

Cleanaway Operations Pty Ltd

Bromelton Energy and Resource Centre

Energy from Waste Policy Report

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

C | 19 December 2025

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.

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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.



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Abbreviations and glossary

Abbreviations	Definition
APCr	Air Pollution Control residues
BAT	Best Available Techniques
BAT-AEL	Best Available Techniques – Associated Emission Level
BATC	Best Available Techniques Conclusions
BERC	Bromelton Energy and Resource Centre (the Project)
BREF	Best Available Techniques Reference Document
BREF-WI	Best Available Techniques Reference Document for Waste Incineration
BREF-WT	Best Available Techniques Reference Document for Waste Treatment
C&I	Commercial and Industrial
DETSI	Department of Environment, Tourism, Science and Innovation
EA	Environmental Authority
EC	European Commission
EfW	Energy from Waste
ELV	Emission Limit Value
EOW	End of Waste
EPP Air	Environment Protection (Air) Policy 2019
EU	European Union
HDPE	High Density Polyethylene
IAP2	International Association for Public Participation
IBA	Incinerator Bottom Ash
IBAA	Incinerator Bottom Ash Aggregate
IED	Industrial Emissions Directive
kg	kilogram
ktpa	kilo tonnes per annum
LHV	Lower Heating Value
MJ	megajoules
MSW	Municipal Solid Waste
MWh	Megawatt hour
PET	Polyethylene Terephthalate
R1	R1 Energy efficiency criteria
SDA	State Development Area
SEQ	South East Queensland
SEQWMP	South East Queensland Waste Management Plan

Abbreviations	Definition
tpa	tonnes per annum
TEEP	Technically, environmentally, and economically practical
WFD	Waste Framework Directive

Executive Summary

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.

The legislative framework for the BERC is set by the Queensland *Waste Reduction and Recycling Act 2011* and the *Environmental Protection Act 1994*. In addition to these Acts, the primary guidance for developing EfW facilities is the Queensland Energy from Waste Policy (Queensland EfW Policy).

The Bromelton SDA Development Scheme requires the Project's application to address all relevant government policy. This report provides a description of the relevant EfW policy context at the State, Federal and International levels. It also provides a response to the Queensland EfW Policy – drawing on a series of technical reports – to demonstrate that the Project complies with the policy framework across its design, development, and approvals documentation.

Cleanaway is committed to contributing to the Australian and Queensland target of transitioning to a circular economy and reducing long-term reliance on landfill by developing an EfW facility that offers a pathway to manage non-recyclable and challenging-to-recycle wastes and complies with the necessary policies and procedures.

The BERC's design has considered the legislative context and requirements, and the facility has been designed to fully align and comply with the seven outcomes stated in the Queensland EfW Policy, and by extension, international best practice requirements. The core values of adherence to the waste hierarchy, and human health and environmental protection, are upheld by the BERC.

1. Introduction

1.1 Purpose of this Assessment

The purpose of this report is to set out the relevant legislative and policy context (Federal, State (Queensland) and international), which is applicable to the Bromelton Energy and Resource Centre (BERC) (the Project). It introduces policy requirements, including specifically the Queensland Energy from Waste (EfW) Policy, and discusses how the Project complies with these requirements, which include demonstrating best practice approaches for:

- Managing waste in the context of the circular economy (i.e. the waste hierarchy)
- Environmental protection
- Energy efficiency
- Stakeholder engagement.

Where further information is required to demonstrate compliance with policy requirements, this report cross-references other relevant sections of the Project's documentation (such as the Technical Process Description). This report should be read in conjunction with all supporting documentation, as listed in Section 3, Table 2.

