Chapter 1

Introduction

1 Introduction

1.1 Proposal overview

Cleanaway and Macquarie Capital are jointly developing an energy-from-waste (EfW) facility known as the Western Sydney Energy and Resource Recovery Centre (WSERRC) (the proposal).

The proposal will be designed to thermally treat up to 500,000tpa of residual Municipal Solid Waste (MSW) and residual Commercial and Industrial (C&I) waste streams that would otherwise be sent to landfill. This process would generate up to 58MW of base load electricity some of which would be used to power the facility itself with up to 55MW exported to the grid. A proportion of the electricity generated would be categorised as renewable. The proposal involves the building of all onsite infrastructure needed to support the facility including site utilities, internal roads, weighbridges, parking and hardstand areas, storm water infrastructure, fencing and landscaping.

The waste feedstock received at the facility will include residual waste that is left over from offsite recycling and resource recovery operations and waste from source separated collections. Source separation involves separating waste into common material streams or categories for separate collection. Waste that is not source separated will be pre-sorted to recover materials for recycling with the residual waste sent as a waste feedstock to the EfW facility.

The NSW Environment Protection Authority (EPA) recognises in the NSW Energy from Waste Policy Statement (NSW EfW policy) that the recovery of energy and resources from the thermal processing of waste has the potential, as part of an integrated waste management strategy, to deliver positive outcomes for the community and the environment. It also notes that EfW can be a valid pathway for residual waste where further material recovery through reuse, reprocessing or recycling is not financially or technically feasible. Without an EfW option, the residual waste that this proposal will target and process, would be sent to landfill.

Whilst some residual materials are produced because of the EfW process, including incinerator bottom ash (IBA), boiler fly ash and flue gas treatment residues (FGTr), the EfW process typically leads to about 90% reduction in the volume, or 80% reduction in mass (tonnes), of waste that would otherwise go to landfill. If IBA is reused into construction products, this number increases further to about 95% reduction in volume and mass of waste that would otherwise go to landfill. However, diversion from landfill will be dependent on the classification and fate of the wastes generated by the EfW facility.

The EfW facility will also include a ferrous metal separator to recover ferrous metals from the IBA for recycling and sale to market. The remaining IBA will be transported to a dedicated offsite IBA storage, treatment, metal recovery and maturation facility where non-ferrous metals (or secondary metals) recovery will be carried out.

Options to reuse the ash in construction products are currently being explored. The offsite IBA storage and secondary metals recovery facility does not form part of this proposal and will be subject to a separate development application process which is discussed further in **Chapter 22 Related development**.

As well as diverting waste from landfill, the proposal will enhance energy security for New South Wales by providing a base load energy source, part of which is categorised as renewable, and an alternative to traditional fossil fuel generation. In addition to supplying electricity to the grid, there is also potential to supply energy in the form of heat and steam to local industrial users. The proposal will produce enough energy for over 79,000 homes in Western Sydney, reducing net greenhouse gas emissions by around 390,000t of CO_2-e per year, equivalent to taking approximately 85,000 cars off the road each year – refer to **Technical report N Greenhouse Gas and Energy Efficiency Assessment Report**.

The proposal will also include a visitor and education centre to help educate and inform the community on the circular economy, recycling, resource recovery and EfW.

The proposal will use established and proven EfW technology. Moving grate technology has been chosen as the means to thermally treat incoming waste to recover energy and advanced flue gas treatment (FGT) technology would be applied so that air emissions will meet stringent emission standards and current international best-practice techniques. Moving grate is a common form of EfW combustion technology where the waste is fed through the combustion chamber by a travelling grate. The primary function of the moving grate is the controlled transport of the waste through the chamber for efficient combustion of the waste. Moving grate technology has been used globally for over 50 years, and in that time the technology has been subject to continual improvement responding to regulatory, industry and public demands. There are about 500 similar operational examples across Europe alone using the same technology being proposed for the WSERRC.[1]

Flue gas treatment technologies have also seen continuous improvements in their ability to achieve ever more stringent emissions standards.

[1] Confederation of European Waste-to-Energy Plants, 2019.

