

## **Appendix D: Site selection report**

---



**Site Selection Process**

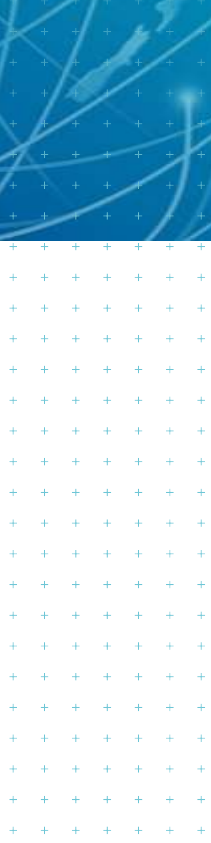
**Auckland Regional Landfill**

**Prepared for**  
Waste Management NZ Ltd

**Prepared by**  
Tonkin & Taylor Ltd

**Date**  
May 2019

**Job Number**  
1005069



## Document Control

<b>Title: Site Selection Process</b>					
<b>Date</b>	<b>Version</b>	<b>Description</b>	<b>Prepared by:</b>	<b>Reviewed by:</b>	<b>Authorised by:</b>
30/05/2019	1.0	Final	A. Brabant	S. Eldridge	S. Eldridge

## Table of contents

<b>1</b>	<b>Introduction and background</b>	<b>1</b>
1.1	Introduction	1
1.2	Background	1
<b>2</b>	<b>Key drivers for site selection</b>	<b>2</b>
<b>3</b>	<b>Site selection process</b>	<b>3</b>
3.1	Key site selection criteria	3
3.2	Cultural Issues	4
3.3	Site assessment and ranking	4
3.4	Traffic and NZTA input	5
<b>4</b>	<b>Conclusions</b>	<b>6</b>
<b>5</b>	<b>Applicability</b>	<b>7</b>

# 1 Introduction and background

## 1.1 Introduction

This report provides a summary of the site alternatives assessment undertaken in the development of the Auckland Regional Landfill project. This has been a long and iterative process, commencing in 2007 and evolving over time. A significant number of potential sites were considered.

The report summarises the decision making and assessment process involved in considering alternative sites. This report does not identify the other sites considered. This is due to commercial sensitivity and the potential impact on current landowners of the other sites, as the vast majority would be unaware that their land was considered, potentially causing significant uncertainty for them if this information was made public. However, this report is intended to demonstrate that significant analysis occurred prior to the selection of the Wayby Valley site for the proposed Auckland Regional Landfill.

## 1.2 Background

Tonkin & Taylor Ltd (T+T) undertook preliminary site identification studies for a possible new “northern” landfill, on behalf of WMNZ in 2007 and 2009. Although the 2007 siting study initially identified in the order of 50 potential sites, a limited number (19 sites) proved viable on further consideration of distance to the north of the Auckland CBD, distance from State Highway 1 and other locational constraints that WMNZ considered appropriate at the time. Ultimately only two sites were identified in the 2007 report as likely being worth further consideration based on the criteria originally set.

In 2009 a further assessment with broader primary constraints was carried out which reviewed and updated the 2007 report and extended consideration to areas northwest of Auckland along SH16. The findings of the 2009 report were that additional sites were identified (28 sites), while one of the shortlisted sites from the 2007 report was removed from the list of possible sites for a number of reasons. The 2009 report identified four sites as being potentially viable and worthy of more detailed scrutiny (from the 28 initially considered), two of which were located off SH16 northwest of the Auckland CBD.

In late 2013 further work commenced which built on that undertaken in 2007 and 2009. This work included a review of the earlier work taking into account changes that had occurred in the regulatory framework and land use patterns within the region, proposed changes to the State Highway network, as well as the latest local and international good practice for landfill siting. Specifically, the finalised designation for the Pūhoi to Warkworth motorway and the notification of the Proposed Auckland Unitary Plan (PAUP) both needed to be considered in the context of the previously identified sites, as well as in relation to any further identified sites.

In undertaking the most recent review it was recognised that land use in the region has changed over the intervening period and the intensification of urbanisation to the north and northwest of the Auckland CBD is progressively increasing the constraints that apply to a large land block suitable for landfill development.

As part of the overall evaluation of these sites, the project team went on helicopter flights in August 2014 to view all of the sites from the air (9 sites). This enabled the team to see not only the proposed landfill footprint areas, but also potential access and haulage routes within the area and neighbouring properties and buffers. These flyovers provided further clarification and assisted with scoring of the potential sites.

