NSW EPA

Our reference: EF13/5103 DOC16/16236-20
Contact: Mark Enright 02 6022 0603

The Interim General Manager
Gundagai Council
PO Box 34
GUNDAGAI NSW 2722

Attention: Brent Livermore

Dear Mr Trethewey

Re Development Application 136/2015

I refer to the Gundagai Shire Council's letter dated 11 January 2016 to the Environment Protection Authority (EPA) regarding Development Application 136/2015 and Environmental Impact Statement (EIS) for the proposed extension of a waste management facility at Lot 472 and 502 DP751421 and Lot 2 DP111917, 303 Burra Road, Gundagai.

I also refer to the following EPA correspondence in regard to the development application and EIS which detailed our assessment requirements:

- 26 August 2015 – letter to Department of Planning and Environment setting out the EPA's information requirements for preparation of the environmental assessment;
- 5 February 2016 – letter to Gundagai Shire Council stating that the EPA's information requirements had not been met and identifying deficiencies in the EIS; and
- 27 April 2016 – letter to Gundagai Shire Council advising that in order to undertake a full assessment of the potential impact of the proposal all the information requested by the EPA must be provided.

The proposed development described in the EIS seeks to expand an existing landfill at the above location by increasing the site capacity from 150,000 tonnes to 750,000 tonnes. The expansion would extend the current site activity for a further 10 to 15 years.

The proposed site is described in the EPA Environmental Guidelines: Solid Waste Landfills (EPA, 1996) as being located in an environmentally sensitive area for landfilling. These guidelines have recently been updated with the EPA Environmental Guidelines: Solid Waste Landfills Second Edition 2016, which continues to support the list of environmentally sensitive or inappropriate areas for landfilling.

The EPA has considered the EIS and all supplementary information provided. The EPA has also reviewed the information contained in the public submissions received by the Gundagai Shire Council and provided for consideration.

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In considering all the available information the EPA is unable to support the proposal or provide recommended conditions of approval.

Given the environmentally sensitive location and scale of the expansion the EPA considers the information provided in the EIS and the supplementary reports provided by the proponent do not provide sufficient certainty that the potential risks to the environment from the proposed development can be adequately mitigated. The EPA's principal concerns are summarised as follows:

- The proposed landfill presents a significant risk to groundwater. Any failure of the leachate barrier system would result in difficult to mitigate off-site groundwater impacts;
- Blasting in close proximity to the existing landfill development presents an unacceptable risk of damage to the existing landfill compacted clay liner. There is no certainty that adverse impacts to groundwater would not occur or be able to be satisfactorily abated as a result of blasting;
- The proposed leachate management system may not have the capacity to contain and adequately manage all the leachate that may be generated during extended periods of wet weather. There is a corresponding unacceptable risk of leachate discharge to surface water; and
- The EIS does not demonstrate to the EPA with sufficient certainty that surface water controls can installed and managed so as to ensure there will be no adverse impacts on the environment from the proposed scale and magnitude of landfill activities.

The EPA has further outlined its key considerations and justification at Attachment A.

In assessing the proposal the EPA has also discussed with Council the issue of road traffic noise issue that they may wish to further consider in their overall assessment of the development application. A detailed explanation of this matter is included at Attachment B.

If you have any further enquiries about this matter please contact Mark Enright by telephoning 02 6022 0603.

Yours sincerely

BRIAN WILD 20 May 2016
Head, Albury Unit
Environment Protection Authority

ATTACHMENT A

Location is the principal determinant of the extent to which a landfill poses an environmental risk and judicious siting of a landfill is the single most effective environmental management tool.

It is relevant to the environmental assessment, and the EPA's review of and response to the environmental assessment, to note that the proposed site was identified as being located in an environmentally sensitive area for landfilling (ie a landfill site in a permanent or intermittent waterbody) as defined in the EPA Environmental Guidelines: Solid Waste Landfills (EPA, 1996)).

The EPA's review of the proposal has identified the following areas of concern with regard to the assessment of potential environmental impacts, risks to the environment, and the formulation and implementation of appropriate mitigation measures.

