

# **DEVELOPMENT OF THE AUCKLAND CITY COUNCIL CLOSED LANDFILL ASSET MANAGEMENT PLAN**

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## **Introduction**

The Auckland City Closed Landfill Asset Management Plan (CLAMP) provides a new approach to managing closed landfills. It also addresses the requirement of the Local Government Act 1974 that an Asset Management Plan (AMP) be available for all infrastructure assets owned by local government.

The Auckland City CLAMP aims to not only meet the minimum requirements set by the Auditor General for acceptability of AMP's, but also:

- Demonstrate responsible stewardship;
- Provide a structured framework for subsequent AMP's; and
- Flag issues, deficiencies and note improvements.

The CLAMP is a “living document” and is constantly evolving with regular and constant review and improvement. The first version of the CLAMP was developed by City Design Ltd and adopted by Council in 1999. Since that time the document has been continuously updated as new information is obtained (City Design Ltd, 1999, 2000, 2001).

The CLAMP contains an Introduction outlining information on the Background, Asset Description, Goals and Objectives of Asset Ownership, and Legal requirements. It also discusses the drivers for Asset Management and sets out the Plan Framework. Other sections of the Plan include Levels of Service, Lifecycle Management Plans, Financial Forecasts and Improvement Plans. This paper discusses only some of the important components of the CLAMP.

## **Background**

The Closed Landfills that this plan relates to are all council owned, located in the Auckland City isthmus and do not include any found on private land. These landfills were primarily constructed over the last 50 years, mostly to dispose of domestic and commercial waste sourced from Auckland City. None of these landfills were constructed

using the techniques commonly used today and most do not possess liners, leachate collection or landfill gas collection systems. Many are located on coastal marine areas as it was common to reclaim mangrove swamp areas which were considered to possess low amenity values and thus thought to be suitable for landfilling purposes.

In 1993 the known closed landfills of Auckland City were visually surveyed and their environmental impacts ranked. They were then assessed and categorised into three priority groupings using an environmental risk index system:

- Priority One – Landfills that should be investigated in detail immediately;
- Priority Two – Landfills that should be investigated in the near future; and
- Priority Three – Landfills that will need to be further investigated at some future date.

### **Asset Components**

Assets typically located within closed landfills, and pertaining to the CLAMP include:

- Landfill capping and lining;
- Containment/Structures such as erosion protection walls;
- Stormwater, gas and leachate controls; and
- Leachate and groundwater monitoring bores.

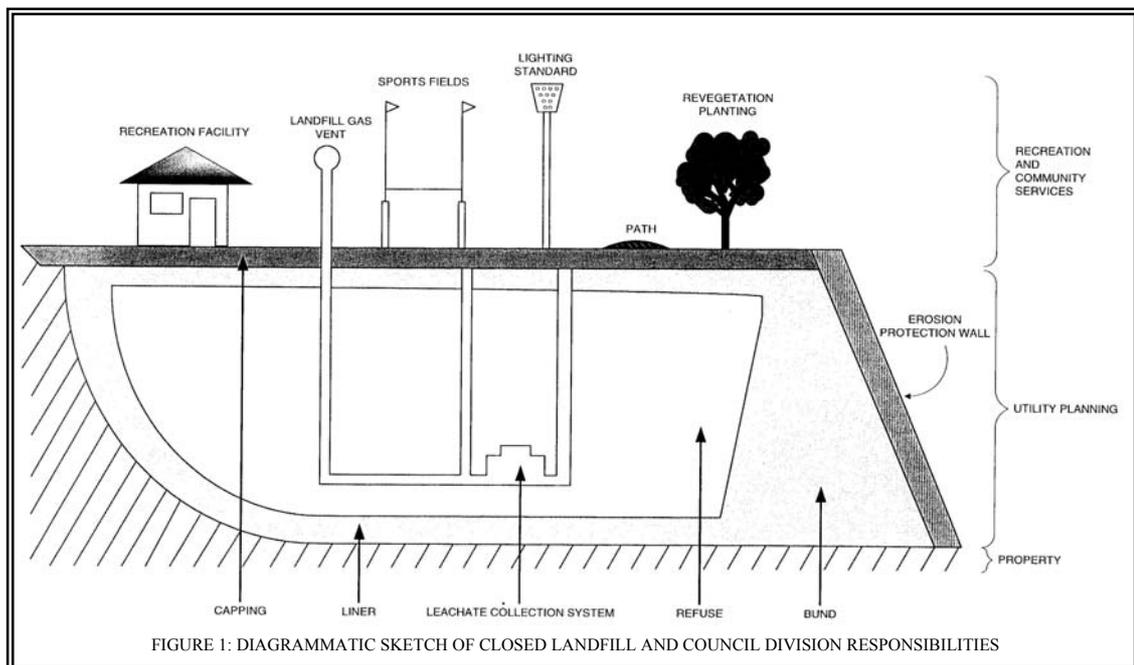
### **Asset Management within Auckland City**

Auckland City uses the CLAMP to gain improved knowledge of its closed landfill assets through a consolidation of asset information and analysis of existing and new asset condition data. The CLAMP also enables review and improvement of current asset management practices with due consideration to best industry standards and practices. The improvement plan flags issues and notes improvements scheduled for the year and is updated yearly.

