Glossary

ADC	Alternative Daily Cover
AHD	Australian Height Datum
AWDF	Awaba Waste Disposal Facility
AWT	Alternative Waste Technology Treatment
DECC	Department of Environment, Climate Change, and Water
DoP	Department of Planning
DGR's	Director General's Requirements
EA	Environmental Assessment
EPA	Environment Protection Authority
EPL	Environment Protection Licence
EP& A Act	Environmental Planning & Assessment Act 1979
GCL	Geosynthetic Clay Layer
GHD	GHD Consultants
KLALC	Koompahtoo Local Aboriginal Land Council
LHCCREMS	Lower Hunter Central Coast Regional Environmental Management Strategy
LHRS	Lower Hunter Regional Strategy
LGA	Local Government Area
LLDPE	Linear Low Density Polyethylene
LMCC	Lake Macquarie City Council
LMS	Landfill Management Services
NSWRFS	NSW Rural Fire Service
M	Metres
ML	Mega litre
NSW	New South Wales
NPWS AHIMS	National Parks and Wildlife Service Aboriginal Heritage Information Management System
PEA	Preliminary Environmental Assessment
SEPPMP	State Environmental Planning Policy Major Projects
WaSIP	Waste and Sustainability Improvement Payments Program
WARR	Waste Avoidance and Resource Recovery

Executive Summary

Lake Macquarie City Council (the proponent) is seeking project approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP& A Act), for additions to the Awaba Waste Disposal Facility (AWDF).

Pursuant to clause 6 (identification of Part 3A projects) of *State Environmental Planning Policy Major Projects* (SEPPMP), the Minster is of the opinion, that the proposed additions to the AWDF are of a kind, to which Part 3A of the EP& A Act applies.

The AWDF is a Category 1 landfill site, was commissioned in 1986, and is licensed by the Department of Environment, Climate Change, and Water (DECCW), for *waste disposal* and *composting*.

Council's current projections, demonstrate that the AWDF has approximately 4 to 6 years of landfill volume (880,000m^3) remaining.

The proposed development includes the excavation of two areas on-site to create additional air space for landfill and extend the landfill life by an estimated 24 years.

Following the demise of the Hunter Regional Waste Project, dwindling landfill capacity has accelerated the need to review Council's waste management strategies.

As a result, Council has embarked upon a *Waste Strategy Development Project 2010-11* to develop and deliver new waste management systems, services, and a plan for the City, inclusive of long-term resource recovery programs and associated plant and collection systems. The proposed additions to the AWDF are also a key component of the strategy. The strategy will address:

- Council's corporate commitment to sustainability and resource recovery;
- community expectations;
- attainment of NSW Government Waste and Resource recovery diversion targets;
- increasing landfill levies; and,
- potential future carbon charges.

Despite planned resource recovery, reuse and recycling initiatives, a residual fraction of waste that cannot be recovered will require a suitable disposal site for the foreseeable future. Additional landfill space is the preferred option for disposal of these wastes, albeit minimised by Council's Waste Strategy, which is seeking to reduce waste presented at AWDF, to preserve airspace therein, only for the most problematic wastes that cannot be treated otherwise.

This Preliminary Environmental Assessment (PEA) has been prepared to provide the Department of Planning (DoP) with information about the project, and inform the drafting of the Director General's Requirements (DGR's), for the Environmental Assessment (EA) under Part 3A of the EP& A Act.

The PEA includes a written and graphical description of the project, including discussion on the need for the project, alternatives considered, the relevant planning provisions that apply, a description of the existing receiving environment, and an outline of the key issues to be addressed in the EA.

In summary, the project proposes:

- excavation of two areas within the boundaries of the site, to provide two additional landfill cells, that will result in a higher maximum height for the entire landform on-site.
- The excavation of the two areas, in combination with space provided over the existing landfill footprint (as a result of the proposal), will provide approximately an overall additional combined airspace of 3,504,000m^3 (4,080,000 tonnes) on-site, and extend the lifespan of the landfill by approximately 24 years;
- removal of native vegetation;
- retention of excavated soil on-site for daily cover;
- a leachate containment and management system;
- a surface water management system and quality control measures;
- ground water and landfill gas monitoring network;
- landfill gas recovery for electricity generation or flaring;
- green waste processing areas; and,
- continuation of landfilling within the approved landfill cells and air space provisions, issued under Part 4 of EP& A Act, and infrastructure associated with existing on-site operations.

1. Introduction

1.1 Overview

Council is proposing to expand the current landfill capacity at the Awaba Waste Disposal Facility (AWDF) through the creation of two additional landfill cells.

Lake Macquarie City Council (the proponent) is seeking project approval under Part 3A of the *Environmental Planning and Assessment Act 1979* (EP& A Act) for additions to an existing approved Awaba Waste Disposal Facility (AWDF).

The proposed additions to the AWDF are considered to meet the capacity thresholds for an extension to a *regional putrescibles landfill*, as prescribed at *clause 27-Schedule 1* of (SEPPMP) as per communications with the Department of Planning staff July 2010 (Manager of Industry Team (Mining & Industry projects) and Senior Environmental Planning Officer – Mining & Industry). Notwithstanding, the proponent is not proposing a facility that intends to service the Lower Hunter or another gazetted Region.

Council engaged consultants (GHD) to undertake a feasibility analysis of various options to increase the capability of the site. The proposed development is one of these options. GHD has completed preliminary concept plans. These plans form the basis of the proposed development. Further investigation and a detailed design of the project will be finalised prior to lodgement of the application.

The proposed development intends to maintain perimeter bush fire and maintenance tracks around the proposed landform as well as boundary buffer zones to adjoining lands. Additionally, the proposed development will improve and introduce further leachate containment and management, and surface water infrastructure. Changes to the approved Environment Protection Licence will be required.

As part of Council's city wide *Waste Strategy Development Project 2010* the two additional landfill cells will allow Council to cater for existing demands and develop further sustainable waste management practices.

1.2 Purpose of the Report

The aim of this Preliminary Environmental Assessment (PEA) is to provide the NSW Department of Planning (DoP) with information, for the preparation of Director General's Requirements (DGRs) for the Environmental Assessment (EA) under Part 3A of the EP& A Act.

1.3 The Proponent

Lake Macquarie City Council is the Proponent for the project described in this PEA.

Lake Macquarie is one of the fastest growing cities in the Hunter, and one of the largest cities in New South Wales. The Lake Macquarie City Local Government Area (LGA) covers an area of 644 km².

See figure 1.1 below for a plan of the boundaries of the local government area and the location of the project.

- Lake Macquarie's population is fast approaching > 200,000.
- Lake Macquarie is the Hunter's largest city, accounting for 37% of the Lower Hunter population.

- Lake Macquarie is the fourth most populous city in NSW, and the eighth most populous city in Australia.
- The population of Lake Macquarie is expected to grow by 60,000 – 70,000 people over the next 25 years, which will create a demand for 36,500 new dwellings. The Lower Hunter Regional Strategy (LHRS) additionally outlines the growth projections for the City's town centres and corridors and employment growth, to that of housing requirements. Two of the City's centres (Cardiff-Glendale and Charlestown) alone are expected to see job creation and dwelling construction, rivalling the other major regional centres.

1.4 Site Description

The AWDF is located at Lot 372 DP 723259, 367 Wilton Road Awaba.

The site has an area of 32.5 hectares, has an irregular shape, and is unencumbered by easements.

Access to the development site is via the local road network.

The site is located in a Mine Subsidence District, is Bush Fire Prone Land (NSWRFS Mapping) and the site is unsewered.

The site is located within the Koompahtoo Local Aboriginal Land Council area.

The proponent occupies the development site under licence and is currently investigating purchase or acquisition of a portion, or the whole of, adjoining Crown Lands, for the purpose of a future Alternative Waste Treatment plant (not subject of this project).

Figure 1.2 below shows the site and surrounding parcels of land and figure1.3 shows an expanded aerial photograph of the site for context with adjoining suburbs.

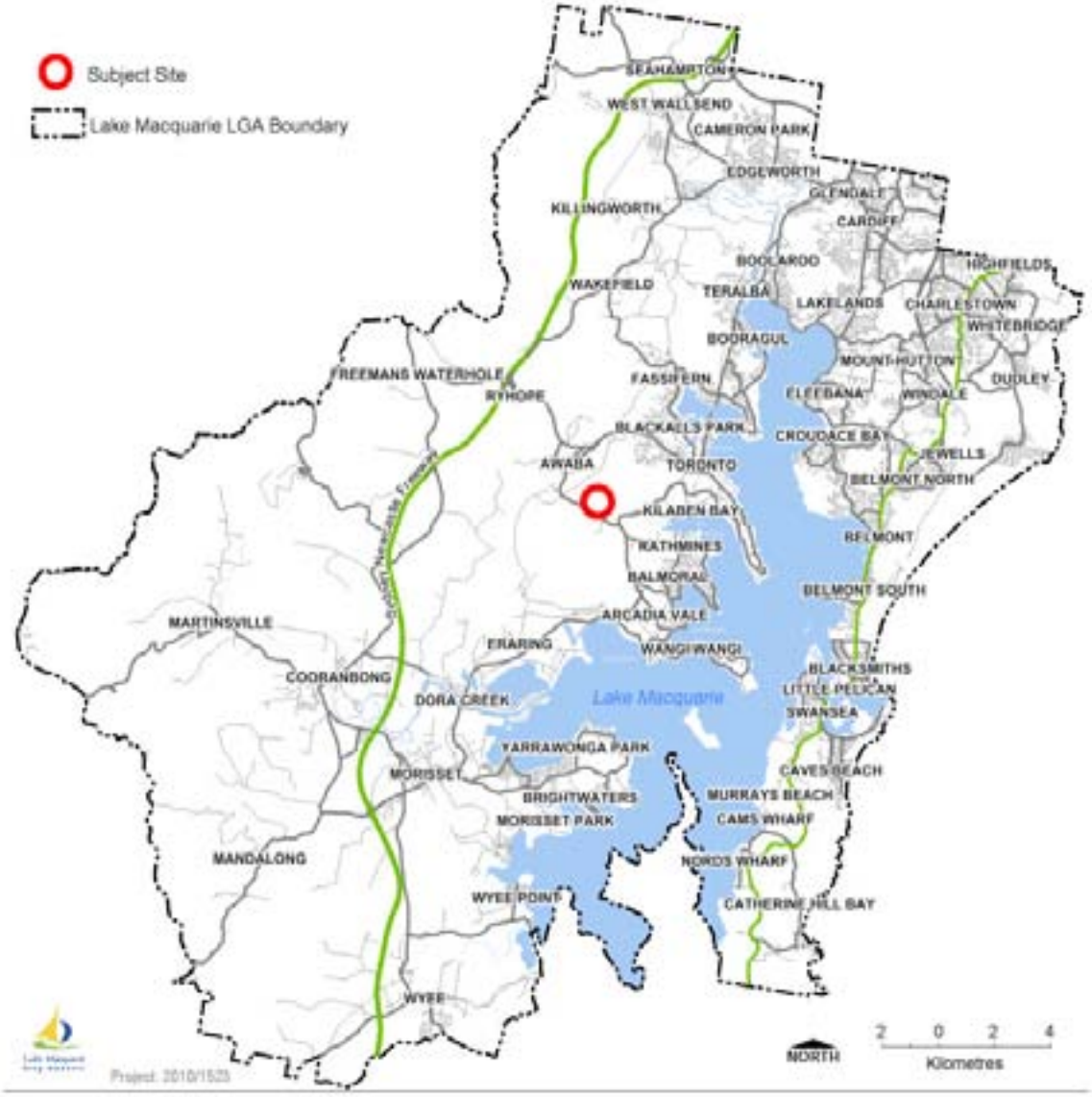

Figure 1.1 extract from Council mapping showing the development site within the Local Government Boundaries.

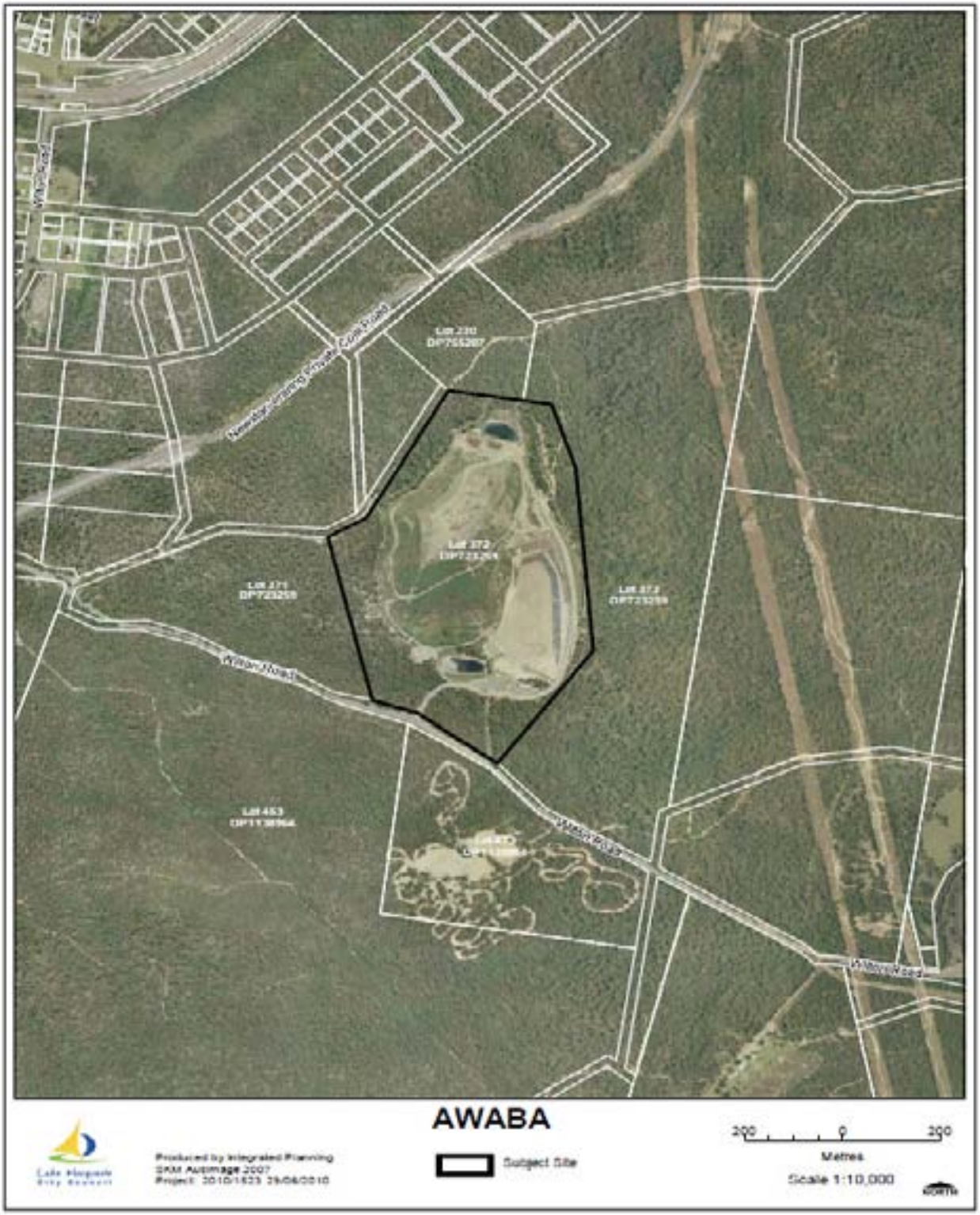

Figure 1.2-Existing AWDF shown edge marked in black.

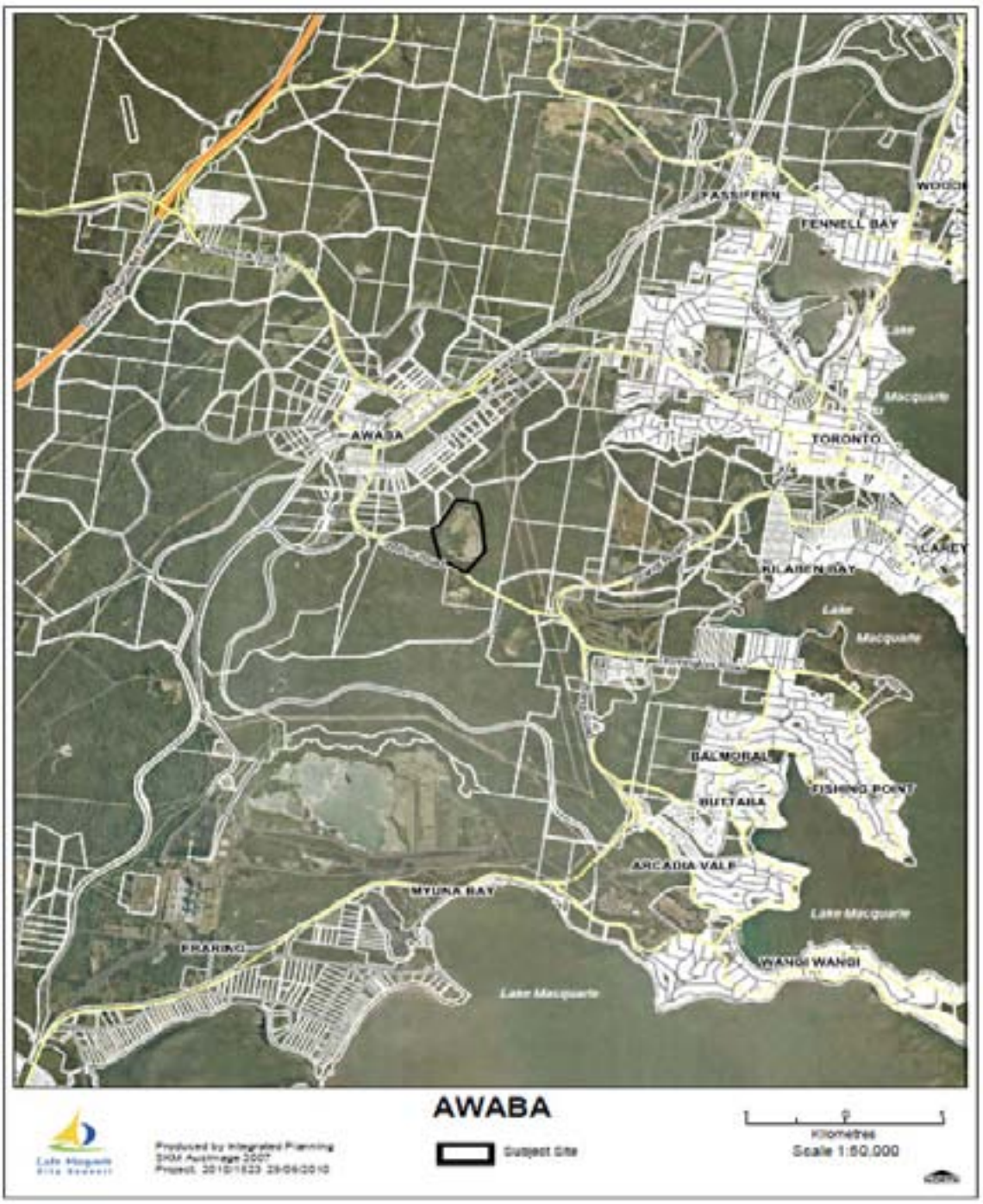

Figure 1.3-Existing AWDF shown edge marked in black and surrounding suburbs.

1.5 Site History

The AWDF gained development consent in October 1986 to operate as a landfill to cater for household wastes, privately transported residential rubbish, construction and municipal wastes and some industrial wastes.

Approximately 20 hectares of the site was devoted to the landfill and supporting infrastructure, with the remainder of the site used for setbacks and buffer zones.

The original landfill emplacement form was approved to RL 76 m AHD, which was expected to accommodate approximately 2.2 million cubic metres of waste (using waste generation rates at the time), and cater for the City's landfill needs to 2010.

In 1995, development consent was granted for an extension to the site (DA/82/1994-*Extension of Waste Disposal Site)* including raising the height of the emplacement from RL 76m AHD to RL 94m AHD (as shown below at figure 1.4). This required the landfill footprint to be extended by 3.5 hectares, resulting in an increase in the total landfill volume to approximately 3.06 million cubic metres.

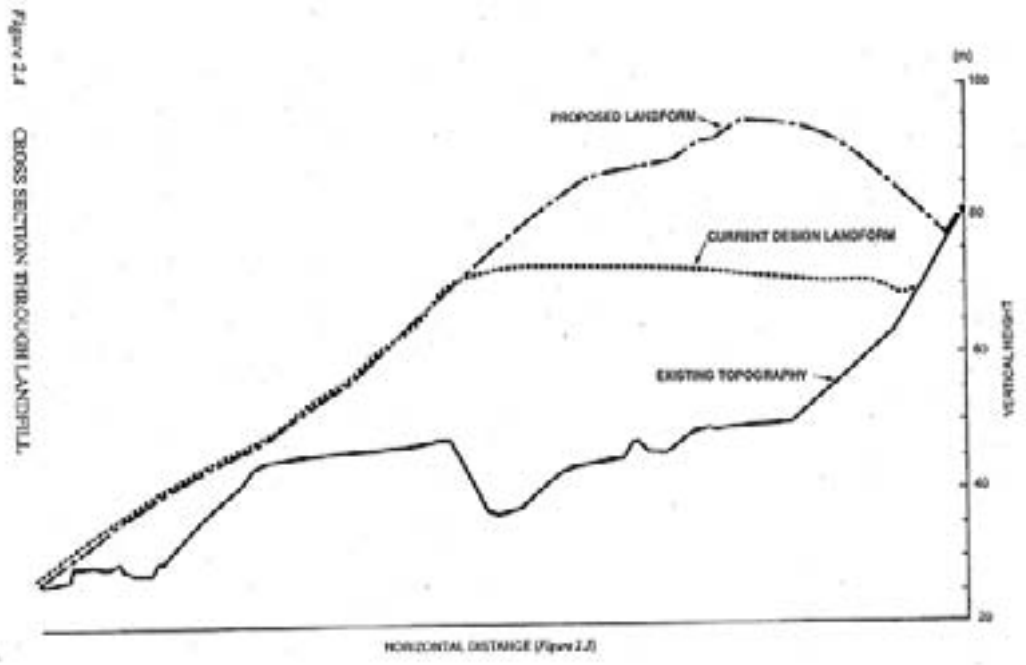

Figure 1.4 –showing the proposed additional air space sought under the1994 proposal, granted development consent under DA/82/1994 in 1995.

Development consent (DA/82/1994) also included conditions relating to:

- environmental management and rehabilitation;
- clearing of vegetation, tree removal and landscaping;

- kerb and guttering, footpaths and road shoulders;
- screen fencing; and,
- earthworks and erosion control.

Under this approval, the main measure or prescriptive tool for determining the ongoing capacity of the site was via the use of an approved relative level (RL 94 m AHD) rather than a cubic metre or tonnage measure.

Currently the AWDF receives approximately 100,000 tonnes of waste per year, which is expected to increase by approximately 1.2% -1.3% per year.

Predicted tonnages for various waste streams expected by Awaba for the following five years are presented in Table 1.1 below:

Table 1.1: Predicated Waste Stream Tonnages

Year	Mixed Domestic Waste	Bulk domestic kerbside Waste	Parks collections – mixed waste	Residential self hauled waste	Commercial Industrial	Building Demolition
2010	59,817	5,633	765	5,857	27,209	3,753
2011	60,714	5,793	770	5,901	27,414	3,781
2012	61,625	5,958	776	5,946	27,620	3,810
2013	62,550	6,128	782	5,990	27,827	3,838
2014	63,489	6,303	788	6,035	28,036	3,867

The most recent volumetric survey of the landfill emplacement was undertaken in February 2009. See figure 1.5 below for the location of existing active landfill cells.

The survey demonstrates that:

- under current landfill design and operations, there is 902,014m^3 of available air space remaining as approved under DA/82/1994;
- in the last six months the landfill emplacement increased by 50,610.7m^3; and,
- in the last six months the landfill emplacement received an average of 280m^3 per day, in the previous six month the daily average of landfill was 296.3m^3.

