

7 September 2012



Kareema Yousif
District Hazardous Substances Officer
Wellington City Council
P O Box 2199
Wellington

3-55619.00

Dear Kareema,

C & D LANDFILL : NES ASSESSMENT

As requested Opus has reviewed the Burrell Demolition C & D Landfill operation located at 50 Landfill Road, Happy Valley, in respect of the National Environmental Standard (NES) for Assessing and Managing Contaminants in Soil to Protect Human Health. Our review and conclusions are as follows:

1. Application of the NES

The NES is specific to the assessment of risk to human health (Users Guide Section 1.4). In assessing whether the NES applies two tests are used relating to the land and the activity:

The land – The C&D landfill site is a HAIL activity being a category G3 “Landfill Site”.

The activity – Activities triggering the NES are:

1. Removal or replacement of an underground fuel storage system and associated soil
Not applicable
2. Soil Sampling – Sampling of the existing fill for contamination is not proposed at this time
Not applicable
3. Soil Disturbance – the site soils are routinely disturbed by virtue of the site being currently an active landfill.
Soils disturbed are;
 - i) Natural in situ ground excavated to win cover and make landfill space, and,
 - ii) Placed fill materials. –*triggers the application of the NES as discussed below*
4. Subdivision of land – no subdivision is proposed as part of the current consent renewal
Not applicable
5. Change in land use – the site is an active construction and demolition waste landfill and has been so for more than 20 years. This use is proposed to continue – *not applicable*.

As new consent applications have been lodged to expand the site footprint and increase the height of the fill, the site’s existing use rights no longer apply so it is necessary to consider the NES.

In considering whether the “Soil disturbance” criterion triggers the NES, in the case of a landfill, disturbance of the soil (natural soil and placed fill) is inherent in the operation. The activity is not permitted given the scale of the operation so consent is required. For the application to be a controlled or restricted discretionary activity a detailed site investigation report on the land must be prepared. No such report has been prepared meaning the application is for a discretionary activity. Our opinion is that a detailed site investigation is not required at this stage. This is as the site is an active landfill; with more fill material being added and the final capping yet to be placed.

The placement of additional contaminants to land and the disturbance of a potentially contaminated site are already classified as ‘discretionary’ under the relevant Greater Wellington Regional Plans and relevant sections of the Wellington City Council District Plan. As such, resource consents from the Regional and District Council consent authorities are required in addition to any consent required under the NES. The matters being considered as part of the consent extension are relevant to the NES also as set out below.

2. Wellington City District Plan – Section 32 Contaminated Land Rules

Irrespective of the NES, the Wellington City District Plan prescribes a number of conditions relating to the use of contaminated land that need to be considered in relation to granting of resource consent and these traverse similar issues to the NES in many aspects. These are:

32.2.1.5 The proposed methodology for the remediation of the land, including as appropriate the provision of a remediation plan that addresses:

- *How any adverse effects on the surrounding environment resulting from earth moving or removal and any potential discharges from the site will be managed.*

Comment:

Sediment control from the operations on site is addressed in the Sections 5 & 10 of the C & D Landfill Site Management Plan (SMP)(a copy is attached).

The effects of the site on water quality in the stream are monitored as required by the consent WGN940057 conditions 21-22, and the SMP (Section 10.5.1).

- *Where soil is to be removed from the land, the appropriate tracking and safe transport to land that is authorised and/or consented for the disposal of any contaminated soils*

Comment:

The Landfill is not approved as a disposal site for contaminated soils (refer SMP section 2.4 for materials acceptance criteria). However it is possible that some low level contaminated soil could be delivered with general fill (e.g. hydrocarbons from general demolition soils, or lead from paint flakes in soil) and therefore control is placed on the tracking of material off site.

One pathway for soil to be removed from the site is by tracking off site on the wheels of trucks dumping material. A wheel wash (refer section 3.3 below) for outgoing trucks could be added in future if shown to be necessary to minimise this.

