MAJOR PROJECT ASSESSMENT: MP 10_0139 – Awaba Waste Management Facility Expansion Project

Director-General's
Environmental Assessment Report
Section 75I of the
Environmental Planning and Assessment Act 1979

May 2013

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EXECUTIVE SUMMARY

Lake Macquarie City Council (the Proponent) owns and operates the Awaba Waste Management Facility (AWMF) at Awaba, in the Lake Macquarie local government area (LGA). The facility is approximately 4 kilometres (km) west of Toronto and around 800 metres (m) south-east of the township of Awaba. The AWMF has operated since 1986 and accepts General Solid Waste (non-putrescible and putrescible), asbestos waste and waste tyres. Based on current trends, the facility would reach its capacity within the next four years.

The Proponent is seeking project approval for an expansion to the existing AWMF (referred to as the Project) to increase landfill space by 2.5 million tonnes through the construction of two additional excavated cells and continued emplacement of waste over the existing landfill area (ie. piggy back). The Project would thereby extend the lifespan of the landfill by an estimated 20 years. The Project also includes the construction of a pipeline between the facility and Hunter Water Corporation's (HWC) Rathmines No. 6 Waste Water Pump Station (WWPS) to allow surplus leachate to be transferred from the landfill for treatment.

The Project would generate 20 full-time equivalent (FTE) construction jobs, maintain 14 FTE operational jobs, and have a capital investment value (CIV) of approximately $12 million.

The Project constitutes a transitional 'Major Project' under Part 3A of the *Environmental Planning and Assessment Act 1979*, as it involves development for the purpose of a resource recovery or waste facility with a capacity to receive more than 75,000 tonnes per year of putrescible waste, and requires the Minister's (or delegates) approval. As the Director-General's environmental assessment requirements (DGRs) were issued in respect of this Project prior to 1 October 2011, the Project is a transitional Part 3A Project.

The Department exhibited the Environmental Assessment for the Project from 14 September 2012 until 30 October 2012 and received 21 submissions, including nine from public authorities, three from special interest groups and nine from the general public. All agencies generally supported the Project in principle and provided recommended conditions. One special interest group and four public submissions opposed the Project. The remaining submissions (two special interest groups and five public submissions) did not oppose the Project, however they did raise issues of concern.

Key issues raised in submissions related to biodiversity, odour, noise and vibration, visual impacts, water and leachate management and gas collection.

To address the issues raised in submissions, the Proponent prepared a Response to Submissions Report which was submitted to the Department in March 2013.

The Department is satisfied that the impacts of the Project are acceptable and can be adequately mitigated and managed. As an existing and established waste facility, the Project represents a logical continuation of landfilling operations in this area. Lake Macquarie City Council's (LMCC) projected resource recovery rate in 2014 / 2015 would be 66 per cent, which is consistent with the *NSW Waste Avoidance and Resource Recovery (WARR) Strategy* target. The extension to the AWMF represents part of LMCC's broader Waste Strategy which it has been progressively implemented since 2009. The Department also considers that the Project is consistent with Clause 123 of *State Environmental Planning Policy (Infrastructure) 2007*.

The Department is therefore satisfied that the applied landfilling rate is comparable to demand in the LGA and that the Proponent is committed to maximising resource recovery from waste such that it is in line with the NSW Government's current targets. Finally, the Department is satisfied that the provision of future resource recovery infrastructure embedded in LMCC's Waste Strategy is likely to further improve resource recovery rates in the LGA.

On balance, the Department believes that the benefits of the Project sufficiently outweigh any potential negative impacts and therefore it is in the public interest and should be approved subject to the imposition of the recommended conditions.

1 BACKGROUND

1.1 Awaba Waste Management Facility

Lake Macquarie City Council (the Proponent) owns and operates the Awaba Waste Management Facility (AWMF) at Awaba, in the Lake Macquarie local government area (LGA). The facility is approximately 4 kilometres (km) west of Toronto and around 800 metres (m) south-east of the township of Awaba. The AWMF has operated since 1986 and accepts General Solid Waste (non-putrescible and putrescible), asbestos waste and waste tyres. Based on current trends, the facility would reach its capacity within the next four years. The AWMF is the only functioning landfill site in the Lake Macquarie LGA and has approximately four years of landfill volume remaining.

The AWMF has established infrastructure, some of which would be required to be upgraded or modified as a result of the Project. This includes the existing landfill operation which accepts up to 150,000 tpa, a green waste processing area, recycling centre and associated infrastructure.

The Proponent is seeking to expand the capacity of the AWMF (the Project) through the construction of two additional excavated cells and continued emplacement over the existing landfill area (ie. piggy back), thereby extending the lifespan of the landfill by an estimated 20 years. The Project also includes the construction of a pipeline between the facility and Hunter Water Corporation's (HWC) Rathmines No. 6 Waste Water Pump Station (WWPS) to allow surplus leachate to be transferred from the landfill for treatment, an additional recycling centre, a transfer station, relocation of the green waste area and ancillary infrastructure.

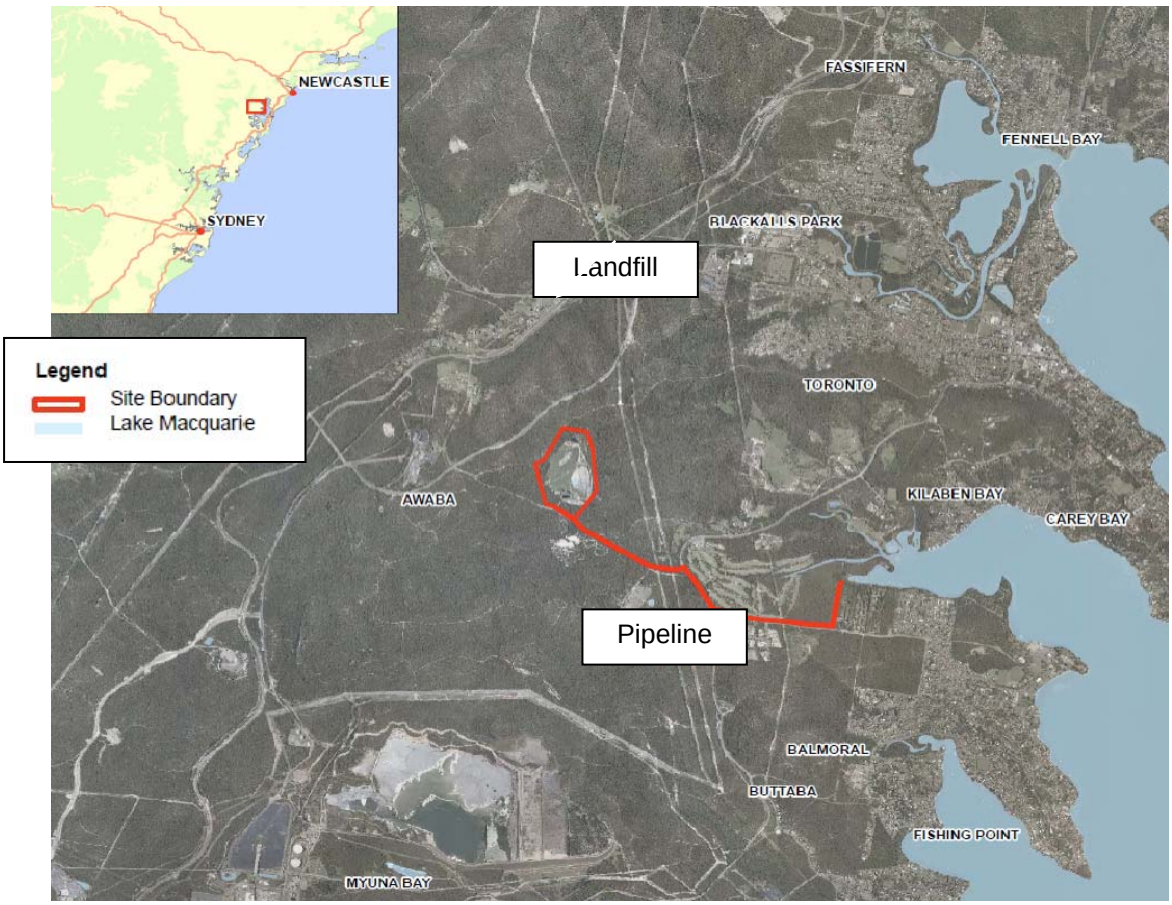

Figure 1: *Site Location*

1.2 LMCC Waste Strategy

In 2009, LMCC initiated a Waste Strategy which seeks to respond to the NSW Government's WARR Targets for the diversion of waste from landfill and promoting resource recovery.
To date, a number of key elements of the Waste Strategy have been completed or are well advanced. These include:

- a waste auditing and forecasting program;
- a study involving the *Review of "Best Practice" Waste Management Alternatives;*
- community waste awareness campaigns;
- a home composting program;
- introduction of a phased, three bin, source separated organics (SSO) system with phasing of:
    - Phase 1 – s source separated green (garden) (SSG), fortnightly collection; and
    - Phase 2 – a source separated organics (garden and kitchen) (SSO) weekly collection;
- expansion of the AWMF;
- short term options for diversion of waste to extend the life of the AWMF; and
- construction of an AWT facility adjacent to the AWMF.

The LMCC Waste Strategy provides a multi-faceted approach to waste minimisation and avoidance, with the future development of an AWT facility proposed to be located adjacent to the AWMF site, therefore providing further opportunities for waste diversion. The AWMF Project represents a key component of LMCC's Waste Strategy.

Historical and future (predicted) resource recovery rates as a result of existing and proposed resource recovery measures within the LMCC LGA are:

- 2009 / 2010: 23%
- 2010 / 2011: 23%
- 2011 / 2012: 21%
- 2013 / 2014 (predicted): 36%
- 2014 / 2015 (predicted): 66%

Through its Waste Strategy, LMCC has demonstrated an existing commitment to resource recovery. Diversion of putrescible and non-putrescible solid waste from the AWMF is predicted to increase from 21% in 2011/1012 to 66% (2014/2015), which complies with the WARR Strategy targets. The predicted increase would be a direct result of the proposed Project which includes additional recycling infrastructure and the proposed AWT facility that would be located adjacent to the AWMF. Waste diversion would likely result in reduced volume of material received at the AWMF and would also likely result in increased waste flow to resource recovery and recycling facilities.

1.3 Existing Consents and Approvals

The original development consent for landfill activities was approved in 1986 by LMCC, with the existing expanded activities approved by LMCC in 1995. Existing landfill activities at the AWMF operate under a number of development consents which are summarised in Table 1.

Table 1: *History of approvals at the Awaba Waste Management Facility*

DA No.	***DA Description***	***Consent Granted***	***Approval Authority***
DA 170/1986	Solid waste disposal depot and associated works (original consent)	7 October 1986	LMCC
DA 976/1994	Recycling area and building	6 December 1994	LMCC
DA 82/1994	Extension of waste disposal site (current working approval to filling levels)	13 February 1995	LMCC
DA 2185/1999	Additions to console window (additional window to weighbridge)	4 January 1999	LMCC
DA 504/2004	Compactor shed storage	13 May 2009	LMCC

As part of this application process, the existing development consents identified in Table 1 would be surrendered for the AWMF. This would allow the Proponent to manage the AWMF under one approval and assist the relevant authorities to regulate the Site's operations.

The AWMF is licenced under *the Protection of the Environment Operations Act 1997* (POEO Act) to accept up to 150,000tpa of General Solid Waste (non-putrescible), General Solid Waste (putrescible), asbestos waste and waste tyres in accordance with the conditions of the Environment Protection Licence (EPL 5873).

1.4 Site Description and Surrounding Land Uses

The AWMF is located within Lot 372 DP 723259 (the Site), which is Crown Land controlled by LMCC as the appointed Corporate Manager of the Awaba Waste Management Reserve Trust (R170042). Lot 372 has an area of around 32.5 hectares (ha), of which approximately 23.5ha is used for existing landfill activities and supporting infrastructure. Approximately 9ha is bushland.

The AWMF is situated on undulating terrain, with the highest point of the Site currently at 82.6m Australian Height Datum (AHD) and slopes from the north-west to south-east. Slope angles are typically 5-10% over most of the Site, with a smaller area of 15-20% immediately north of the entrance road. The Site is generally cleared, with tall open woodland forest to the north, south, east and west limiting the visibility of the AWMF from local areas. Regional landscape features include Lake Macquarie to the east and distant views of relatively intact vegetated hills.

The site itself contains a minor creekline located in the southern portion of Lot 372, which flows from west to east. This creekline eventually feeds into Kilaben Creek, which then drains to the Lake Macquarie estuary, approximately 2.6km downstream of the AWMF site.

Low density residential land uses form part of the landscape and are particularly concentrated in the vicinity of Lake Macquarie to the east, including the townships of Rathmines and Toronto. The Site is also located to the south-east of the township of Awaba, where the nearest residential receivers are located at a distance of approximately 800m.

In addition to residential land uses, the surrounding area includes industrial, commercial, recreational and rural land uses, as well as rail and road infrastructure.

The Site is located within the West Lake Mine Subsidence District. The proposed AWMF landfill cells are underlain by coal seams. Final cell design would therefore need to consider worst case mine subsidence parameters and be able to accommodate worst case ground movement without suffering structural failure or compromising environmental protection should underground mining occur.

1.5 Project Need

The AWMF represents the only landfill within the LGA, which is owned and operated by the Proponent and caters for putrescible and non-putrescible waste. No other sites within the Lake Macquarie LGA are available to accept the Municipal Solid Waste (MSW). Therefore, as no known AWT can currently achieve a 100% diversion rate of resource recovery, there is a critical need for the Proponent to secure adequate future landfill capacity for disposal of residual MSW within the Lake Macquarie LGA.

2 PROJECT DESCRIPTION

2.1 Project Description

The Project is known as the Awaba Waste Management Facility (AWMF) Expansion Project (the Project).

The major components of the Project are summarised in Table 2 and depicted in Figures 2 and 3. The Project is described in full in the Proponent's Environmental Assessment (EA) prepared by Cardno and the Response to Submissions report (attached as Appendix D and F).