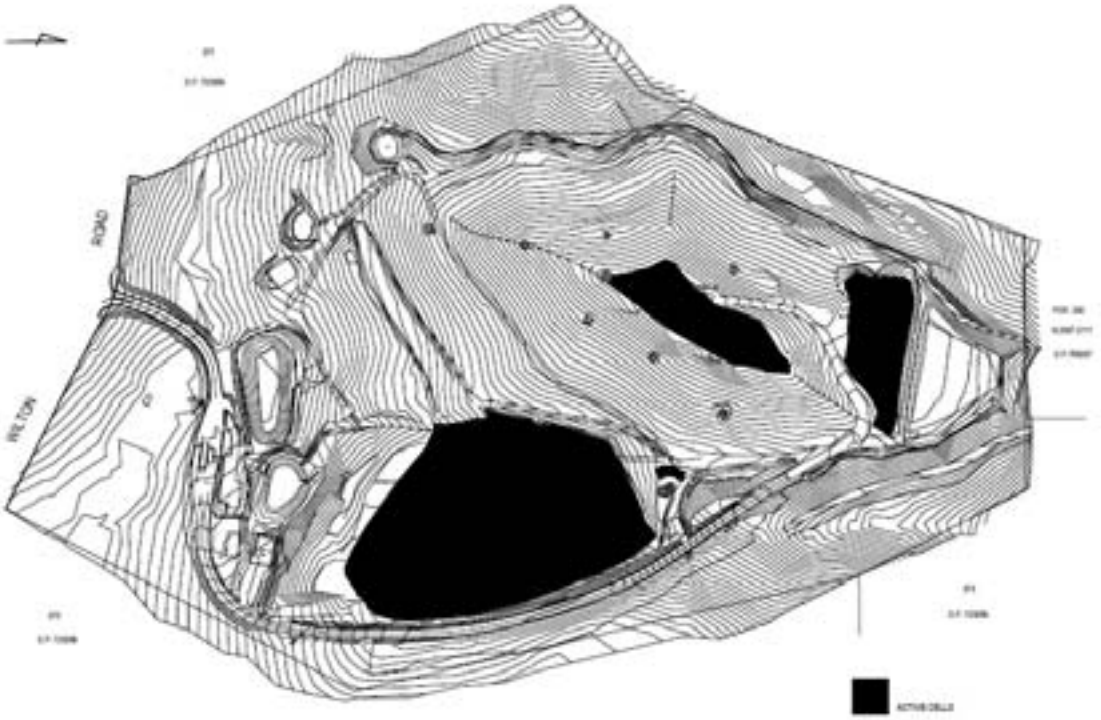

Figure 1.5- Survey plan showing the location of the existing active landfill cells on-site (as black).

1.6 Environment Protection Licence

An Environment Protection Licence was first issued for the development in 1986.

The current Environment Protection Licence (5873) was issued by Department of Environment, Climate Change and Water (DECCW), pursuant to Section 55 *Protection of the Environment Operations Act 1997.* The Environment Protection Licence anniversary date is 13 October and the review due date is, 9 February 2011.

The Scheduled Activity licensed at AWDF is *Waste Disposal* and *Composting.* The existing operations covered by an Environment Protection Licence (EPL), include:

- dust control;
- maintenance of plant and equipment;
- leachate management;
- leachate disposal;
- maintenance of sedimentation system and leachate holding ponds;
- management of surface waters;
- fire risk reduction works;
- screening of wastes; and
- acoustic and offensive odour conditions.

2. Planning and Legislative Requirements

2.1 Project Approval

The proponent is seeking a project approval for additions to Awaba Waste Disposal Facility, as a major project, to which Part 3A of EP&A Act applies, pursuant to section 75B of EP&A Act.

Pursuant to section 75D(1) of EP&A Act, the Minister for Planning is the approval authority for Part 3A projects.

2.2 NSW Statutory Legislation

The following relevant NSW statutory legislation is applicable, where not excluded by section 75U of EP&A Act:

- Environmental Planning & Assessment Act 1979 (as amended);
- Environmental Planning and Assessment Regulation 2000;
- Mine Subsidence Compensation Act 1961;
- Threatened Species Conservation Act 1995;
- Protection of the Environment Operations Act 1997; and
- Waste Avoidance and Resource Recovery Act 2001.

2.3 Environmental Planning Instruments

Pursuant to section 75R (Application of other provisions of Act) of EP&A Act, the following Environmental Planning Instruments are applicable:

- State Environmental Planning Policy No 44—Koala Habitat Protection;
- State Environmental Planning Policy No 55—Remediation of Land;
- State Environmental Planning Policy (Major Development) 2005; and,
- State Environmental Planning Policy (Infrastructure) 2007.

2.3 Commonwealth Legislation

Depending on further fauna and flora assessment of the site, the following Commonwealth legislation may be applicable:

- Environmental Protection and Biodiversity Conservation Act 1999.

2.4 Approvals/licences required

The existing Environment Protection Licence, issued under the Protection of the Environment Operations Act 1997, will be required to be updated, or reissued, by the Department of Environment, Climate Change and Water.

Other approval/licence authorisations generally required under part 4 of EP&A Act are not required for project approval, subject to section 75U of EP&A Act.

2.5 Local Environmental Planning Instruments

- Lake Macquarie Local Environmental Plan 2004.

2.5 Other applicable legislation/documents

The following documents have relevance to the project:

- Department of Environment, Climate Change and Water: *landfill design environmental guidelines* (ie. benchmark techniques outlined in the NSW EPA's Environmental Guidelines: Solid Waste Landfills, 1996);
- Department of Environment, Climate Change and Water: *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales*;
- Department of Environment, Climate Change and Water: *Approved Methods for the Sampling and Analysis of Air Pollutants in NSW*;
- Department of Environment, Climate Change and Water: *Assessment and management of odour from stationary sources in NSW - Technical Framework;*
- Department of Environment, Climate Change and Water: *Assessment and management of odour from stationary sources in NSW - Technical Notes;*
- Department of Environment, Climate Change and Water: *Local government Air Quality Toolkit;*
- Department of Environment, Climate Change and Water: *Waste classification guidelines;*
- Department of Environment, Climate Change and Water: *Environmental Guidelines: Solid Waste Landfill;*
- Department of Environment, Climate Change and Water: *The NSW Waste Avoidance and Resource Recovery Strategy 2007;*
- Department of Planning: *Managing Land Contamination: Planning Guidelines - SEPP 55 Remediation of Land;*
- Department of Planning: *Commonwealth Environmental Protection and Biodiversity Conservation Act 1999: Guide to implementation in NSW;*
- Department of Planning: *Guidelines for Major Project Community Consultation*;
- Department of Planning: *EIS Guideline – Landfilling;* and
- Lower Hunter Regional Strategy.

3. Written and Physical Description of Project

3.1 General

The concept plans of the proposed development are shown at Appendix A.

It should be noted that Council's purpose is not to develop, or extend, a *regional putrescibles landfill,* in order to accept more waste per annum/capita, but rather to extend the lifespan of the existing landfill whilst developing additional sustainable waste minimisation practices.

It is a clear intention of Council's waste strategy to implement resource recovery and diversion actions as demonstrated in DECCW's required WaSIP reports (attached at appendix B).

Extension of the current landfill site is preferred to development of a new landfill site elsewhere, particularly as the site is already disturbed from landfilling operations.

3.2 Design Assumptions

The concept plans for the project include a 3-dimensional excavation and final landfill surface that was developed using 12D modelling software. The excavation and airspace volumes were calculated based on the 3-dimensional surfaces developed. Council's landfill engineering consultants (GHD) developed these concept plans, taking into consideration the following design assumptions:

- the AWDF currently landfills approximately 100,000 tonnes of waste per year. The landfilling rate is expected to increase by approximately 1.2%-1.3% per year;
- waste is landfilled at a compaction rate of 0.86 tonnes waste/m^3 (including daily cover);
- all airspace figures are measured from top of cap to bottom of liner, and therefore include volume consumed by lining, daily cover and capping works;
- the steepest excavation batter surface is 1(V):2.5(H) (at this stage no geotechnical slope stability assessments have been undertaken); and
- the final landfill cap construction contours are assumed to have a maximum slope of 1(V):4(H).

Options for the landfill expansion were also developed with the following design issues in mind:

- extent of the existing landfill footprint;
- nature of the topography of the existing site;
- limits of the existing site boundary;
- compliance with DECCW landfill design environmental guidelines (i.e. benchmark techniques outlined in the NSW EPA's Environmental Guidelines: Solid Waste Landfills, 1996);
- existing natural water courses and drainage;
- integration with existing leachate and stormwater management infrastructure;

- potential landfill construction and operational issues;
- potential landfill staging issues;
- potential for maximising landfill airspace;
- areas for future resource recovery operations; and
- minimising the impact on the receiving environment.

Additionally, an objective of the expansion of the landfill was to satisfy the environmental goals outlined in DECCW's Environmental Guidelines, including:

- proposed leachate barrier system-Benchmark Technique (BT) 1;
- proposed lechate collection system-BT 2;
- proposed surface water control measures-BT 3; and
- proposed groundwater monitoring network-BT4.

3.3 Principal Physical Components of the Project

The project proposes the following components (refer to the concept plans shown at appendix A).

Further detailed design of each component is required and will be addressed within the comprehensive EA. However, where relevant further details are provided below under section 3.4 Landfill Design Criteria.

Further details on the staging of the project will be considered within the comprehensive EA.

The project proposes:

1 excavation of two additional areas on-site to create two new landfill cells, known as Area A and Area B;

1.1.1 Area A-required excavation volume is 92,000m^3 which will provide approximately 1,042,000m^3 (1,200,000 tonnes) of additional landfill airspace. The basal area is approximately 33,200m^2;

1.1.2 Area B-required excavation volume is 92,000m^3 (similar to Area A) and provides approximately 1,292,000m^3 (1,510,000 tonnes) of additional landfill airspace. The basal area is approximately 28,300m^2.

1.1.3 Combining both Area A and Area B, plus the resulting provision of further landfill space over the existing landfill footprint, the combined areas overall, allows a total of 4,080,000 tonnes or 3,504,000m^3 of additional airspace, and approximately 24.9 years additional landfill life, at current deposition rates.

1.1.4 The final highest emplacement relative level proposed is R.L 110m AHD.

2 earthworks and the removal of native vegetation;

3 retention of excavated earth on-site for future daily cover;

4 the extension of the landfill into Area A will require decommissioning of an existing leachate basin that is located in that area;

5 continued use of the existing leachate basin located to the south of the existing landform;

6 construction of a new leachate basin to the south-west of the site HDPE Lined (6-8 ML Capacity);

7 retention of existing leachtate basin to the south-east of the site (6 ML Capacity);

8 construction of a new leachate management system to service extension Areas A and B;

9 existing sediment basin to the south-west of the site to be extended and an additional sediment basin to be constructed within Area B south;

10 retention of existing sediment basin to the south-east of the site (2.7 ML Capacity);

11 construction of additional landfill gas and extraction manifold wells;

12 construction of additional groundwater monitoring wells;

13 construction of surface water diversion and stormwater management infrastructure;

14 construction of on-site service road works;

15 lining of existing waste batters;

16 construction of two green waste processing areas;

17 retention of existing landfill operations approved under DA/82/1994, where not superseded by the project; and

18 site rehabilitation.

3.4 Landfill Design Criteria

The following landfill design criterian (section 3.4.1 to 3.4.8) was adopted by GHD for the project concept design.

3.4.1 Design of Excavation Batters and Basal Grades

Excavation batters and grades have been designed to allow for the following:

- maximisation of landfilling space;
- provision of a relatively stable excavation surface based on the material type and local geology (it is noted that no slope stability or geotechnical analysis of the rock hardness has been undertaken at this time, however will be undertaken as part of the Environmental Assessment of the project);
- provision of suitable grades to promote leachate drainage and collection; and
- the potential for provision of material for beneficial re-use as operational material.

The basal excavation grades have been designed to allow leachate flow and collection and incorporate a minimum of 3% transverse fall. The basal grades have been designed to utilise the site's existing natural fall towards the south and provides an overall fall, which meets, or exceeds, the minimum design criteria outlined in the *NSW EPA, Environmental Guidelines: Solid Waste Landfills, 1996*.

Excavation grades have been designed with a maximum slope of 1(V):2.5(H) which provides a relatively stable excavation surface (subject to appropriate geotechnical assessments) and allows the use of readily available geosynthetic lining materials and standard anchor trench designs and excludes the need for strengthening geogrids or other specialised geosynthetics.

The potential to utilise excavated material on-site for operational purposes (i.e. daily cover) will depend upon the volume, types and quality of the material excavated. However, it is likely that excavated soils may be used in daily cover and capping (revegetation) works, while any sandstone rock could potentially be easily processed on-site during construction works to produce a crushed sandstone product. Additionally, the Council may choose to export excavated material for use in other civil construction works if site storage limitations or the physical properties of the material warrant it.

3.4.2 Leachate Containment System

- **Basal Lining Options**

GHD identified four lining options available for utilisation in the landfill expansion areas that would meet the environmental goals of *NSW EPA, Environmental Guidelines: Solid Waste Landfills, 1996,* including:

-900mm thick, compacted clay liner (permeability $< 1 \times 10^{-9}$ m/s) constructed in 5m high (vertical) lifts;

-composite lining system consisting of 300mm thick compacted clay and 2mm HDPE geomenbrane;

-composite lining system consisting of 300mm thick compacted clay and Geosynthetic Clay Liner (GCL); and,

-composite lining system of Geosynthetic Clay Liner (GCL) and 2mm HDPE geomenbrane.

GHD's investigations noted that there is a lack of clay materials available on-site which would meet the EPA's required performance criteria for the construction of the sealing layer of the basal and sidewall liner systems (permeability $< 1 \times 10^{-9}$ m/s). In this regard, should the project include a lining system with a clay component, clay would be required to be imported to the site. However, the cost of clay importation would be cost prohibitive and a source of reliable clay, taking into consideration the volumes required, would be difficult to secure.

In this regard, due to a lack of suitable on-site material for the construction of the sealing layer, GHD has considered a leachate barrier system that utilises a lining system consisting of a Geosynthetic Clay Liner (GCL) overlain by the HDPE geomembrane.

This combination of materials provides both low permeability and contaminant attenuation properties that are important to minimising the risk of adverse environmental impact from leachate seepage. It should be noted that a 300-500mm seal bearing layer has been included in the design, to provide a smooth, unyielding surface, free of protrusions for the placement of the geosynthetic lining materials. Processed excavation material may be suitable for construction of this layer. This seal bearing layer would also act as a bridging layer for mitigating any impacts from potential mine subsidence (these design attributes need to be confirmed with the Mine Subsidence Board as part of the detailed design process). It is not proposed to

install the seal bearing layer along the excavated sidewalls. Based on local geology, it is assumed that the excavated surface can be trimmed to shape and the underlying GCL (which is self-healing), will provide sufficient cushion and protection to the overlying HDPE geomembrane.

Although a soil/HDPE geomembrane composite liner has been used in other areas of the landfill, this lining method is not preferred for the geometry of the proposed extension areas. The construction method required to build a relatively thin clay/soil liner along the batter wall slopes could be very difficult and costly to achieve.

- **Lining of Waste Batters**

To minimise the potential for leachate migrating off-site, where new waste is proposed to be placed over existing unlined filled areas, the existing waste batters are proposed to be lined. This will ensure that any new waste will be captured and collected by the new leachate barrier and collection system.

The following waste barrier lining options have been investigated:

-Geotextile Seperation Layer overlain by soil material;

-Geosynthetic Clay Liner (GCL); and,

-Linear Low Density Polyethylene (LLDPE).

The geotextile separation layer overlain by soil material option, although being more permeable than the other options, could potentially be utilised. Of the lining options, this is the least expensive, however the risk of preventing leachate from percolating through old waste mass migrating off-site, is not completely removed. This option is not recommended.

The GCL option, although providing a good barrier to leachate and being simple to install, requires a 300mm thick confining layer to be maintained at all times and cannot be left exposed for long periods of time. The GCL option has the highest capital costs of all the options identified and although feasible, this is not the preferred option.

LLDPE, like GCL, provides a very low permeability layer, with the advantage of being stable when left exposed. The LLDPE can also be easily integrated with the existing landfill gas extraction system. This is the preferred option as it provides a very high level of environmental protection and is relatively easy to construct.

3.4.3 Leachate Management

The extension of the landfill area will require consideration and expansion of the existing leachate management system.

The new landfill areas have been designed for the provision of leachate drainage, by way of a leachate drainage and conveyance system constructed at the base of each extension area.

The proposed leachate collection system is compliant with the benchmark technique 2, outlined in the *NSW EPA, Environmental Guidelines: Solid Waste Landfills, 1996.*

In following the natural slope of the land, it is proposed that leachate will drain towards a sump at the southern extent of the areas, from where leachate can be pumped to an existing or new leachate basin for disposal.

In the construction of Area A, the leachate collection system has been kept independent of the leachate system of the cell currently being filled. This is mainly because a connection to the existing leachate system would be quite difficult and may prove unfeasible. Significant excavation would likely be required to access the existing infrastructure, and the capacity of the existing system to accommodate further leachate is unknown. Additionally, by keeping the two leachate collection systems independent, greater control for disposing of and managing leachate generated by each area is provided, particularly if they end up having different characteristics.

In the construction of Area B, excavation of existing waste mass may be required to allow connectivity of the leachate systems between the north and south areas.

The extension of the landfill into Area A will require decommissioning of an existing leachate basin that is located in that area. Continued use of the existing leachate basin located to the south of the existing landform is proposed, plus construction of a new leachate basin to the south-west of the site. Further investigation, during the detailed design phase is required to confirm the capacity and utilisation of the existing leachate basins, and to determine the desirable capacity of the additional leachate basins.

3.4.4 Surface Water Management

As for leachate management above, the extension of the landfilling area will require expansion of the surface water management system and infrastructure. Indicative surface water management infrastructure for the proposal is shown on plan, at appendix A.

Further design work during the detailed design phase is required to determine the capacity of the existing sediment basins and to determine what additional stormwater management infrastructure is required to meet the site Environment Protection Licence (EPL) requirements.

3.4.5 Access and Traffic Management

Provision has been made for a perimeter access track (incorporating surface water diversion and stormwater drainage) to provide access to the new landfilling areas and connecting to the existing site access roads.

The perimeter access track is proposed to form part of the perimeter buffer.

Careful staging of the extension works would provide temporary access to the landfilling areas during construction and ensure access as the cells become active.

3.4.6 Landfill Gas Management

The AWDF rights to landfill gas generated, are held by Landfill Management Services (LMS). As part of the comprehensive EA, additional information will be provided at that time, regarding the rights to collection of gas generated by the proposed extensions to the site, which may be significant. At this stage, an indicative enlarged landfill gas network is shown on plan at Appendix A.

3.4.7 Environmental Monitoring Infrastructure

Additional groundwater and landfill gas monitoring wells are proposed for extension Areas A and B. The proposed number of groundwater and landfill gas monitoring wells at this stage are proposed as a minimum number only and additional wells may be required, depending on the outcomes of the monitoring results.

3.4.8 Other Infrastructure

Two green waste processing areas are proposed, one with an area of 3500m², the other being 8000m².

These areas are located in the vicinity of the current landfilling works, on the eastern side of the landform. The area is relatively flat in comparison to the rest of the site, which would allow for the construction of the processing areas with minimal profiling of, or excavation in landfilled waste. In addition, any leachate generated by the operations can be diverted into the existing cell's leachate collection system.

4. Project Need and Waste Management Strategy

LMCC is a large Council providing a diverse range of waste services to its community of roughly 200,000.

Council operates a single landfill, licensed to accept Class 1 waste that is the sole depository for domestic solid waste from the City, as well as offering waste disposal to commercial and industrial entities.

The imperative for the project and a waste management strategy has heightened, due to the withdrawal of the combined Hunter Advanced Waste Treatment project that held promise of a very sophisticated sorting and diversion of waste from landfill process. As that option became no longer viable, a need arose for Council to rapidly assess its remaining landfill capacity and waste disposal options. Develop new strategic and flexible plans for waste management (in the short, medium and long-terms), and meet the waste management needs and sustainability expectations of the community, in long-term financially, ecologically, and socially sustainable ways.

The *Waste Strategy Development Project 2010-11* represents a large body of work that began in November 2009 with the allocation of resources by Council to complete analyses to address complex and inter-related issues, around waste management practices, in determining optimal solutions.

The work is being carried out through modules of sequential and concurrent tasks outlined in Council's *Waste Strategy Project Development Project Plan* (November 2009), which was supplied in July 2010, to the Department of Planning (attached at appendix C).

Development of the new waste strategy is additionally driven by cost penalties (s88 levy charges, proposed Carbon Pollution Reduction Scheme), NSW WARR targets and by Council's own commitment to eco-footprint management, to achieve a globally sustainable footprint for the City. For instance, Council is committed to delivering strategies, services and programmes that minimise negative impacts of waste and consumption, demonstrated through a *Carbon Reduction Policy* and a management plan, actions and targets. Significant synergistic opportunities, with economic, environmental, and social benefits can be gained from utilising as much of the waste stream as a resource and contribute to these targets - for example for renewable energy production, compost, and material resource recovery.

Council's sole landfill at Awaba represents a very significant asset and disposal cost advantage that requires maximisation through the recovery of resources and diversion of wastes. This will maximise the opportunity value of Awaba landfill and additions to the existing landfill site at Awaba, identified as part of Council's Waste Strategy Development Project, carries significant economic and environmental advantages, including:

- expansion of an existing landfill with associated infrastructure, where environmental impacts are already assessed and controls already in place, i.e. development at an already disturbed site;

- development at a site where transport and waste delivery is already functioning with little social impact or impact on surrounding areas;

- the project provides opportunities to expand and develop existing landfill gas capture systems and leachate management systems, maximising energy recovery and minimising environmental impacts; and

- the redevelopment of the Awaba site would avoid placing Council at a commercial disadvantage in the marketplace for disposal options. If Awaba were to be at capacity, this would draw significant funds away from the implementation of sustainable, resource recovery actions, in order to cover waste disposal costs.

Additionally, redevelopment of the AWDF will contribute to the overarching aims of the new waste strategy which seeks to deliver waste management systems that:

- are consistent with Council's environmental, social, and economic policies and corporate plan, with support from business and the residential community;

- provide safe, cost-effective and convenient waste management services for customers and workers;

- use wherever possible best available waste management technologies and delivery methods appropriate to local situations; and,

- retain flexibility in order to adapt to rapidly developing technological, financial, environmental, social and legislative contexts – allowing Council to maximise opportunities and minimise risks.

These aims will be realised through a number of actions centred around waste avoidance and resource recovery and installation of collection systems, and processing facilities, that divert waste from landfill. Primarily this is expected to be achieved through diversion of the organic stream and alternative processing and marketing for this waste stream. The secondary methods for improvement of diversion will be through enhancement of volumes of recyclables collected and processed elsewhere.

It should be noted that, outcomes from Council's Waste Strategy Development Project are expected in draft form for public display, in November 2010, and a Council endorsed final strategy is expected by March 2011, and will potentially include:

- development of organics diversion and processing operations from municipal waste collections;
- development of collection management systems associated with maximising diversion of municipal waste;
- maximisation of recycling through community education around use of yellow-lidded bins;
- maximisation of recycling through addressing capacity issues associated with yellow-lidded bins;
- enhancement of public place recycling;
- enhancement of eWaste collection facilities/services;

- implementation of programmes to engage business and industry to maximise avoidance, minimisation, re-use and recycling; and
- continuation of long-term education and communications on waste avoidance and management.

These measures ultimately will work to divert waste from the new landfill cells proposed.

5. Description of Existing Environment

A desk-top study of the existing natural, built and social environments of the development site and the surrounds has been undertaken.

See section 1.4 Site Description, for the real property description and section 1.5 Site History, for further details of the development site.

5.1 Existing Site Conditions

The existing waste disposal facility including the landfill emplacement, existing cells, and associated infrastructure, including road works and structures, covers an area of approximately 23.5 of the 32.5 hectare site.

The operational areas of the site are degraded as the site has been used for landfilling, since 1986.

Council is required to report any incidence of acoustic or odour complaints received and any exceedence of the EPL conditions, relating to noise and odour to DECCW. Since operation of the facility, there are no records indicating Council has received any off-site acoustic of odour complaints. In this regard, whilst the development may affect the immediate locality by odour and noise, records indicate the impacts have neither been excessive, nor adverse, nor impacting on sensitive receptors.

The vegetated areas separated by the existing emplacement landform and internal road works, proposed to be removed, is partially vegetated with open forest comprised of native vegetation.

Current mapping (LHCCREMS 2003 Vegetation Mapping Model) indicates that the vegetation is Coastal Plains Smooth-barked Apple Woodland and Coastal Plains Scribbly Gum Woodland. Further classification of the community type will be subject to a fauna and flora report within the EA.

The Lower Hunter Central Coast Regional Environmental Management Strategy (LHCCREMS) mapping of the site has not identified any known Endangered Ecological Communities (ECC) are present.

The natural slope of the site is from the north to the south. The land is not low lying and is not located in the coastal zone. An existing minor creek line, within the southern area of the site, traverses the site from west to east. The creek line eventually feeds into Kilaben Creek, which then drains to Lake Macquarie, which is approximately 2.6 km downstream of the site.

Currently, the EPL allows discharge to this creek, subject to conditions, if flooding occurs on-site due to wet weather.

On-site surface water is collected within sediment ponds which is then used for dust suppression, and the application of Alternative Daily Cover (ADC).

Surface water infrastructure is also in place to divert overland flows from adjoining lands around the AWDF, to ensure there is no on-site mixing of dirty and clean surface water flows.

Figure 5.1 extract from Council mapping showing in blue known hydrological lines over the site and surrounding parcels. The creek line on-site is located to the south of the site between the road access and the facility.

The waters collected within the existing leachate basins from the decommissioned and active landfill cell, is currently periodically disposed of by irrigation over the decommissioned landfill cell only. This prevents overflow or flooding of the on-site leachate ponds.

The development site is positioned in a Mine Subsidence District and is Bushfire Prone Land. The site is zoned '9 Natural Resources Zone' under Lake Macquarie

Local Environmental Plan 2004 (LMLEP04). The proposed development is permissible in this zone.

Figure 5.1 extract from NSW Rural Fire Service Mapping, showing the site and surrounds as bushfire prone land.