1.2 Project Description

1.2.1 Project 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.

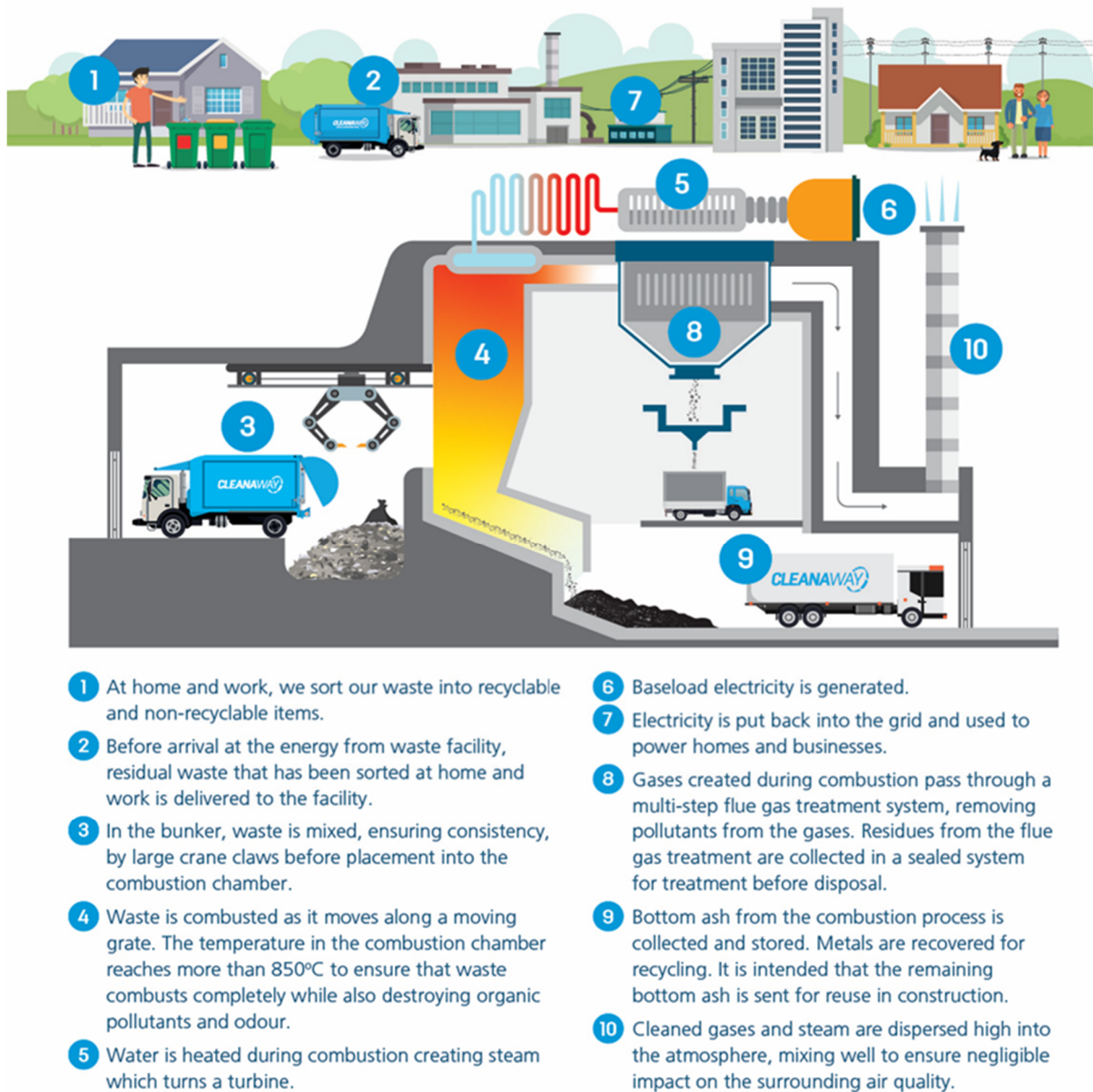


Figure 1: Energy from Waste Process

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 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	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. 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. 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.
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	Approximately 73.2 MW (577,600 MWh/year, corrected for ambient temperature) exported to the grid as baseload electricity. Potential to supply energy in the form of heat and/or process steam to local industrial users. Residual materials include IBA and APCr. - 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. - The Project includes a facility to stabilise APCr before removal and disposal at a licensed landfill.
Key infrastructure	EfW facility including administration and visitors centre IBA maturation and processing facility (2 x pads and 2 x sheds) APCr facility (1 x pad, 1 x shed)

Project Component	Detail
	Transformer yard and switchyard De-coupling area for trucks Weighbridges Internal road network and carparking 2 x combined storm water treatment and detention basin 1 x lined retention basin Access from Beaudesert Boonah Road via a signalised intersection with Recycling Street
Hours of Operation	24 hours per day, seven days per week (365 days per year)
Operational Staff	Approximately 60 staff



Figure 2: Site Location

2. Policy Overview

2.1 Commonwealth legislation

The Australian Government has historically had limited involvement in regulating or influencing waste and resource recovery issues, except on specific topics such as national product stewardship schemes and transboundary transport of hazardous waste. The latter being regulated internationally under the Basel Convention and domestically under the *National Environmental Protection (Movement of Controlled Waste between States and Territories) Measure*.