## 2 Key drivers for site selection

The key drivers for the site selection process were related to the overall project objective, namely to find a site to establish a regional landfill, including ancillary waste activities that support its operation. To enable this objective to be fulfilled a site needed to be found and secured, as well as the appropriate resource consents obtained. While looking at options for a site the following key drivers had to be considered:

- A site large enough to provide a regional facility for Auckland and enable security of operation for the landfill into the future;
- Adequate buffer distances to neighbouring properties;
- A site that is readily accessible from the State Highway network to enable suitable access;
- A site whereby the geology was workable and did not present any fatal flaws;
- Terrain and topography;
- Avoiding known sites of significance to iwi;
- Planning overlays and zones, particularly to avoid sites that might be within areas of archaeological, or ecological significance as flagged through planning documents; and
- Complexity of land ownership and title encumbrances.

These key drivers are expanded on below as part of the discussion on the site selection process that was undertaken.

### 3 Site selection process

The process of identifying a preferred site followed a number of steps. In the first instance a constraints mapping exercise was undertaken to narrow the potential areas for consideration based on how feasible and practical it would be to develop a landfill of the size required and secondly to ensure any “fatal flaws” were identified. The first step in this process was the identification of “key selection criteria” to form the basis for the initial site identification process.

#### 3.1 Key site selection criteria

The earlier landfill site selection process, which was updated as the project progressed, was based on setting a primary siting constraint related to access. Previous New Zealand experience with landfill site selection has shown that community and consenting issues often relate to concerns over increases in truck traffic on local roads. This is primarily due to the potential for adverse amenity effects that can result from noise, dust, vibration and visual impacts from these truck movements. These can result in a noticeable and undesirable change on what might be a sedate local environment. This reduction in amenity may result in restrictions on the operation of the landfill by restricting numbers or operating hours through consent conditions, therefore it is preferable to avoid local roads where possible.

The primary siting constraint established during the 2007 study remained throughout as a key consideration for siting. That is, the primary requirement for any site is that it is accessible from within a corridor 2 to 5 km wide, either side of a State highway to the north and north-west of the Auckland CBD. This constraint immediately removes large areas of land in the central northern areas between SH16 and SH1 from consideration, but in the context of a new regional landfill site, this was considered appropriate due to the heavy truck movements and therefore the need to be close to main arterial routes.

While most rural areas serviced by the secondary road network receive regular flows of heavy traffic, much of this is service and farm related and is accepted as normal. However, from the perspective of siting and consenting a new regional landfill facility, where truck movements are likely to exceed one million truck movements over the life of the facility, access from a primary regional haul route is considered an essential requirement. Previous case law from landfill consent processes has confirmed the critical importance of this consideration and therefore areas which are not within direct access distance of one of the State highway routes have been discounted from consideration from the outset. In short, all such areas are considered likely to be too difficult to consent due to traffic impact and related considerations.

Once this primary siting constraint had been applied, identified sites were ranked by looking at secondary siting considerations such as site size and development potential (to ensure a workable landfill volume can be achieved, as well as adequate buffer), buffer availability (both internal and external), planning considerations and site ownership complexity (which relates to land availability). The technical attributes of sites such as geology, hydrogeology and topography were also assessed as these affect the viability and cost of landfill development. However, given the relative importance of the key secondary attributes related to buffer availability, site size (and hence landfill volume potential) and land availability, technical attributes such as geology and topography were given a lower weighting when scoring and ranking the sites. This is because technical deficiencies in a site (for example steep topography) can often be dealt with through engineering, whereas a more fundamental requirement such as the site’s size, or the availability of buffer, cannot.

In summary the constraint hierarchy applied for the consideration of alternative sites were as follows:

- 1 Primary constraint – any potential site must be located within or accessible from a corridor 2 to 5 km wide aligned along state highway routes north and north-west of Auckland and within an acceptable haulage distance north and north-west of the Auckland Harbour Bridge (this distance was initially set as 60 km for both directions based on a WMNZ internal assessment of an economic haul distance cut-off. The northern cut-off distance was subsequently amended as more clarity was provided by NZTA around the proposed improvements to the State highway network in North Auckland). Any land area outside these corridors has not been considered due to known consenting issues related to truck traffic on secondary roads.
- 2 Secondary constraints (weighting = 3 to 5):
  - Site size/available land area (weighting 4)
  - Buffer availability (weighting 5)
  - Land title complexity / number of owners (weighting 3)
  - Specific Auckland Unitary Plan (AUP) constraints such as proximity to or impingement on identified sites of cultural significance, Outstanding Natural Landscapes, Significant Ecological Areas and watercourses (weighting 3)
- 3 Tertiary constraints (weighting = 1 or 2)
  - Geology / natural containment/ hydrogeology (weighting 2)
  - Topography (weighting 2)
  - Engineering complexity (weighting 2)
  - General AUP constraints (weighting 1)