- *How the health and safety of the workers and the wider community will be provided for during the works, including if necessary the presence of public exclusion zones, site security and location of worker amenity facilities*

Comment:

The public do not have access to the Landfill site. Access is controlled by a gate at the entrance with Landfill Road. The Landfill also has a site office which is attended by a C&D Landfill staff member during the normal working hours. The nearest public access point is via the “Tip-track”, a sometimes steeply ascending gravel track rising from Happy Valley Road (near it’s junction with Landfill Road) to join a sealed

road on the main ridge. The 'Tip-track' is some 100m horizontally and 50 vertically above the site with a steep climb through scrub.

The health and safety of workers at the Landfill is addressed in the SMP which includes a Health & Safety Manual (Appendix 3). This describes the measures applied to protect the health of staff, contractors, and visitors working or visiting the site. Personal Protective Equipment (PPE) is covered in the Health & Safety Manual, being specifically:

- *Enclosed safety toe boots or gumboots as per NZ standard*
- *High visibility coverall or vest*
- *Hard hat (worn when on landfill out of vehicle)*
- *Safety gloves (for refuelling vehicles or handling landfill materials)*
- *Safety eyewear*
- *Hearing protection (ear plugs or muffs)*

Worker amenities are provided at the main offices off site. A toilet is provided at the site itself.

For the long term wellbeing of staff, C&D Landfill require employees working at the tip face to undertake health monitoring (at the company expense). This may include blood or urine tests for chemical agents or biological agents (Section 10.1 Appendix 3 SMP).

- *The standard of remediation on completion*

Comment

The site is to be capped on completion and revegetated. Section 9.1 of the SMP refers, being the "Site Rehabilitation Plan". The specific measures directly relevant to any on-going risk to human health from any materials placed in the fill are (section 4.1):

Following filling to final contours topsoil is then evenly spread over the capping material. The depth of capping material shall be mixed organic material, topsoil and clays and will, as much as possible, be at least one metre.

When placing the topsoil care should be taken to avoid creating layers which can act as a barrier to root penetration, particularly in soils with high clay content . On steeper slopes the ground should be ripped with tines on the contour to a depth of 100 – 300mm to mix the soil and provide drainage.

Capping of the fill materials with 1 m of soil will ensure adequate cover to the fill material to prevent any casual visitors to the site coming into contact with fill.

- *The potential for recontamination to occur...*

Comment:

On-going contamination of the site can arise through the waste filling activities. This risk is managed through the waste acceptance criteria, load inspection and verification procedures. This is further discussed below.

- *Any alternatives to remediation...*

Comment:

Not relevant in this context.

- *Any potential long term or cumulative effects of discharges from the land...*

Comment:

The principal discharge pathways for any contaminants present on the site are either by airborne dust or by sediment and leachate reaching surface water. These are discussed below.

3. Potential Exposure pathways

Operation of the C&D Landfill creates a *potential* risk to human health through four major exposure pathways:

- i. Personnel working on the site directly contacting fill material, e.g. walking on soil, breathing dusts, handling waste materials (e.g. removing non-acceptable materials received at the Landfill),
- ii. Soil tracking off site with vehicles,
- iii. Material blowing off site, and,
- iv. Material washing or leaching into waterways.

All of these exposure pathways are recognised by the procedures in the SMP as follows:

3.1 Primary Control

The primary control to minimise the potential for harm from all of the above pathways is the Landfill materials acceptance criteria and the verification/inspection procedures.

(a) Materials Accepted

Materials accepted or not accepted at the C&D Landfill are proscribed by WGN 940057(01) Conditions 12 and 13. Section 2.4 of the proposed SMP for the resource consent application further defines materials that are accepted or not accepted. Taken from Section 2.4.3 of the SMP the following materials are specifically excluded:

- *Liquid waste*
- *Domestic waste in the form of municipal sanitary waste*
- *Industrial waste*
- *Commercial waste*
- *Hazardous wastes*
- *Contaminated soil*

(b) Load Inspection Procedures

Measures to ensure that the waste acceptance criteria are complied with are as detailed in Section 3.8 of the SMP (specifically Section 3.8.1 "*Identification of Source*", Section 3.8.2 "*Load quality checking*", and Section 3.9 "*Tiphead Inspection procedures*"). All incoming drivers are required to sign a docket certifying the origin and type of material in relation to the Landfill's resource consent acceptance criteria under WGN940057.