The Australian Government's involvement in policymaking on waste issues increased significantly from 2018, in response to widespread media attention and concerns from industry and the community over issues such as marine plastic pollution and the China National Sword Policy.

Relevant Australian Government announcements and directions include:

- 2018 announcement of 2025 National Packaging Targets to make all packaging reusable, recyclable or compostable and increase both recycling rates and use of recycled content in packaging, and the 2024 release of the 2030 Strategic Plan by the Australian Packaging Covenant Organisation
- 2018 update of the National Waste Policy, in partnership with State governments, and publication of an updated National Waste Policy Action Plan in 2024
- 2019 announcement of an intended ban on export of waste materials, with phase-in from 2020. The measure aims to increase domestic processing capability, jobs and resilience to international market disruptions.

Under the National Waste Policy Action Plan, the Australian Government has taken responsibility for leading targets related to:

- Banning the export of waste plastic, paper, glass and tyres
- Reducing total waste generated in Australia by 10% per person by 2030
- Increasing resource recovery (including energy recovery) rates to achieve an 80% average recovery rate from all waste streams by 2030
- Significantly increase the use of recycled content by government and industry
- Continued phase out of problematic and unnecessary plastics
- Reducing the amount of organic waste sent to landfill by 2030
- Making comprehensive, economy-wide and timely data available to support better consumer, investment and policy decisions.

These national directions are a reaction to the significant disruption to established recycling supply chains. Previously dominant recycling pathways, including export of recyclable materials, have become unavailable or unacceptable due to local and international policy changes, including China's import restrictions. This is

reflected in national waste datasets and reporting such as the National Waste and Resource Recovery Report 2024¹.

The drive to significantly increase domestic recycling and use of waste materials reflects a growing sense of responsibility for securing an environmentally sound fate for Australia's waste: Australia does not currently have the infrastructure and market outlets to immediately absorb and use mixed recyclable materials which were previously exported. The policy actions from the Australian Government demonstrate an understanding that fundamental changes to practices and business models for managing waste and raw materials use are needed to re-establish secure and responsible supply chains; and also to realise economic opportunities in Australia.

2.2 Queensland EfW policy and requirements

The Queensland *Waste Reduction and Recycling Act 2011* defines the waste and resource management hierarchy and the circular economy principles, which supports the recovery of energy from waste in accordance with the waste hierarchy. Thermal EfW responds directly to the objectives of the *Waste Reduction and Recycling Act 2011* by providing innovative new infrastructure and technologies to recover energy and other resources from unavoidable waste in accordance with the waste and resource management hierarchy, while also reducing the short to medium term climate change impacts of landfill disposal.

In addition to the Queensland *Waste Reduction and Recycling Act 2011* and the *Environmental Protection Act 1994*, there are several key policies and guidance documents that set the framework for waste management (and hence Energy from Waste) projects in Queensland. These are:

- *Waste Management and Resource Recovery Strategy* (the Waste Strategy), 2019, required to be prepared in accordance with the *Waste Reduction and Recycling Act 2011*
- Queensland EfW Policy, 2021
- Queensland EfW Guideline, 2021
- End of Waste Guideline (EOW Guideline), 2016.

Additionally, the following guidance documents outline the role of EfW infrastructure more locally, in South East Queensland (SEQ):

- South East Queensland Waste Management Plan (SEQWMP), 2021
- Recycling Enterprise Precinct Location Strategy, 2022.

The Waste Strategy provides the strategic framework for Queensland to become a zero-waste society, where waste is avoided, reused and recycled to the greatest possible extent. Targets are outlined in the Waste Strategy for 2050, which include:

- Reduce household waste by 25% (per capita basis)
- Recycle 75% of all waste
- Divert 90% of all waste from landfill.

¹ Section 11.2 of the National Waste and Resource Recovery Report (Blue Environment Pty Ltd, 2025).

Under the Strategic Priority 2 – Transitioning to a circular economy for waste, the Queensland government committed to developing an EfW Policy to develop a clear position on EfW and ensure that technologies deployed to recover EfW materials are appropriate and in the best interests of Queenslanders.