The site is mapped within a zone of Sensitive Aboriginal Cultural Landscapes, however the site is not known to contain any items, or archaeology, of European or Indigenous origin. National Parks and Wildlife Service (NPWS) Aboriginal Heritage Information Management System (AHIMS) list does not identify any known items on-site.

The development site is located within the Koompahtoo Local Aboriginal Land Council area.

Figure 5.2 extract from Council mapping showing cross-hatched area mapped area of Sensitive Aboriginal Cultural Landscapes. AWDF site is shown marked red.

5.2 Adjoining Existing Environment

The existing adjoining receiving natural environment, within one kilometre of the site, is generally characterised by uncleared open native forest, comprising Coastal Plains Smooth-barked Apple Woodland and Coastal Plains Scribbly Gum Woodland (LHCCREMS), subject to further detailed field assessment. No EECs are currently mapped on the immediate adjoining lots, however further field assessment will clarify this.

Natural vegetation on immediately adjoining parcels of land is interrupted by gravel tracks, vegetation clearing for electricity infrastructure, the Newstan-Eraring Private Coal Haulage Road and natural drainage lines.

The immediate adjoining lands are Bushfire Prone and are located within a Mine Subsidence District.

The immediate adjoining parcels north of Wilton Road are Crown Lands under the care and control of the Land and Property Management Authority (LPMA). The two large parcels of land south of Wilton Road and opposite the site, are owned by the LPMA and the NSW Aboriginal Land Council. The LMPA parcel opposite the site is currently leased to the Westlakes Automobile Club.

Figure 5.3 below show the ownership of adjoining parcels.

Figure 5.3 extract from Council mapping showing context of site, ownership of adjoining parcel and hydrological lines marked blue. Yellow marks boundary edges.

NPWS AHIMS list identifies there are a number or items of indigenous origin within these immediate adjoining parcels.

5.3 Social Environment

The closest dwelling to the western boundary of the site is positioned (in a direct line) approximately 822 metres away. To the east of the site, the outer edge of the residential precincts of Kilaben Bay, Rathmines and Balmoral are positioned at a distance from the site of approximately 1.7 km, 2.5 km and 3.24 km respectively.

The Toronto Country Club (Golf Course) is approximately 1 km to the east of the site and the Lake Macquarie Clay Pigeon Gun Club is approximately 950 metres south-east of the site.

Under Lake Macquarie Local Environmental Plan 2004, land surrounding the development site is currently zoned either 9 Natural Resources or 7(2) Conservation (Primary) Zone. The closest land zoned 2(1) Residential zone, is approximately 653 metres (in a direct line), from the north-western boundary of the site.

5.4 Visual Catchment

There are currently no easily obtainable views of the site from adjoining lands, roadways, residential precincts and or other places of interest.

There are no foreground static or transient views of the site from the local road network, due to the topography of the site and surrounding land, and screening vegetation.

Distant static or transient views of the site are also not easily obtainable, particularly from residential precincts of the city, due to the remoteness of the site, topography of the city, and the current height of the landfill emplacement.

Development application DA/82/1994 sought approval for a landfill emplacement height of RL 94 m AHD. This application was supported by a visual assessment of the project which concluded that distant views of the site will be obtainable from some residential areas of the City, including, Rathmines (3.4km), Buttaba (3.9km) and Awaba (1.1km), particularly when the landfill emplacement gets above RL 90m AHD. Additionally, some minor distant views of the emplacement above RL 80 m AHD may also possible for a small component of the emplacement, approximately 8%, from the Awaba township. This report concluded that the visual impacts would be minimal. Figure 5. 4 below, shows indicatively the visual catchment of the development.

Currently, the highest point of the site (the decommissioned landfill cell) is at RL 82.6m AHD. The project proposes a new height of approximately RL 110m AHD.

Figure 3.1 VISUAL CATCHMENTS

Figure 5.4 Extract from DA/82/1994 showing the likely visual catchment of the proposed landfill emplacement to a height of RL 94 m AHD. The new project proposes a height of RL 110 m AHD. The development site is edged marked black, the visual catchment shown crosshatched and main sightlines of the site noted as sections A and B.

6. Environmental Risk Analysis

Table 6.1 below provides a brief environmental risk analysis of the project and indentifies the weighting of the key issues to be addressed in the EA, as either high, medium or low risk issues, subject to further investigation.

Issue	Impacts and Mitigation Measures	Issue Importance and EA reporting
Aboriginal heritage and archaeology	Previously uncleared areas of the site are proposed to be cleared for the construction of the two new landfill cells. Council's mapping indicates that the landscape has Aboriginal cultural heritage, however no items on-site are listed under NPWS AHIMS. To ensure there is no adverse damage or destruction of items of a place of Aboriginal heritage. It is recommended that consultation with the Koompahtoo Local Aboriginal Land Council (KLALC) be undertaken, prior to any further heritage or archaeological studies are undertaken on-site.	Medium significance The EA will contain further details on consultation with KLALC and inform the level of reporting required. At this stage, subject to a site assessment by KLALC, it is not known whether an archaeology survey will be required. In the minimum the EA will report on the implications on Aboriginal Heritage.
Acoustic	Acoustic impacts will result from the construction and operational phases of the development. However, due to the large separation of the site from sensitive receivers, acoustic impacts are likely to be low. An acoustic report and construction management plan will detail construction timetabling and possible construction methods to mitigate the potential for adverse noise.	Low significance The site has an existing Environment Protection Licence (EPL) that conditions acoustic impacts. The EA will contain an acoustic report detailing the likely acoustic impacts and mitigation measures during the construction and operational phases of the development.
Bushfire	The site and surrounds is bushfire prone land. A buffer zone and a site perimeter road is proposed, which will provide a defendable area for fire fighting and enable fire fighting vehicles, access around the site. The use of daily cover and ADC also limits the potential for fire to be generated currently within the landfill site. A bush fire threat assessment will be undertaken detailing bush fire safety measures.	Low significance The EA will contain a bush fire threat assessment.
Construction Management	The EA will be supported by a draft construction management plan (CMP) that will detail as a minimum, construction timetabling, traffic and transport measures, construction complaint mechanisms, dust	Low significance A formulation of a final CMP could be a condition of development consent.

	suppression and acoustic management.	
Contaminated Land	The development will require the excavation of soil from the site, which may be contaminated due to the site history. To ensure contaminated soil does not enter the receiving environment, controls during construction should be employed to safeguard the environment and the workforce. Further investigation during the design phase to asses the likelihood of containments occurring in the construction area is required.	Medium to high significance A phase one contamination assessment be undertaken during design stage to determine whether any contamination issues exist within the site of works. If contamination is established, a phase two plan and remedial action plan and a remediation and validation plan be developed and contained with the EA.
Dust (air quality)	A water cart is used daily for dust suppression on-site, subject to daily climatic conditions. The excavation of new cells has the potential to generate more dust to the environment than the current operations of the landfill alone, even though the site is not located close to sensitive receivers. This is due to the amount of excavation required and the potential for dust to carry long distances. Similar dust suppression of the excavation works will be required, albeit at a higher frequency and proportion.	Medium to high significance Within a CMP, a dust suppression management plan will be developed to address the construction phase of the development. An operational dust suppression management plan to be detailed within the EA.
Fauna and Flora	The proposed works require the removal of approximately 6.63 ha of existing native open forest.	High significance An ecological assessment of the site and direct and indirect impacts of the development will be undertaken and the findings reported within the EA.
Geo-technical	Geo-technical investigation of the extension areas will be required of the soil profile. Additionally, groundwater monitoring and mine subsidence investigations are also required, to ensure the design of the new cells, groundwater monitoring and diversion network, and the leachate containment and management systems, are adequately designed to protect the receiving environment. It will be important during excavation of the cells to establish safe construction management protocols, informed by the geo-technical analysis.	High significance The EA will be supported by geo-technical analysis, inclusive of the following studies: • groundwater; • mine subsidence; • slope stability; • geology; and • construction

		management.
Groundwater	As part of the geo-technical investigations, testing of the ground water in the proposed exaction areas would be required, to establish what impacts may occur on the groundwater profile of the locality. There is a high possibility that the excavation will impact the groundwater system. A groundwater monitoring system and program is to be developed to evaluate the construction and operational phases of the development. The new landfill cells are proposed to be lined with a lining system consisting of a Geosynthetic Clay Liner (GCL) overlain by the HDPE geomembrane. Existing landfill batters are proposed to be lined with Linear Low Density Polyethylene (LLDPE). These measures form part of the whole of site leachate and sediment containment and management system. A soil and water management plan will be required that shows temporary and permanent devices to ensure the downstream catchment is not adversely impacted.	High significance The EA will be supported by: • geo-technical report (as described above); • leachate management and containment plan; • soil and water management plan ; • stormwater management plan; and • construction management plan.
Leachate	New ponds are proposed on-site, to cater for the extended areas and existing leachate emissions. Further investigation and modelling is required to inform the sizing of new leachate ponds, to ensure there is adequate capacity on-site to prevent polluted water entering the natural environment.	High significance The EA will be supported by a detailed investigation of the leachate containment and management system. The EA will consider the advantages of staging the construction works and undertake capping to minimise leachate generation as well as investigating alternative/additional options for leachate storage and disposal. The leachate management system will require modelling at the detailed design phase.

Odour (air quality)	Odour impacts are likely to result from the expansion of the site as an addition to the ongoing operations of the existing landfill. Currently, ADC is utilised to cover the landfill, which contains an odour suppressant, that reduces potential odour impacts, along with daily cover (soil) that is used each day also, to cover the landfill. The expansion of the site will be managed similarly to current operations to reduce odour impacts to the receiving environment. These measures above have been effective is managing odour impacts.	Low significance The site has an existing Environment Protection Licence (EPL) that conditions odour impacts. In the minimum, the EA will contain an Odour Impact management plan.
Traffic and transport	Additional traffic to the site is likely during the construction phase of the development. The expansion of the site is proposed to cater for the existing demands of the city. In this case, during operation, additional traffic impacts associated with the site, are unlikely to change. Currently, traffic impacts associated with the development are satisfactory. In the long-term changes to the waste stream under the Council's waste management strategy may reduce the amount of trips made to the site by residents of the City.	Low significance The EA will contain a traffic impact statement, not a traffic study, and consider impacts, including the impacts associated with the construction phase of the development.
Soils	Excavation of the new cells will result in a large amount of soil being stockpiled on-site. Some of the soil will be used during construction on-site, and for lining material. The soil may also be used as daily cover. To ensure excavated soil does not migrate off-site (air or water borne) and enter downstream environments, or the air shed of the locality. An erosion and sedimentation control plan shall be development to demonstrate how the stockpiling of excavated soil associated with the works shall be managed. Some exported excavated material may be required for use in other civil construction works if site storage limitations or the physical properties of the materials warrant it.	Low significance The EA will contain an erosion and sedimentation control plan, construction management plan, and further details on the future use of excavated soil on-site. Details shall be provided of the implications of export of material from the site, inclusive of traffic and dust impacts.
Socio-economic	The development will add potentially an additional 24 years of landfill life to the site and provide Council and the community some assurance that cost-effective disposal of wastes is catered	High significance The EA will contain a discussion on socio-economic impacts, however no formal

	for, whilst newer technologies and sustainable strategies are developed to further shrink the waste stream and value add to the City's resources. In this regard, the development has the potential to provide positive socio-economic impacts to the city. In the event that the site is not expanded and a new site is required, this scenario has the potential to create substantial socio-economic impacts. The site is located in a remote location and the on-going use of the site is unlikely to affect residential land-use strategy of the city other than assisting in delivery of increased residential accommodation consistent with the LHRS. Assessment of the site and future expansion options will be considered with regard to the land-use strategy of surrounding lands.	Social Impact Assessment is proposed to be undertaken.
Scenic quality	The eventual emplacement of landfill within the proposed cells and the existing cells on-site has the ability to affect the scenic quality of the locality, when viewed at a distance. Daily cover of the landfill face lessens the visual impact of the landfill by removing lighter colours from the emplacement, and the eventual rehabilitation of the site will promote vegetation of the landfill emplacement. A visual impact assessment will be undertaken to ascertain the severity of visual impacts, the receptors, and measures, to temper the likely visual impact of the development.	High significance The EA will contain a visual impact assessment and a site rehabilitation and revegetation plan.
Surface water	The extension of the landfilling area will require expansion of the surface water management system and infrastructure currently on-site to ensure that natural overland flows do not mix with surface flows from the landfill cells during construction and operation. Currently, clean water from adjoining land is diverted around the site to the natural watercourse located to the south of the site, to ensure clean and dirty water does not mix. Whilst on-site dirty surface water flows are drained to the existing sediment basin, which is collected and used for dust suppression over the site.	High significance The EA will be supported by further design work on site surface water modelling to size the proposed sediment basins. The EPL will be required to be updated with regard to discharge to the natural watercourse. This will include consideration of the advantages of staging the works to maximise diversion of clean water runoff.

7. Alternatives Considered

Council's Waste Strategy will deliver a comprehensive set of actions to develop new infrastructure and services that represent optimal waste management solutions for the city. These actions focus on alternatives to landfilling as waste management solutions.

Broadly speaking, alternatives to the expansion of Awaba include:

1. development of alternative processing methods and facilities with minimal residual output waste from these processes designated for landfill, particularly with respect to the large organic fraction currently landfilled;
2. education and communication with the public and businesses to increase waste avoidance, source-separation and resource recovery through recycling;
3. diversion of wastes to other landfill sites;
4. avoiding disposal of certain waste components/streams at Awaba landfill through use of pricing signals; and,
5. development of an alternative, new landfill site within or outside the city.

Items 2 to 4 above are already being pursued as outcomes of the waste strategy. LMCC has embarked on an extensive education campaign using a variety of media (item 2) and has recently released an Expression of Interest for provision of waste processing and/or disposal as a short-term measure whilst consent for extension of Awaba landfill is sought (item 3).

Much of LMCC's commercial and industrial waste is diverted to neighbouring landfills through price signals, although this option (4 above) is not considered ideal since it does not minimise waste generation or resource recovery but shifts the issue geographically. LMCC has developed a landfill fee for some items, such as matresses, that can be recycled and where there is a local processor, representing a better sustainable outcome when pricing is used in conjunction with a recovery/recycling option.

By far the preferred strategy is to develop alternative processing methods that result in added value to waste streams and yielding marketable products (Option 1). LMCC have engaged waste consultants who are currently reviewing waste options and developing triple bottom line modelling that will inform Council of risks and benefits associated with various collection and processing systems, along with costs and expected diversion from landfill for each. This report, along with planned community consultation, is expected to inform a draft waste strategy in November 2010 and a final waste strategy in March 2011. Following, LMCC expects to determine and potentially go to tender in 2011 or 2012 for services and infrastructure that will enable significant diversion from Awaba landfill.

LMCC considers the development of an alternative landfill as least desirable.

Notably, Council has already commenced the following steps, measures and alternatives to reducing landfill:

- acquisition of land for siting of alternative waste treatment processing operations;

- implementation of a citywide home composting programme for residents encouraging source separation and on-site composting of household organic waste;
- provision of a permanent e-waste drop-off site;
- extensive citywide community awareness and education campaign using a variety of media;
- provision of “Second-Hand Saturday” periodic mixed household recycling events;
- provision of oil recycling drop-off sites;
- biannual kerbside residential green waste collections;
- completion of 4 kerbside residual audits, 2 of which will be completed with concurrent kerbside recycling audits;
- improvements to Council’s own corporate waste management systems; and,
- the short-term diversion of individual waste components to other facilities for processing and/or disposal.

8. Stakeholder and Community Consultation

8.1 General

The proponent intends to undertake rigorous stakeholder and community consultation and adopt consultation processes required by the DGR's, in preparation of the EA.

The proponent will endeavour to carry out "adequate and appropriate" consultation as described at the DoP *Guidelines for Major Project Community Consultation*, prior to, during, and after assessment of the project.

The proponent is prepared to adequately resource and report on the consultation processes required by DoP and the DGR's.

8.2 Government Consultation

With regard to the proposed extension to the AWDF, Council has been in discussion already with the DECCW and DoP, mainly regarding the proposed concept design of the new landfill cells. However, prior to finalisation of a more detailed design and lodgement of an EA, the proponent would seek to consult further with the following government agencies:

- Department of Planning;
- Department of Environment, Climate Change and Water (National Parks & Wildlife Service, Environment Protection Agency, Department of Water & Energy);
- NSW Mine Subsidence Board;
- Roads and Traffic Authority;
- Energy Australia; and
- Land and Property Management Authority

8.3 Key stakeholders

It is recommended that the following key stakeholders are consulted prior, and after, assessment of the project:

- Residents of the Township of Awaba;
- Adjoining landowners;
- Government agencies;
- Local Councillors and members of Parliament;
- the relevant Local Aboriginal Land Council;
- Nearby community, business, recreational groups and community social organisations in the area; and
- organisations with state and national interest and relevant peak bodies.

8.4 Community Consultation

The community consultation program for the project will generally focus on the following forms of consultation in addition to the legislative requirement of the project application in addition to any matters raised by DoP as required pursuant to the DGR's:

- written contact with adjoining landowners and those directly impacted by the project, inclusive of those adjoining construction transport routes;
- written contact with individuals and groups likely to have an interest in the local implications of the project;
- face to face consultation events, staffed by members of the project team;
- notification of the project and consultation events and milestones through local and regional newspapers, existing local newsletters such as Councils' ezine, eco-advocate and Lake Business, LGA wide electronic and hardcopy mail outs;
- use of Council's website for advertisement and consultation event details and project details and milestones;
- consultation events to include face to face, on-line and ward based events; and
- community groups, and groups and individual briefings with key stakeholders including presentations and feedback sessions by members from the project team as required.

8.5 Waste Strategy Development Project 2010-11 and Community Consultation

Council has already committed to a citywide program of community consultation as part of its *Waste Strategy Development Project 2010 -11.*

Consultation around proposed waste management options, from collection to processing, is being undertaken as part of the strategy.

Council has also engaged an independent facilitator to manage consultation sessions with the following groups in order to i) inform individuals about waste management options, ii) allow feedback, comments and preferences to be recorded and iii) to determine which waste management options represent workable solutions for Lake Macquarie City:

- special interest groups (environmental);
- general community meetings (three, one in each ward);
- LMCC's Community Advisory Group (existing, representative Council advisory body of community members);
- LMCC's Youth Advisory Council;
- internal staff related to waste services and operations; and,
- internal staff at large (n=1,000).

Workshops with the above are planned for August and September 2010 as an integral part of development of a new waste strategy. It is anticipated that consultation regarding waste disposal will also be discussed with the above groups.

Additionally, Council is currently tendering for service providers to deliver training workshops during August and September 2010, for a home composting program trial of 300 households. Once a service provider is appointed, a geographical area will be selected as the trial area, and the recruitment of participants will follow.

Council has additionally appointed a temporary full-time officer to a role specifically around community consultation over waste management and services.

Conclusion

Despite resource recovery, reuse and recycling initiatives of Lake Macquarie City Council, a residual fraction of waste that cannot be recovered will require a suitable disposal site for the foreseeable future.

The proposed extension to the landfill capacity to Awaba Waste Disposal Facility would enable Council to continually dispose of these wastes, whilst simultaneously working to reduce the long-term impacts of waste disposal, financially, ecologically, and in socially sustainable ways.

It is considered that the project will be consistent with the strategic direction for waste management in NSW and Council's strategic commitments.

The project will assist in satisfying local demand for landfill capacity. The site is suitable for the project, due to the historic use of the site, the existing infrastructure in place and the surrounding context of the existing facility.

Development of the existing landfill site at Awaba has been identified as part of LMCC's Waste Strategy Development Project, and proposes significant economic and environmental advantages, over finding an alternative site.

In this regard the proponent seeks the Director General's Requirements in order to prepare a project application pursuant to Part 3A of EP & Act 1979.

Appendix A

Appendices

VOLUMES:

(1)	AREA A EXCAVATION	=	92,000 m³
(2)	AREA B EXCAVATION	=	92,000 m³
(3) = (1) + (2)	TOTAL SITE EXCAVATION	=	184,000 m³

DESIGN ASSUMPTIONS:

1. EXISTING SITE CONTOURS AS SUPPLIED BY COUNCIL DATED FEBRUARY 2010.
2. EXCAVATION BATTERS ARE 1 (V) : 2.5 (H).
3. GEOTECHNICAL STABILITY ANALYSIS OF THE EXCAVATION BATTERS HAS NOT BEEN UNDERTAKEN AS PART OF THE APPROVED SCOPE OF WORKS.
4. NO WATER BALANCE MODELLING AND HENCE LEACHATE AND SEDIMENT BASIN SIZING HAS BEEN UNDERTAKEN AS PART OF THE APPROVED SCOPE OF WORKS.
5. 30m BUFFER DISTANCE FROM THE EXISTING CREEK CENTERLINE HAS BEEN ASSUMED. AN ENVIRONMENTAL ASSESSMENT IS RECOMMENDED TO ASSESS THE REQUIRED (IF ANY) BUFFER DISTANCE.

LEGEND:

- LOT BOUNDARY
- PROPOSED EXCAVATION CONTOURS
- EXISTING LANDFILL FOOTPRINT
- AREA A
- AREA B
- PROPOSED LEACHATE COLLECTION SYSTEM
- LEACHATE COLLECTION SUMP
- 3% BASAL GRADIENTS
- PROPOSED GROUNDWATER MONITORING WELLS (2 SK020)
- PROPOSED LANDFILLGAS MONITORING WELLS
- EXISTING GROUNDWATER MONITORING WELLS

0 20 40 60 80 100m

SCALE 1:2000 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
B	REVISED		20.04.10
A	INITIAL ISSUE		24.03.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL

PROPOSED EXCAVATION OPTION 2 - 10m BUFFER

GHD CLIENTS | PEOPLE | PERFORMANCE

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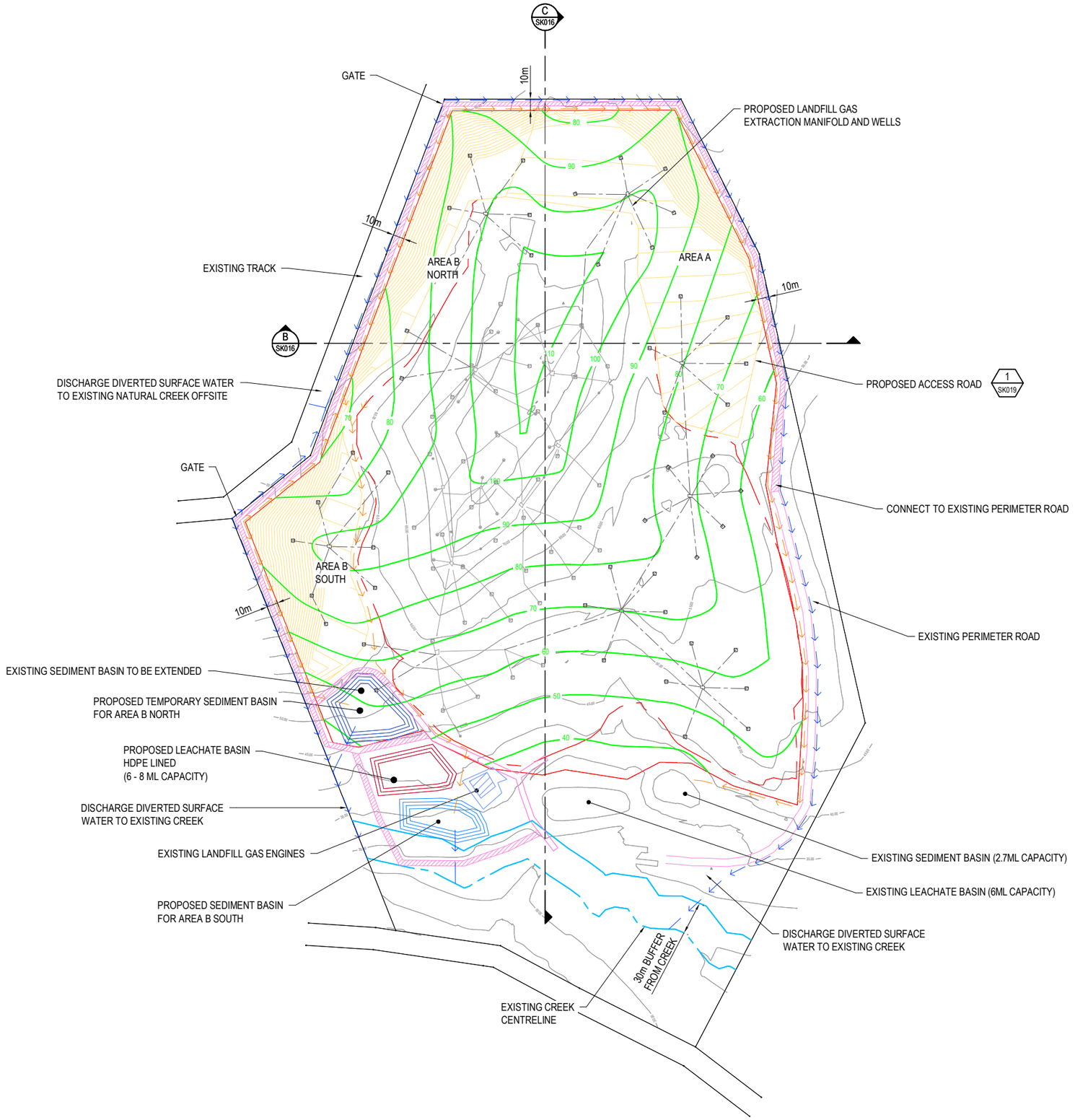
scale	1:2000 for A1	job no.	21-19318
date	APR 2010	rev no.	B

approved SK012

Plot Date: 12 July 2010 - 5:57 PM Plotted by: Luis Rodriguez/Sydney/GHD/AU Cad File No: Z:\21\19318\CADD\Drawings\21-19318-SK012.dwg



VOLUMES:

(1)	TOTAL SITE EXCAVATION (REFER TO SK012)	=	184,000 m³
(2)	TOTAL AIRSPACE BETWEEN EXISTING SITE LEVELS AND TOP OF CAP	=	3,320,000 m³
(3) = (1) + (2)	TOTAL SITE AIRSPACE	=	3,504,000 m³
	- AREA A: APPROX. TOTAL AIRSPACE	=	1,042,000 m³
	- AREA B: APPROX. TOTAL AIRSPACE	=	1,292,000 m³
	- ADDITIONAL AIRSPACE GAINED OVER EXISTING LANDFILL	=	1,170,000 m³

DESIGN ASSUMPTIONS:

1. EXISTING SITE CONTOURS AS SUPPLIED BY COUNCIL DATED FEBRUARY 2010.
2. MAXIMUM FILL SLOPE ARE 1 (V) : 4 (H).
4. NO WATER BALANCE MODELLING AND HENCE LEACHATE AND SEDIMENT BASIN SIZING HAS BEEN UNDERTAKEN AS PART OF THE APPROVED SCOPE OF WORKS.
5. 30m BUFFER DISTANCE FROM THE EXISTING CREEK CENTERLINE HAS BEEN ASSUMED. AN ENVIRONMENTAL ASSESSMENT IS RECOMMENDED TO ASSESS THE REQUIRED (IF ANY) BUFFER DISTANCE.

