



4 July 2012

Armidale Dumaresq Regional Landfill (MP06_0220)

PROPOSAL

This application seeks project approval to construct and operate a new regional landfill facility. The site is situated 12km east of Armidale on the Grafton Road. The site has an area of 86 hectares and is currently used as a grazing property.

The main activities associated with the Project include:

- A new landfill providing 750,000 tonnes of waste capacity over 50 years at a rate of up to 15,000 tonnes per annum (tpa) of waste;
- Associated infrastructure including; 5 landfill cells, leachate retainment and circulation system, internal access road and new intersection, office and staff amenities and diesel storage;
- Clearing 20.3 hectares of land and provision of a 61 hectare biodiversity offset scheme; and
- Subdivision.

The Proponent for this application is Armidale Dumaresq Council.

DELEGATION TO THE COMMISSION

The Project was referred to the Commission for determination under the terms of the Ministerial delegation dated 14 September 2011.

Dr Neil Shepherd AM and Mr Garry West were nominated as the Commission members for the Project. Dr Neil Shepherd AM chaired the Commission.

DEPARTMENT'S ASSESSMENT REPORT

On 12 April 2012, the Commission received the Director-General's Environmental Assessment Report. The report provided a detailed assessment of key issues including:

- Project need and the demand for a new landfill;
- Leachate management and the potential impact on Oxley Wild Rivers National Park; and
- Biodiversity impacts.

The report also considered other issues including landfill design and operation, energy recovery, land use conflicts, visual impacts, flooding and stormwater, air quality, noise, heritage and the site selection process.

The Department's assessment concluded that the proposal would have an acceptable environmental impact and would not add to existing pollution loads within the catchment. However, the Department only recommended approval for two out of the five waste cells as an incentive for Council to encourage greater waste minimisation practices.

CONSULTATION

The Department received a total of 104 submissions on the project. Issues raised during the exhibition period included:

- Water quality;
- Need for the Project;
- Visual impact;
- Biodiversity;
- Leachate migration;
- Cost and economic impacts;
- Air quality;
- Traffic; and
- Site selection.

One of the key issues of concern was the potential for downstream impacts on the Gara River catchment and the Oxley Wild Rivers National Park.

Commission Meetings with Key Stakeholders

Public Meeting

The Commission held a public meeting on 24 May 2012 at the Armidale Dumaresq Council Chambers to hear the public's views on the Department's Assessment Report and recommendation. Nine people spoke at the Commission meeting (see Appendix 1). The key issues raised at the meeting included:

- The risk of leachate migration and/or contaminated surface waters polluting the Gara River and sensitive downstream environments;
- Proximity of the site to the Gara River, World Heritage listed Oxley Wild Rivers National Park and the Gondwana Rainforest;
- Impacts on fauna and flora;
- Lack of data on groundwater characteristics of the site and the species composition of downstream fauna and flora;
- Uncertainty regarding risk management and remediation;
- Vegetation clearing;
- Slope of the site;
- Out-dated landfill design;
- Availability of alternative options (expanding existing landfill site, use of Alternative Waste Technologies (AWT), and transferring waste to local industry for power generation);
- Council's financial capacity to manage the landfill;
- Use of contractors to manage the landfill;
- Management of pests, weeds and litter;
- Odour; noise; smoke and dust impacts on surrounding properties and tourist facilities;
- Lack of consultation with NSW National Parks and Wildlife;
- Land use conflicts, particularly with existing dwellings and agricultural enterprises;
- Visual impact;
- Tourism impacts; and
- The site selection process.

Armidale Dumaresq Council

The Commission met with Armidale Dumaresq Council on 25 May 2012. The meeting focused on the following issues:

- Council's waste minimisation strategy;
- The Department's recommendation to approve only 2 of the 5 proposed cells;
- Leachate containment strategies and infrastructure requirements;
- Leachate characteristics;
- The risk of leachate contamination of the Gara River by means of migration or overflow;

- Groundwater characteristics of the site and the risk of groundwater contamination;
- Proximity of the site to the Gara River;
- Adequacy of proposed surface water diversion;
- Odour/Noise impacts;
- Visual impact;
- Site selection process; and
- The concept of a regional waste facility.

On 25 June 2012, the Commission received supplementary response from the Proponent (Appendix 2) addressing issues raised by speakers at the public meeting and by the Commission.

COMMISSION'S COMMENTS

Waste Minimisation

The Department's Assessment Report recommends approval to construct and operate only two of the proposed five landfill cells. The stated aim of limiting the approval to the first two cells is to act as an incentive to encourage greater waste minimisation practices. It is stated not to be 'an environmental limit'. The Commission interprets this to mean that it is not based on assessment of the potential environmental impacts of the Project itself.

