

**Cleanaway Operations Pty Ltd**

# Bromelton Energy and Resource Centre

## Hazards and Risk Assessment

Reference: BERC-ARU-BNE-ENRI-RPT-0001

Rev C | 22 January 2026

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 293683-00

Arup Australia Pty Ltd | ABN 76 625 912 665

**Arup Australia Pty Ltd**  
Level 26  
123 Albert Street  
Brisbane City, QLD, 4000  
Australia  
[arup.com](https://www.arup.com)

## Acknowledgement of Country

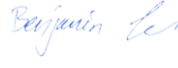
Arup acknowledges the Traditional Owners across all lands, waters and skies our firm may reach; we acknowledge their wisdom, resilience, and rich cultural heritage. We pay our respects to the Elders, past and present, and to all Aboriginal and Torres Strait Islander peoples.

‘Continuing to Shift to shape an even better world’ original artwork by Tarni O’Shea of Gilimbaa and updated by David Williams of Gilimbaa.



## Document Verification

**Project title** Bromelton Energy and Resource Centre  
**Document title** Hazards and Risk  
**Job number** 293683-00  
**Document ref** BERC-ARU-BNE-ENRI-RPT-0001  
**File reference**

| Revision | Date             | Filename           | BERC-ARU-BNE-ENRI-RPT-0001_A                                                        |                                                                                       |                                                                                       |
|----------|------------------|--------------------|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------|
| A        | 8 August 2025    | <b>Description</b> | Issue for Cleanaway Review                                                          |                                                                                       |                                                                                       |
|          |                  |                    | <b>Prepared by</b>                                                                  | <b>Checked by</b>                                                                     | <b>Approved by</b>                                                                    |
|          |                  | <b>Name</b>        | Syed Fahad                                                                          | Nigel Cann                                                                            | Nigel Cann                                                                            |
| B        | 11 November 2025 | <b>Filename</b>    | BERC-ARU-BNE-ENRI-RPT-0001_B                                                        |                                                                                       |                                                                                       |
|          |                  | <b>Description</b> | Issue of Adequacy Review                                                            |                                                                                       |                                                                                       |
|          |                  |                    | <b>Prepared by</b>                                                                  | <b>Checked by</b>                                                                     | <b>Approved by</b>                                                                    |
|          |                  | <b>Name</b>        | Syed Fahad                                                                          | Ben Smith<br>RPEQ 32157                                                               | Anna Stewart                                                                          |
|          |                  |                    |                                                                                     |                                                                                       |                                                                                       |
|          |                  |                    |                                                                                     |                                                                                       |                                                                                       |
| C        | 22 January 2026  | <b>Filename</b>    | BERC-ARU-BNE-ENRI-RPT-0001_C                                                        |                                                                                       |                                                                                       |
|          |                  | <b>Description</b> | Issue for Approval                                                                  |                                                                                       |                                                                                       |
|          |                  |                    | <b>Prepared by</b>                                                                  | <b>Checked by</b>                                                                     | <b>Approved by</b>                                                                    |
|          |                  | <b>Name</b>        | Nieve Powell                                                                        | Ben Smith<br>RPEQ 32157                                                               | Anna Stewart                                                                          |
|          |                  |                    |                                                                                     |                                                                                       |                                                                                       |
|          |                  | <b>Signature</b>   |  |  |  |

Issue Document Verification with Document



## Contents

---

|                                                                                              |      |
|----------------------------------------------------------------------------------------------|------|
| Executive Summary                                                                            | 1    |
| Abbreviations and Glossary                                                                   | 2    |
| 1. Introduction                                                                              | 4    |
| 1.1 Purpose                                                                                  | 4    |
| 1.2 Project description                                                                      | 4    |
| 2. Regulatory Context                                                                        | 9    |
| 2.1 Work Health and Safety (WHS) Legislation                                                 | 9    |
| 2.2 Hazardous Chemicals and Environmental Protection Legislations                            | 10   |
| 3. Assessment of Regulatory Requirements                                                     | 12   |
| 3.1 Expected Quantities                                                                      | 12   |
| 3.2 Regulatory Outcomes                                                                      | 13   |
| 3.3 Hazard Identification (HAZID)                                                            | 14   |
| 4. Conclusions                                                                               | 15   |
| <br>                                                                                         |      |
| <b>Tables</b>                                                                                |      |
| Table 1: Key Project Components                                                              | 6    |
| Table 2: Expected quantities and classifications of hazardous chemicals                      | 12   |
| Table 3: Relevant hazardous chemicals and their placard/manifest thresholds                  | 13   |
| Table 4: Hazardous chemicals stored on-site as outlined in Table 15.1 of the WHS Regulations | 14   |
| <br>                                                                                         |      |
| <b>Figures</b>                                                                               |      |
| Figure 1: Energy from Waste process                                                          | 5    |
| Figure 2: Site location                                                                      | 8    |
| <br>                                                                                         |      |
| <b>Appendices</b>                                                                            |      |
| Appendix A                                                                                   | A-16 |
| HAZID Register                                                                               | A-16 |
| Appendix B                                                                                   | B-17 |
| Rail Specific Risk Assessment                                                                | B-17 |

# Executive Summary

The purpose of this report is to identify and mitigate the risks associated with hazardous chemicals and industrial hazards for the construction and operation of the Bromelton Energy and Resource Centre (BERC or the Project), a proposed Energy from Waste (EfW) facility located in Bromelton, Queensland.

The Project is designed to thermally treat 760,000 tonnes per annum (tpa) of waste feedstock that would otherwise be sent to landfill. The waste feedstock primarily consists of residual municipal solid waste and residual commercial and industrial waste. The Project incorporates maturation and processing of incinerator bottom ash (IBA) to recover recyclable metals and to utilise the remaining ash as an aggregate in construction.

This report reviews the following legislation in relation to hazardous chemicals and industrial hazards for both the construction and operational phases of the Project:

- Work Health and Safety (WHS) Regulations 2011
- State Code 21: Hazardous Chemical Facilities
- *Environmental Protection (EP) Act 1994*
- Environmental Protection Regulation 2019.

As the project is located near a rail corridor a separate Rail Specific Risk Assessment (Appendix B) has been prepared, based on the requirements of *Guide to Development in a Transport Environment: Rail* (Department of Transport and Main Roads (TMR), Queensland). This assessment considers the risks associated with hazardous chemicals being stored and handled in the facility near a rail corridor.

The following are the key regulatory requirements for BERC:

- Under Chapter 7 Division 2 of the WHS Regulations, the operator of the facility must ensure that a hazardous chemical used, stored and handled at a workplace is correctly labelled and obtain safety datasheets of hazardous chemical before commencing the operations.
- Under Chapter 7 Division 3 of the WHS Regulations, the operator must also ensure that a register of hazardous chemical used, handled or stored is prepared and kept at the workplace. Under the same division of the WHS Regulations, the operator must prepare a manifest of Schedule 11 hazardous chemicals. Under Chapter 7 Division 4 of WHS regulations, the operator must also display warning placards scheduled 11 hazardous chemicals. See section 3.2.1.1 of this report for details. These requirements need to be met before commencing of the operations.
- As diesel and ammonia (if used) exceed the threshold quantity of Schedule 3 of the EP Act, the operator shall notify the Department of Environment, Tourism, Science and Innovation (DETSI) of these 'notifiable activities'.
- Prior to commencing operations an emergency plan shall be developed in accordance with Regulation 361 of the WHS Regulations before commencing operations. This shall include appropriate evacuation procedures, a medical treatment and assistance plan and an effective communication plan between the person coordinating an emergency response and all persons in the workplace. The operator shall also provide the emergency plan to Queensland Fire and Emergency Services (QFES) for review. The plan shall be updated to align with QFES's recommendations before the facility operation begins.
- The operator shall provide placards in compliance with the Schedule 13 'Placard Requirements' of the WHS Regulations, where the expected storage capacity is greater than the placard quantity. Similarly, a manifest shall be produced by the operator for all hazardous chemicals where the expected storage quantity exceeds the manifest threshold. The manifest shall meet all obligations under Schedule 12 'Manifest Requirements'.

# Abbreviations and Glossary

| Abbreviation   | Definition                                                          |
|----------------|---------------------------------------------------------------------|
| APCr           | Air Pollution Control Residue                                       |
| ADGC           | Australian Code for the Transport of Dangerous Goods by Road & Rail |
| BAT            | Best Available Techniques                                           |
| BERC           | Bromelton Energy and Resource Centre                                |
| BREF           | Best Available Techniques Reference Document                        |
| C&I            | Commercial and Industrial                                           |
| CEMS           | Continuous Emissions Monitoring System                              |
| DETSI          | Department of Environment, Tourism, Science and Innovation          |
| DG             | Dangerous Goods                                                     |
| EfW            | Energy from Waste                                                   |
| EP Act         | <i>Environment Protection Act 1994</i> (Qld)                        |
| EP Regulation  | Environmental Protection Regulation 2019                            |
| ERA            | Environmentally Relevant Activity                                   |
| FEED           | Front End Engineering Design                                        |
| HAZID          | Hazard Identification                                               |
| HCF            | Hazardous Chemical Facilities                                       |
| IBA            | Incinerator Bottom Ash                                              |
| IBAA           | Incinerator Bottom Ash Aggregate                                    |
| kg             | Kilogram                                                            |
| LPG            | Liquefied Petroleum Gas                                             |
| m              | Metres                                                              |
| m <sup>2</sup> | Meters Squared                                                      |
| m <sup>3</sup> | Meters Cubed                                                        |
| mg             | Milligrams                                                          |
| MHF            | Major Hazard Facility                                               |
| MJ             | Mega Joules                                                         |
| MSW            | Municipal Solid Waste                                               |
| MW             | Megawatt                                                            |
| MWh            | Megawatt hours                                                      |
| QFES           | Queensland Fire and Emergency Services                              |

| Abbreviation | Definition                                               |
|--------------|----------------------------------------------------------|
| SFAIRP       | So Far As Is Reasonably Practicable                      |
| SDA          | State Development Area                                   |
| SDS          | Safety Data Sheet                                        |
| SDAP         | State Development Assessment Provisions                  |
| SNCR         | Selective Non-Catalytic Reduction                        |
| t            | Tonnes                                                   |
| TEEP         | Technically, environmentally, and economically practical |
| tpa          | Tonnes Per Annum                                         |
| WHS          | Work Health and Safety                                   |
| w/w          | Weight by weight                                         |

# 1. Introduction

## 1.1 Purpose

The purpose of this report is to identify risks relating to hazardous chemicals and industrial hazards for the construction and operation of the Bromelton Energy and Resource Centre (BERC), a proposed Energy from Waste (EfW) facility located in Bromelton, Queensland.

### 1.1.1 Report structure

This report is structured as follows:

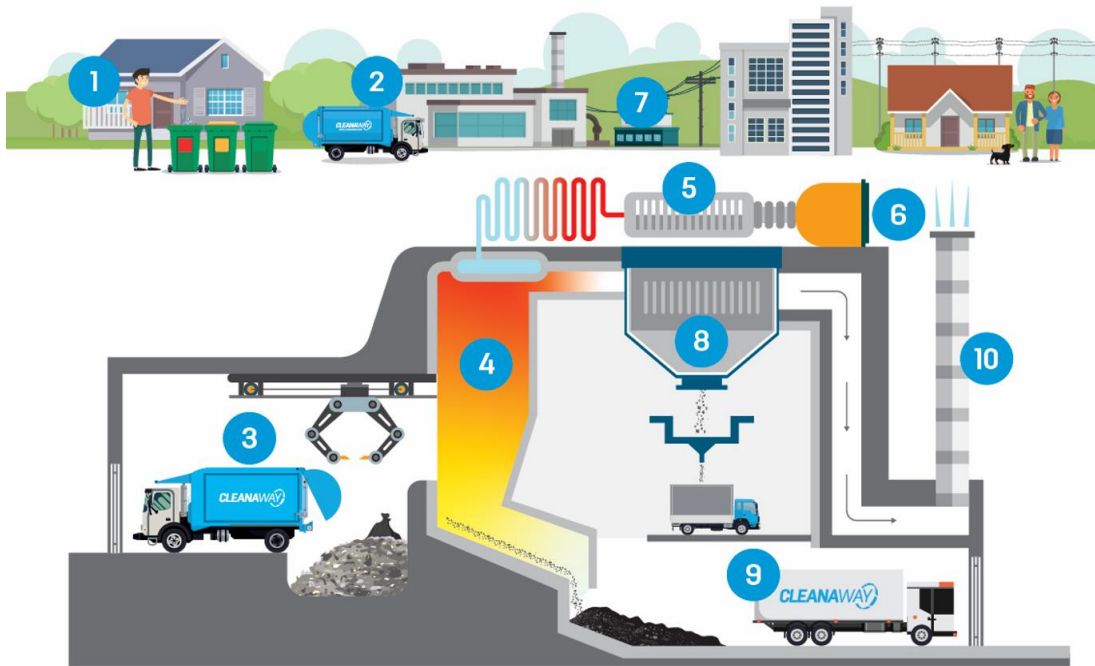
- Section 1 – provides an overview of the Project.
- Section 2 – addresses the regulatory framework. This section outlines the requirements for the management of hazardous chemicals and industrial hazards with respect to the:
  - Work Health and Safety (WHS) Regulations 2011
  - State Code 21: Hazardous Chemical Facilities
  - *Environmental Protection (EP) Act 1994*
  - Environmental Protection Regulation 2019.
- Section 3 – outlines regulatory outcomes and the identified risks from hazardous chemicals and industrial hazards to the facility, during the construction and operational phase. Operational risks were identified during a HAZID (hazard identification) workshop with the engineering design team and process design specialists.
- Section 4 – this section identifies the residual risks and mitigation and management measures to be considered. It also provides conclusions and required next steps in relation to the relevant legislation.
- Appendix A Hazard Identification Register
- Appendix B Rail Specific Risk Assessment

## 1.2 Project description

### 1.2.1 Overview

Cleanaway Operations Pty Ltd (Cleanaway) is developing an Energy from Waste (EfW) facility in Queensland known as the Bromelton Energy and Resource Centre (BERC / the Project). The Project will be located within the Special Industry Precinct of the Bromelton State Development Area (SDA), west of Beaudesert within the Scenic Rim Regional Council local government area.

The Project has been designed to thermally treat approximately 760,000 tonnes per annum (tpa) of waste feedstock, consisting of residual Municipal Solid Waste (MSW) and residual Commercial and Industrial (C&I) waste. Residual waste is waste that is not technically, environmentally, and economically practical (TEEP) to reuse or recycle, which would otherwise be sent to landfill for disposal. The facility's actual annual throughput will vary depending on the calorific value of the feedstock and plant availability. To account for variability in feedstock energy content, the facility will be designed for a maximum processing capacity of up to 10% above the nominal figure (836,000 tpa). The EfW process is summarised in Figure 1.