Table 2: *Major Project Components*

Aspect	***Description***
Project Summary	▪ The creation of an additional 2.5 million tonnes of landfill space through the construction of two additional landfill cells and continued emplacement of waste over the existing landfill area (ie piggy backing), with landfilling expected to be completed by around December 2032; ▪ Construction of a pipeline between the facility and Hunter Water Corporation's (HWC) Rathmines No. 6 WWPS along various road reserves to allow for the transfer of surplus leachate for treatment; and ▪ additional recycling centre, a transfer station, relocation of the green waste area and ancillary infrastructure.
Land	▪ Lot 372 DP 723259 (AWMF); and ▪ The sewer pipeline would be constructed along the existing road reserves of Wilton, Wangi and Dorrington Roads.
Additional Landfill cells	▪ Excavation of two additional areas to create two new landfill cells (Area A and Area B), each having an excavation volume of approximately 92,000 m^3; ▪ Area C, to be constructed above the existing landfill area, involves no excavation but would continue to have waste deposited over the existing landfill (ie piggy back); and ▪ Approximately 2.5 million tonnes of additional landfill space would be provided, with a final emplacement level of 110m AHD.
Annual Input Rate	▪ An annual waste input rate of up to 150,000 tonnes.
Staging	▪ Three new landfill areas (Area A, Area B and Area C) would be constructed / filled over 11 stages; and ▪ Staging details and a staging plan as detailed in Table 3 and Figure 3.
Leachate management system	▪ Decommissioning of the existing leachate basin located within Area A; ▪ Construction of a new 8ML capacity leachate basin to the south-west of the Site; ▪ Retention of the existing 6ML capacity leachate basin to act as a maturation pond; ▪ Construction of a new leachate management system to service Area A and Area B to be located above the existing landfill (Area C); and ▪ Construction of an onsite package pumping station and rising main which would extend from the AWMF to the Rathmines No. 6 WWPS to provide a suitable means of transferring additional leachate generated by the landfill for treatment.
Landfill gas management	▪ Retention of the existing landfill gas management system; and ▪ Construction of additional landfill gas and extraction manifold wells.
Surface water, stormwater and groundwater management	▪ Construction of additional groundwater monitoring wells; ▪ Construction of surface water diversion and stormwater management infrastructure; ▪ Expansion of the existing sediment basin to the south of the AWMF site; and ▪ Consolidation of the three existing sediment basins into two new sediment basins adjacent to Area B.
Green waste processing	▪ Relocation of existing green waste processing area (3,500m^3) from the southern portion of the site to the western Site boundary.
Access road	▪ Extension of the access road around the perimeter of the site.
Vegetation and rehabilitation	▪ Removal of 8.55ha of vegetation (of which 7.2ha is native vegetation) within Lot 372, and an additional 1ha of vegetation (of which 0.1ha is native vegetation) along the proposed pipeline route; and ▪ Revegetation and landscaping of disturbed areas along the pipeline route.
CIV	$12,306,584.00
Hours of Operation	Plant operating hours: ▪ Monday to Friday: 7.15am to 4.30pm ▪ Weekend and Public Holidays: 7.15am to 4.30pm ▪ Christmas Day: Closed Public access operating hours: ▪ Monday to Friday: 8am to 4pm ▪ Weekend and Public Holidays: 8am to 4pm ▪ Christmas Day: Closed
Hours of Construction	▪ Monday to Friday: 7.00am to 6.00pm ▪ Saturdays: 8.00am to 1.00pm ▪ Sundays and Public Holidays: No construction work
Employment	▪ Construction jobs: 20 full time employees; and ▪ Operational jobs: maintain existing workforce of 14 full time employees.

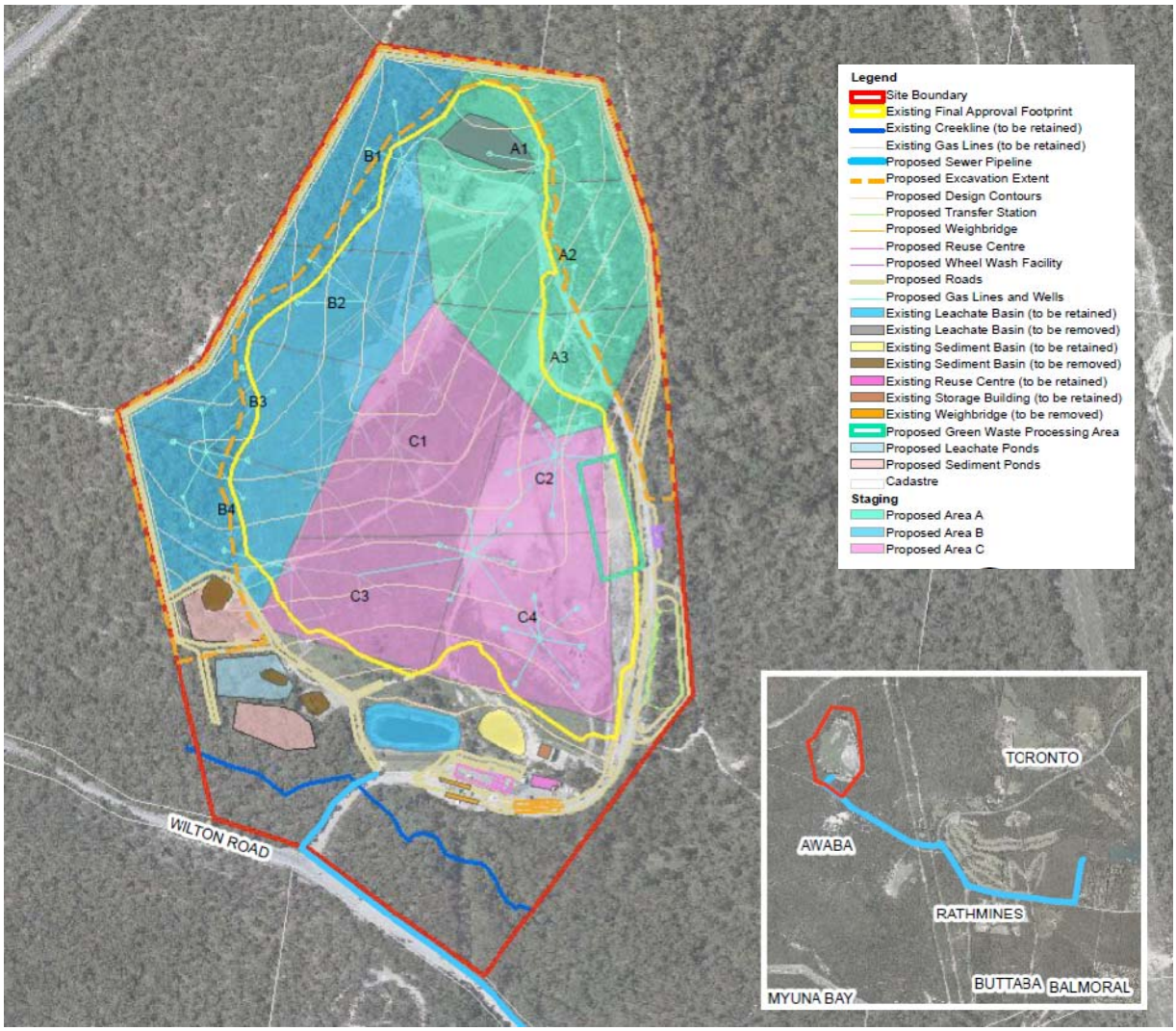

Figure 2: *Key Components of the Project*

2.2 Project Staging and Volumes

It is anticipated that the Project would be constructed, capped and operated over eleven key stages, as outlined in Table 3 and depicted in Figure 3.

Table 3*: Staging Details*

Landfill Cell	*Total Footprint Area (m^2)*	*Total Waste Quantity (Tonnes)*	*Estimated Completion Date*
A1	23,585	418,547	August 2014
A2	17,860	269,206	December 2016
A3	13,912	132,662	February 2018
B1	17,269	248,790	February 2020
B2	17,269	248,790	April 2022
B3	18,573	250,775	October 2023
B4	18,573	250,775	December 2025
*C1	25,928	430,440	May 2029
*C2	12,194	116,799	July 2030
*C3	18,072	93,343	July 2031
*C4	24,084	75,263	December 2032

**Stages C1 to C4 would be located above the existing landfill area (ie piggy back)*

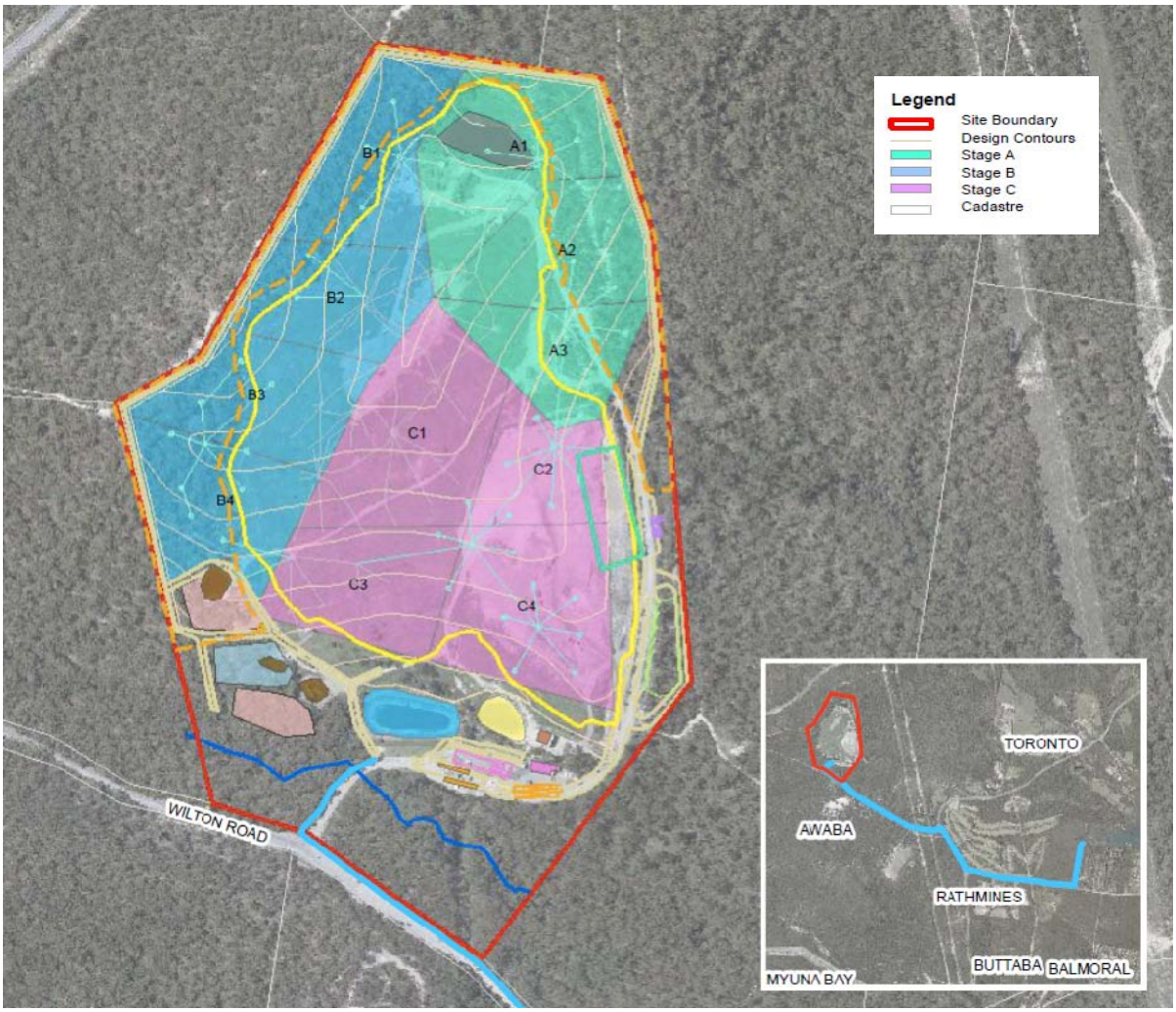

Figure 3: *Staging Plan*

2.3 Alternatives Considered

Waste Strategy Development Project

The Proponent commenced a review of its Waste Strategy in November 2009 to formulate a new domestic waste service for the Lake Macquarie LGA. Investigations identified a number of options, including:

- expansion of the existing AWMF (the subject of this assessment);
- development of a new landfill site within the Lake Macquarie LGA;
- development of an alternative waste treatment (AWT) facility within the Lake Macquarie LGA;
- export of residual waste to facilities (landfill / AWT) outside of the Lake Macquarie LGA; and
- a waste management system focused on source segregation and specific recovery / management of each waste stream.

The investigation recommended a multi-level approach including extending the life of the existing AWMF, future alternative waste treatment and alternative waste disposal options, introduction of separate organic / green waste kerbside collection and the establishment of a waste transfer station / resource recovery facility. While the Waste Strategy is still being finalised, the Proponent has commenced implementing aspects of its recommendations, including commencing the process of acquiring land adjacent to the AWMF for the purposes of developing a future AWT facility.

The Proponent considers that it is necessary to increase the capacity of the AWMF on the basis that while advances in waste minimisation and the development of an AWT facility by LMCC would act to reduce waste generation into the future, the Project provides for the disposal of residual wastes that

cannot be recovered from the waste stream. The Project would also ensure that there is appropriate waste deposal facilities available within the Lake Macquarie LGA to manag future waste requirements.

The "do nothing" option would result in the Lake Macquarie LGA not having an approved landfill for the disposal of non-recoverable wastes once the current approved capacity of the AWMF is reached in the next four years. It would also result in a lost opportunity to contribute to meeting the targets in the *Waste Avoidance and Resource Recovery Strategy 2007* (WARRS) by not recovering and utilising materials proposed to be recovered as part of the additional reuse centre which would expand the recycling and reuse capability of the AWMF. LMCC's Waste Strategy provides a multi-faceted approach to waste minimation and avoidance, with the future development of an AWT facility adjacent to the AWMF site, providing further opportunities for waste diversion.

3 STRATEGIC & STATUTORY CONTEXT

3.1 Strategic Context

NSW 2021 aims to increase recycling to meet 2014 NSW waste recycling targets in the *NSW Waste Avoidance and Resource Recovery Strategy 2007* (WARR Strategy). The Department has considered the overall need for the proposal, including consideration of resource recovery levels, in Section 5.1.1, and found that the Project is consistent with NSW 2021 and the WARR Strategy.

The Department also considered that the Project is consistent with the *Lower Hunter Regional Strategy 2006*. The purpose of the regional strategy is to manage the region's expected high level of growth in a sustainable manner. The proposed expansion of the AWMF would provide essential waste management services to support the continued growth of the Lake Macquarie LGA and is consistent with the Strategy.

3.2 Major Project

The Project is classified as a major project under the now repealed Part 3A of the *Environmental Planning and Assessment Act 1979* (EP&A Act), as it includes development for the purpose of a resource recovery or waste facility with a capacity to receive more than 75,000 tonnes per year of putrescible waste.

3.3 Continuing Operation of Part 3A

Part 3A of the EP&A Act, as in force immediately before is repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A Projects. Director-General's environmental assessment requirements (DGRs) were issued in respect of this Project prior to 1 October 2011, and the Project is therefore a transitional Part 3A Project.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister (or his delegate) may approve or disapprove of the carrying out of the Project under section 75J of the Act.