Council disagrees with the Department's recommendation and considers that approval should be granted for five cells rather than two. Council argues that;

- Council's current waste recovery is performing well above the NSW average and is getting very close to the 2014 WARR targets; and
- Council has adopted additional waste diversion strategies since the submission of the EA, including the commencement of the domestic organics (garden and food wastes) service, which demonstrates their commitment to improving waste recovery.

Council is also concerned that approval to operate two cells rather than five represents a financial risk and an unnecessary level of uncertainty for Council's long-term waste security.

The issue of using the development consent process to drive waste avoidance and resource recovery was considered recently by the Commission in its report on the Woodlawn Waste Facility Project determination MP10_0012. In the Assessment Report for that Project the Department argued that it was undesirable to drive waste reduction targets by imposing volume based limits or caps on waste facilities in development consents and that more efficient and equitable mechanisms, such as the NSW Waste and Environment Levy, were available for achieving these waste reduction targets. The Commission agreed with the Department's position.

The Commission can see no logical reason for the substantial change to that position proposed for this Project. Effectively what is proposed is a one-off limit on capacity that does not really impact for almost 20 years. Exactly how this would drive continual improvement in waste avoidance and resource recovery is unclear. What is clear is that applying a two cell restriction will impose considerable uncertainty and some additional costs on Council.

However, the Commission accepts that the Department's intention to complement the State's waste avoidance and resource recovery strategies is a legitimate objective. If volume based limits or caps are not desirable, an alternative option might be to require Council to provide the Director-General with an independent review of Council's waste management performance and any recommendations for improvement at least 12 months before the proposed commencement of each additional cell. This will give time for consideration of any changes that may need to be implemented and the opportunity for the Director-General to require those changes before the new cell becomes operational. The review would need to report on Council's progress in meeting the current waste avoidance and resource recovery targets.

In the Commission's view this is a preferable way to complement other elements of the State's approach to waste avoidance and resource recovery without imposing additional uncertainty and financial risk on Council. The Commission has therefore approved construction and ultimate utilisation of all five cells, but has included a condition requiring a review of waste management performance prior to use of each new cell.

Surface Water Management

Concern was raised in submissions and at the public meeting about the capacity of the proposed stormwater management system to cope with extreme rainfall events and the potential for contaminated surface waters to pollute the Gara River and sensitive downstream environments.

The proposed stormwater management system is comprised of the following components:

- A diversion system - constructed around the perimeter of the site, to divert clean surface runoff around the site into the downstream creek system;
- A sedimentation basin - constructed downstream of the landfill to capture water runoff from all disturbed areas of soil during operation; and
- A dry basin - to be located in the lowest (north-eastern) corner of the site to collect and fully contain potential overflows from the sedimentation basin, including any emergency overflows from the leachate pond.

The Commission notes that the system has been designed to meet the environmental guidelines for Solid Waste Landfills. However, the Commission questioned whether this was adequate given the sensitivity of the site arising from its proximity to the Gara River and its location within the catchment of the Oxley Wild Rivers National Park and World Heritage Area. The Proponent has responded by significantly increasing the capacity of surface water management controls including:

- increasing the capacity of the sedimentation basin from 2,850m³ to a total minimum capacity of 5,250m³; and
- increasing the flood storage capacity of the dry basin from 19ML to a total minimum capacity of 30ML.

The dry basin has now been designed for a 100 year ARI, 3 day rainfall event rather than the originally proposed 100 year ARI, 1 day rainfall event. A 100 year ARI, 3 day rainfall event is an extreme rainfall event and has only occurred once in the 155 years of recorded rainfall in Armidale. The increased capacity of the dry basin would therefore make it extremely unlikely that untreated stormwater could be released to the downstream environment at any time during the life of the landfill. The basin would also be managed to ensure the increased storage volume (30ML) is maintained throughout the landfill operation.

The Commission notes that design of the diversion drains remains unchanged. The diversion drains have been designed to convey uncontaminated surface runoff around the site in a 1 in 100 year ARI peak flow event. Further, the landfill is located in the upper slopes of the catchment, which will minimise the volume of overland flow experienced at the landfill.

The Commission is satisfied that the existing capacity of the diversion drains, coupled with the significantly increased capacity of the sedimentation and dry basins, means that there is now a very low level of risk of the system being overwhelmed, even during an extreme rainfall event.