Groundwater Impacts

Due to the inherent risk of undertaking landfill activity at a site identified as being environmentally sensitive for landfilling the EPA placed a heavy emphasis in its environmental assessment requirements on geological, hydrogeological, topographic and meteorological (water balance) evaluations to assess the appropriateness of the site.

The EPA requested a comprehensive hydrological investigation and impact assessment for the site and the surrounding groundwater to identify with a high degree of certainty the groundwater quality, flow pathways and vulnerability to contamination for all aquifers.

The groundwater assessment as submitted did not, in the EPA's view, comprise a comprehensive assessment of groundwater at the site. Some aspects such as geology, hydrogeology and consideration of the value of the groundwater resource were not adequately addressed. However, the information presented on hydraulic conductivity, hydraulic gradients and depth to groundwater highlighted the vulnerability of the underlying groundwater resource. The EPA also notes as detailed in the report that there are three groundwater wells registered for stock and domestic use within 500 metres of the landfill.

The environmental assessment identified the groundwater under the landfill as having a high seepage velocity of 1.34 metres per day and a corresponding flow in the connected aquifer of 2,176 kilolitres per day. The initial design of the landfill would have intersected the water table. Following a request from the EPA for further information the landfill design was subsequently modified to raise the base of each cell to one metre above recently recorded standing ground water levels.

Based on the information contained in the EIS the EPA considers the proposed landfill presents a significant risk to groundwater. Any failure of the leachate barrier system would result in the leachate only having to permeate a short distance through the sub-strata and enter the underlying aquifer and moving at more than one metre per day would quickly result in difficult to mitigate off-site groundwater impacts.

The EIS and supporting information demonstrates that the proposed development is located in an environmentally sensitive area with regard to potential impacts on groundwater. The construction of the landfill, and in particular cell 3, is proposed to be undertaken in an area the EPA considers is not suited for this type of development. Based on the information provided in the EIS the EPA considers that the proposed development presents a significant environmental risk.

Blasting Impacts

The EPA's environmental assessment requirements included the requirement to describe all construction activity including an assessment of the impacts from blasting.

The EIS submitted to the EPA in January 2016 incorrectly stated that blasting activities for the existing landfill were approved and indicated that blasting of material may be required depending on the nature of the material

that would be extracted during the construction phase. It is noted the EIS included, at Attachment 8, a structural integrity assessment of the existing clay liner dated September 2014 for a blasting event associated with the existing landfill development.

The EPA's request to the proponent for information in February 2016 required an assessment of the amenity impacts on nearby residents, an estimate of the number and duration of blasts, and an assessment of impacts on the compacted clay liner of the existing facility in relation to any potential blasting events. The EPA's requested assessment information included blast design monitoring and review criteria to ensure that the existing compacted clay liner would not be compromised by any blasting activity proposed to be undertaken as a result of the expansion.

The EPA noted that Addendum 1 (supplied in response to our letter dated 5 February 2016) envisaged that blasting was not required and indicated that should blasting be required it would be subject to further development assessment.

In April 2016 the EPA sought a detailed explanation about how the major elements of the landfill would be constructed without the need for blasting. The requested information was to include details of how cell excavation and diversion of the creek was to be undertaken and an accompanying geotechnical investigation to substantiate the proposed excavation method.

A detailed blasting assessment report was submitted to the EPA on 16 May 2016 in response to our request for additional information. Whilst the EPA acknowledges that the blasting report addressed the amenity impacts and presented a rational basis for the assessment and design of blasting activities at the proposed landfill site, the report also highlighted that blasting may pose a risk to the integrity of the existing landfill cells.

The submitted blast design is based on a risk probability framework, or as stated in the report a "percentage likelihood of exceedance" of the damage criteria. The report acknowledges the absence of any specific ground vibration criteria for the protection of the compacted clay liner in the existing landfill cells at the subject site. The report also strongly recommends that material used for existing linings be assessed for a range of geotechnical parameters in order to validate the nominated clay liner vibration damage criteria.

