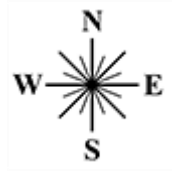


Central Darling Shire Council



Draft White Cliffs Waste Facility Long Term Plan of Management



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1.0 Overview

The White Cliffs Waste facility is located within part lot 366 and part lot 367 of DP 722942, it serves a population of up to 350 residents depending on the time of year (fewer residents during the hotter months) and is the principal means of waste disposal for the local community. The Waste Facility occupies an area of about 3 hectares. Council does not provide a kerbside waste collection service for residents and all waste receivals at the landfill are self haul. Opal mining is the main industry within White Cliffs which does not generate any significant quantity of industrial waste requiring landfilling.

The average annual rainfall is around 300 mm which can come in the form of storms. The evaporation rate exceeds 2000 mm per annum. As a general observation, little leachate would be produced at the landfill as a result of rain events and the water table appears to be well below any excavations within the waste facility. Contamination of the ground water or surface water is not considered to be a significant issue at this site.

The total quantity of waste managed at the facility would likely be less than 300 tonnes per annum and the remoteness of the township, small population, the local geology and weather characteristics need to be considered as mitigating factors when contemplating any changes to current waste disposal practices

The site is not supervised, that is there is no Council presence to oversee the operation of the facility nor is the site controlled, that there are means to limit access to defined times. This is understandable given the small population and limited quantity of materials being received. Nonetheless, Council has an obligation to operate the waste facility in accordance with the POEO (Waste) Regulations 2014.

There is a service road to the various activity areas where facility users can deposit their wastes into the excavation or at the stockpiles areas for scrap metal, green waste and for used tyres. Litter fences are provided within the site and around the boundaries and are relatively effective in preventing the spread of windblown litter. The existing signage that provides information and direction to facility users can be improved, particularly in relation to the lighting of fires.

Geotechnical engineer, Robert Amaral, has provided concept designs and notes (see Appendices 1 and 2) that demonstrate how waste is to be deposited and covered as a number of stages towards the achievement of a final landform. The site has the potential to received waste materials for approximately 40 years

2.0 Background

Central Darling Shire Council has determined to undertake a review of the operations of its waste facilities in order to identify how the residual life of the landfills it operates can be maximised, how improvements to current practices could be introduced, where efficiencies may be gained and risks mitigated. Council's aim is to achieve sustainable management of

the White Cliffs waste facility that is commensurate with available resources and obligations set out in the POEO (Waste) Regulations 2014.

Council has prepared a scope of works and engaged Robert Bailey Consulting and Robert Amaral Geotechnical (Landfill) Engineer to prepare a long term plan of management for the White Cliffs Waste Facility that will provide a final landform design, filling/staging plans and procedures to improve operational performance and to mitigate risks.

3.0 Purpose

The purpose of this Long Term Plan of Management (LTPoM) is to provide a process with the highest probability of achieving the defined project aims. The LTPoM would address long term planning and the future operations of the White Cliffs Waste Facility in considering the final landform, existing and future infrastructure, plant utilisation, complying with the EPA Environment Guidelines: Solid Waste Landfills (2nd edition 2016) and POEO (Waste) Regulations 2014, valuing responsible environmental performance, improving existing landfill management practices and recognising resource recovery opportunities.

The primary aims of the project are:

- To put measures in place that will maximise the residual life of the landfill
- To identify improvements to existing practices that will translate into cost efficiencies and provide for the realisation of these opportunities.
- To develop plans for the coordinated development of the facility over the longer term.
- To engage practices that will ensure responsible environmental performance is achieved
- To comply with the requirements of the EPA Environment Guidelines: Solid Waste Landfills (2nd edition 2016) together with other relevant legislation, regulations and codes where applicable
- To address risk
- To contribute to the development of an overarching strategic plan for Council's waste facilities including the preparation of a financial model that will predict future incomes and expenditures and will provide for the managed development of the facilities over the longer term.

