



Banksia Road Landfill

Cleanaway Solid Waste Pty Ltd

Waste Minimisation Environment Management Plan

JBS&G 66264 | 160,693

18 October 2024





We acknowledge the Traditional Custodians of Country throughout Australia and their connections to land, sea and community.

We pay respect to Elders past and present and in the spirit of reconciliation, we commit to working together for our shared future.

Caring for Country The Journey of JBS&G
Artist: Patrick Caruso, Eastern Arrernte



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Abbreviations

Term	Definition
AHD	Above height datum
ARI	Assessment of Referral Information
C&D	Construction and demolition
C&I	Commercial and industrial
CAR	Compliance Assessment Report
CEO	Chief Executive Officer
CRG	Community Reference Group
DLCRG	Dardanup Landfill Community Reference Group
DWER	Department of Water and Environmental Regulation
EMP	Environmental Management Plan
EP Act	<i>Environmental Protection Act 1986</i>
EPA	Environmental Protection Agency
FOGO	Food organics and garden organics
MS	Ministerial Statement
WA	Western Australia

1. Executive Summary

This Waste Minimisation Environmental Management Plan (EMP) is prepared to support Cleanaway Solid Waste Pty Ltd (Cleanaway) in implementing the construction and operation of landfill cells 9, 10 and 12A and associated infrastructure at the Banksia Road Landfill, 10 km east of Bunbury in the Shire of Dardanup (the proposal).

The proposal was assessed by the Environmental Protection Authority (EPA) and was approved by the Minister for Environment in November 2023 subject to conditions set out in Ministerial Statement 1213 (MS 1213).

Table ES1.1 provides a summary of the Proposal as relevant to this Waste Minimisation EMP.

Table ES1.1: Summary of proposal

Proposal name	Banksia Road Landfill, Dardanup. Construction and operation of cells 9, 10 And 12A.
Proponent name	Cleanaway Solid Waste Pty Ltd
Ministerial Statement number	1213
Purpose of the EMP	To meet the waste minimisation environmental objectives of condition B1-1 of MS 1213
Key environmental factors and objectives	<p>The key environmental factors are:</p> <ul style="list-style-type: none"> • Greenhouse gas emissions; and • Social surroundings. <p>The environmental objectives for waste minimisation are to ensure that the proposal's waste volumes, types of waste and disposal methods are:</p> <ul style="list-style-type: none"> • Consistent with the principles of waste minimisation and the waste hierarchy and align with Western Australia's <i>Waste Avoidance and Resource Recovery Strategy 2030 (as amended or replaced)</i> (the waste strategy) (Waste Authority 2019); • Consistent with diversion of relevant waste streams away from landfill where practicable; • Consistent with waste being accepted from producers and/or suppliers who operate in accordance with a waste minimisation policy consistent with the waste strategy and recognised state and national product stewardship schemes; and • Reviewed every five years and continuous improvements are implemented to ensure consistency with the above are included.
Condition clause (if applicable)	<p><i>B1-1 The proponent must implement the proposal to meet the following environmental objectives:</i></p> <ol style="list-style-type: none"> <i>1. The proposal's acceptance of waste volumes, types of waste and disposal methods:</i> <ol style="list-style-type: none"> <i>a. Are consistent with the principles of waste minimisation and the waste hierarchy and align with Western Australia's Waste Avoidance and Resource Recovery Strategy 2030 (as amended or replaced);</i> <i>b. Are consistent with diversion of relevant waste streams away from landfill where practicable;</i> <i>c. Are consistent with waste being accepted from producers and/or suppliers who operate in accordance with a waste minimisation policy consistent with the Western Australia's Waste Avoidance and Resource Recovery Strategy 2030 (as amended or replaced) and recognised state and national product stewardship schemes; and</i>

d. Are reviewed every five (5) years and continuous improvements are implemented to ensure consistency with the above are included.

- B1-2 The proponent must prepare an environmental management plan that satisfies the requirements of condition C4 and demonstrates how the waste minimisation environmental objectives in condition B1-1 will be achieved and submit it to the CEO.
- C1-1 The proponent must not undertake operations until the CEO has confirmed in writing that the environmental management plan required by condition B1-2 meets the requirements of that condition.
- C2-1 Upon being required to implement an environmental management plan under Part B, or after receiving notice in writing from the CEO under condition B1-2 that the environmental management plan required in Part B satisfies the relevant requirements, the proponent must:
1. implement the most recent version of the confirmed environmental management plan; and
 2. continue to implement the confirmed environmental management plan referred to in condition C2-1(1), other than for any period which the CEO confirms by notice in writing that it has been demonstrated that the relevant requirements for the environmental management plan have been met, or are able to be met under another statutory decision-making process, in which case the implementation of the environmental management plan is no longer required for that period.
- B2-2 The proponent:
1. may review and revise a confirmed environmental management plan provided it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan; and
 2. must review and revise a confirmed environmental management plan and ensure it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan, as and when directed by the CEO.
- C2-3 Despite condition C2-1, but subject to condition C2-4, the proponent may implement minor revisions to an environmental management plan if the revisions will not result in new or increased adverse impacts to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve
- C2-4 If the proponent is to implement minor revisions to the environmental management plan under condition C2-3, the proponent must provide the CEO with the following at least twenty (20) business days before it implements the revisions:
1. the revised environmental management plan clearly showing the minor revisions;
 2. an explanation of and justification for the minor revisions; and
 3. an explanation of why the minor revisions will not result in new or increased adverse impacts to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.

