

Cleanaway Operations Pty Ltd  
**Western Sydney Energy and  
Resource Recovery Centre**  
Scoping Report

WSERRC-ARU-SYD-ENEM-RPT-0001

13 November 2019



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 264039

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**ARUP**

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## Appendices

### Appendix A

#### Aboriginal and Non-Aboriginal Heritage Assessment

## Glossary

Air pollution control residues (APCr)	<p>A fine-grained powder known as one of the residual products from EfW facilities.</p> <p>Flue gas treatment is one of the key steps in the EfW process, the cooled flue gases leaving the boiler pass through a series of scrubbing and cleaning processes, which comprise the Air Pollution Control (APC) system and are designed to meet best available technology emissions standards. The APC system produces APCr at the end of this process which is formed of scrubber residue and/or bag house filter dust. The residues are produced by the injection of lime into the flue gas to react with the acidic gases and capture the particulates in filter bags. APCr are typically a mixture of ash, carbon and lime.</p> <p>Note that where we refer to APCr in this report, we are also referring to and including Boiler Ash (BA) (which is also a fine-grained powder residual product from EfW facilities).</p>
Best Available Techniques Reference Document (BREF)	<p>European Commission, Best Available Techniques (BAT) Reference Document for Waste Incineration adopted under both the European Integrated Pollution Prevention and Control (IPPC) Directive (2008/1EC) and the Industrial Emissions Directive (IED 2010/75/EU) to guide the development of industrial facilities covered by the Industrial Emissions Directive (IED) in the European Union (EU).</p> <p>The BAT reference document (BREF) informs the relevant decision makers about what may be technically and economically available to industry in order to improve environmental performance.</p> <p>A Draft BREF was published in 2018.</p>
Calorific value	<p>The energy contained in a fuel, determined by measuring the heat produced by the complete combustion of a specified quantity of the fuel.</p>
Commercial and Industrial (C&I) Waste	<p>Solid waste (putrescible and non-putrescible) generated by businesses, industries (including shopping centres, restaurants and offices) and institutions (such as schools, hospitals and government offices).</p>
Eligible waste fuels	<p>Waste or waste-derived materials considered by the Environmental Protection Authority (EPA) to pose a low risk of harm to the environment and human health due to their origin, low levels of contaminants and consistency over time.</p>
Energy Recovery Facility (ERF)	<p>Defined in the NSW Energy from Waste Policy Statement as: A facility that thermally treats a waste or waste-derived material that does not meet the definition of an eligible waste fuel. These facilities must be able to demonstrate that they will be using current international best practice techniques.</p>

Energy-from-waste (EfW)	The process of generating energy in the form of electricity and/or heat from the primary treatment of waste, or the processing of waste into a fuel source. EfW is a form of resource recovery.
Flue gas	Flue gas (sometimes called exhaust gas or stack gas) is the gas that emanates from combustion plants and which contains the reaction products of fuel and combustion air and residual substances.
FOGO	Food organics and garden organic waste.
Industrial Emissions Directive (IED)	European Parliament and Council, Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).  The Industrial Emissions Directive is a European Union Directive which commits European Union member states to control and reduce the impact of industrial emissions on the environment.
Minister	Minister for Planning and Public Spaces.
Metropolitan Levy Area	Metropolitan Levy Area comprises the Sydney metropolitan area, the Illawarra region and Hunter region.
Moving grate	Moving grate is a common form of EfW technology where the waste is fed into the combustion chamber by a travelling grate. The primary function of the moving grate is the controlled transport of the waste through the combustion chamber to guarantee efficient mixing of the fuel bed and permanent coverage of the metal parts to protect them against over-heating.
Municipal Solid Waste (MSW)	Solid waste (putrescible and non-putrescible) from households and local government operations, including waste placed at the kerbside for local council collection and waste collected by councils from municipal parks and gardens, street sweepings and public council bins.
Putrescible waste	Solid waste that contains organic material capable of being decomposed by micro-organisms and cause odours.  (Source: <a href="https://www.lawinsider.com/dictionary/putrescible-waste">https://www.lawinsider.com/dictionary/putrescible-waste</a> )
Residual C&I	Waste that is left over following the recycling and recovery of resources from the C&I waste stream. Residual C&I is a feedstock for the EfW facility.
Residual MSW	Waste that is left over following the recycling and recovery of resources from the MSW waste stream. Residual MSW is a feedstock for the EfW facility.
Secretary's Environmental Assessment Requirements (SEARs)	The issues to be addressed and the information to be provided in an EIS. SEARs are prepared by the Planning Secretary in consultation with public authorities.