4.0 Operations

- 4.1 Current operations for the general waste active tipping area** – access to the general waste disposal area is by way of a formed track leading to the tipping platform. General waste is deposited in the excavation and progressively covered. There is no formal plan for the staged placement and covering of waste,
- 4.2 Proposed improvements to the operation of the general waste tipping area** – Geotechnical engineer Robert Amaral (Amaral) has prepared concept

designs for the future operation of the current general waste disposal area that includes sequencing and concept designs for staging and final landform. (see Amaral concept designs and notes Appendix 1 and Appendix 2). The current excavation has a residual life of around 40 years under current receival volumes

- 4.3 **Existing landfill plant** - a front end loader (FEL) that is contract hired on a needs basis together with a Council mini excavator and bobcat
- 4.4 **Proposed improvement to landfill plant utilisation**—there are no proposed changes to the type of plant to be used
- 4.5 **Current site control and supervision** – the site is not supervised that is there is no Council presence to oversee the operation of the facility nor is the site controlled, that is there is no means to limit access to defined times. Given the small population using the facility and infrequent visitations, it is understandable and acceptable that the site is not controlled nor supervised, whilst ever the facility meets the requirements set out in the POEO (Waste) Regulations 2014.
- 4.6 **Proposed improvement to site control and supervision** – no changes are proposed to site control and supervision.
- 4.7 **Current Green Waste Management** – there is a separate area where self haul green waste and wood waste are stockpiled, pushed up and could be shredded as part of a service agreement. Contamination can be an issue. Shredding can be expensive and the contaminated product has little re-use value other than for cover material or placement over disturbed areas to control dust and erosion.
- 4.8 **Proposed improvements to green waste management** – although no change is proposed to the manner in which green waste is stockpiled, the location may shift to be closer to the general waste disposal area. For the current stockpile and for the future management of green waste, as an alternative to shredding and to save costs, when suitable plant is available, that is larger plant with tracks such as dozer or excavator, the stockpiled green waste can be spread, larger items of contamination removed and the green waste broken up using a number of passes of the track machine. The broken up green waste can then be landfilled or placed on top of capped surfaces, depending on the quality of the finished product to control dust and erosion. It may also be used as cover as a substitute to ENM.
- 4.9 **Current scrap metal management** – self haul scrap metal is stockpiled in two separate locations within the site. One is for white goods and general scrap and the second for car bodies. The ongoing determination in operating two separate stockpile areas will be a value judgement for Council. The collected scrap metal is on-sold to a service contractor whereby the material is taken off site on a routine basis. The scrap metal stockpiles are pushed up from time to time using the contracted FEL
- 4.10 **Proposed scrap metal management** – ideally, the scrap metal would be contained to one controlled stockpile area and not allowed to spread or multiple stockpile areas develop. This is about site management and not about scrap metal recovery. Should this practice be adopted, a large part of

the site could be barricaded off and rehabilitated. A collection contractor should be engaged to remove the accumulated scrap metal on a regular basis

4.11 Current and proposed waste concrete management – waste concrete is not being separated but landfilled. No change is proposed to waste concrete management.

4.12 Deceased animals and asbestos disposal- deceased animals or asbestos are not accepted at the waste facility. Changes to this position are not proposed

4.13 Litter- Litter fences are provided within the site and around the boundaries and are relatively effective in preventing the spread of windblown litter. Litter is generally contained against the litter fencing. Any litter that migrates beyond the site boundaries should be collected routinely

5.0 Landform Concept Design

Final landform design and filling/staging plans have been prepared for the future development of the White Cliffs waste facility and these appear as –

- Notes to Accompany Design Drawings in Appendix 1,
- Concept Designs in Appendix 2
- Guide to Site Capacity in Appendix 2,

This suite of documents provides information on the development of the landfill for future decades and offers guidance for the orderly progression of the landfilling operations. Each sub stage is essentially a building block that in total combination will deliver the final landform. It will be most important that the design is followed in order to deliver the desired outcomes. This may require periodical examination by an external party (surveyor, geotechnical engineer) to confirm the landfilling works are progressing in keeping with the adopted designs.