LEGEND

- LOT BOUNDARY
- PROPOSED FINAL SITE CONTOURS
- EXISTING LANDFILL FOOTPRINT
- PROPOSED LANDFILL FOOTPRINT
- EXISTING CREEK
- PROPOSED EXCAVATION
- EXISTING ACCESS ROAD
- PROPOSED ACCESS ROAD
- PROPOSED STORMWATER DRAIN
- PROPOSED SURFACE WATER DIVERSION BUND/SWALE
- EXISTING GAS MANAGEMENT SYSTEM
- PROPOSED GAS MANAGEMENT SYSTEM

0 20 40 60 80 100m
SCALE 1:2000 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
B	REVISED		20.04.10
A	INITIAL ISSUE		24.03.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL

PROPOSED FINAL CONTOURS OPTION 2 - 10m BUFFER

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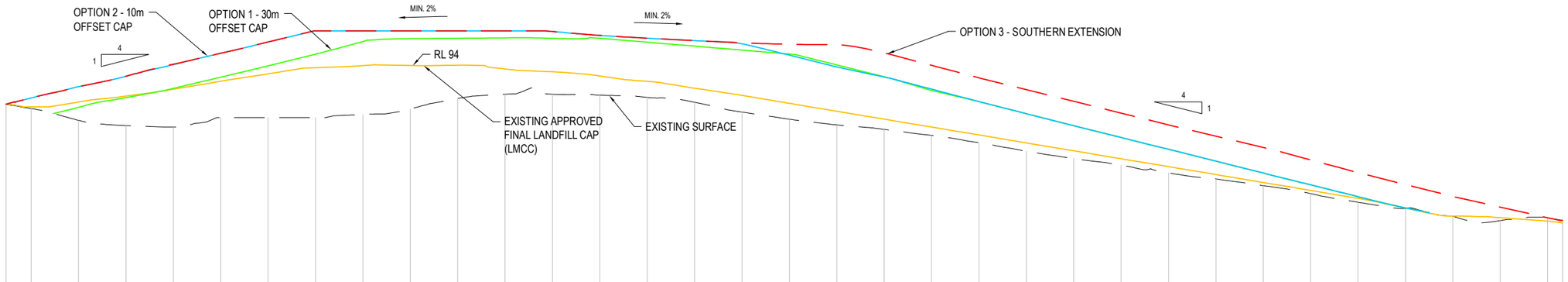
scale	1:2000 for A1	job no.	21-19318
date	APR 2010	rev no.	B

approved SK013

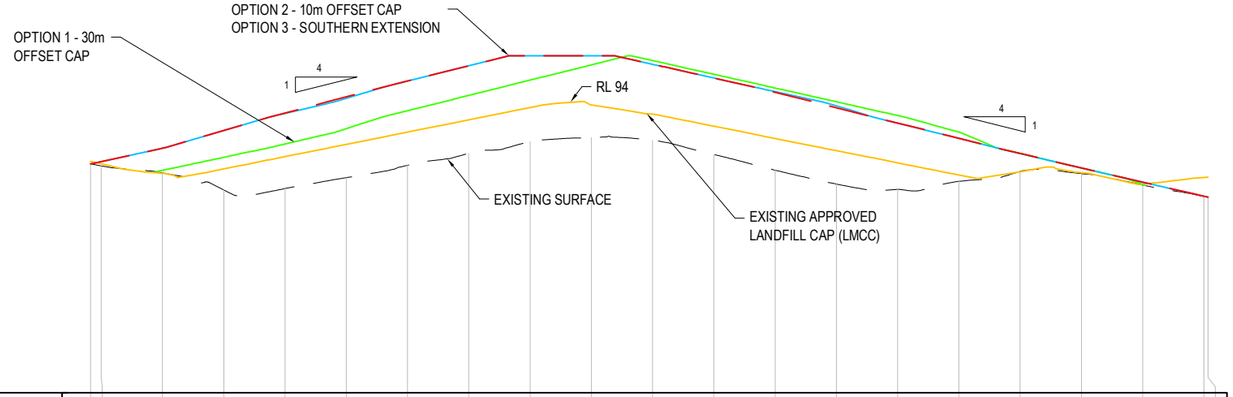
Plot Date: 20 April 2010 - 11:47 AM Plotted by: Alison J. Horlyck Cad File No: G:\21\19318\CADD\Drawings\21-19318-SK013.dwg



DATUM RL. 0.0

CHAINAGE	49.363	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	420	440	460	480	500	520	540	560	580	600	620	640	660	680	700	706.352
OPTION 3 - SOUTH EXTENSION	79.081	81.736	86.5	90.912	95.987	100.56	105.289	110	110	110	110	110	109.738	108.102	106.897	105.888	104.982	104.352	104.125	100.729	95.504	90.214	85.278	80.349	75.356	70.369	65.651	60.912	55.65	50.284	45.264	40.262	35.759	31.31	30.208
OPTION 2 - 10m OFFSET CAP	79.081	81.736	86.5	90.882	95.786	100.56	105.289	110	110	110	110	110	109.738	108.102	106.897	105.885	104.526	99.761	94.813	90.553	85.457	80.214	75.112	70.037	65.07	60.121	55.106	50.1	45.132	40.153	35.431				
OPTION 1 - 30m OFFSET CAP			77.78	81.865	85.763	90.489	95.274	100.176	105.519	106.716	106.876	107.027	106.845	106.898	105.223	103.562	101.891	100.212	95.653	90.671	84.889	80.192	75.112	70.037	65.07	60.121	55.106	50.1	45.132	40.153	35.431				
EXISTING FINAL LANDFILL CAP	79.392	78	80.055	82.55	85.426	88.759	91.892	94.495	95.367	95.413	95.545	93.954	92.757	90.98	88.734	85.83	82.808	79.475	76.142	72.808	69.475	66.142	62.808	59.475	56.142	52.808	49.475	46.142	42.808	39.44	35.359	32	31.332	29.853	29.107
EXISTING SURFACE	79.081	77.277	72.331	70.124	69.5	73.5	73.5	73.5	74.76	77.12	81.523	83.301	83.31	82.922	81.972	79.919	75.79	72.778	70.393	68.478	65.947	62.941	59.348	56.262	53.44	50.197	47.679	44.801	41.462	37.802	35.179	31.946	30.102	31.237	30.208

C SECTION
SK011 SCALE 1:1000



DATUM RL. 0.0

CHAINAGE	36.56	40	60	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	400	401.39
OPTION 3 - SOUTH EXTENSION	74.699	75.448	79.806	85.601	91.316	96.57	101.734	106.731	110	110	107.229	102.725	98.055	93.041	88.015	83.055	78.107	73.372	68.733	64.173	63.856
OPTION 2 - 10m OFFSET CAP	74.699	75.448	79.806	85.601	91.172	96.091	101.734	106.731	110	110	107.229	102.725	98.265	93.633	88.005	83.055	78.096	73.367	68.731	64.172	63.856
OPTION 1 - 30m OFFSET CAP			72.899	76.899	81.171	86.18	92.037	97.033	102.03	107.027	108.417	103.999	99.467	94.988	90.491	85.098	78.099	73.372	67.863		
EXISTING FINAL LANDFILL CAP	75.561	74.74	71.636	73.049	77.08	81.082	85.082	89.082	93.082	93.954	90.983	87.012	83.012	79.012	75.045	71.077	72.133	71.817	68.079	70.255	70.352
EXISTING SURFACE	74.699	74.022	71.764	66.214	66.649	70.196	74.246	78.173	82.001	83.301	82.399	77.752	72.694	68.131	66.403	69.015	72.264	71.521	67.805	64.124	63.856

B SECTION
SK011 SCALE 1:1000

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
B	REVISED		20.04.10
A	INITIAL ISSUE		24.03.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL

PROPOSED FINAL LANDFORM LONGITUDINAL SECTIONS

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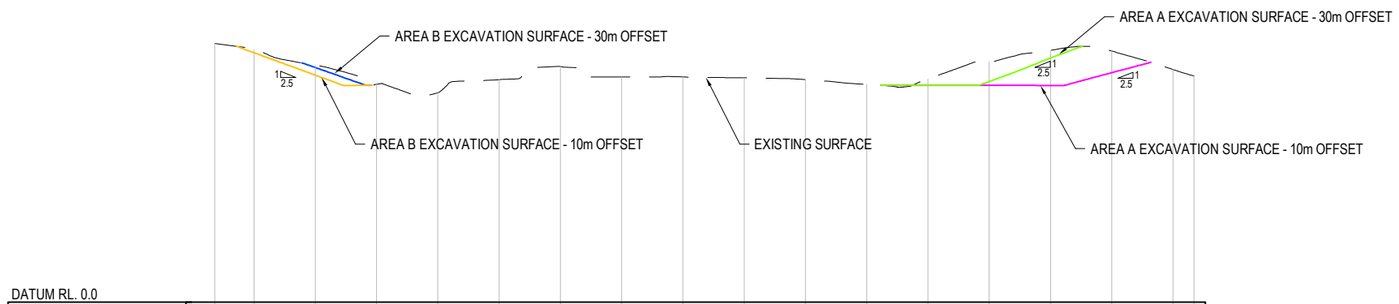
scale 1:1000 for A1 | job no. 21-19318
date APR 2010 | rev no. B

approved SK016

Plot Date: 20 April 2010 - 11:30 AM Plotted by: Alison J. Horlyck Cad File No: G:\21\19318\CADD\Drawings\21-19318-SK016.dwg



DATUM RL. 0.0

EXCAV AREA B 30m			76.582																			
EXCAV AREA B 10m		81.409	74.104																			
EXCAV AREA A 30m														70.798	72.021	79.705						
EXCAV AREA A 10m														70.808	70.789	70.757	74.92					
EXISTING SURFACE	84.5	82.5	77.391	71.105	68.373	72.629	76.933	73.5	73.515	73.236	72.652	71.107	72.866	78.422	82.165	82.001	75.969	73.855				
CHAINAGE	67.144	80	100	120	140	160	180	200	220	240	260	280	300	320	340	360	380	386.624				

A SECTION
SK010 SCALE 1:1000

0 10 20 30 40 50m
SCALE 1:1000 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
B	REVISED		15.04.10
A	INITIAL ISSUE		24.03.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL

PROPOSED EXCAVATION LONGITUDINAL SECTION

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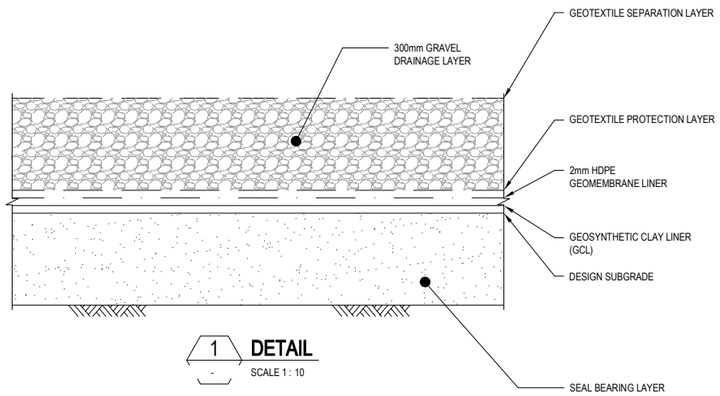
scale | 1:1000 for A1 job no. | 21-19318
date | APR 2010 rev no. | B

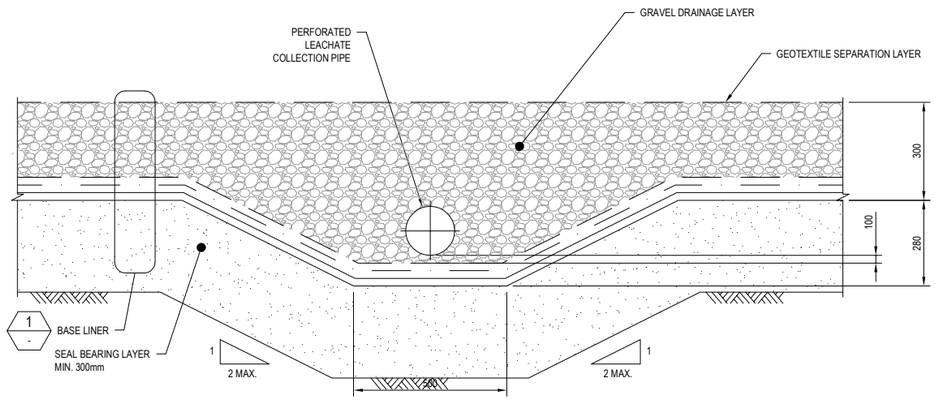
approved SK017

Plot Date: 20 April 2010 - 11:50 AM Plotted by: Alison J. Horlyck Cad File No: G:\21\19318\CADD\Drawings\21-19318-SK017.dwg



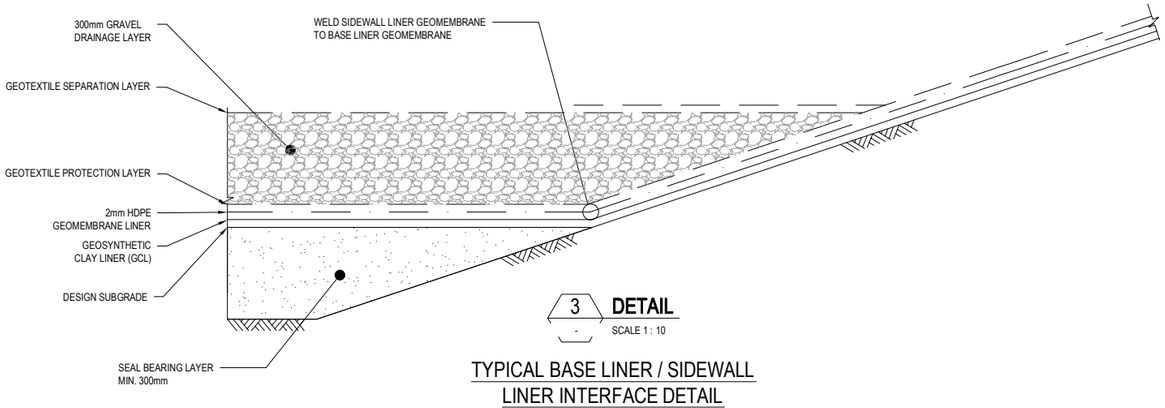
1 - DETAIL
SCALE 1 : 10

TYPICAL BASE LINER DETAIL



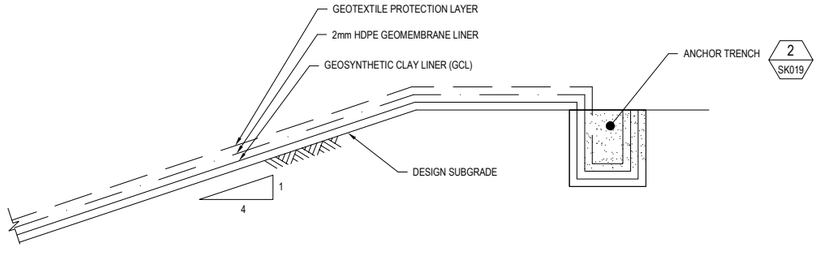
2 - DETAIL
SCALE 1 : 10

TYPICAL LEACHATE COLLECTION PIPE TRENCH DETAIL



3 - DETAIL
SCALE 1 : 10

TYPICAL BASE LINER / SIDEWALL LINER INTERFACE DETAIL



4 - DETAIL
SCALE 1 : 10

TYPICAL SIDEWALL LINER DETAIL

0 0.1 0.2 0.3 0.4 0.5m
SCALE 1:10 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
A	INITIAL ISSUE		09.04.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL
LANDFILL EXTENSION
TYPICAL DETAILS - SHEET 1

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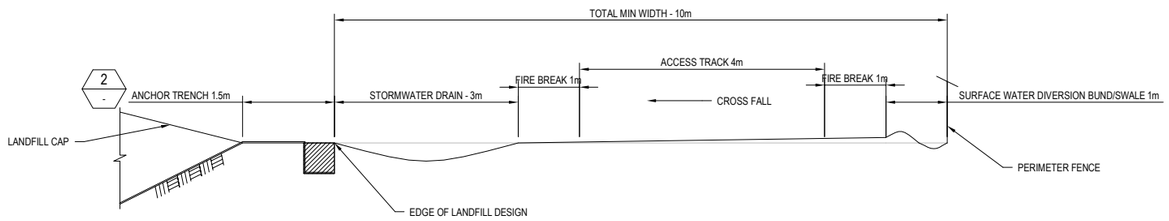
scale 1:10 for A1 | job no. 21-19318
date APR 2010 | rev no. A

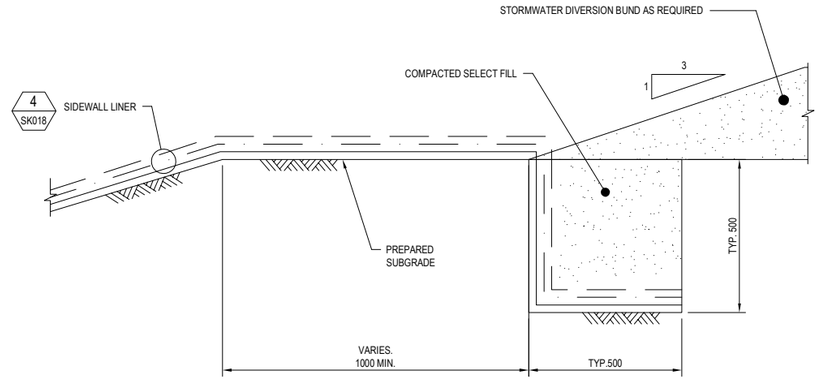
approved SK018

Plot Date: 20 April 2010 - 11:29 AM Plotted by: Alison J. Horlyck Cad File No: G:\21\19318\CADD\Drawings\21-19318-SK018-20.dwg



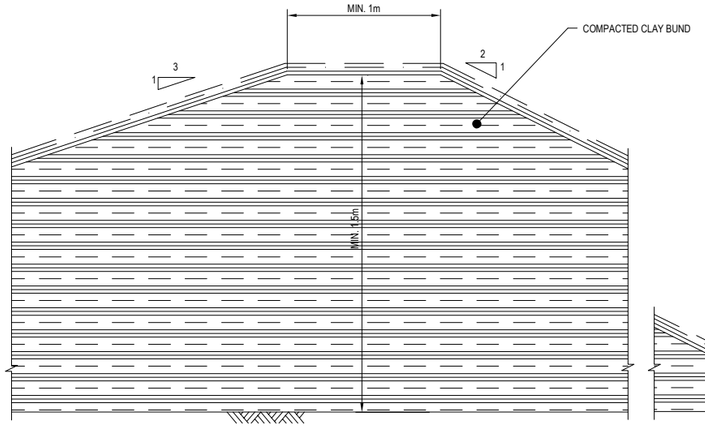
1 - **DETAIL**
SCALE 1 : 50m

PERIMETER ACCESS ROAD
10m OFFSET



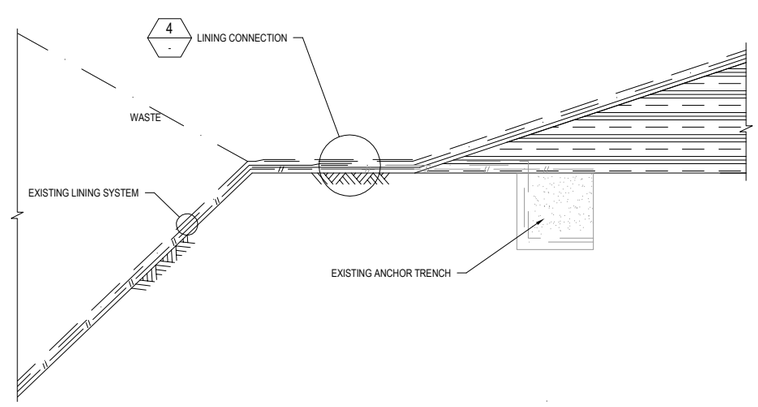
2 - **DETAIL**
SCALE 1 : 10

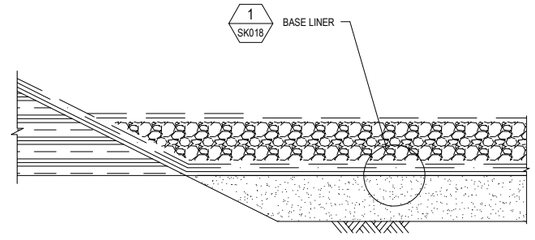
TYPICAL ANCHOR TRENCH DETAIL

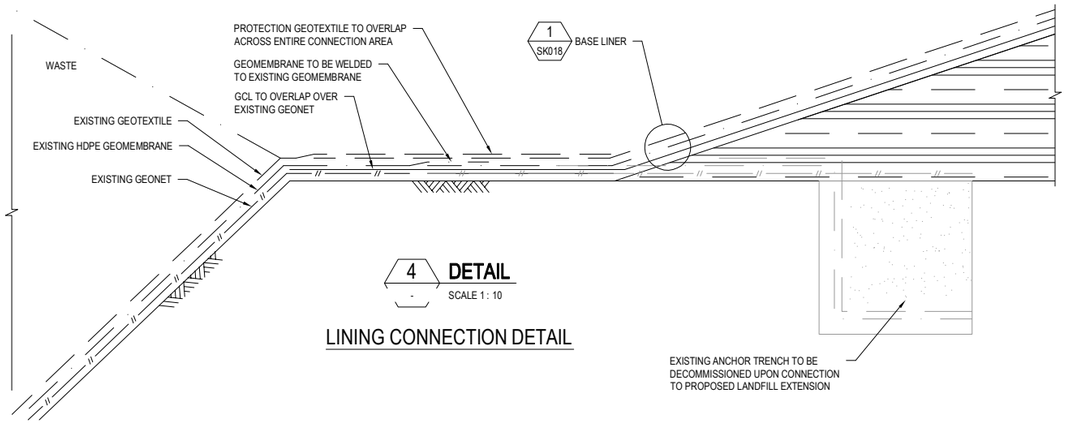


3 - **DETAIL**
SCALE 1 : 20

TYPICAL PERIMETER
CONTAINMENT BUND DETAIL







4 - **DETAIL**
SCALE 1 : 10

LINING CONNECTION DETAIL

0 0.5 1.0 1.5 2.0 2.5m
SCALE 1:50 AT ORIGINAL SIZE

0 0.2 0.4 0.6 0.8 1.0m
SCALE 1:20 AT ORIGINAL SIZE

0 0.1 0.2 0.3 0.4 0.5m
SCALE 1:10 AT ORIGINAL SIZE

PRELIMINARY

rev	description	app'd	date
A	INITIAL ISSUE		09.04.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL

LANDFILL EXTENSION
TYPICAL DETAILS - SHEET 2

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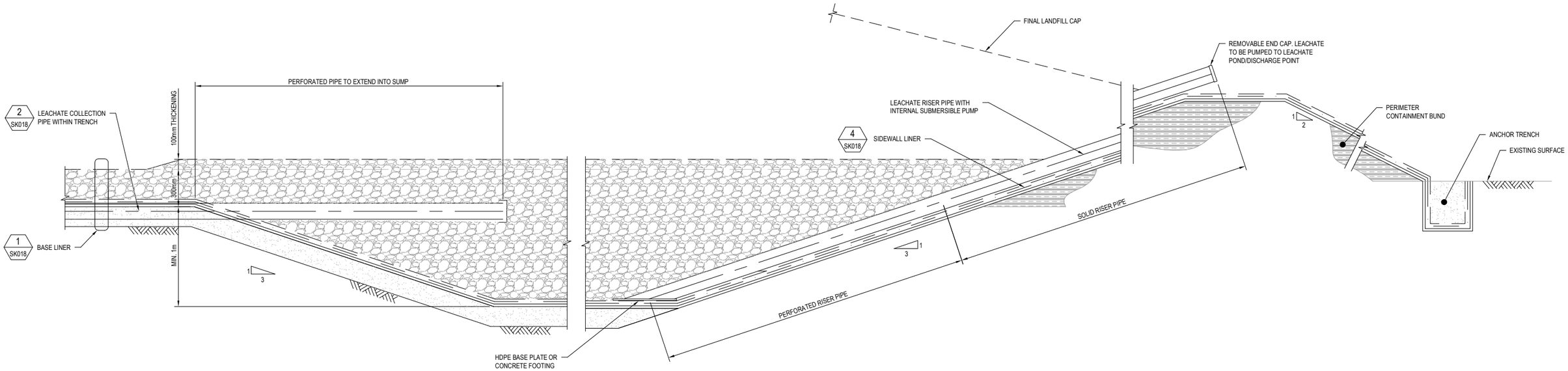
scale 1:50 for A1 | job no. 21-19318
date APR 2010 | rev no. A

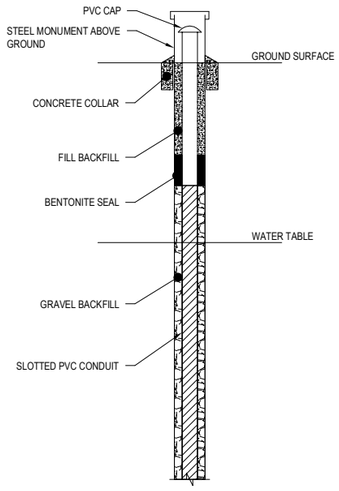
approved SK019

Plot Date: 20 April 2010 - 4:13 PM Plotted by: Alison J. Horlyck Cad File No: G:\21\19318\CADD\Drawings\21-19318-SK018-20.dwg



1 **DETAIL**
-
SCALE 1 : 20

TYPICAL LEACHATE SUMP DETAIL



2 **DETAIL**
-
NOT TO SCALE

TYPICAL GROUNDWATER MONITORING WELL DETAIL

PRELIMINARY

rev	description	app'd	date
A	INITIAL ISSUE		09.04.10

LAKE MACQUARIE CITY COUNCIL
AWABA LANDFILL

LANDFILL EXTENSION
TYPICAL DETAILS - SHEET 3

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scale	1:20 for A1	job no.	21-19318
date	APR 2010	rev no.	A

approved SK020

Plot Date: 20 April 2010 - 3:43 PM Plotted by: Alison J. Horlyck Cad File No: G:\21\19318\CADD\Drawings\21-19318-SK018-20.dwg

Appendix B

Welcome to the
Local Government Strategic Waste Action Plan tool

This Local Government Strategic Waste Action Plan tool, (LGSWAP tool) is to:

-Evaluate current performance against the 66% 2014 Waste Avoidance and Resource Recovery Strategy (WARR) target.