3.4 Approval Authority

The Minister has delegated his functions to determine Part 3A development applications to the Planning Assessment Commission where an application is made before or after 1 October 2011 (including reportable political donations applications) other than applications made by or on behalf of a public authority.

There have been five (5) objections received from members of the public and special interest groups. Whilst Lake Macquarie City Council's (LMCC) City Strategy Division has made a submission, the submission did not object to the Project, rather it raised general comments for consideration. There has been one (1) political disclosure statement made for this application by a special interest group (Centennial Coal).

Accordingly, the application is to be determined by the Planning Assessment Commission (PAC) in accordance with the Minister's Instrument of Delegation dated 14 September 2011 as a political disclosure statement has been made in respect to the Project Application.

3.5 Other Approvals

The Project has been deemed to be a Controlled Action under the *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) and requires approval by the Commonwealth under the EPBC Act. The Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) has agreed to accredit the Department's assessment process. As such this assessment report and the draft Project Approval will be forward to SEWPAC for consideration and a separate determination. Should SEWPAC approve the Project, a separate yet consistent approval will be granted.

The Department has continued to consult SEWPAC through out its assessment of the Project. SEWPAC has advised the Department that it is satisfied with the assessment process and the Department's recommended conditions.

Under Section 75V of the EP&A Act, a number of further approvals are required to be obtained. These include:

- Environment Protection Licence (EPL) under the *Protection of the Environment Operations Act 1997* (POEO Act):
  The Project requires a variation of the existing EPL 5873 held for the AWMF. The Department has consulted with the EPA and considered the relevant issues relating to the grant of an EPL in its assessment of the Project (see Section 5). The EPA has determined that should Project approval be granted, it would be able to issue an EPL subject to conditions.
- Section 15 approval under the *Mines Subsidence Compensation Act 1961* (MSC Act):
  The MSC Act makes provision for the payment of compensation where improvements on the surface or household effects are damaged by subsidence following the extraction of coal or shale. Approval is required in accordance with Section 15 of the MSC Act. The Department has consulted with the Mines Subsidence Board (MSB) and considered relevant issues relating to an approval under the MSC Act in its assessment of the Project (see Section 5). The MSB has determined that should Project approval be granted, it would be able to issue approval under the MSC Act, subject to conditions.
- Section 138 of the *Road Act 1993*, requires consent to be obtained for any works within the road reserve. The proposed construction of a sewer pipeline for the discharge of surplus leachate to be pumped to the Rathmines No. 6 WWPS would require works within the road reserve and as such consent for such works would be required from the relevant road authority.
- A Part 5 licence under the *Water Act 1912* is required as the Project includes the installation of additional groundwater monitoring bores for water quality monitoring, and excavation for the landfill cells and sewer pipeline (including dewatering of bedrock). Any dewatering of alluvial sediments would also require a water access licence under the *Water Management Act 2000*.

3.6 Permissibility

The site is zoned '9 Natural Resources Zone' under *Lake Macquarie Local Environmental Plan 2004*. Development for the purpose of a waste management facility and / or recycling facility is permissible with consent.

Under the *Draft Lake Macquarie Local Environmental Plan 2012*, the site is zoned SP2 Waste or Resource Management Facility. The proposed development is permissible with consent.

In addition, the Project is permissible with consent under Division 23 of the *State Environmental Planning Policy (Infrastructure) 2007* (the Infrastructure SEPP), as a waste or resource management facility that is located within an equivalent or prescribed zone.

3.7 Exhibition and Notification

Under Section 75(3) of the EP&A Act, the Director-General is required to make the Environmental Assessment (EA) for the Project publicly available for at least 30 days.

After accepting the EA for the Project, the Department:

- made it publicly available from 14 September 2012 until 30 October 2012 in the following means;
  - on the Department's website,
  - at the Department's Head Office Information Centre in Sydney,
  - at the Nature Conservation Council's Head Office in Sydney,
  - at Lake Macquarie City Council's administrative building;
- notified landowners in the vicinity of the site about the exhibition period by letter;
- notified relevant State government authorities, interest groups and LMCC by letter; and
- advertised the exhibition in the Newcastle Herald.

This satisfies the requirements in Section 75H(3) of the EP&A Act.

During the assessment process the Department also made a number of documents available for download on the Department's website. These documents included the:

- Project Application;
- Director-General's environmental assessment requirements;
- the Proponent's Environmental Assessment Report;
- Agency, steakholder and community submissions; and
- the Proponent's response to issues raised in submissions.

3.8 Environmental Planning Instruments

Under Section 75I of the EP&A Act, the Director-General's report is required to include a copy of, or reference to, the relevant environmental planning instruments (EPIs) that substantially govern the carrying out of the Project.

In relation to this Project, the key EPIs are:

- *State Environmental Planning Policy (Major Development) 2005*;
- *State Environmental Planning Policy (Infrastructure) 2007*;
- *State Environmental Planning Policy No 44 – Koala Habitat Protection;*
- *State Environmental Planning Policy No. 55 - Remediation of Land*;
- *Lake Macquarie Local Environmental Plan 2004*; and
- *Draft Lake Macquarie Local Environmental Plan 2012*.

The Department has assessed the proposal against the relevant provisions of the key environmental planning instruments and is satisfied that the Project is consistent with the EPIs (see Appendix C).

3.9 Objects of the *Environmental Planning and Assessment Act 1979*

In determining the application, the Minister should consider whether the Project is consistent with the relevant objects of the EP&A Act.

The Department has fully considered the objects of the EP&A Act, including the encouragement of Ecologically Sustainable Development (ESD), in its assessment of the application. The Department considers that objects (ii), (iv), (vi) and (vii) are relevant to the merit assessment of this application.

The Department considers that the Project represents an orderly and economic use of the land (ie. a 'piggy back' landfill design at an existing and suitably zoned landfill site) for the social and economic welfare of the regional community.

In particular, the Project responds to the critical need to ensure Lake Macquarie's landfill capacity for disposal of municipal waste is secured for the future. Further, the Department considers that through an emphasis on avoidance of impacts, careful design, management and mitigation measures, the Project would not adversely impact on any important ecological areas, threatened ecological species or communities and is consistent with the principles of ESD.

4 ISSUES RAISED IN SUBMISSIONS

During the exhibition period, the Department received a total of 21 submissions on the Project, comprising:

- 9 from public authorities;
- 3 special interest group submissions; and
- 9 public submissions.

A summary of the issues raised in submissions is provided in the following pages. A copy of the submissions is attached in Appendix E.

4.1 Public Authorities

The **Environment Protection Authority (EPA)** provided comments relating specifically to air quality and odour, noise, cell design and the lining system and general operating requirements. After considering additional information and further details relating to concept cell design, the EPA advised that it was generally satisfied with the Project and recommended a number of conditions of approval relating to air quality and odour, noise and cell design.

Department of Primary Industries (Crown Lands) was satisfied with the Project, however recommended that any project approval require LMCC to acquire the Project site (Lot 372 DP 723259) from the Crown.

Department of Primary Industries (NSW Office of Water (NOW)) raised no objection to the Project, however it did raised concerns requesting baseline data on groundwater levels and flow directions within the EA. Additional baseline data and analysis was provided to the NOW. Upon review of the additional data, the NOW advised that should the Project be approved, further baseline data on groundwater levels and quality should be obtained from the existing and proposed monitoring bores prior to construction. Further, that groundwater levels and quality should continue to be monitored during construction and operation.

Hunter Water Corporation (HWC) raised no objection to the Project, and provided comment relating to the requirements for the discharge of excess leachate as trade waste from the Project to HWC's infrastructure. HWC also confirmed that the proposed quantity of leachate to be disposed of to sewer during operation of the AWMF could be accepted at its Rathmines No. 6 Waste Water Pump Station (WWPS).

Mine Subsidence Board (MSB) considered the Project as it is located in a Mine Subsidence District. The MSB did not object to the Project and detailed requirements relating to landfill design and construction parameters that would be imposed prior to the MSB issuing approval under the *Mines Subsidence Compensation Act 1961***.**

Office of Environment and Heritage (OEH) were generally satisfied with the findings of the biodiversity and Aboriginal cultural heritage assessments and broadly supported the proposed biodiversity offset strategy. OEH recommended specific conditions of approval relating to biodiversity and Aboriginal heritage.

Rural Fire Service (RFS) raised no objection to the Project and provided recommended conditions of approval associated with managing bush fire risk.

Roads and Maritime Service (RMS) raised no objection to the Project and provided recommended conditions of approval associated with the management of traffic during construction. RMS also provided details on works requirements associated with the future upgrade of the intersection of Wangi Road and Wilton Road.

Lake Macquarie City Council (LMCC) raised no objection to the Project and suggested that outstanding issues relating to offsetting and biobanking be managed through conditions of approval.

Commonwealth Department of Sustainability, Environment, Water, Population and Communities (SEWPAC) has accredited this assessment process and has considered additional information provided by the Proponent in relation to the proposed offsets. Upon review of this information, SEWPAC accepted the biodiversity assessment and the biodiversity offset proposal subject to a condition requiring the offset lands being secured as a biobanking site prior to the commencement of construction. Following the Department's assessment of the Project, SEWPAC would consider the Department's assessment report and conditions and make an independent determination of the Project. If approved by SEWPAC, a separate yet consistent approval would be granted/issued.

4.2 Special Interest Groups

Three submissions were received from special interest groups. Of these, two generally supported the Project subject to conditions.

Centennial Coal, after further consultation with LMCC regarding the compatibility of the biobanking proposal and underground mining, broadly supported the Project subject to the ability for the biobanking proposal to co-exist with underground coal mining.

Rathmines Progress Association raised concerns regarding possible subsidence issues and provided copies of its submissions on the community information session and the Newstan Coal Mine Subsidence Predictions and Impact Assessment.

4.3 Community

Nine public submissions were received during the exhibition of the Project. Of these submissions four opposed the Project. Key issues raised in the public submissions included; biodiversity offsetting and suggesting lands for acquisition for biodiversity conservation purposes; leachate management; mine subsidence impacts; odour; landfill gas capture; visual impacts and human health impacts.

4.4 Response to Submissions

The Proponent has provided a response to the issues raised in submissions (refer to Appendix F). This response has been made publicly available on the Department's website.

The Department has considered the issues raised in submissions, and the Proponent's responses to these issues, in its assessment of the Project.

5 ASSESSMENT

In assessing the merits of the Project, the Department has considered the following:

- the environmental assessment, submissions and response to submissions on the Project (see Appendices D to F);
- agency, stakeholder and community submissions;
- the relevant environmental planning instruments, guidelines and policies (refer to Appendix C);
- the objects of the EP&A Act, including the object to encourage ecologically sustainable development; and
- the relevant statutory requirements of the EP&A Act and Regulation.

The following provides the Department's assessment of the key issues associated with the Project including justified demand, biodiversity, odour and noise. All other issues associated with the Project are summarised in Table 5.

5.1 Key Issues

5.1.1 Waste

Issue

Whether or not there is justified demand for the Project and an appropriate level of resource recovery in accordance with the Infrastructure SEPP.

Consideration

Justified Demand
The Department considers that a landfill should only be approved if there is a genuine demand for landfill space.

The Proponent has applied for approximately 2.5 million tonnes of additional landfill space, with a final emplacement level of 110m AHD, which equates to approximately 140,000 tonnes per annum (tpa) over 18 years from 2014 to around 2032.

The NSW Government is committed to resource recovery. This commitment is embedded in various policies and legislation, including the WARR Act and associated Strategy. At the same time, it is acknowledged that at present, and for the foreseeable future, not all waste can be recycled and reused. That is, there is a need for on-going capacity to dispose of residual waste to landfill.

The existing landfill airspace at the AWMF is projected to expire in 4 years and no further sites within the Lake Macquarie LGA are available to accept Municipal Solid Waste (MSW).

Under the *Local Government Act 1993,* the Proponent has a responsibility to collect and dispose of waste from domestic premises within the LGA.

Lake Macquarie's population is approaching 200,000 and is the Hunter's largest city, accounting for 37% of the Lower Hunter population. The population of Lake Macquarie is expected to grow by an additional 60,000 to 70,000 people over the next 25 years, an increase of around 35% or 1.4% a year. This is expected to create a demand for approximately 36,500 new dwellings and place increased pressure on waste management services in the Lake Macquarie LGA.

The total volume of waste to landfill at the AWMF has decreased significantly over the last 7 years from 200,736 tpa in 2003/04 to 109,233 tpa in 2009/10 due to community education, the Proponent's resource recovery initiatives and associated infrastructure (see discussion in 'Resource Recovery Levels' below).

The EA predicts that the Proponent will require a maximum waste input rate of approximately 144,000 tpa over 18 years from 2014 to around 2032.

As such, despite the pressures of population growth and housing in Lake Macquarie over the next 25 years increasing by around 35% or 1.4% a year, the applied annual landfilling rate to 2032 is significantly less (ie. around 56,000 tonnes of waste) than historical landfill input rates at the AWMF. The applied landfilling rate also equates to an annual compound increase of waste to landfill of approximately 1.31% a year to 2032 based on predicted 2012/13 levels (i.e. 113,884 tonnes) which is comparable to the estimated annual population growth rate for the Lake Macquarie LGA.

Alternate waste management options were considered in Section 2.3 of the EA. The assessment demonstrated alternatives would result in significant and unnecessary economic, social and environmental costs. A summary of some alternatives considered in the EA and by the Department in its assessment of the Project are provided in Table 4.

Table 4: *Project alternatives considered in the EA*

Alternative	***Outcome***
Do nothing alternative	Significant economic, social and environmental implications for the Lake Macquarie LGA such as high cost of transport of waste outside the LGA.

Alternatives to landfill (Development of a new AWT)	No known resource recovery system can achieve a 100% landfill diversion performance and consequently resource recovery activities still require the disposal of residual material to landfill.
Project Design and Location Alternatives	
Hunter Integrated Resource Regional Waste Project	Provision of AWT to serve multiple Council areas in the Lower Hunter. Uncertainty about the successful operation and financial viability of the proposed AWT coupled with the global financial crisis led to the abandonment of this project.
Alternate existing landfill sites inside Lake Macquarie	No known suitable existing landfill sites available inside Lake Macquarie LGA that accept MSW
Alternate existing landfill sites outside Lake Macquarie	Significant cost of waste transport outside LGA, increased greenhouse gas emissions and resulting increased traffic impacts.
Alternate new landfill site in Lake Macquarie	Increased waste footprint in the Lake Macquarie LGA, significant time required for the design, approval and construction of a new landfill and no other supporting resource recovery infrastructure is available.

Based on the above, the Department is satisfied that there are no suitable/viable project alternatives or alternate sites within the Lake Macquarie LGA that are available to accept MSW. Further, the Department is satisfied a waste input rate of 150,000 tpa, which is consistent with the current EPL for the site, is appropriate and comparable to the established demand for landfill space within the Lake Macquarie LGA.