Council should also be aware that operating a landfill effectively and in keeping with the EPA Guidelines requires skilled plant operators, correct plant, an understanding of grades, reduced levels, waste placement, surface water management, covering and compaction. Council staff who have been given the responsibility to oversee the operation of the facility and contractors who may be engaged to perform specific tasks should be trained accordingly and be familiar with the designs and the principles supporting those designs

6.0 Acts and Policies Associated with the Project

- Protection of the Environment Operations Act 1997
- Protection of the Environment Operations (Waste) Regulation 2014
- EPA Environmental Guidelines: Solid Waste Landfills (2nd edition 2016)
- Environmental Planning and Assessment Act 1979
- Environmental Planning and Assessment Regulation 2000
- Infrastructure SEPP 2007

7.0 Delivery

Desired Outcomes – White Cliffs waste facility will be developed in a planned and co-ordinated manner.

- The project will deliver the stated aims
- Risk will be managed
- Regulatory agencies gain confidence in Council's management processes
- Succession planning is achieved
- Landfill void space will be maximised
- Residual life of the landfill will be optimised
- Long term planning prevents re-work resulting in corresponding savings
- Budgets can be developed for the capital works and programmed for delivery in a measured way and for optimum benefit

Key Actions to deliver the desired outcomes

Milestone 1 – Progressively deposit the waste material until the final landform is achieved. (Amaral Appendices 1 and 2, figures 1-4)

Key Tasks

- Develop suitable vehicular access to the active tipping area and prepare the tipping platform.
- Establish improved signage that informs and directs facility users
- Develop protocols for the management of green waste
- Concentrate the stockpiling of scrap metal to one location and close off that part of the site where car bodies were being stored
- Push waste progressively into the excavation in accordance with the Amaral concept filling/staging plans and the “waste placement technique” as shown in Appendix 4.
- Source cover/capping material from on site stockpiles of ENM

- Apply cover as shown in the “waste placement technique”
- Continue the process until the final landform is achieved and final capping applied

Cost Estimates - Figures provided below for the likely cost of works required to achieve the milestones are cost estimates only and may well vary depending on a range of circumstances. The purpose of the estimates is to provide inputs for the financial model that has been developed in the overarching Strategic Plan. The Strategic Plan has been prepared to provide direction for the future management of all of Council’s waste facilities.

Milestone 1

Progressively deposit the waste material until the final landform is achieved

The cost of achieving milestone 1 will be met from the existing waste budget for the operations of the White Cliffs facility

9.0 Appendices

Appendix 1- Notes to Accompany Design Drawings

Notes to Accompany Figures 1, 2, 3 and 4: Staged Filling Plans for White Cliffs Landfill

Figure 1 Stage 1 Filling Plan

This Figure illustrates the completion of the Stage 1 filling area.

At this point in time the waste has been placed into a mounded shape and covered with an interim soil cover 300mm deep capable of shedding surface rainfall directly to the environment.

This filling should be carried out in several sub-stages, filling from northwest to southeast.

The side batters are shown at a 5H:1V gradient which should be capable of development using an FEL or similar equipment.

The south western batter is “ final ” and may be covered with an additional 300mm of soil and overtopped with gravel , cobbles, bricks, tiles or other coarse inert fill to control erosion.

This should encourage the collection of dust, seeds and the like to promote the introduction of native shrubs.

Figure 2 Stage 2 Filling and Stage 3 Excavation Plan

This Figure illustrates the completion of the Stage 2 filling sequence and the excavation (to 2m depth) of the Stage 3 filling area.

As with the Stage 1 Filling Plan the waste will be placed in the Stage filling area in several sub-stages from northwest to south east, marrying in with the completed Stage 1 mound.

The north eastern batter is shown as having a gradient of 3H:1V but can be reduced to 5H:1V depending on the equipment available and the experience of the operators.

Again, this completed mound will shed surface water off the landform and reduce leachate production.

The excavation is shown at a depth of 2m which should provide ample soil for internal and final cover.

If this area contains old waste it should not present a problem as it will, in all probability, have been burnt and will be inert and suitable for selective disposal in the Stage 2 landfilling area or as soil cover.

Any water that collects in this excavation may be used for fire fighting, watering to encourage shrub growth over the completed stage areas or simply left to evaporate.

Figure 3 Stage 3 Filling Plan

This Figure illustrates an initial Sub-Stage 3A filling at completion and the balance of the Stage 3 filling area with two more Sub-stages (3B and 3C) using dashed lines at completion.

As shown, the filling sequence should be from up gradient to down gradient.