	<p>C2-5 <i>The proponent must cease to implement any revisions which the CEO notifies the proponent (at any time) in writing may not be implemented.</i></p> <p>C2-6 <i>The confirmed environmental management plan, and any revised environmental management plan under conditions C2-2 and C2-4, must be published on the proponent’s website and provided to the CEO in electronic form suitable for online publication by the Department of Water and Environmental Regulation within twenty (20) business days of being implemented, or being required to be implemented (whichever is earlier).</i></p> <p>C4-1 <i>The environmental management plan required under condition B1-2 must contain provisions which enable the achievement of the relevant objectives of those conditions and substantiation of whether the objectives are reasonably likely to be met, and must include:</i></p> <ol style="list-style-type: none"> 1. <i>management actions;</i> 2. <i>management targets;</i> 3. <i>contingency measures if management targets are not met; and</i> 4. <i>reporting requirements.</i> <p>C4-2 <i>Without limiting condition C2-1, the failure to achieve an environmental objective, or implement a management action, regardless of whether contingency measures have been or are being implemented, represents a non-compliance with these conditions.</i></p>
Key components in the EMP (if applicable)	<p>This Waste Minimisation EMP focuses on management actions relevant to the acceptance of waste before it is accepted and disposed of in the landfill, specifically:</p> <ul style="list-style-type: none"> • Diversion of relevant waste streams away from landfill where practicable; and • Acceptance of waste from producers and/or suppliers who operate in accordance with a waste minimisation policy. <p>Objective-based EMP components are shown in Table 3.1.</p>
Proposed construction date	Construction commenced
EMP Required pre-construction	No. The proponent must not undertake operations until the Department of Water and Environmental Regulation (DWER) has confirmed in writing that the EMP meets the requirements of condition B1-2.

2. Context, Scope and Rationale

2.1 Proposal

Cleanaway Solid Waste Pty Ltd (Cleanaway) is implementing the continuation of existing waste receipt and burial activities at the Banksia Road Putrescible Landfill, Dardanup (the site). The site is a putrescible landfill and liquid waste facility operated under Part V of the *Environmental Protection Act 1986* (EP Act) through Licence L8904/2015/1 granted by DWER. The putrescible landfill accepts up to 350,000 tonnes per year of general (household and commercial) waste.

The site is located within the Shire of Dardanup, approximately 10 km from the City of Bunbury and 3.8 km southeast of Dardanup (Figure 1). A waste management precinct that includes facilities other than the Banksia Road Landfill Facility is located approximately 400 m north of the site and includes the closed Dardanup Landfill Site, the Bunbury Harvey Regional Council Banksia Road Organics Processing Facility, the Shire of Dardanup Waste Transfer Station and a Water Corporation wastewater treatment plant.

Cleanaway is constructing three new landfill cells at the site (Cells 9, 10 and 12A), including associated stormwater, leachate and landfill gas management infrastructure. The works are a continuation of the current operations and include the establishment of additional landfill cells within the existing site boundary.

In April 2021, Cleanaway submitted a works approval application to DWER for the following activities:

- Progressive construction of landfill Cells 9, 10 and 12A over a six to seven-year period; and
- Construction of associated surface water control infrastructure within the excavated voids of Cells 9 and 10.

Concurrent with the submission to DWER, Cleanaway (the proponent) also referred the works approval application to the EPA as a significant proposal under Section 38 of the EP Act. In August 2021, the EPA determined that the works were to be assessed at the level of Assessed on Referred Information (ARI), with additional information required under section 40(2)(a) of the EP Act and a four-week public review period.

The EPA published the report and recommendations of its assessment on 5 October 2023, with the appeal period closing on 26 October 2023. No appeals were received and, therefore, Ministerial Statement (MS) 1213 was published on 21 November 2023.

The elements of the proposal that have been subject to the EPA's assessment are described in Table 2.1. The disturbance footprint of the new cells is approximately 7 ha within a 121 ha development envelope (Figure 2).

Table 2.1: Authorised extent of proposal

Proposal element	Location	Maximum extent or range
Physical elements		
Development envelope		Disturbance of up to 7 ha within a Development Envelope of 121 ha
Maximum development height	Figure 2	130 m AHD (top of waste – 128 m plus 2 m capping)
Net greenhouse gas emissions		Up to 45,000 tCO ₂ -e per annum, excluding biogenic emissions
Timing elements		
Project life	-	Landfilling operations of up to 27 years from the date of substantial commencement of operations

2.1.1 Types and Quantities of Waste

Waste types accepted at the site consist of municipal solid waste (25%), commercial and industrial (C&I) waste (54%) and construction and demolition (C&D) waste (14%).

The site is a Class III landfill that is permitted to accept the following materials (as per the current EP Act licence and *Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)* (DWER 2019):

- Clean fill;
- Inert Waste Type 1;
- Inert Waste Type 2 (plastics only);
- Putrescible Waste;
- Contaminated solid waste (meeting up to and including Class III criteria);
- Special Waste Type 1 (asbestos);
- Special Waste Type 2 (biomedical/clinical);
- Green Waste;
- Contaminated solid wastes meeting acceptance criteria for Class I, II or III landfill; and
- Drilling mud following fixation.

Waste quantities, informed by current operations, that will be accepted by the proposal are shown in Table 2.2.

Table 2.2: Waste material type, quantity and disposal destinations

Waste type	Anticipated annual quantity (tonnes)
Putrescible Waste	205,186
Contaminated Solid Waste Class III	3,3626
Inert Waste Type 2	13,738
TWM Processed Septage	1802
Special Waste Type 1	85
Special Waste Type 2	0
Drill Mud	0
Inert Waste Type 2	0

2.1.2 Waste Acceptance Procedure

The EP Act licence currently allows for the disposal of 350,000 tonnes per year of Class II and III waste to landfill. There is no transfer station or waste sorting activities at the site. Once processed over the weighbridge, landfill waste is delivered directly to the tipping area by the waste delivery vehicles, from where the waste is then pushed up and incorporated into the landfill waste mass. The exception to this is drilling mud, which is delivered to the drilling mud fixation area, mixed with soil to produce a spadeable product, tested and landfilled when confirmed to be a maximum of Class III material.