The Environment Protection Authority (EPA) did not raise any issues in relation to justified demand.

Resource Recovery Levels

Under Clause 123 (1a) of the Infrastructure SEPP, an approval authority for any new landfill is also required to consider whether a project demonstrates a suitable level of resource recovery of waste so that the amount of waste is minimised before being landfilled.

The Department considers that the matters for consideration in the Infrastructure SEPP are relevant to the Project and in the public interest. The matters are highly relevant to the main objects of the Act and the principles of Ecologically Sustainable Development.

Resource recovery and reduction in waste diversion rates are generally driven by two key mechanisms in NSW including:

- progressively increasing the NSW Waste and Environment Levy; and
- the WARR Strategy.

The *NSW Waste and Environment Levy* is a progressively increasing levy imposed on waste operators to make it more expensive to dispose of waste to landfill each year. This provides economic incentive to reduce waste disposal and stimulate Alternative Waste Technology (AWT) development.

The WARR Strategy is the key NSW Government policy driving diversion of waste from landfills, and promoting recycling, increased processing of residual waste and safe disposal of waste to minimise environmental harm. The WARR Strategy sets out the following specific targets for resource recovery by 2014:

- 66% of municipal waste;
- 63% of commercial and industrial waste (C&I); and
- 76% of construction and demolition (C&D) waste.

Waste accepted at the AWMF includes putrescible and non-putrescible municipal solid waste (MSW) that originates from domestic waste collection and commercial waste drop off, as well as waste from private customers. Existing resource recovery measures undertaken within the Lake Macquarie LGA include:

- domestic and commercial kerbside recycling;
- bi-annual bulk waste collection;
- eWaste collection;
- NSW Energy Saving Scheme – Fridge Buyback program;
- recycling of cartridges, used motor oil, batteries and light globes;
- sharps disposal programs;
- mobile phone muster;

- recycling of construction and demolition waste; and
- green waste processing and reuse.

Historical and future (predicted) resource recovery rates as a result of existing and proposed resource recovery measures within the LMCC LGA are:
- 2009 / 2010: 23%
- 2010 / 2011: 23%
- 2011 / 2012: 21%
- 2013 / 2014 (predicted): 36%
- 2014 / 2015 (predicted): 66%

The Department notes that LMCC, through the development of its Waste Strategy, has assessed a range of options for waste management in the Lake Macquarie LGA (see Section 2.2). The Waste Strategy provides for a multi-faceted approach to waste management, with LMCC seeking not only additions to the AWMF (the subject of this application), but also committing to a Phased Three Bin Source Separated Organics processing system to reduce green waste and organics within the waste stream, as well as the proposed development of an AWT facility adjacent to the AWMF (subject to future assessment and approval).

Through its draft Waste Strategy, LMCC has demonstrated an existing commitment to resource recovery. Diversion of putrescible and non-putrescible solid waste from the AWMF is predicted to increase from 21% in 2011/1012 to 66% (2014/2015), which complies with the WARR Strategy targets. This diversion would likely result in reduced volume of material received at the AWMF and would also likely result in increased waste flow to resource recovery and recycling facilities.

The impact of other recovery activities which are currently undertaken (and would continue to be undertaken) at the AWMF are not included in the historical and predicted recovery rates, including recovery of ferrous and non-ferrous metals and paper and cardboard. Recovery of these materials would further increase actual recovery rates above those reported and predicted above.

The Department is therefore satisfied that the Project demonstrates a suitable level of resource recovery, effectively minimising as far as practicable the amount of municipal waste that is eventually directed to the AWMF.

The EPA did not raise any issues in relation to resource recovery levels.

Other Considerations Under the Infrastructure SEPP
Under Clauses 123 (1b to d) of the Infrastructure SEPP, an approval authority for any landfill is required to consider a number of other matters before determining a development application.

The Department has reviewed the EA, Response to Submissions (RTS) report and all other information provided by the Proponent and is satisfied that the Project:
- adopts best practice landfill design and operation as it has been designed generally in accordance with the EPA's Environmental Guidelines: Solid Waste Landfill's 1996;
- would reduce the long-term impacts of the disposal of waste by minimising odour (see Section 5.1.3) and greenhouse gas emissions by expanding and improving existing landfill gas capture at the AWMF increasing energy recovery capabilities;
- is located so as to avoid land use conflicts on suitable zoned land, would utilise ('piggy back') an existing landfill site (i.e. degraded land) prior to rehabilitation, is consistent with the overall intent of the Lower Hunter Regional Strategy and the Department of Planning's EIS Guideline: Landfilling (1996); and
- would eliminate the need for not long haul waste transport outside of the LGA and optimise transport links by utilising existing and established routes.

Conclusion

The Department is satisfied that there is established demand for landfill space within the Lake Macquarie LGA and that the proposed waste input rate is appropriate.

The Department considers that the Proponent is committed to maximising resource recovery in the LGA, with resource recovery levels predicted to meet the WARR Strategy targets in 2014/2015. The Proponent has, through LMCC's Waste Strategy, also committed to a Three Bin Source Separated Organics processing system to reduce green waste and organics within the waste stream, as well as the proposed development of an AWT facility adjacent to the AWMF.

The Department considers that these (and other) commitments in the Proponent's draft waste strategy and the progressively increasing NSW *Waste and Environment Levy* will continue to promote improvement in municipal waste diversion rates at Lake Macquarie. The Department also considers the proposal to be consistent with Clause 123 of the Infrastructure SEPP.

To ensure ongoing performance in regard to waste minimisation at the site, the Department has also recommended conditions of approval which would require the Proponent to:

- only receive waste at the site that is authorised for receipt by an EPL;
- implement all reasonable and feasible measures to recover resources from waste; and
- prepare and implement an on-going Waste and Resource Recovery Monitoring Program for the landfill including measures to monitor the effectiveness of the resource recovery measures.

5.1.2 Biodiversity

Issue

The Project would result in the clearing of vegetation which could impact on threatened flora and fauna species and communities.

Consideration

The Project would require clearing of:

- 8.55 ha for expansion of the landfill, 7.2ha of which is native vegetation; and
- 1 ha for construction of the pipeline, 0.1ha of which is native vegetation.

A biodiversity assessment was undertaken as part of the EA and involved desktop investigations and targeted field surveys of the landfill site, pipeline route and proposed biodiversity offset area. The assessment considered the impacts of the Project on NSW and nationally listed threatened flora and fauna species, with reference to the NSW *Threatened Species Conservation Act, 1995 (TSC Act)* and the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)*. The assessment identified the biodiversity offset requirements for the Project using OEH's *Biobanking Assessment Methodology, 2009*.

Vegetation Communities

The vegetation communities potentially affected by the Project, and their status in relation to the TSC Act and EPBC Act, are shown in Table 5.

***Table 5**: Vegetation communities*

Site	***Vegetation Community***	***Listing (TSC, EPBC)***
Landfill site and proposed offset area (adjacent to site)	*Sugarloaf Lowlands Bloodwood-apple Scribbly Gum Forest*	None
	Freemans Peppermint-apple Bloodwood Forest	None
	Red Mahogany-paperbark Thicket	None
	Coastal Plains Scribbly Gum Woodland	None
	Sugarloaf Lowlands Bloodwood-apple Forest	None
Pipeline route	*Swamp Oak-Rushland Forest*	EEC[1]
	Swamp Oak-Sedge Forest	EEC[1]
	Red Mahogany-Paperbark Thicket	None
	Foreshore Redgum-Rough-barked Apple Forest	None
	Narrabeen Alluvial Sedge Woodland	None
	Coastal Plains Smooth-barked Apple Woodland	None
	Coastal Plains Scribbly Gum Woodland	None
	Freemans Peppermint-apple Bloodwood Forest	None
	Sugarloaf Lowlands Bloodwood-Apple Scribbly Gum Forest	None

[1]EEC – Endangered Ecological Community as listed under the TSC Act or EPBC Act.

The total area of native vegetation proposed to be cleared for expansion of the landfill is 7.2ha, affecting the five vegetation communities shown in Table 5. Construction of the pipeline would be largely within the road reserve and would affect moderate to highly modified exotic grasses. An area of less than 0.1ha of native vegetation would be impacted for the pipeline, however this does not include the Endangered Ecological Communities (EEC) identified in Table 5.

Flora

Five flora species listed as vulnerable under the TSC Act and EPBC Act were identified as potentially occurring within a 5km radius of the site. Targeted field surveys identified the presence of four (4) of these species in the study area, including the landfill site, pipeline route, proposed offset area and land adjacent to the landfill that would not be impacted by the Project (see Table 6 and Figure 4).

***Table 6**: Flora species*

Site	***Flora***	***Listing (TSC, EPBC)***
Landfill site	*Tetratheca juncea (*Black-eyed Susan)	Vulnerable
	Grevillea parviflora ssp. *Pariflora* (Small-flower Grevillia)	Vulnerable
Pipeline route	*Tetratheca juncea (*Black-eyed Susan)	Vulnerable
	Grevillea parviflora ssp. *Pariflora* (Small-flower Grevillia)	Vulnerable
	Angophora inopina (Charmhaven Apple)	Threatened
Proposed offset area (adjacent to site)	*Acacia bynoeana*	Threatened
	Angophora inopina (Charmhaven Apple)	Threatened

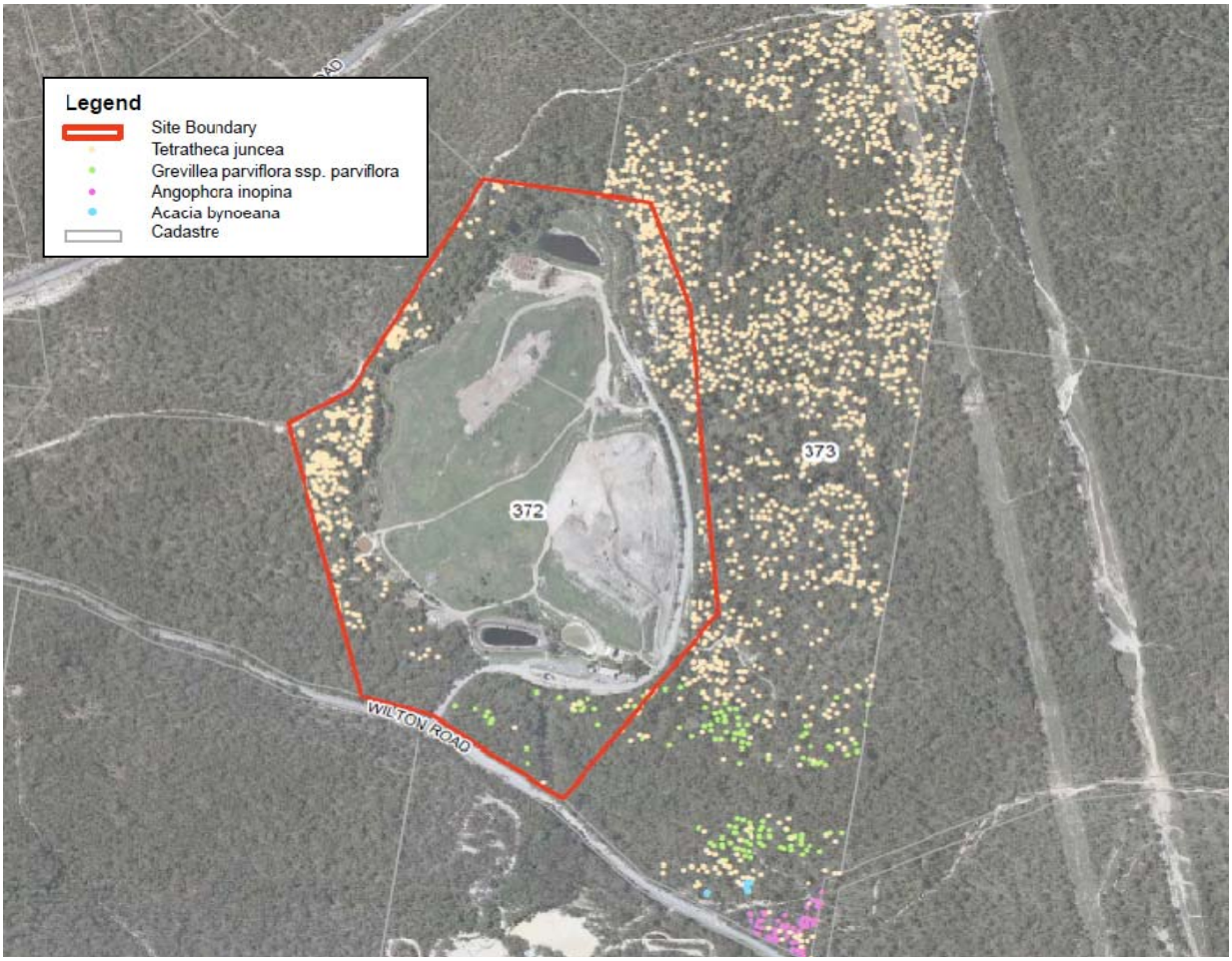

***Figure 4:** Location of Threatened Flora Species*

Expansion of the landfill would result in the clearing of 2,302 plants of Black-eyed Susan (of the 2,333 recorded on the site). No Small-flower Grevillia plants would be affected (of the 280 recorded on the site).

Construction of the pipeline would not impact on any listed flora species as the pipeline is restricted to a 3m wide easement, the majority of which would be within the road reserve.

Fauna

Field surveys identified five threatened fauna species and four migratory bird species on the landfill site, the pipeline route and the proposed offset area adjacent to the site (see Table 7 and 8).

***Table 7**: Fauna species*

Site	***Flora***	***Listing (TSC Act)***
Landfill site	*Mormopterus norfolkensis* (East-coast Freetail Bat)	Vulnerable
Pipeline route	N/A	
Proposed offset area (adjacent to site)	*Mormopterus norfolkensis* (East-coast Freetail Bat)	Vulnerable
	*Miniopterus schreibersii oceanensis (*Eastern Bent-wing Bat)	Vulnerable
	*Miniopterus australis (*Little Bent-wing Bat)	Vulnerable
	*Petaurus norfolcensis (*Squirrel Glider)	Vulnerable
	*Daphoenositta chrysoptera (*Varied Sittella)	Vulnerable

***Table 8**: Migratory bird species*

Site	***Flora***	***Listing (EPBC Act, CAMBA, JAMBA)[1]***
Landfill site	*Chenonetta jubata (*Australian Wood Duck)	Migratory
	*Haliastur sphenurus (*Whistling Kite)	Migratory
	*Hirundapus caudactus (*White-throated Needletail)	Migratory & JAMBA
Pipeline route	*Haliaeetus leucogaster (*White-bellied Sea Eagle)	Migratory & CAMBA
Proposed offset area (adjacent to site)	*Haliaeetus leucogaster (*White-bellied Sea Eagle)	Migratory & CAMBA

[1] CAMBA – China-Australia Migratory Bird Agreement and JAMBA – Japan-Australia Migratory Bird Agreement (two bilateral agreements relating to the conservation of migratory birds.

