Section 2

Description of the Proposal

PREAMBLE

This section presents the Applicant's objectives and plans to expand and operate the Nyngan Waste and Resource Management Facility. Details are presented in relation to the following.

- *The sources and classification of material to be received.*
- *The layout of the proposed expanded facility.*
- *Management measures that would be implemented throughout the life of the Proposal.*
- *The proposed traffic, staging, hours of operation and employment.*
- *Proposed rehabilitation of the Site.*

Emphasis is placed throughout this section on presenting the Applicant's plans in sufficient detail to enable the environmental impacts of the Proposal to be assessed by the determining authority.

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2.1 INTRODUCTION

2.1.1 Objectives

The Applicant's objectives for the expansion and operation of the Proposal are to:

a) develop facilities to allow for the collection and recycling of waste oils, metal, glass, paper and cardboard, batteries, used types and bulky items;

b) develop facilities to allow for the collection and on-site mulching of greenwaste for use by the Council or provision to the public;

c) continue to provide a facility that enables the receipt and emplacement of non-recyclable wastes;

d) progressively rehabilitate the entire Site in a manner that re-instates the rural agriculturally productive land consistent with the land surrounding the Site; and

e) achieve (a) to (d) above in an environmentally and socially responsible manner.

2.1.2 The Site

For the purposes of this document, the Site is the area within which all existing and proposed activities would be undertaken. The Site is shown on **Figure 2.1** and comprises Lot 107, DP 822472 and part Lot 7301, DP 1161404. The Applicant has agreed with Catchments and Lands and the Livestock Pest and Health authority to transfer ownership of the Site to the Applicant. To this end, a plan of subdivision has been prepared but has yet to be approved.

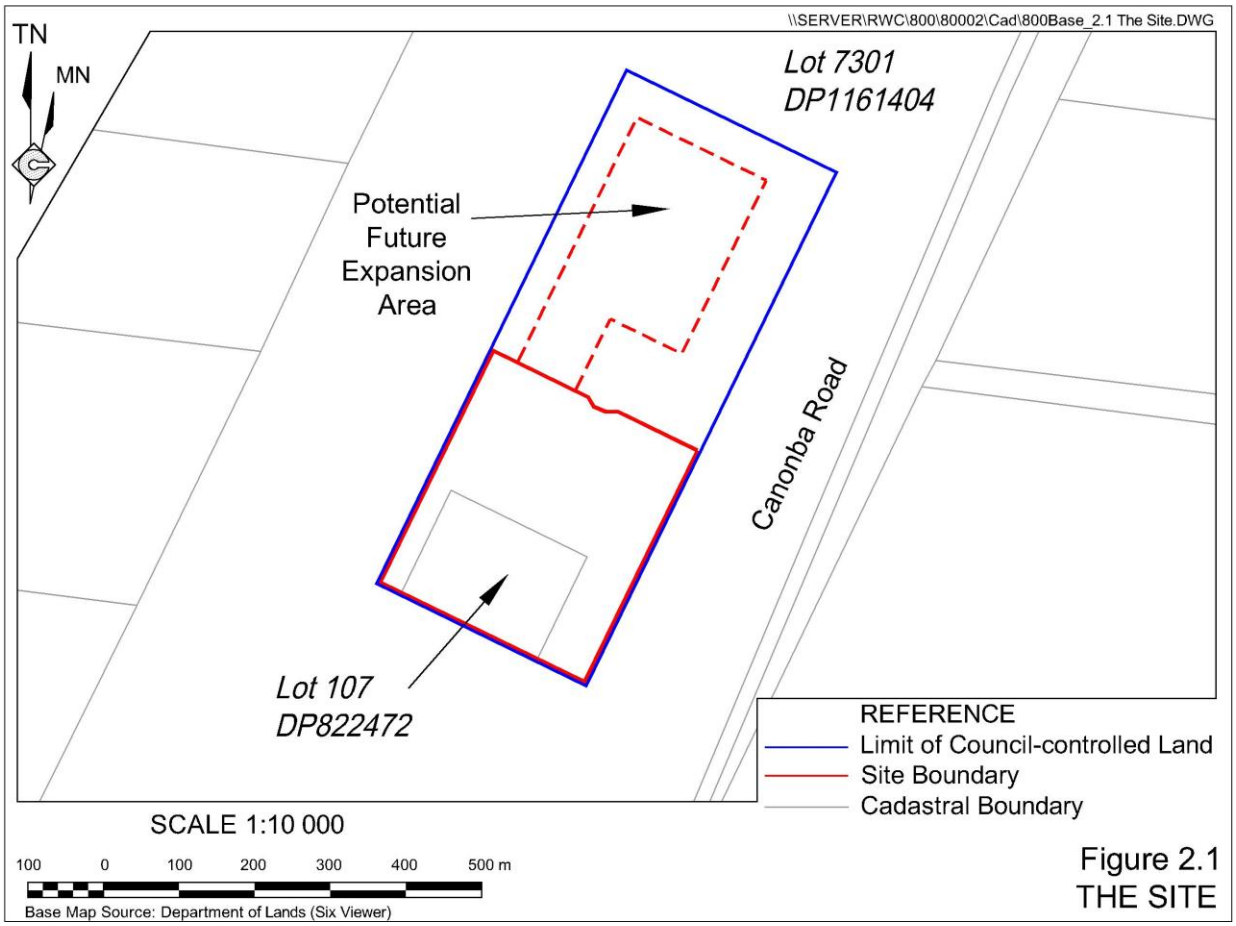
As can be seen on **Figure 2.1**, an area has been identified for potential future expansion of the facility. It is envisaged that nearing the end of the life of the current Proposal, an application would be submitted for further expansion of the landfilling activities into this area. This additional area is not part of the current Proposal.