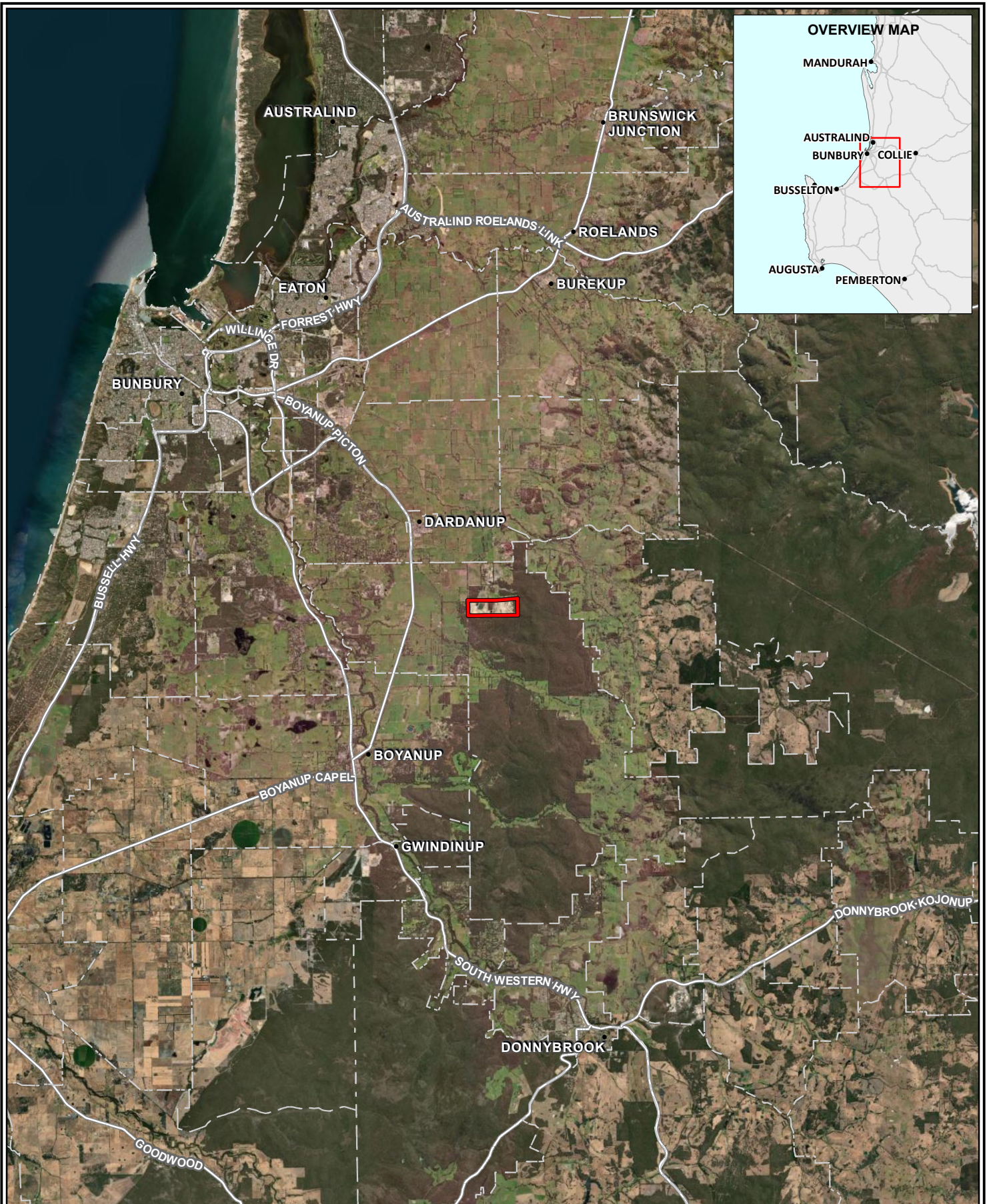
Waste is progressively placed and compacted into thin layers of approximately 500 mm thick. At the end of each day (or sooner if required for special waste types), the waste placement area is covered with daily cover, the cover thickness being dependent on the material type being covered (as prescribed in the EP Act licence).

A Waste Acceptance Program has been implemented at the site to ensure that waste materials are accepted and disposed of at the site in accordance with the EP Act licence and are suitable for landfill, i.e., the waste being accepted does not contain uncontaminated material that can be recovered. The Waste Acceptance Program includes the following control measures:

- A controlled site entrance that includes a weighbridge staffed by trained and experienced personnel;
- A data management system that includes recording of all incoming waste loads;

- An area for performing load inspections, including random inspections, and sampling of incoming loads;
- A communication system linking the weighbridge staff and the operating personnel at the landfill working face; and
- Monitoring of waste during unloading and deposition by operating personnel at the working face.

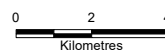
If prohibited waste is identified in an incoming vehicle during review of paperwork, consultation with the driver or load inspection, the vehicle is refused entry. If prohibited waste is discovered during waste deposition, the load is recovered, loaded back into the transport vehicle, rejected and removed from the site by the transporter.



Legend

- Site boundary
- Suburb boundary
- Roads (MRWA)

Scale 1:200,000 at A4



Coord. Sys. GDA 1994 MGA Zone 50



Job No: 61736

Client: Cleanaway Solid Waste Pty Ltd

Version: A

Date: 12-Aug-2022

Drawn By: ianandagoda

Checked By:CT

**Banksia Road Landfill
Dardanup, WA 6236**

SITE LOCATION

FIGURE 1





- Legend**
- Site boundary
 - Proposal footprint
 - Cadastral boundary
 - Minor road



Job No: 61736

Client: Cleanaway Solid Waste Pty Ltd

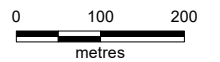
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Date 12/08/2022

Drawn By: ianandagoda

Checked By: CT

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Coord. Sys. GDA 1994 MGA Zone 50

**Banksia Road Landfill
Dardanup, WA 6236**

SITE LAYOUT

FIGURE 2

2.2 Key Environmental Factors

The key environmental factors identified by the EPA for the proposal are:

- Greenhouse gas emissions; and
- Social surroundings.

In addition to the above key environmental factors, the EPA considered the principle of waste minimisation in its holistic assessment of the proposal. As outlined in section 4 of the EP Act, this principle establishes that all reasonable and practicable measures should be taken to minimise the generation of waste and its discharge into the environment.