The NSW EfW policy states that *'to ensure emissions are below levels that may pose a risk of harm to the community, facilities proposing to recover energy from waste will need to meet current international best-practice techniques.'*

This proposal has been designed to meet the European Industrial Emissions Directive (IED)[2] and the associated Best Available Techniques Reference[3] (BREF) document which sets the European Union environmental standards for waste incineration as published on 3 December 2019. The EU Commission Implementing Decision (2019/2010) on 12 November 2019 states the best available techniques (BAT) conclusions as the main element of the BREF and prescribes them to be adopted by Member States. Additionally, the facility will comply with the technical criteria set out in the NSW EfW policy – refer to **Chapter 5 EfW policy**.

Several additional projects, referred to as related development, are required to support the operation of the WSERRC. These will be assessed and determined through separate approval processes and are not part of the scope of the proposal. The additional projects that comprise related development include:

- Processing facility for the pre-processing of waste before delivery to the WSERRC
- IBA processing and secondary metals recovery facility
- An electrical connection to the high-voltage network
- Water and sewer connections
- Telecommunications connections
- Site access works.

1.2 Proposal objectives

The proposal seeks to meet the following objectives:

- Increase the recovery of valuable resources from residual waste
- Divert waste from landfill, supporting the NSW Government targets for landfill diversion, responsible waste management and reducing the burden of landfills on the environment and communities
- Develop waste management infrastructure close to waste generation sources, reducing waste transport distances and associated environmental impacts
- Develop and operate a facility to international best-practice standards that protects the health of people and the environment in the surrounding area

[2] Directive 2010/75/EU of the European Parliament https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32010L0075
[3] https://eippcb.jrc.ec.europa.eu/sites/default/files/2020-01/JRC118637_WI_Bref_2019_published_0.pdf

- Develop a facility which integrates the built form into the existing context, including adopting architecture which minimises visual bulk, and provides opportunities to enhance the appearance of the building
- Build trust with the community through ongoing engagement in the planning, design, construction and operation of the EfW facility
- Set up an education resource that raises awareness of the principles of waste management, waste avoidance, the circular economy, recycling, resource recovery and EfW
- Contribute to the economy in Western Sydney by creating direct and indirect skilled employment opportunities, both during construction and long-term
- Provide a source of baseload energy, part of which is categorised as renewable, contributing to NSW Government objectives for energy security and renewable energy.

1.3 Site description

The proposal site is located at 339 Wallgrove Road in Eastern Creek, NSW (Lot 1 DP 1059698) which is in the Blacktown local government area (LGA) and the Wallgrove Precinct of the Western Sydney Parklands (WSP) Plan of Management. **Figure 1.1** shows the location of the site relative to Sydney.

The nearest residential area is around 1km to the south of the site in Horsley Park with the Minchinbury residential area located around 3km to the north-west. Horsley Park Public School is over 2km south of the site and a childcare centre is within the Eastern Creek industrial area about 1km to the west of the site.

The site is bounded by the Westlink M7 Motorway to the west with the Eastern Creek industrial area located farther west. The SUEZ Eastern Creek Waste Management Centre, comprising the now-closed landfill site and operational organics recycling facility is located to the north and north-east, with the operational Global Renewables waste management facility located immediately to the east (see **Figure 1.3**). To the south, the site is bounded by the Warragamba Pipeline Corridor with the Austral Bricks facility located farther south. **Figure 1.2** shows the local site context.

Access to the site is via a dedicated access road off an unnamed road, referred to as the Austral Bricks Road, adjacent to the site's southern boundary. The road crosses over the Warragamba Pipeline Corridor to enter the site from the south. The existing access road was built by encasing the two pipelines during construction of the M7. The site access needs to be upgraded to accommodate the traffic movements associated with the proposal, however site access works do not form part of this EIS and are discussed in **Chapter 22 Related development**. Austral Bricks Road connects to Wallgrove Road which in turn connects to the wider road network including the M7 motorway.

The 8.23ha site is divided by a small strip of land not part of the proposal site, resulting in a 2.04ha northern section and a 6.19ha southern section (**Figure 1.3**). This dividing strip is part of the adjacent lot and includes a right of carriageway benefitting the proposal site, allowing vehicles to move between the two parts of the site.