- 1 At home and work, we sort our waste into recyclable and non-recyclable items.
- 2 Before arrival at the energy from waste facility, residual waste that has been sorted at home and work is delivered to the facility.
- 3 In the bunker, waste is mixed, ensuring consistency, by large crane claws before placement into the combustion chamber.
- 4 Waste is combusted as it moves along a moving grate. The temperature in the combustion chamber reaches more than 850°C to ensure that waste combusts completely while also destroying organic pollutants and odour.
- 5 Water is heated during combustion creating steam which turns a turbine.
- 6 Baseload electricity is generated.
- 7 Electricity is put back into the grid and used to power homes and businesses.
- 8 Gases created during combustion pass through a multi-step flue gas treatment system, removing pollutants from the gases. Residues from the flue gas treatment are collected in a sealed system for treatment before disposal.
- 9 Bottom ash from the combustion process is collected and stored. Metals are recovered for recycling. It is intended that the remaining bottom ash is sent for reuse in construction.
- 10 Cleaned gases and steam are dispersed high into the atmosphere, mixing well to ensure negligible impact on the surrounding air quality.

**Figure 1: Energy from Waste process**

### 1.2.2 Proponent

Cleanaway, an Australian owned company, has operated for more than 50 years, supporting industry, government, communities and households across Australia. Its mission is to make a sustainable future possible, achieved through action across all levels of the waste hierarchy. Waste generation is minimised through extensive education programs, with Cleanaway's 50 education officers reaching over 120 businesses, 30 councils, and almost 33,000 school participants in the last financial year.

Cleanaway invests heavily in recycling, operating several Material Recovery Facilities nationwide and has partnered with Pact Group, Asahi Beverages and Coca-Cola to deliver two large-scale PET (polyethylene terephthalate) recycling facilities and a HDPE (high density polyethylene) recycling facility with Pact Group. In addition, in collaboration with Viva Energy, Cleanaway is developing a soft plastics recycling plant. EfW is recognised by Cleanaway as an important part of the future waste management framework, enabling recovery of energy and other resources from residual waste that cannot otherwise be recycled.

### 1.2.3 Policy alignment

The BERC aligns with the Queensland EfW Policy and the Queensland EfW Guideline (2021) by diverting residual waste from landfill and delivering economic and social benefits through employment and local business opportunities in South East Queensland (SEQ).

In accordance with Policy outcome 7 of the Queensland EfW Policy, the BERC will be designed to meet the best practice emission standards and requirements of the European Industrial Emissions Directive (IED) (2010) and the associated Best Available Techniques Reference (BREF) Document for Waste Incineration (2019), which sets the European Union environmental standards for waste incineration.

The Project also supports the Queensland Waste Strategy contributing to its 2050 targets to reduce household waste by 25%, recycle 75% of all waste, and divert 90% from landfill. In doing so, the BERC will play a key role in advancing Queensland's transition to a circular economy and reducing long-term reliance on landfill.

#### 1.2.4 Key components

The key components of the Project are summarised in Table 1.

**Table 1: Key Project Components**

| Project component         | Detail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address                   | Lot 1 Beaudesert Boonah Road, Bromelton, Queensland, 4285 (Lot 1 on RP45234). Refer Figure 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
| Site area                 | 63 hectares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Summary of proposed works | <p>The Project includes the construction of a main EfW facility for waste processing, incinerator bottom ash (IBA) maturation and processing facility and an air pollution control residue (APCr) facility.</p> <p>It also includes all onsite infrastructure needed for the EfW facility, such as site utilities, internal roads, weighbridges, parking and hardstand areas, stormwater infrastructure, fencing and landscaping.</p> <p>The Project will include a visitor centre to help educate and inform the community on circular economy principles, the waste hierarchy, including waste avoidance, recycling, resource recovery, the benefits of landfill diversion and the EfW process. The intent behind this education is to drive a shift in community awareness and attitudes toward waste management and resource recovery.</p> |
| Technology used           | The proposed technology is moving grate combustion technology. This has been used globally for over 100 years and is common in many of the 500 similar operational examples across Europe.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     |
| Facility outputs          | <p>Approximately 73.2 MW (577,600 MWh/year, corrected for ambient temperature) exported to the grid as baseload electricity.</p> <p>Potential to supply energy in the form of heat and/or process steam to local industrial users.</p> <p>Residual materials include IBA and APCr.</p> <ul style="list-style-type: none"> <li>It is intended that the IBA will be mechanically processed on site to create incinerator bottom ash aggregate (IBAA). During this process, both ferrous and non-ferrous metals are recovered for recycling and sale. It is intended that the remaining material is repurposed for use as an aggregate in construction.</li> <li>The Project includes a facility to stabilise APCr before removal and disposal at a licensed landfill.</li> </ul>                                                                 |
| Key infrastructure        | <ul style="list-style-type: none"> <li>EfW facility including administration and visitor's centre</li> <li>IBA maturation and processing facility (2 x pads and 2 x sheds)</li> <li>APCr facility (1 x pad, 1 x shed)</li> <li>Transformer yard and switchyard</li> <li>De-coupling area for trucks</li> <li>Weighbridges</li> <li>Internal road network and carparking</li> <li>2 x combined storm water treatment and detention basin</li> <li>1 x lined retention basin</li> </ul>                                                                                                                                                                                                                                                                                                                                                          |

| Project component  | Detail                                                                                                                                   |
|--------------------|------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <ul style="list-style-type: none"> <li>Access from Beaudesert Boonah Road via a signalised intersection with Recycling Street</li> </ul> |
| Hours of operation | 24 hours per day, seven days per week (365 days per year)                                                                                |
| Operational staff  | Approximately 50 to 60 staff                                                                                                             |



**Figure 2: Site location**

## 2. Regulatory Context

This section sets out the relevant legislation, policy and guidelines applicable to Queensland, for hazardous chemicals and industrial hazards in relation to the Project.

### 2.1 Work Health and Safety (WHS) Legislation

#### 2.1.1 Work Health and Safety (WHS) Regulations 2011

##### 2.1.1.1 Chapter 7.1: Hazardous Chemicals

Chapter 7 Part 1 of the WHS Regulations applies to the use, handling and storage of hazardous chemicals on-site, including the relevant placard and manifest quantities of hazardous chemicals and the requirements that apply when these quantities are exceeded. Chapter 7 Part 1 also includes duties of the operator to maintain hazardous chemical register and obtain safety datasheets (SDS).

##### 2.1.1.2 Schedule 11: Placard and Manifest Quantities

Schedule 11 of the WHS Regulations outlines the placard and manifest quantities for hazardous chemicals. Hazardous chemicals stored on-site that exceed the Schedule 11 thresholds, are subject to additional placard and manifest requirements.

##### 2.1.1.3 Manifest Regulation Summary

If the manifest quantities in Schedule 11, ‘placard and manifest quantities’, are exceeded, it is required that a manifest of Schedule 11 hazardous chemicals is prepared by the operator, and that the regulator is given written notice of these manifest quantities. The manifest shall comply with Schedule 12, ‘manifest requirements’, which shall include the following key information:

- Name of the chemical
- Quantity of chemical stored.

For containers storing the hazardous chemical, the manifest of hazardous chemicals shall include:

- The identification number or code of the container
- The type and capacity of the container.
  - For a fixed vertical tank used to store fire risk hazardous chemicals – the diameter of the tank.

Further, the manifest shall be supplied by the operator to the Queensland Fire and Emergency Services (QFES), and it shall be kept in a place determined in agreement with the QFES.

##### 2.1.1.4 Regulation 361: Emergency Plans

Where hazardous chemicals exceed the manifest quantities in Schedule 11 of WHS regulations, a written emergency plan shall be developed by the operator in accordance with Regulation 361 and shall also be provided to the QFES. The emergency plan shall be developed including the following:

“(a) emergency procedures including;

- (i) an effective response to an emergency; and
- (ii) evacuation procedures; and
- (iii) notifying emergency service organisations at the earliest opportunity; and
- (iv) medical treatment and assistance; and

(v) *effective communication between the person authorised by the person conducting the business or undertaking to coordinate the emergency response and all persons at the workplace;*

(b) *testing of the emergency procedures, including the frequency of testing;*

(c) *information, training and instruction to relevant workers in relation to implementing the emergency procedures.”*

Additionally, should QFES provide any revisions or recommendations related to the content or the effectiveness of the supplied emergency plan, the emergency plan shall be updated to be aligned with the recommendations.

#### **2.1.1.5 Placard Requirements**

In accordance with Schedule 13, ‘placard requirements’, for all hazardous chemicals that exceed the placard quantity, appropriate placards (in accordance with the WHS Regulations) shall be located as close as reasonably practicable to the main entrance of the facility and in each room or walled section of the facility in which the hazardous chemical is used, handled or stored. If the chemicals are contained in outside storage areas, placards shall be located next to the container or outside storage area.

## **2.2 Hazardous Chemicals and Environmental Protection Legislations**

### **2.2.1 Bromelton SDA Development Scheme**

The Project is located within the Bromelton SDA. SDAs are areas declared under the State Development and Public Works Organisation Act to promote economic development. The Bromelton SDA Development Scheme 2017 (SDA Development Scheme) establishes a regulatory framework for the assessment of development which is regulated under the Development scheme. The project is within the Special Industry Precinct (SIP). The SIP provides an area for high-impact and difficult-to-locate industries that require separation from non-industrial uses due to the potential for off-site impacts.

The SDA wide assessment criteria that are relevant to this report include:

*“(3) Development maintains the safety of noxious and hazardous materials and chemicals manufactured or stored in bulk during flood events.”*

Considerations of ‘Natural Hazards’ required by the SDA scheme are not addressed in this report. The reports Bushfire attack level assessment, air quality assessment and flood risk assessment address the natural hazards outlined in the SDA scheme.

The design presented within the Development Approval have taken into consideration the findings of this report as well as those mentioned above to minimise the impacts of ‘Natural Hazards’ on the operation of the BERC.

### **2.2.2 State Code 21: Hazardous Chemical Facilities**

The State Development Assessment Provisions (SDAP) provide assessment benchmarks for the assessment of development applications involving the State Assessment and Referral Agency (SARA). State Code 21: Hazardous Chemical Facilities (HCF) defines HCFs as those where identified hazardous chemicals are present or likely to be present in quantities greater than 10% of the threshold for a major hazard facility (MHF) as listed in Schedule 15 of WHS Regulations 2011.

The purpose of State Code 21 is that the *“development is designed and sited, so far as is reasonably practicable (SFAIRP), to ensure:*

- 1. Human health and safety and the built environment are protected from off-site risks resulting from physical or chemical hazards; and*
- 2. Hazardous chemical facilities are protected from:*
  - a. Offsite hazard scenarios at existing hazardous chemical facilities.*
  - b. Natural hazards.”*

## 2.2.3 *Environmental Protection Act 1994 and Environmental Protection Regulation 2019*

### 2.2.3.1 *Environmental Protection Act*

The objective of the *Environmental Protection Act 1994 (EP Act)* is to “*protect Queensland’s environment while also allowing for developments that improves the total quality of life, both now and in the future, in a way that maintains the ecologically processes on which life depends (ecological sustainable development)*”. The *EP Act* lists the obligations to prevent or minimise environmental harm, nuisances and contamination. The two duties that apply are:

- **General Environmental Duty (GED)** – the duty to not carry out activities that may cause harm without taking measures to prevent or minimise the harm caused
- **Duty to notify of environmental harm** – to inform the relevant authority and landowners when environmental harm has occurred or might occur.

The EP Act provides a framework for operators undertaking activities to meet its GED and provides requirements around ‘notifiable activities’ in accordance with Schedule 3, whereby these activities may result in environmental harm.

Schedule 320A of the EP Act requires landowners, occupiers, auditors or local government authorities to give notice to the Department of Environment, Tourism, Science and Innovation (DETSI), where land is being used for ‘notifiable activities’.

The activities outlined in Schedule 3, ‘notifiable activities’, that are relevant to the Project are:

- “7: Chemical storage (other than petroleum products or oil under item 29)—storing more than 10t of chemicals (other than compressed or liquefied gases) that are dangerous goods under the dangerous goods code.
- “29: Petroleum product or oil storage—storing petroleum products or oil—
  - a. in underground tanks with more than 200L capacity; or
  - b. in above ground tanks with—
    - i. for petroleum products or oil in class 3 in packaging groups 1 and 2 of the dangerous goods code—more than 2,500L capacity; or
    - ii. for petroleum products or oil in class 3 in packaging groups 3 of the dangerous goods code—more than 5,000L capacity; or
    - iii. for petroleum products that are combustible liquids in class C1 or C2 in Australian Standard AS 1940, ‘The storage and handling of flammable and combustible liquids’ published by Standards Australia—more than 25,000L capacity.”

### 2.2.3.2 *Environmental Protection Regulation*

Schedule 2 of the *Environmental Protection Regulation 2019 (EP Regulation)* lists out Environmentally Relevant Activities (ERAs) that are generally industrial or intensive animal industries with the potential to release emissions that may have an impact on the environment or surrounding land uses.

ERA 8 (Chemical Storage) regulates the storage of chemicals that are used as feedstocks in industrial or manufacturing processes. It generally applies only to the storage of virgin chemical materials and does not extend to waste products that are generated as part of an existing ERA activity.

In this case, the facility does not involve the external receipt, storage, or treatment of chemicals as standalone feedstocks. Instead, any chemical storage occurring onsite is directly associated with the conduct of ERA 61 (Thermal waste processing and treatment), ERA 14 (electricity generation) and ERA 54 (Mechanical waste reprocessing). As per the *Environmental Protection Regulation 2019*, waste generated onsite as a result of an ERA is regulated under the conditions of that primary ERA and does not separately trigger ERA 8.

### 3. Assessment of Regulatory Requirements

This section outlines the key impacts of relevant regulatory requirements for the BERC, with regard to hazardous chemicals and industrial hazards for both the construction and operational phases of the Project.

#### 3.1 Expected Quantities

Table 2 shows the expected quantities of hazardous chemicals, defined by the global harmonised system as required by the WHS Regulations, stored on-site.

Based on the current design it is likely that 40% w/w urea solution will be used as opposed to ammonia (ammonium hydroxide or 25% aqueous ammonia solution). Ammonia is classified as a Class 8 dangerous good under the Australian Code for the Transport of Dangerous Goods by Road & Rail (ADGC), where urea is not. All options have been included in this report for completeness.