Based on its consideration of the principle, The EPA included a condition in MS 1213 requiring an EMP designed to minimise the amount of waste being accepted and managed by the site. The EPA noted that minimising the amount of waste being managed on site will in turn minimise impacts relating to social surroundings.

2.3 Condition Requirements

The conditions relevant to meeting the objectives of waste minimisation and the sections of this EMP where the requirements are met are described in Table 2.3.

Table 2.3: Condition requirements

#	Condition requirement	EMP section
B1-1	<p><i>The proponent must implement the proposal to meet the following environmental objectives:</i></p> <ol style="list-style-type: none"> 1. <i>The proposal's acceptance of waste volumes, types of waste and disposal methods:</i> <ol style="list-style-type: none"> a. <i>are consistent with the principles of waste minimisation and the waste hierarchy and align with Western Australia's Waste Avoidance and Resource Recovery Strategy 2030 (as amended or replaced);</i> b. <i>are consistent with diversion of relevant waste streams away from landfill where practicable;</i> c. <i>are consistent with waste being accepted from producers and/or suppliers who operate in accordance with a waste minimisation policy consistent with the Western Australia's Waste Avoidance and Resource Recovery Strategy 2030 (as amended or replaced) and recognised state and national product stewardship schemes; and</i> d. <i>are reviewed every five (5) years and continuous improvements are implemented to ensure consistency with the above are included.</i> 	Section 2.4.1
B1-2	<i>The proponent must prepare an environmental management plan that satisfies the requirements of condition C4 and demonstrates how the waste minimisation environmental objectives in condition B1-1 will be achieved and submit it to the CEO.</i>	This Waste Minimisation EMP
C1-2	<i>The proponent must not undertake operations until the CEO has confirmed in writing that the environmental management plan required by condition B1-2 meets the requirements of that condition.</i>	Confirmed Waste Minimisation EMP

#	Condition requirement	EMP section
C2-1	<p><i>Upon being required to implement an environmental management plan under Part B, or after receiving notice in writing from the CEO under condition B1-2 that the environmental management plan required in Part B satisfies the relevant requirements, the proponent must:</i></p> <ol style="list-style-type: none"> <i>1. implement the most recent version of the confirmed environmental management plan; and</i> <i>2. continue to implement the confirmed environmental management plan referred to in condition C2-1(1), other than for any period which the CEO confirms by notice in writing that it has been demonstrated that the relevant requirements for the environmental management plan have been met, or are able to be met under another statutory decision-making process, in which case the implementation of the environmental management plan is no longer required for that period.</i> 	Section 6
C2-2	<p><i>The proponent:</i></p> <ol style="list-style-type: none"> <i>1. may review and revise a confirmed environmental management plan provided it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan; and</i> <i>2. must review and revise a confirmed environmental management plan and ensure it meets the relevant requirements of that environmental management plan, including any consultation that may be required when preparing the environmental management plan, as and when directed by the CEO.</i> 	Section 3.2
C2-3	<p><i>Despite condition C2-1, but subject to condition C2-4, the proponent may implement minor revisions to an environmental management plan if the revisions will not result in new or increased adverse impacts to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve</i></p>	Section 3.2
C2-4	<p><i>If the proponent is to implement minor revisions to the environmental management plan under condition C2-3, the proponent must provide the CEO with the following at least twenty (20) business days before it implements the revisions:</i></p> <ol style="list-style-type: none"> <i>1. the revised environmental management plan clearly showing the minor revisions;</i> <i>2. an explanation of and justification for the minor revisions; and</i> <i>3. an explanation of why the minor revisions will not result in new or increased adverse impacts to the environment or result in a risk to the achievement of the limits, outcomes or objectives which the environmental management plan is required to achieve.</i> 	Section 3.2
C2-5	<p><i>The proponent must cease to implement any revisions which the CEO notifies the proponent (at any time) in writing may not be implemented.</i></p>	Section 3.2
C2-6	<p><i>The confirmed environmental management plan, and any revised environmental management plan under conditions C2-2 and C2-4, must be published on the proponent's website and provided to the CEO in electronic form suitable for online publication by the Department of Water and Environmental Regulation within twenty (20) business days of being implemented, or being required to be implemented (whichever is earlier).</i></p>	Section 5

#	Condition requirement	EMP section
C4-1	<p><i>The environmental management plan required under condition B1-2 must contain provisions which enable the achievement of the relevant objectives of those conditions and substantiation of whether the objectives are reasonably likely to be met, and must include:</i></p> <ol style="list-style-type: none"> 1. <i>management actions;</i> 2. <i>management targets;</i> 3. <i>contingency measures if management targets are not met; and</i> 4. <i>reporting requirements.</i> 	Section 3.1
C4-2	<p><i>Without limiting condition C2-1, the failure to achieve an environmental objective, or implement a management action, regardless of whether contingency measures have been or are being implemented, represents a non-compliance with these conditions.</i></p>	N/A

2.4 Rational and Approach

2.4.1 Management Objectives

The following environmental objectives for the proposal have been set by the EPA in MS 1213:

- The proposal must be implemented to ensure the acceptance of waste volumes, types of waste and disposal methods:
 - Are consistent with the principles of waste minimisation and the waste hierarchy and align with the waste strategy;
 - Are consistent with the diversion of relevant waste streams away from landfills where practicable;
 - Are consistent with waste being accepted from producers and/or suppliers who operate in accordance with a waste minimisation policy consistent with the waste strategy and recognised state and national product stewardship schemes; and
 - Are reviewed every five years and continuous improvements are implemented to ensure consistency with the above are included.

This Waste Minimisation EMP outlines objectives-based provisions and minimum requirements to be implemented before the operation of the proposal. Compliance with objectives-based provisions is determined through monitoring as to whether management actions are implemented and effective at meeting the management targets.

2.4.2 Key Assumptions and Uncertainties

The key uncertainty regarding this Waste Minimisation EMP is the waste strategy as the Waste Authority is currently leading a review of the strategy. In 2023, the Waste Authority sought feedback on a directions paper, which set out key areas it proposed to focus on in the review. Consultation feedback was provided through surveys and written submissions that informed the development of a revised waste strategy, which was released for public consultation in May 2024. The revised waste strategy is expected to be published in 2025. This Waste Minimisation EMP will be reviewed when the revised waste strategy is released to ensure that it aligns with the updates.