2.2 WASTE SOURCES AND CLASSIFICATION

As discussed in Section 1.1, waste to be emplaced within the proposed facility would be general solid waste (putrescible and non-putrescible) including limited recyclable material and special waste.

The vast majority of waste generated within Bogan Local Government Area (LGA) would continue to be disposed of within the existing waste facility. It is noted that the facility is not a manned facility and that material is delivered by Council-operated vehicles, contractors engaged by both the Applicant and the community, and the general public. Typically, however, material is derived from the following sources.

- Domestic waste collected as part of Council's kerbside collection service. Recyclable material collected as part of that service is transferred directly to a recycling facility outside of the LGA.
- Trade waste and inert building and demolition waste from skip bins and trucks.



- Industrial and demolition waste delivered to the facility by designated operators.
- Clinical waste from Nyngan Hospital and medical centres delivered to the facility via authorised contractors.
- Waste oil delivered to the facility by local businesses and the public.
- Waste generated on Council properties, land and common areas that are managed by Council.

In addition, the Applicant operates three village waste management facilities. It is anticipated that during the life of the Proposal that these facilities will be converted to waste transfer stations and that the resulting waste will be transferred to the proposed facility.

Waste generated as part of the Council's kerbside waste collection program and waste from future transfer stations would continue to be delivered directly to the active waste emplacement area. Waste delivered by the public, businesses and waste management contractors would be placed within the General Waste Drop-off Area for disposal to landfill or the Selected Waste Drop-off Area for collection by a suitably licenced waste management contractor for transportation to a suitable recycling facility.

2.3 SITE LAYOUT AND PROPOSAL COMPONENTS

The Site would incorporate all infrastructure and activities required to successfully operate the Nyngan Waste & Resource Management Facility and would comprise the following components (**Figure 2.2**).

- Site entrance and access road.
- Site office and workshop.
- Selected Waste Drop-off Area.
- A landfill area (approximately 2ha) comprising 24 landfill cells, each approximately 40m long, 15m wide and 6m deep.
- Soil and clay or virgin excavation natural material (VENM) stockpile areas.
- Leachate Evaporation Pond.
- A vegetation/tree screen.
- A centrally-located internal access road.

2.4 SITE ESTABLISHMENT

Site establishment would involve the range of activities required to enable the initial waste to be received on the Site for disposal to a landfill cell within the extended area. It is noted that during the site establishment period, the Applicant would also complete the rehabilitation activities of the existing facility.

Figure 2.2 displays the locations of each of the activities to be completed during the site establishment phase. The principal activities involved would include the following.

- Relocation of existing drainage diversions within the extended area to ensure that surface water from surrounding land is adequately diverted around the Site.
- Construction of a surface water diversion around the perimeter of the Site to ensure that surface water does not flow onto the Site and that surface water from the Site is not discharged.
- Construction of a perimeter fence to secure the Site. The fence would extend the fence around the existing waste facility.
- Construction of the site Office.
- Deconstruction and reconstruction of the workshop.
- Formation of the internal access road. The road would be unsealed and approximately 10m wide.
- Reconfiguration of the fire fighting/water network. This is discussed further in Section 2.10.1.3.