-Develop an Action Plan to improve performance against the target.

This tool requires your LGA's waste and recycling data. This data may be imported from your 2007/2008 Local Government Annual Return Survey (LG data). Alternatively you may manually enter data or use NSW default data. LG data (if imported) or default data can be reloaded or replaced with user-defined data at any time.

NB: All subsequent references to 'LG data' means data from the 2007/2008 Local Government Annual Return Survey. Data from all other Annual Return Surveys will not load correctly into this version of the tool.

The User Guide button on each page of the tool allows you to access additional information and instructions.

Import 07/08 LG data

LG data for Lake Macquarie City Council has been imported

User guide **Enter tool**

Step 1 · Step 2 · Step 3 · Step 4 · Step 5 · Step 6 · Step 7 · User guide

Council Details

Enter your Council profile details

Complete all fields marked with *

Data input options:

Either: Clear table to enter own data — Clear

Or: Reload your LG data

Council	Lake Macquarie City Council	*
Region *Please select*	SMA	*
Population	195,559	*
Rateable units - MUDs	6,147	*
Rateable properties - SUDs	66,000	*
Rateable properties - Rural	1,771	
Rateable properties - Total	**73,918**	
Date (day/month/year)	5/07/10	
Name of officer	Debbie Cleary	
Position	aste Education & Planning Coordinator	
E-mail address	dcleary@lakemac.nsw.gov.au	

Reload LG data

Back Next

Step 1 ····· **Step 2** ····· Step 3 ····· Step 4 ····· Step 5 ····· Step 6 ····· Step 7 **User guide**

Kerbside Recycling - Quantity of Materials Collected and Sold

Enter the quantity of kerbside recyclables collected and sold.

Also enter Council's contractual agreements for kerbside recycling collection.

Data input options:

Either: Clear table to enter own data — **Clear**

Or: Load table with default data — **Load default data**

Source: Getting more from our recycling systems - assessment of domestic waste and recycling systems (DEC, 2004) NSW local government data for the National Environment Protection Measure for Used Packaging Materials (2005-06)

Alternatively: Reload your LG data — **Reload LG data**

Contractual Agreement	Please se	Council contracted
Date of contract renewal		

The 'Total' for each material in this column must be completed

Material Type	Material Type sub categories	Kerbside recycling **collected** (tonnes)	Kerbside **recycling sold** or **sent** for secondary use including energy recovery (tonnes)	Kerbside recycling residual fraction (**contaminants**) disposed of to landfill (tonnes)
Paper / cardboard	***Packaging Paper -***			
	Cardboard	-	-	-
	Liquid Paper Board	-	-	-
	Total Packaging Paper	-	-	-
	Other paper (non-packaging) -			
	Paper – white office	-	-	-
	Paper - Newspaper and magazines	-	-	-
	Paper - mixed	-	-	-
	Total all other non-packaging paper	-	-	-
	Total Paper Products	**10,144**	**10,024**	**120**
Glass	Glass White	1,127	1,114	13
	Glass Green	730	721	9
	Glass Brown	2,809	2,776	33
	Glass Mixed	-	-	-
	Total Glass Containers	**4,666**	**4,611**	**55**
Plastic	PET	-	-	-
	HDPE	-	-	-
	PVC	-	-	-
	Plastic Other	-	-	-
	Plastic Mixed	-	-	-
	Total Plastics	**1,314**	**1,298**	**16**
Metal cans	**Aluminium (cans)**	**145**	**143**	**2**
	Steel (cans, tins etc)	**1,589**	**1,570**	**19**
Organics	**Food Organics**	-	-	-
	Garden Organics / Vegetation	-	-	-
Other	Other - Please Specify			
	Total Other			
	Contaminates (waste)	-	-	-
	TOTAL	**17,858**	**17,648**	**212**

Contamination:

If the table above does not contain realistic contamination values (ie recycling collected' minus recycling sold'):

Either: Apply default NSW contamination rates to the kerbside material collected. Source: NSW local government data for the National Environment Protection Measure for Used Packaging Materials (National Environment Protection Council, 2005-06) — **NSW contamination**

Or: If a value for **'Contaminates (waste)'** has been entered in the **'Kerbside recycling collected'** column, this contamination rate can be applied to each material to populate the third column.

A Contaminates (waste) value has not been entered so this option is not available — **Average contamination**

Data Check

Select data source: LG data only

Step 1 Step 2 **Step 3** Step 4 Step 5 Step 6 Step 7 **User guide**

Kerbside Recycling - MUD and SUD Composition

Enter here:
Section A The proportion of recyclables collected from MUDs and SUDs as a percentage of all kerbside recyclables collected.
Section B The composition of collected recyclable material from MUDs and SUDs respectively.

Data input options:

Either: Use default data. **Load default data**

The default values for the proportion of material collected is based on the proportion of MUDs and SUDs in your LGA.
The default material composition for MUDs and SUDs is based on the composition of recyclables collected, as entered on the previous page of this tool.

Or: Clear the default data and enter separate MUD and SUD data. **Clear**

Section A

(Skip this section if separate MUDs and SUDs recycling quantities are not known)

Percentage of recyclables collected from MUDs	8%
Percentage of recyclables collected from SUDs	92%

Section B

(Skip this section if separate MUDs and SUDs recyclables compositions are not known)

Material Type	Material Type sub categories	MUDs	SUDs
Paper / cardboard	***Packaging Paper -***		
	Cardboard		
	Liquid Paper Board		
	Total Packaging Paper		
	Other paper (non-packaging) -		
	Paper – white office		
	Paper - Newspaper and magazines		
	Paper - mixed		
	Total all other non-packaging paper		
	Total Paper Products	**57%**	**57%**
Glass	Glass White	6%	6%
	Glass Green	4%	4%
	Glass Brown	16%	16%
	Glass Mixed		
	Total Glass Containers	**26%**	**26%**
Plastic	PET		
	HDPE		
	PVC		
	Plastic Other		
	Plastic Mixed		
	Total Plastics	**7%**	**7%**
Metal cans	**Aluminium (cans)**	**1%**	**1%**
	Steel (cans, tins etc)	**9%**	**9%**
Organics	**Food Organics**		
	Garden Organics / Vegetation		
Other			
	Total Other		
	Contaminates (waste)		
	TOTAL	**100%**	**100%**

Data Check

Select data source:	LG data + default data

Step 1 Step 2 Step 3 **Step 4** Step 5 Step 6 Step 7 **User guide**

Kerbside Residual Waste

Enter here:
- The quantity of kerbside residual waste collected
- Details of any residual waste sent to an AWT
- The composition of the residual waste stream

Also enter Council's contractual agreements for kerbside residual waste collection.

Section A

Data input options

Either: Clear section to enter your own data — **Clear**

Or: Load this section with default data — **Load default data**

Source: Getting more from our recycling systems - assessment of domestic waste and recycling systems (DEC, 2004)

Alternatively: Reload this section with your LG data — **Reload LG data**

Section A

How much kerbside residual waste is collected for disposal to landfill? (tonnes)	58,993
Does your Council send any residual waste to an AWT?	No
Total residual waste sent to an AWT? (tonnes)	
Material sent to landfill from AWT? (tonnes)	
Total residual waste collected at the kerbside in 2007/2008 (tonnes)	**58,993**
Percentage of residual waste collected from MUDs	8%
Percentage of residual waste collected from SUDs	92%

Select data source: LG data + default data

Section B

Data input options

Either: Click the button 'Reload calculated values' to load the table with calculated values based on the default composition for residual waste as reported in *Getting more from our recycling systems - Assessment of domestic waste and recycling systems (DECC, 2004)*.

Alternatively: Clear table to enter separate MUD and SUD residual waste audit data if available. — **Clear**

Section B

	Complete all 3 columns with defualt or user defined data		
	Reload calculated values	Reload calculated values	Reload calculated values
Material	**Average in LGA**	**MUDs**	**SUDs**
Paper and Cardboard	11.2%	11.2%	11.2%
Liquid paperboard	1.1%	1.1%	1.1%
Glass	4.5%	4.5%	4.5%
Plastics	8.2%	8.2%	8.2%
Aluminium	0.2%	0.2%	0.2%
Steel	2.2%	2.2%	2.2%
Food organics	31.7%	31.7%	31.7%
Garden organics	27.2%	27.2%	27.2%
Other	13.7%	13.7%	13.7%
Total	**100%**	**100%**	**100%**

Contractual Agreement	*Please sele*	Day labour

Select data source:	Default data only

Step 1 Step 2 Step 3 Step 4 **Step 5** Step 6 Step 7 **User guide**

Kerbside Bulky Waste

Enter here the quantity of bulky waste i.e. domestic kerbside clean up waste collected.

Data input options

Either Clear the table to enter own data **Clear**

Alternatively: Reload your LG data **Reload LG data**

Category	Sub Category	Materials collected for recycling (tonnes)	Materials diverted (sold or sent for secondary use including energy recovery) (tonnes)
Dry Recyclables	Dry Recyclables	0	
Organics	Organics	1129	
Metals	Metals	247	
Other - Please specify			
	Total	**1376**	**0**

Total bulky waste disposed of to landfill (tonnes)	**5430**

Zero Waste SA commissioned an audit to determine the nature and composition of materials presented for hard waste collection in South Australia. Click on the link below to view the report.

Information on issues and opportunities of kerbside hard waste collection

Select data source:	LG data only

Back **Next**

Local Government Strategic Waste Action Plan Tool

Current Waste Diversion - Performance Evaluation

Lake Macquarie City Council

This Current Waste Diversion Performance Evaluation has been developed using the Strategic Waste Action Plan tool. This report identifies potential areas to increase diversion of waste from landfill.

Date:	5/07/10
By:	Debbie Cleary
Position:	Waste Planning & Education Coordinator
Contact:	02 9421 0561

Report Details

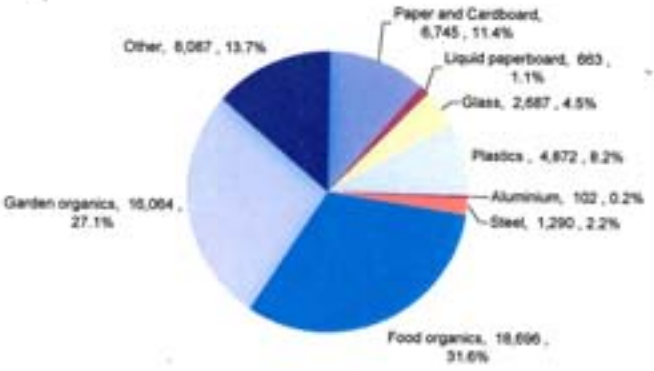
Summary of Data Sources Used		
Step 2	Kerbside recycling (quantity of materials collected and sold)	LG data only
Step 3	Kerbside recycling (MUD and SUD composition)	LG data + default data
Step 4	Kerbside residual waste (quantities)	LG data + default data
Step 4	Kerbside residual waste (composition)	Default data only
Step 5	Kerbside bulky waste	LG data only

Overview

Lake Macquarie City Council currently generates 83,657 tonnes of domestic waste, of which 17,646 tonnes or 21% is diverted from landfill.
To achieve a 66% diversion target, Council would need to increase overall diversion by 45%.

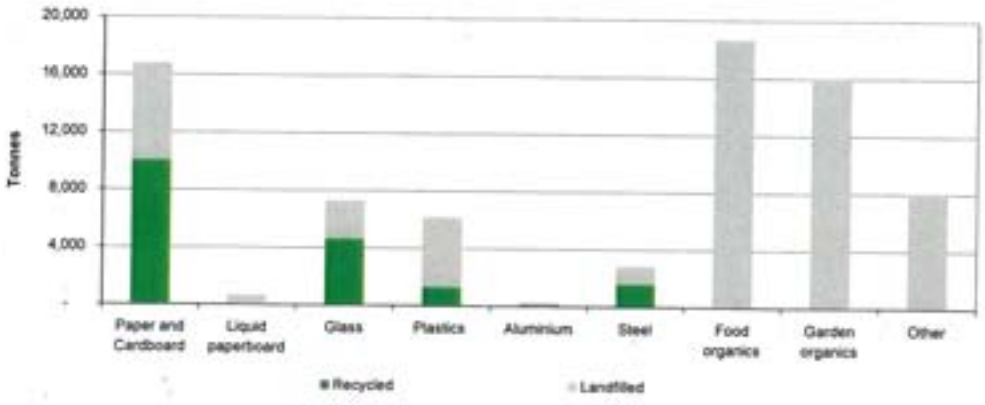
Waste Currently Landfilled

The domestic waste currently being sent to landfill comprises the following fraction of materials. For each material type the pie chart shows both the tonnages and percentage of the domestic kerbside waste stream.



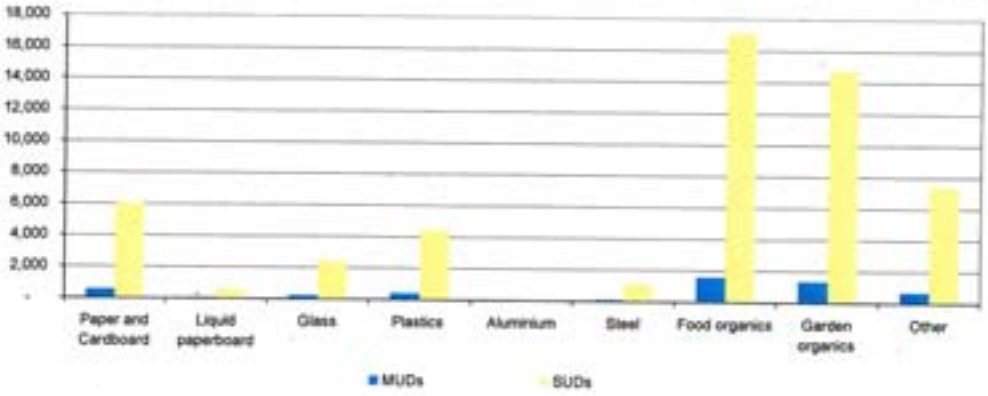
General Waste - Landfilled vs. Recovered

The graph below shows the total domestic waste generation by material type. The green bars show the fraction currently being recovered by Council's recycling collection programmes. The grey bars show the fraction currently sent to landfill.



Landfilled - MUDs and SUDs

The land filled recyclable materials in the residual waste stream (the grey bars in the above graph) can be further divided by MUDs and SUDs.



Environmental Benefits

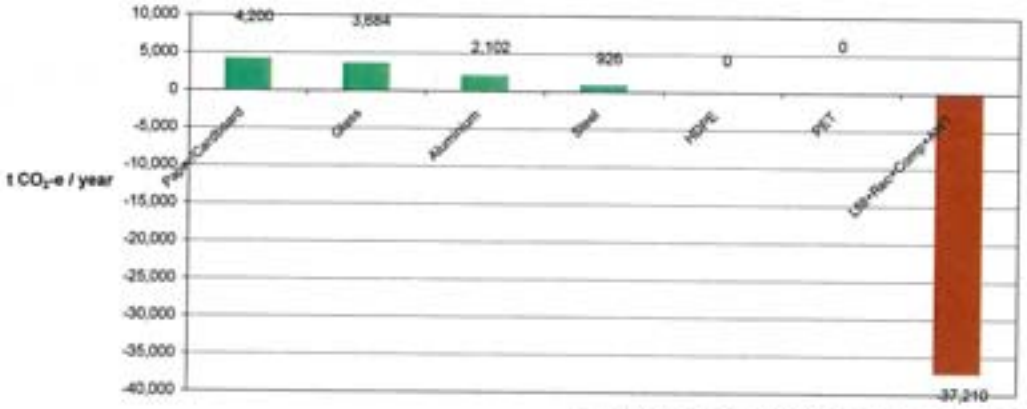
The environmental savings associated with Council's kerbside recycling are presented below in terms of greenhouse gas, water and energy savings. Savings are indicated by a positive number whereas impacts are indicated by a negative number.

Most benefits/impacts have been derived from Department of Environment and Climate Change Environmental Benefits of Recycling Calculator, which can be found here: http://www.environment.nsw.gov.au/resources/warr/benefitrecycalcJune2008.xls. Estimated benefits/impacts for greenhouse gas emissions incorporate proprietary in-house data from Hyder Consulting.

Note: The environmental benefits and impacts illustrated in this report are broadly defined and indicative only. Greenhouse benefits and impacts, in particular, do not represent site-specific carbon footprinting and should not be interpreted as such.

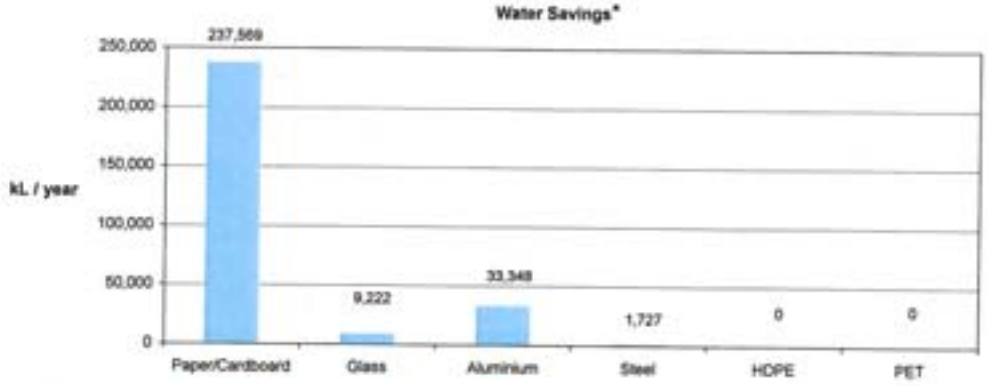
The greenhouse gas savings associated with recycling are presented as green bars in the graph below, whereas the total CO2-e emissions of Council's waste management system, such as emissions associated with landfilling combined with benefits from composting, AWT and recycling, are presented in the brown bar.

Greenhouse Gas Savings / Impacts



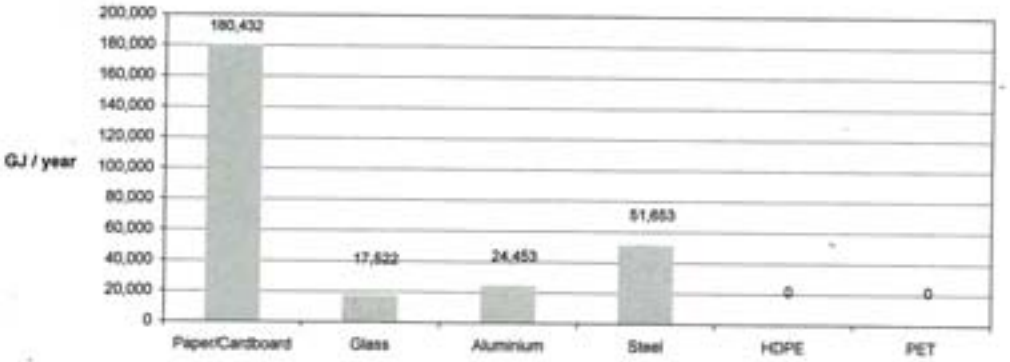
The combined benefits/impacts of landfilling, recycling, composting and AWT treatment

Water Savings*



* Water usage is indicated by a negative number

Energy Savings



Save Print

This Local Government Strategic Waste Action Plan (LGSWAP) tool, was developed by Hyder Consulting Pty Ltd for the Department of Environment and Climate Change NSW (DECC) in 2008. It was developed for the use of local government in NSW. Councils can use this tool to assist in the evaluation of their current performance against the 2014 target of 66 per cent municipal waste diversion as set out in the NSW Waste Avoidance and Resource Recovery Strategy, and the development of an action plan to improve performance against the target.

This tool was developed using the best data and case studies existing at the time. The results displayed are indicative only. **DECC and Hyder Consulting make no representation about the accuracy, completeness or suitability of the results obtained from the use of this tool for any particular purpose.** Councils will need to consider their respective circumstances when using the tool. DECC and Hyder Consulting do not accept responsibility for any liability incurred by any Council arising from the use of this tool.

Step 1 Step 2 Step 3 Step 4 Step 5 **Step 6** Step 7 **User guide**

Planned Changes to Kerbside Waste and Recycling Services

In order to make a projection of Council's future resource recovery rate, information on any planned major changes to the waste management system should be recorded here.

Tick the appropriate boxes below to include any of the four major changes to your waste management system. Make sure that diverted materials are not double counted - for example if 100% diversion to AWT is selected in Action 1, then Action 2, source separated food collections, would not be appropriate.

The impact of these changes on your diversion rate is shown in the graph below.

Data Input

Enter your own data and information - there are no default or LG data options.

Irregularities in the data will be indicated by a red warning

☐ **1 Processing of residual waste with AWT in the future**

Operational in year	Please select	
Recovery potential		0%
Percentage of households for implementation of action		

1 Current recovery at AWT: 0 tonnes

☑ **2 Source separated food waste collections**

Operational in year	Please select	2014
Expected yield (kg/household/week)		4.41
Percentage of households for implementation of action		100%

This action would produce an additional recovery of: 16,103 tonnes, contributing to 16.2% of total diversion

2 Current recovery of source separated food waste: 0 tonnes. Max available: 16,099 tonnes/year or 4.8 kg/hh/wk (based on 100% participation)

☑ **3 Upgrade * garden waste collection service**

Operational in year	Please select	2013
Expected yield (kg/household/year)		196
Percentage of households for implementation of action		95%

This action would produce an additional recovery of: 13,764 tonnes, contributing to 16.5% of total diversion

3 Current recovery of garden organics: 0 tonnes, max available: 16,264 tonnes. Current yield: 0.0, max yield available: 217.0 kg/hh/yr (based on 100% participation)

* Upgrade can refer to both improving the existing garden organics collection service or introducing new services

☑ **4 Upgrade * dry recyclables collection service**

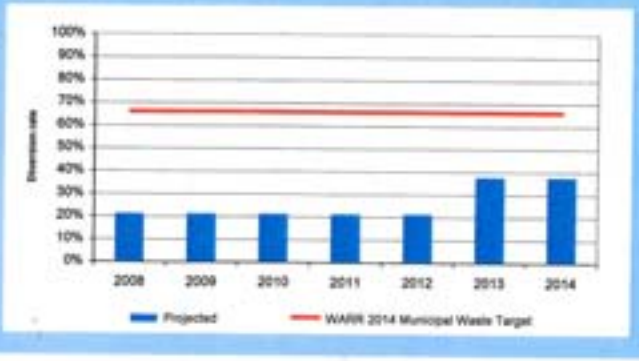
In best practice collection systems, contamination of dry recyclables stream comprises approximately 5% of all waste generated.