The **Queensland EfW Policy**, developed as an outcome of the Waste Strategy, aims to ensure Queensland's EfW sector is developed in an environmentally and socially sound manner. The Queensland EfW Policy seeks to position EfW as an alternative to landfill, and not as an alternative to recycling, as part of a longer-term, integrated waste management system solution. This non-statutory policy does not incentivise or promote EfW but aims to provide certainty to government and industry regarding expectations and requirements for EfW facility developments in Queensland, related to the following matters:

- The expectations for proponents to undertake appropriate stakeholder engagement in the EfW sector
- The information required to support an environmental authority (EA) application for an EfW facility
- The environmental regulation of EfW facilities.

The Queensland EfW Policy has a strong focus on the waste and resource management hierarchy, circular economy, EfW hierarchy and the precautionary principle. Additionally, the policy highlights the importance of siting EfW facilities in locations that reduce potential impacts and unintended consequences.

The policy covers thermal, biological, chemical and mechanical EfW technologies. It also outlines seven policy outcomes to guide proponents on how EA applications for EfW facilities will be assessed and regulated. Under the Queensland EfW Policy, the BERC will need to demonstrate how it will achieve the following requirements:

1. ***Protect the waste hierarchy:*** EfW proposals do not undermine reuse and recycling and circular economy principles, and disposal does not undermine appropriate energy recovery. Alignment with the waste hierarchy and EfW hierarchy should be considered.
2. ***Demonstrate operational performance:*** EfW facilities are required to prove that the selected technology can perform in an environmentally-sound manner, providing data to support an assessment of the selected technology. It is required to understand and propose mitigation strategies of risk associated with the selected new or emerging technology.
3. ***Engage with the community:*** Communities potentially impacted by proposed EfW facilities are required to be appropriately engaged by adhering to the key policy community engagement principles.
4. ***Use only residual waste as feedstock:*** Ensure that waste materials which can be managed at a higher level of the waste hierarchy are not used for energy recovery.
5. ***Adapt to residual waste changes over time:*** The quantity and composition of residual waste in Queensland is expected to change over time as a result of policy impacts and consumer behaviour, therefore EfW facilities should be able to adapt to these anticipated changes in residual waste.
6. ***Energy recovery requirements:*** All EfW facilities are required to demonstrate they can achieve an acceptable energy recovery efficiency by achieving an R1 equal to 0.65.
7. ***Environmental protection requirements:*** The potential environmental impacts of EfW facilities are expected to be managed in accordance with industry best practices (the European Union's Waste Incineration BREF and Waste Treatment BREF).

The Queensland EfW Policy is supplemented by the **Queensland EfW Guideline** providing additional direction on the policy's scope, objectives, applicability, and further detailing each of the seven policy

requirements. The guideline provides a detailed and comprehensive framework for the planning, development and regulation associated with EfW facilities, as well as information applicants should present to the Department of Environment, Tourism, Science and Innovation (DETSI) when applying for an environmental authority to perform an EfW activity.

The **EOW Guideline** describes a framework through which a waste can be deemed a resource if specific quality criteria for a specified use are met. Under the EOW Framework, a waste can be deemed a resource under an EOW code. The EOW Framework is applicable to residues from thermal treatment of waste, where commercial pathways exist to reuse residues beneficially and safely as an alternative to virgin quarried materials and to avoid landfill disposal of those residues.

The **SEQWMP** was developed to address the challenges and opportunities associated with municipal solid waste management across the region and meet the state targets set in the Waste Strategy. The SEQWMP outlines actions and recommendations for optimising the treatment of residual MSW. Key conclusions applicable to the BERC include:

- Thermal EfW (incineration) is the most suitable processing technology for residual MSW
- It is estimated that EfW will be required to divert ~200 ktpa by 2030, and ~590 ktpa by 2050 of residual MSW assuming all of the State's non-binding targets relating to per capita waste reduction and waste diversion are achieved in full (SEQWMP, Exhibit 2)
- Recommendation for development of 2-6 thermal EfW facilities by 2050 with a scale >200 ktpa for processing of both residual MSW and C&I waste (Recommendation #6, pg 59).