Another uncertainty lies with the volumes of waste accepted at the site. The construction of new waste-to-energy plants in East Rockingham and Kwinana will divert a large amount of residual waste from landfills. The development of these plants has been subject to lengthy delays and the quantum and timing of the impact on waste volumes accepted at the site is uncertain.

2.4.3 Rationale for Management Actions

The environmental objective set in MS 1213 requires the proposal's acceptance of waste volumes, types of waste and disposal methods to be consistent with the principles of waste minimisation and the waste hierarchy, and to align with the waste strategy. The current vision of the waste strategy is for *Western Australia will become a sustainable, low-waste, circular economy in which human health and the environment are protected from the impacts of waste.*

2.4.3.1 Waste Strategy Principles

The waste strategy defines five key principles that are aligned with legislation, guide the thinking behind the strategy and drive future decision-making. The principles are as follows with a discussion of how the proposal aligns with them:

1. Shared responsibility and partnership – owning your impact.

Cleanaway acknowledges that the state's environmental resources belong to all Western Australians and that it has all have a role to play in protecting them. Cleanaway works collaboratively with relevant stakeholders, including government and the community to improve waste management outcomes.

Cleanaway has an active engagement program with the local community and key stakeholders, including the Shire of Dardanup and DWER. In November 2018, Cleanaway established an independently facilitated Dardanup Landfill Community Reference Group (DLCRG), which meets on a quarterly basis and consists of representatives from Cleanaway, the local community and the Shire. The DLCRG objectives are to:

- Provide a genuine opportunity for community members to have a voice on relevant matters of concern;
- Foster community understanding and confidence in the operation of the landfill and its compliance with licence conditions through the provision of factual and unbiased information, monitoring data, presentations and site tours; and
- Develop a broad understanding of current and future priorities regarding the ongoing operation of the site.

In addition, the proposal was assessed by the EPA with a four week public review period, which allowed stakeholders the opportunity to comment on the proposed activities. Secondary approval processes relevant to the proposal, including DWER works approvals and licence amendments and local government development applications are subject to public participation.

2. Innovation and growth.

Cleanaway has a focus on innovation to lead on new and improved ways to process waste.¹

3. Better practice.

Cleanaway has been operating the landfill facility at the site since 2006 when it took the operation over from another company. The site has been a landfill site since 1999. The site is operated in line with better practice management and regulatory obligations for landfills. The operation is audited regularly by DWER and independent specialists.²

4. Waste as a resource.

Cleanaway's mission is to make a sustainable future possible and it knows that waste has extraordinary potential and is not an ordinary part of everyday life. Cleanaway sees all waste as a resource and uses its facilities and processes to transform it into valuable commodities for every sector, industry and community.³

¹ <https://www.cleanaway.com.au/blueprint-2030/>

² <https://www.cleanaway.com.au/dardanup/>

³ <https://www.cleanaway.com.au/about-us/our-business/>

5. Intergenerational equality.

The EPA considered the principle of intergenerational equity in its assessment of the proposal and had regard for this principle in its assessment of air quality and inland waters. The EPA concluded that environmental values will be protected and that the health, diversity and productivity of the environment will be maintained for the benefit of future generations.

2.4.3.2 Waste Strategy Objectives, Targets and Strategies

The waste strategy includes three objectives to guide the Western Australian community and enable the development of a sustainable, low-waste and circular economy. These are:

1. Avoid – Western Australians generate less waste.
2. Recover – Western Australians recover more value and resources from waste.
3. Protect – Western Australians protect the environment by managing waste responsibly.

In the context of the proposal being the continuation of an existing landfill for the disposal of waste, Cleanaway has limited ability to align with the 'Avoid' and 'Recover' objectives. Cleanaway's contribution to these objectives is provided through its other sustainable waste management services.

The 'Protect' objective sets targets of no more than 15% of waste generated in Perth and Peel regions being landfilled and all waste being managed and or disposed to better practice facilities by 2030. The proposal aligns with this objective and targets by providing a viable option (to 2030 and beyond) for residual waste that cannot be recovered to be disposed at a facility that is operated in accordance with better practice management and regulatory obligations for landfills.

Cleanaway has and will continue to contribute to these targets by supporting the lead stakeholders implement the following strategies contained in the waste strategy:

- Knowledge:
 - Review and report on approaches to the management of hazardous waste including controlled and liquid waste.
 - Assess existing recovery facility and landfill siting and management practices and publish information to guide achievement of better practice approaches.
- Enabling infrastructure:
 - Investigate and report on the role of funding approaches to drive the uptake of better practice approaches at waste management facilities.
- Incentives:
 - Review and update the regulatory framework for waste to ensure it is appropriate and reduces the environmental impacts and risks from waste management.
 - Revise and publish waste classifications and definitions to reflect current knowledge to ensure waste materials are managed according to their risk and are treated and/or disposed of appropriately.
- Information and data:
 - Review and update data collection and reporting systems to allow waste generation, recovery and disposal performance to be assessed in a timely manner.
 - Collaborate with industry to develop a data strategy that includes actions to improve waste data collection, management and reporting, and guides their implementation.
- Engagement and education:

- Recognise and reward the adoption of positive behaviours, practices and innovation that contribute to reduced waste generation, increased resource recovery and protection of the environment.
- Regulation and policy:
 - Contribute to national waste policy and programs aimed at waste avoidance, resource recovery and environmental protection.
 - Review the scope and application of the waste levy to ensure it meets the objectives of Waste Avoidance and Resource Recovery Strategy 2030 and establish a schedule of future waste levy rates with the initial schedule providing a minimum five year horizon.
 - Review and revise regulations and policies to achieve a level playing field for industry which ensures entities that are compliant and apply best practice are not disadvantaged.