**Table 2: Expected quantities and classifications of hazardous chemicals**

| Hazardous Chemicals                    | Use On-Site / By-Product                                                                                                                                                                                                                                                                                                                                               | UN Number <sup>1</sup> | Class          | Packing Group <sup>2</sup> | Quantity Held On-Site |
|----------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|----------------|----------------------------|-----------------------|
| Hydraulic oil                          | The use of mechanical equipment such as the grate, cranes and turbines in the facility requires the use of hydraulic and lubrication oil.                                                                                                                                                                                                                              | TBC                    | 3              | III                        | 2t                    |
| Lubrication oil                        |                                                                                                                                                                                                                                                                                                                                                                        | TBC                    | 3              | III                        | 2t                    |
| Activated carbon                       | Activated carbon is added to the flue gas to remove absorbing dioxins, furans, gaseous mercury and other impurities that may be present in the flue gas.                                                                                                                                                                                                               | 1362                   | 4.2            | III                        | 50m <sup>3</sup>      |
| 25% aqueous ammonia Solution (if used) | Used in the Selective Non-Catalytic Reduction (SNCR) process where ammonia is injected into the boiler to reduce nitrogen oxide emissions in the combustion process                                                                                                                                                                                                    | 1005                   | 8              | N/A                        | <120t                 |
| Propane/acetylene                      | Propane and/or Acetylene are used as fuels for welding as required during maintenance operations                                                                                                                                                                                                                                                                       | 1978/3374              | 2.1            | N/A                        | <100kg                |
| Sodium hydroxide                       | Used to adjust pH of process water                                                                                                                                                                                                                                                                                                                                     | 1823                   | 8              | II                         | 1400kg                |
| Hydrochloric acid                      | Used in water treatment regeneration.                                                                                                                                                                                                                                                                                                                                  | 1789                   | 8              | II                         | 1400kg                |
| APCr <sup>3</sup>                      | APCr is collected as a solid residue from the flue gas treatment system, then stabilised in concrete for transport.                                                                                                                                                                                                                                                    | - <sup>4</sup>         | -              | -                          | 350t <sup>5</sup>     |
| Stabilised APCr (curing)               |                                                                                                                                                                                                                                                                                                                                                                        |                        |                |                            | 4,600t                |
| Stabilised APCr (cured)                |                                                                                                                                                                                                                                                                                                                                                                        |                        |                |                            | 4,600t                |
| Diesel                                 | BERC uses diesel as the start-up fuel to ensure temperatures are high enough for safe and efficient waste combustion. Once the temperature can be sustained by the waste, diesel is no longer required.<br><br>While diesel is not classified as a dangerous good, it can add to the fuel load in the event of a fire and shall be considered when assessing the site. | 1202                   | - <sup>6</sup> | N/A                        | 360kL                 |

<sup>1</sup> A UN number is a four-digit number that identifies hazardous chemicals, in order to classify and track chemicals in international trade.

<sup>2</sup> Packing groups are a number (I, II or III) assigned to specific dangerous goods: I being a substance presenting high danger to III being a substance presenting low danger.

<sup>3</sup> APCr is not transported as treatment will occur at the site. Once treated and stabilised on-site APCr will be transported in solidified form off-site

<sup>4</sup> APCr does not have a specific UN Number or dangerous goods classification. Based on Safe Work Australia's guidance for mixture classification and the BREF, APCr does not meet the definition of toxic under the ADGC or the Queensland Work Health and Safety Regulation 2011.

<sup>5</sup> This quantity refers to the maximum amount of raw pre-treated APCr stored on-site prior to treatment.

<sup>6</sup> Diesel is a combustible liquid, but is not classified as a dangerous good under the ADGC.

## 3.2 Regulatory Outcomes

### 3.2.1 WHS Regulations

#### 3.2.1.1 Schedule 11: Placard and Manifest Quantities

Table 3 below outlines the relevant hazardous chemicals stored on-site from Table 2 and the associated placard and manifest thresholds.

**Table 3: Relevant hazardous chemicals and their placard/manifest thresholds**

| Hazardous Chemicals                    | Hazardous Chemical Classification | Quantity Held On-Site | Placard Quantity Threshold | Placard Quantity Exceeded? | Manifest Quantity | Exceeded Manifest Quantity? |
|----------------------------------------|-----------------------------------|-----------------------|----------------------------|----------------------------|-------------------|-----------------------------|
| Hydraulic oil                          | Category 4 Flammable liquid       | 2t                    | 10,000L                    | No                         | 100,000L          | No                          |
| Lubrication oil                        | Category 4 Flammable liquid       | 2t                    | 10,000L                    | No                         | 100,000L          | No                          |
| Activated carbon                       | -                                 | 50m <sup>3</sup>      | -                          | -                          | -                 | -                           |
| 25% aqueous ammonia solution (if used) | Category 1C Skin corrosion        | 176,000L              | 50L                        | Yes                        | 500L              | Yes                         |
| Propane/acetylene                      | Category 1 Flammable Gas          | <100kg                | 200L                       | No                         | 5,000L            | No                          |
| Sodium hydroxide                       | Category 1B Skin Corrosion        | 1400kg                | 250L or kg                 | Yes                        | 2,500L or kg      | No                          |
| Hydrochloric acid                      | Category 1B Skin Corrosion        | 1400kg                | 250L or kg                 | Yes                        | 2,500L or kg      | No                          |
| Diesel                                 | Category 4 Flammable Liquid       | 360,000L              | 1,000L                     | Yes                        | 100,000L          | Yes                         |

For hazardous chemicals exceeding placard quantities, appropriate placards in accordance with the WHS Regulations, shall be located as close as reasonably practicable to the main entrance of facility and in each room or walled section of the facility in which the hazardous chemical are used, handled, or stored. If the hazardous chemicals are contained in outside storage areas, placards shall be located next to the container or outside storage area.

For hazardous chemicals exceeding manifest quantities, a manifest shall be prepared by the operator in accordance with Schedule 12 of the WHS Regulations. Additionally, a written emergency plan shall be developed and provided to QFES by the operator for review in accordance with Regulation 361 of the WHS Regulations.

#### 3.2.2 State Code 21

Table 2 shows the hazardous chemical division/packing group classifications per the global harmonised system as required by the WHS Regulations. Most of the chemicals listed in Table 2 are not listed in Table 15.1 of the WHS Regulations, so are not considered with respect to State Code 21. Table 3 shows the hazardous materials stored at the site with their hazardous material classifications, placard quantities and manifest quantities. Table 4 shows the hazardous chemicals listed in Table 15.1 of the WHS Regulations with their MHF and HCF thresholds.

**Table 4: Hazardous chemicals stored on-site as outlined in Table 15.1 of the WHS Regulations**

| Hazardous Chemicals | Quantity Held On-Site | MHF Quantity Threshold | HCF Quantity Threshold (10% MHF) | Exceeded HCF Quantity? |
|---------------------|-----------------------|------------------------|----------------------------------|------------------------|
| Acetylene           | <100kg                | 50t                    | 5t                               | No                     |
| Hydrochloric Acid   | 1400kg                | 250t                   | 25t                              | No                     |

Only ammonia solutions with more than 50% ammonia are categorised under Schedule 15 of the WHS Regs, so the proposed 25% solution is not assessed under State Code 21.

### 3.2.3 EP Act 1994 and EP Regulation 2019

To address the requirement for minimising the environmental impact of any hazardous chemicals stored on-site, a HAZID assessment was undertaken to identify key risks and propose relevant controls and mitigation measures.

#### 3.2.3.1 EP Act

Based on Table 3, the following hazardous chemicals exceed the quantity thresholds in Schedule 3 of the EP Act:

- Diesel storage exceeds the threshold of 25,000L under notifiable activity of ‘petroleum product or oil storage’.

The storage of above hazardous chemicals is classified as a ‘notifiable activity’; therefore, the DETSI shall be notified by the operator under the EP Act.

#### 3.2.3.2 EP Regulation

No hazardous chemical activities are identified as Environmentally Relevant Activities (ERA) under Schedule 2 of the EP Regulations.

## 3.3 Hazard Identification (HAZID)

The Project held a hazard identification (HAZID) workshop to identify hazards and risks in relation to the storage of hazardous chemicals and industrial hazards. The workshop included the multi-disciplinary design team from Arup, Ramboll, Therefor Group and Cleanaway. The HAZID process involved a comprehensive review of the EfW process, analysing key process steps, their corresponding risks and their potential causes and consequences. Where risks were identified, the design team proposed reasonably practicable mitigation measures to remove or reduce the risks to acceptable levels. The HAZID register is attached in Appendix A.

59 credible hazard scenarios were identified. Of those, nine are assessed as having a medium residual on-site risk, and 50 as having a low residual on-site risk. Only six of those hazard scenarios are assessed as having a credible off-site consequence; five are assessed as having a low residual off-site risk and one (traffic collision) has a medium residual off-site risk.

## 4. Conclusions

This report identifies potential hazards and risks associated with the construction and operation of the BERC, specifically in relation to the management and storage of hazardous chemicals on-site as well as the ongoing operation of the facility.

To meet the legislative requirements associated with the management and storage of hazardous chemicals, the next steps include:

- Under Chapter 7 Division 2 of the WHS Regulations, the operator of the facility must ensure that a hazardous chemical used, stored and handled at a workplace is correctly labelled and obtain safety datasheets of hazardous chemical before commencing the operations.
- Under Chapter 7 Division 3 of the WHS Regulations, the operator must also ensure that a register of hazardous chemical used, handled or stored is prepared and kept at the workplace. Under the same division of the WHS Regulations, the operator must prepare a manifest of Schedule 11 hazardous chemicals. Under Chapter 7 Division 4 of WHS regulations, the operator must also display warning placards scheduled 11 hazardous chemicals. See section 3.2.1.1 of this report for details. These requirements need to be met before commencing of the operations.
- As diesel and ammonia (if used) exceed the threshold quantity of Schedule 3 of the EP Act, the operator shall notify the Department of Environment, Tourism, Science and Innovation (DETSI) of these 'notifiable activities'.
- Prior to commencing operations an emergency plan shall be developed in accordance with Regulation 361 of the WHS Regulations before commencing operations. This shall include appropriate evacuation procedures, a medical treatment and assistance plan and an effective communication plan between the person coordinating an emergency response and all persons in the workplace. The operator shall also provide the emergency plan to Queensland Fire and Emergency Services (QFES) for review. The plan shall be updated to align with QFES's recommendations before the facility operation begins.
- The operator shall provide placards in compliance with the Schedule 13 'Placard Requirements' of the WHS Regulations, where the expected storage capacity is greater than the placard quantity. Similarly, a manifest shall be produced by the operator for all hazardous chemicals where the expected storage quantity exceeds the manifest threshold. The manifest shall meet all obligations under Schedule 12 'Manifest Requirements'.

# Appendix A

## HAZID Register

## Risk Assessment Methodology

Risk is assessed in the word diagram with the following headings:

- Consequences.
- Offsite risk rating – the consequence and likelihood of the scenario *affecting people and assets located offsite* is assessed.
- Safeguards – risk control measures related to design, construction, testing, procedures and hazard mitigation.
- Onsite risk rating – the consequence and likelihood of the scenario *affecting people and assets located onsite* is assessed.

The risk rating is based on a 5x5 risk matrix considering the likelihood and consequence of the scenario. The worst credible case consequence for each scenario is determined, then the likelihood of that consequence level is determined.

| Rating | Likelihood Level | Definition                                             | Example Descriptions                                                    | Estimated Control Reliability |
|--------|------------------|--------------------------------------------------------|-------------------------------------------------------------------------|-------------------------------|
| 5      | Almost Certain   | Expected to occur frequently unless actively managed   | Has occurred at this site or frequently across the industry             | <1% reliable                  |
| 4      | Likely           | Expected to occur under foreseeable conditions         | Multiple causal pathways; has happened at peer sites                    | 20% reliable                  |
| 3      | Possible         | May occur                                              | Credible scenarios exist; some reliance on less robust controls         | 50% reliable                  |
| 2      | Unlikely         | Not expected to occur, but could in unusual conditions | Relies on failure of multiple controls; some industry examples globally | 80% reliable                  |
| 1      | Exceptional      | May only occur in exceptional circumstances            | Rare or no known incidents globally; no realistic causal pathway        | >99% reliable                 |

| Rating | Consequence Level | Example Descriptions                                                                                                                                                                        |
|--------|-------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 5      | Catastrophic      | Multiple fatalities or life-threatening injuries; extensive destruction of facilities or assets; prolonged total shutdown (weeks +); severe and lasting environmental or reputational harm. |
| 4      | Major             | Single fatality or serious injury; major damage to critical assets; significant disruption or downtime (days); substantial regulatory, environmental or reputational consequences.          |
| 3      | Moderate          | Injury requiring medical treatment; localised damage or system impairment; short-term operational disruption (hours); manageable external or community concern.                             |
| 2      | Minor             | First-aid-level injury; minor, contained damage; brief or easily managed disruption; negligible external impact.                                                                            |
| 1      | Insignificant     | No injury; minimal or cosmetic damage; no operational, environmental or reputational effect.                                                                                                |

| RISK RATING TABLE  |                   |           |              |           |                 |
|--------------------|-------------------|-----------|--------------|-----------|-----------------|
|                    | 1 - Insignificant | 2 - Minor | 3 - Moderate | 4 - Major | 5. Catastrophic |
| 5 – Almost Certain | Low               | Medium    | High         | Very High | Very High       |
| 4 - Likely         | Low               | Medium    | High         | High      | Very High       |
| 3 - Possible       | Low               | Medium    | Medium       | High      | Very High       |
| 2 - Unlikely       | Low               | Low       | Medium       | High      | High            |
| 1 - Exceptional    | Low               | Low       | Low          | Medium    | High            |