The **Recycling Enterprise Precinct Location Strategy**, developed by the Department of State Development, Infrastructure, Local Government and Planning, states that developments should generate positive economic and social impact, have minimal environmental and amenity impacts, and provide for efficient use of land and infrastructure. The strategy identifies Bromelton as being a potential area for a recycling precinct to service SEQ and indicates the potential for developing an EfW facility in the precinct, with the Bromelton SDA providing a suitable land use.

2.2.1 SDA Scheme

The development application for the BERC will be assessed against the Bromelton SDA Development Scheme. Section 2.5.13 of the SDA wide assessment criteria requires the proposal to demonstrate consistency with other relevant legislative requirements that may be required for the development to proceed, which includes the Queensland EfW Policy and associated requirements.

2.3 International best practice for EfW facilities

Various member states in the European Union (EU) have a long track record of using EfW for processing MSW and C&I wastes and have achieved high energy recovery efficiency, good social acceptance and some of the highest recycling and composting rates and the lowest landfill rates in the world. Europe is also regarded as a leader in environmental protection and circular economy adoption. These values are reflected in the EU regulation of EfW. Most states and territories in Australia with EfW policies recognise European regulation as best practice, including Queensland's EfW Policy.

Policies adopted by the European Commission (EC) set out regulations, measures and long-term targets which are to be transposed into law within each of the member states. The strategies and fiscal instruments

used to implement EC policies and achieve targets typically vary between member states, and waste management outcomes vary dramatically across the EU. The key policies are itemised and outlined below:

- Waste Framework Directive (WFD) 2008/98/EC6 and amendment 2018/851
- Industrial Emissions Directive (IED) 2010/75/EU
- Waste Incineration Best Available Techniques Reference Document (BREF-WI) (and associated Best Available Techniques Conclusions (BATC))
- Waste Treatment Best Available Techniques Reference Document (BREF-WT).

The **WFD 2008/98/EC6 and amendment 2018/851** sets out the fundamental waste management principles by the EC, including the ‘waste hierarchy’, the ‘polluter pays principle’ and ‘extended producer responsibility’. The waste hierarchy concept is fundamental to the EU waste framework.

The WFD also introduced the R1 energy recovery criteria, which distinguishes between incineration primarily for waste disposal ($R1 < 0.65$) and genuine energy recovery ($R1 \geq 0.65$). The R1 formula considers energy recovery in the forms of both electricity and heat. This has directly informed the energy efficiency criteria in the Queensland EfW policy (outcome 6).

The **Industrial Emissions Directive (IED) 2010/75/EU and most recent amendment 2024/1785** replaces seven previous directives relating to the operation of industrial facilities, including specific regulation of waste incineration. The IED aims to reduce emissions from industrial activities with a major pollution potential, including EfW installations. The competent authority in each EU member state is responsible for licencing and enforcement, creating subtle variations in application.

However, across all member states, the IED applies the following key principles to industrial facilities:

- Preventing pollution through normal operations
- Limiting the risk and consequence of accidents
- Providing remediation preventing legacy pollution issues
- Prevention, reuse, recycling, recovery or disposal of process waste in accordance with the waste hierarchy
- Efficient use of energy
- Application of Best Available Techniques (BAT).

The concept of BAT is a notable feature of the IED and is intended to offer a flexible tool that balances high environmental protection standards with pragmatic technical and economic factors which vary with scale, location and over time. BAT for specific industries are defined in a BAT Reference Document (BREF), developed by an expert technical working group.

The **BREF-WI** considers and defines best practice in the design and operation of waste incineration facilities, including grate incinerators, rotary kilns, fluidised bed incinerators, as well as pyrolysis and gasification systems. The BATC is a summary of the conclusions reached in the BREF-WI. The most recent BREF-WI and BATC were published in 2019 and include 37 conclusions.

The Queensland EfW Policy (outcome 7) directly references and requires that proponents demonstrate alignment with the BREF-WI.

Refer to the Technical Process Description for further information on the BREF-WI and assessment of the BERC proposal against each of the BAT Conclusions.

The Queensland EfW Policy (outcome 7) also refers to the BREF-WT. While the BREF-WT broadly relates to treatment of a wide range of wastes (including non-thermal, biological waste treatment and generally excludes thermal treatment of waste), it does discuss best practice in relation to the treatment of Air Pollution Control residue (APCr, referred to in the BREF-WT as Flue Gas Treatment residue), to stabilise this material prior to disposal. However, best practice in relation to the management and treatment of Incinerator Bottom Ash (IBA) is covered by the BREF-WI and is specifically excluded from the scope of the BREF-WT.