The existing site layout and current features of the site are shown in **Figure 1.4**. The site is sloping from the south-west (highest point) to the north-eastern area of the site where the man-made farm dam is situated. A stormwater overland flow path enters the site via twin culverts to the south and passes through the site along the eastern boundary to the north. From the farm dam spillway, the densely vegetated overland flow path conveys flows northwards then north-west, eventually discharging into Reedy Creek about 450m north west of the site.
A separate open stormwater drain is within the M7 WestLink Motorway property boundary, which collects and conveys stormwater from the section of the M7 WestLink Motorway adjacent to the proposal site. This drain has been designed such that stormwater does not discharge to the proposal site. Small areas of hard standing adjacent to the western boundary, comprising about 5% of the site, are graded to the west, conveying overland flows into the open drain serving the M7 Westlink Motorway. This open drain flows north and discharges into Reedy Creek.

There is minimal piped stormwater drainage within the site, with building downpipes discharging to the adjacent surface.

The proposal site supports about 0.88ha of native vegetation comprising one Plant Community Type (PCT) with varying levels of disturbance and condition. Native vegetation within the proposal site generally comprises isolated patches of regrowth Cumberland Shale Plains Woodland (PCT 849) within low-lying areas along the eastern property boundary. Vegetation within the site is subject to high levels of disturbance due to historical land clearing, agricultural land uses and ongoing industrial and transport activities.

The existing southern portion of the site includes sheds and ancillary buildings associated with a disused poultry facility and storage of wrecked vehicles, all of which will be cleared from the site before the commencement of construction.

Currently, two hectares of the northern part of the site are paved. The proposal area will be fully contained in the 6.19ha portion of the site as shown in **Figure 1.3.** Works to occur on the 2.04ha northern section of the site include the clearing of weeds and exotic vegetation within the existing overland flow channel, which is confined to the eastern section of this parcel of land. The northern section will also be used temporarily to support construction works. It is not currently expected that any other works will occur on the 2.04ha northern section of the site as part of this proposal.