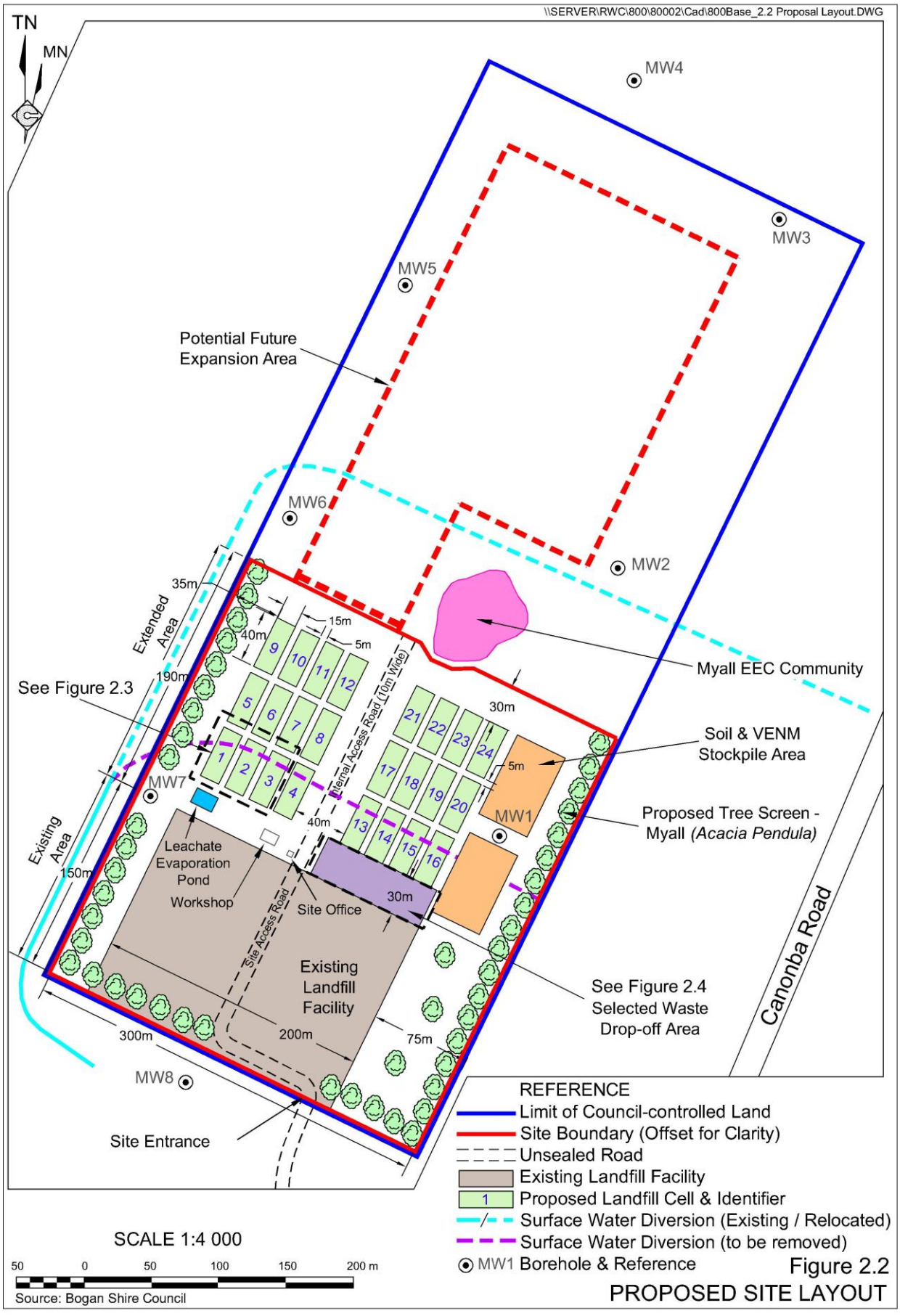


Figure 2.2
PROPOSED SITE LAYOUT

- Construction of the Leachate Evaporation Pond (see Section 2.5.5 for further detail) and other surface water management structures on the Site.
- Establishment of the soil and VENM storage areas.
- Establishment of the Selected Waste Drop-off Area, discussed in Section 2.6.
- Planting of the tree screen. The tree screen will be comprised of Myall (*acacia Pendula*) species to complement the Weeping Myall Woodlands Endangered Ecological Community (Myall EEC) adjacent to the Site (see Section 4.4.4).

2.5 WASTE EMPLACEMENT DESIGN AND OPERATION

2.5.1 Introduction

The following sub-sections discuss the principals used in designing the landfill cells, how the cells will be constructed, landfilling operations, and how leachate from the landfill cells will be managed.

2.5.2 Landfill Design Principals

2.5.2.1 Introduction

The landfill design for the proposed facility is presented in **Figure 2.2**. The proposed landfilling operations would include 24 landfill cells. Each landfill cell would be approximately 40m long, 15m wide and 6m deep for a final volume of approximately 3 000m^3 (assuming a 1m thick capping and topsoil cover) within each cell and 72 000m^3 for the entire facility.

The proposed landfill design incorporates objectives, principles and design elements for the emplacement of waste in an environmentally responsible manner in accordance with the Environment Protection Authorities (EPA) *Environmental Guidelines: Solid Waste Landfills* (EPA, 1996) (the Guideline). The following sub-sections provide a summary of how the principal environmental issues and goals identified in Section 2 of the Guideline have been incorporated. **Appendix 3** addresses each of the Benchmark Techniques outlined in Appendix A of the Guideline.

2.5.2.2 Environmental Issue 1 - Water Pollution

The landfill cells would be designed to meet the leachate barrier system requirements of EPA's *Environmental Guidelines: Solid Waste Landfills* in accordance with the Benchmark Technique 1. The Applicant would ensure that the base and the walls of cells would achieve a permeability of $<1x10^{-9}$ m/s over 900mm thickness or equivalent.

A leachate collection system would be installed in the base of each landfill cell. All leachate would be contained in the landfill cell or pumped to an engineered Leachate Evaporation Pond as described in Section 2.5.5 (**Figure 2.2**).

A range of piezometers have been installed by the Applicant and would continue to be used to monitor groundwater within and surrounding the Site to identify any potential adverse groundwater quality impacts.

Finally, a surface water diversion structure would be constructed to ensure that water from undisturbed areas surrounding the Site is diverted around the Site, while potentially sediment laden water within the Site is retained.

2.5.2.3 Environmental Issue 2 - Air Pollution

The small volumes of gas that would be generated as a result of landfilling of putrescible waste would have a low risk of escaping from the landfill cell via subsurface migration. As indicated in Section 2.5.6, the Applicant would control the emission of gas by progressively capping and rehabilitating each cell as it is completed.

If gas emissions, particularly methane emissions, become problematic, the gas would be tapped off in accordance with the regulatory requirements and the methane component would be oxidised.

2.5.2.4 Environmental Issue 3 – Land Management and Conservation

As indicated in Section 2.5.3, the Applicant would implement a quality assurance program during construction of each of the landfill cells to ensure that the design criteria are achieved.

In addition, the Applicant would implement a range of measures identified in Section 2.5.4 to manage the waste placed within the landfill cells and maximise the recycling and reuse of materials, thereby minimising the volume of material sent to landfill.

Finally, the Site would be rehabilitated progressively throughout and at the end of the life of the Proposal as described in Section 2.12.

2.5.2.5 Environmental Issue 4 – Hazards and Loss of Amenity

A range of measures would be implemented to control entry to the Site and control where waste is placed.

The proposed facility would include the following controls to prevent degradation of the local amenity.