Expansion of the landfill and construction of the pipeline would not impact on the identified threatened fauna species or migratory bird species.

In summary, the biodiversity assessment concluded that the Project would only impact significantly on one flora species, *Tetratheca juncea* (Black-eyed Susan). These impacts are directly attributed to clearing for expansion of the landfill. Construction of the pipeline would not impact on any threatened flora or fauna species.

Based on the SEWPAC referral guidelines for *Tetratheca juncea,* the landfill site can be considered an important population, as there are greater than 1,000 clumps (2,333 plants) at an estimated clump density of 340 clumps/ha. The landfill site is also located within an identified area of important habitat under the guidelines. The clearing of the 8.55ha of vegetation for expansion of the landfill would result in the loss of 2,302 *tetratheca* plants, equating to 98.6% of the population recorded within the landfill site, and 17% of the local population that is estimated at 13,047 plants.

An EPBC Act referral was submitted to SEWPAC on 18 May 2011. The Commonwealth Minister for SEWPAC deemed the proposed actions to be a controlled action on 17 June 2011. SEWPAC reviewed the Proponent's biodiversity assessment and raised no issues, but requested further information regarding the proposed biodiversity offsets, which was later submitted and addressed by the Proponent (see below).

OEH also reviewed the biodiversity assessment and raised no issues. The Department is satisfied that the assessment adequately identifies the potential impacts of the Project on threatened flora and fauna species.

Biodiversity Offsets

In order to offset the negative impacts on threatened flora, in particular *Tetratheca juncea*, a biodiversity offsetting assessment was prepared for the Project. The assessment utilised the *Biobanking Assessment Methodology* (DECCW, 2009) to estimate the offsetting requirements for the Project.

The biodiversity offsetting assessment concluded that 392 Ecosystem Credits and 33,853 *Tetratheca juncea* Species Credits would be required to offset the Project.

The Proponent proposed an Offset Strategy for the Project comprising dedication of:
- the remainder of the landfill site that would not be cleared;
- a portion of the adjacent land (immediately to the east of the landfill site – referred to as Lot 373 see Figure 4); and
- an additional suitable area of land (to be purchased by the Proponent).

The proposed Offset Strategy would generate:
- 153 Ecosystem Credits for the vegetation communities that would be impacted by the Project ('like for like');
- 27 Ecosystem Credits for other vegetation types; and
- 69,792 Tetratheca juncea credits, well in excess of the number required (ie. 33,853).

An additional 239 Ecosystem Credits of 'like for like' vegetation would need to be provided by the additional suitable land yet to be purchased by the Proponent. The Proponent has committed to purchasing this additional land, and then undertaking a biobanking assessment over that land to ensure sufficient ecosystem credits are generated. A parcel of Crown Land has been identified and an 'in principle' agreement to its purchase has been reached. The selection of the parcel of land was based on a number of criteria, including:
- containing similar ecosystems and species as present at the landfill site;
- being within reasonable proximity to the landfill site; and
- being available for purchase by the Proponent.

The Department is satisfied that the Proponent has taken appropriate measures to identify suitable land to make up the shortfall in Ecosystem Credits and therefore meet the offsetting requirements for the Project.

SWEPAC considered additional information provided by the Proponent relating to the proposed offset strategy, including an assessment of the additional land yet to be purchased. SEWPAC is satisfied with the biobanking assessment and require the offset strategy to be implemented (land secured) prior to undertaking the proposed works.

Similarly, the OEH supports the proposed use of biobanking to provide and secure biodiversity offsets for the Project. The OEH re-confirmed the need for its establishment, purchase and retirement of ecosystem and species credits prior to the commencement of any construction works. The OEH provided recommended conditions to this effect and the Department has incorporated these recommended conditions, including the Crown's requirement for the purchase of the land by the Proponent.

Apart from the Offset Strategy, a number of additional management measures are proposed to mitigate and manage potential impacts on flora and fauna. These include:
- preparation of a Vegetation Management Plan, including Weed Management sub-plan;
- preparation of a Fauna Management Plan;
- preparation of a Translocation Plan; and
- implementation of species specific mitigation measures in accordance with relevant Recovery Plans, Threat Abatement Plans or Priority Action Statements.

Conclusion

Whilst the Project would result in the removal of approximately 7.2 ha of native vegetation and is likely to impact significantly on the *Tetratheca juncea* species, the Department considers that the proposed management measures and offset strategy would adequately manage and offset the biodiversity impacts of the Project.

To manage and offset the impacts on biodiversity, the Department together with the OEH and SEWPAC recommends a number of conditions which require the Proponent to:

- implement the proposed offset strategy prior to commencement of construction, including purchase and retirement of 392 Ecosystem Credits and 33,853 Species Credits (for Tetratheca juncea);
- ensure pre-clearance surveys are undertaken by a suitably qualified and experienced ecologist;
- ensure translocation of any threatened fauna is in accordance with OEH policy; and
- develop a Translocation Plan, Vegetation Management Plan, Fauna Management Plan and Final Landform and Rehabilitation Management Plan for the Project.

5.1.3 Odour

Issue

Operation of the AWMF, through the processing of waste, could result in potential odour impacts to nearby residential receivers.

Consideration

A number of submissions raised issues relating to odour from the existing landfill operations.

The site is located approximately 4km west of Toronto and approximately 800m south-east of the township of Awaba, which is the location of the closest receiver. The site is located in undulating topography and surrounded by native bushland.

The EA indicates that during future operations of the expanded landfill, the primary odour source would be the active and/or exposed tipping face, with lower emissions coming from the leachate storage ponds and intermediate cover areas. Negligible impacts are expected to occur from additional facilities proposed at the site, including the waste transfer station and additional reuse centre, wheel wash facility, and the underground package treatment plant and pipeline. No construction related sources of odour were identified.

The EA included a quantitative assessment of potential odour impacts for the Project. The assessment was undertaken in accordance with the '*Approved Methods and Guidance for the Modelling and Assessment of Air Pollutants in New South Wales'* (NSW DEC, 2005). Whilst the AWMF is located within a sparsely populated rural area, an odour assessment criterion of 2 odour units (OU) (the most stringent criterion) was adopted for the assessment.

Two operational scenarios were modelled to account for variations in the location of odour emitting sources as landfilling progresses over the course of the landfill life. The highest odour emissions from landfills occur from the active tipping face and the scenarios chosen represent snapshots of the landfill life where the active tipping face is located closest to residents to the northwest and southeast respectively.

The two scenarios modelled were:
- Scenario 1: represents worst case impacts when active landfill is occurring towards the north of the site and closest to the town of Awaba; and
- Scenario 2: represents a worst case scenario where the landfill is approaching the end of its life and odour emissions across a maximum footprint are expected.

The results of the odour assessment are detailed in Figures 6 and 7.

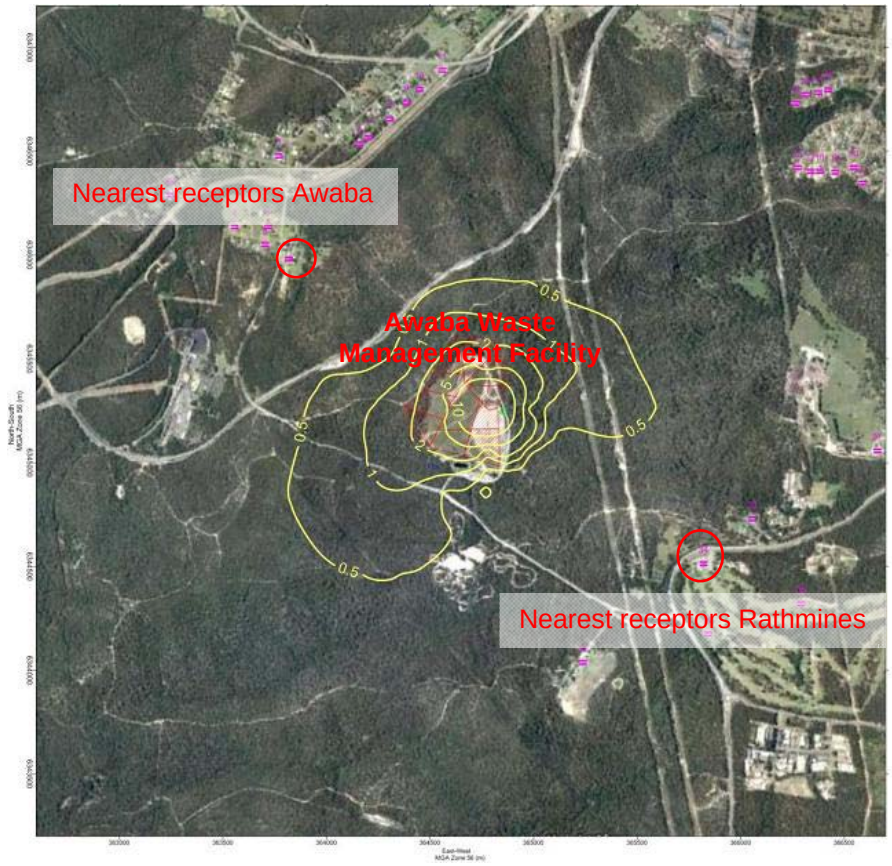

Figure 6: *99th percentile predicted odour levels for Scenario 1*

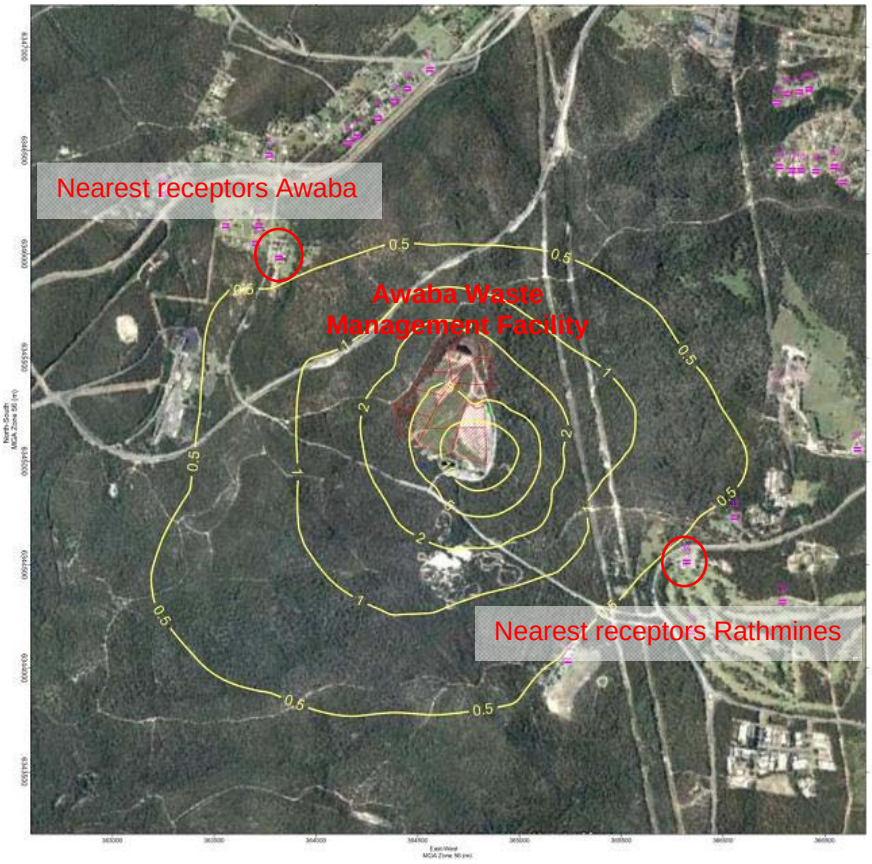

Figure 7: *99th percentile predicted odour levels for Scenario 2*

The results indicate that the predicted ground level concentrations (GLC) at any residential receptor are significantly less than the applicable 2 OU criteria and below 1 OU (the odour threshold or theoretical odour level at which no impact is experienced) within 500m of the site.

Notwithstanding, the Proponent proposes to implement a number of management measures to further reduce any potential odour impacts from the site. These include:

- placement of daily over the active landfill face;
- capping and covering of the waste emplacement area;
- sub-surface gas monitoring program; and
- surface gas emission monitoring program.

The EPA undertook a review of the odour assessment for the Project and was satisfied that there would be a low risk of potential odour impacts. The EPA considered that its existing Environment Protection Licence (EPL) condition relating to odour, which states that the licensee must not cause or permit the emission of any offensive odour from the premises, is sufficient for the Project.

Conclusion

The Department is satisfied that predicted odour emissions from the Project would comply with the relevant odour criteria at all residential receivers. As such, both the Department and EPA are satisfied that odour emissions would be managed and would not pose an unacceptable amenity issue for surrounding receivers. The Department has also incorporated the recommendation of the EPA in the approval conditions, which requires the Proponent to not cause or permit the emission of offensive odour from the site. Further, the Department has also recommended that the Proponent be required to prepare and implement an Air Quality and Odour Management Plan to manage and monitor potential emissions from the site.

5.1.4 Noise and Vibration

Issue

Operation of the AWMF, through the processing of waste, could result in potential noise and vibration impacts to nearby receptors.

Consideration

The AWMF is located approximately 4km west of Toronto and approximately 800m south-east of the township of Awaba. The closest sensitive receivers are considered to be the residential properties in Awaba (800m) and residences towards Toronto (1.1km), as well as residential properties at Rathmines located in close proximity to the access road to the Rathmines No.6 WWPS.

The site is located in undulating topography and surrounded by native bushland. The topographic features surrounding the Site are likely to provide a significant buffer between the Site and potential noise receivers during both the construction and operational phases of the Project. The AWMF is also surrounded by dense natural vegetation which may serve to further attenuate noise emissions.

Construction Noise and Vibration

There would be intermittent noise and vibration emissions from the proposed works during the construction phase associated with excavators and other heavy vehicles used to transport materials, as well as noise during trenching activities for the sewer pipeline. Minimal increases in traffic movements during the construction phase are anticipated.

Construction noise at sensitive receivers has been predicted using 'maximum' equipment sound power levels given in the draft *Construction Noise Guideline* (DECC, 2008) coupled with a loss of distance over flat ground. Resultant noise has not been added, rather the loudest noise source has been assumed to be representative of the overall noise level. DECC's *Interim Construction Noise Guideline* (DECC, 2009) stipulates a noise guideline of 75dB(A) which equates to the 'highly noise affected' management level for construction noise received at residences.