2.4.3.3 Waste Hierarchy

The waste strategy applies the waste hierarchy, which is a widely accepted decision-making tool set out in the *Waste Avoidance and Resource Recovery Act 2007*. The waste hierarchy ranks waste management options in order of their general environmental desirability (Figure 3). The hierarchy is used alongside other tools (including economic, social and environmental assessment tools) to inform decision-making.

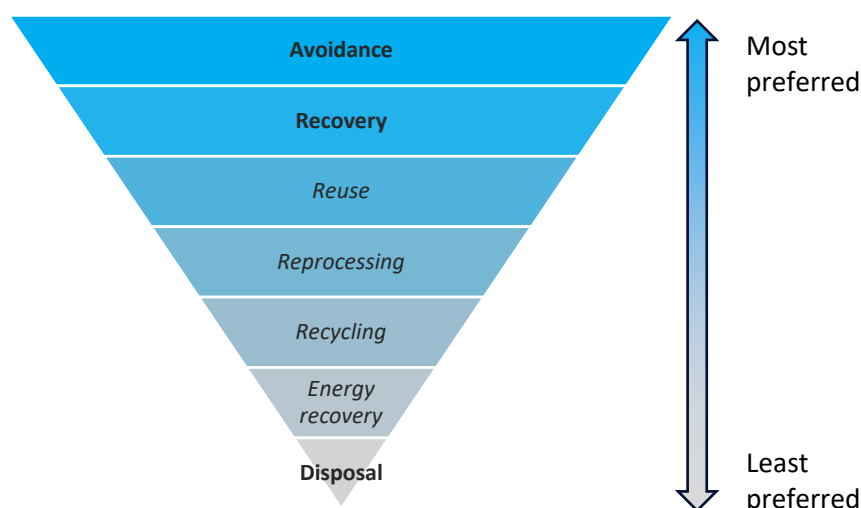


Figure 3: Waste hierarchy

As shown in Figure 3, disposal (landfill) is the least preferred waste management option as it generally recovers the least value from materials and delivers the least environmental benefit. Consequently, The waste strategy sets a target of no more than 15% of waste from the Perth and Peel region to be disposed of in landfills.

However, the State Infrastructure Strategy (Infrastructure Western Australia 2022) acknowledges that landfills will continue to play an important role, even as WA transitions to a circular economy. The proposal represents the continuation of existing waste receipt and burial activities at the site, which is located, constructed and operated following better practice approaches and management practices. Therefore, the proposal is considered to align with the waste hierarchy.

Cleanaway has further considered how the proposal aligns with the waste hierarchy in the sections below. The following descriptions of the waste management options listed in the waste hierarchy have been adapted from the Waste Authority's (2020) *Position statement on the waste hierarchy - Getting our WasteSorted*.

Waste Avoidance

Waste avoidance is the most preferred option in the waste hierarchy as it prevents substances, materials or products from becoming waste. Avoidance refers to the prevention or reduction of waste generation or the prevention or reduction of the environmental impacts (e.g. toxicity) of waste generation

Waste avoidance is focused on producers, suppliers and consumers, where product consumption is the primary driver for waste generation. This aspect of waste generation is considered beyond the scope of the proposal (e.g., use of sustainable materials in packaging and containers; avoiding food waste through meal planning and preparation).

Waste Recovery

Recovery refers to several actions (including mechanical, thermal, biological or chemical) that recover all or some of the materials that may otherwise be disposed of. Recovery options include the following:

Reuse

Reuse refers to using a material or item again. Reuse is the most preferable form of recovery because it requires no (or minimal) resources and, therefore, has no (or minimal) environmental impact. Waste reuse is again focused on producers, suppliers and consumers and beyond the scope of the proposal (e.g., use of second-hand items; selection of reusable products such as nappies).

Direct reuse of waste associated with the proposal would require a reclamation process to be implemented at the site e.g., a tip shop to accept unwanted items for resale such as the Trash and Treasure Shop run by Bunbury Harvey Regional Council at the Stanley Road Resource Management Facility. The proposal is not well positioned geographically i.e., is away from population centres, and public access to the site is problematic for safe access and separation from operational activities.

Reprocessing

Reprocessing refers to using an item or material that might otherwise become waste during the manufacturing or remanufacturing process. It may include actions both pre- and post-consumption. Re-processing options are typically implemented by manufacturers and suppliers as part of the supply chain and are not directly applicable to the proposal.

Recycling

Recycling refers to using recovered waste materials as substitutes for extracted raw materials. Recycling involves taking 'waste' materials or products and reconstituting those wastes into materials that have a market value.

Cleanaway provides recycling services for comingled waste types, including paper, cardboard, aluminium, steel, glass and rigid plastics. These recyclables are transported to existing Materials Recovery Facilities (MRFs) for processing.

Cleanaway has no plans to develop an MRF as part of the proposal, relying on existing facilities to service its recycling activities. However, it has identified several waste streams currently accepted at the landfill that could be recovered, including:

- Food organic/garden organics (FOGO) waste:

A FOGO scheme is already in operation in the region – garden waste bins are used to dispose of FOGO waste allowing separation from mixed waste in the general waste bin and collection for recycling through composting with minimal contamination. Recycling occurs at the local FOGO facility operated by the Bunbury Harvey Regional Council, in the established waste precinct adjacent to the site.

Despite the implemented FOGO scheme, putrescible waste is estimated to make up approximately 48% of the municipal waste accepted at the site. Furthermore, the putrescible waste comprises 25.5% of C&I waste and 2% of C&D waste accepted at the landfill.

Consequently, Cleanaway is investigating the potential to develop an organics facility either at the site or in the adjacent waste precinct. The proposed Dardanup Organics Facility will provide a solution predominantly targeted at the southwest region; however, it will have capacity for additional volume including southwest regional growth. The project will construct an enclosed receive hall with aerated pasteurisation, windrow maturation, and screening for FOGO-derived wastes.

- C&D waste:

Implementing recovery of C&D materials will provide opportunity for the use of these materials following processing, thus contributing to the circular economy model, waste strategy targets and management objectives. The National Greenhouse and Energy Reporting Scheme default waste mix for C&D waste is 89.0% inert materials, with the remaining 11% being made up of paper, garden, and wood waste (3%, 2%, and 6%, respectively).