- Continue to ensure that vehicles travelling to and from the Site cover their loads and that waste is not deposited along Canonba Road.
- Ensure mobile litter fences are used as appropriate to limit wind-blown litter. In particular, the active cell would be surrounded on three sides with mobile litter fences.
- Ensure intermediate clay covers are used to minimise the area of exposed waste.
- Implement dust controls, including rapid stabilisation and/or revegetation of disturbed areas.

- Implement appropriate weed and pest animal control (e.g. rodents).
- Plant tree screens comprising species representative of the Myall EEC around the Site boundary.

Adequate fire prevention measures would be implemented to prevent fires starting within the Site or coming onto the Site and the Applicant would continue to ensure that adequate fire fighting equipment is available to fight any fires that do occur.

Hazardous wastes would be received at the proposed facility and managed in accordance with the relevant guidelines, namely *Protection of the Environment Operations (Waste) Regulation 2005*. In particular, a separate cell would be maintained for hazardous materials, including asbestos.

Finally, the Applicant would ensure that all staff and contractors receive adequate training and support to properly manage the facility.

2.5.3 Construction of Landfill Cells

Landfill cells would typically be constructed progressively during the life of the Proposal. As indicated in **Figure 2.3**, the Applicant would typically have one or more cells undergoing rehabilitation, one active cell and one cell under construction.

As the Site is grass-covered, topsoil together with the grass cover, followed by subsoil, would initially be stripped and placed in stockpiles, either within the soil and VENM stockpile area or adjacent to the active landfill cell. Topsoil stockpiles would be no more than 2m high and subsoil stockpiles no more than 3m high. Once landfilling operations have progressed sufficiently, topsoil and subsoil material would be placed directly on cells undergoing rehabilitation.

Following soil stripping, the underlying clay material would be excavated to a depth of approximately 6.6m below the surface. Material with a high sand content would be stockpiled separately and not used for lining or capping purposes. The excavated material would either be;

- used immediately to cap completed cells,
- placed within a temporary soil and clay stockpile area for reuse; or
- stockpiled within the soil and VENM stockpile area for reuse within the Site or elsewhere within the Bogan LGA.

Two geotechnical assessments of the Site have been undertaken by Macquarie Geotech. These are referred to as Macquarie Geotech (2012a) and (2012b). These reports are presented in **Appendix 4.** The initial report, Macquarie Geotech (2012a) was prepared in February 2012 and described the subsurface clay materials within the Site and to identify the *in situ* permeability of those materials. That report concluded that the sub-surface material had a permeability between 2.05×10^{-11}m/s and 9.17×10^{-8}m/s. As a result, some clay material within the Site would not be sufficiently impermeable for used untreated as lining material.