The likely maximum sound level generated at the AWMF during construction would be below the 'highly noise affected level' of 75dB(A) prescribed by the *Interim Construction Noise Guideline* (DECC, 2009) for construction noise received at residences, which is predicted to be 58 dB(A). Noise levels are also predicted to decrease as the distance increases from the AWMF.

While the maximum noise level associated with the construction of the pipeline is predicted to be above the 'highly noise affected level' of 75dB(A) [ie. around 93-96 dB(A)], this maximum construction noise level would not be experienced for extended periods of time at any one location. Noise levels would decrease with increased distance from the pipeline works, such that receivers over 110m from the pipeline works within the road reserves should not experience noise above the 'highly noise affected level' of 75dB(A). Whilst some receivers from the pipeline are located within 10m, the duration of the works, being intermittent and for a short period, are likely to cause nuisance rather than prolonged impact.

Given the topographic and land use characteristics of the site and the vegetation buffer surrounding the AWMF as well as the short construction duration for the pipeline, the Department considers that construction noise associated with the Project would not have significant impacts on potential sensitive receivers.

Vibration effects associated with the proposed works at the AWMF are unlikely given the distances to potential receptors. Vibration effects associated with the sewer pipeline construction may be perceptible to users of the Dorrington Road Business Park and the few residents occupying properties in close proximity to the access road to the Rathmines No. 6 WWPS. However, the Department notes that given the nature of the trenching and installation works, any vibration effects would be short term. Additionally, machinery utilised during trenching is likely to be small scale as a result of the confined nature of the road reserve, and thus vibration effects are not anticipated to be significant or prolonged enough to affect the integrity of any surrounding buildings or structures.

The EPA assessed the predicted construction noise and vibration impacts and did not raise any concerns. The EPA noted that noise from construction of the rising main will not affect any resident for an extended period of time.

Operational Noise and Vibration

While the Project seeks to expand the operational life of the facility and include some additional waste related infrastructure, the EA concluded that the Project would not result in a significant increase in noise from the site.

The EA indicated that the distance of private properties from the AWMF (ie. 800m), in addition to the surrounding natural topography, would provide a natural buffer to mitigate any potential operational noise impacts from the facility. The EA outlined that the proposed AWMF would meet the existing limits of 45 dB(A) for daytime operations, as set out in the EPA's EPL for the site.

The EPA reviewed and considered the Proponent's noise assessment for the Project. The EPA noted that the intensity of operations at the subject premises is not proposed to increase and therefore it is expected that operational noise levels would not change significantly over time. The EPA recommended noise levels that are consistent with existing noise level limits on the current EPL.

The Department agrees with the EPA's recommendation and has included existing noise limits from the EPL in the recommended approval conditions. Further, the Department has also recommended that the Proponent prepare and implement a noise management plan for the site to ensure noise emissions are managed and comply with the recommended limits. Other recommended conditions also require the Proponent to:

- restrict construction and operational activities to approved daytime hours;
- implement reasonable and feasible mitigation measures to minimise noise impacts; and
- undertake a comprehensive noise validation program within 3 years of commencement of the expansion project to ensure the Project complies with the predicted noise limits and that the noise limits are consistent with the EPA's *Industrial Noise Policy (2000)*.

Conclusion

Given the topographic and land use characteristics of the site and the vegetation buffer surrounding the AWMF as well as the short construction duration for the pipeline, the Department considers that construction noise associated with the Project would not have significant impacts on potential sensitive receivers.

In regards to operational noise, the Department is satisfied that operational noise would not increase as a result of the Project and that the recommended conditions would ensure any noise impacts are adequately managed.

5.1.5 Visual

Issue

The proposed landfill has the potential to result in impacts to the visual amenity of the locality.

Consideration

The AWMF is situated on undulating terrain, with the highest point of the site currently at 82.6m AHD. The Site is generally cleared, with tall open woodland forest to the north, south, east and west limiting the visibility of the AWMF from local areas.

Regional landscape features include Lake Macquarie to the east and distant views of relatively intact vegetated hills, several of which have transmission towers. Low density residential landuses also form part of the landscape and are particularly concentrated in the vicinity of Lake Macquarie to the east, including Rathmines and Toronto. The site is approximately 800m south-east of the township of Awaba, where the nearest residential receivers to the Site are located.

In addition to residential uses, the surrounding area includes industrial, commercial, recreational and rural land uses, as well as rail and road infrastructure. The Eraring Power Station is a dominant landscape feature closer to Lake Macquarie.

The site is currently not visible from adjoining lands, roadways or residential areas. Similarly the sewer pipeline route of Wilton, Wangi and Dorrington Roads is generally not visible from adjoining lands and surrounding residential areas, with the exception of the road reserve adjacent to the Toronto Golf Course on Wangi and Dorrington Roads. At this location the road reserve is partially visible due to limited vegetation screening.

A visual analysis was undertaken from two Awaba viewpoints using three dimensional (3D) representations of the proposed emplacement to provide an indication of the design profile of the ultimate landfill emplacement. The locations of the viewpoints were selected based on this vantage point at these locations. The viewpoints are detailed in Figure 8.

Figure 8: *Representative viewpoints in Awaba*

Construction Phase

Visual impacts associated with construction works at the AWMF would result from vegetation clearing and the use of mobile construction equipment. However, existing vegetation screening and local topography provides a visual barrier at the AWMF and impacts are anticipated to be short term and minimal.

Short term impacts during trenching and pipeline installation works would be associated with vehicles and equipment, site facilities and stockpiles of materials within the road reserves. These impacts would be short term and are not considered to be significant.

Operational Phase

The proposed expansion of the AWMF has the potential to generate minor impacts on the visual amenity and landscape features of the area, primarily in Awaba. Photomontages of works associated with Stage A, B and C are detailed in Figures 9 and 10. It should be noted that the emplacement mound, while shown in a distinct contrasting orange colour to assist in the visual interpretation, would only be seen during the final waste emplacement phase of each Stage and would be progressively revegetated.

Figure 9: *Views from Viewpoints 1 and 2 showing proposed emplacement for Stage A*

Figure 10: *Views from Viewpoints 1 and 2 showing proposed emplacement for Stages B & C*

From vantage points in Awaba, some 800 metres from the AWMF, visual impacts are not likely to be noticeable during Stage A. During Stage B and Stage C, the emplacement area would only be visible during the final phase of filling of each Stage once the emplacement area has been filled to a level above the surrounding ridgelines. This would be short term as progressive landscaping and revegetation of the landfill cells would result in the cells being of similar colour and blending in with the surrounding landscape.

Notwithstanding, a number of management measures have been proposed by the Proponent to minimise visual impacts, including:

- daily covering and progressive landscaping and rehabilitation to minimise the area of active landfill face that is exposed and provide for colour blending;
- use of shade cloth on construction site fencing along the sewer pipeline route to minimise views of construction works by road users; and
- progressively revegetate and rehabilitate each landfill cell.

Conclusion

The Department considers that given the distance between the AWMF and nearest receivers, together with progressively covering and revegetation of the emplacement areas, the Project is not expected to

result in any adverse impact to the visual amenity of the locality. Any visual impacts to receptors at Awaba would be relatively short-term and distant.

The Department is satisfied that the impacts to visual amenity would be minimised through the implementation of the identified management measures such that the impacts are not considered significant.

5.1.6 Water Management (excluding leachate)

Issue

The proposed development has the potential to result in surface water and groundwater impacts.

Consideration

The AWMF is located in the vicinity of two un-named natural watercourses, one located to the south of the proposed development footprint within Lot 372 and the other to the south of Wilton Road, draining to culverts under Wilton Road approximately 220m east from the AWMF exit onto Wilton Road. Both watercourses discharge into Kilaben Bay within Lake Macquarie, approximately 3km east of the AWMF site. The existing Rathmines No. 6 WWPS, where the pipeline would be constructed to, is located approximately 200m from these un-named watercourses, near the discharge point into Kilaben Bay.

Groundwater monitoring bores at the site have been in place since 2006 and indicate depths ranging from 1.6m to 4.m across the site. Groundwater quality is variable, however groundwater monitoring data does not indicate any groundwater contamination from existing landfill operations.

Existing and Proposed Stormwater Management
Rain that infiltrates the active tipping face is treated as leachate. Management of leachate from the landfill is discussed in detail in Table 9 of this report.

Stormwater (dirty) currently flows into 4 sub-catchments which are then directed to one of the existing sediment basins (1 to 5) on-site for treatment, prior to discharge at one of the site's licensed (by EPL) stormwater discharge points. Stormwater quality is required to be monitored at these sites in accordance with the EPL. All EPL monitoring points are located to the south of the site where stormwater eventually flows into the un-named watercourse to the south.

Clean surface water that does not come into contact with landfilled areas is currently diverted around the landfill by stormwater drains/swales and discharged directly into the un-named watercourse to the south of the site. This arrangement would not change as a result of the Project.

However with the proposed Project, the AWMF site would be divided into 11 sub-catchments for surface water. Surface water diversion and stormwater management infrastructure would be constructed at the site to manage surface drainage so that landfilled and non-landfilled areas remain separated. In particular, to detain and treat dirty stormwater to an acceptable quality, the Project would result in:

- an expansion of the existing sediment basin to the south of the AWMF site; and
- consolidation of the three existing sediment basins into two new sediment basins adjacent to Area B.

Dirty stormwater would flow into one of the 11 sub-catchments before being directed by open diversion channels into one of the two new sediments basins for sediment removal and further treatment, prior to monitoring and discharge at a licensed (i.e. via EPL) point south of the landfill.

The proposed stormwater infrastructure is illustrated in Figure 11.

Stormwater Behavior
The Project would increase the landfill footprint and steepen the slope of the capped surface when compared with existing surface gradients in Areas A and B. These modifications would generate

higher peak stormwater runoff rates when compared to existing conditions and would result in some changes to flood hydrology.

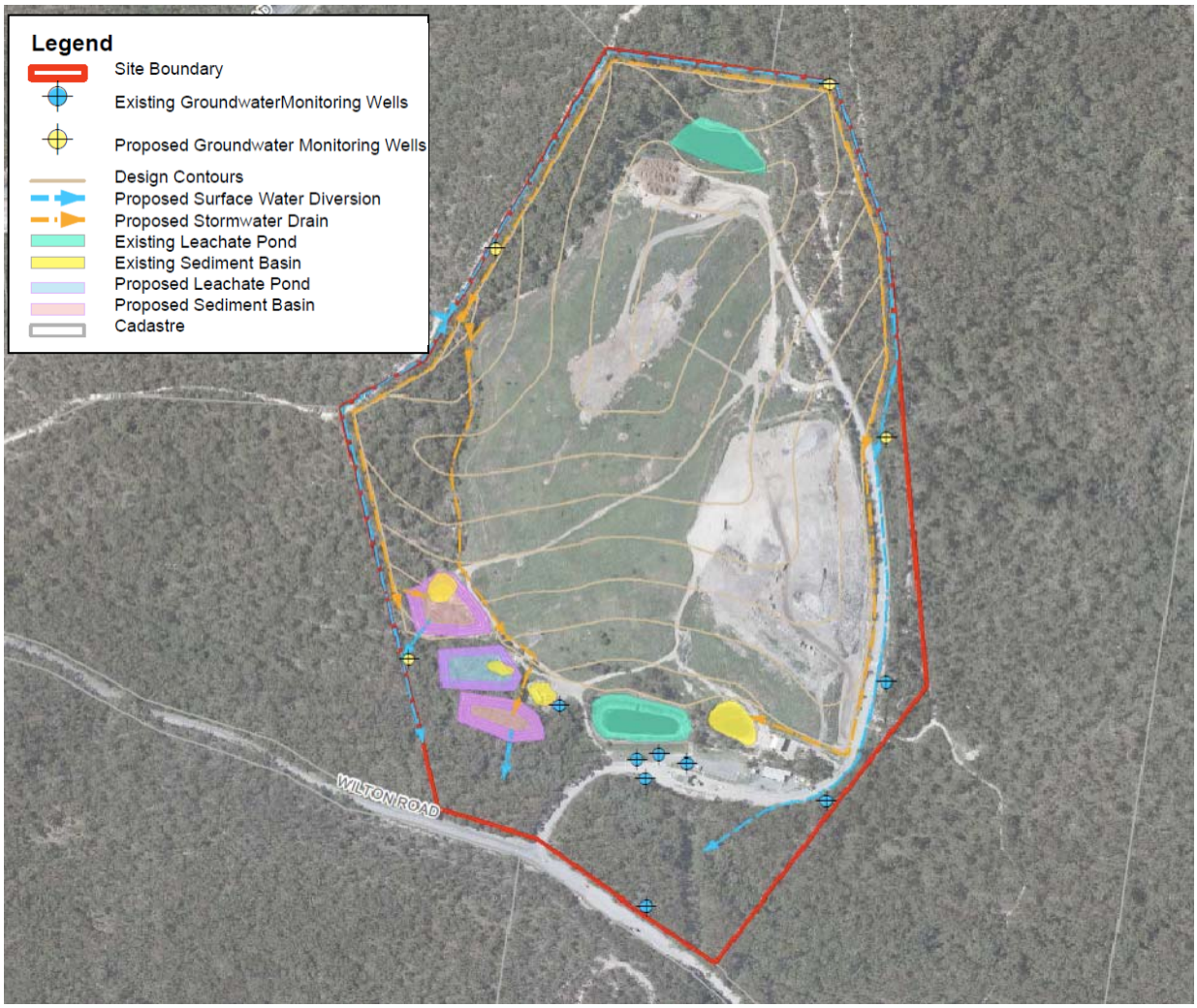

Figure 11: *Stormwater and Groundwater Management Infrastructure*

Flood modelling considered 1 and 2 year ARI storm events to assess the impact of the Project on runoff from frequent storms, and the 100 year ARI event to assess the impacts of the Project on runoff under large infrequent storms.

The modelling found that the Project would result in a slight increase in the peak flow velocity and duration, but flood levels would not exceed natural pre-development conditions. As such, the EA concluded that the Project would result in a negligible impact on the on-site watercourse to the south of the landfill (Lot 372).

The NOW, Council and the OEH did not raise any concerns regarding stormwater behaviour including potential flooding impacts.

In regards to stormwater velocity, modelling found that the proposed open stormwater diversion channels would be required to convey stormwater runoff to sediment basins to facilitate the conveyance of 10 year ARI peak stormwater flows. More importantly, the modelling found that the proposed sediment basins are sufficient in size and capacity to reduce peak stormwater flows to levels lower than under pre-development conditions. As such, the Department has incorporated a requirement for the Proponent to restrict stormwater run-off from the site to pre-development rates or less as part of the recommended conditions.

The Department is therefore satisfied that the Project would not result in significant impact on flood levels and would restrict stormwater run-off from the site to pre-development rates or less.