The EPA considers that even the one percent criterion (the lowest percentage likelihood of exceedance considered in the blasting report) is not acceptable, as although the probability is low, the consequences may be significant. The probability and risk of impacts is further increased by the fact that multiple blasts will be required (an estimated 8 blasts over 4 months).

The EPA also raises the following concerns in regard to the proposed blasting:

a) Assessment of damage to the liner - The most critical area for the required design performance of the liner is in the base section of the leachate barrier system where free liquid can accumulate. The blasting report does not consider the consequences of damage to the compacted clay liner as a result of blasting or identify any means of detection or monitoring for such failure. The blasting report does not consider the potential impacts to the environment should such damage occur, nor does the EIS identify any contingency plan to mitigate any adverse impacts should such damage occur. The risk of potential damage to the liner, in particular the base section of the leachate barrier system, needs to be considered given it is located under approximately 10 metres of waste and any failings in this area have the potential to cause adverse environmental impacts;
b) Validity of the proposed "site law" - The proposal to develop a "site law" will assess ground vibration at the surface, a location where the strata is fractured and weathered rock, but this may not correlate to the impacts and damage that may occur to the base section of the liner that is buried under the waste, and constructed directly onto the hard rock strata that required blasting in the initial development; and
c) Site geology - The blasting report presents a theoretical framework but has not included a site assessment based on the site geology. The blasting report did not contain any details of a geotechnical investigation to substantiate the proposed blasting methodology.

In summary, the EPA considers that blasting in close proximity to the existing landfill development presents an unacceptable risk of damage to the existing landfill compacted clay liner, and there is no certainty that adverse impacts to groundwater would not occur as a result of blasting. The EIS does not adequately consider all the potential risks to the environment as a result of blasting activities and it does not demonstrate to the EPA with sufficient certainty that the risks can either be managed or mitigated so as to ensure there will be no adverse impacts on the environment from this activity.

Leachate storage and disposal

The EPA requested the proponent undertake a water balance calculation to determine the size of the leachate storage dam. A calculation was included in the additional information submitted as Addendum 1. This water balance was reviewed by the EPA and the following concerns were noted:

a) the assessment was based on a single wet year, rather than being run as a full water balance model run over several years to determine the required cumulative storage volume;
b) a generic methodology rather than a recognised landfill leachate generation assessment model was used. The EPA has concerns about the validity of all the assumptions embedded in this model (eg the assumption that evaporation from the cells will equal the evaporation data provided by the Bureau of Meteorology); and
c) the water balance did not account for the water in the waste to be received at the site. The percentage of water in the paper machine rejects is 36 percent as detailed in the waste characterisation assessment. This may be a significant contributor to the overall leachate load and should have been considered as part of the assessment.

The EPA considers that the EIS and additional information has not demonstrated with sufficient certainty that the proposed leachate management system has the capacity to contain and adequately manage all the leachate that may be generated during extended periods of wet weather. There is a corresponding unacceptable risk of leachate discharge to surface water.

Surface water controls

The proposed development will involve constructing and operating the landfill and associated infrastructure on a steep, rocky and constrained site.

The EPA requested details of the proposed surface water management and controls in accordance with the guidance in *Managing Urban stormwater: Soils and Construction Volume 1 and Volume 2B Waste Landfill.* This included details of the measures to be installed to:

- minimise erosion and sediment runoff impacts during the construction phase; and
- prevent ingress of stormwater into to the leachate system, contamination of runoff by contact with waste, and prevent erosion and sediment impacts from exposed area such as new landfill cell caps.

The EPA requested this information include details of proposed sediment basins and how the collected runoff will be treated and disposed of.

The information provided by the proponent was limited to a commitment to install controls in accordance with the guidance manual.

The physical site characteristics significantly increase the environmental risk from uncontrolled surface water discharges and make it difficult to separate or isolate clean from potentially polluted runoff. The assessment should have clearly articulated the higher risk associated with this particular site and detailed how the necessary mitigation measures could be installed, maintained and operated to achieve the objectives set out in the referenced guidance material.

The EIS does not demonstrate to the EPA with sufficient certainty that the risks can either be managed or mitigated so as to ensure there will be no adverse impacts on the environment from these activities.