| ID | Area         | Property  | Guideword            | Cause                                                                                                             | Consequence                                                                                            | Safeguard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | Onsite Residual Risk |   |   | Offsite Residual Risk |   |   | Potential Additional Controls                                                                                                                                                                                          | Timeline                                         |
|----|--------------|-----------|----------------------|-------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|    |              |           |                      |                                                                                                                   |                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | L                    | C | R | L                     | C | R |                                                                                                                                                                                                                        |                                                  |
| 1  | Tipping hall | Fire      | Waste                | Waste that has a smouldering load (most common source for a truck fire is a lead acid/li-ion batteries and vapes) | Fire inside a truck (load)                                                                             | Waste Analysis Plan (WAP) will be implemented as a preventive measure to identify any source of fire in the incoming waste.<br><br>The operational response is for employees to physically observe the smoke. The response is to stop and tip the load on concrete or a sealed area not in the building. A fire hose/hydrant will be nearby.<br><br>Fire engineering to include fire detection and suppression system.                                                                                                                                                                                                    | 2                    | 3 | M | Not credible          |   |   | Emergency response procedures to be identified in the Emergency Management Plan<br><br>Consultant team to determine whether compliance with FM Global Data Sheets will be done for insurance.                          | Detailed design stage                            |
| 2  |              | Fire      | Truck                | Truck breaks down/catches fire                                                                                    | Fire inside a truck                                                                                    | The operational response is for employees to physically observe the smoke. The response is to stop and tip the load on concrete or a sealed area not in the building. A fire hose/hydrant will be nearby.                                                                                                                                                                                                                                                                                                                                                                                                                 | 2                    | 3 | M | Not credible          |   |   | Emergency response procedures to be identified in the Emergency Management Plan                                                                                                                                        | Detailed design stage                            |
| 3  |              | Fire      | Combustible material | Fire in bunker comes back into tipping hall                                                                       | Fire spread through building                                                                           | Vehicles are the only combustible materials within tipping hall. There are no other combustible materials. The design includes fire detection and sprinklers. Fire engineering review during detail design to cover fire detection and suppression system.<br><br>Visual inspection in tipping hall and in bunker. Crane operator visuals and CCTV can provide alert.<br><br>Good housekeeping – residual waste dropped. Possible area for waste to be inspected. Front loader to push waste into bunker.<br><br>Vehicle and their contents present combustible materials risk. Any rubbish left in hall must be removed. | 1                    | 4 | M | 1                     | 3 | L | Emergency response procedures to be identified in the Emergency Management Plan.<br><br>Housekeeping procedures need to be prepared as a preventive measure to keep tipping areas free of residual waste.              | Detailed design stage<br><br>Commissioning stage |
| 4  |              | Crash     | Truck                | High frequency of movements in tipping hall                                                                       | Fire inside a truck                                                                                    | Vehicles are the only combustible materials within tipping hall (forklifts and front-end loaders operate around the site). There are no other combustible materials. The design management of this risk includes fire detection and sprinklers.<br><br>Trucks have their own fire extinguisher.<br><br>Waste acceptable protocol – no waste liquid accepted.<br><br>Traffic analysis and management plan developed with recommendations to be implemented in detailed design stage.<br><br>Escalation of crash to fire scenario is very unlikely                                                                          | 1                    | 3 | L | Not credible          |   |   | Emergency procedures to be identified in the Emergency Management Plan                                                                                                                                                 | Detailed design stage                            |
| 5  |              | Crash     | Truck                | Fuel spill                                                                                                        | Fuel ignites                                                                                           | Flame detection, firefighting equipment including appropriate extinguishers (trucks carry foam extinguishers) to be provided. Fire detection and sprinklers are to be provided within the tipping hall.<br><br>Traffic analysis and management plan developed with recommendations to be implemented in detailed design stage.                                                                                                                                                                                                                                                                                            | 2                    | 2 | L | Not credible          |   |   | Emergency response procedures to be identified in the Emergency Management Plan.                                                                                                                                       | Detailed design stage                            |
| 6  |              | Air flow  | Odor                 | Handling putrescible waste                                                                                        | Odor release                                                                                           | To be managed in tipping hall and bunker. Fast operating entrance and exit doors and manually operable louvers.<br><br>Tipping hall and bunker are maintained under negative pressure.<br><br>Secondary filtration system as backup.                                                                                                                                                                                                                                                                                                                                                                                      | 2                    | 2 | L | 1                     | 2 | L | N/A                                                                                                                                                                                                                    |                                                  |
| 7  |              | Collision | Truck                | High frequency of movements in tipping hall                                                                       | Collision with onsite workers in tipping hall.<br><br>Damage to safety critical systems like hydrants. | Traffic analysis and management plan developed with recommendations to be implemented in detailed design stage.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | 2                    | 4 | M | Not credible          |   |   | Emergency response procedures to be identified in the Emergency Plan.<br><br>Safety critical systems need to be protected from impact.<br><br>Safety signs, safety mirrors and walkways need to be considered for safe | Detailed design stage                            |

| ID | Area   | Property      | Guideword | Cause                                                                           | Consequence                  | Safeguard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Onsite Residual Risk |   |   | Offsite Residual Risk |   |   | Potential Additional Controls                                                                                                                                                                                                                                                                                             | Timeline                                         |
|----|--------|---------------|-----------|---------------------------------------------------------------------------------|------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------|
|    |        |               |           |                                                                                 |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | L                    | C | R | L                     | C | R |                                                                                                                                                                                                                                                                                                                           |                                                  |
|    |        |               |           |                                                                                 |                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                      |   |   |                       |   |   | interaction between workers, critical systems and trucks.                                                                                                                                                                                                                                                                 |                                                  |
| 8  | Bunker | Fire          | Waste     | Hot ash / disposal of hot waste / self-heating                                  | Fire in waste                | Thermal detection of waste, remotely controlled full water cannons, bunker is scanned (infrared) continuously at various levels of detection. Each level determines a new action from water cannons (semi-automatic). Crane operator/control room will be alerted and can take control of water cannons. In the event that the operators in control room are alerted to the presence of hot spots or smouldering or burning waste in the waste bunker, they can interject and move the material into the furnace feed hopper using the grab crane, as required. | 2                    | 3 | M |                       |   |   | N/A                                                                                                                                                                                                                                                                                                                       |                                                  |
| 9  |        | Flammable gas | In waste  | Decomposition of waste                                                          | Biogas catches fire/explodes | Negative air pressure in the waste bunker caused by drawing combustion air from that area would carry biogas into furnace along with the combustion air.<br><br>Decomposition of waste can occur at the bottom of the bunker but is too slow compared to the normal residence time of waste in the waste bunker. The bunker would be emptied in sections so that waste is not kept in the bunker for long enough for decomposition to occur and is also mixed.                                                                                                  | 2                    | 2 | L |                       |   |   | Establish operating procedures for moving waste from bunker to furnace to avoid waste being in the bunker for too long (first in, first out).<br><br>Consultant team to confirm air changes per hour in the waste bunker to keep generated flammable gas well below the lower flammability limits within the bunker area. | Commissioning stage<br><br>Detailed design stage |
| 10 |        | Recovery      | Confined  | Confined space access                                                           | Operational continuity       | There is no ready access for people to physically enter the waste bunker.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       | 1                    | 4 | M |                       |   |   | Operational Management Plan to outline procedures around confined spaces and lifting equipment for people for activities such as waste bunker concrete inspections.<br><br>Safety signs to be provided to communicate the hazard of confined space workers.                                                               | Detailed design stage                            |
| 11 |        | Recovery      | Fall      | Fall into bunker from vehicles or people (vehicle operators or cleaning staff)  | Operational continuity       | Temporary barriers and signage in place.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 1                    | 4 | M |                       |   |   | Operational Management Plan to outline procedures around confined spaces and lifting equipment for people for activities such as waste bunker concrete inspections.<br><br>Side tippers may be used for BERC, so the opening is larger for potential falls. Alternative measures to be considered.                        | Detailed design stage                            |
| 12 |        | Fire          | Shredder  | Shredder generates sparks that initiates a bunker fire                          | Fire in bunker               | Firefighting equipment including remotely controlled water cannons will be used. The shredder can withstand a deluge of firewater if required.                                                                                                                                                                                                                                                                                                                                                                                                                  | 2                    | 2 | L |                       |   |   | In the event of a major fire, thorough inspections of the shredder including the bearings is required to be implemented                                                                                                                                                                                                   | Operation and maintenance                        |
| 13 |        | Fire          | Shredder  | Shredder shredding items that are flammable, combustible or can generate sparks | Fire in bunker               | Supervised loading and selective feeding. Design does not allow for fire to stay in shredder. The shredder has a wide opening and material falls out of the shredder back into the waste bunker. Therefore, any material that is on fire would not stay in the shredder                                                                                                                                                                                                                                                                                         | 2                    | 2 | L |                       |   |   | The configuration of firefighting equipment in the waste bunker area will ensure that the shredder and its output is adequately covered by the fire suppression system(s).                                                                                                                                                | Detailed design stage                            |
| 14 |        | Explosion     | Shredder  | Combustible waste (specially wood/paper) shredded to small                      | Dust explosion               | Continuous thermal monitoring and visual monitoring by crane operator.<br><br>Negative air pressure in bunkers.                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1                    | 3 | L |                       |   |   | Housekeeping procedures need to be prepared as a preventive measure to flat surface free of combustible dust.<br><br>The possibility of explosive dust atmosphere from combustible waste                                                                                                                                  | Commissioning stage                              |

| ID | Area                    | Property            | Guideword              | Cause                                                              | Consequence                                                  | Safeguard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | Onsite Residual Risk |   |   | Offsite Residual Risk |   |              | Potential Additional Controls                                                                                                                                                           | Timeline              |
|----|-------------------------|---------------------|------------------------|--------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|--------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|    |                         |                     |                        |                                                                    |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | L                    | C | R | L                     | C | R            |                                                                                                                                                                                         |                       |
|    |                         |                     |                        | pieces with dust formation                                         |                                                              |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            |                      |   |   |                       |   |              | shredding and requirement of classified electrical equipment in bunker area needs to be considered in the detailed design.                                                              | Detailed design stage |
| 15 |                         | Flow                | Dust (not combustible) | Dust accumulation from normal operation                            | Visibility and nuisance                                      | Implement good housekeeping. The walls of the bunker is designed to minimise accumulation of dust from falling back into the bunker.<br><br>Use of water cannon and/or misters (preferred control) for dust suppression.<br><br>No HAC required as the dust is not combustible.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | 3                    | 1 | L |                       |   | Not credible | N/A                                                                                                                                                                                     |                       |
| 16 | Furnace                 | Flow                | High                   | Backfire from furnace into chute.                                  | Fire from furnace comes back into chute.                     | During operation, the feed chute is typically kept full of waste by the waste crane operator. Feed chute level monitoring alerts the operator and/or the combustion control system to adjust the feed rate accordingly.<br><br>There is also a fire damper inside the chute, to keep the feed chute sealed and prevent the uncontrolled ingress of combustion air into the furnace via the feed chute. In addition, the furnaces operate under slight vacuum conditions, which means that hot flue gases preferentially flow up into the heat recovery boiler, rather than back out the feed chute.<br><br>Fire damper between bunker and boiler hall.<br><br>The automatic combustion control system controls how much waste is on the conveyor, ram feeder into furnace. | 2                    | 2 | L |                       |   | Not credible | N/A                                                                                                                                                                                     |                       |
| 17 |                         | Combustion Air flow | Zero/Low               | Emergency or planned                                               | Gasification in furnace combustion chamber                   | Emergency diesel generators provides electricity to critical fans. Auxiliary burners have a burner management system and uninterrupted power supply (UPS) to ensure combustible gases in the flue gas are fully combusted before entering the boiler and flue gas treatment system.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | 2                    | 3 | M |                       |   | Not credible | Operating and maintenance procedures need to be in place for safe start-up and shutdown of the furnace. This is particularly important to prevent furnace fire box explosion scenarios. | Commissioning stage   |
| 18 |                         | Flammable gas       | In waste               | Gas canister                                                       | Explosion in furnace                                         | Operationally, these items if visually seen by the grab crane operators will be removed. Additionally, the furnace design allows for canister explosions (size unknown).                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | 2                    | 2 | L |                       |   | Not credible | The size of the gas cylinder needs to be confirmed that the furnace is able to handle. The design needs to handle 19kg gas cylinder explosion.                                          | Detailed design stage |
| 19 | Boiler                  | Leak                | Steam                  | Instantaneous release of steam from pipework, potential for injury | Shutdown of line                                             | Contained within boiler. No external pipework exposed to flue gas. Boiler and pressure vessels designed to AS1210 (or allowable international boiler code). Mandatory (regulatory) inspections of boiler. Operationally, regular maintenance, continuous emissions monitoring systems (CEMS) (for monitoring moisture content) .                                                                                                                                                                                                                                                                                                                                                                                                                                           | 1                    | 3 | L |                       |   | Not credible | N/A                                                                                                                                                                                     |                       |
| 20 |                         | Leak                | Water                  | Flue gas is corrosive, corrodes the inside of the boiler           | Shutdown of line                                             | Contained within boiler. No external pipework exposed to flue gas. Designed to AS1210 (or allowable international boiler code). Mandatory (regulatory) inspections of boiler. Operationally, regular maintenance, CEMS (for monitoring moisture content) .                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 2                    | 1 | L |                       |   | Not credible | N/A                                                                                                                                                                                     |                       |
| 21 | Aqueous Ammonia storage | Loss of material    | Aqueous Ammonia/urea   | Leak in storage or pipes                                           | People exposed to ammonia or urea (options being considered) | Urea (if used) stored inside (not outside due to temperature and to prevent crystallisation) (if 40% urea solution is used). Solid urea may be used to avoid this issue. Note Urea exposure is an odour issue not a toxic one.<br><br>Ammonia (solution) (if used) to be stored outside. Location to be determined - provisional location for ammonia tank outside in a separate bund.                                                                                                                                                                                                                                                                                                                                                                                     | 2                    | 2 | L |                       |   | Not credible | Confirm if urea or ammonia will be used during detailed design. If ammonia is used, confirm location. Separate bund will be required if it is located within the tank farm.             | Detailed design stage |

| ID | Area                        | Property   | Guideword                     | Cause                                                        | Consequence                                 | Safeguard                                                                                                                                                                                                                                                                                                                                                                                                                                                       | Onsite Residual Risk |   |   | Offsite Residual Risk |   |   | Potential Additional Controls                                                                                                                                                                                                                     | Timeline              |
|----|-----------------------------|------------|-------------------------------|--------------------------------------------------------------|---------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|    |                             |            |                               |                                                              |                                             |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | L                    | C | R | L                     | C | R |                                                                                                                                                                                                                                                   |                       |
| 22 | ge area                     | Pressure   | High                          | Ammonia tank (if applicable) needs to be vented              | People near venting pipe exposed to ammonia | Tank venting is required during operation e.g. during tank filling. The venting pipe design shall be high enough so as not to affect people. The vent and overflow lines will require ammonia absorption protection. This can be achieved with water seals to absorb the vapours or a scrubber.                                                                                                                                                                 | 2                    | 2 | L | Not credible          |   |   | Aqueous ammonia storage needs to be designed to AS3780 for aqueous ammonia.                                                                                                                                                                       | Detailed design stage |
| 23 |                             | Tank level | High                          | Over delivery of ammonia (if applicable)                     | Overflow of ammonia                         | Monitoring of the tank level gauge during filling. Tank secondary containment to be provided. Ammonia storage to be designed to AS3780. Water sprays included around the bunded area. In the event of release, the spray traps the ammonia in the water, reducing the offsite risk from ammonia vapour being carried in the air.                                                                                                                                | 2                    | 2 | L | Not credible          |   |   | Loading/unloading system needs to be designed to AS3780 for aqueous ammonia.                                                                                                                                                                      | Detailed design stage |
| 24 |                             | Crash      | Vehicle collision             | Vehicles colliding with tank(s).                             | Vehicle collision with outside tank         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | 1                    | 2 | L | Not credible          |   |   | Tank protection to be provided in accordance with AS3780.                                                                                                                                                                                         | Detailed design stage |
| 25 | IBA Handling/<br>Maturation | Reaction   | Hydrogen                      | Water reacting with elemental aluminium in IBA               | Explosion of hydrogen                       | Evolution quantities are very small raw IBA will not be stored within a building or unventilated area. The gas will safely dissipate in the atmosphere.<br><br>Conveyors are naturally ventilated at high points. Stockpiled in open air.<br><br>Maturation building will be a 3-sided building with ventilation at high points.<br><br>Hydrogen detection and ventilation (number of air changes to ensure below LEL) at high points including in the IBA hall | 2                    | 2 | L | Not credible          |   |   | Likelihood of explosive atmosphere in IBA handling areas (like conveyers within the building) need to be considered in detailed design stage. Hazardous Area Classification as required by AS/NZS 60079.10.1.                                     | Detailed design stage |
| 26 |                             | Reaction   | Phosphine                     | Bonemeal in waste producing phosphine                        | Explosion of phosphine in IBA               | Unlikely to have a lot of bonemeal in incoming waste.<br><br>The BERC draft Waste Acceptance Protocol classifies medical waste, vet waste, and bodies as unacceptable waste and such waste shall not be accepted for processing at BERC.                                                                                                                                                                                                                        | 1                    | 2 | L | Not credible          |   |   | N/A                                                                                                                                                                                                                                               |                       |
| 27 |                             | Explosion  | Dust                          | Ignition source                                              | Dust generated by IBA process explodes      | IBA is maintained in a moist condition with 15-20% moisture. IBA sorting and processing will occur in a fully enclosed area with appropriate ventilation and dust extraction. IBA has very low unburnt carbon content (<3% total organic carbon) and is therefore inert. Matured and processed IBA aggregate (IBAA) will be stored outdoors with appropriate dust suppression. Loading into vehicles for transport off-site will also occur outdoors.           | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                                                                                               |                       |
| 28 |                             | Loss       | Water supply                  | IBA is not cooled                                            | IBA causes fire/explosion/dust explosion    | Duty standby on water supply to water bath on ash discharger. IBA is essentially inert, with very low unburnt carbon content (<3% total organic carbon).                                                                                                                                                                                                                                                                                                        | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                                                                                               |                       |
| 29 |                             | Failure    | Extraction system or conveyor | Loss of power or mechanical failure                          | Accumulation of hydrogen gas                | ID fan and IBA vapour extraction fans are connected to the emergency diesel generator. Mechanical ventilation for IBA extraction hall to be provided. IBA conveyor enclosure to be ventilated. Hydrogen detection monitors to be located in high points where hydrogen gas could potentially accumulate.                                                                                                                                                        | 1                    | 2 | L | Not credible          |   |   | N/A                                                                                                                                                                                                                                               |                       |
| 30 | IBA Sorting                 | Explosion  | Dust                          | Dust atmosphere during sieving and metal recovery operations | Metal dust explosion                        | Sorting facility is within a building however IBA moisture content will still be ~10%<br><br>Use of enclosed conveyers. Use of fugitive dust management system will be decided during detailed design.<br><br>Discharge points of bag filter/air filter shall be at a safe elevation above the IBA sorting plant roof.                                                                                                                                          | 1                    | 2 | L | Not credible          |   |   | Depending upon the type sieves used, likelihood of explosive atmosphere in IBA handling areas (like conveyers within the building) need to be considered in detailed design stage. Hazardous Area Classification as required by AS/NZS 60079.10.1 | Detailed design stage |
| 31 | IBA A                       | Emissions  | Dust                          | Stored in open area                                          | Dust emissions                              | IBAA unlikely to contain particulate matter.                                                                                                                                                                                                                                                                                                                                                                                                                    | 2                    | 2 | L | 1                     | 2 | L | N/A                                                                                                                                                                                                                                               |                       |