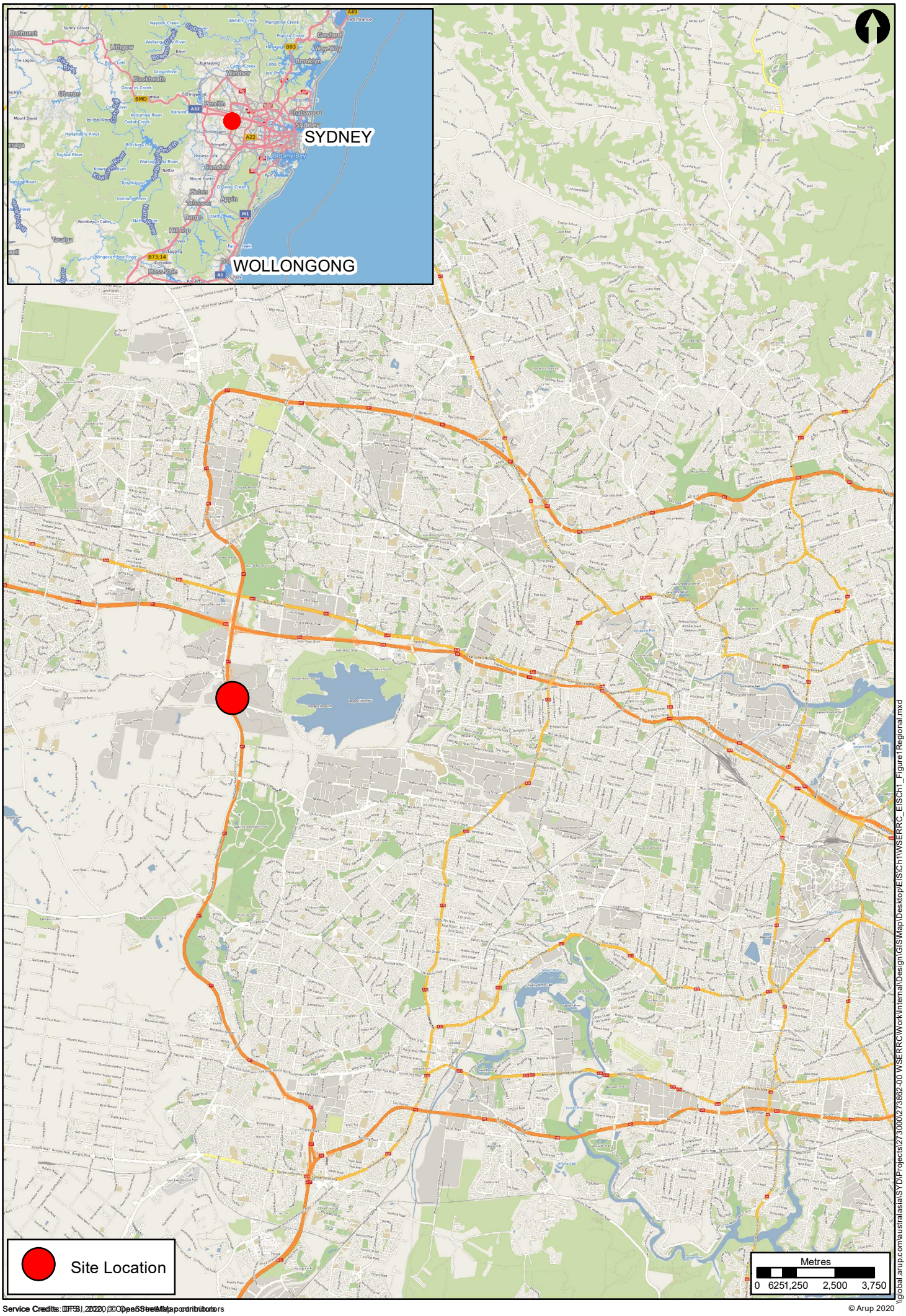
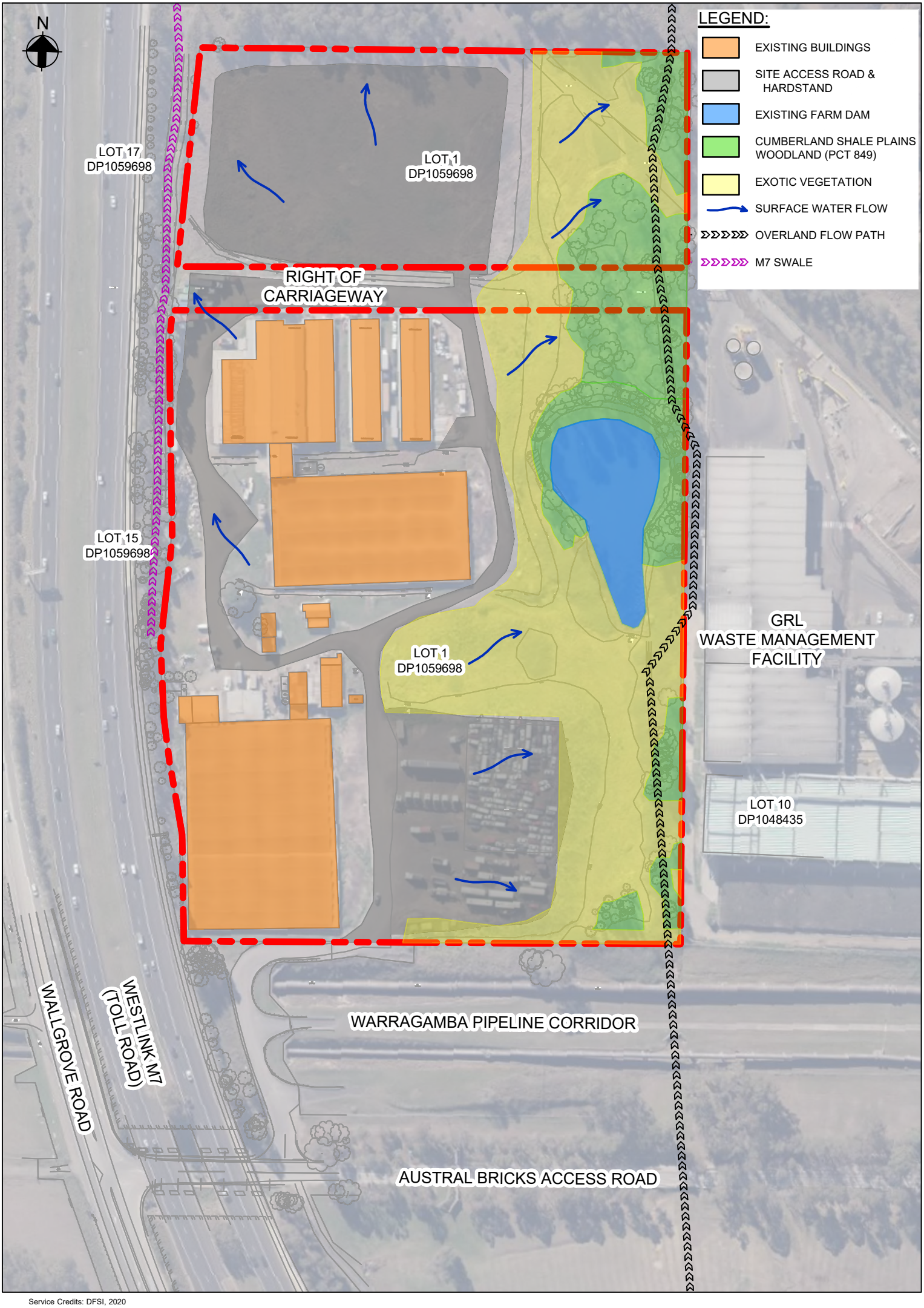