3. Policy Application

The BERC's design has been developed to comply with the Queensland EfW Policy and associated Guideline, and where relevant the other legislation and guidelines previously discussed. The facility design incorporates a variety of local and international techniques to achieve best practice outcomes.

Table 2 provides a concise overview of the requirements specified in the Queensland EfW Policy and illustrates how the BERC Project effectively addresses and fulfills these standards.

Table 2: Compliance of BERC with Queensland EfW Policy and Guideline

EfW Policy outcome	Requirements of policy and guideline	Summary of the BERC approach	Compliance status and documentation references
1. Protect the waste hierarchy	<i>Proponents are expected to demonstrate how their proposed project aligns with both the waste hierarchy and the EfW hierarchy.</i> <i>Proponents should evaluate:</i> <i>The existing management fate of the proposed feedstock</i> <i>Current and emerging programs, opportunities and partnerships to avoid, reuse and recycle the current feedstock.</i>	The main objective of the BERC is to manage residual waste (that is not practicable to reuse or recycle) in alignment with the Queensland's waste and EfW hierarchies, by recovering energy and other resources and by diverting waste from landfill disposal. Waste which will be processed at the BERC is only waste which would have otherwise been landfilled, aligning with the Queensland Government's targets for recycling and landfill diversion, ensuring responsible waste management, and reducing the environmental and community burden caused by landfills. As part of this process, the BERC will extract energy and recyclable materials (recyclable metals and IBA aggregate) from the waste that would have otherwise been discarded, managing waste at the highest practical level of the hierarchy by diverting up to 95% of the waste feedstock away from landfill disposal. The proposed technology has a proven high level of reliability and availability, providing certainty to councils, business and the State, which is a prerequisite for providing the essential service of residual waste management and resource recovery. Further, the facility will manage its own process wastes in accordance with the waste hierarchy. The BERC is a thermal EfW facility as recognised in the EfW hierarchy. The target feedstock is currently managed via landfilling (lower in the hierarchy than thermal EfW). Cleanaway also has ongoing operations as part of their core business with different materials recovery facilities (e.g. Cleanaway Hervey Bay Materials Recovery Facility and Cleanaway Hemmant Packaging Waste Recycling) for the management of recyclable wastes such as plastic and cardboard. The BERC represents an additional opportunity for Cleanaway to uphold the waste hierarchy.	Compliant Refer to the Waste Feedstock Report and the Waste Acceptance Protocol for further details on waste types to be accepted at the BERC. Refer to the Resource and Waste Management Technical Report for further details on the management of process residues.
2. Demonstrate operational performance	<i>A proponent is expected to be able to characterise the risks to human health and the environment associated with the commissioning and operation of the proposed EfW facility.</i>	Comprehensive human health and environmental risk assessments have been undertaken and are available in the Human Health Risk Assessment and the Environmental Risk Register. These studies have concluded that the project presents a negligible risk to human health and the environment.	Compliant Refer to the Human Health Risk Assessment and Environmental Risk Register for further details.