This approach is consistent with the WasteMINZ Technical Guidelines for Disposal to Land (2018) (**Guidelines**). These Guidelines supersede the CAE Landfill Guidelines 2000, and provide recommendations on siting, design, construction, operation, and monitoring for disposal to land. The Guidelines also establish “good practice requirements” for the various types of facilities based on waste acceptance criteria. Of particular relevance to this assessment are the Guidelines’ recommendations with respect to geological requirements and in particular constraints around high permeability soils, sands and gravels, active faults and karst geology. In the site selection process any areas of high permeability or active faults were avoided. In areas that have such technical constraints, as recommended by the Guidelines, the design would need to incorporate a higher level of engineered containment and appropriate contingency measures than would be required at a site with low permeability underlying geology (natural containment). This was taken into account in the ranking of the sites.

### 3.2 Cultural Issues

As part of the site selection process, consideration was given to the location of marae and areas of significance to iwi. As the site selection process was a confidential desktop exercise, this was assessed using information available on the New Zealand Archaeological Association ArchSite, Auckland Council Geo Maps, ownership identified by Certificates of Titles, and Treaty Settlement agreements. Areas that were in legal ownership of iwi (as recognised by LINZ), incorporated Marae, or were listed as sites of significance to mana whenua were avoided.

### 3.3 Site assessment and ranking

Over the course of the site selection process numerous sites were looked at for consideration (upwards of 28). These were slowly whittled down over the various iterations, with the final ranking matrix from the 2014 report including a ranking of 9 potential sites. A summary of the key observations from the ranking process are as follows:



- Only a few sites had a good buffer available. Many of them only had marginal buffer availability which dropped them down the ranking.
- Land information on title owners and encumbrances, varied extensively, with some sites being particularly complex in regards to the number of owners and legal mechanisms registered against the titles.
- The issues identified under the AUP (which at the time of the 2014 report was the Proposed Auckland Unitary Plan) were separated into primary and secondary concerns. Any new landfill under the AUP requires a consent for landfilling activity regardless of location and therefore the AUP requirements that vary between sites are those around existing features of environmental significance, such as outstanding landscapes, vegetation, areas of ecological significance/biodiversity and watercourses. These were ranked as primary concerns with secondary concerns including identified sites of ecological significance and natural hazard notations, both of which were new features within the AUP. It should also be noted that for the 2014 phase of the project, the AUP was going through the submission, further submission and hearing phase of the AUP process and therefore the relevant objectives, policies and rules were changing.
- None of the sites had ideal hydrogeological / geological suitability and this is also reflected in the level of engineering complexity. However, as discussed previously, this only requires attention during the design and operational phases of the landfill development rather than rules out a specific site from development. The Wayby Valley had conditions which were able to be addressed through additional engineering controls, rather than any “fatal flaws” which would have deemed it unsuitable for development.

### **3.4 Traffic and NZTA input**

Some preliminary traffic analysis and input was sought relating to some of the preferred sites to determine how difficult access to the sites would be and what approvals may be required from NZTA.

There was also some analysis done in relation to the “roads of national significance” and what plans NZTA had for the region in relation to motorway upgrades or extensions. As discussed earlier, the distribution of refuse from the main centres out towards the landfill is of critical importance and haulage routes and times are central to the development of such a facility.

## 4 Conclusions

Since the initial commencement of the project in 2007, an extensive process of alternatives assessments and site identification studies have occurred to refine the options for selecting a suitable site for the development of a regional scale landfill to serve Auckland. This ultimately resulted in the identification of the proposed site for the Auckland Regional Landfill in the Wayby Valley.

## 5 Applicability

This report has been prepared for the exclusive use of our client Waste Management NZ Ltd, with respect to the particular brief given to us and it may not be relied upon in other contexts or for any other purpose, or by any person other than our client, without our prior written agreement.

Tonkin & Taylor Ltd

Report prepared by:



.....  
Andrea Brabant

Technical Director – Planning

Authorised for Tonkin & Taylor Ltd by:



.....  
Simonne Eldridge

Project Director

ALB