Asset management is coordinated through the Auckland City Asset Management Steering Team (AMST). This team coordinates the management of all AMP's ensuring that they meet the strategic objectives of the City Council and comply with the requirements of the New Zealand Audit Office.

Three divisions within council share responsibility for the administration and management of the closed landfills. They are Property, Utility Planning (UP), and Recreation and Community Services (RACS). This division of responsibilities makes it essential for the different parties to maintain a good level of understanding and communication to facilitate a comprehensive management approach. Figure 1 shows graphically the relationship between the portions of a landfill and the relevant Council divisions. Their individual responsibilities can be described as follows:

- Property is responsible for the ownership of the land underlying the landfill liner;
- RACS is responsible for any developed property sitting on top of the landfill capping such as sports fields, fences, carparking areas, buildings and lighting standards; and
- UP is responsible for the liner, refuse and capping including any assets located within this volume such as pumping and reticulation systems and seawalls or erosion protection walls. UP is also responsible for developing, updating and managing the CLAMP.



### Levels of Service and Consultation

A key objective of the CLAMP is to match the Levels of Service (LOS) provided by the asset with the requirements and expectations of the relevant Customers and Stakeholders. The LOS defined in the plan are used as a measure of effectiveness of the plan; as a focus for the AM strategies developed; to identify the costs and benefits of the services offered,

and to demonstrate financial responsibility in managing the relevant assets. The CLAMP sets out target LOS using performance indicators. Targets are periodically reviewed to reflect changes in stakeholder expectations, possible legislative changes and new information received from ongoing consultation. The operation and management of closed landfills is to be consistent with, and guided by the vision statement and corporate goals stated in Auckland City's Annual Strategic Plan.

A comprehensive consultation plan has been developed which involves active communication with stakeholders and those directly concerned with the assets. This plan assesses the suitability and affordability of the services offered from which a better understanding of customer and stakeholder expectations will develop.

In the past, consultation has only been undertaken as part of the consultative process to gain resource consents for new works or through complaints and comments received through the Council call centre or directed at Auckland City workers on site. While this consultation has been based on industry best practices, it has not considered customer and stakeholder expectations in any detail.

Auckland City is currently undertaking preliminary Iwi consultation with the objective of consulting with all relevant customers and stakeholders in the near future. In some cases, Iwi are already extensively involved as stakeholders in the planning and implementation of closed landfill management.

Iwi consultation is of particular importance. The Resource Management Act 1991 (RMA) requires that Auckland City:

*“Take into account the Treaty of Waitangi in exercising functions and powers under the Act relating to the use, development and protection of natural and physical resources”.*

While Auckland City is legally obligated to conduct consultation, Iwi are stakeholders, as well as guardians of the land, and have valuable knowledge of the land as well as “old ties” to the land. Effective consultation therefore holds considerable benefit. Identifying issues early on may prevent inappropriate or delayed asset management decisions at a later stage and ultimately lead to better and more cost effective and efficient management of assets.

Gap Analysis is undertaken annually to determine high priority improvement tasks under three categories within the plan: AM Processes, AM Information Systems and AM Data and Information. The main key point identified in the 2000 Gap Analysis was to ensure stakeholder (and in particular iwi) expectations were accurately assessed, recorded and addressed in terms of future planning.

### **Life Cycle Management Plans and Asset Register**

Given that landfills are systems that contain potentially hazardous materials buried below current ground levels, any attempt to inspect assets is a difficult and hazardous exercise. Little was known of the state or efficiency of these assets until the development of the Asset Register.