Notwithstanding the extremely low risk of contaminated surface water escaping from the re-designed system, the Commission requested the Proponent to provide information on the risks to downstream environments in the event that the leachate pond overflowed. The Proponent responded by increasing the capacity of the leachate pond from 13.9ML to 14.6ML. The pond will now have increased freeboard (to 400mm) and the capacity to contain the 100 year ARI, 3 day rainfall event. In the unlikely event the leachate pond did

overflow, the leachate would be caught first by the sedimentation pond and then by the dry basin, minimising the risk of contaminated water entering the downstream catchment.

The Proponent has also undertaken analysis of leachate from the existing Council landfill at Long Swamp Road. This shows the leachate to be relatively benign in terms of toxicity. Given that in an extreme rainfall event any leachate escaping the dry basin would be substantially diluted with rainwater (and be entering waterways that were themselves in flood) it is difficult to envisage that leachate overflow poses any real risk to downstream environments during extreme rainfall events.

Leachate Migration

A key issue raised in submissions and at the public meeting was the potential for leachate to escape the landfill, enter the groundwater and migrate to the Gara River, which then flows into the Oxley Wild Rivers National Park. In particular, concern was raised regarding the adequacy of the leachate barrier design.

To prevent escape of leachate, the landfill design includes barrier system comprising a re-compacted clay base overlaid by a flexible membrane liner of High Density Poly Ethylene (HDPE). A gravel layer is then placed over the HDPE to prevent ponding of leachate against the liner. This was criticised by some submitters as being an out-dated design and no longer international best practice.

In response, the Proponent provided an updated comparison of the proposed design against internationally accepted landfill designs. This found that the proposed design remains an accepted design for landfills and meets or exceeds internationally accepted requirements.

There are five elements to consider in connection with possible environmental impacts on sensitive downstream ecosystems caused by migration of leachate from the proposed landfill. They are:

- (i) potential failure of the barrier;
- (ii) potential for migration in groundwater and the speed of that migration;
- (iii) whether the proposed monitoring system is adequate to detect contamination;
- (iv) whether remediation options exist in the event of contamination; and
- (v) characteristics of the leachate itself.

(i) Potential failure of the leachate barrier

As noted above, design of the leachate barrier already exceeds regulatory requirements and can be considered best practice. If properly installed it should have a long service life, particularly given the proposed leachate management system. The leachate characteristics also indicate low potential for corrosion of the liner.

The Commission accepts that, while no barrier can be guaranteed 100% failsafe, the risk of significant failure is extremely low.

(ii) Potential for migration in groundwater and the speed of that migration

This remains a contested area. The Proponent's studies indicate that the permeability of the underlying geology is low and that migration of any contaminants would be very slow - so slow in fact that the substantial dilution and bio-degrading processes would render the leachate components indistinguishable from the background before reaching the Gara River. Opponents argue that the geology is much more heterogeneous and that the rapid migration of leachate would be possible.

The Department's Assessment Report provides a comprehensive summary of this issue and concludes that the risk is very low. The Commission agrees with the Department's conclusion.

(iii) Whether the proposed groundwater monitoring system is adequate

The Proponent argues that the extent of the monitoring network should be commensurate with the risk. Council argues that the risk is low and therefore the number of monitoring bores should be low. The Department's Assessment Report suggests that more monitoring bores may be required and indicates that it supports NOW's recommendations for some specific additional bores. However, it is not clear from the draft approval conditions just what the Proponent is required to implement in the way of additional bores.

For the purposes of approval, sufficient certainty can be provided by requiring the Proponent to:

- Prepare a groundwater monitoring plan for the site in consultation with NOW including details on the number, design, location, timelines for establishment and sampling regime(s) for the monitoring bores and reporting requirements for the sampling results. The plan must be submitted to the Director-General within 6 months of the date of this approval and be endorsed by NOW before submission.
- Install the baseline monitoring bore and implement the baseline monitoring sampling program before construction of the landfill.
- Implement the approved groundwater monitoring plan to the satisfaction of the Director-General.

(iv) Whether remediation options exist in the event of groundwater contamination

This is a contested issue. Some submissions and public meeting presenters made the point that remediation of groundwater contamination is inherently difficult and costly. They also noted that detection of narrow, but high volume, plumes of contamination may be difficult. The Proponent argues that the risk is low, that the characteristics of the site mean that the likelihood of detection is good and that, although expensive, remediation options such as pumping back to the leachate pond, construction of cut-off trenches, repairs to the area of leakage, etc., are possible.

The Department's Assessment Report supports the Proponent's position and a draft condition (Schedule 4 Condition 9(j)) requires preparation of a remedial action plan to deal with any leachate escape.