Additional Matter

The EPA also highlights the following additional aspects that the EIS and additional informational did not fully consider and document. Whilst these aspects are not central to EPA's decision to not support the proposal, they represent a potential environmental impacts that have not been adequately detailed and is therefore considered to compound the environmental risk and the EPA's concerns about the suitability of the site for the proposed development.

The EPA's environmental assessments requirements included the request that the EIS should fully describe the proposed landfill expansion and all associated activities. While the EIS did outline the major elements of the development, the EPA considers that the details of the proposal as presented is the EIS did not fully describe the following aspects.

- No details were provided on the estimated construction period for the creek diversion, cell 3 and cell 4 and the corresponding construction impact duration;
- the diagram in the main EIS report shows a highlighted area of cell 3 that is significantly less than the engineering drawings;
- The quantitative information on the extent of excavation and other construction work was limited to the engineering drawing. The EIS did not include details of the significant earthworks volumes associated with the construction of the creek diversion, cell 3 and cell 4;
- Quantities of clay to be imported were not estimated nor was any information provided about its suitability to achieve the required engineering specifications; and
- Very limited details were provided on the construction of Cell 4.

The lack of detail makes it difficult for the EPA to fully understand and assess the potential environmental impacts of these activities and the subsequent risk of adverse environmental impacts occurring.

ATTACHMENT B

The EPA's environmental assessment requirements included the requirement to assess noise, including road traffic noise. The EIS submitted to the EPA in January 2016 referred to a March 2013 noise impact assessment but this assessment had not been updated in regard to road traffic noise impacts for the proposed expansion.

The EPA's request to the proponent for additional information in February 2016 sought an updated assessment of operational, construction and road traffic noise. The response as detailed in Addendum 1 considered only operational noise impacts but did not include an updated assessment of construction or road traffic noise for the proposed expansion.

In April 2016 the EPA reiterated that noise impact assessments must be undertaken for construction and road traffic noise in accordance with previously referenced EPA guidelines.

A revised noise impact assessment (NIA) was included as part of Addendum 3 to the EIS provided to the EPA on 16 May 2016. While impacts from road traffic noise are not regulated by the EPA, Gundagai Shire Council sought the EPA's review of the report and the following comments are provided for consideration.

The revised NIA reassessed predicted noise impacts for all aspects of the development. Of particular note was a correction to previous assumptions relating to site boundaries and the evaluation of vehicle movements on public and private roads. This resulted in a significant change in the application of noise criteria at resident R1, with the noise impacts now being assessed against the NSW Road Noise Policy (RNP) criteria rather than the criteria set out the NSW Industrial Noise Policy.

For traffic along Burra Road the EPA considers the NIA has correctly adopted the criteria from the RNP for existing residences affected by additional traffic generated by land use development (ie $L_{Aeq,15hours}$ 60dB(A) daytime).

In regard to the proposed route leading from the intersection with Burra Road to the landfill entrance the EPA considers this section of road should be assessed as a "local road" under the RNP. The road traffic noise assessment makes no reference to the local road category or the assessment criteria ($L_{Aeq,1\ hour}$ 55dB(A) which suggests the report may not have specifically considered noise impacts against this criterion.

Council may also wish to consider whether they identify this section of road as a "principal haulage route" in which case the RNP specifies a criterion of $L_{Aeq,15hours}$ 60dB(A) daytime but with a total traffic noise level increase limited to an $L_{Aeq,15hours}$ +12dB(A) daytime would apply.

In regard to the potential impact of road traffic noise, heavy vehicle movements associated with the proposed development will result in a significant increase in noise on account of the close proximity of the residential dwelling (identified as receiver R1 in the Noise Impact Assessment dated 13 May 2016) to the access road.

The predicted noise level may not exceed the local road criterion of $L_{Aeq,1\ hour}$ 55dB(A) however the EPA estimates (using the noise impact prediction in the original EIS document) that the noise will increase from the current background of 30 dB to approximately 50 dB $L_{Aeq,1\ hour}$. This would be perceived as a fourfold increase in the noise level at receiver R1.