Stormwater Quality

Construction works at the AWMF and proposed pipeline route could potentially impact on local surface water quality if appropriate stormwater runoff measures are not implemented. In particular, trenching works along the access road leading to the Rathmines No. 6 WWPS would be in close proximity to Kilaben Bay.

To manage these potential impacts, the Department has recommended conditions requiring the Proponent to implement standard erosion and sediment controls in accordance with the EPA's *Managing Urban Stormwater: Soils and Construction Volume 2* which would be documented in the Construction Environmental Management Plan (CEMP) for the Project.

Further, if surface water is found to be contaminated during construction, it would be managed in accordance with the Contamination Management Plan for the Project.

Water quality modeling in the EA was used to investigate stormwater runoff quality from the Site under pre and post (worst-case) development conditions.

This modelling found that the proposed sediment basins at the landfill would be sufficient to reduce the quality of stormwater to acceptable levels in line with the EPA's relevant environmental targets for stormwater pollutants.

The basins would be designed in accordance with the conceptual design in the EA, applicable Australian Standards and industry standard best practice guidelines. The basins would also be lined to prevent potential interaction to groundwater.

The NOW recommended a number of conditions of approval including the requirement for the Proponent to prepare and implement a Site Water Management Plan for the Project including:

- a Site Water Balance (SWB);
- a Surface Water Management Plan (SMP); and
- a Groundwater Management Plan (GMP).

The Department formalised and built upon NOW's recommendations in the recommended conditions of approval (see conclusion below).

The Department is therefore satisfied stormwater quality would not be impacted upon by the construction and operation of the Project and that stormwater quality would comply with the relevant pollutant criteria, prior to discharge off-site.

Groundwater

During construction, groundwater may be encountered during the excavation of the proposed pipeline route, particularly in the lower lying coastal areas near the Rathmines No. 6 WWPS and in the vicinity of the culvert crossing under Wilton Road.

The Department considers that, if encountered during construction, groundwater would be controlled by dewatering via sumps. Formal procedures for managing any groundwater inflows would be documented in the CEMP for the Project. As above, if groundwater is found to be contaminated, it would be managed in accordance with the Contamination Management Plan for the Project.

The NOW requested that the site Water Management Plan for the Project include baseline data on (and monitoring of) groundwater levels during construction and operation of the Project. The Department has incorporated this requirement into the recommended conditions.

As previously discussed, groundwater monitoring data from the site does not indicate any groundwater contamination from the existing landfill operations.

In this regard, the Department notes prevention of future groundwater contamination at the site from landfilled waste would predominantly rely on the successful installation and performance of the

proposed leachate management system. The adequacy of the leachate containment and management system is discussed in detail in Table 9.

The Department is satisfied that any potential groundwater inflows could be effectively managed, should it be encounted during construction. The Department is also satisfied that the Project is unlikely to result in groundwater contamination during the Project's operation.

Conclusion

Based on the above, the Department is satisfied that potential impacts on water quality during construction can be effectively managed, subject to conditions.

Once operational, the Department is satisfied that the Project would result in a negligible impact to flood levels at the Site and that the proposed stormwater management system would be adequate. In this regard, the Department notes the key findings of the assessment which found that the proposed sediment basins are of sufficient capacity to restrict stormwater run-off from the Site to pre-development rates or less and would treat stormwater to an acceptable quality in line with the relevant EPA criteria.

The EPA, OEH and NOW were generally satisfied that any potential impacts of the Project on stormwater and groundwater would be adequately managed. Notwithstanding, the NOW requested that baseline groundwater levels and quality, and surface water flows and quality be obtained prior to any construction. The Department agrees with this requirement and has included it within the recommended conditions of approval.

Furthermore, surface water would be monitored for pollutant concentrations as part of the recommended conditions, prior to any discharge at a licensed discharge point. This monitoring would allow any issues with the stormwater management systems being detected so that remedial action could be implemented. In addition to these requirements, the recommended conditions also require the Proponent to:

- implement standard erosion and sediment controls during construction in accordance with the EPA's *Managing Urban Stormwater: Soils and Construction Volume 2;*
- design and install water management and collection system in accordance with EPA requirements, relevant Australian Standards and standard industry best practice;
- ensure that all licensed surface water discharges from the site comply with discharge limits (volume and quality) set for the project in any EPL; and
- prepare and implement a Soil, Water and Leachate Management Plan for the site in consolation with Council, NOW and the EPA.

5.2 Other Assessment Considerations

Table 9 presents the Department's consideration of other issues.

Table 9*: Other Assessment Considerations*

Issues	*Assessment*	*Recommendation*
Leachate Management	▪ Leachate is currently stored on site and is lost through evaporation, aeration and irrigation over existing cells. ▪ The Project incorporates independent leachate management systems for Areas A, B and C, with leachate collected by gravity systems feeding to a leachate sump within each of the three areas. Leachate would then be pumped from each of the sumps into leachate ponds (see Figure 11). ▪ The existing 6ML leachate pond to the south of Area C would be retained and a new leachate pond of approximately 8ML capacity would be constructed in the south-west area of the Site. ▪ The proposed leachate collection system is compliant with the NSW Government guidelines for	Recommended conditions require the Proponent to: ▪ prepare and implement a Soil, Water and Leachate Management Plan; ▪ design and install the leachate management and collection system in accordance with EPA's requirements, relevant Australian Standards and standard industry best practice; ▪ establish a Trade Waste Agreement with HWC for the discharge of leachate from the

	solid waste landfills. ▪ Surplus leachate generated at the AWMF would be pumped from a package pumping system to HWC's Rathmines No.6 WWPS for treatment. ▪ The Proponent would enter into a Trade Waste Agreement with HWC as part of this process. ▪ A leachate generation model demonstrated that at the final stages of landfilling, the maximum quantity of leachate generate each month would be approximately 8,765kL of which 5,000kL would be transferred off site. ▪ HWC raised no concerns regarding the proposed leachate management system at the AWMF and has confirmed that it could accommodate the proposed quality and quantity of leachate at its Rathmines WWPS. ▪ The Department and EPA are satisfied that the Project incorporates suitable measures to ensure that any impacts from leachate could be adequately managed. ▪ Notwithstanding, the Department and EPA have recommended a number of conditions should the Project be approved.	AWMF to sewer; and ▪ undertake treatment of any leachate proposed to be discharged to sewer, to the satisfaction of the HWC, prior to it being discharged from the Site.
Gas Collection	▪ The existing gas extraction infrastructure located at the AWMF would be retained and extended into the proposed landfill Areas A, B and C on a progressive basis. ▪ Additional landfill gas monitoring wells would also be installed to meet the monitoring requirements of the EPL for the Site. ▪ Captured landfill gases would be utilised to generate electricity on Site, which would then be fed back into the grid. ▪ Gas flaring would be used only when the generator is not operational. ▪ The Department and EPA are satisfied that the Project incorporated suitable measures to ensure that any impacts from gas generation would be adequately managed. ▪ Notwithstanding, the Department and EPA have recommended that the Proponent be required to prepare a Greenhouse Gas Management Plan for the Project.	Recommended conditions require the Proponent to: ▪ prepare and implement a Greenhouse Gas Management Plan for the Project;
Air Quality (excluding odour)	▪ An air quality assessment was completed for the Project. ▪ The assessment found that while trucks travelling along unsealed roads and the use of heavy machinery could result in the emission of dust and particulate matter, air quality impacts during construction would not be significant. ▪ Modelling undertaken to assess the potential air quality impacts during operation of the AWMF demonstrated that NO2 concentrations would be well below the assessment criteria and are unlikely to be substantial in the areas surrounding the AWMF site. ▪ Other compounds, namely CO, VOCs, NOx and SO_2 were also found to only be present in insignificant concentrations. ▪ No air quality impacts due to the pipeline or the ancillary facilities at the AWMF site are anticipated during the operation of the Project. ▪ Dust impacts are anticipated at times during the operation, however modelling predictions indicated that the maximum predicted 24-hour PM10 concentration at a residence is 7.1g/m^3 which is well	Recommended conditions require the Proponent to: ▪ implement all reasonable and feasible measures to minimise dust; and ▪ prepare and implement an Air Quality and Greenhouse Gas Management Plan for the Project in consultation with EPA.

	below the assessment criteria of 50 g/m^3. ▪ The EPA did not object to the proposal, noting that the predicted dust and NO_x impacts at sensitive receptors were well below EPA criteria. The EPA recommended a range of conditions which have been incorporated into recommended conditions. ▪ The Department is satisfied that air impacts would be negligible. Notwithstanding, the Department prepare and implement an Air Quality and Greenhouse Gas Management Plan for the Project.	
Greenhouse Gas Emissions	▪ A quantitative Scope 1 and 2 emission assessment was completed for the Project. ▪ Predicted total greenhouse gas emissions (GHG) over a 90 year period (2011-2100) under current operations are 1,584,923 T CO_2-e and under the proposed Project would be 3,210,456 T CO_2-e. ▪ Predicted annual average greenhouse gas emissions over a 90 year period (2011-2100) under current operations are 18,004 T CO_2-e and under the proposed Project would be 36,008 T CO_2-e. ▪ Capturing and flaring of gases is currently undertaken at the AWMF. Electricity generated on-site from captured landfill gas is fed back into the grid. ▪ Mitigation measures proposed by the Proponent to reduce GHG include: increasing waste diversion from the landfill; expansion of the existing gas extraction infrastructure to recover gas; and expansion of the existing gas monitoring system. • In addition, the Commonwealth's Clean Energy Legislative Package and carbon pricing mechanism also commenced on 1 July 2012 which aims to provide a coordinated nationwide response to greenhouse gas management, reduce Australia's carbon pollution and provide incentives for industry to move to using clean energy. • Given the Commonwealths legislation, and the Proponent's proposed measures to reduce greenhouse gas emissions from the Site, the Department is satisfied that the GHG emissions of the Project would be acceptable and are likely to continue to improve.	Recommended conditions require the Proponent to: ▪ implement all reasonable and feasible measures to minimise energy use on site and greenhouse gas emissions; and ▪ prepare and implement a Greenhouse Gas Management Plan for the landfill in consultation with the EPA, detailing the measures that would be implemented to manage greenhouse gas impacts of the Project.
Traffic	▪ Construction of the Project is anticipated to result in a minor increase in traffic volumes with minor traffic impacts localised to Wilton, Wangi and Dorrington Roads during construction of the pipeline. ▪ Given the short duration of works along the pipeline route, any interruptions to traffic would not be prolonged. Traffic impacts associated with construction are therefore not considered to be significant. ▪ The existing operations at the AWMF generate approximately 170 vehicles per day. The Project would only result in minor, if any, intensification of the AWMF operations as the proposed works are primarily designed to prolong the life of the landfill. ▪ Traffic modelling results indicate that the existing intersection of Wilton and Wangi Roads is operating at capacity in the AM and PM peak periods, with large delays to vehicles turning right from Wilton Road onto Wangi Road. ▪ The Proponent has committed to the upgrading of the intersection of Wangi and Wilton Road. ▪ The RMS did not object to the Project and provided recommended conditions of approval which included the requirement to undertaken intersection upgrade	Recommended conditions require the Proponent to: ▪ prepare and implement a Construction Traffic Management Plan; ▪ ensure that the internal roads and parking associated with the Project are constructed and maintained in accordance with the latest versions of AS 2890.1 and AS 2890.2; and ▪ upgrade the intersection of Wilton and Wangi Roads prior to the commencement of operation, to the satisfaction of the RMS.

	works prior to the commencement of operation. ▪ The Department is satisfied that traffic impacts associated with the construction and operation of the Project would not be significant and could be appropriately managed through the implementation of the recommended conditions.	
Heritage	▪ The heritage assessment concluded that no non-Aboriginal heritage items are located within the Site or along the pipeline route. ▪ An area of potential archaeological sensitivity was identified in the south-western portion of the Site. The assessment recommended that additional archaeological survey and excavation works should be undertaken in this area prior to construction. ▪ The assessment identified three items of Aboriginal cultural heritage (culturally modified trees) during a site survey of the AWMF. Of these items, only one tree would potentially be affected by the proposed expansion. This tree was no longer alive and may be relocated. ▪ Sub-surface testing identified one item of low archeologically significance within the AWMF site – a silcrete broken flake. Silcrete objects are one of the most common artefacts found in the region. ▪ A midden consisting of approximately 50 fragments of shell of moderate archaeological significance was identified within the pipeline route. ▪ The Proponent has committed to the implementation of the management measures recommended within its heritage assessment. ▪ OEH acknowledged that the heritage assessment had been undertaken in accordance with OEH's assessment guidelines and agrees with the management measures proposed by the Proponent. ▪ The OEH raised no objection to the Project and provided recommended conditions of approval. ▪ The Department is satisfied that the Project would not have a significant impact on heritage item and that any potential impacts can be appropriately managed through proposed mitigation and management measures. ▪ Notwithstanding, the Department has recommended that conditions recommended by the OEH be incorporated into the conditions of approval.	Recommended conditions require the Proponent to: ▪ consult with and involve all the registered Aboriginal parties for the project in the ongoing management of the Aboriginal cultural heritage values; ▪ prepare and implement a Cultural Heritage Management Plan in consultation with OEH and registered Aboriginal parties; ▪ provide for the monitoring of ground disturbing activities by registered Aboriginal parties; ▪ implement an Aboriginal Cultural Education Induction; and ▪ cease all works in the event that indigenous or non-indigenous cultural material is found during any works and consult with relevant agencies and the local Aboriginal community.
Hazards	▪ A Preliminary Hazard Analysis (PHA) was undertaken which identified that the quantities of dangerous goods that would be stored or processed on Site would not exceed that relevant screening threshold set out in the Department's guidelines *Applying SEPP 33*. ▪ The Department is satisfied that the qualitative approach to the assessment of Site hazards and risks within the PHA is appropriate. ▪ A number of controls are proposed, including signage, video surveillance of vehicles, training and supervision provisions, security patrols and various fire management measures. ▪ The Department is satisfied that the PHA adequately demonstrates that the Project would not significantly increase off-site risks and that existing and proposed safeguards are appropriate. ▪ Notwithstanding, recommended conditions require the Proponent to update existing safety plans and programs to incorporate the expansion Project.	Recommended conditions require the Proponent to: ▪ amend existing systems to take account of the proposed expansion, including the Fire Management Plan, Environmental Management Plan, Emergency Response Plan and Landfill Gas Monitoring Program.
Subsidence	▪ The AWMF and proposed pipeline route are located within the West Lake Mine Subsidence District.	Recommended conditions require the Proponent to:

	▪ The proposed landfill cells are underlain by coal seams which are likely to be mined sometime in the future. ▪ Potential impacts from mine subsidence include ponding on the piggy back liner thereby hindering the functioning of the leachate collection system, damage to the proposed gas collection system and structural damage to surface infrastructure and the sewer pipeline. ▪ Modelling undertaken on behalf of Centennial Coal (who holds a mining lease beneath the AWMF) determined maximum subsidence parameters appropriate for the AWMF. ▪ The Mines Subsidence Board (MSB) raised no objection to the Project subject to it being consulted, the subsidence parameters being met and an approval being obtained from the MSB under the *Mine Subsidence Compensation Act 1961*. ▪ These recommendations from the MSB have been incorporated into the Department's recommended conditions. ▪ The Department is satisfied that subsidence risks could be appropriately mitigated and managed through detailed design taking into account the requirements of the MSB.	▪ design and construct the landfill cells in accordance with the maximum design parameters for the AWMF and in accordance with the requirements of the MSB.
Final Landform	▪ Following completion of filling, the final emplacement level for the AWMF would be 110m AHD. ▪ The Proponent proposes progressive capping and rehabilitation of the total landfill footprint. ▪ The Department is satisfied that an appropriate final landform will be achieved through the preparation of a Landfill Closure and Rehabilitation Management Plan in consultation with the EPA and has recommended conditions accordingly.	Recommended conditions require the Proponent to: ▪ prepare and implement a Landfill Closure and Rehabilitation Management Plan in consultation with the EPA.