Selective Non-Catalytic Reduction (SNCR)	SNCR is a method to reduce nitrogen oxide emissions in combustion processes. It involves injecting either ammonia or urea into the boiler to react with the nitrogen oxides formed in the combustion process.
WSP	Western Sydney Parklands
WSERRC	Western Sydney Energy Resource Recovery Centre
Incineration Bottom Ash (IBA)	Ash from the end of the grate and from the siftings that pass through the grate. Granular material; typically contains glass, ceramics, silicates, rocks, masonry products and carbon/organics. Typically contains some ferrous and non-ferrous metals, which can be extracted for recycling.
Boiler Ash (BA)	Ash from boiler hoppers. Fine granular material; typically, agglomerations of particles.

## Executive Summary

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### Overview

The Western Sydney Energy and Resource Recovery Centre (WSERRC) (the proposal) is being delivered by Cleanaway and Macquarie Capital. Cleanaway and Macquarie Capital have entered into a joint venture agreement to plan the energy and resource recovery centre, located at 339 Wallgrove Road, Eastern Creek. The applicant is Cleanaway Operations Pty Ltd (Cleanaway).

This Scoping Report supports a request for Secretary's Environmental Assessment Requirements (SEARs) which will identify the information to be provided in the environmental impact statement (EIS).

### Introduction and information about the applicant

The purpose of the proposal is to build an energy-from-waste (EfW) facility that can generate up to 55 megawatts (MW) of power by thermally treating up to 500,000 tonnes per year of residual municipal solid waste (MSW) and residual commercial and industrial (C&I) waste streams that would otherwise be sent to landfill. The proposal will also recover metals from the ash and these metals will be recycled.

The application is categorised as State significant development (SSD) as it is electricity generating works with a capital investment value (CIV) greater than \$30 million for the purposes of Schedule 1 of the State and Regional Development (SRD) State Environmental Planning Policy (SEPP) (SRD SEPP) 2011. It will be assessed and determined by the Minister for Planning and Public Spaces or the Independent Planning Commission (IPC). To comply with the NSW Energy from Waste Policy Statement, unless there is sufficient source separation in the waste streams, resources in the waste streams will first be recovered at a resource recovery facility, with the residual waste providing the waste feedstock for the EfW facility. The front-end resource recovery facility is not part of the scope of the application but the EIS will demonstrate that the EfW facility is using residual waste from bona fide resource recovery operations.

Cleanaway is an Australian waste management, recycling and industrial services company. Its 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.

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

In 2018, Cleanaway recycled more than 380,000 tonnes of paper and cardboard, 15,500 tonnes of plastic, and 25,000 tonnes of steel and aluminium. Cleanaway captured more than 115 million cubic metres of landfill gas and generated over 135 million kilowatt hours of renewable energy, enough to power more than 27,000 homes.

Cleanaway has entered into a joint venture with Macquarie Capital to plan the energy and resource recovery centre. Macquarie is the developer and co-investor in Australia's first energy and resource recovery centre now being built south of Perth. An experienced renewable energy

developer and investor, Macquarie's expertise is also enhanced by its Green Investment Group (GIG), which is a specialist global developer and investor supporting the growth of the green economy. GIG and Macquarie's team of 350 green investment experts is amongst the largest in the world, and its energy from waste track record includes development and investment in state of the art projects in Europe, Asia and Australia.

The WSERRC project's success will rest on factors such as the suitability of the site, the high quality of the technology utilised and its ability to deliver emission limits well below Australian and international standards. However it is Cleanaway's local expertise in waste, combined with Macquarie and GIG's proven track record of successfully delivering a wealth of energy from waste projects around the world which provides the key differentiating factor for this proposal.

## The proposal

### *Site and surrounds*

The site is located at 339 Wallgrove Road, Eastern Creek, in the Blacktown local government area (LGA) and on the western part of the Western Sydney Parklands (WSP). The area immediately surrounding the site is characterised by industrial and transport infrastructure.

The site is bounded by the M7 motorway to the west with the Eastern Creek industrial area farther west. The now closed Eastern Creek landfill is located to the north and north-east with the operational Global Renewables waste management facility located immediately to the east. The Warragamba Pipeline Corridor adjoins the southern boundary of the site with the Austral Bricks site located farther south.