Operational in year	Please select	2011
Contamination rate		1.0%
Percentage of households for implementation of action		100%

This action would produce an additional recovery of: 33 tonnes, contributing to 0.0% of total diversion

4 Current contamination of recyclables: 1.2%

* Upgrade can refer to both improving the existing dry recyclable collection service or introducing new services



Step 7 **User guide**

Develop your Strategic Waste Action Plan

This page allows you to view the potential impact of actions and programmes on diversion rates.

Explanations and links to further information about each action can be found in the User Guide.

This page is divided into 4 sections:

1) Major System Changes
2) Small Scale System Improvements, such as education programmes and material specific initiatives
3) User Defined System Improvements, here you enter resource recovery rates for programmes and actions not covered in the categories above
4) Other Programmes and Actions, here you enter information on programmes that may be difficult to quantify in terms of resource recovery rates

Data Input
To activate an action tick the appropriate box, enter data and assumptions.
To the right of each action an information box provides data about current recovery rates.
Red text will give warnings of irregularities in entered data such as recovery of more material than currently generated or expected yield less than current yield.
The diversion potential of each action is indicated below the grey data entry boxes and the cumulative impact of all the selected actions can be viewed in the graph.

Be careful not to 'double count' materials for resource recovery.

Before moving to the next section, ensure that any actions you do not wish to include in your action plan have been deleted (unselected).

1 Major System Changes

Action 1 Processing of residual waste with AWT

Click here for more information on this programme

As defined in Step 6

Operational in year	Please select	
Recovery potential		
Percentage of households for implementation of action		

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

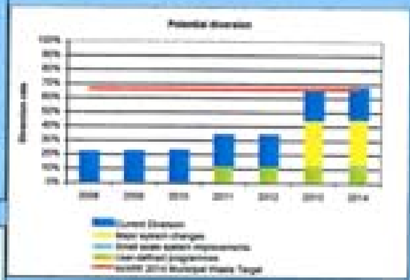
Action 2 Source separated food waste collection

Click here for more information on this programme

Operational in year	Please select	2013
Expected yield (kg/hh/week)		4.41
Percentage of households for implementation of action		80%

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well



Action 3 Upgrade garden organics collection service*

Click here for more information on this programme

Operational in year	Please select	2013
Expected yield (kg/hh/year)		195
Percentage of households for implementation of action		100%

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

5

More information... Preferred Resource Recovery Practices (DECC 2008)

* Upgrade can refer to both improving the existing garden organics collection service or introducing new services

Action 4 Upgrade dry recyclables collection service*

Click here for more information on this programme

In best practice collection systems, contamination of dry recyclables stream comprises approximately 5% of all waste generated.

As defined in Step 6

Operational in year	Please select	2011
Contamination rate		1.0%
Percentage of households for implementation of action		100%

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

5

More information... Preferred Resource Recovery Practices (DECC 2008)

* Upgrade can refer to both improving the existing dry recyclables collection service or introducing new services

Back

2 Small Scale System Improvements

Community and Education Programmes

Action 5 Work with communities with residents with language barriers

Click here for more information on this programme

Implemented and functional in year	Please select	
Percentage of households for implementation of action		

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

Action 6 Work with migrant worker communities

Click here for more information on this programme

Implemented and functional in year	Please select	
Percentage of households for implementation of action		

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

Action 7 Work with significantly disadvantaged areas

Click here for more information on this programme

Implemented and functional in year	Please select	2011
Percentage of households for implementation of action		5%

[illegible]

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

Action 8 Increase rates of recycling in MUDs

Click here for more information on this programme

Implemented and functional in year	Please select	2012
Percentage of households for implementation of action		5%

[illegible]

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

Action 9 Increase recycling rates amongst transient student populations

Click here for more information on this programme

Implemented and functional in year	Please select	
Percentage of households for implementation of action		

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

Action 10 Establish community environment centres

Click here for more information on this programme

Implemented and functional in year	Please select	
Percentage of households for with access to centre		

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

☑ Action 11 Enhance communication and community outreach programs

Click here for more information on this programme

Implemented and functional in year	Please select	2010
Percentage of households for implementation of action		80%

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

Material Specific Initiatives

☐ Action 12 Improve construction and demolition diversion programs

Click here for more information on this programme

Operational in year	Please select	
Percentage of households for implementation of action		
Is C&D defined as an 'other' recyclables category? (see box)		

[illegible]

1 Not specified
2 Not specified

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

☑ Action 13 Establish a textiles diversion program

Click here for more information on this programme

Operational in year	Please select	2011
Percentage of households for implementation of action		40%
Are textiles defined as an 'other' recyclables category? (see box)		yes - 1

[illegible]

1 Not specified
2 Not specified

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well
4

☐ Action 14 Work with industry to increase recovery of glass fines

Click here for more information on this programme

Operational in year	Please select	
Percentage of households for implementation of action		

[illegible]

If this action has already been included in Council's current waste management system, comment on the success or barriers of the change in the box below, and evaluate its success from 1 to 5 in the box on the right.

Success rate (1-5)
1 = not implemented to any meaningful degree
5 = implemented consistently and well

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3 User defined system improvements

User defined action 1

Please specify	Recycling Education	
Waste stream the action is applicable to	Please select	general
Operational in year	Please select	2011
Percentage of households for implementation of action		100%
Expected increase in recycling rate (%)		11%

User defined action 2

Please specify	Household Chemical Hazardous Waste Disposal	
Waste stream the action is applicable to	Please select	residual
Operational in year	Please select	2009
Percentage of households for implementation of action		20%
Expected increase in recycling rate (%)		1%

User defined action 3

Please specify	Domestic Oil Recycling	
Waste stream the action is applicable to	Please select	residual
Operational in year	Please select	2009
Percentage of households for implementation of action		40%
Expected increase in recycling rate (%)		1%

User defined action 4

Please specify	[illegible] Collection	
Waste stream the action is applicable to	Please select	residual
Operational in year	Please select	2009
Percentage of households for implementation of action		40%
Expected increase in recycling rate (%)		1%

User defined action 5

Please specify	Home Composting	
Waste stream the action is applicable to	Please select	residual
Operational in year	Please select	2011
Percentage of households for implementation of action		35%
Expected increase in recycling rate (%)		2%

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4 Other Programmes and Actions

In addition to the above quantified and modelled actions there are a range of activities that can be undertaken that might be difficult to quantify but are worth including as current activities or proposed actions.

Programme / Action	In place?	Comments
Waste Not OCP	yes	
Home composting	yes	Trial program to commence August 2010
Price increase and downsizing of residual waste bin	no	
Increase mattresses, E-waste, white goods and metal collection service	yes	2 Hard Saturday, [illegible] Recycling, Lifecycle [illegible]
Roadside chipping	no	
Parks green waste and public bin waste	no	
Other		
Other		
Other		

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Appendix C

Sustainable Lake Macquarie

Waste Strategy Development

Project Plan

VERSION 1, NOVEMBER 2009

Lake Macquarie City Council

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DOCUMENT CHANGE HISTORY

Document Control Sheet

Contact for enquiries and proposed changes. If you have any questions regarding this document or if you have a suggestion for improvements, please contact:

Project Manager	Dr Kate Barton
Phone	4921 0206

Version History

Version	Author	Issue Purpose	Date
1	Kate Barton	Project Commencement	November 2009

Project Director Approval

The following officer has **approved** this document.

Name	Tony Farrell		
Position	Director City Strategy / Project Director		
Signature		Date	

DISTRIBUTION LIST

Name	Position
Cr Greg Piper	Mayor
Cr Fraser (Chairperson), Cr Gissane (Deputy Chairperson), Cr Johnston, Cr J Harrison, Cr Wallace	Waste Advisory Committee
Brian Bell	General Manager
Tony Farrell	Project Director
Dr Kate Barton	Project Manager
TBA	Waste Planning and Education. Coordinator
David Brake	Group Coordinator Waste Operations
Jenni Donaldson	Project Consultation Manager
Morven Cameron	Director, Community Development
Amanda Colbey	Director, Operations
Keith Stevenson	Manager, Waste, Environment & Rangers
Dr Quentin Espey	Manager, Sustainability
Graeme Hooper	Manager, Economic Development
Kylie Downie	Business Analyst
Dr Alice Howe	Team Leader, Environmental Risk
James Giblin	Acting Team Leader, Sustainable Living
Ben Maddox	Footprint Analyst
TBA	Sustainability Project Coordinator (Waste Education and Communication)
Kerrie Walsh	Project Document Controller
Trevor Lloyd – Lloyd Consulting	Principal
Mark Ricketts	Consultancy Manager
Mike Ritchie	Specialist Consultant

TABLE OF CONTENTS

1 PROJECT SUMMARY

1.1 PROJECT PLAN

1.1.1 Purpose of Project Plan

The Project Plan provides a framework to expedite the identification and implementation of new waste management strategies, providing a seamless transition from current waste management practices to desirable waste management solutions that afford long-term flexibility, environmental sustainability and sound economic rationale. This Project Plan establishes processes for setting and tracking Project scope, objectives, tasks, deliverables, milestones and governance for activities required to ensure the implementation of a Waste Strategy for Lake Macquarie. It presents the project components "thematically" to enable better grouping of tasks and allocation of resources. The Project Plan also defines key activities, operating principles and procedures required to drive the day to day management and delivery of the Project.

1.1.2 Audience for Project Plan

The key audience for this document are the:

- Lake Macquarie City Council (LMCC / Council);
- Waste Advisory Committee (Committee);
- Project Director and Council's Executive Management Team;
- Project Manager and Project Consultant(s) responsible for project delivery;
- Community stakeholders; and
- Neighbouring Councils.

1.2 PROJECT BACKGROUND & NEED

The integrated Waste Strategy is essential to articulate, coordinate and communicate the significant body of work the Lake Macquarie City Council will undertake over the next two years. Evaluation and implementation of various waste strategies is required in a short time frame to optimise quadruple bottom line outcomes for the City, and because of the cost penalties involved in not achieving project outcomes on time and with a very high level of certainty. Specifically, these costs are, or will be, entailed through:

- Annually increasing NSW Government waste levy charges
- the Federal Government's proposed Carbon Pollution Reduction Scheme

A further potential cost driver exists if the NSW Government's 66% waste diversion from landfill target becomes mandated.

Aside from cost, Council's own commitment to eco-footprint management to achieve a globally sustainable footprint for the City gives reason to review and improve citywide waste management. Lake Macquarie City Council is committed to delivering strategies, services and programmes that minimise negative impacts of waste and consumption. This is demonstrated through its Carbon Policy of 3% CO_2e reduction per capita per annum, and a management plan requiring a 2.5% reduction in consumption impact per annum. Significant synergistic opportunities, with economic, environmental and social benefits, can be gained from utilising as much of the waste stream as a resource and contribute to these targets - for example for renewable energy production, compost and material resource recovery.

The nature of modern waste management is that it will involve many functional areas of Council, the private sector and residents. As such, it is vital that all know their roles and impacts and can plan accordingly.

The imperative for the Waste Strategy has heightened due to the withdrawal of the combined Hunter Advanced Waste Treatment project that held promise of a very sophisticated sorting and diversion of waste from landfill. As that option is no longer viable, LMCC must develop an integrated plan to reach the NSW Government's target of 66% diversion of waste and Council's sustainability goals.

In addition, LMCC's sole landfill at Awaba represents a very significant asset and disposal cost advantage that requires maximisation through the recovery of resources and diversion of wastes. This will not only maximise the opportunity value but also minimise the significant costs of the NSW Section 88 landfill levy and the looming carbon taxation in the federal government's "cap and trade" carbon reduction permit scheme.

Waste management is probably LMCC's single biggest financial commitment, commercial risk and ratepayer service. The project recognises the priority of the task ahead and will provide the project governance and discipline required for such a strategically important commitment.

Currently, various waste diversion strategies are operating relatively successfully but without any mechanism of formal coordination or coherence. Key stakeholders within the organisation or outside in the private sector and residents, have only a limited idea of what part they can and must play in this key aspect of creating a sustainable Lake Macquarie.

A significant body of work already exists to anchor the project, including:

- Kerbside waste characterisation studies;
- Waste receival data from Awaba;
- The Sustainable Infrastructure Australia Report into Sustainable Waste Management Options;
- Awaba landfill 6 monthly volumetric surveys;
- Existing waste services monitoring data, including:
  - Oil recycling;
  - Sharps collection;
  - Kerbside recycling;
  - Public place recycling;
  - Bulk waste collection;
  - Teralba Worm Farm;
  - Household hazardous waste collection;
  - MobileMuster;
  - Lifecycle; and
  - E-Waste collection.
- Hunter Regional Waste Project information.
- Past community attitudes surveys
- Micromex 2007 Home Composting survey

However, this work and data is not always in a readily accessible or suitable format for analysis.

It is entirely likely that the new Waste System will require significant increases in funding and resourcing. This has implications for the ratepayers and customers as well as the LMCC budget. Given the variety of stakeholders in this project and the eventual outcomes, communications will be a key factor in success or failure. The project will need to engage the internal and external stakeholders on an on-going basis so that issues and questions will be dealt with cooperatively from an informed position.

1.3 PROJECT OBJECTIVES

The objectives of the Project are as follows:

1. **A Waste Strategy for Lake Macquarie that Supports Council's Sustainability Agenda**

   The new Waste Strategy is a key factor in Council's Sustainability Agenda and must be consistent with Council's environmental, social and economic policies and Corporate Plan.

2. **A safe, cost-effective and convenient Waste Management service for its customers and workers.**

   The Strategy must respect the needs of its stakeholders for a service that suits their needs while protecting the health and safety of everyone involved.

3. **A Supportive and Engaged Council & Commercial and Community Stakeholders**

   The Waste Strategy will be developed with the support of the business and residential community who will be engaged through targeted consultation. Council participation in the Waste Advisory Committee and Project Control Group will ensure that a full spectrum of internal stakeholders participate in the process.

4. **Assessment of Best Available Waste Management Approaches (Technologies and Delivery Methods)**

   The Waste Strategy must assess best available practice waste management approaches including technologies and delivery methods for its implementation and are consistent with Council's Sustainability Agenda and represent value for money for the ratepayers.

5. **Agreed Short-Term Actions for Immediate Implementation**

   The Waste Strategy must include a series of short-term implementation actions based on 'no regrets' to begin progress while the longer term and more challenging options are fully analysed. Actions referred to hereafter as "no regrets" are those that can be undertaken to maximise the life of the Awaba landfill regardless of the form of any long-term strategy.

1.4 PROJECT METHODS

The project will consist of a number of identified modules that will be undertaken sequentially or concurrently as required in order to achieve objectives.

Initial modules include gathering of existing data and aggregation into useful categories to feed in to analyses, and that can be easily accessed and manipulated. These include waste stream (e.g. audit) and services data, and existing raw data and analyses completed for the Hunter Regional Waste Project.

A number of immediate actions can be taken that will add value to the process independent of future paths taken or outcomes of analyses. These “no regrets” actions include an investigation of the potential capacity of Awaba landfill under currently agreed licensing and a general public engagement campaign. Calculation of a dollar value on airspace at Awaba, to inform future analysis around cost comparisons of different strategies, can also begin immediately.

Triple bottom line analysis of various waste management options constitutes the bulk of the project’s strategy development phase, followed by development of a delivery strategy. Services will be specified, and subsequently tenders will be called, evaluated and let to implement to recommendations from the waste strategy. Throughout will be a series of consultation processes with the community and various key groups, and various broad or targeted education and marketing programmes.

A review and adjustment phase will allow optimisation and troubleshooting around new services, facilities or infrastructure introduced, which are expected in the second half of 2011.

1.5 PROJECT FRAMEWORK, DELIVERABLES & MILESTONES SUMMARY

Table 1 presents a summary of the tasks, deliverables and milestones for the Project under this framework. A summary Project Timeline showing key milestones is presented as **Figure 1** in **Section 1.5** and a Project Schedule is presented in **Appendix 8.1**. Task details are presented in **Section 5**.

Table 1: Summary of Project Tasks, Deliverables & Timeframes

Task	*Description & sub-tasks*	*Deliverables*	*Completion*
Task 1: **Project Planning Management & Governance**	1-1 Project Plan preparation, review and approval 1-2 Project management, time and cost control and reporting 1-3 Project governance, Waste Advisory Committee (WAC) meetings preparation, facilitation and recording minutes	1. Project Plan 2. Project Delivery 3. Quarterly Committee Meetings & WAC Decision Documentation	October 2009 Late 2011 October 2009 to Late 2011
Task 2: **Consultation & Communication**	2-1 Project announcement media plan 2-2 Consultation & communication plan 2-3 Implementation of Plan to accompany Strategy development and implementation 2-4 Commercial stakeholder engagement program with neighbouring Councils, key industries, waste contractors and economic development agencies	4. Media Release for Project announcement, SIA Report release 5. Consultation & Communication Plan 6. Engaged & Supportive Community 7. Engaged Commercial “partners”	Dec 2009 Feb 2010 2010 & 2011 2010 & 2011

Task 3: **"No Regrets" immediate Activities**	3-1 Awaba Opportunity Value Study and pricing for diversion including consideration and decision on available diversion alternatives to conserve Awaba airspace 3-2 Minimise organic waste to landfill and engage residents in practical responses such as home composting 3-3 LMCC showing leadership and consistency with messages to residents and business 3-4 Assessment of Awaba airspace, management	8. Awaba Opportunity Value Report including cost benefit analysis of available short term diversion options 9. "Home Organics Awareness" Program 10. LMCC "Walk the Talk" internal Waste Program 11. Awaba Airspace Maximisation Plan	A Dec 2009 B Mar 2010 Jul 2010 & onwards Jul 2010 Jan 2010
Task 4: **Waste Streams Analysis & Forecasting**	4-1 Preliminary analysis of current waste streams data, review background information relating to waste streams. Identify data gaps and methods to address 4-2 Analysis of individual waste streams: • Organics / green waste; • Municipal solid waste stream; • Commercial and industrial wastes; and • Construction and demolition wastes 4-3 Future waste stream /service demand forecasting	12. Background Information / Gap Analysis Report 13. Waste Stream Analysis Report 14. Waste Streams/ services Forecast Report	Jan 2010 Feb 2010 Mar 2010

Task 5: **Assessment Framework, Options Identification, TBL & Commercial Analysis**	5-1 Risk assessment & analytical framework development	15. Risk assessment and analytical comparative framework	Mar 2010
	5-2 Draft options for each waste stream	16. Individual Waste Streams Diversion Options (Technical Papers)	Apr 2010
	5-3 Global best practice comparison	17. Global Best Practice review	May 2010
	5-4 TBL Cost – benefit comparison including economic development opportunities	18. Cost-benefit Report	May 2010
	5-5 Land Availability & Zoning Study	19. Land Options Report	May 2010
	5-6 Identify preferred options / scenarios from waste streams review	20. Preferred Options Report	Jun 2010
Task 6: **Delivery & Financial Analysis**	6-1 Review of contracts and service delivery	21. Situation Report	Jul 2010
	6-2 Delivery Strategy	22. Preferred Contracting & Service Delivery Report	Aug 2010
	6-3 Financial analysis of impact on LMCC	23. Financial Report	Oct 2010
Task 7: **Strategy Preparation**	7-1 Compliance with DECCW and Federal DoE.	24. DECCW & DoE Waste Strategy Requirements	Mar 2010
	7-2 Prepare & consult on Draft Waste Strategy	25. Draft Waste Strategy	Oct 2010
	7-3 Review public consultation	26. Public consultation Report	Dec 2010
	7-4 Adopt and publish Waste Strategy	27. Waste Strategy & Implementation Plan	Feb 2011

Task 8: **Specifications & Contracts**	8-1 Prepare technical specifications and call tenders for implementation of Waste Strategy components 8-2 Tender evaluation and contracts for implementation of Waste Strategy 8-3 Mobilisation of successful tenderers & internal service providers 8-4 Education of customers & ratepayers	28. Tender documents & technical specifications 29. Tenders let, Contracts signed 30. Services commencement 31. Media campaign	April 2011 July 2011 Oct 2011 Oct 2011
Task 9: Commissioning	9-1 Refinement of Waste Strategy implementation	32. Variations to contracts or improvements to facilities and services 33. Public education and awareness materials	Apr 2012 Ongoing
Task 10: Monitoring and Reporting	10 -1Data compilation, performance review and monitoring 10-2 Reporting on new service performance	34. Accessible databases 35. Performance report	Jun 2012

1.6 PROJECT TIMELINE

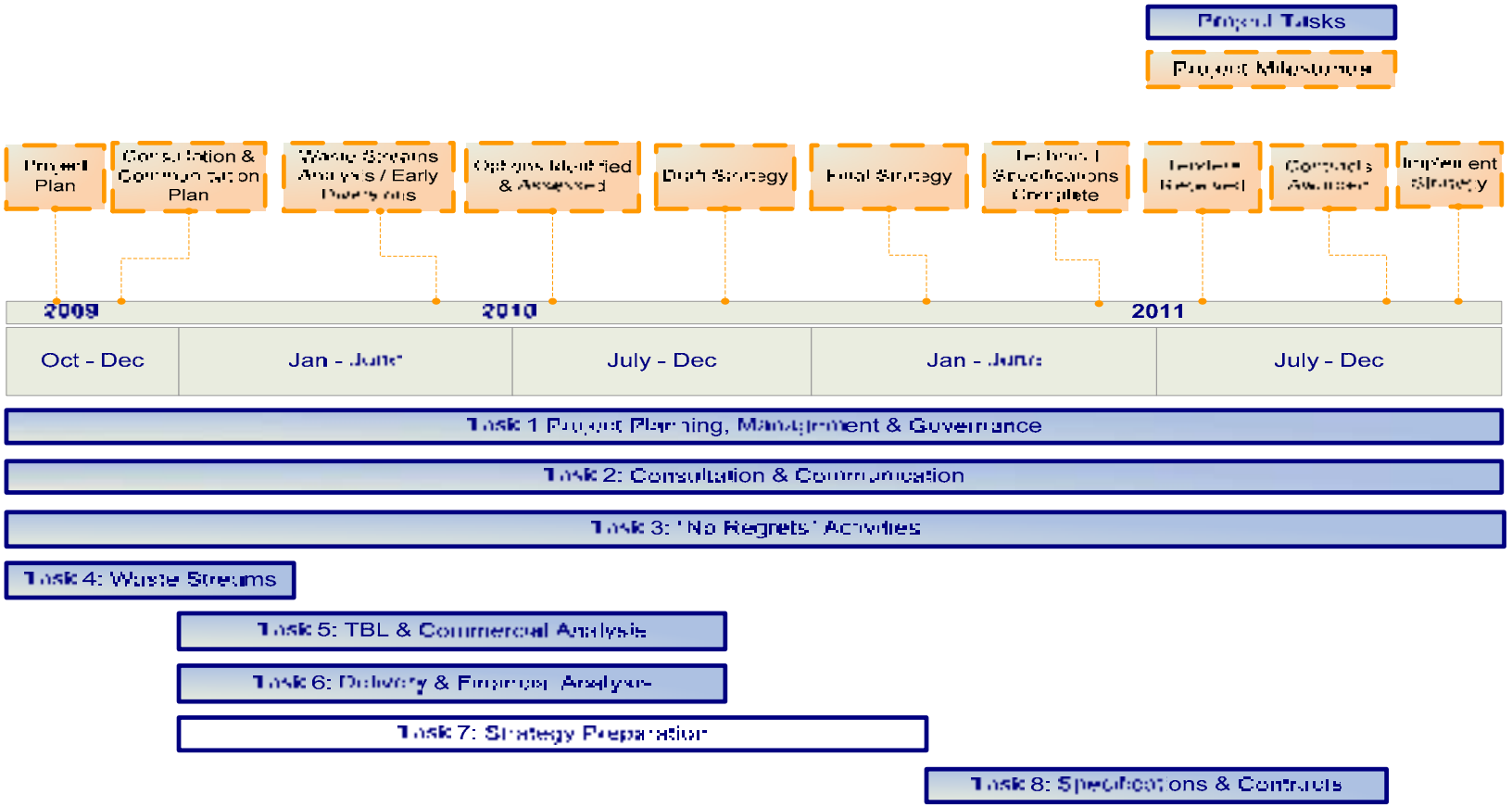


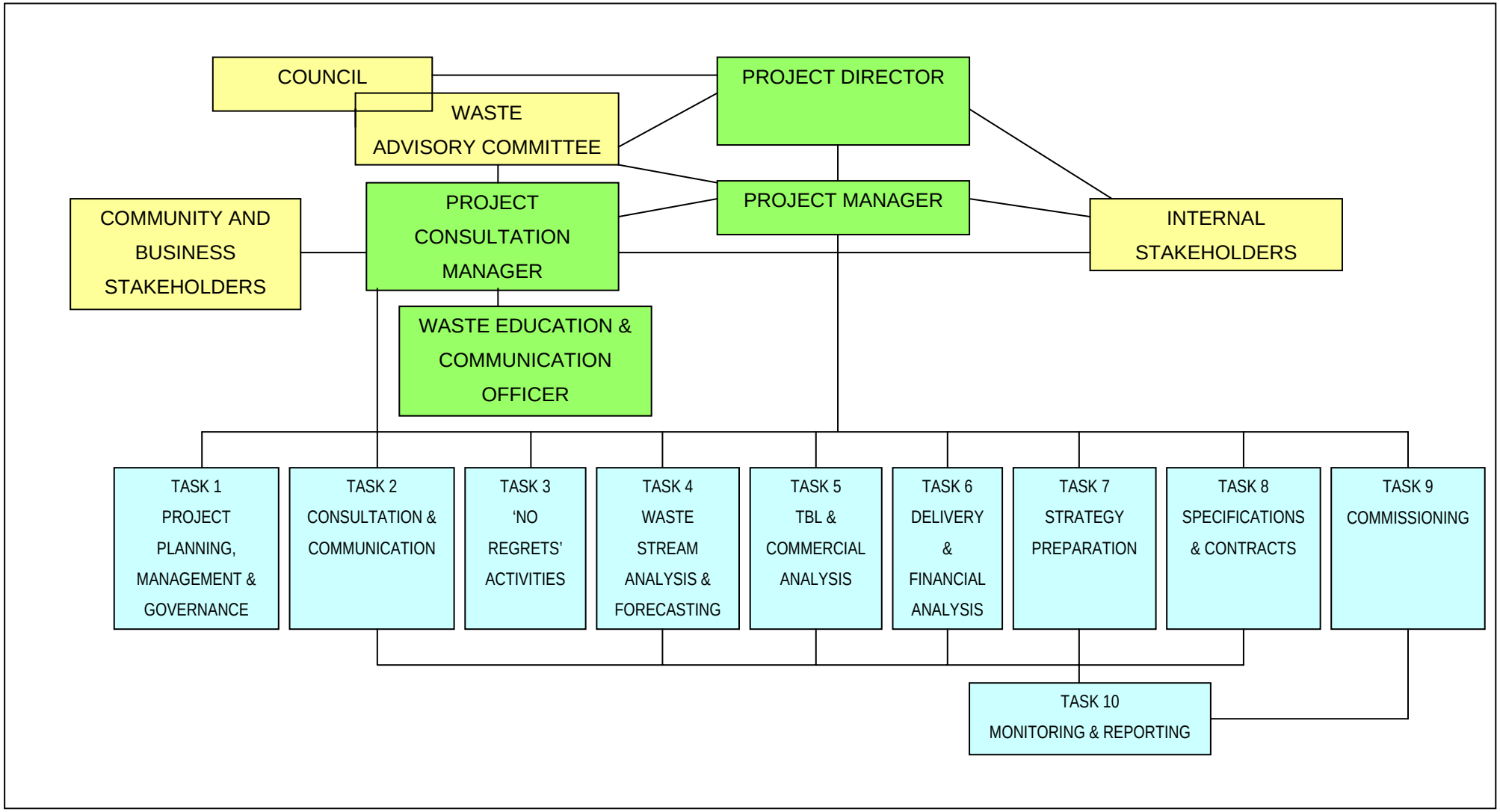
Figure 1: Project Timeline Showing Key Milestones