Figure 4 Stage 1A Filling Plan

This Figure illustrates the initial filling of the Stage 1 filling area, raising this depression so as to allow the shedding of surface water to the southeast.

This Sub-stage should be followed by a further raising to final grade as shown on **Figure 4**.

Figures illustrating the construction sequences that can be used for final perimeter batters (3H:1V) and internal temporary batters (1:1) have been provided for the larger Central Darling Shire landfills but are probably not appropriate for White Cliffs.

It is likely the case here that survey height markers should be provided as the work progresses so that the operators can achieve these design levels by whatever means they feel comfortable with using available equipment.

Capacity

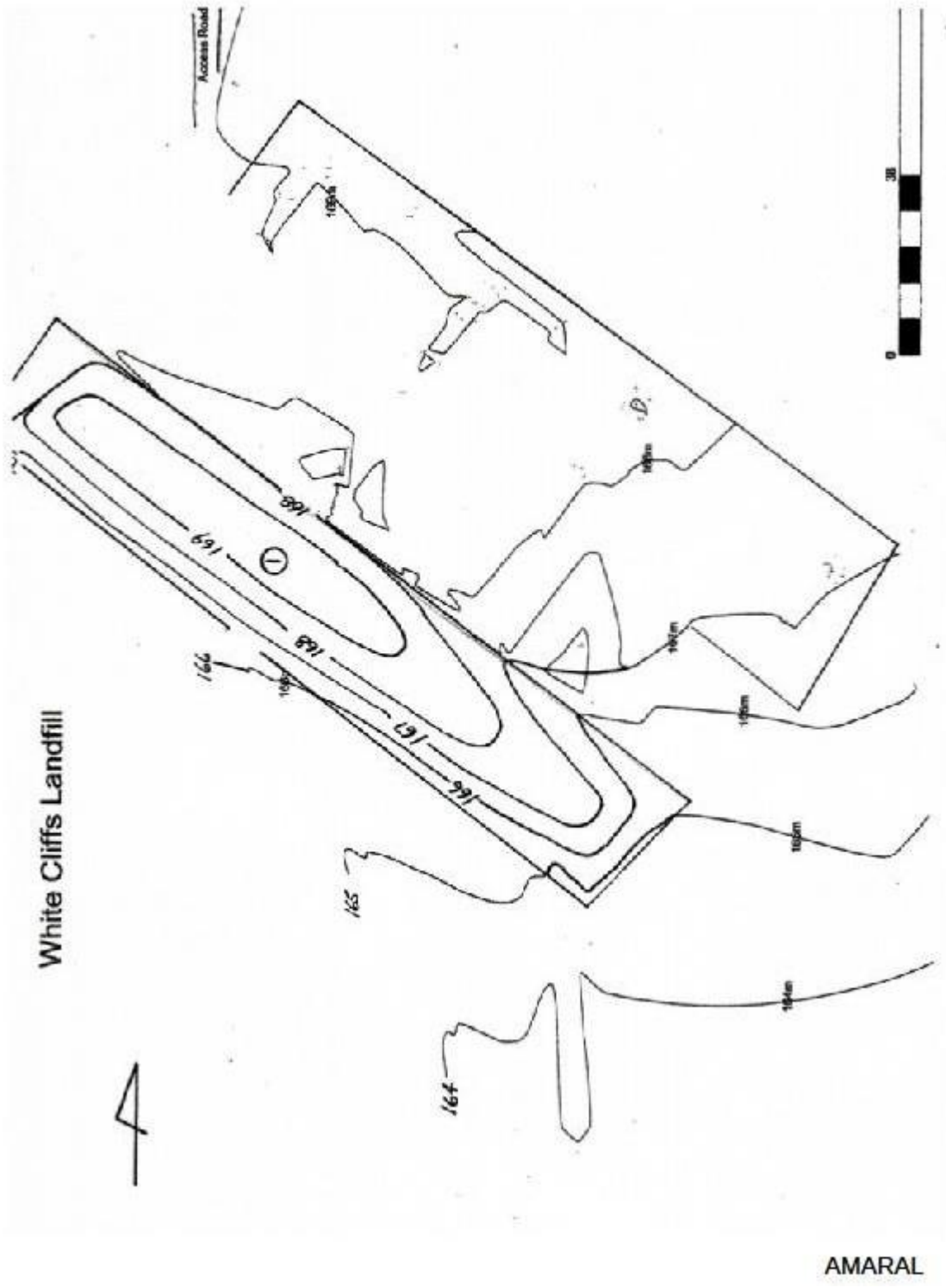
Using conventional cover usage rates of 20% the following approximate capacities have been estimated for planning purposes :