The nearest residential area is located around 1 km to the south. The Erskine Park residential area is located around 3.5 km to the west with Minchinbury located around 3 km to the north.

There is no public and social infrastructure located directly at the site.

The site is accessed via an unnamed road (known as the Austral Bricks Road) adjacent to the southern site boundary. The unnamed road provides access to Wallgrove Road which connects to the surrounding road network including the M7 motorway.

The site has been extensively cleared and approximately two hectares of the northern part of the site is currently paved. Disused poultry sheds and ancillary buildings currently occupy the site, with mature vegetation along the eastern boundary and a man-made pond occupying the eastern part of the site.

### *Energy-from-waste technology*

Energy-from-waste (EfW) refers to a broad range of technologies which involve the combustion of residual waste streams, significantly reducing the volume of waste being sent to landfill while generating renewable energy. The most common EfW technology is called 'moving grate' where residual waste is fed onto a grate which moves the waste through a combustion chamber to ensure the complete combustion of the waste material.

The hot gases from the combustion process are used to generate steam which drives a turbine to produce electricity. Emissions in the resulting gas are cleaned using established air pollution control technologies before being released to the atmosphere through a stack.



The EfW process produces residual materials including bottom ash. The proposal will capture bottom ash and recover metals which will be recovered and sold to metal recyclers. The remaining bottom ash will be transported to an off-site facility and may be incorporated into construction products such as road base, subject to further investigation.

Other residual materials include boiler bottom ash and air pollution control residues. These materials will be sent to a licenced facility for disposal, however options to treat and recycle this material will also be investigated (e.g. reusing in construction applications such as road base).

The NSW EfW Policy Statement requires EfW applications to be designed in accordance with international best available techniques (BAT). This is defined by the European Industrial Emissions Directive (IED) and the BAT Reference Document (BREF).

The BREF sets emission limits for several emission parameters. First adopted in 2006, a new BREF with more stringent emission limits was published as a draft in 2018, responding to the continuous improvement in air pollution control technology in the industry.

Experience from operational EfW facilities in Europe demonstrates that actual emissions are significantly lower than the IED limits, and the more stringent draft 2018 BREF limits. IED limits are the same as or lower than NSW limits as defined in the POEO Act.

The WSERRC will be designed to meet the emission limits in the draft 2018 BREF. The application will use data from facilities operating in the EU that use the same combustion technology (i.e. moving grate) and air pollution control technologies with similarities in waste feedstock as a reference for this proposal.

### ***Energy-from-waste in NSW***

EfW can play an important role in meeting NSW targets for landfill diversion and resource recovery when it is part of an integrated waste management strategy which follows the resource management priorities of the waste hierarchy, being avoidance, reuse and resource recovery, energy recovery and treatment with landfill as a final resort.

Currently, around 3.2 million tonnes of MSW and C&I waste in the Metropolitan Levy Area is sent to landfill. This represents approximately 55 percent of total MSW and C&I waste generated. The Metropolitan Levy Area comprises the Sydney metropolitan area, the Illawarra region and Hunter region. NSW has set itself a landfill diversion target of 75 percent and a recycling rate of 70 percent for MSW and C&I waste by 2021-2022. The Strategy notes that reuse and recycling will remain the key avenues for diverting waste from landfill as supplemented by energy recovery in the future.

Actual recycling rates for MSW are currently short of the 2021-2022 target. Rates declined from 52 percent in 2010-2011 to 42 percent in 2017-2018, highlighting the need for investment in waste infrastructure that is proven and effective in achieving high levels of resource recovery and diversion from landfill.

Experience from top performing European countries indicates that recycling rates of 50-60 percent can be achieved, however, achieving landfill diversion rates beyond this requires thermal treatment of the residual waste.

### ***Proposal description***

The proposal is to:

- Build an EfW facility to thermally treat up to 500,000 tonnes of residual municipal solid waste (MSW) and commercial and industrial (C&I) waste every year that would otherwise be sent to landfill.
- Generate up to 55 MW of power.
- Capture and temporarily store residual materials from the EfW process so that they can be transported off-site for further resource recovery and ultimate reuse or disposal to licenced facilities.
- Build a visitor centre to help educate and inform the community on the circular economy, recycling, resource recovery and EfW.
- Build the site infrastructure needed to support the proposal including internal roads, weighbridges, parking and hardstand areas, stormwater infrastructure, fencing and landscaping.