| ID | Area               | Property           | Guideword                              | Cause                                                                      | Consequence                       | Safeguard                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | Onsite Residual Risk |   |   | Offsite Residual Risk |   |   | Potential Additional Controls                                                                                                                                                  | Timeline              |
|----|--------------------|--------------------|----------------------------------------|----------------------------------------------------------------------------|-----------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|---|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|    |                    |                    |                                        |                                                                            |                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | L                    | C | R | L                     | C | R |                                                                                                                                                                                |                       |
|    | Storage            |                    |                                        |                                                                            |                                   | IBAA moisture content will be ~10%.<br>Temporarily stored in IBAA storage area.<br>Storage sprayed with rainwater collected from IBA area<br>Dust suppression on roadways in IBA area.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                      |   |   |                       |   |   |                                                                                                                                                                                |                       |
| 32 | Baghouse           | Fire               | Baghouse                               | Heat from flue gas or external fire source                                 | Fire in baghouse                  | The filter bags are typically covered by filter cake (a layer of lime and activated carbon), that ultimately becomes APCr.<br>Low/negligible risk of fire/explosion due to the low concentration of activated carbon.<br>Choice of bag materials to be considered in detailed design.<br>Economiser cools flue gas upstream of a semi-dry scrubber inclusive of a water quench, which further cools and moistens the flue gas upstream of the baghouse filter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                            |                       |
| 33 |                    | Loss of feed bags  | Control                                | Catastrophic failure of baghouse bags                                      | Catastrophic failure of feed bags | Isolate and replace bag.<br>A CEMS will be implemented to continuously monitor flue gas dust concentration and alert the operators to take action in the event of a filter bag failure.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                     | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                            |                       |
| 34 |                    | Explosion          | Dust                                   | Flammable gas atmosphere in the filter housing                             | Explosion, damage to baghouse     | The filter bags are typically covered by filter cake (a layer of lime and activated carbon), that ultimately becomes APCr.<br>Choice of bag materials to be considered in detailed design.<br>Economiser cools flue gas upstream of a semi-dry scrubber inclusive of a water quench, which further cools and moistens the flue gas upstream of the baghouse filter.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | 2                    | 2 | L | Not credible          |   |   | Likelihood of explosive atmosphere within the filter housing need to be considered in detailed design stage.<br>Hazardous Area Classification as required by AS/NZS 60079.10.1 | Detailed design stage |
| 35 | Storage silo       | Explosion          | Activated carbon                       | Storage and handling (de-bagging) of activated carbon is an explosion risk | Dust explosion                    | Typical material safety requirements include storage in a dry, cool, well-ventilated area, away from strong oxidizers, strong acids, ignition sources, combustible materials, and heat. An adequate air gap between packages is recommended to reduce propagation in the case of fire. As with all finely divided materials, all transfer, blending, and dust collecting equipment shall be grounded to prevent static discharge. Good housekeeping practices will prevent the accumulation of dust or dusty conditions in areas associated with activated carbon handling and storage. Permanent nitrogen blanketing of the storage silo is to be adopted. Where dust is unavoidable, dust-proof boxes and regular electrical line maintenance are recommended. Hazardous Area Classification as required by AS/NZS 60079.10.2:2016. Appropriate standard operating procedures will be developed by the proponent for maintenance and use. | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                            |                       |
| 36 | Flue gas treatment | Loss of emissions  | Flue gas treatment                     | Pipe burst or leaking valve of APCr                                        | Uncontrolled release of emissions | APCr storage and handling is indoors. APCr is a fine solid (powder) which may generate some dust in the unlikely event of an uncontrolled release. APCr consists of alkaline salts which can be removed to prevent dust accumulation. Operators to wear appropriate PPE while attending to any release of APCr and corrective maintenance to address the point of release.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | 1                    | 3 | L | 1                     | 2 | L | N/A                                                                                                                                                                            |                       |
| 37 |                    | Abnormal operation | Abnormal operation<br>Startup/shutdown | Power loss                                                                 | Flue gas treatment out of action  | An emergency diesel generator to be included in design                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      | 3                    | 1 | L | Not credible          |   |   | N/A                                                                                                                                                                            |                       |

| ID | Area                       | Property                | Guideword                   | Cause                                                      | Consequence                        | Safeguard                                                                                                                                                                                                                                                                                               | Onsite Residual Risk |   |   | Offsite Residual Risk |   |   | Potential Additional Controls                                                                                                                                                                        | Timeline              |
|----|----------------------------|-------------------------|-----------------------------|------------------------------------------------------------|------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|---|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|    |                            |                         |                             |                                                            |                                    |                                                                                                                                                                                                                                                                                                         | L                    | C | R | L                     | C | R |                                                                                                                                                                                                      |                       |
| 38 | APCr storage area          | Loss                    | APCr                        | APCr silos out of action                                   | Small spillage of APCr             | APCr mixed with cement and water to create concrete slurry and bagged prior to batch transport to another area for curing. Raw APCr will not be transported offsite without being treated. If the transfer pipe cracks/breaks, the screw conveyors are used. Two APCr storage silos provide redundancy. | 2                    | 1 | L | Not credible          |   |   | Specific health and safety measures need to be taken to handle APCr and cement including ventilation systems, enclosures for conveyers specially the transfer points, water runoff controls systems. | Detailed design stage |
| 39 | APCr transfer pipework     | APCr                    | APCr                        | Corrosion                                                  | Leak in pipe                       | Pipe material selection in accordance to industry best practice.                                                                                                                                                                                                                                        | 1                    | 1 | L | Not credible          |   |   | Consider if fibreglass pipework would perform better during detailed design                                                                                                                          | Detailed design stage |
| 40 | Bulk Chemical storage Area | Storage                 | Hydrochloric acid (if used) | Pipe burst                                                 | Leakage near equipment and flanges | Design to AS3780                                                                                                                                                                                                                                                                                        | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 41 |                            | Storage                 | Sodium hydroxide            | Pipe burst                                                 | Leakage near equipment and flanges | Design to AS3780. Likely used for water treatment, thus, stored in small quantities.                                                                                                                                                                                                                    | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 42 |                            | Storage                 | Ammonia                     | Pipe burst                                                 | Leakage near equipment and flanges | Design to AS3780                                                                                                                                                                                                                                                                                        | 1                    | 3 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 43 | Water Treatment            | Incompatible substances | Control                     | Storage of sodium hydroxide and hydrochloric acid together | Interaction of acid and base       | Design to AS3780. Segregation of storage areas for incompatible substances.                                                                                                                                                                                                                             | 2                    | 1 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 44 | Transformer                | Fire                    | Bund                        | Oil filled transformer                                     | Transformer explosion              | Design to AS2067 and AS/NZS60076 series.                                                                                                                                                                                                                                                                | 1                    | 3 | L | Not credible          |   |   | Let the fire burn out if an event occurs. Safeguards by electrical engineer to be specified if stored inside.                                                                                        | Detailed design stage |
| 45 | UPS                        | UPS batteries           | UPS batteries               | Lead acid batteries                                        | Hydrogen production                | Design to appropriate standards                                                                                                                                                                                                                                                                         | 1                    | 2 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 46 |                            | UPS batteries           | UPS batteries               | Lithium ion (if used)                                      | Overloaded and creating a fire     | Design to appropriate standards                                                                                                                                                                                                                                                                         | 2                    | 2 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 47 | Site                       | Weather                 | Extreme rainfall            | Extreme rainfall                                           | Flooding                           | Main energy from waste (EfW) facility and visitor centre will be located above the 1 in a 100-year event. The site's stormwater network will be designed in accordance with local regulations and will shed overland flows away from the buildings. There is no catchment flooding risk.                | 1                    | 2 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 48 |                            | Weather                 | Wind                        | Weather                                                    | Damage to facility                 | Design to AS/NZS1170.2                                                                                                                                                                                                                                                                                  | 2                    | 1 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 49 |                            | Weather                 | Lightning                   | Extreme weather event                                      | Lightning hits stack               | Provide local lightning protection as per regulations                                                                                                                                                                                                                                                   | 1                    | 2 | L | Not credible          |   |   | N/A                                                                                                                                                                                                  |                       |
| 50 |                            | Fire                    | Bushfire                    | Existing vegetation on site                                | Bushfire reaches site              | TBC                                                                                                                                                                                                                                                                                                     | 2                    | 2 | L | Not credible          |   |   | Bushfire assessment to be undertaken. Potential QRES engagement.                                                                                                                                     | Detailed design stage |

| ID | Area         | Property       | Guideword            | Cause                                            | Consequence                                                    | Safeguard                                                                                                                                                                                                                                  | Onsite Residual Risk |   |   | Offsite Residual Risk |   |              | Potential Additional Controls                                                                                                | Timeline              |
|----|--------------|----------------|----------------------|--------------------------------------------------|----------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------|---|---|-----------------------|---|--------------|------------------------------------------------------------------------------------------------------------------------------|-----------------------|
|    |              |                |                      |                                                  |                                                                |                                                                                                                                                                                                                                            | L                    | C | R | L                     | C | R            |                                                                                                                              |                       |
|    |              |                |                      |                                                  |                                                                | Site evacuation procedures in bushfire scenario – no credible injury consequence                                                                                                                                                           |                      |   |   |                       |   |              |                                                                                                                              |                       |
| 51 |              | Sabotage       | Sabotage             | Environmental activists and theft of materials   | Mostly vocal. Risk during construction if protestor is injured | Construction site to be secured. Building is secure outside of hours and has security system in place during operation.<br>CCTV for security and operations provided at site boundary and internally.<br>Secure fencing – cyclone fencing. | 1                    | 1 | L |                       |   | Not credible | N/A                                                                                                                          |                       |
| 52 |              | Fire           | Bund                 | 100 000L of diesel                               | Diesel ignition                                                | Design to AS1940. Diesel not flammable, low probability of ignition.<br>Engagement with relevant fire authorities. Hydrant locations, etc                                                                                                  | 1                    | 2 | L |                       |   | Not credible | N/A                                                                                                                          |                       |
| 53 |              | Separation     | Transformer          | Transformer                                      | Domino effect for transformers                                 | Design to AS2067 and AS/NZS60076 series                                                                                                                                                                                                    | 2                    | 1 | L |                       |   | Not credible | Safeguards by electrical engineer to be specified if stored inside.                                                          | Detailed design stage |
| 54 | Turbine Hall | Fire           | Bund                 | Turbine lube oil storage                         | Fire                                                           | Design in accordance with Australian Standards and industry best practice (deluge system)                                                                                                                                                  | 1                    | 2 | L |                       |   | Not credible | N/A                                                                                                                          |                       |
| 55 | MC C         | Fire           | Electrical equipment | Loose connections, equipment damage, overheating | Fire                                                           | Design in accordance with Australian Standards and industry best practice                                                                                                                                                                  | 1                    | 2 | L |                       |   | Not credible | N/A                                                                                                                          |                       |
| 56 | N/A          | Storage        | Quick lime           | Pipe burst                                       | Leakage near equipment and flanges                             | Design to AS3780.                                                                                                                                                                                                                          | 1                    | 1 | L |                       |   | Not credible | Bulk storage on-site. It is unlikely that this will be provided as a slurry. To be determined based off equipment providers. | Detailed design stage |
| 57 | Off-site     | Contamination  | IBA leachate         | IBA leachate flow off-site                       | Contaminate off-site surroundings                              | TBC                                                                                                                                                                                                                                        | 1                    | 2 | L |                       |   | Not credible | QFES requirements for fire water runoff to be considered                                                                     | Detailed design       |
| 58 |              | Entrance/exits | Traffic hazards      | Traffic collisions between trucks and cars       | Injury/fatalities of people within vehicles                    | TBC                                                                                                                                                                                                                                        | 1                    | 4 | M | 1                     | 4 | M            | Work with TMR to reduce speeds at thoroughfare                                                                               | Detailed design       |
| 59 |              | Exits          | Queuing              | Trucks are queued up waiting for exit            | Accident of trucks coming back onto the main road              | Ample queuing space on private land                                                                                                                                                                                                        | 1                    | 1 | L | 1                     | 1 | L            | N/A                                                                                                                          |                       |

# Appendix B

## Rail Specific Risk Assessment

**Cleanaway Operations Pty Ltd**

# Bromelton Energy and Resource Centre

## Rail Specific Risk Assessment

Reference: BERC-ARU-BNE-RRA-RPT-0001

B | 22 January 2026

This report takes into account the particular instructions and requirements of our client. It is not intended for and should not be relied upon by any third party and no responsibility is undertaken to any third party.