(v) Characteristics of the leachate itself

Leachates are not all of the same composition or toxicity. It is important in assessing environmental risk from leachate contamination to have an understanding of the characteristics of the particular leachate likely to cause the threat. The Commission therefore requested the Proponent to provide details on the leachate from its current landfill. Because this leachate results from landfilling practices that did not include some of the current waste avoidance and resource recovery initiatives (such as removal of organic waste) it would be expected to provide a worst-case baseline for the proposed landfill.

The Proponent provided detailed sampling records for the current Long Swamp Road landfill. These records indicate that the leachate from this landfill is relatively benign, although it does contain elevated levels of some elements. The Commission considers that continued improvement in managing the waste stream will further improve this leachate quality. The Commission also notes that leachate from the new landfill will not have the historical legacy of landfilling potentially toxic materials.

The Commission considers that, taken together, the design of the leachate barrier, the geological characteristics of the site, the proposed monitoring system and the relatively low toxicity of the leachate itself mean that migration of leachate poses a very low risk to the sensitive downstream environments.

Biodiversity

This issue is dealt with in detail in the Department's Assessment Report. The Commission is in agreement with the Department's conclusions concerning the adequacy of the measures to deal with biodiversity impacts and is satisfied that the draft approval conditions provide a suitable framework for implementation of these measures.

Visual Impact

Speakers at the public meeting raised concern that the landfill would detract from the scenic and visual character of the area, particularly for motorists driving along the Waterfall Way to Armidale, which is an important tourist route.

The Commission drove along the Waterfall Way to gain a better understanding of the potential visual impacts. The Commission noted that the majority of the landfill site is screened from the Waterfall Way by existing vegetation. However there are some short stretches of road where the landfill may be temporarily visible to motorists. The Commission's site inspection confirmed the Proponent's assurance that these would be effectively screened once the biodiversity offset area is fully established.

The Commission has carefully considered the visual impact of the proposal and, on balance, accepts the Department's assessment that the proposal would have a minimal visual impact.

Other Issues

Flooding

Surface runoff from the surrounding catchment flows to the north towards an unnamed ephemeral creek, which discharges to the Gara River. The flood study submitted with the EA concluded that the 1 in 100 year ARI flood level would be approximately 6 to 7m below the lowest (north-east) boundary of the site.

Based on the flood study prepared for the proposal, the Commission is satisfied that the landfill and associated infrastructure, including the leachate pond, sedimentation basin and dry basin are located outside the 1 in 100 year ARI creek floodplain.

Site Selection

Concern was also raised regarding Council's site selection process for the proposed waste facility. In response, the Proponent has provided further detail outlining the site selection process. The Commission considers that the site selection process has been comprehensive and sufficiently documented. Based on a merit assessment of the environmental impacts associated with the proposal, the Commission considers the subject site is suitable for the proposed development.

Site Management

Concern was raised regarding litter, weed and pest control at the site. Further, concern was also raised regarding the potential dust, smoke and odour impacts. The Commission notes that the Department has imposed a number of conditions to manage these impacts adequately. The Commission also conducted two site inspections of the Long Swamp Road facility to gain an impression of Council's current management of such issues. The first of these inspections was unannounced and unaccompanied and the second was accompanied by Council officers. The Commission considered the waste facility to be operating to a very high standard and is satisfied that, provided current standards are maintained, the landfill will be appropriately managed to control such residual impacts.

COMMISSION'S DETERMINATION

The Commission has carefully considered the views expressed at the public meeting, the Department's Assessment Report and agency and public submissions.

On balance, the Commission agrees with the Department's recommendation that the proposal should be approved subject to the Commission's amended conditions.

The Commission notes that the measures for management of stormwater and leachate in this approval are considerably more stringent than those normally required for landfills of this type. This is solely due to the site-specific constraints of this site and its proximity to highly sensitive environments downstream. It should not be taken to indicate that the Commission considers the current standards for construction and management of landfills are inadequate.



Dr Neil Shepherd AM
Commission Member



Garry West
Commission Member

Appendix 1 List of Speakers

Planning Assessment Commission Meeting

Time & Date: 1:00am - Wednesday 24 May 2012

Venue: **Armidale Council Chambers**

1. Mr Geoffrey Fox
2. Mr Hans Hietbrink
3. Mr Peter Metcalfe
4. Mr Peter Lloyd
5. Mr David Laird
6. Mr Ron Piddington
7. Mr Christian Quaife
8. Mr Damien Coffey
9. Mr Gorm Kirsch

Appendix 2
Armidale Regional Landfill – Supplementary Response
AECOM (22 June 2012)