EfW Policy outcome	Requirements of policy and guideline	Summary of the BERC approach	Compliance status and documentation references
	<i>A proponent proposing to establish a commercial technology is expected to meet the following requirements:</i> <i>Provide data from a reference facility to demonstrate that the proposed facility can function in an environmentally-sound manner in compliance with the requirements of this policy</i> <i>Provide at least two (2) years of operational data from the reference facility to enable the department to assess and validate the potential environmental and human health risks of the proposed facility.</i>	In addition, the Project has conducted a range of studies to assess the impact of the BERC on the surrounding environment (e.g. Air Quality, Noise & Vibration, Hazard & Risk). These are available in the Project documentation. The thermal EfW technology that BERC proposes to use is moving grate combustion. This is a technology that has been successfully operating globally for decades and therefore qualifies as a ‘commercial technology’. To validate the viability of the proposed technologies, three reference facilities have been chosen: UBB Gloucestershire (UK), FCC Greatmoor Buckinghamshire (UK), and Covanta Dublin (Ireland). These facilities operate within the European legislative framework and handle similar waste streams originating from a mix of MSW and C&I waste feedstocks. They all employ the same thermal treatment technologies and (except Dublin, which is used as a reference facility for residue data only) the same Air Pollution Control process as proposed in the BERC project. Data and reference facility performance is provided in the Technical Process Description.	Refer to the Project’s documentation (e.g. Air Quality, Noise & Vibration, Hazard & Risk) for supporting studies. Refer to the Technical Process Description for further details including operational reference data.
3. Engage with the community	<i>A proponent is expected to demonstrate engagement with communities potentially affected by the proposed facility. It is expected this engagement will adhere to the principles of community engagement.</i> <i>Community engagement will be authentic and transparent</i> <i>Community engagement will be inclusive</i> <i>Community engagement will be respectful</i> <i>Community engagement will be responsive</i> <i>People have a right to participate in decisions about matters that affect them.</i>	Cleanaway is focused on proactively engaging, involving and informing government, business, and community stakeholders by providing continued engagement during the early stages and ongoing project development of BERC. This plan is guided by government and industry standards presented in Section 2.3.2 of the Queensland EfW guideline. The development of this plan is governed by engagement principles adapted from the IAP2 Core Values, the tested principles of the Queensland Resources Council, and the Cleanaway Values. These principles include a focus on relationships, early involvement of key stakeholders, and facilitation of their input. Cleanaway adheres to essential engagement principles for the project by providing pertinent information to stakeholders, elucidating their influence on the development, and maintaining accurate communication. Cleanaway upholds integrity by keeping the community updated on progress and honouring their commitments. Cleanaway makes decisions that contribute to a sustainable future for employees, customers, investors,	Compliant Refer to the Community and Stakeholder Engagement Report.

EfW Policy outcome	Requirements of policy and guideline	Summary of the BERC approach	Compliance status and documentation references
		communities, and the environment by recognising the needs and interests of stakeholders. Inclusivity is sought by engaging with all stakeholders openly through multiple channels, soliciting feedback from interested parties, and encouraging participation and attentiveness throughout the process. For further detail refer to the Community and Stakeholder Engagement Report.	
4. Residual waste as feedstock	<i>A proponent of an EfW facility must demonstrate that the proposed feedstock is residual waste</i>	The primary feedstocks to be processed at the BERC EfW Facility are residual MSW, collected in a kerbside residual waste bin from local councils, and residual C&I waste. Key primary controls for waste acceptance and confirming waste is truly residual waste include: - The BERC Waste Acceptance Protocol – this document defines contractually acceptable waste types and unacceptable waste types, the BERC waste receipt process, inspection regime and on-going audits of waste streams and waste suppliers - MSW residual waste feedstock is in accordance with the EfW Guideline for waste that residual waste is not technically, environmentally, and economically practical through council collections which source separate waste streams including separation of recyclable and/or food and garden organics - Commercial waste supply contracts (Waste Supply Agreements) with councils, businesses (including resource recovery businesses or Local Government Area operations, such as Material Recovery Facility and Food Organics and Garden Organic waste treatment facilities processing recyclables and also producing a residual waste stream requiring disposal/EfW) and institutions – the Waste Acceptance Protocol will be a schedule to these agreements. Key secondary controls include: - BERC on-site waste receipt process (e.g. radiation detection, waste supplier and waste type identification) - On-site waste inspection and monitoring regime (pre-inspection, Tipping Hall inspection (where feasible) and waste bunker inspection).	Compliant Refer to the Waste Feedstock Report and the Waste Acceptance Protocol for further details on waste types to be accepted at the BERC.