Stage	void capacity (m3)	soil cover (m 3)	net void available (m3)
1	8,000	1,600	6,400
2	5,000	1,000	4,000
3	12,000	2,400	9,600
totals	25,000	5,000	20,000

Appendix 2 – Design Concept Figures 1 to 4

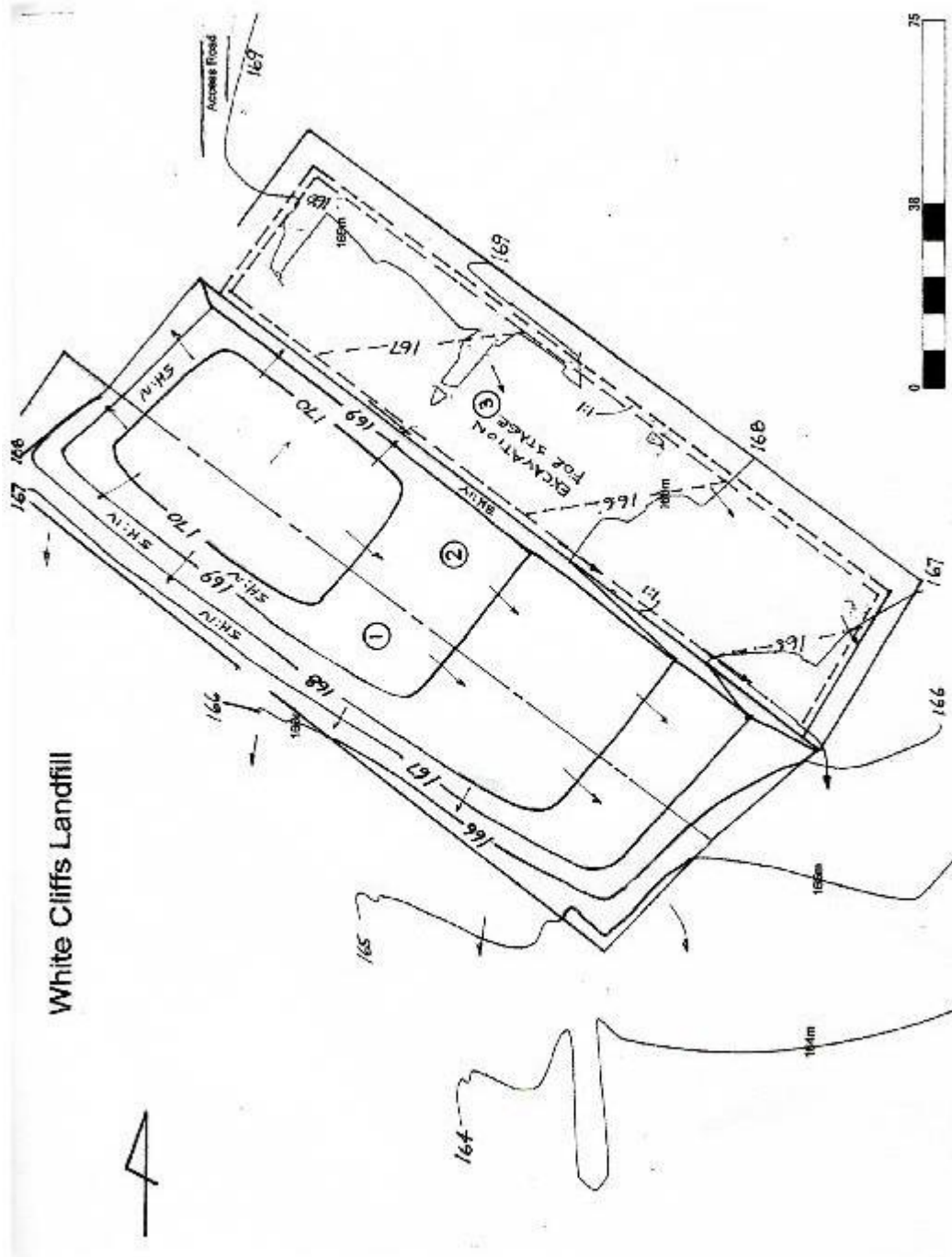
Stage 1 Filling Plan

FIGURE 1



Stage 2 filling Plan

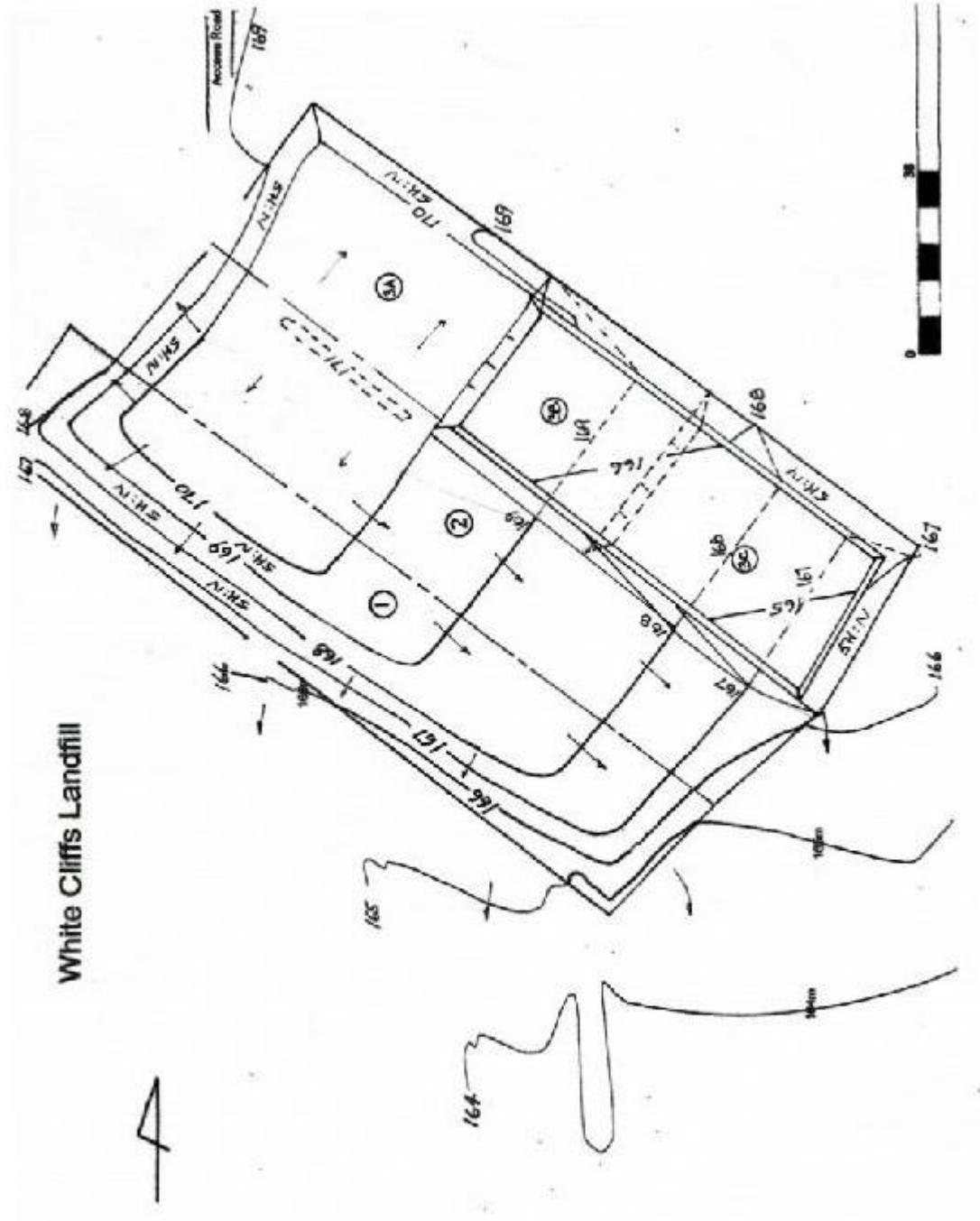
FIGURE 2



AMARAL

Stage 3 filling Plan

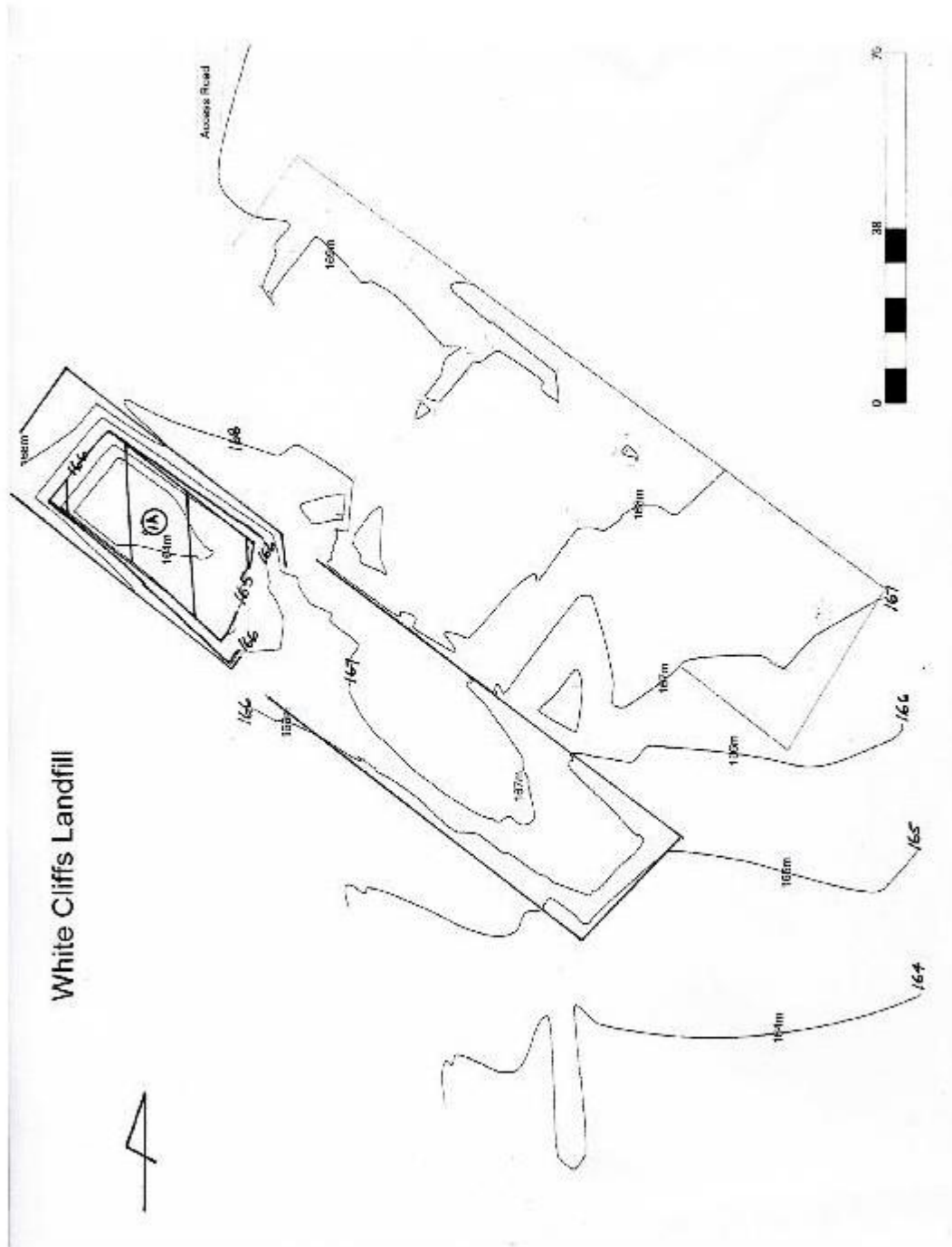
FIGURE 3



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Stage 1A Filling Plan

FIGURE 4

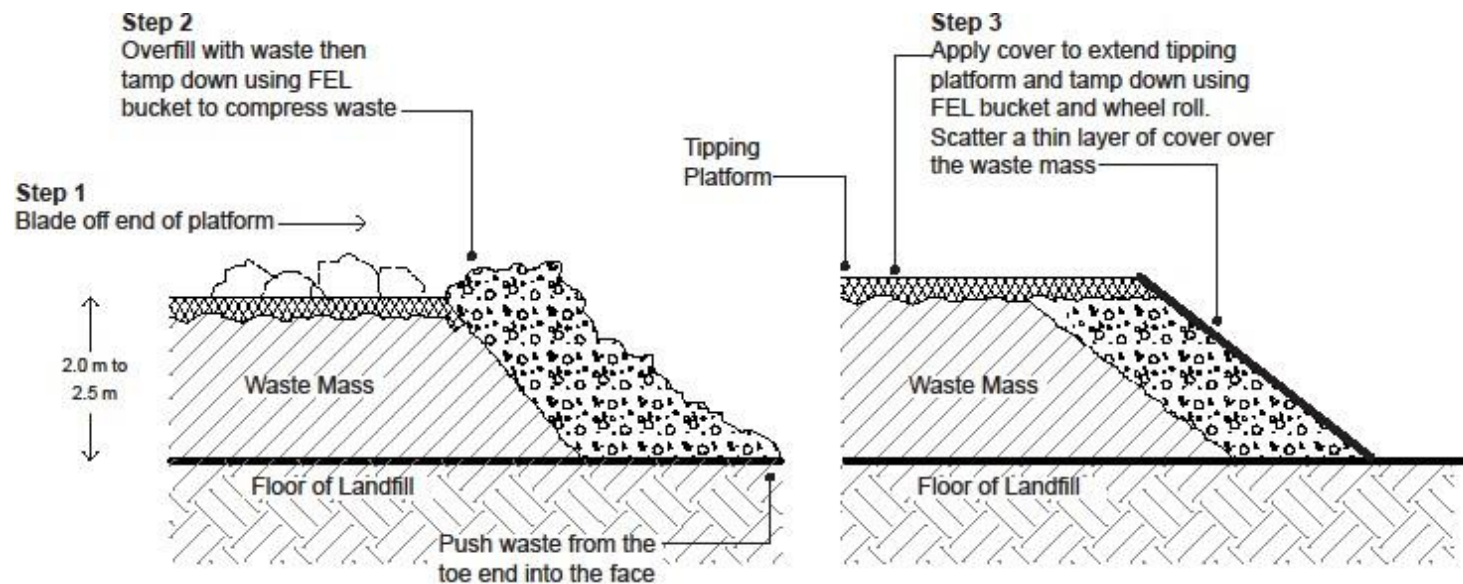