Job number 293683-00

**Arup Australia Pty Ltd**  
Level 26, 123 Albert Street  
Brisbane  
QLD 4000  
Australia  
[arup.com](http://arup.com)

Document Verification

Project title        Bromelton Energy and Resource Centre  
Document title     Rail Specific Risk Assessment  
Job number         293683-00  
Document ref       BERC-ARU-BNE-RRR-RPT-0001  
File reference      BERC-Rail-Risk-Assessment

| Revision | Date        | Filename    | Rail Specific Risk Assessment              |                         |              |
|----------|-------------|-------------|--------------------------------------------|-------------------------|--------------|
| A        | 11 Nov 2025 | Description | Issued for Adequacy Review                 |                         |              |
|          |             |             | Prepared by                                | Checked by              | Approved by  |
|          |             | Name        | Gemma Pollard                              | Ben Smith<br>RPEQ 32157 | Anna Steart  |
|          |             | Signature   |                                            |                         |              |
|          |             |             |                                            |                         |              |
| B        | 22 Jan 2026 | Filename    | Rail Specific Risk Assessment              |                         |              |
|          |             | Description | Issue for Approval                         |                         |              |
|          |             |             | Prepared by                                | Checked by              | Approved by  |
|          |             | Name        | Gemma Pollard                              | Ben Smith<br>RPEQ 32157 | Anna Stewart |
|          |             | Signature   | pp <i>Benjamin Le Benjamin Le Allevant</i> |                         |              |

Issue Document Verification with Document ☒

## Contents

---

|                                                          |    |
|----------------------------------------------------------|----|
| Abbreviations                                            | 2  |
| Executive Summary                                        | 3  |
| 1. Introduction                                          | 5  |
| 1.1 Purpose of Assessment                                | 5  |
| 1.2 Project Description                                  | 5  |
| 2. Site Details                                          | 9  |
| 3. Railway Details                                       | 11 |
| 4. Development Details                                   | 12 |
| 5. Construction Details                                  | 12 |
| 6. Risk Identification, Analysis and Evaluation Approach | 13 |
| 6.1 Identification of Hazards (Long List)                | 13 |
| 6.2 Risk Evaluation                                      | 14 |
| 6.3 Risk Rating                                          | 16 |
| 6.4 Risk Assessment Outcome                              | 18 |

## Tables

|                                                                                                     |    |
|-----------------------------------------------------------------------------------------------------|----|
| Table 1: Summary of Abbreviations                                                                   | 2  |
| Table 2: Key Project Components                                                                     | 7  |
| Table 3: BERC Site Details                                                                          | 9  |
| Table 4: Adjacent Railway Detail                                                                    | 11 |
| Table 5: Hazard Long List                                                                           | 13 |
| Table 6: Overall Risk Score Criteria                                                                | 14 |
| Table 7: Likelihood Criteria – Based on TMR’s Guide to Development in a Transport Environment       | 15 |
| Table 8: Severity of Risk Criteria - Based on TMR’s Guide to Development in a Transport Environment | 15 |
| Table 9: Residual Risk Scores                                                                       | 16 |
| Table 10: Summary of Risks Screened Out as Not Credible                                             | 17 |

|                                        |   |
|----------------------------------------|---|
| Figure 1: Energy from Waste Process    | 6 |
| Figure 2: Site Location Plan           | 8 |
| Figure 3: Existing Drainage Catchments | 9 |

## Appendices

**No table of contents entries found.**



### ***Acknowledgement of Country***

*Arup acknowledges the Traditional Owners across all lands, waters and skies our firm may reach; we acknowledge their wisdom, resilience, and rich cultural heritage. We pay our respects to the Elders, past and present, and to all Aboriginal and Torres Strait Islander peoples.*

*‘Continuing to Shift to shape an even better world’ original artwork by Tarni O’Shea of Gilimbaa and updated by David Williams of Gilimbaa.*

# Abbreviations

**Table 1: Summary of Abbreviations**

| Abbreviation | Definition                                               |
|--------------|----------------------------------------------------------|
| AHD          | Australian Height Datum                                  |
| APCr         | Air Pollution Control Residue                            |
| ARTC         | Australian Rail Track Corporation                        |
| AS           | Australian Standard                                      |
| BERC         | Bromelton Energy and Resource Centre                     |
| BREF         | Best Available Techniques Reference                      |
| C&I          | Commercial and Industrial                                |
| CMP          | Construction Management Plan                             |
| EfW          | Energy from Waste                                        |
| IBA          | Incinerator Bottom Ash                                   |
| IBAA         | Incinerator Bottom Ash Aggregate                         |
| IED          | Industrial Emissions Directive                           |
| ISO          | International Organization for Standardization           |
| MSW          | Municipal Solid Waste                                    |
| MWe          | Megawatt Electric                                        |
| ONRSR        | Office of the National Rail Safety Regulator             |
| RL           | Relative Level                                           |
| SDA          | State Development Area                                   |
| SRRC         | Scenic Rim Regional Council                              |
| TEEP         | Technically, environmentally, and economically practical |
| TMR          | Department of Transport and Main Roads                   |

# Executive Summary

This Rail Risk Assessment for the Energy from Waste (EfW) facility known as Bromelton Energy and Resource Centre (BERC) in Queensland follows the *Guide to Development in a Transport Environment: Rail* (the Guide) and, in accordance with the Guide, specifically focuses on risks that may impact the adjacent railway corridor.

The Project layout has been developed such that the majority of the development site, and all of the operational components of the development, are outside of the area adjacent to the railway as defined in the Guide (i.e. land within 25 metres of the boundary of the railway).

## Hazard Context Review

This risk assessment is undertaken based on the hazard scenarios to the adjacent Sydney – Brisbane rail corridor and how these threats may manifest.

A total of 17 hazard scenarios were identified. Following an internal Risk Screening Workshop, 12 credible hazards were identified, with 5 considered not credible. Generally, the non-credible hazard scenarios are those for which the threat reaching the area adjacent to the rail corridor is not considered credible.

## Risk Assessment Results

The 12 credible hazard scenarios are assessed in accordance with the risk assessment methodology in the Guide. The 12 hazard scenarios are assessed as low risk to the rail corridor, based on the Guide's risk criteria. This is reflective of the robust control framework developed for the BERC Project, and the separation distance between the operational components of the BERC site and the rail corridor.

## Risk Treatments

The following risk treatments are proposed for BERC and are considered in the determination of the risk scores for each hazard scenario:

- Incinerator bottom ash (IBA) stockpiles matured in three-sided building.
- Misting/ dust suppression systems.
- Barrier wall around IBA pad.
- Additional maintained vegetated buffer.
- Bunded fuel tanks.
- Spill containment.
- Maintain the rail boundary interface as specified in the Construction Management Plan (CMP).
- Automatic leak detection.
- Emergency spill plan agreed with rail authority.
- Fire detection and suppression.
- Fire water containment.
- Liaison with local fire authority and rail operator for coordinated response plan.
- Operator training.
- Rail authority permit to work.
- Exclusion zones between work and rail.
- Preventive and regular maintenance.

- Immediate notification protocol to rail authority if exceedance occurs.
- Exclusion fencing.
- Flood modelling including shared catchment.
- Overflow directed away from rail.
- Lifting plans.
- Spotters.
- Crane slew restrictors.
- General housekeeping.
- Debris netting on scaffold.
- Engineer-certified design.
- Confirm all underground services via ‘Dial Before You Dig’ and rail authority plans.
- Supervise excavation near known alignments.
- Annual fire drills and response test.
- Regular performance checks.
- Incident reviews (post-event).

#### **Risk Assessment Outcome**

As all identified and assessed hazards pose a low risk to the rail corridor, in accordance with the risk criteria in the Guide, “appropriate control measures should be in place to allow the development to proceed”.

The Project shall continue to manage risks through design, construction, commissioning and operation, and that risk management shall continue to consider the potential for impacts to the rail corridor.

# 1. Introduction

## 1.1 Purpose of Assessment

The *Guide to Development in a Transport Environment: Rail* (Department of Transport and Main Roads (TMR), Queensland) (the Guide) outlines the requirements for developments located near or within rail corridors to ensure safety, operational integrity, and compatible land use. The Guide defines the area adjacent to a railway as land within 25 metres of the boundary of the railway.

This report responds to the Guide by assessing how the proposed development aligns with its principles and technical requirements. It summarises relevant sections of the Guide, identifies key risks and interface issues, and outlines how the design and proposed mitigation measures align TMR expectations.

The Guide states that it “*provides specific technical guidance to assist development proponents to achieve compliance with the performance outcomes and acceptable outcomes in the Queensland State Development Assessment Provisions (SDAP) in relation to managing impacts of development on railway safety, structural integrity and operation.*” As such, the purpose of this assessment is to assess risks and hazards associated with the Project insofar as they relate to the area adjacent to the railway. Other risks and hazards associated with the development are outside the scope of this Rail Risk Assessment.

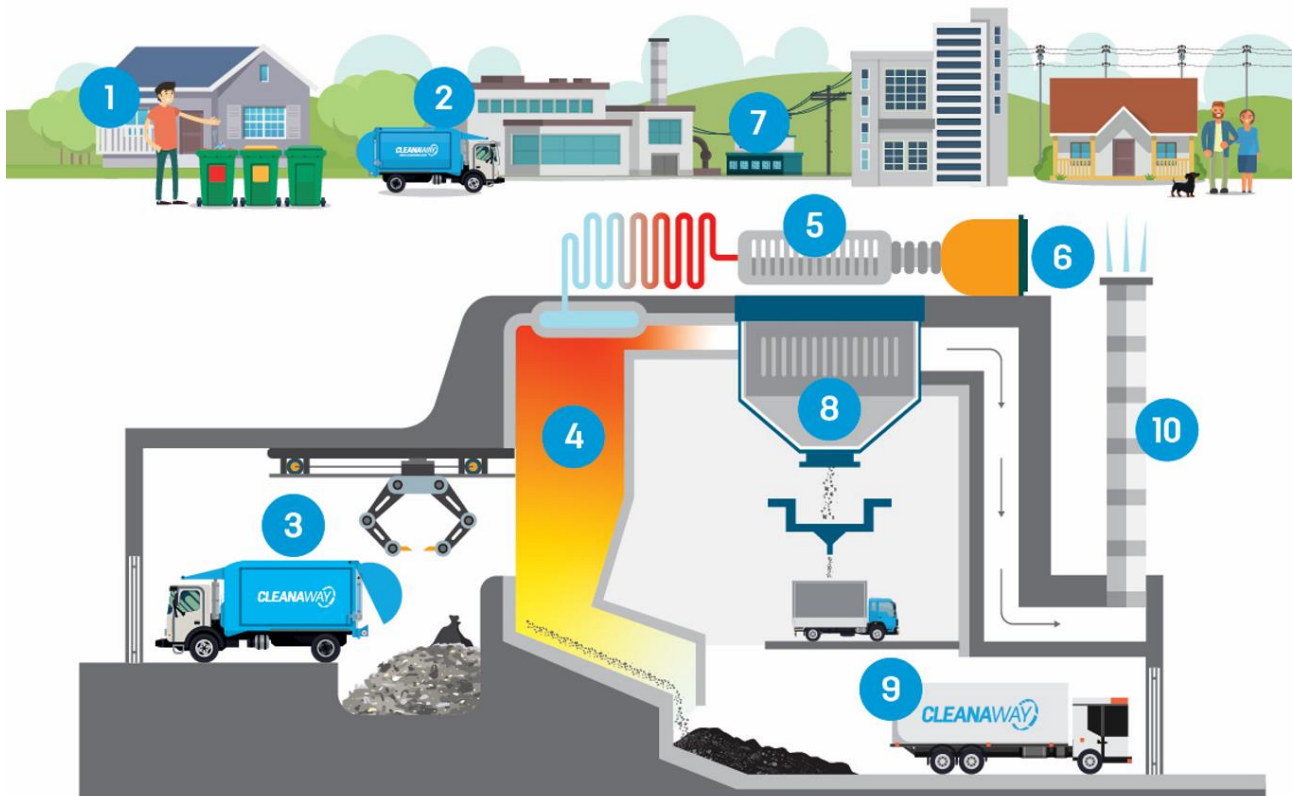
## 1.2 Project Description

### 1.2.1 Project Overview

Cleanaway Operations Pty Ltd (Cleanaway) is an Australian waste management, recycling and industrial services company. Cleanaway is developing an Energy from Waste (EfW) facility in Queensland known as the Bromelton Energy and Resource Centre (BERC) (the Project). The Project will be located within the Special Industry Precinct of the Bromelton State Development Area (SDA), west of Beaudesert within the Scenic Rim Regional Council local government area.

The Project layout has been developed such that the majority of the development site, and all of the operational components of the development, are outside of the area adjacent to the railway as defined in the Guide (i.e. land within 25 metres of the boundary of the railway).

The Project has been designed to thermally treat approximately 760,000 tonnes per annum (tpa) of waste feedstock, consisting of residual Municipal Solid Waste (MSW) and residual Commercial and Industrial (C&I) waste. Residual waste is waste that is not technically, environmentally, and economically practical (TEEP) to reuse or recycle, which would otherwise be sent to landfill for disposal. The facility’s actual annual throughput will vary depending on the calorific value of the feedstock and plant availability. To account for variability in feedstock energy content, the facility will be designed for a maximum processing capacity of up to 10% above the nominal figure (836,000 tpa). The EfW process is summarised in Figure 1.



- 1 At home and work, we sort our waste into recyclable and non-recyclable items.
- 2 Before arrival at the energy from waste facility, residual waste that has been sorted at home and work is delivered to the facility.
- 3 In the bunker, waste is mixed, ensuring consistency, by large crane claws before placement into the combustion chamber.
- 4 Waste is combusted as it moves along a moving grate. The temperature in the combustion chamber reaches more than 850°C to ensure that waste combusts completely while also destroying organic pollutants and odour.
- 5 Water is heated during combustion creating steam which turns a turbine.
- 6 Baseload electricity is generated.
- 7 Electricity is put back into the grid and used to power homes and businesses.
- 8 Gases created during combustion pass through a multi-step flue gas treatment system, removing pollutants from the gases. Residues from the flue gas treatment are collected in a sealed system for treatment before disposal.
- 9 Bottom ash from the combustion process is collected and stored. Metals are recovered for recycling. It is intended that the remaining bottom ash is sent for reuse in construction.
- 10 Cleaned gases and steam are dispersed high into the atmosphere, mixing well to ensure negligible impact on the surrounding air quality.

**Figure 1: Energy from Waste Process**

### 1.2.2 Proponent

Cleanaway, an Australian owned company, has operated for more than 50 years, supporting industry, government, communities and households across Australia. Its mission is to make a sustainable future possible, achieved through action across all levels of the waste hierarchy. Waste generation is minimised through extensive education programs, with Cleanaway's 50 education officers reaching over 120 businesses, 30 councils, and almost 33,000 school participants in the last financial year.

Cleanaway invests heavily in recycling, operating several Material Recovery Facilities nationwide and has partnered with Pact Group, Asahi Beverages and Coca-Cola to deliver two large-scale PET (polyethylene terephthalate) recycling facilities and a HDPE (high density polyethylene) recycling facility with Pact Group. In addition, in collaboration with Viva Energy, Cleanaway is developing a soft plastics recycling plant. EfW is recognised by Cleanaway as an important part of the future waste management framework, enabling recovery of energy and other resources from residual waste that cannot otherwise be recycled.