6 CONCLUSION

The Department has assessed the merits of the Project having regard to the objects of the EP&A Act and the principles of ecologically sustainable development.

Overall, the Department considers that:

- there is a justified demand for putrescible and non-putrescible landfilling at the AWMF, having regard to ongoing demand for waste disposal, the alternatives that have been considered by the Proponent and the Proponent's commitment to resource recovery and alternative waste technologies as recognised in its Waste Strategy;
- the additional annual landfill capacity being sought is comparable to established demand in the Lake Macquarie LGA;
- the Project demonstrates a suitable level of resource recovery, is consistent with the WARR Strategy targets and Clause 123 of the Infrastructure SEPP*;*
- the project is a critical piece of waste infrastructure that would meet the need for future putrescible waste disposal in the Lake Macquarie LGA; and
- the 2.5 million tonnes of additional landfill capacity being sought is acceptable from an environmental perspective.

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The Department has prepared recommended conditions of approval for the Project (see Appendix B) and summarised these conditions in Appendix A. These conditions are required to:

- prevent, minimise, and/or offset adverse impacts of the Project;
- set standards and performance measures for acceptable environmental performance;
- ensure regular monitoring, reporting and auditing of the environmental performance with a view to continually improving the performance of the operations over time; and
- provide for the ongoing environmental management of the Project.

The Department has provided the draft conditions of approval for the Project to relevant government authorities for comment, and has incorporated these comments into the conditions of approval where appropriate.

The Proponent has reviewed and accepts the recommended conditions.

This assessment has concluded that with the implementation of the recommended conditions of approval, the potential impacts of the Project can be mitigated and/or managed to ensure an acceptable level of environmental performance.

Overall the Department considers that the Project has been adequately justified on economic, social and environmental grounds and is in the public interest and should be approved, subject to the conditions in the project approval set out in Appendix B.

7 RECOMMENDATION

It is RECOMMENDED that the Planning Assessment Commission:

- **consider** the findings and recommendations of this report;
- **approve** the project application, subject to conditions, under section 75J of the Environmental Planning and Assessment Act 1979; and
- **sign** the attached project approval (see Appendix B).

C. Ritchie 2/5/13

Chris Ritchie
Manager - Industry

2.5.13

Chris Wilson
Executive Director
Development Assessment Systems and Approvals

APPENDIX A: SUMMARY OF CONDITIONS OF APPROVAL

Aspect	*Condition*	*Requirement*
Schedule 3: Administrative Conditions		
Obligation	1	Obligation to minimise harm to the environment.
Limits of approval	5	Ensure that no more than 150,000 tonnes per annum of waste is accepted at the landfill in any one calendar year.
Acquisition of Land	9	Acquire Lot 372 DP 723259 from the Crown under the *Land Acquisition (Just Terms Compensation) Act 1991.*
Schedule 4: Specific Environmental Conditions		
Waste Management	1 - 2	Only receive waste permitted by an EPL, and ensure waste classification of construction waste generated on site and disposed of to a facility lawfully permitted to accept the waste.
	3 - 5	Implement resource recovery program, screening of incoming wastes and implementation of waste and resource recovery monitoring program.
	6	Enter into a Trade Waste Agreement with Hunter Water Corporation.
	7	Undertake landfill operations to minimise exposed areas, maximise compaction and progressively cap and revegetate landfill cells.
	8	Cover material requirements.
	9	Implementation of litter control.
	10 - 11	Cell design and lining system requirements.
Soil and Water	12	Water supply requirements.
	16	Surface Water discharge limits to comply with discharge limits set for the development in the EPA.
	17	Design and install stormwater management system in accordance with EA, Australian Standards and industry best practice guidelines; divert clean surface water and collect sediment laden water.
	18	Design and install leachate management system in accordance with EA, Australian Standards and industry best practice guidelines.
	19	Prepare and implement a Soil, Water and Leachate Management Plan, including: site water balance, erosion and sediment control plan, leachate management plan, surface water monitoring plan and groundwater monitoring plan.
	20	Prepare and implement Contamination Management Plan.
Air Quality	21	Prevent the emission of offensive odour.
	22	Dust criteria applying to the Project.
	23 - 24	Ensure dust generation on site is minimised.
	25 - 26	Prepare and implement an Air Quality Management Plan and a Greenhouse Gas Management Plan for the Landfill.
Noise	27	Comply with noise limits.
	28	Undertake a comprehensive Noise Validation for submission to the EPA by 21 January 2016.
	29	Operating conditions to minimise noise.
	30	Comply with operating hours.
	31 – 32	Prepare and implement a Construction Noise Management Plan and an Operational Noise Management Plan.
Transport	33 - 38	Ensure internal roads and parking consistent with requirements of relevant Australian Standard and prepare a Construction Traffic Management Plan.
Visual Amenity	39	Ensure lighting complies with relevant Australian Standards.
	40	Advertising signage shall not be erected without written approval.
Hazards	41	Implement suitable measures to manage pests, vermin and declared weeds.
	42	Prepare / update and implement Fire Management Plan.
	43	Prepare and implement Emergency Response Plan.
Heritage	44	Consultation with registered Aboriginal parties.
	45	Prepare and implement a Cultural Heritage Management Plan for the Project.
Biodiversity	50	Implement a Biobanking Offset Strategy.
	51	Enter into a Biobanking Agreement.
	54	Prepare and implement a Translocation Plan and requirements for the translocation of any threatened fauna found in the development site.
	55	Prepare and implement a Vegetation and Fauna Management Plan.
	56	Prepare and implement a Vegetation Clearing Protocol.

Landfill Closure and Rehabilitation	57-58	Prepare and implement a Landfill Closure Plan and Rehabilitation Management Plan.
Schedule 5: Environmental Management, Reporting and Auditing		
Environmental Management	1 - 2	Prepare and implement a Construction Management Plan and Landfill Environmental Management Plan.
Annual review	4	Undertake Annual Environmental Management Reviews.
Reporting and revision of plans	6 - 7	Report incidents and progressively revise plans.
Independent Environmental Audit	8 - 9	Undertake Independent Environmental Audits of the Project, the first within one year of commencement of operations and thereafter five-yearly.
Access to Information	10	Make specific information on the Project publicly available on the Proponent's website.
Community Education	10	Prepare and implement a Community education program focussing as a minimum of recourse recovery.

APPENDIX B: CONDITIONS OF APPROVAL

APPENDIX C: CONSIDERATION OF ENVIRONMENTAL PLANNING INSTRUMENTS

State Environmental Planning Policy (Major Development) 2005

SEPP (Major Development) identifies development to which the development assessment and approval process under Part 3A of the EP&A Act applies (and transitional Part 3A projects as per Schedule 6A of the EP&A Act). Schedule 1, Group 9 of the SEPP provided that a resource recovery or waste facility with a capacity to receive more than 75,000 tonnes per year of putrescible waste are a class of development to which part 3A applies.

The Project is therefore classified as a Major Project under the now repealed Part 3A of the *Environmental Planning & Assessment Act 1979* (EP&A Act) as it includes development for the purpose of a resource recovery or waste facility with a capacity to receive more than 75,000 tonnes per year of putrescible waste.

Part 3A of the EP&A Act, as in force immediately before its repeal on 1 October 2011 and as modified by Schedule 6A to the Act, continues to apply to transitional Part 3A Projects. Director-General's environmental assessment requirements (DGRs) were issued in respect of this Project prior to 1 October 2011, and the Project is therefore a transitional Part 3A Project.

Consequently, this report has been prepared in accordance with the requirements of Part 3A and associated regulations, and the Minister (or his delegate) may approve or disapprove of the carrying out of the Project under section 75J of the Act.

State Environmental Planning Policy (Infrastructure) 2007

The Infrastructure SEPP generally aims to provide a consistent planning regime for infrastructure and the provision of services in NSW.

The Department is satisfied that the matters for consideration under Clause 123 of the Infrastructure SEPP have been addressed in the detailed assessment of the Project (see Section 5.1).

The Department is therefore satisfied that the Project is generally consistent with the Infrastructure SEPP.

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

SEPP 33 aims to identify proposed developments with the potential for significant off site impacts, in terms of risk and/or offence (odour, noise etc). A development is defined as potentially hazardous and/or potentially offensive if, without mitigating measures in place, the development would have a significant risk and/or offence impact, on off-site receptors. SEPP 33 requires that a PHA be carried out on a potentially hazardous development to ensure that any hazards are systematically evaluated as part of the overall environmental assessment.

The Project is considered to be a potentially offensive industry as the waste related activities may potentially impact upon the surrounding localities, even after measures are taken to reduce potential impacts. A Preliminary Hazard Analysis (PHA) was carried out for the Project in accordance with the Department of Planning's *Hazardous Industry Planning Advisory Paper (HIPAP) No. 6* (*Guidelines for Hazard Analysis*) (refer to Appendix F).

The PHA identified the main hazards associated with the Project were transportation and depositing of hazardous waste materials, natural hazards such as geological subsidence or bushfire and fire at the landfill (waste or gas).

The Department's Hazards Unit has reviewed the Project, the EA and the PHA prepared by Cardno and is satisfied that, subject to the implementation of hazard and risk mitigation measures outlined in

the EA, the Project will not significantly increase the off-site impacts, and is therefore consistent with SEPP 33.

State Environmental Planning Policy No. 44 – Koala Habitat Protection

SEPP 44 aims to 'encourage the proper conservation and management of areas of natural vegetation that provide habitat for koalas to ensure a permanent free-living population over their present range and reverse the current trend of koala population decline'. Schedule 1 of SEPP 44 identifies areas of land that are classified as being 'Core Koala Habitat' and Schedule 2 identifies feed tree species pertaining to 'Potential Koala Habitat'.

An assessment against SEPP 44 was undertaken as part of the specialist flora and fauna studies for the AWMF and sewer pipeline route (see Appendix F). The assessments identified:

- one Schedule 2 tree species occurs within the Site, indicating occurrence of 'Potential Koala Habitat;
- no evidence of Koalas utilising the AWMF site, sewer pipeline route or wider study area based on scat and spotlight searches;
- no 'Core Koala Habitat' as defined by SEPP 44 occurs on the Site or sewer pipeline route as no evidence of a resident koala population was determined.

The Department is satisfied that the Project is generally consistent with SEPP 44.

State Environmental Planning Policy No. 55 – Remediation of Land

SEPP 55 aims to promote the remediation of contaminated land for the purpose of reducing the risk of harm to human health or any other aspect of the environment. The AWMF is defined as contaminated land and consequently SEPP 55 applies to the Project.

Under SEPP 55, a consent authority must consider a range of contamination issues before it can grant consent to carry out development on a site.

The Department has reviewed all contamination issues associated with the Project and outlined in the EA. A detailed assessment of these issues is provided in Section 5 of this report (in particular, see 'Section 5.1.6 Water Management and Section 5.1.7 Leachate Management and Gas Collection).

The Project does not involve changing the use of land, rather an extension of the current use. The Site would be remediated in accordance with the approved Landfill Closure Plan and Rehabilitation Management Plan for the Project, developed in consultation with the EPA and consistent with the relevant best practice guidelines/standards in NSW (see conditions 53 and 54 in Schedule 4 of the project approval).

The Department has reviewed the Project, the EA and all other supporting information and is satisfied that, subject to the implementation of the above recommended conditions of approval, the Project is consistent with SEPP 55.

Lake Macquarie Local Environmental Plan 2004

Pursuant to the Lake Macquarie Local Environmental Plan (LEP) 2004, the Site (Lot 372) is currently zoned as 9 – Natural Resources Zone. In this zone, waste management and/or recycling facilities (a building or place used for the collection, storage, abandonment, sorting and/or sale of waste materials and/or the preparation of those recycled materials for further use) is permissible with development consent. Therefore the proposed expansion of the AWMF is permissible with consent under the current LEP 2004.

The general objectives of the 9 – Natural Resources Zone are to provide land that has dual values as an economic natural resource and for environmental protection and recognise the dual values of the land and integrate economic use of the land with ecological sustainability.

In its assessment, the Department has considered the Project against the relevant objectives of the Lake Macquarie LEP 2004 and is satisfied that the Project would provide for the economic use of the land whilst, through biodiversity offsetting, provide for ecological sustainability.

The Department is therefore satisfied that the Project is consistent with the Lake Macquarie LEP 2004.

Draft Lake Macquarie Local Environmental Plan 2012

Under the Draft Lake Macquarie Local Environmental Plan (LEP) 2012 Lot 372 is zoned SP2 Infrastructure, which is a Special Purpose Zone and Lots 372 and 373 are marked as 'Waste or Resource Management Facility' on the Land Zoning Map. In zone SP2, development is permitted with consent for 'the purpose shown on the Land Zoning Map, including any development that is ordinarily incidental or ancillary to development for that purpose'. Therefore the Project is permissible with consent under the Draft LEP 2012 as the Land Zoning Map shows the purpose to be for Waste or Resource Management Facility.

The general objectives of the SP2 zone are to provide for infrastructure and related uses and prevent development that is not compatible with or may detract from the provision of infrastructure

In its assessment, the Department has considered the Project against the relevant objectives of the draft Lake Macquarie LEP 2012 and is satisfied that the Project provides for the provision of infrastructure and related uses.

The Department is therefore satisfied that the Project is consistent with the draft Lake Macquarie LEP 2012.

APPENDIX D: ENVIRONMENTAL ASSESSMENT

APPENDIX E: SUBMISSIONS

APPENDIX F: RESPONSES TO SUBMISSIONS & REVISED STATEMENT OF COMMITMENTS