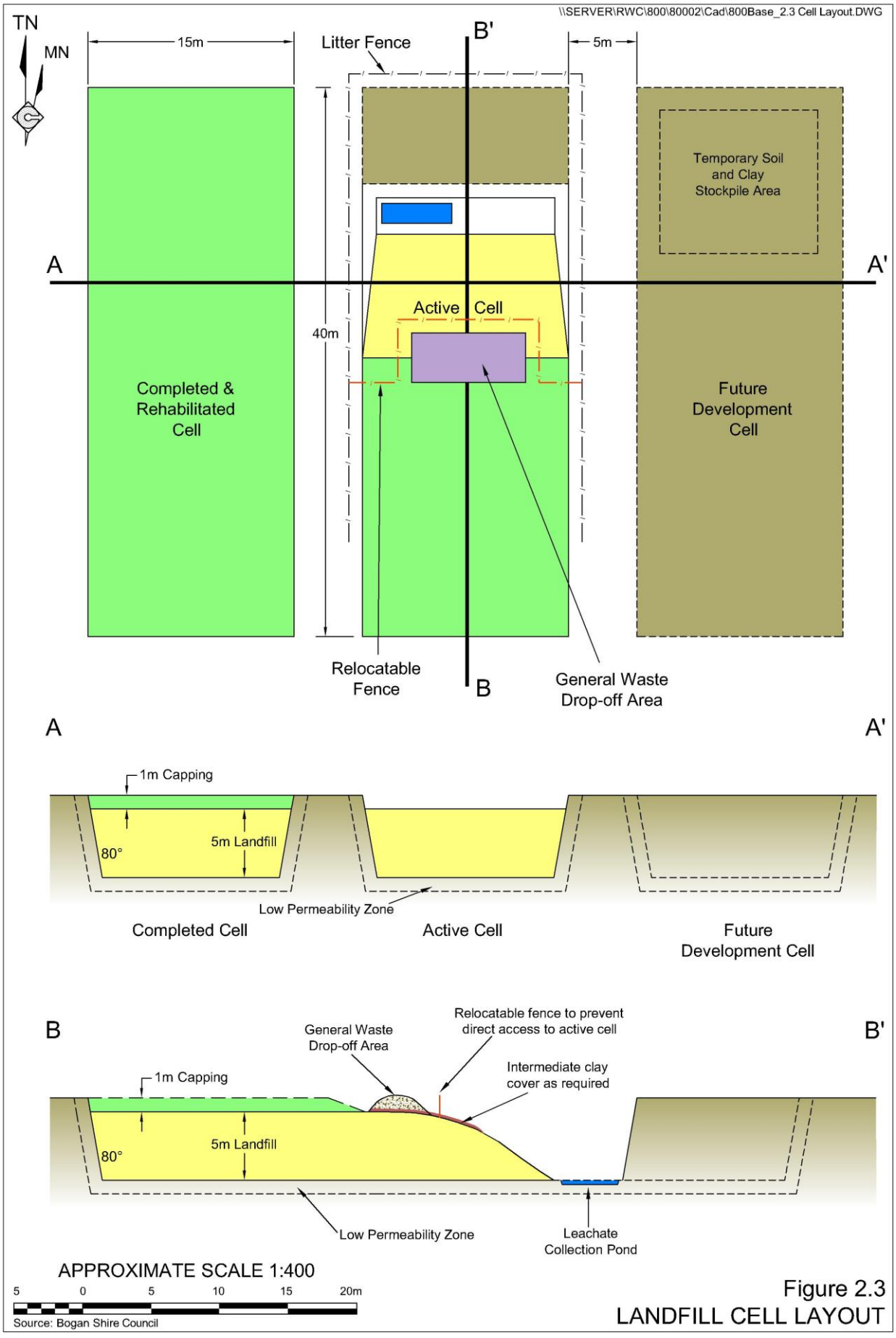


Figure 2.3
LANDFILL CELL LAYOUT

As a result, Macquarie Geotech undertook a second round of geotechnical test work (Macquarie Geotech, 2012b) to determine whether the *in situ* material could be treated to achieve the required permeability and, if so, the most appropriate methodology. In summary, Macquarie Geotech (2012b) determined that mixing onsite clay material with 1% or 2% bentonite would provide the required permeability. As a result, the Applicant would implement the following procedure when constructing the lining for the proposed landfill cells.

1. Rip the base of the excavation to a depth of 300mm and blend 2% bentonite into the ripped material. Where sandy material is encountered within 300mm of the base of the excavation, this would be removed and replaced with 300mm of clay material which would then be mixed with 2% bentonite.
2. The ripped material would be compacted to achieve a dry density of 98% relative to standard compaction at a moisture content of 80% to 110% of the optimal moisture content.
3. Stockpiled clay material, with 2% bentonite, would then be placed in 3 x 200mm layers on top of the 300mm of ripped material to achieve a minimum 900mm liner, with each layer compacted prior to placement of the next layer as described previously. Where placement of 200mm layers is not feasible, this material would be placed in 2 x 300mm layers.
4. The liner would be tested in accordance with the requirements of Level 1 Inspection and Testing identified in *AS* 3798-*2007 Guidelines on Earthworks for Commercial and Residential Developments.*

Each cell would be constructed progressively from south to north, with internal ramps maintained for vehicular access and a sump for collection and management of incident rainwater and leachate.

2.5.4 Landfilling Operations

Engineered waste emplacement would be undertaken at the facility and would involve the following general activities.

- Waste screening, emplacement, compaction and covering, including intermediate covering.
- Waste levy compliance.
- Leachate management, including stormwater management (see Section 2.5.5).
- Gas and odour management (see Section 2.5.6).
- Litter, dust, odour, mud tracking, fire, weed and vector controls.

Waste material would be delivered directly to the active cell by garbage trucks operated by the Applicant or to the General Waste Drop-off Area by the public during the opening hours of the proposed facility.

Specific operational controls that would be implemented include the following.

- Waste screening procedures to ensure that only those wastes noted in Section 2.2 would be permitted to be disposed of in landfill. This screen procedure would include the following.
  - Access to the active section of the cell would be restricted through the use of a relocatable fence or similar.
  - All waste within the General Waste Drop-off Area would be visually inspected by the Applicant prior to being pushed into the cell.
- Filling and compaction of the waste in small sections or compartments in each cell, together with the use of intermediate cover to limit the potential for wind-blown litter. The dimensions of the compartments would be documented in a Landfill Management Plan to be prepared on commencement of emplacement activities.
- The Applicant would meet its levy obligations through maintenance of records of waste received and development and implementation of reporting procedures to the satisfaction of the EPA.
- Incident rainfall and leachate within the active cell would be captured within a sump and transferred to the Leachate Evaporation Pond, as required.
- Litter would be collected and managed during the life of the Proposal.
- Dust emissions would be controlled by sequencing of landfill development and stabilisation of disturbed areas as soon as possible. In extremely dry and hot conditions a water tanker or sprinklers would be employed to wet down dusty surfaces, as necessary.
- Odour would be controlled by aerating the Leachate Evaporation Pond and oxidising gas from rehabilitated cells, as required.
- Risks associated with prevention of fire would be managed through restriction of access to the active cell and regular inspection during times when the public has access to the facility.
- A weed and pest control program would be developed and implemented.

Waste received at the proposed facility that is not suitable to be landfilled would be managed and removed from the site in accordance with the requirements of the *Protection of the Environment Operations Act 1997*.

Finally, a *Landfill Management Plan* would be prepared and regularly updated. The plan would systematically cover the following points.

- Site overview – covering the broad locational and environmental characteristics of the Site.

- Landfill structure and operations overview – outlining the landfill design/construction concepts, specifications, general operating philosophy, the nature and quantity of wastes to be received, recycling to be conducted, the intended life of the landfill and predicted financial guarantees over the life of the landfill.
- Discharge of pollutants to waters – describing in detail mechanisms for preventing groundwater and surface water contamination.
- Emissions of pollutants to the atmosphere – describing in detail mechanisms for controlling emissions.
- Land management and conservation – describing in detail the measures to be adopted to help meet waste reduction goals, the degree of control over waste taken into the Site, and the proposed approach to site colure and remediation.
- Prevention of hazard and loss of amenity – identifying mechanisms for managing dust, birds, litter, noise, pests, vermin, odour, traffic and fire.
- EPA reporting requirements in accordance with Benchmark Techniques 23 and 27.