### 1.2.3 Policy Alignment

The BERC aligns with the Queensland EfW Policy and the Queensland EfW Guideline (2021) by diverting residual waste from landfill and delivering economic and social benefits through employment and local business opportunities in South East Queensland.

In accordance with Policy outcome 7 of the Queensland EfW Policy, the BERC will be designed to meet the best practice emission standards and requirements of the European Industrial Emissions Directive (IED) (2010) and the associated Best Available Techniques Reference (BREF) Document for Waste Incineration (2019), which sets the European Union environmental standards for waste incineration.

The Project also supports the Queensland Waste Strategy contributing to its 2050 targets to reduce household waste by 25%, recycle 75% of all waste, and divert 90% from landfill. In doing so, the BERC will play a key role in advancing Queensland's transition to a circular economy and reducing long-term reliance on landfill.

### 1.2.4 Key Components

The key components of the Project are summarised in Table 2.

**Table 2: Key Project Components**

| Project Component         | Detail                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  |
|---------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address                   | Lot 1 Beaudesert Boonah Road, Bromelton, Queensland, 4285 (Lot 1 on RP45234). Refer Figure 2.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |
| Site Area                 | 63 hectares                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Summary of proposed works | <p>The Project includes the construction of a main EfW facility for waste processing, incinerator bottom ash (IBA) maturation and processing facility and an air pollution control residue (APCr) facility.</p> <p>Additionally, it includes all onsite infrastructure needed for the EfW facility, such as site utilities, internal roads, weighbridges, parking and hardstand areas, stormwater infrastructure, fencing and landscaping.</p> <p>The Project will include a visitor centre to help educate and inform the community on circular economy principles, the waste hierarchy, including waste avoidance, recycling, resource recovery, the benefits of landfill diversion and the EfW process. The intent behind this education is to drive a shift in community awareness and attitudes toward waste management and resource recovery.</p> |
| Technology Used           | The proposed technology is moving grate combustion technology. This has been used globally for over 100 years and is common in many of the 500 similar operational examples across Europe.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Facility Outputs          | <ul style="list-style-type: none"><li>• Approximately 73.2MW (577,600 MWh/ year, corrected for ambient temperature) exported to grid as baseload electricity.</li><li>• Potential to supply energy in the form of heat and/or process steam to local industrial users.</li><li>• Residual material include IBA and APCr.</li><li>• It is intended that the IBA will be mechanically processed on site to create incinerator bottom ash aggregate (IBAA). During the process, both ferrous and non-ferrous metals are recovered for recycling and sale. It is intended that the remaining material is re-purposed for use as an aggregate in construction.</li><li>• Includes a facility to stabilise APCr before removal and disposal at a licensed landfill.</li></ul>                                                                                 |
| Key Infrastructure        | <ul style="list-style-type: none"><li>• EfW facility including administration and visitor's centre.</li><li>• IBA maturation and processing facility (2 x pads and 2 x sheds).</li><li>• APCr facility (1 x pad, 1 x shed).</li><li>• Transformer yard and switchyard.</li><li>• De-coupling area for trucks.</li><li>• Weighbridges.</li></ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |

| Project Component  | Detail                                                                                                                                                                                                                                                                                                |
|--------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
|                    | <ul style="list-style-type: none"> <li>• Internal road network and carparking.</li> <li>• 2 x combined storm water treatment and detention basin.</li> <li>• 1 x lined retention basin.</li> <li>• Access from Beaudesert Boonah Road via a signalised intersection with Recycling Street.</li> </ul> |
| Hours of Operation | 24 hours per day, seven days per week (365 days per year)                                                                                                                                                                                                                                             |
| Operational Staff  | Approximately 60 staff                                                                                                                                                                                                                                                                                |

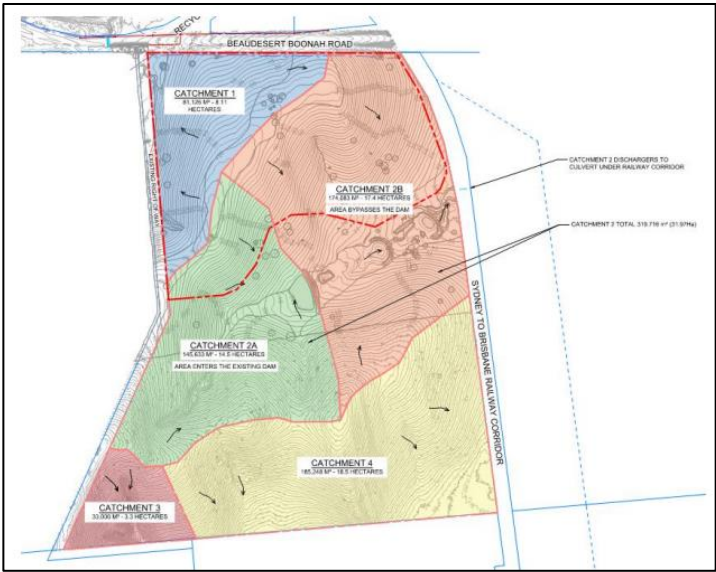


**Figure 2: Site Location Plan**

## 2. Site Details

Table 3 provides a summary of the key physical, environmental, and locational characteristics of the BERC site, including site condition, soil and geology, topography, drainage patterns, proximity to infrastructure and noise levels.

**Table 3: BERC Site Details**

| Topic                                      | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|--------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Address                                    | Lot 1 Beaudesert Boonah Road, Bromelton QLD 4285                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
| Site condition                             | <p>The site is located within the Bromelton SDA and Scenic Rim Council local government area (SRRC) at Lot 1 Beaudesert Boonah Road, Bromelton Qld 4285, and formally described as Lot 1 on RP45234 (Refer Figure 2). The site is comprised of approximately 63 hectares and is irregular in shape.</p> <p>The site has approximately 510m sole frontage to Beaudesert Boonah Road (State-controlled Road) and adjoins a railway corridor (Brisbane – Sydney Line) along the eastern boundary (965m). The southern property boundary (880m) and western property boundary (1,060m) interfaces with private land.</p> <p>Historical photography indicates the site has primarily been used in the past 100 years for grazing and agricultural purposes. The site is vacant and contains sparse vegetation. There is a waterbody at the centre of the site.</p>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |
| Topography                                 | The site slopes from the crest of a hill in the western portion of the site, which has an approximate elevation of relative level (RL) 95 m relative to the Australian Height Datum (AHD), sloping down to the north-western and south-eastern corners of the site, with elevations of 85 m AHD and 75 m AHD respectively.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                    |
| Prevailing drainage patterns over the site | <p>The Project area is pastoral and currently contains no formal piped stormwater infrastructure. There are no formal stormwater quality improvement devices on site; however, it is considered that the series of farm dams provide a level of stormwater attenuation and allow sediment removal.</p> <p>The site is defined by a series of ridgelines that divide it into three distinct drainage catchments — northern, central and southern — as illustrated in Figure 3.</p> <ul style="list-style-type: none"> <li>▪ Catchment 1 (Northern): Overland flows are collected by a swale within the Beaudesert Boonah Road corridor. These flows are conveyed to twin 2.125 m × 0.9 m pre-cast concrete box culverts beneath Beaudesert Boonah Road, discharging into a man-made channel that flows north toward Allen Creek.</li> <li>▪ Catchments 2A and 2B (Central): Catchment 2A drains into existing on-site farm dams. Catchment 2B conveys overland flows to an arch culvert (1.85 m × 1.85 m) beneath the railway corridor, providing flow conveyance toward the north.</li> <li>▪ Catchments 3 and 4 (Southern): These southern catchments shed overland flows off-site toward Swan Creek, located approximately 200 m south of the lot boundary.</li> </ul>  |

**Figure 3: Existing Drainage Catchments**

|                                                               |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
|---------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Soil type and geology                                         | <p>Soil type: The subsurface conditions typically consist of topsoil overlaying residual clay, followed by extremely weathered siltstone. Beneath these layers, the bedrock mainly comprises siltstone and mudstone, with occasional interbedded sandstone.</p> <p>Geology: The Lotsearch report indicates that the site is underlain by middle-Jurassic aged Walloon Coal Measures. The lithology of this unit consists of shale, siltstone, sandstone and coal seams.</p> |
| Proximity to a railway and railway infrastructure/ utilities. | The site adjoins the railway corridor (Brisbane – Sydney Line) along the eastern boundary (965m).                                                                                                                                                                                                                                                                                                                                                                           |

### 3. Railway Details

Table 4 summarises the key characteristics and operational details of the adjacent Sydney–Brisbane rail corridor, including track geometry, speed, rolling stock type, usage, planned upgrades, and operational requirements.

**Table 4: Adjacent Railway Detail**

| Topic                                                                                         | Description                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   |
|-----------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Track geometry and alignment (for example, straight or curved section of track)               | The Sydney-Brisbane rail corridor in this area is relatively straight and flat to maintain suitability for longer freight trains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Track speed                                                                                   | Governed by the Australian Rail Track Corporation's (ARTC) Operational Standards and the Inland Rail Design Specifications, the BERC section of the rail track is 115 km/h and may reduce speed near this facility to 60-80 km/h.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |
| Type of railway rolling stock (for example, electric passenger or diesel freight locomotives) | This rail corridor is primarily used for interstate diesel-electric freight locomotives. Electric passenger trains generally operate closer to Brisbane and are not typical at this BERC section of the rail corridor.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |
| Derailment history                                                                            | Using open-source material, no derailment history for this rail corridor was identified.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
| Current and future estimated usage and growth in patronage (10-year horizon)                  | Currently accommodates 1,800-metre-long freight trains, following completion of the Inland Rail Design project, the upgrades plan to increase the container trains to 3,600-metre-long freight trains.<br><br>As passenger trains are unlikely to operate in this section of the rail corridor, no growth in patronage is expected in the next 10-years.                                                                                                                                                                                                                                                                                                                                                                                      |
| Details of any future/planned railway upgrades/works                                          | The existing rail corridor is part of the Inland Rail project where enhancements to the railway are expected. Upgrades include improvements to the track alignment and geometry (to support longer, heavier trains), increased clearance levels to allow for double-stacked containers and built with the potential to accommodate 3,600-metre-long trains.                                                                                                                                                                                                                                                                                                                                                                                   |
| Formation of the track (for example, in cut, on an embankment or at grade)                    | This section of the track is predominately at grade.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |
| Potential for the carrying of freight and dangerous goods                                     | Currently accommodates 1,800-metre-long-freight trains.                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
| Operational requirements of the railway                                                       | The operational requirements are based on the ARTC's Operational Standards and the Inland Rail Design Specifications. Key requirements include: <ul style="list-style-type: none"> <li>• Locomotives of up to 25-tonnes.</li> <li>• Freight wagons of approximately 21-tonnes.</li> <li>• Standard gauge of 1435mm.</li> <li>• Maximum speed of up to 115km/h.</li> <li>• Utilises an Advanced Train Management System to ensure safety and efficiency.</li> <li>• Minimum vertical clearance of 6.5m for double-stacked containers.</li> <li>• Gradients to typically be below 1.5%.</li> <li>• Regular asset (track and rolling stock) monitoring.</li> <li>• Follow the fire and life safety protocols for rail infrastructure.</li> </ul> |

## 4. Development Details

- The BERC is an EfW facility proposed by Cleanaway within the Bromelton State Development Area (SDA) in Queensland. The development site is approximately 63-hectares, located directly adjacent to the interstate railway corridor (Sydney – Brisbane), and will operate 24-hours a day, 7-days per week.
- The Project site is within the Special Industry Precinct of the SDA. Two industrial properties Quickcell Technology Products Pty and SCT Logistics are located to the north of the site. The interstate rail line is located on the eastern boundary of the site.
- The facility will meet relevant guidelines and strategies and is consistent with the objectives set in the Queensland Waste Strategy, which targets a 75% recycling rate, and diversion of 90% of all waste from landfill by 2050. The Project is positioned to contribute to Queensland's move towards a circular economy and decreased dependence on landfill disposal over the long term. Throughout the development process, community engagement will also be sought to ensure local community input and feedback is received.
- The Project includes the construction of all onsite infrastructure needed for the EfW facility, such as site utilities, internal roads, weighbridges, parking and hardstand areas, stormwater systems, fencing and landscaping. This also covers building and operating an IBA maturation and processing facility on site, designed to store and stabilise IBA before it is mechanically processed into aggregate for use in construction. During this process, ferrous and non-ferrous metals will be recovered from the IBA for recycling and sale to the scrap metal market.
- The Project includes a visitor centre to increase the community's awareness and education around economy principles, the waste hierarchy, benefits of landfill diversion and the EfW process.
- Moving grate technology has been selected for the thermal treatment of waste to facilitate energy and resource recovery, which is well established globally and utilised in many operational facilities worldwide.

## 5. Construction Details

- During construction of the Project, increased construction traffic is expected. However, as the nearest railway crossings are grade separated, no impact on the railway corridor is anticipated.
- Construction is anticipated to take approximately 39 months (exclusive of commissioning and proof of performance testing prior to operations) to complete.
- The indicative construction methodology will be detailed in the Construction Management Plan (CMP) to be developed by the contractor when appointed.

## 6. Risk Identification, Analysis and Evaluation Approach

### 6.1 Identification of Hazards (Long List)

The first stage of the risk assessment process is hazard identification. Table 5 shows the long list of hazards that are identified. The long list hazard identification does not consider whether the hazard or the potential consequence in the rail corridor is credible. Further screening and risk assessment is undertaken to determine the list of credible hazards.