2 PROJECT GOVERNANCE

2.1 PROJECT ORGANISATION

The Project is to be governed according to structure outlined in **Figure 2**. The Project Manager and Project Director will report on Project progress and outcomes to Council with advice from the Waste Advisory Committee. The Project Director will sign off key deliverables, timeframes and budget reports. The Project Manager will manage project resources and activities with the assistance of the external resources. Endorsement of Project deliverables will be sought from the Committee, and through external and internal consultation with relevant stakeholders. Final decision-making rests with Council which will consider recommendations from the Project Director with advice from the Committee.

Figure 2: Project Organisational Chart



2.1.1 Project Stakeholders

The stakeholders of the project are:

- Council;
- Council staff;
- Waste Advisory Committee members (see **Appendix 8.3**);
- Service Providers;
- Customers (commercial & residential);
- Neighbouring Councils; and
- State and Federal Governments.

2.2 PROJECT REPORTING

Project Progress Reports

Quarterly progress reports will be prepared prior to Committee meetings and will be the responsibility of the Project Manager through the Project Director. Progress reports will provide an updated Project Schedule, if required (see **Appendix 8.1**), identify issues to be resolved and highlight the achievement or delay of any key milestones. Progress reports will also outline learning's / decisions made throughout the Project and highlight any proposed changes to Project scope or deliverables.

Project Plan Maintenance

Project Plan maintenance, including incorporation of changes likely to significantly alter the nature or timeframe for the delivery of the Project, will be the responsibility of the Project Manager. The Project Manager will obtain written Project Director approval of any significant Project Plan revisions. Version control measures are to be taken when these changes are made to ensure that a historical record remains available.

2.2.1 Management of Project Documents

The Project document library will be kept within the Project Office and managed by the Project Document Controller. Files and documents will be recorded according to Lake Macquarie City Council's procedures outlined in the Integrated Management System, and filed under the TRIM directory WASTE MANAGEMENT – PLANNING – WASTE STRATEGY DEVELOPMENT.

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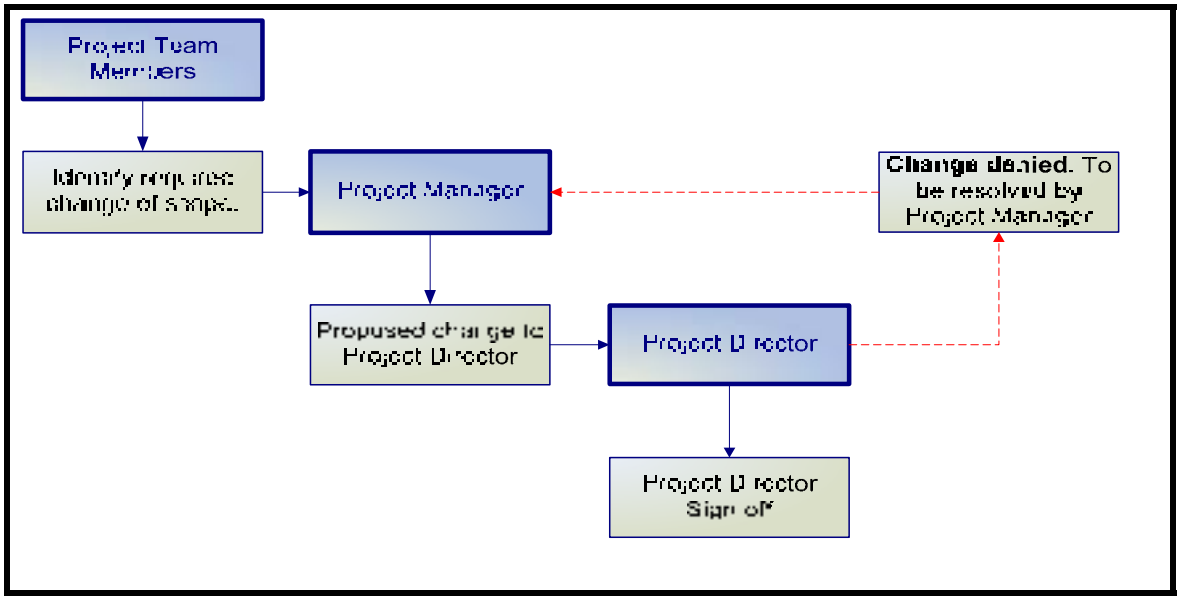
3 PROJECT SCOPE MANAGEMENT

3.1 SCOPE CHANGE CONTROL

Changes to Project scope, deliverables, milestones and timeframes which do not alter the ultimate delivery of the Project are to be signed off by the Project Manager. Changes likely to significantly alter the nature or timeframe for the delivery of the Project are to be tabled to be signed off by the Project Director. A diagram outlining the Scope Change Process is below.



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4 PROJECT RESOURCE MANAGEMENT

4.1 PROJECT TEAM ROLES AND RESPONSIBILITIES

Project Director – owns the project budget and is ultimately responsible for the success of the project. The Project Director is required to manage conflicting priorities, provide direction to the Project Manager and liaise with Waste Advisory Committee members and internal and external stakeholders throughout the Project's lifecycle.

Project Manager – The Project Manager is required to manage conflicting priorities, provide direction to the relevant LMCC staff and external resources(s) and liaise with the Project Director, the Project Consultation and Communication Manager and Waste Advisory Committee members and internal and external stakeholders throughout the Project's lifecycle. The Project Manager plans, monitors and controls Project activities, manages resources and people as well as collects and disseminates information. The Project Manager coordinates the inputs of stakeholders and staff, providing a single point of contact for third parties engaged to deliver specific elements of, and tasks within the project. They will also be responsible for quality assurance, providing a review of all project documentation and deliverables and advice where required for management decisions.

Project Consultation Manager – The Project Consultation Manager is required to liaise with the Project Director, Project Manager and Waste Advisory Committee members and internal and external stakeholders throughout the Project's lifecycle. The Project Consultation Manager plans, monitors and controls Project consultation and communication task activities, manages resources and people as well as collects and disseminates information.

Project Team - Details of Project Team members and roles are attached as **Appendix 8.2**.

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5 PROJECT TASKS, TIMING, DELIVERABLES & RESOURCES

The following section outlines briefly each of the modules of work to be completed, expected outputs and dates, and human resourcing required to complete the work.

TASK 1: PROJECT PLANNING, MANAGEMENT & GOVERNANCE

Task Description:

Plan and manage the Project to ensure delivery to meet objectives to required standards within budget and schedule.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 1-1: Project Plan Preparation	4 weeks	October 2009
Task 1-2: Project Management	110 weeks	Late 2011
Task 1-3: Waste Advisory Committee (WAC) Meetings Facilitation	110 weeks	October 2009 to Late 2011

Task Deliverables:

1. ***Project Plan***
2. ***Project Delivery***
3. ***Quarterly WAC Meeting Decision Documentation***

Task Resources:

- Project Manager
- External resources

Sub-Tasks:

Task 1-1: Project Plan Preparation

Who: Project Team

By When: October 2009

Output: Project Plan

Activities / Consultation / Required Inputs:

- Review SIA Options Report
- Project planning workshop.
- Draft project plan preparation.
- Project plan review and formal approval.
- Prepare project plan summary presentation for Waste Advisory Committee (WAC) & Council.

Task 1-2: Project Management

Who: Project Director, Manager

By When: Late 2011

Output: Project Delivery

Activities / Consultation / Required Inputs:

- Project meetings.
- Staff and resource management.
- Time and cost recording and control.
- Progress reporting.
- Meeting attendance.

Task 1-3: Project Governance / WAC Facilitation

Who : Project Manager, Waste Planning and Education Coordinator

By When: Oct 2009 to late 2011

Output: 9 x WAC meeting decision documentation

Activities / Consultation / Required Inputs:

- Meeting materials and facilitation
- Decision documentation

TASK 2: CONSULTATION & COMMUNICATION

Task Description:

Undertake stakeholder consultation, communication, education and engagement to ensure Project delivery to required objectives.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 2-1: Project Announcement Media Plan	4 weeks	Dec 2009
Task 2-2: Project Consultation & Communication Plan Development	8 weeks	Feb 2010
Task 2-3: Project Consultation & Communication Program Delivery	100 weeks	Feb 2010 to Late 2011
Task 2-4: Commercial Stakeholders Engagement Program	100 weeks	Feb 2010 to Late 2011

Task Deliverables:

4. ***Media Release for Project Announcement, SIA Report Release***
5. ***Project Consultation & Communication Plan***
6. ***Engaged & Supportive Community***
7. ***Engaged Commercial Sector***

Task Resources:

- Project Manager
- Project Consultation & Communication Manager
- External resources

Sub-Tasks:

Task 2-1: Project Announcement Media Plan

Who: Project Manager & External resources

By When: December 2009

Outputs: Initial media release, Brief for Mayor GM and WAC

Task Scope / Activities / Consultation / Required Inputs:

- Review Community Survey information
- Consult with Council media personnel
- Prepare brief on Waste Strategy Announcement and media release

Task 2-2: Project Consultation & Communication Plan Development

Who: Project Consultation & Communication Manger

By When: February 2010

Output: Project Consultation & Communication Plan

Task Scope / Activities / Consultation / Required Inputs:

- Project Announcement Media Plan
- Project Plan
- Consult with Council media personnel

Task 2-3: Project Consultation & Communication Program Delivery

Who: Project Consultation & Communication Manger

By When: February 2010 to Late 2011

Output: Engaged & supportive community.

Task Scope / Activities / Consultation / Required Inputs:

- Community engagement methods and processes to be determined by Project Consultation & Communication Plan

Task 2-4: Commercial Stakeholders Engagement Program

Who: Project Team

By When: February 2010 to Late 2011

Output: Engaged commercial sector.

Task Scope / Activities / Consultation / Required Inputs:

- Meetings and discussions with all neighbouring Councils, commercial waste operators in the region
- Identification and collaboration with key industries
- Identify potentially economic development and local job creation opportunities which utilise waste streams and cleaner production principles

TASK 3: "NO REGRETS" ACTIVITIES

Task Description:

Commence waste management improvements that are complimentary to Waste Strategy Development to build momentum, prolong life of Awaba and engage community. Provide foundational awareness for, and enhance LMCC's long-term, existing promotional and educational activities that encourage removal of home organics from domestic waste collections.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 3-1: Awaba Opportunity Value and Airspace Conservation Study	4 weeks 4 weeks	Part A - Dec 2009 Part B –Jul 2010
Task 3-2 : "Home Organics Awareness" Program	16 weeks	July 2010 + ongoing
Task 3-3 : Waste management actions as part of LMCC's "Walk the Talk" Internal waste program	32 weeks	July 2010
Task 3-4 : Awaba Airspace Maximisation Study	4 weeks	Jan 2010

Task Deliverables:

8. ***Awaba Opportunity Value Report & Conservation Options***
9. ***"Home Mulching and Composting" Program***
10. ***LMCC "Walk the Talk" Internal Waste Program***
11. ***Awaba Airspace Maximisation Report***

Task Resources:

- Project Manager
- LMCC Sustainability Staff
- LMCC Waste , Environment and Rangers Staff
- External resources

Sub-Tasks:

Task 3-1: Awaba Opportunity Value Benchmark Study

Who: Project Manager, Business Analyst & Consultant

By When: Part A: December 2009 / Part B: July 2010

Output: Awaba Opportunity Value Report

Task Scope / Activities / Consultation / Required Inputs:

Part A

- Determine reliable disposal alternatives to Awaba
- Assess likely gate prices
- Determine likely transfer station & transport costs
- Model CPI, CPRS, landfill levy and other cost drivers
- Establish benchmark cost to landfill a tonne of waste post-Awaba in today's dollars.
- Establish a benchmark cost of consuming Awaba landfill volume compared to the alternatives in the market.
- Utilise the benchmark costs in all evaluation of future use options for Awaba

Part B

- Review cost benefit for each major waste stream entering Awaba including C+I, C+D and MSW by each waste stream component
- Determine a preferred set of retention, diversion and pricing options for each stream and each component where appropriate
- Identify and implement waste processing technologies which have a positive impact on Awaba landfill's airspace capacity.
- Explore short term diversion options and their cost benefit compared to Awaba benchmark price
- Negotiate suitable diversion contracts where beneficial to LMCC in cash and opportunity cost terms
- Commence diversion or pricing of these beneficial options

Task 3-2: "Home Organics Awareness" / Domestic Organics Diversion Program

Who: Sustainability Project Coordinator (Waste Education and Communication), LMCC community engagement & media/ communications staff & consultant

By When: July 2010 with delivery continuing indefinitely (5+ years)

Output: Home Composting Program

Task Scope / Activities / Consultation / Required Inputs:

- Review previous community surveys for likely barriers
- Review global experiences in domestic organics diversion
- Develop proposed program and budget
- Determine delivery strategy (contractors, community groups, internal staff)
- Establish delivery partners (media, Landcare, service deliverers, gardening clubs etc)
- Run training workshops
- Engage stakeholder partners such as Bunnings, Mitre 10 etc
- Develop media plan, educational materials, advice conduits, bins and worm farm subsidies

Task 3-3: LMCC "Walk the Talk" Waste program.

Who: LMCC Sustainability Department

By When: substantially by July 2010 but on-going

Output: Documented Internal Waste Program

Task Scope / Activities / Consultation / Required Inputs:

- Audit of Council waste generation activities and options
- Identify synergies with DECCW Sustainability Advantage Programme (Staff Engagement and Resource Efficiency modules)
- Draft internal waste strategy
- Council recycling bin program – organics, recyclables, timber etc
- Council waste information program
- Council home composting program for staff
- Training workshops for staff in home composting
- Collateral – posters, information leaflets etc

Task 3-4: Awaba Airspace Maximisation Study

Who: Project Manager, Specialist Landfill Consultant

By When: Jan 2010

Output: Airspace Maximisation Report.

Task Scope / Activities / Consultation / Required Inputs:

- Develop project brief for re-survey of the site
- Seek proposals from recognised landfill specialists
- Examine all available volume creation options and cost benefit
- Seek initial development consideration of options
- Let contract and deliver footprint and volume enhancement works
- Seek DECCW and Planning consideration and review

TASK 4: WASTE STREAMS ANALYSIS & FORECASTING

Task Description:

Undertake review of waste streams to identify early diversion opportunities and to provide a basis for forecasting future demand.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 4-1: Background Data Review & Gap Rectification	8 weeks	Jan 2010
Task 4-2: Analysis of Individual Waste Streams	4 weeks	Feb 2010
Task 4-3: Waste Streams / Services Forecast	2 weeks	Mar 2010

Task Deliverables:

12. Background Information / Gap Analysis Report

13. Waste Stream Analysis Report

14. Waste Streams / Services Forecast Report

Task Resources:

- Project Manager
- LMCC Sustainability, W, Environment & Rangers, Development Assessment & Compliance and Integrated Planning Staff
- Project Consultation Manager
- Business Analyst
- External resources

Sub-Tasks:

Task 4-1: Background Data Collation & Review & Gap Identification

Who: Project Manager, Footprint Analyst, Waste Planning and Education Coordinator, Group Coordinator Waste Operations

By When: January 2010

Output: Background Information / Gap Analysis Report

Task Scope / Activities / Consultation / Required Inputs:

- Collate and review background information relating to waste streams
- Compile into accessible reports and trends
- Identify data gaps and methods to address
- Model waste cost drivers including the landfill levy/ CPRS and their likely impact on waste supply
- Develop a data warehouse for evaluation of options

Task 4-2: Analysis of Individual Waste Streams

Who: Project Team

By When: Feb 2010

Output: Waste Stream Analysis Report

Task Scope / Activities / Consultation / Required Inputs:

- Analysis of individual waste streams by type and origin
- Trends, price sensitivity established
- Identify all alternative locations for use or disposal of materials
- Undertake C+I and C+D audits where necessary
- Understand community drop off behaviour and preferences

Task 4-3: Waste Streams / Services Forecasting

Who: Project Team & Planning staff (DAC and / or IP ???)

By When: Mar 2010

Output: Waste Streams / Services Forecast Report

Task Scope / Activities / Consultation / Required Inputs:

- Assess trend data from waste stream analysis
- Complete futures analysis of prevailing social, environmental and political contexts
- Interpret demographic, commercial and industrial growth projections
- Develop a 10 year model of waste generation by tonnage and volume

TASK 5: PREFERRED OPTIONS WITH SUSTAINABILITY ANALYSIS

Task Description:

The preferred waste management scenario will be developed through a risk assessment and best practice review of preliminary waste management options / scenarios. The disposal options for residual wastes will be examined and a preferred strategy chosen. Finally, a 'triple-bottom-line' (TBL) analysis of the preferred scenario will be undertaken to provide a basis for the draft Waste Strategy.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 5-1: Risk Assessment & Analytical Framework	6 weeks	March 2010
Task 5-2: Waste Options Identification	12 weeks	April 2010
Task 5-3 : Global Best Practice Comparison	4 weeks	May 2010
Task 5-4: TBL Analysis of Proposed Waste Options	4 weeks	May 2010
Task 5-5 : Land Availability & Suitability Assessment	4 weeks	May 2010
Task 5-6 : Identify preferred Waste Options / Scenario	4 weeks	June 2010

Task Deliverables:

15. Risk Assessment & Analytical Comparative Framework
16. Waste Options Identification
17. Global Best Practice Comparison
18. TBL Cost Benefit Analysis Report
19. Land / Site Suitability report
20. Preferred Waste Options / Scenario

Task Resources:

- Project Director
- Project Manager
- External resources
- LMCC Financial Staff
- LMCC Economic Development staff
- WAC

Sub-Tasks:

Task 5-1: Risk Assessment & Analytical Framework

Who: Project Team, External resources

By When: March 2010

Output: Risk Assessment & Analytical Comparative Framework

Task Scope / Activities / Consultation / Required Inputs:

- Develop LMCC-specific risk assessment matrix
- Detail appropriate parameters for applicable "best practice"
- Consider LMCC targets for reducing the impact of consumption, i.e. 3% per/ capita per annum for Carbon, and 2.5% for consumption in total.

Task 5-2: Waste Options Identification

Who: Project Team, External resources

By When: April 2010

Output: Draft Waste Options for:

- Domestic: Organics, Recyclables, Hazardous & Residual wastes
- Commercial & Industrial: Organics, Recyclables, Hazardous & Residual wastes
- Construction & demolition : Recyclables, Residuals
- Specialist or Problematic Wastes : Tyres, mattresses, e-wastes, bulky items, clothing

Task Scope / Activities / Consultation / Required Inputs:

- Develop list of applicable and likely interventions to deliver required (66%) and aspirational levels (80%) of waste diversion
- Develop a Technical Report on each using a SWOT & Risk assessment, outlining any cross linkages or synergies available
- Review available technology for each stream
- Review Australian experience with each technology

Task 5-3: Comparison of Likely Options against Global Best Practice

Who: Project Team, External resources

By When: May 2010

Output: Review paper

Task Scope / Activities / Consultation / Required Inputs:

- Scan of applicable Global Best Practice in selected facets
- Benchmark LMCC reduction targets against global best practice
- Comparison with likely options
- Suggested amendment to likely options

Task 5-4: TBL Analysis of Proposed Waste Options

Who: Project Team, External resources

By When: May 2010

Output: TBL Cost Benefit Analysis Report

Task Scope / Activities / Consultation / Required Inputs:

- Development of assessment framework incorporating LMCC footprinting
- Application of assessment framework to identified waste options
- Preparation of TBL Cost Benefit Analysis Report
- Review commercial feasibility of options
- Review transport, disposal and other constraints on success

Task 5-5: Land Suitability Study

Who: Project Team, LMCC planning staff, External resources

By When: May 2010

Output: Report on Possible Facility Locations

Task Scope / Activities / Consultation / Required Inputs

- Identify suitably zoned land for each facility
- Identify available land parcels at Awaba, if any especially at existing weighbridge, adjoining it and at top of landfill
- Identify other possible vacant land
- Review existing worm farm site options in terms of potential expansion of operational site areas
- Develop a map of possible sites

Task 5-6: Preferred Waste Strategy Options / Scenario with TBL Analysis

Who: Project Team, Specialist LMCC staff,External resources

By When: June 2010

Output: TBL Analysis Report on Proposed Waste Strategy Options

Task Scope / Activities / Consultation / Required Inputs:

- Develop preferred waste scenario
- Analysis of selected strategic options within broader sustainability (economic development / environmental impact / social cohesion / LMCC strategic goals) context to evaluate benefits / costs.
- Consultation with key stakeholders
- Development of clear objectives and outputs for future assessment of performance following implementation
- Delivery of a Public Discussion Paper and associated consultation
- Assess alternate waste futures to provide a strategic risk assessment of preferred options, considering the resilience and adaptability of these options under alternate future waste scenarios.