2.5.5 Leachate Management

The design of the floor of the active landfill cell would include a leachate collection point or sump which would be relocated as landfilling activities progressively move north within the active cell. Leachate collected in the sump would be pumped to an appropriately lined Leachate Evaporation Pond using a mobile pump as required. As monthly evaporation rates in the vicinity of the Site exceeds the monthly mean rainfall during all months, accumulation of excessive volumes of leach is not anticipated.

If required, the leachate management pond would be aerated to manage odour-related issues (see Section 2.5.6).

Once capped and rehabilitated, the Applicant anticipates that very little rainfall would infiltrate into the landfill cells and consequently very little leachate would be generated within the completed cells. As such no post-rehabilitation leachate-specific management would be required.

2.5.6 Gas and Odour Management

Gas generation and odour emissions are not expected to be a major issue given the limited quantities of putrescible waste that would be landfilled. Notwithstanding this, the Applicant would implement the following gas and odour management measures.

- Minimise the risk of subsurface migration of gas through the use of an impermeable barrier in the floor and walls of each landfill cell.

- Ensure that odours would be minimised through limiting the size of the active emplacement area and installation and operation of an aerator on the Leachate Evaporation Pond, if required.
- Collect and oxidise any methane generated within the landfill cells in accordance with the State and Federal Regulatory requirements.

2.6 WASTE RECEIPT, RECYCLING AND RESOURCE RECOVERY OPERATIONS

2.6.1 Waste Receipt

Waste would be received as described in Section 2.2, namely through Council's kerbside waste collection program and through waste delivery by the public, businesses and waste management contractors.

Waste collected during Council's kerbside waste collection program would be delivered to the Site by Council-controlled vehicles and deposited directly in the active cell.

Waste delivered by the public, businesses and waste management contractors would be placed within the General Waste Drop-off Area or the Selected Waste Drop-off Area (**Figures 2.2** and **2.3**). These areas would be divided into a number of appropriately signposted drop-off points for the following classes of waste. **Figure 2.4** shows an indicative layout for the Selected Waste Drop-off Area.

General Waste Drop-off Area

- General waste, including domestic, commercial and industrial putrescible and non-putrescible wastes.

Selected Waste Drop-off Area

- Green waste.
- Demolition waste, including bricks and concrete.
- Recyclable materials, including waste oils, metal, glass, paper and cardboard and batteries.
- Bulky items, including household items (refrigerators, stoves and microwave ovens, etc.) and vehicle bodies.
- Used tyres.

Other classes of waste, including dead animals requiring burying and special waste (clinical, asbestos-contaminated and other contaminated wastes), would only be accepted by prior arrangement and would be placed directly into an appropriate emplacement area under the supervision of the facility manager or operator.

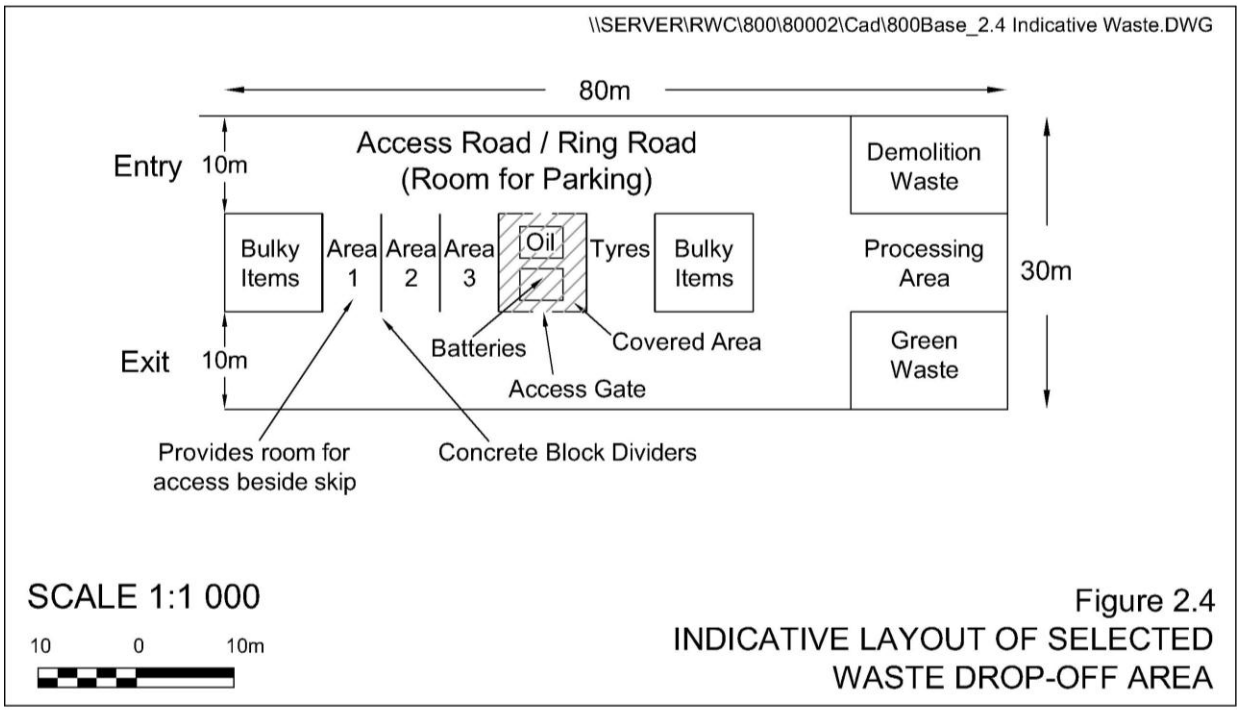


Figure 2.4
INDICATIVE LAYOUT OF SELECTED WASTE DROP-OFF AREA

Signs alerting members of public to the appropriate drop off areas, operational hours and warning that illegal dumping of waste in areas other than those designated will incur a fine would be erected at the site entrance and within the Site.