**Table 5: Hazard Long List**

| Hazard Scenario                                                                                                                                                                                                          | Hazard Source                                                                                     | Potential Consequence (Rail)                                                                                                                                                                                      |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Dust emissions during construction and once operational                                                                                                                                                                  | Dust emissions from Incinerator Bottom Ash stockpiles or construction dust from vehicle movements | <ul style="list-style-type: none"> <li>Dust drift, track contamination leading to traction/ slip issues</li> <li>Increased rail maintenance</li> <li>Reduced driver visibility</li> </ul>                         |
| Diesel storage - BERC uses diesel as the start-up fuel to ensure temperatures are high enough for safe and efficient waste combustion. Once the temperature can be sustained by the waste, diesel is no longer required. | Storage of diesel on site                                                                         | <ul style="list-style-type: none"> <li>Potential fuel causing fire/ explosion hazard impacting track access or causing service disruption</li> </ul>                                                              |
| Fire within waste bunker or process areas                                                                                                                                                                                | Waste stored in the bunker                                                                        | <ul style="list-style-type: none"> <li>Smoke plume or radiant heat affecting rail corridor visibility and signalling</li> </ul>                                                                                   |
| Storage or handling of hazardous substances (e.g., ammonia, lime, activated carbon) during construction and once operational                                                                                             | Hazardous substances stored on-site and creating a chemical spill                                 | <ul style="list-style-type: none"> <li>Chemical spill entering rail corridor</li> </ul>                                                                                                                           |
| Heavy vehicle operations and near rail boundary                                                                                                                                                                          | Heavy vehicles operating near rail boundary                                                       | <ul style="list-style-type: none"> <li>Heavy vehicles operating near rail boundary causing interference with access to the rail corridor and signalling systems and blocking emergency response routes</li> </ul> |
| Vibration from EfW plant (turbine, moving plant, vehicles) or construction vibration (piling, compaction, heavy plant)                                                                                                   | Vibration caused from uneven mass distribution                                                    | <ul style="list-style-type: none"> <li>Vibration transfer to rail formation</li> </ul>                                                                                                                            |
| Failure of air pollution control (baghouse, scrubber)                                                                                                                                                                    | Visible emissions or residue deposition from incorrectly controlling air pollution                | <ul style="list-style-type: none"> <li>Visible emissions or residue deposition on railway causing operational concern or triggering rail incident report</li> </ul>                                               |
| Security breach or trespass between sites during construction and once operational                                                                                                                                       | Climbing over existing boundary fencing                                                           | <ul style="list-style-type: none"> <li>Unauthorised access to rail corridor from EfW site</li> </ul>                                                                                                              |
| Flooding from on-site stormwater system failure or sediment runoff from construction site                                                                                                                                | On-site stormwater system failure                                                                 | <ul style="list-style-type: none"> <li>Water ingress onto track or electrical infrastructure</li> </ul>                                                                                                           |
| Smoke/ heat from fire                                                                                                                                                                                                    | Secondary hazard from fire occurring                                                              | <ul style="list-style-type: none"> <li>Potential to cause extreme smoke/ heat resulting in injury to people, damage to assets</li> </ul>                                                                          |
| Cranes and lifting near overhead lines or rail easement during construction                                                                                                                                              | Contact with overhead line equipment (OLE) into rail corridor                                     | <ul style="list-style-type: none"> <li>Disruption to rail service operations</li> </ul>                                                                                                                           |
| Undertaking construction work adjacent to live rail line (personnel, plant, fencing)                                                                                                                                     | Construction work spilling into the rail boundary                                                 | <ul style="list-style-type: none"> <li>Encroachment into rail corridor</li> </ul>                                                                                                                                 |

|                                                                                                          |                                                                                                                  |                                                                                                                                           |
|----------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------|
|                                                                                                          |                                                                                                                  | <ul style="list-style-type: none"> <li>Personnel struck by train; plant collision</li> </ul>                                              |
| Construction noise                                                                                       | Heavy machinery causing reduced hearing and interference with rail communications or signalling maintenance work | <ul style="list-style-type: none"> <li>Disruption to rail service operations</li> </ul>                                                   |
| Material or debris encroachment onto rail land during construction                                       | Material or debris drifting onto rail corridor due to heavy wind conditions                                      | <ul style="list-style-type: none"> <li>Obstruction or damage to track</li> <li>Rail incident, disruption in service operations</li> </ul> |
| Temporary works failure (excavation collapse, hoarding, scaffolding, crane collapse) during construction | Material or machinery collapses onto rail corridor                                                               | <ul style="list-style-type: none"> <li>Railway track is disrupted, causing operational delays</li> </ul>                                  |
| Unplanned service strike (stormwater, sewer, power, communications) during construction                  | Power outage from storm                                                                                          | <ul style="list-style-type: none"> <li>Disruption to rail signalling or communications if shared utilities are affected</li> </ul>        |
| Plume visibility                                                                                         | Temperature related condensation of steam in the exhaust air and the water vapour becomes visible                | <ul style="list-style-type: none"> <li>Plume becomes visible at the railway corridor, disrupting train operations</li> </ul>              |

## 6.2 Risk Evaluation

The risk evaluation follows TMR's risk analysis criteria (from the Guide) to calculate the relative level of risk on the basis of the following formula:

$$\text{Risk} = \text{Likelihood} \times \text{Severity}$$

The relative risk is assessed based on the risk criteria shown in Table 6 (reproduced from Table 13 of the Guide).

**Table 6: Overall Risk Score Criteria**

| Relative Risk | Assessment of Risk   | Implications for Development                                                                                                                                                                                         |
|---------------|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1 – 2         | Low                  | <ul style="list-style-type: none"> <li>Appropriate control measures should be in place to allow the development to proceed</li> </ul>                                                                                |
| 3 – 4         | Medium               | <ul style="list-style-type: none"> <li>Significant control measures should be in place to allow development to proceed. Such control measures may require design changes to components of the development</li> </ul> |
| 5 – 9         | High                 | <ul style="list-style-type: none"> <li>It is unlikely that suitable control measures can be put in place. Development is unlikely to be supported by TMR</li> </ul>                                                  |
| 10 or more    | Totally unacceptable | <ul style="list-style-type: none"> <li>Development cannot proceed</li> </ul>                                                                                                                                         |

### 6.2.1 Risk Assessment Methodology

This risk assessment considers the potential for each hazard scenario to impact the existing rail corridor.

The main objectives of undertaking risk analysis are to:

- Determine the appropriateness of existing controls to manage the identified priority risks.
- Prioritise risks for subsequent evaluation.
- Provide an improved understanding of the vulnerability of critical assets to the identified risks.

Through assessing identified threats on this basis, a level of information is provided such that risks can be prioritised in a way that aids in the assessment of tolerability.

The risk score is calculated by determining the worst credible case consequence for each hazard scenario, then determining the likelihood of that consequence occurring.

### Likelihood Criteria

Table 7 shows the likelihood values from the Guide that are used in this assessment. The Guide provides only the qualitative description in the first column of Table 7 with no definition for each term. The second column is therefore provided here to give an indicative description of each likelihood level; these should not be construed as prescriptive definitions, but rather as examples of what each likelihood level could mean.

**Table 7: Likelihood Criteria – Based on TMR’s Guide to Development in a Transport Environment**

| Likelihood of Occurrence | Example Description                                                              |
|--------------------------|----------------------------------------------------------------------------------|
| Totally eliminated (0)   | <b>Never occurred</b> in the Australian Rail Industry                            |
| Rare (1)                 | <b>Has not</b> occurred in the Australian Rail Industry in the last 10-years     |
| Unlikely (2)             | <b>Infrequently</b> occurs in the Australian Rail Industry in the last 5-years   |
| Likely (3)               | <b>Occasionally</b> occurs in the Australian Rail Industry (once a year)         |
| Certain (4)              | <b>Periodically</b> occurs in the Australian Rail Industry (2-10 times per year) |
| Imminent (5)             | <b>Always occurs</b> in the Australian Rail Industry (10 times a year or more)   |

### Severity Criteria

Table 8 shows the severity definitions from the Guide.

**Table 8: Severity of Risk Criteria - Based on TMR’s Guide to Development in a Transport Environment**

| Risk | Risk Source           | Potential Outcome                                                                                                                                                                                                                                                                                                                                                       |
|------|-----------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1    | Minor                 | <ul style="list-style-type: none"> <li>No harm to railway staff, customers, passengers, users of the development and external public</li> <li>No damage to railway infrastructure</li> <li>No damage to development or structural elements</li> <li>No fire or blast</li> </ul>                                                                                         |
| 2    | Medium                | <ul style="list-style-type: none"> <li>No harm to railway staff, customers, passengers, users of the development and external public</li> <li>No damage to railway infrastructure</li> <li>No damage to development or structural elements.</li> <li>Minor fire</li> </ul>                                                                                              |
| 3    | Major                 | <ul style="list-style-type: none"> <li>Minor injuries/ harm to railway staff, customers, passengers, users of the development and external public</li> <li>Some damage to railway infrastructure</li> <li>Some damage to development or structural elements</li> <li>Fire or blast</li> </ul>                                                                           |
| 4    | Catastrophic          | <ul style="list-style-type: none"> <li>Injuries/ harm to railway staff, customers, passengers, users of the development and external public</li> <li>Death</li> <li>Major damage to railway infrastructure</li> <li>Major damage to development or structural elements</li> <li>Major fire or blast</li> <li>Impact largely contained to development/railway</li> </ul> |
| 5    | Catastrophic External | <ul style="list-style-type: none"> <li>Impact of a catastrophic event</li> <li>Significant impact beyond the boundaries of the premises</li> </ul>                                                                                                                                                                                                                      |

### 6.3 Risk Rating

A Risk Screening Workshop was undertaken on 5 November 2025. The workshop determined that, of the 17 hazards identified in Table 5, 12 hazards are considered credible sources of a consequence in the rail corridor. The risks associated with those hazards are assessed with consideration of the controls in place, including the effectiveness of those controls. The relative level of risk for the hazards is shown in Table 9.

**Table 9: Residual Risk Scores**

| Hazard                                                                                    | BERC Proposed Controls                                                                                                                                                                                                                                                                                                                                                                      | Likelihood | Severity   | Risk Score     |
|-------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|------------|----------------|
| Dust emissions during construction and once operational                                   | <ul style="list-style-type: none"> <li>IBA stockpiles matured in three-sided building</li> <li>Misting/ dust suppression systems</li> <li>Barrier wall around IBA pad</li> <li>Additional maintained vegetated buffer</li> <li>Refer to air quality report for additional information.</li> </ul>                                                                                           | Rare (1)   | Minor (1)  | <b>Low (1)</b> |
| Diesel storage                                                                            | <ul style="list-style-type: none"> <li>All diesel will be stored in a designated area away from the railway infrastructure</li> <li>Bunded fuel tanks</li> <li>Spill containment</li> <li>Maintain the rail boundary interface as specified in the Construction Management Plan (CMP)</li> <li>Automatic leak detection</li> <li>Emergency spill plan agreed with rail authority</li> </ul> | Rare (1)   | Minor (1)  | <b>Low (1)</b> |
| Fire within waste bunker or process areas                                                 | <ul style="list-style-type: none"> <li>Fire detection and suppression</li> <li>Fire water containment</li> <li>Liaison with local fire authority and rail operator for coordinated response plan</li> <li>Annual fire drills and response tests</li> </ul>                                                                                                                                  | Rare (1)   | Medium (2) | <b>Low (2)</b> |
| Heavy vehicle operations and near rail boundary                                           | <ul style="list-style-type: none"> <li>The nearest road is located on an embankment adjacent to the railway, with guardrails installed as a control measure to prevent trucks from entering the railway corridor</li> <li>Operator training</li> <li>Rail authority permit to work</li> <li>Exclusion zones between work and rail</li> </ul>                                                | Rare (1)   | Minor (1)  | <b>Low (1)</b> |
| Failure of air pollution control (baghouse, scrubber)                                     | <ul style="list-style-type: none"> <li>Preventive maintenance</li> <li>Operator training</li> <li>Immediate notification protocol to rail authority if exceedance occurs</li> <li>Regular performance checks</li> <li>Incident reviews (post-event)</li> </ul>                                                                                                                              | Rare (1)   | Minor (1)  | <b>Low (1)</b> |
| Security breach or trespass between sites during construction and once operational        | <ul style="list-style-type: none"> <li>Exclusion fencing</li> </ul>                                                                                                                                                                                                                                                                                                                         | Rare (1)   | Minor (1)  | <b>Low (1)</b> |
| Flooding from on-site stormwater system failure or sediment runoff from construction site | <ul style="list-style-type: none"> <li>Flood modelling has been undertaken to understand and mitigate flooding risk. Refer to Stormwater</li> </ul>                                                                                                                                                                                                                                         | Rare (1)   | Minor (1)  | <b>Low (1)</b> |

|                                                                                      |                                                                                                                                                                                                                   |          |            |                |
|--------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------|------------|----------------|
|                                                                                      | Management Plan and Flood Risk Assessment. <ul style="list-style-type: none"> <li>• Overflow directed away from rail</li> <li>• Regular maintenance</li> </ul>                                                    |          |            |                |
| Smoke/ heat from fire                                                                | <ul style="list-style-type: none"> <li>• Fire detection and suppression</li> <li>• Fire water containment</li> <li>• Liaison with local fire authority and rail operator for coordinated response plan</li> </ul> | Rare (1) | Medium (2) | <b>Low (2)</b> |
| Cranes and lifting near overhead lines or rail easement                              | <ul style="list-style-type: none"> <li>• Rail authority permit to work</li> <li>• Lifting plans</li> <li>• Exclusion zone between work and rail</li> <li>• Spotters</li> <li>• Crane slew restrictors</li> </ul>  | Rare (1) | Minor (1)  | <b>Low (1)</b> |
| Material or debris encroachment onto railway land                                    | <ul style="list-style-type: none"> <li>• Exclusion fencing</li> <li>• Housekeeping</li> <li>• Debris netting on scaffold</li> </ul>                                                                               | Rare (1) | Minor (1)  | <b>Low (1)</b> |
| Temporary works failure (excavation collapse, hoarding, scaffolding, crane collapse) | <ul style="list-style-type: none"> <li>• Engineer-certified design</li> <li>• Regular inspection</li> <li>• Exclusion zone between works and rail</li> </ul>                                                      | Rare (1) | Minor (1)  | <b>Low (1)</b> |
| Unplanned service strike (stormwater, sewer, power, communications)                  | <ul style="list-style-type: none"> <li>• Confirm all underground services via 'Dial Before You Dig' and rail authority plans</li> <li>• Supervise excavation near known alignments</li> </ul>                     | Rare (1) | Minor (1)  | <b>Low (1)</b> |

Table 10 presents risks that have been assessed as not credible, together with the justification for this determination.

**Table 10: Summary of Risks Screened Out as Not Credible**

| Risk                                                                                                                         | Reasoning                                                                                                                                                                                                                                                                                           |
|------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Storage or handling of hazardous substances (e.g., ammonia, lime, activated carbon) during construction and once operational | Hazardous substances are stored within the main EfW facility, located centrally on the site and away from the rail corridor. Handling of these materials occurs inside enclosed areas of the facility. Appropriate storage, handling procedures, and control measures are in place to manage risks. |
| Vibration from EfW plant (turbine, moving plant, vehicles) or construction vibration (piling, compaction, heavy plant)       | The Noise and Vibration Assessment concludes that vibration levels during both construction and operation will be below thresholds that could affect railway infrastructure or operations. Standard construction controls will be implemented to minimise vibration.                                |
| Undertaking construction work adjacent to live rail line (personnel, plant, fencing)                                         | Construction activities will be planned and managed in accordance with rail safety requirements. Physical separation from the live rail line will be maintained, with appropriate fencing, exclusion zones, and safe working procedures in place to prevent encroachment.                           |
| Construction noise                                                                                                           | The Noise and Vibration Assessment concludes that construction noise levels will comply with relevant criteria and will not adversely affect railway operations. Mitigation measures will be implemented where required.                                                                            |
| Plume visibility                                                                                                             | The Air Quality Assessment concludes that plume visibility will be infrequent. The EfW stack design and operating conditions minimise the potential for visible plumes.                                                                                                                             |

## **6.4 Risk Assessment Outcome**

Following the review of risks to the rail corridor from the development of BERC and once operational, 12 hazard scenarios are considered credible and, with consideration of the controls in place, assessed as low risk according to the Guide's criteria. This is reflective of the robust control framework developed for the BERC Project, and the separation distance between the operational components of the BERC site and the rail corridor.

As all identified and assessed hazards pose a low risk to the rail corridor, in accordance with the risk criteria in the Guide, "appropriate control measures should be in place to allow the development to proceed".

The Project shall continue to manage risks through design, construction, commissioning and operation, and that risk management shall continue to consider the potential for impacts to the rail corridor.