Figure 1.1: Site location

Figure 1.2: Local context

Figure 1.3: Proposal site boundary



Service Credits: DFSI, 2020

Figure 1.4: Existing site boundary

1.4 About the applicant

The applicant is Cleanaway Operations Pty Ltd, on behalf of a joint venture between Cleanaway and Macquarie Capital who are developing the proposal. The land is owned by the Western Sydney Energy & Resource Recovery Centre Pty Ltd (ACN 635 427 262), an entity jointly owned by Cleanaway and Macquarie Capital, with details as described in **Table 1.1**.

Table 1.1: Entity and site details

Full name	Cleanaway Operations Pty Ltd
Postal address	Level 4, 441 St Kilda Road, Melbourne Metro Victoria (South East), VIC 3004
Australian business number	40 010 745 383
Nominated contact	James Pearce
Contact details	James.pearce@cleanaway.com.au Mob: +61 459 222 379
Site owner(s)	Western Sydney Energy & Resource Recovery Centre Pty Ltd ACN 635 427 262
Legal description of site	Lot 1 DP 1059698

1.4.1 Cleanaway Operations

Cleanaway is an Australian waste management, recycling and industrial services company. Its stated mission is to make a sustainable future possible by viewing all waste as a resource and using its facilities and processes to transform it into a valuable commodity for every sector, industry and community. It is an ASX Top 100 company.

As Australia's largest waste, recycling, industrial and liquids service provider, Cleanaway has been servicing Australian businesses for over 50 years through a network of recycling facilities, transfer stations, engineered landfills, liquid treatment plants, medical waste treatment facilities and refineries.

Cleanaway has more than 250 sites across Australia, 5,000 vehicles and 120 licensed prized infrastructure assets. Cleanaway's Solid Waste Services business operates the largest solid waste and recycling fleet in Australia, servicing more than 95 municipal councils and over 140,000 commercial and industrial businesses.

Cleanaway believes that environmental performance is crucial to the success and sustainability of their business and is committed to achieving a high level of environmental performance at all its facilities.

To achieve this, Cleanaway conducts its business in compliance with an independently certified ISO 14001 Environmental Management System, which is underpinned by their Environmental Policy. Cleanaway also holds several Environmental Protection Licences (EPL) in New South Wales.

The solid waste collection business is supported by an extensive post-collection facilities network across the country, including the Erskine Park Waste Transfer Station in Western Sydney, which is licensed to accept 300,000t of putrescible waste each year.

In 2018, Cleanaway recycled more than 380,000t of paper and cardboard, 15,500t of plastic, and 25,000t of steel and aluminium. Cleanaway captured more than 115Mm^3 of landfill gas and generated over 135GWh of renewable energy, enough to power more than 27,000 homes.

Cleanaway's Footprint 2025 strategy is focussed on investing in world class recycling and resource recovery infrastructure to improve landfill diversion and recycling rates. Cleanaway's investments in innovation and infrastructure reflects the Federal and State Government's domestic circular economy policies.

WSERRC forms an element of the Footprint 2025 strategy, for residual waste that cannot otherwise be recycled. Cleanaway continues to invest in higher-order recycling and resource recovery facilities across Australia to maximise the environmental benefit of the waste being generated. More recent projects in New South Wales are detailed below.

In 2017, Cleanaway (as part of a joint venture with Tomra) was appointed as the network operator for the NSW Container Deposit Scheme (CDS). Collected containers are processed through a state-of-the-art Materials Recovery Facility in Western Sydney with over four billion containers recycled since the inception of the scheme, putting New South Wales well on track to reaching its goal of a 40% state-wide reduction in the proportion of drink containers in the total litter volume by 2020.