2.6.2 Recycling and Resource Recovery

Kerbside recycling facilities have been provided since September 2011 within the Bogan LGA. Materials are collected and transported directly to a Gilgandra sorting yard. As a result, the amount of recyclable material that would be received within the Selected Waste Drop-off Area is expected to be limited.

Notwithstanding the above, the Applicant would provide facilities for recycling waste oils, metal, glass, paper and cardboard, batteries, used tyres and bulky items within the Selected Waste Drop-off Area. When sufficient material has accumulated, it would be collected by a suitably licenced waste management contractor for transportation to a suitable recycling facility.

Greenwaste would be stockpiled within the Selected Waste Drop-off Area until sufficient material has been accumulated to justify a mulching program. Mulched material would be used within the Bogan LGA for Council-related purposes or provided to the public.

Demolition waste would be stockpiled until sufficient material has been accumulated to justify a crushing program. Crushed material would be used as drainage medium within the cells or elsewhere within the Bogan LGA.

2.7 PROPOSED TRAFFIC AND TRANSPORTATION

The Site would continue to be accessed by both Council garbage trucks and public vehicles via Canonba Road.

The Applicant notes that residential kerbside general waste collection is currently undertaken two days per week, with approximately 2 return journeys to the existing facility required on each collection day. Commercial, schools and the hospital kerbside waste is collected Monday, Wednesday, Thursday and Friday.

In addition, the Applicant's employees access the existing facility most weekdays, requiring approximately two return journeys or four movements.

Finally, limited vehicle movements associated with public access to the facility would occur, principally in the evenings during the week and through the day on weekends.

The number of vehicles associated with public access to the facility is unknown but likely to be significantly less than 20 journeys or 40 movements on most days, with an average likely to be closer to five journeys or ten movements per day.

The Applicant anticipates that the existing traffic levels and vehicle types accessing the proposed facility would remain similar to the existing levels and types.

2.8 PROPOSAL STAGING, HOURS OF OPERATION AND LIFE

2.8.1 Proposal Staging

The Applicant intends to undertake the site establishment stage over a period of approximately 22 months. Construction and use of the first landfill cell would then be able to be commenced progressively with the closure and rehabilitation of the existing active cell (as described in Section 2.5.3).

Landfill cells would be progressively constructed in the order identified on **Figure 2.2**. However, cells for contaminated waste would progressively be developed in reverse order from cell 24.

As discussed in Section 2.1.2, an area has been identified for potential future expansion. It is envisaged that nearing the life of the current Proposal, an application would be submitted for further expansion of the landfilling activities into this area. This additional area is not part of the current Proposal.

2.8.2 Hours of Operation

The proposed operational hours for the facility would be as follows.

- Landfilling Operations 7:00am to 6:00pm Monday to Saturday.
- Public Access 7:00am to 4:00pm Monday to Friday.
  6:00am to 6.00pm Saturday.

The facility would be locked and public access prevented outside the identified hours.

2.8.3 Proposal Life

The anticipated operational life of the proposed facility would be approximately 16 years based on the current average landfilling rate of approximately 4 400m^3/year and an average cell volume of 3 000m^3.

2.9 EMPLOYMENT

The Proposal will not result in the creation of additional employment. Rather, it will secure the ongoing employment of the existing Council workforce of approximately two people on a full-time equivalent basis.

The Proposal would also support employment within the Bogan Shire through flow-on benefits, including processing of recycled materials, the purchase of consumables and spending of employee wages.

2.10 INFRASTRUCTURE, UTILITIES AND SERVICES

2.10.1 Infrastructure

2.10.1.1 Internal Roads

The Applicant would construct a network of internal roads to provide access for machinery to transport materials on site and for landfilling operations (e.g. cover material) or road-registered trucks to deliver wastes to the active emplacement area(s). These internal roads would be unsealed and surfaced and graded, as required. Where any internal roads are located close to any steep slopes or directly adjacent to in-ground leachate ponds or pits, a roadside barrier would be constructed to a height at least one half the wheel height of the vehicles travelling on the road.

The internal roads would be re-located as required throughout the life of the Proposal.

2.10.1.2 Workshop Area

The Applicant would relocate the existing workshop area currently located in the western corner of the Site to the more suitable location (**Figure 2.2)**. The workshop area would comprise a covered parking and work area for earthmoving equipment, one or more containers for storage of equipment, tools, oils and greases.

2.10.1.3 Fire Fighting

Several fires have occurred within the existing landfill, however on each occasion, the fires have been extinguished without spreading beyond the active landfilling cell through a combination of application of water and extraction and spreading of waste material.

In order to reduce the risk of fire, access to the active cell would be restricted and stockpiles of combustible materials would be specifically managed using measures such as limiting the size of combustible stockpiles, stockpiling of combustible materials separately to avoid spread of fire; and the regular removal of combustible materials from the Site.

In addition, to help limit the potential for off-site fires to impact the Site, a fire break would be maintained around the active sections of the Site.

Finally, the Applicant would extend the existing reticulated water supply system within the Site to provide adequate water supply to enable any fires that do occur to be quickly and safely extinguished.

2.10.2 Utilities and Services

2.10.2.1 Electricity and Lighting

No electricity supply to the facility currently exists and none is proposed. Power for the office would be provided by small generator or solar system.

2.10.2.2 Sewage

A chemical toilet would be provided.

2.10.2.3 Communications

Communication, both voice and data, would continue to be via wireless services, as well as two-way radios onsite communications.