An Asset Register (AR) has been prepared for all priority one closed landfills, and it is intended that eventually all 64 known closed landfills in the Auckland City isthmus will be incorporated into the AR. The AR lists and quantifies all known assets in the priority one closed landfills. That is, all accessibly visible assets above ground as well as those recorded on GIS below ground. It also contains

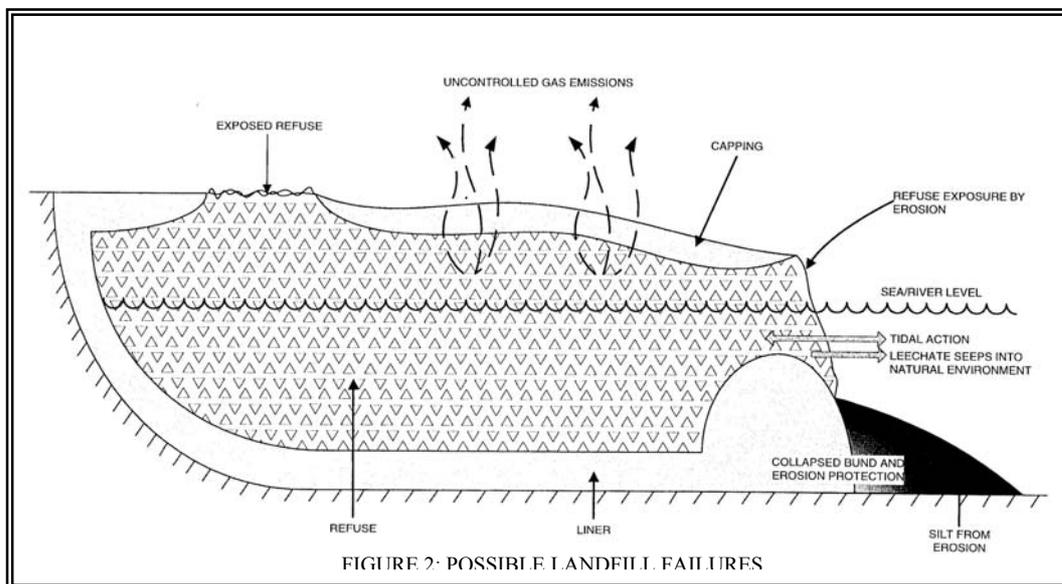
- Asset capacity information in terms of the expected life of the asset;
- Performance ability of the asset in terms of meeting the specified performance target levels;
- Condition assessment of the assets from visual site inspections undertaken during regular closed landfill monitoring;
- Criticality of the asset, in terms of the threshold for action following failure of the asset; and
- Valuation of assets. Closed landfill assets range in value from \$300,000 (for capping/ erosion protection walls) to under \$1000 for monitoring bores. Generally previous valuation data has been long lost and the development of the asset register was the first attempt to assign a value to those assets created before the development of the CLAMP.

The potential issues associated with the closed landfills generally fall into the following categories:

- The closed landfill may constitute a risk to the *Health and Safety* of the public. Typical examples include exposed refuse or incompetent capping, and concentrated discharges of leachate into areas frequented by public;
- Structural collapse allowing refuse, leachate and/or gas to escape into the environment; and
- Degradation of the receiving environment and water quality due to leachate seeps, and degradation of localised air quality from emissions of landfill gas.

Failure of the assets associated within the closed landfill can result from any of the potential problems listed above, as summarised in Figure 2.

In order to minimise these detrimental effects the CLAMP contains Lifecycle Management Plans (LCMP) for all significant assets located within the closed landfills. The LCMP includes routine maintenance plans, renewal/replacement plans, and creation/acquisition/augmentation plans. A disposal plan is currently being compiled.



### Financial Forecast

Asset management is rates funded. As these landfills have been closed for approximately 20 – 30 years it is not possible to identify specific users. Therefore the only way to fund the remediation is through rates, arguing that the community at large benefits from the clean up of the environment and the availability of the open spaces the closed landfills provide.

The Local Government Act (No.3) 1996 places an emphasis on the preparation of long term strategic financial planning. The CLAMP provides clear justification for forward works programmes (and associated funding programmes) and provides the ability to even out peak funding demands and account for changes in asset service potential.

Following the development of the Asset Register, financial forecasts are updated every financial year. Expenditure is identified by Asset group under the headings of:

- Operational (asset management and standing charges);
- Maintenance (planned and unplanned);
- Renewals (renovation and replacement works), and
- New works (upgrading and creation of new assets).

### **Improvement Plan**

The Improvement Plan provides key actions noted for the up and coming financial year. This Plan is updated each year and plays a vital role in contributing to the “living document”. Improvement Plans are prepared based on desired practices and having regard for key issues and current initiatives. These include decision-making processes, risk management and environmental impact.

### **Conclusion**

In addition to being a legal requirement, the CLAMP is also a very useful management tool. AMP's are used as management tools for all other infrastructure assets within councils and can also be used effectively for closed landfills. The nature of closed landfills makes their AMP's unique, and often difficult to prepare. This is in part due to lack of information, unpredictability regarding asset performance and associated high environmental risk factors. Setting appropriate Levels of Service and undertaking effective consultation are of key importance for a plan to be realistic and workable.

### **References**

City Design Ltd (1999), (2000), (2001), Closed Landfill Asset Management Plan for Auckland City Council