Cleanaway is investigating the possibility of establishing a C&D waste processing area at the site to recover inert materials (e.g., concrete and brick) that could be recycled. Processing of C&D materials includes pre-sorting and extraction of large items (e.g., large pieces of steel), pre-screening via track vibrating screen or trommel, and extracting various sized fractions (e.g., <10 mm fines, 10 mm to <100 mm coarse and >100mm). Manual sorting to remove contaminants and recoverable wood may also be carried out prior to magnet extraction of ferrous material and use of an air separator to extract light plastics and fibres. A mobile crusher would be used to process brick and concrete material and untreated wood recovered for chipping.

- Mattresses:

Mattresses take up valuable space in landfills and do not compress or break down easily, resulting in long-lasting waste with issues for cell stability and leachate generation. Additionally, the materials used to make mattresses, such as foam and metal springs, can release harmful chemicals into the leachate.

Cleanaway has identified the possibility of providing a mattress storage and stripping area at the site to allow for the recovery of component materials such as steel springs, timber frames and foam cores. Residual waste could then be shredded making it more manageable in the landfill cell and taking up less void space.

Mattresses would be collected and stored in an appropriate area to undergo stripping and processing. Separated components would be transported to alternative facilities with the capability to undertake recycling of these materials, such as, but not limited to, manufacturing of mulch, tin roofs, and carpet underlays, from the timber base, springs, and foam, respectively.

- End-of-life tyres:

Disposal of used tyres is partially restricted in Western Australia as there is a Tyre Landfill Exclusion Zone established in and around the Perth metropolitan and country areas. The southwest is not in the exclusion zone and, therefore, tyres are accepted for landfill.

While shredding can be used to recycle tyres into products such as rubber crumbs and granules for surface or road construction, the energy input is high for low-value products. Furthermore, there are some concerns about the environmental impact of such uses due to polyaromatic hydrocarbons⁴ and

⁴ https://echa.europa.eu/documents/10162/17233/rest_pahs_children_investigation_report_en.pdf/51536e8a-990d-3b12-011c-51105ee30889?t=1687323925114

contribution to microplastics (plastic polymers and additives that are <5 mm in size), which are now banned in the European Union.

Cleanaway is considering the installation of a tyre monocell either at the site or in the adjacent waste precinct to be used for end-of-life tyre storage. Diversion of tyres from landfills achieves segregation of a potentially valuable resource that can be accessed in the future.

Energy Recovery

Energy recovery refers to the process of converting waste products into some form of energy, including:

- Thermal treatment, which uses heat to release energy bound in waste (waste to energy); and
- Biological treatment which uses biological processes to convert biodegradable waste into biogas (e.g., anaerobic digestion plant).

Energy recovery facilities provide an alternative solution to landfills for genuine residual waste that cannot feasibly be reused or recycled. The construction of waste-to-energy plants in East Rockingham and Kwinana will divert significant volumes of residual waste from landfills, including the proposal.

However, the development of energy recovery facilities requires careful site selection, consideration of proven best-practice technology, and significant engagement with the community through the full planning, design, environmental approvals and commissioning process to build community confidence and acceptability.

The development of energy recovery options at the proposal is not considered feasible from commercial, environmental and community standpoints. Whilst not part of the waste-to-energy plants being constructed in the Perth metropolitan area, Cleanaway is investing in the implementation of waste-to-energy technology in other states to manage the residual waste after general waste has been subject to reduce, reuse and recycle initiatives.^{5,6}

2.4.3.4 Regulatory Framework

The proposal involves the receipt and burial (landfilling) of waste in perpetuity. However, the proposal will be implemented to ensure that no waste is discharged to the environment, e.g., through engineered liners and containment and leachate collection and treatment systems.

The design, construction, and operation of the proposal must be consistent with regulatory requirements to prevent environmental contamination from waste and leachate emissions. This is achieved through the regulation by DWER of emissions and discharges associated with landfill activities under Part V of the EP Act.

Cleanaway holds Works Approval W6855/2023/1 for the construction of the proposal (i.e. new Cells 9, 10 and 12A) and Licence L8904/2015/1 for the operation of the existing landfill cells. Cleanaway will apply to DWER to amend the licence once the construction of each of the new cells is complete to allow their ongoing operation. The works approval and licence include conditions for infrastructure specifications, construction quality assurance, specifications for waste volumes, types, acceptance and processing, control of emissions and discharges (e.g., leachate, landfill gas, odour, noise), monitoring and reporting.

2.4.3.5 Rationale

Given the proposal's alignment with the principles of the waste strategy and waste hierarchy, and the regulation of the site by DWER under Part V of the EP Act, this Waste Minimisation EMP focusses on management actions relevant to the acceptance of waste before it is accepted and disposed of in the landfill, specifically:

⁵ <https://cleanaway2stor.blob.core.windows.net/cleanaway2-blob-container/2023/10/MR-BERC-011023.pdf>

⁶ <https://www.cleanaway.com.au/location/melbourne-energy-and-resource-centre/>

- Diversion of relevant waste streams away from landfill where practicable; and
- Acceptance of waste from producers and/or suppliers who operate in accordance with a waste minimisation policy.

3. EMP Components

3.1 Objective-Based EMPS

The objective-based components that this Waste Minimisation EMP will implement are provided in Table 3.1.

3.2 Contingency Measures

If monitoring demonstrates that a management target is not being met, Cleanaway will raise an environmental incident in the site incident management system with corrective actions identified and allocated.

3.3 Non-Compliance Reporting

If monitoring specified at any time indicates a failure to achieve an environmental objective or implement a management action, a potential non-compliance with the conditions of MS 1213 will be raised. In accordance with condition D1-1, as soon as Cleanaway becomes aware of a potential non-compliance, it will:

1. Report the potential non-compliance to the Chief Executive Officer (CEO) of DWER within seven days.
2. Implement contingency measures.
3. Investigate the cause.
4. Investigate environmental impacts.
5. Advise rectification measures to be implemented.
6. Advise any other measures to be implemented to ensure no further impact.
7. Provide a report to the CEO within 21 days of being aware of the potential non-compliance, detailing the measures required in items 1-6 above.