AMARAL

Appendix 3 - Aerial Location Plan



Appendix 4 – Waste Placement Technique



Note – Tamp down the exposed waste with the FEL bucket from the top and then, if accessible, from the toe area push any loose waste into the leading face. Then tamp in the exposed waste with the FEL bucket. Scatter some soil over the leading face from the top (and from the bottom, if accessible) after tamping is completed. This will save cover material and reduce windblown litter

WASTE PLACEMENT TECHNIQUE USING FEL ONLY

Appendix 5 – Pollution Defence

The EPA enforces strict rules for land pollution to deter illegal dumping of waste including asbestos, waste tyres, hazardous waste, and restricted solid waste. There is a defence against a land pollution charge for unlicensed landfills, if those facilities maintain certain minimum standards.

By setting minimum operational standards for unlicensed landfills across NSW, the **Protection of the Environment Operations (Waste) Regulation 2014** (Waste Regulation) provides a defence to land pollution at unlicensed landfills.

This defence to potential prosecution under section 142 of the POEO Act would be available if the landfill operator, at the time of the alleged land pollution, maintained these minimum standards at their facility.

These standards include measures to

- reduce fire risk
- reduce odour, noise and dust
- control public access to the site
- generally maintain the facility

These minimum standards are not a mandatory practice, however, they do provide a defence for operators against potential prosecution for land pollution under section 142 of the POEO Act.