Another joint venture, the Cleanaway ResourceCo Resource Recovery Facility in Wetherill Park, is the largest waste-to-processed engineered fuel (PEF) facility of its kind in Australia, recovering dry non-recyclable C&I waste that would otherwise go to landfill. By using PEF instead of coal to power industry, the reliance on fossil fuels is reduced, lowering greenhouse gas emissions, while diverting up to 250,000t of waste from landfill each year.

Cleanaway has entered into a memorandum of understanding with Pact Group and Asahi Beverages to jointly develop a local plastic pelletising facility, onshoring the recycling of plastics to Australia. The facility will be based in Albury Wodonga to service the East Coast of Australia.

It is anticipated that the facility will process up to 28,000t of plastic bottles and other recyclables into flake (plastic fragments) and food grade pellets to be used as a raw material to produce packaging for food and beverages.

The recycling of the used bottles reduces the demand for new plastic and hence the reliance on fossil fuel required to manufacture it, thereby helping to reduce NSW's carbon footprint. The cross-value chain collaboration combines the expertise of each participant. Cleanaway will provide available feedstock through its collection and sorting network in Victoria and New South Wales. Pact will provide technical and packaging expertise and Asahi and Pact will buy most of the recycled pellets from the facility to use in their packaging products. This reflects Cleanaway's commitment to invest in infrastructure that will allow the shift to a circular economy.

The proposed WSERRC would further strengthen Cleanaway's waste management infrastructure in Sydney, complementing its existing business by providing a means of treating residual waste streams that cannot otherwise be recycled, generating renewable baseload energy and reducing the volume of waste going to landfill.

1.4.2 Macquarie Capital

Cleanaway will develop the WSERRC jointly with Macquarie Capital. Macquarie Capital is the developer and co-investor in Australia's first thermal energy from waste project, Avertas Energy, currently under construction at Kwinana in Perth, Western Australia.

Macquarie Capital combines specialist expertise, innovative advice, and flexible capital solutions to help clients and partners make opportunity reality. This ranges from global corporate M&A and advisory capabilities, underpinned by deep specialist expertise across a range of sectors, and a full spectrum of capital solutions – to investing its own capital to enable development and construction of infrastructure and energy projects.

Macquarie's Green Investment Group (GIG) is part of Macquarie Capital and brings a depth and breadth of global expertise in green technology and development to Macquarie Capital's leading position in Australia and New Zealand as an equity investor and developer of green energy and infrastructure assets. Together, Macquarie Capital and GIG have been involved in either developing, financing or investing in more than 35 biomass and EfW projects globally, including the Dublin EfW facility, which is a reference facility for this proposal.

Through a global team of over 450 staff, Macquarie Capital and GIG offer clients international reach, a deep pool of expertise, global procurement and access to a growing pipeline of high value investment opportunities – to ultimately – accelerate the green transition.

1.5 Delivery of the WSERRC

Design of the proposal will continue to progress following lodgement of the EIS, responding to submissions received through the exhibition of the EIS and, if approved, conditions of consent.

A suitable operator with experience in managing an EfW facility and complying with relevant environmental regulations will be appointed to partner with Cleanaway to operate the proposal.

The selected operator will need to demonstrate that they are eligible to hold an EPL, having regard to the requirements of the *Protection of* the *Environment Operations Act 1997* (POEO Act). The operator will also be required to operate the proposal in accordance with Cleanaway's Environmental Policy and independently certified ISO 14001 Environmental Management System, reflecting Cleanaway's commitment to achieving a high level of environmental performance at its facilities.

1.6 Assessment process

This EIS has been prepared under the Secretary's Environmental Assessment Requirements (SEARs) for the proposal issued by the Department of Planning, Industry and Environment (DPIE) on 12 December 2019. A list of the SEARs and where they have been addressed in this EIS is included in **Appendix A Secretary's Environmental Assessment Requirements cross-reference table**.

The proposal is State significant development (SSD) as it is classified as electricity generating works with a capital investment value (CIV) of more than $30m under Schedule 1 of the State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP). The estimated CIV is around $645m as referenced within **Appendix D Statement of CIV**.