2.10.2.4 Fuel

All fuel required for earthmoving equipment would be transported to Site as required.

2.11 SAFETY AND SECURITY

2.11.1 Employee and Visitor Safety

There would be no access to the active cell by the general public, with access limited to the General Waste Drop-off Area and Selected Waste Drop-off Area.

To ensure safety off all visitors, appropriate signage would be installed throughout the Site to ensure both waste delivery vehicles and any visitors remain within nominated areas. In addition, a fence would be constructed around the active cell/s.

As part of their induction, all on-site employees and contractors would be made aware of potential hazards and risks on-site to both staff and visitors and the appropriate management and safeguard measures required to mitigate these risks.

2.11.2 Site Security

The perimeter of the existing facility is currently fenced and that fence would be extended around the perimeter of the entire Site. Given the surrounding rural land use, distance to the closest residence and to Nyngan and the fact that the gates would remain locked outside of operational hours, this level of fencing is considered sufficient for security purposes.

2.12 REHABILITATION

2.12.1 Introduction

Successful progressive rehabilitation of the Site is one of the Applicant's principal objectives for the Proposal. Progressive rehabilitation would assist in minimising the generation of wind blown litter and leachate generation.

This sub-section reviews the proposed final land-use and landform for the Site which provides the focus for the approach to rehabilitation, together with a review of the proposed rehabilitation and decommissioning activities. The discussion concludes with a review of the post operational approach to management and monitoring of the Site.

2.12.2 Final Land Use and Landform

The Applicant's principal objective in rehabilitating the proposed facility would be to rehabilitate the facility in a manner that would re-instate rural agriculturally productive land consistent with the land surrounding the Site.

To this end, the Applicant would progressively construct a final landform that would mimic the existing landform, namely a flat, grassed landform suitable for intermittent grazing operations. Each rehabilitated cell would be slightly mounded to ensure that surface water does not pool on the rehabilitated landform, with the resulting risk of increased surface water infiltration. The Leachate Evaporation Pond would be backfilled and rehabilitated.

2.12.3 Progressive Rehabilitation

A described in Section 2.5.3, the landfill cells including existing landfill cells would be progressively rehabilitated. Completed sections of each cell would be capped with approximately 700mm of clay material extracted within the Site. The clay material would either be sourced directly from the sections of a new landfill cell as it is being prepared, or from the separately stockpiled material derived from earlier extraction activities.

Following capping operations, the capped area would be shaped, spread with 300mm of soil material and permitted to revegetate naturally. Each cell would be slightly mounded to allow for some long-term subsidence and to prevent ponding of water.

Sections of the existing area that are currently used for stockpiling of material would be cleaned up and all material either relocated to the active landfill cell or the Selected Waste Drop-off Area. If required, the disturbed area would be reprofiled and soil would be spread and the area permitted to revegetate naturally.

2.12.4 Site Decommissioning

The Applicant anticipates that a subsequent application for development consent would be prepared prior to the end of the life of the Proposal. However, in the event that a subsequent application is not made the following Site decommissioning activities would be implemented.

- The active cell would be compacted, covered with clay and soil and permitted to revegetate naturally.
- The Applicant would remove the Site office, workshop and all other infrastructure from the Site.
- Rip compacted areas and spread stockpiled subsoil then topsoil and allow to revegetate naturally.
- Construct long-term water management structures (if necessary).
- Implement an appropriate contamination survey and remediate any contamination identified.
- Backfill and rehabilitate the Leachate Evaporation Pond.

2.12.5 Post Operational Monitoring and Management

Following the completion of emplacement activities in each cell the Applicant would commence post-operational monitoring and management. The principal components of the stage would be as follows.

- Maintenance of capping, revegetation and sediment and erosion control structures.
- Leachate and gas management maintenance.

Typical capping maintenance actions would involve filling depressions in the capping layer if they develop to ensure that surface water does not pond above the emplaced waste.

The Applicant would continue its groundwater monitoring regime following the life of the Proposal (see Section 4.2.3).

The monitoring data collected on Site would be reviewed annually in conjunction with the Annual Return for the site's environment protection licence to ensure it remains meaningful. Any appropriate adjustments would be discussed with the EPA.

2.13 ALTERNATIVES ASSESSED

2.13.1 Introduction

The Director-General's Requirements for the Project (see **Appendix 2**) nominate that the *Environmental Impact Statement* include an analysis of feasible alternatives and justification for the Proposal. It is acknowledged that some alternatives considered were in fact not economically feasible nor practical, hence, they have not been outlined in this sub-section.

Alternatives for the following Proposal components were considered by the Applicant during the planning stages of the Proposal.

- Waste types received and recycled/processed.
- Waste emplacement area extent and design.

2.13.2 Waste Types Received and Recycled

The Applicant considered limiting the types of waste received to exclude special wastes such as asbestos and clinical waste. However, given the relative isolation of Nyngan and the costs associated with transportation of that material to another facility, it was determined that excluding those classes of waste would impose an unreasonable burden on the community and would encourage illegal or irresponsible dumping of that material.

2.13.3 Waste Emplacement Area Extent and Design

The Applicant considered a range of design alternatives for the waste emplacement area, including a much larger application area and larger and more numerous cells. The options were rejected for the following reasons.

- The larger application area, namely the full area of Council-controlled land (see **Figure 2.2**), would have provided sufficient capacity for over 80 years. It is recognised that granting of development consent for that length of time would not be considered reasonable by the community.
- Larger emplacement cells would have resulted in a slower rate of progressive rehabilitation and cells remaining open for many years. This was not considered to be acceptable by the Applicant.

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