TASK 6: GOVERNANCE, DELIVERY STRUCTURES & FINANCIAL ANALYSIS

Task Description:

Undertake analysis of existing contracts, develop a delivery & contracting strategy, likely financial impact identified.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 6-1: Review of Existing Contracts	4 weeks	July 2010
Task 6-2: Develop Delivery Strategy	4 weeks	August 2010
Task 6-3: Financial Analysis of Preferred Waste Strategy Options	8 weeks	October 2010

Task Deliverables:

21. Review of Existing Contracts & Service Delivery

22. Delivery and Contracting Strategy

23. Financial Analysis of Preferred Options for Waste Strategy Implementation

Task Resources:

- Project Director
- Project Manager
- Waste Planning and Education Coordinator
- Group Coordinator Waste Operations
- LMCC Financial Staff
- External resources
- Specialist Contract Analyst

Sub-Tasks:

Task 6-1: Review of Existing Contracts & Service Delivery

Who: Project Team

By When: July 2010

Output: Report on existing arrangements

Task Scope / Activities / Consultation / Required Inputs:

- Review existing waste contracts.
- Review existing internal service delivery
- Review governance, market access and competition issues

Task 6-2: Develop Delivery Strategy

Who: Project Team, External resources & Contract Specialist

By When: August 2010

Output: Preferred contracting and service delivery arrangements for Waste Strategy

Task Scope / Activities / Consultation / Required Inputs:

- Establish possible synergies in service delivery or site / facilities management
- Establish commercial or other risks or opportunities for LMCC
- Develop LMCC's preferred arrangements for service delivery of collection, bin sizes and pricing, asset and facilities ownership, recycling and disposal facilities management
- Develop service delivery & contract strategy
- Test the preferred strategy with key stakeholders

Task 6-3: Detailed Financial Analysis of Preferred Waste Strategy Options

Who: Project Team, LMCC financial staff, & External resources

By When: October 2010

Output: Financial Analysis Report on Preferred Waste Strategy Options

Task Scope / Activities / Consultation / Required Inputs:

- Benchmark preferred strategy against existing facilities and prices
- Determine likely cost increments for LMCC
- Develop rate base vs. gate price funding model
- Identify offsets e.g. compost sales, commodity values
- Market research on willingness to pay
- Examine external price and policy influencers
- Seek DECCW engagement and review

TASK 7: STRATEGY PREPARATION

Task Description:

Prepare detailed draft Waste Strategy for public and internal consultation. Finalise Strategy in light of consultation.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 7-1: Ensure Compliance with DECCW and Federal Policy Requirements	2 weeks	March 2010
Task 7-2: Develop Public Consultation Draft Waste Strategy	4 weeks	October 2010
Task 7-3 : Review Input from 4 weeks Facilitated Public Consultation	2 weeks	December 2010
Task 7-4 : Adopt & Publish LMCC Waste Strategy	4 weeks	February 2011

Task Deliverables:

24. DECCW & DoE Waste Strategy Requirements

25. Draft Waste Strategy

26. Public Consultation Report

27. Waste Strategy

Task Resources:

- Project Manager
- LMCC Sustainability Staff
- WAC
- External resources

Sub-Tasks:

Task 7-1: Ensure Compliance with DECCW and Federal Policy Requirements

Who: Project Team

By When: March 2010 (initially but on-going)

Output: DECCW Waste Strategy Requirements

Task Scope / Activities / Consultation / Required Inputs:

- Discussions with DECCW regarding Waste Strategy requirements.
- Determine Federal requirements
- Understand EPR, CPRS, s.88 landfill levy and other drivers

Task 7-2: Prepare Draft Waste Strategy

Who: Project Team, LMCC communications staff, external resources

By When: October 2010

Output: draft Waste Strategy

Task Scope / Activities / Consultation / Required Inputs:

- Develop text for draft
- Develop appropriate graphics
- Compile supporting documentation
- Gain WAC & Council approval for publication

Task 7-3: Review Public Consultation Input on Draft Strategy

Who: Project Team

By When: December 2010

Output: Consultation Report

Task Scope / Activities / Consultation / Required Inputs:

- Review data from consultation
- Identify issues of support, concern and good ideas
- Develop report for WAC, Council and feedback to public

Task 7-4: Adopt and Publish Final Waste Strategy

Who: Project Team

By When: February 2011

Output: Waste Strategy

Task Scope / Activities / Consultation / Required Inputs:

- Gain decision on outstanding issues
- Compose final Strategy with clearly articulated processes and performance targets
- Submit to WAC & Council for consideration & formal adoption
- Publish Strategy

TASK 8: STRATEGY IMPLEMENTATION - SPECIFICATIONS & CONTRACTS

Task Description:

Develop technical specifications, call, evaluate and let tenders and mobilise for Waste Strategy implementation. Inform customers of any changed service requirements.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
Task 8-1: Prepare Technical Specifications, Tender or EoI Documents for Implementation of Waste Strategy	10 weeks	April 2011
Task 8-2: Call, Evaluate & Let Tenders for Implementation of Waste Strategy	12 weeks	July 2011
Task 8-3: Mobilise Contractors and Internal Service Providers	12 weeks	Oct 2011
Task 8-4: Education Program for Customers & Ratepayers	4 weeks	Oct 2011

Task Deliverables:

28. Technical Specifications

29. Contracts for Waste Strategy Implementation Evaluated & Let

30. Contractors / Providers for Waste Strategy Implementation Mobilised

31. Public Education Materials & Program

Task Resources:

- Project Manager
- Waste Planning and Education Coordinator
- LMCC Legal & Contracts Staff
- LMCC Sustainability Staff
- External resources
- Specialist Engineering Consultants
- LMCC communications staff

Sub-Tasks:

Task 8-1: Prepare Technical Specifications, Tender / EoI documents, for Implementation of Collection and Infrastructure components of the Waste Strategy

Who: Project Team, LMCC legal and contracting expertise, external resources

By When: April 2011

Output: Technical Specifications, Tender documents, tender process & criteria

Task Scope / Activities / Consultation / Required Inputs:

- Document performance specifications, critical deliverables, issues of flexibility or evolution, ownership preferences for assets & facilities, preferred commercial arrangements, preferred mobilisation timetable, unacceptable solutions
- Develop tender documents
- Develop tender evaluation process & probity plan
- Develop tender evaluation criteria

Task 8-2: Call, Evaluate & Let Tenders for Implementation of Waste Strategy

Who: Project Team, LMCC legal team, contract specialist, external resources

By When: July 2011

Output: Contracts for Waste Strategy Implementation

Task Scope / Activities / Consultation / Required Inputs:

- Assess Tenders
- Negotiate with tenderers
- Finalise recommendations to Council
- Gain approval from Council
- Notify tenderers of success or failure
- Write and sign contracts

Task 8-3: Mobilise Internal and External Service Providers

Who: Project Team,

By When: October 2011

Output: Contracts for Waste Strategy Implementation

Task Scope / Activities / Consultation / Required Inputs:

- Facilitate mobilisation of contractors & internal service providers

Task 8-4: Public Education Materials & Program

Who: Project Team, LMCC Communications

By When: October 2011

Output: Communications collateral and media kits

Task Scope / Activities / Consultation / Required Inputs:

- Develop key messages & requirements
- Develop media strategy on changed bin days, configurations etc
- Implement media campaign

TASK 9: COMMISSIONING

Task Description:

Refinement of Waste Strategy implementation, review of processes and outcomes, inform stakeholders of any changes required to services

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
9-1: Refinement of Waste Strategy Implementation	26 weeks	April 2012

Task Deliverables:

32. Variations to contracts or improvements to faculties and services

33. Public Education and Awareness Materials

Task Resources:

- Project Manager
- Waste Planning and Education Coordinator
- LMCC Legal & Contracts Staff
- LMCC communications staff

Sub-Tasks:

Task 9-1: Refinement of Waste Strategy Implementation

Who: Project Team, LMCC legal and contracting expertise, communications staff

By When: April 2012

Output: Technical Specifications variations, Tender documents, Public education and awareness materials criteria

Task Scope / Activities / Consultation / Required Inputs:

- Assessment of project performance, targets reached
- Tracking of public participation and attitudes
- Evaluation of performance of Waste strategy components
- Draft and execute variations to contract scopes
- Refinement of community engagement materials and processes

TASK 10: MONITORING AND REPORTING

Task Description:

Evaluation and public reporting on performance of specific Waste Strategy outputs.

Task Activities & Schedule:

Sub-Task	*Timeframe*	*Completion*
10 -1: Data collection on performance	40 weeks	June 2012
10-2: Reporting on service performance	40 weeks	June 2012

Task Deliverables:

34. Accessible databases to enable internal and external reporting

35. Waste Strategy Performance Report

Task Resources:

- Project Director
- Project Manager
- WAC

Sub-Tasks:

Task 10-1: Data compilation, performance review and monitoring

Who: Project Manager, Waste Planning and Education Coordinator

By When: June 2012

Output: Technical databases and documents

Task Scope / Activities / Consultation / Required Inputs:

- Data collection tracking performance of implemented waste options
- Development of databases to facilitate reporting requirements
- Establishment of continuous monitoring programme
- Action framework developed with triggers established to prompt review processes
- Identification of services and processes for improvement

Sub-Tasks:

Task 10-2: Reporting on service performance

Who: Project Manager, Project Director

By When: June 2012

Output: Waste Strategy Performance Report

Task Scope / Activities / Consultation / Required Inputs:

- Compilation and TBL analysis on implemented Waste Strategy
- Consultation with key stakeholders
- Comparison with expected results
- Comparison with other LGAs in Australia and abroad
- Assessment of achievements in terms of footprint reduction
- Report dissemination and media liaison

6 PROJECT RISK MANAGEMENT

6.1 PROJECT RISK ASSESSMENT

Significant risks identified for the Project include:

- Human Resourcing;
- Project costs;
- Project funding including impact upon DWMC and CWMC;
- Waste stream data availability and applicability;
- Commercial stakeholder support;
- Project delivery contractual risks;
- Project delivery timeframes;
- Market conditions;
- Infrastructure siting;
- State requirements;
- Community support; and
- Competition from the private sector and / or other Councils.

Risk management measures have been identified to address significant risks.

A Project risk assessment matrix outlining these risks and measures follows.

Risk Scores (likelihood x consequence): (VL) very low = 1, (L) low = 2; (M) medium = 3; (H) high = 4; (E) extreme = 5

PROJECT RISK[1]	LIKELIHOOD VL(1) – E(5)	CONSEQUENCE VL(1) – E(5)	RISK SCORE W/O CONTROLS	CONTROLS	RISK SCORE + CONTROLS
Human Resourcing	H(4)	E(5)	HxE(20)	Ensure clear management comprehension of project plan implications and renegotiate scope or timetable if resources are not commensurate. Ensure project budget is sufficient to supplement internal resources with external when necessary.	**M** x **M = 9**
Project funding	M(3)	H(4)	MxH(12)	Consult regularly with Council to ensure budget availability.	**L** x **M = 6**
Community support	M(3)	H(4)	MxM(12)	Develop effective community education and engagement processes and invest in appropriate internal staff and external resources.	**L** x **M = 6**
Waste stream data availability and applicability	M(3)	H(4)	MxH(12)	Ensure effective consultation with Council staff. Ensure 'fit-for-purpose' test applied to data requests. Undertake external research if required.	**L** x **L = 4**
Market conditions	H(4)	H(4)	HxH(16)	Undertake rigorous economic, financial and commercial analyses to support Waste Strategy and justify investment and secure funding.	**L** x **M = 6**
State requirements	H(4)	H(4)	HxH(16)	High level liaison with State to ensure policy and regulatory requirements for Waste Strategy are clearly understood and agreed.	**L** x **M = 6**
Commercial stakeholder support	M(3)	M(3)	MxM(9)	Develop effective commercial stakeholder engagement processes.	**L** x **L = 4**
Project delivery timeframe	M(3)	L(2)	MxL(6)	Invest in development of detailed Project Plan. Establish and maintain effective Project communications.	**L** x **L = 4**

7 PROJECT CONSULTATION

7.1 KEY STAKEHOLDERS & CONSULTATION PROGRAM

Consultation with key Project stakeholders will be via internal and external consultation committees, specific consultation forums or specific communication. Committee membership is presented in **Appendix 8.3**. The proposed schedule and scope of Waste Advisory Committee meetings and activities is presented below. The methodology and processes for community consultation, education and engagement will be specified in the Project Consultation and Communication Plan. Project consultation will be a monthly e-mail up-date distributed internally to appropriate staff, coordinated by the Project Consultation Manager.

Meeting No.	Date	Proposed Inputs	Key Issues & Required Outputs
1	**Oct 2009**	• **SIA Report** • **Project Plan** • **"No Regrets" Actions** • **Project Announcement**	• To be determined
2	**Feb 2010**	• **Project Consultation & Communication Plan** • **Awaba Opportunity Value Part A Report** • **Awaba Airspace Maximisation Report** • **Home Organics Awareness Program**	• To be determined
3	**April 2010**	• **Awaba Opp. Value – Part B** • **Waste Streams Analysis and Diversion Opportunity Reports (Technical Papers)**	• To be determined
4	**June 2010**	• **Best Practice Report** • **Cost Benefit Report** • **Land Availability Report**	• To be determined
5	**Aug 2010**	• **Preferred Options Report**	• To be determined
6	**Oct 2010**	• **Economic / Resource Management / TBL Report** • **Commercial Analysis & Options Report Draft Strategy** • **Financial Analysis Report** • **Draft Waste Strategy**	• To be determined
7	**Feb 2011**	• **Waste Strategy Consultation Report** • **Final Waste Strategy**	• To be determined
8	**August 2011**	• **Preferred Tenders for Strategy Implementation**	• To be determined
9	**Nov 2011**	• **Strategy Implementation Plan**	• To be determined
10	**Mar 2012**	• **Strategy implementation update – performance review**	• To be determined
11	**Jun 2012**	• **Waste Strategy Performance Report**	• To be determined

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8 APPENDICES AND SUPPORTING DOCUMENTATION

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8.1 PROJECT SCHEDULE CONSOLIDATION

Task 1: Project Planning, Management & Governance

Sub-Task	*Timeframe*	*Completion*
Task 1-1: Project Plan Preparation	4 weeks	October 2009
Task 1-2: Project Management	110 weeks	Late 2011
Task 1-3: Waste Advisory Committee (WAC) Meetings Facilitation	110 weeks	October 2009 to Late 2011

Task 2: Consultation & Communication

Sub-Task	*Timeframe*	*Completion*
Task 2-1: Project Announcement Media Plan	4 weeks	Dec 2009
Task 2-2: Project Consultation & Communication Plan Development	4 weeks	Feb 2010
Task 2-3: Project Consultation & Communication Program Delivery	100 weeks	Feb 2010 to Late 2011
Task 2-4: Commercial Stakeholders Engagement Program	100 weeks	Feb 2010 to Late 2011

Task 3: "No Regrets" Activities

Sub-Task	*Timeframe*	*Completion*
Task 3-1: Awaba Opportunity Value Study and Conservation Study and recommendations	4 weeks 4 weeks	Part A: Dec 2009 Part B Mar 2010
Task 3-2 : "Home Organics Awareness" Program	16 weeks	July 2010 + ongoing
Task 3-3 : LMCC "Walk the Talk" Program	32 weeks	July 2010
Task 3-4 : Awaba Airspace Maximisation	4 weeks	Jan 2010

Task 4: Waste Streams Analysis & Forecasting

Sub-Task	*Timeframe*	*Completion*
Task 4-1: Background Data Review & Gap Rectification	8 weeks	Dec 2009
Task 4-2: Analysis of Individual Waste Streams	4 weeks	Jan 2010
Task 4-3: Waste Streams / Services Forecast	2 weeks	Feb 2010

Task 5: Preferred Options with Sustainability Analysis

Sub-Task	*Timeframe*	*Completion*
Task 5-1: Risk Assessment & Analytical Framework	6 weeks	March 2010
Task 5-2: Waste Options Identification	12 weeks	April 2010
Task 5-3 : Global Best Practice Comparison	4 weeks	May 2010
Task 5-4: TBL Analysis of Proposed Waste Options	4 weeks	May 2010
Task 5-5 : Land Availability & Suitability Assessment	4 weeks	May 2010
Task 5-6 : Identify preferred Waste Options / Scenario	4 weeks	June 2010

Task 6: Governance, Delivery Structures & Financial Analysis

Sub-Task	*Timeframe*	*Completion*
Task 6-1: Review of Existing Contracts	4 weeks	July 2010
Task 6-2: Develop Delivery Strategy	4 weeks	August 2010
Task 6-3: Financial Analysis of Preferred Waste Strategy Options	8 weeks	October 2010

Task 7: Strategy Preparation

Sub-Task	*Timeframe*	*Completion*
Task 7-1: Ensure Compliance with DECCW and Federal Policy Requirements	2 weeks	March 2010
Task 7-2: Develop Public Consultation Draft Waste Strategy	4 weeks	October 2010
Task 7-3 : Review Input from 4 weeks Facilitated Public Consultation	2 weeks	December 2010

Task 7-4 : Adopt & Publish LMCC Waste Strategy	4 weeks	February 2011

Task 8: Strategy Implementation - Specifications & Contracts

Sub-Task	*Timeframe*	*Completion*
Task 8-1: Prepare Technical Specifications, Tender or EoI Documents for Implementation of Waste Strategy	10 weeks	April 2011
Task 8-2: Call, Evaluate & Let Tenders for Implementation of Waste Strategy	12 weeks	July 2011
Task 8-3: Mobilise Contractors and Internal Service Providers	12 weeks	Oct 2011
Task 8-4: Education Program for Customers & Ratepayers	4 weeks	Oct 2011

Task 9: Commissioning

Sub-Task	*Timeframe*	*Completion*
Task 9-1: Refinement of Waste Strategy implementation	26 weeks	Apr 2012

Task 10: Commissioning

Sub-Task	*Timeframe*	*Completion*
Task 10-1: Data compilation, performance review and monitoring	40 weeks	Jun 2012
Task 10-2: Reporting on service performance	40 weeks	Jun 2012

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Gantt Chart of actions

	Oct-09	Nov-09	Dec-09	Jan-10	Feb-10	Mar-10	Apr-10	May-10	Jun-10	Jul-10	Aug-10	Sep-10	Oct-10	Nov-10	Dec-10	Jan-11	Feb-11	Mar-11	Apr-11	May-11	Jun-11	Jul-11	Aug-11	Sep-11	Oct-11
Task 1: Project Planning, Management & Governance																									
Task 1-1: Project Plan Preparation																									
Task 1-2: Project Management																									
Task 1-3: Waste Minimisation Advisory Committee (WMAC) Meetings Facilitation																									
Task 2: Consultation & Communication																									
Task 2-1: Project Announcement Media Plan																									
Task 2-2: Project Consultation & Communication Plan Development																									
Task 2-3: Project Consultation & Communication Program Delivery																									
Task 2-4: Commercial Stakeholders Engagement Program																									
Task 3: "No Regrets" Activities																									
Task 3-1: Awaba Opportunity Value Study																									
Task 3-2 : "Home Mulching & Composting" Program																									
Task 3-3 : LMCC "Walk the Talk" Program																									
Task 3-4 : Awaba Airspace Maximisation and Conservation Study																									
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Task 4-2: Analysis of Individual Waste Streams																									
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Task 5-3 : Global Best Practice Comparison																									
Task 5-4: TBL Analysis of Proposed Waste Options																									
Task 5-5 : Land Availability & Suitability Assessment																									
Task 5-6 : Identify preferred Waste Options / Scenario																									
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Task 7-3 : Review Input from 4 weeks Facilitated Public Consultation																									
Task 7-4 : Adopt & Publish LMCC Waste Minimisation Strategy																									
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Task 8-3: Mobilise Contractors and Internal Service Providers																									
Task 8-4: Education Program for Customers & Ratepayers																									

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8.2 PROJECT TEAM

PROJECT TEAM MEMBERS:

Project Team

Name	Organisation	Role	Contact Details
Tony Farrell	LMCC	Project Director	4921 0250
Dr Kate Barton	LMCC	Project Manager	4921 0206/ 0428 162087
Jenni Donaldson	LMCC	Project Consultation Manager	4921 0291
David Brake	LMCC	Group Coordinator Waste Operations	0407 404 794
TBA	LMCC	Waste Planning and Education Coordinator	4921 0561
TBA	LMCC	Sustainability Project Coordinator (Waste Education and Communication)	4921 0245

Project Control Group

Name	Organisation	Role	Contact Details
Brian Bell	LMCC	General Manager	4921 0220
Morven Cameron	LMCC	Director, Community Development	4921 0289
Amanda Colbey	LMCC	Director, Operations	4921 0625
Wayne Jack	LMCC	Director, Corporate Services	4921 0181
Keith Stevenson	LMCC	Manager, Waste, Environment & Rangers	4921 0436
Dr Quentin Espey	LMCC	Manager, Sustainability	4921 0337
Sharon Pope	LMCC	Manager, Integrated Planning	4921 0271
Graeme Hooper	LMCC	Manager, Economic Development	4921 0245
Kylie Downie	LMCC	Business Analyst	4921 0218
Dr Alice Howe	LMCC	Environmental Risk Team Leader	4921 0624
Ben Maddox	LMCC	Footprint Analyst	4921 0112
TBA	LMCC	Sustainability Project Coordinator (Waste Education and Communication)	4921 0245

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8.3 PROJECT STAKEHOLDERS

Waste Advisory Committee

Name	Organisation	Role	Contact Details
Cr Kay Fraser	LMCC	Chair, WAC	0404 497 401
Cr Hannah Gissane	LMCC	Deputy Chair, WAC	0429 910 290
Cr Barry Johnston	LMCC	Member, WAC	0409 777 599
Cr Jodie Harrison	LMCC	Member, WAC	0428 141 029
Cr Daniel Wallace	LMCC	Member, WAC	0429 610 290

External Consultation Committee

Name	Organisation	Role	Contact Details
Cr Greg Piper	LMCC	Mayor	4973 2754
Cr Kay Fraser	LMCC	Chair, WAC	0404 497 401
Cr Hannah Gissane	LMCC	Deputy Chair, WAC	0429 910 290
Cr Barry Johnston	LMCC	Member, WAC	0409 777 599
Cr Jodie Harrison	LMCC	Member, WAC	0428 141 029
Cr Daniel Wallace	LMCC	Member, WAC	0429 610 290
Cr Anthony Birt	LMCC	Councillor	0428 910 290
Cr Arnold Tammekand	LMCC	Councillor	0407 482 162
Cr Garry Edwards	LMCC	Councillor	0428 310 290
Cr Jodie Harrison	LMCC	Councillor	0428 141 029
Cr Laurie Coghlan	LMCC	Councillor	0407 954 497
Cr Paul Scarfe	LMCC	Councillor	0412 452 928
Cr Philippa Parsons	LMCC	Councillor	0428 410 290
Cr Wendy Harrison	LMCC	Councillor	0409 775 432
Tony Farrell	LMCC	Project Director	4921 0250
Dr Kate Barton	LMCC	Project Manager	4921 0206
Jenni Donaldson	LMCC	Project Consultation Manager	4921 0291

David Brake	LMCC	Group Coordinator Waste Operations	0407 404794
Graeme Hooper	LMCC	Manager, Economic Development	4921 0425
TBA	Chambers of Commerce	TBA	TBA
TBA	Business Community Representatives	TBA	TBA
TBA		Public Focus Group	TBA
TBA	Non-Government Organisations	TBA	TBA

Internal Consultation Committee

Name	Organisation	Role	Contact Details
Brian Bell	LMCC	General Manager	4921 0220
Tony Farrell	LMCC	Project Director	4921 0250
Dr Kate Barton	LMCC	Project Manager	4921 0206
Jenni Donaldson	LMCC	Project Consultation Manager	4921 0291
David Brake	LMCC	Group Coordinator Waste Operations	TBA
Graeme Hooper	LMCC	Manager, Economic Development	4921 0425
Morven Cameron	LMCC	Director, Community Development	4921 0289
Amanda Colbey	LMCC	Director, Operations	4921 0625
Wayne Jack	LMCC	Director, Corporate Services	4921 0181
Keith Stevenson	LMCC	Manager, Waste, Environment & Rangers	4921 0436
Sharon Pope		Manager, Integrated Planning	4921 0271
Dr Quentin Espey	LMCC	Manager, Sustainability	4921 0337

Graeme Hooper	LMCC	Manager, Economic Development	4921 0245
Kylie Downie	LMCC	Business Analyst	4921 0218
Dr Alice Howe	LMCC	Environmental Risk Team Leader	4921 0624
Ben Maddox	LMCC	Footprint Analyst	4921 0112
Rick Brindley	LMCC	Waste Sites Co-ordinator	4921 0477
Steven Merrett	LMCC	Waste Site Field Supervisor	0408 485407
Jeff McKenna	LMCC	Waste Operations Co-Ordinator	4921 0768
Gary Lethbridge	LMCC	Bulk Waste Co-Ordinator	4921 0766
TBA	Union Representative	TBA	TBA
TBA	HR/IR Representative	TBA	TBA

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8.4 REFERENCES

- SIA – Waste Management Strategy and Infrastructure Options Final Report;
- Lloyd Consulting Peer Review of SIA Report
- Current waste to landfill and resource recovery data;
- Public place recycling monitoring data;
- Regional Waste Project historical data;
- Preliminary analysis of Council's liability under proposed carbon pollution reduction scheme;
- Waste audit results;
- 2008-18 Community Plan;
- 2008 State of the Environment Report;
- 2008-09 Management Plan;
- New South Wales Waste Avoidance and Resource Recovery Strategy;
- Awaba Waste Disposal Facility EPA licence;
- Viet Nysen consultant report;
- Proposed CiviLake Recycling Facility information;
- Dr Quentin Espey community presentation – The Long Walk to Sustainability with the Community;
- Awaba landfill gas extraction data;
- Centre for Integrated Sustainability Analysis – LMCC waste footprint report;
- Municipal Solid Waste Scenario modelling;
- Awaba Reuse Centre Operations tender;
- Waste related community surveys;
- DECC Yearly Local Government Waste and Resource Recovery Data Returns;
- Residential Recycling Survey findings;
- Price Waterhouse Coopers – True cost of waste services report;
- Urban Development Program (UDP) information;
- Public place recycling contract;
- Awaba Reuse Centre contract;
- Oil recycling contract;
- Organic garden waste processing and marketing contract.

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