The SSD status of the proposal is further reinforced by the proposal site being located within the Western Sydney Parklands (WSP), being development that has a CIV of more than $10m on land identified as being within the Western Parklands on the WSP Map within the meaning of State Environmental Planning Policy (Western Sydney Parklands) 2009.

Figure 1.5 shows the phases in the SSD process, and indicates the current status of the application, namely Exhibition of EIS.

The EIS follows on from the Scoping phase where a Scoping Report was prepared to identify the potential impacts of the proposal on the environment to help DPIE and agencies in preparing SEARs for the proposal which are covered in **Appendix A**.

1 Early Consultation and Scoping

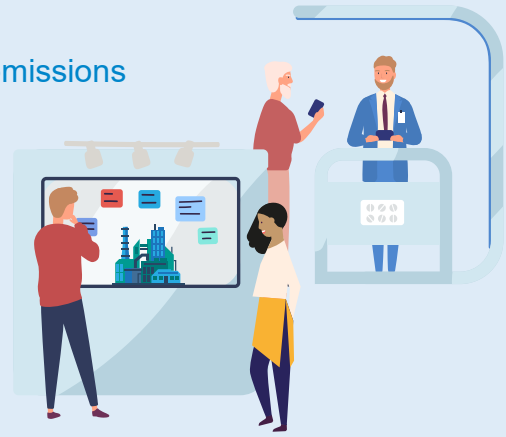
- Identify issues of importance to the community and stakeholders to be addressed in the EIS
- Identify how the community want to be engaged during the EIS process
- Leading to the submission of a Scoping Report to support a request for Secretary's Environmental Assessment Requirements to confirm the scope of the EIS

2 Prepare EIS

- Assessment of environmental impacts and feedback to the proposal layout and design
- Ongoing engagement with the community and stakeholders
- Preparation of EIS to address SEARs including assessment of environmental impacts and outcomes of community and stakeholder engagement

3 Exhibit EIS and Respond to Submissions

- **DPIE exhibits the EIS for a minimum of 28 days and invites submissions**
- Applicant assesses and responds to submissions



4 Assessment and Determination

- Assessment of application by DPIE, including preparation of Assessment Report
- Determination of application by consent authority, including any conditions if consent is granted
- Applicant addresses requirements of conditions of consent
- Ongoing engagement with the community and stakeholders during construction and operation

Figure 1.5: State significant development process

1.7 Document purpose and structure

The purpose of this document is to describe the proposal for which approval is being sought, assess impacts that are predicted to occur during the proposal's construction, operation, and maintenance, and identify measures to avoid, manage and mitigate those impacts. The EIS allows the public to understand the proposal and its potential impacts and helps the decision-makers to inform the assessment and determination process.

The assessment documents are structured to generally follow section 3.2 of Preparing an Environmental Impact Statement: Draft Environmental Impact Assessment Guidance Series June 2017 (DPIE, 2017) and to meet the requirements of Schedule 2 of the *Environmental Planning and* Assessment *Regulations 2000*. Clauses 6 and 7 of the Schedule set the form and content of an EIS. **Table 4.1** of **Chapter 4 Statutory context** describes where the form and content requirements set out in clauses 6 and 7 are addressed in this EIS.

- Volume 1 (this document) is the main statement document, describing the proposal, its strategic and statutory context, the approach to community engagement and a summary of specialist environmental studies. Site layout and design drawings are included as appendices to Volume 1 along with other appendices.
- Volume 2 contains specialist studies.

Volume 1 contains 26 chapters and 6 Appendices:

- Chapter 1 Introduction
- Chapter 2 Strategic context
- Chapter 3 Proposal description
- Chapter 4 Statutory context
- Chapter 5 EfW policy
- Chapter 6 Engagement
- Chapter 7 Environmental assessment scope
- Chapters 8–21 Key issues: environmental assessment
- Chapter 22 Related development
- Chapter 23 Cumulative impacts
- Chapter 24 Summary of management and mitigation measures
- Chapter 25 Evaluation and conclusions
- Chapter 26 References

- Appendix A Secretary's Environmental Assessment Requirements cross-reference table
- Appendix B Architecture and Landscape Design Strategy Report
- Appendix C Drawings
- Appendix D Statement of CIV
- Appendix E Landowner's consent
- Appendix F Community and Stakeholder Engagement Report.
- Appendix G Information relating to the Draft Voluntary Planning Agreement (VPA)