(c) Random Verification

The receipt of loads containing soils affected by heavy metal or hydrocarbon contamination is a possibility. Customers and transport operators are required to sign off documentation that declares the origin and content the incoming materials. C & D Landfill will reserve the right to take random samples of soil to

confirm compliance. Generally this step would be taken where the incoming material is known to originate from sites where past land use activities would suggest there may be soil contamination issues.

3.2 Exposure path - Site Personnel.

The SMP includes a number of specific requirements for site staff which effectively minimises the potential for harm should there be a breakdown in the primary control. These are as detailed in the Site Health & Safety Manual (Appendix 3 of the SMP).

3.3 Exposure path - Soil tracking off site

The movements of trucks into and out of the Landfill often when there is a significant presence of mud on the floor of the Landfill tipping areas and access roads creates an exposure risk pathway. A solution to avoid or minimise this risk would be the operation of a facility such as a wheel wash that would remove loose soil material from the wheels and under carriages of trucks. Typically a wheel wash is a facility that is provided near the main access point of a Landfill. However operational experience from the C&D Landfill is that tracking of mud off the site has not been a problem to date. This would be due to the long length of internal access road vehicles traverse to reach the gate after leaving the tipping area, and an informal wheel wash area 100m in from the gate.

A wheel wash could be added in future if found necessary.

3.4 Exposure path - Material blowing off site.

Dust emissions are addressed by the "Air Quality Management Plan" under Section 6 of the SMP. Section 1.2 details specific measures to control dust which include:

- *The maintenance of access roads and haul roads on site. This includes the periodic metalling of the main access road from Landfill Road from the main gate at the boundary of the property to the tip head.*
- *This road is also graded periodically to ensure that the formation of ruts and potholes is kept to a minimum.*
- *The use of a water cart during dry weather to keep access and haul roads damp.*
- *The use of rubber-wheeled excavation and loading equipment to ensure that the construction and demolition landfill is kept in a compact condition with minimum specific surface disturbance.*
- *Stockpiles and overburden are excavated at natural moisture content and finished exposed faces are re-vegetated as quickly as weather and germination conditions allow.*
- *Vehicle speed signs have been erected on the access roads and are strictly enforced. Haul roads are used by permanent staff and vehicle speeds are limited to below 30 km/hour for operational safety.*
- *The major contracting companies visiting the site are aware of the need to keep vehicle speeds and respect the speed limit requirements.*
- *The site is kept under continuous surveillance during operational hours and steps are taken by ordering the use of a water cart or alternative routes as available to ensure that dust nuisance does not occur.*
- *The equipment used is kept clean and maintained in first class operating condition.*

The following control measures will be implemented to manage potential off-site impacts of dust from the landfill:

- *the unsealed road will be sprayed with water at a frequency determined by wind conditions (particularly in summer);*
- *during high wind events, the Machine Operator will be required to manage the tipping of waste to ensure that off-site dust migration is minimised:*

Emissions of landfill gas and odour are expected to be minor as only small quantities of organic material (principally as paper and timber) are deposited into the Landfill. Section 1.4 of the Air Quality Management Plan contains specific measures to address gas and odour.

3.5 Exposure path - Material washing or leaching into waterways.

The stormwater management procedures detailed under Sections 5 and 10 of the Landfill SMP set out how discharges of sediment and leachate to waterways are minimised and monitored.

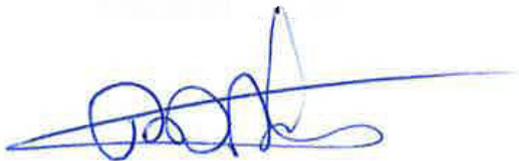
The conditions 19, 20, 21, 22, 23 & 24 of the current resource consent WGN 940057(01) exercise regulatory control over discharges to waterways.

4. Conclusion

We conclude that the NES is triggered for the C & D Landfill as changes are proposed to the site footprint and height meaning that the existing use approved by WGN 940057 can no longer be relied upon. A land use resource consent is required as a discretionary activity.

The pathways by which a risk to human health could arise should there be contaminated material deposited at the site are all recognised and addressed in the proposed SMP and/or are regulated through the conditions of the existing resource consent.

Yours faithfully



Peter Askey

Principal Environmental Engineer