The reports specified in Table 3.1 will be maintained by Cleanaway and reported to the CEO of DWER annually as part of the Compliance Assessment Reports (CAR) required by conditions D2-1 to D2-4 of MS 1213.

Table 3.1: Objective-based EMP

EPA factors and objectives:	Social surroundings: to protect social surroundings from significant harm (EPA 2023a).
Objectives:	<p>B1 Waste Minimisation</p> <p>B1-1 The proponent must implement the proposal to meet the following environmental objectives</p> <p>1. The proposal’s acceptance of waste volumes, types of waste and disposal methods:</p> <ol style="list-style-type: none"> a. Are consistent with the principles of waste minimisation and the waste hierarchy and align with the waste strategy; b. Are consistent with diversion of relevant waste streams away from landfill where practicable; c. Are consistent with waste being accepted from producers and/or suppliers who operate in accordance with a waste minimisation policy consistent with the waste strategy and recognised state and national product stewardship schemes; and d. Are reviewed every five years and continuous improvements are implemented to ensure consistency with the above are included.
Key environmental values:	Potential indirect and direct impacts from changes to visual amenity.
Key impacts and risks:	Impact on visual amenity as the cell height will become a noticeable hill and adversely impact the broader landscape character and the visual amenity of the area.

Objective based				
Management Target	Management Actions	Monitoring	Timing/Frequency of Actions	Reporting
Contribute to waste strategy target of no more than 15% of waste generated in Perth and Peel regions being landfilled	Complete feasibility study for the implementation of a FOGO facility at the site.		By end of FY2025	
	Complete feasibility study for implementation of C&D processing area at the site.	Cleanaway Executive decision on progress or don’t progress.	By end of FY2025	Reporting as per Section 3.3; Items 1 and 6
	Complete feasibility study for implementation of tyre monocell at the site.	Annual compliance assessment	By end of FY2025	Annual reporting through Compliance Assess Reports (CARs) required by conditions D2-1 to D2-4 of MS 1213.
	Complete feasibility study for implementation of mattress storage and processing area at the site.		By end of FY2025	

Objective based				
Management Target	Management Actions	Monitoring	Timing/Frequency of Actions	Reporting
All waste accepted at the site is provided by suppliers who operate in accordance with a waste minimisation policy consistent with the waste strategy and recognised state and national product stewardship schemes.	Conduct annual audit of sample (minimum 7) of top waste suppliers (by waste tonnage) that use the landfill to determine presence and status of their waste minimisation policy.	Review of audit records.	Annually	Annual reporting through Compliance Assess Reports (CARs) required by conditions D2-1 to D2-4 of MS 1213.

4. Adaptive Management and Review

Cleanaway will implement an adaptive management approach to improving set objectives during the implementation of the proposal through the evaluation of the monitoring and management components of the Waste Minimisation EMP.

Adaptive management concerning this plan includes review, at a minimum, every five years.

Reviews may also be initiated:

- At the direction of the CEO of DWER (condition C2-2[2]);
- On completion of an investigation into a management target not being met;
- On completion of the annual CAR;
- Before any significant changes to proposal activities;
- On publication of the revised waste strategy; or
- On changes to any relevant legislation or approvals.

Each adaptive management review will include:

- Review of the objectives that this Waste Minimisation EMP addresses;
- Review of the implementation of the management targets, actions and associated monitoring and reporting requirements;
- Review of the management actions based on evaluation of:
 - Monitoring data and records;
 - Review of assumptions and uncertainties and understanding;
 - External changes (e.g., technical advances or innovation); and
 - Consultation with stakeholders.

In accordance with condition C2-3, Cleanaway may implement minor revisions to the plan if the revisions will not result in new or increased adverse impacts to the environment or result in a risk to the achievement of the objectives the plan is required to achieve.

Any revisions to this Waste Management EMP will be documented in Section 6 following EPA instructions and templates, and the revised version will be submitted to the CEO of DWER for approval before implementation in accordance with condition C2-4 of MS 1213.

Cleanaway will cease to implement any revisions to the plan if the CEO of DWER notifies in writing that they may not be implemented (condition C2-5).

5. Stakeholder Consultation

Cleanaway will consult with relevant stakeholders during the implementation of this Waste Minimisation EMP for the duration of the proposal.

The key stakeholders involved with the proposal include:

- DWER;
- J&P Metals (landowner and adjacent land user);
- Shire of Dardanup;
- Customers (i.e., waste providers);
- Contractors and suppliers; and
- DLCRG.

The Waste Minimisation EMP will be published on Cleanaway's website at <https://www.cleanaway.com.au/dardanup/>.

6. Document Changes

Cleanaway will implement the most recent version of the approved Waste Minimisation EMP until the CEO of DWER has confirmed by notice in writing that it has been demonstrated that the relevant requirements for the EMP have been met or are able to be met under another statutory decision-making process (condition C2-1[2] of MS 1213).

This version of the Waste Minimisation EMP is the first version of the plan. Any future changes to the plan will be summarised in this section.

7. References

Department of Water and Environmental Regulation (2019). *Landfill Waste Classification and Waste Definitions 1996 (as amended 2019)*. Available from <https://www.der.wa.gov.au/images/documents/our-work/licences-and-works-approvals/WasteDefinitions-revised.pdf> [Accessed 5 June 2024].

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Appendix A Limitations

Scope of services

This report (“the report”) has been prepared by JBS&G in accordance with the scope of services set out in the contract, or as otherwise agreed, between the Client and JBS&G. In some circumstances, a range of factors such as time, budget, access and/or site disturbance constraints may have limited the scope of services. This report is strictly limited to the matters stated in it and is not to be read as extending, by implication, to any other matter in connection with the matters addressed in it.

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Environmental conclusions

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1	1: Electronic (Updated EPA comments))	Cleanaway – Les Egerton; EPA	18/10/2024

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