EfW Policy outcome	Requirements of policy and guideline	Summary of the BERC approach	Compliance status and documentation references
5. Adapt to residual waste changes over time	<i>Proponents must clearly demonstrate how the proposed EfW facility will adapt to the expected changes in residual waste, over the facility's expected lifetime</i> <i>It is recommended that EfW proponents consider:</i> <i>Feedstock variability</i> <i>Impact of feedstock variability on facility performance</i> <i>Measures to adapt</i> <i>Transitioning away from feedstocks over time</i> <i>Review.</i>	The BERC has considered the impact of changes to its target waste feedstock stream over the facility life. The following activities have been undertaken by Cleanaway, which have provided an in-depth understanding of the feedstock: - Waste arisings assessment, to determine the amount of suitable feedstock available now and into the future, considering the impact of policy drivers and consumer behaviours - Physical and chemical composition audits of MSW and C&I waste that is representative of the feedstock that the BERC may receive, to determine parameters that are critical for process design, including seasonal variability of the waste - Analysis of the estimated calorific value of waste over the project life, to determine appropriate parameters for the Capacity Diagram. These activities are summarised in the Waste Feedstock Report, which includes discussion of the impacts of feedstock variability, measures to adapt, and ongoing review of the feedstock.	Compliant Refer to the Waste Feedstock Report for further details.
6. Energy recovery requirements	<i>The energy recovery efficiency of a proposed EfW facility must be determined using the R1 Energy Efficiency formula (R1 formula). Proposals for combustion with energy recovery are expected to demonstrate that the proposed facility can achieve a minimum R1 threshold equal to 0.65.</i> <i>All EfW facilities are encouraged to adopt appropriate energy recovery and efficiency best practice techniques.</i> <i>In particular, proponents are encouraged to maximise energy recovery and efficiency in accordance with the guidance set out in the latest versions of following BREFs:</i> <i>Waste Incineration BREF</i> <i>Waste Treatment BREF</i>	R1 energy efficiency The R1 value for the BERC Proposal is calculated to be 0.80, subject to detailed design and final technology supplier selection e.g. selection of steam parameters, excess air ratio, steam turbine selection and final boiler design. This significantly exceeds the threshold of 0.65 specified in the EfW Policy, confirming the facility is designed for energy recovery rather than destruction of waste. The R1 value has been calculated on the following basis: $R1 = (E_p - (E_f + E_i)) / (0.97 * (E_w + E_f))$ $E_w = 2,237,800$ MWh/year (based on nominal LHV 10.6MJ/kg and 760ktpa throughput) $E_p = 1,739,500$ MWh/year (includes electrical energy used on site and exported multiplied by 2.6 and heat energy used on site and exported multiplied by 1.1).	Compliant Refer to the Technical Process Description for further details.

EfW Policy outcome	Requirements of policy and guideline	Summary of the BERC approach	Compliance status and documentation references
	<i>Energy Efficiency BREF.</i>	E_f = 3,430 MWh/year (for auxiliary fuel use during start-up, with 7 hours steam production, based on 5 starts per year) E_i = 4,410 MWh/year (for imported electricity and auxiliary fuel use during start-up without steam production for 7 hours) Other energy recovery and efficiency practices (BAT) The BERC is compliant with all relevant BAT conclusions from the BREF-WI. The BERC's compliance with BAT for thermal EfW facilities as defined by the BREF-WI is assessed in the Technical Process Description.	
7. Environmental protection requirements	<i>Proponents are expected to demonstrate the use of best practices as set out in the following BREFs:</i> <i>Waste Incineration BREF</i> <i>Waste Treatment BREF.</i> <i>The emissions to air from a proposed facility must be at a level that does not cause the ambient level of contaminants in the relevant airshed to exceed the air quality objectives prescribed in Schedule 1 of the Environment Protection (Air) Policy 2019 (EPP Air).</i>	Scope The BERC is compliant with all relevant BAT conclusions from the BREF-WI. Refer to the Technical Process Description for compliance details. The BERC will adhere to best practice, as described in the BREF-WT, in relation to the treatment of APCr (referred to in the BREF-WT as Flue Gas Treatment residue), to stabilise this material prior to disposal. Cleanaway will continue to consider and investigate alternative techniques for managing APCr, which result in improved resource recovery outcomes, reduce landfill disposal and are economically practicable. Emission Limit Values (ELV) Air dispersion modelling has been undertaken in accordance with the methodology proposed in the EfW guideline. In summary, the daily average air quality modelling results demonstrate that with the proposed emission limit settings, based on the upper end of the BAT-AEL range associated with implementation of BAT for emission control and flue gas treatment, the Project (in isolation) is predicted to have an insignificant impact on air quality, as measured against the relevant health-based and environmental-based air quality objectives (refer to the Air Quality Assessment and Human Health Risk Assessment for further details).	Compliant Refer to the Technical Process Description for further details. Refer to the Air Quality Assessment and Human Health Risk Assessment for further details.

4. Conclusion

The BERC's design has considered the legislative context and requirements, and the facility has been designed to fully align and comply with the seven outcomes stated in the Queensland EfW Policy, and, by association, international best practice requirements. The facility design incorporates a variety of local and international techniques to achieve best practice outcomes. The core values of the waste hierarchy, human health and environmental protection are upheld by the BERC.