The proposal will include continuous monitoring of emission parameters which will be used to manage the operation of the combustion and air pollution control process to achieve required emission limits. Monitoring of other emission parameters which cannot be monitored on a continuous basis will be undertaken at regular intervals in accordance with an agreed monitoring programme.

Bottom ash from the combustion process will be held securely in a bottom ash bunker and metals will be recovered and sold to metal recyclers. After metals recovery, the residual bottom ash will be transported off-site with the final use of the ash being subject to ongoing assessment (e.g. incorporation into construction materials such as road base). Boiler ash and air pollution control residues will be transported for disposal at a licenced facility.

The EIS will demonstrate that the feedstock supplied to the proposal is residual from resource recovery operations and meets the resource recovery criteria of the EfW Policy Statement. Management procedures on-site will identify any incoming waste that is not part of the approved waste feedstock. Such incoming loads can be inspected in the waste receival hall with arrangements made for the transport off-site.

### **Strategic context**

The strategic context describes the relevant waste, energy and land use plans and policies which support the need for the proposal and the suitability of the site.

The WSERRC can play an important role in contributing to NSW targets for landfill diversion, recycling and resource recovery. These targets and requirements are set out in a number of documents including:

- The Waste Avoidance and Resource Recovery Strategy which establishes targets for landfill diversion and recycling and emphasises on the importance of the waste hierarchy in setting priorities for how waste should be managed.

- The NSW Energy from Waste Policy Statement which recognises 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 environment. The Policy Statement sets requirements that EfW projects must address including how they meet international best available techniques for emissions control and waste management as well as technical, thermal efficiency and resource recovery criteria.

Several other strategies and plans recognise the role of energy recovery including the NSW Circular Economy Policy Statement, Western Sydney Regional Waste Avoidance and Resource Recovery Strategy and the National Waste Policy.

As a producer of renewable energy, the proposal would support the renewable energy objectives and targets of National and State policies including the NSW Renewable Energy Action Plan.

The site is located in the western part of the Western Sydney Parklands in an area of low environmental and recreational value. It is surrounded by industrial land uses with the nearest residential areas located approximately 1 km to the south. It has good access to Wallgrove Road which connects to the wider road network, including the M7, with Cleanaway's Erskine Park Resource Recovery Facility located around 6 km to the west.

The site is part of the Wallgrove Precinct, one of sixteen precincts that make up the WSP. The WSERRC would be consistent with the Plan of Management by using low environmental or recreational value land for utilities infrastructure and by providing employment. The desired future character for the Wallgrove Precinct includes retention of some current uses such as recycling sites and future uses such as recycling and renewable energy. The WSERRC incorporates both recycling and renewable energy and would be consistent with the Precinct's desired future character.

## Statutory context

The proposal is permissible under the Western Sydney Parklands (WSP) State Environmental Planning Policy (SEPP) (WSP SEPP) 2009 and the Infrastructure SEPP (ISEPP) 2007.

It is classified as electricity generating works under Schedule 1 of the State and Regional Development SEPP (SRD SEPP) 2011. With a capital investment value (CIV) over \$30 million, it would be assessed and determined as State significant development (SSD). The consent authority would be the Minister for Planning and Public Spaces or the Independent Planning Commission.

The WSP SEPP identifies several matters that should be considered by a consent authority when assessing an application for consent in the WSP. These matters will be assessed in detail in the EIS.

The extent of other approvals will be confirmed in the EIS but is likely to include:

- An environmental protection licence (EPL) under the NSW *Protection of the Environment Operations Act 1997*.
- An approval under Section 138 of the NSW *Roads Act 1993*.

In addition to the SRD SEPP, ISEPP and WSP SEPP referred to earlier, other State policies may be relevant to the proposal. These will be identified and considered in the EIS and are likely to include:

- State Environmental Planning Policy No.33 Hazardous and Offensive Development.
- State Environmental Planning Policy No.55 Remediation of Land.
- State Environmental Planning Policy No.64 Advertising and Signage.

## Community and stakeholder engagement

To support the site selection process and to identify the issues that should be addressed in the EIS, research was carried out in late 2018 and early 2019 to explore community perceptions of an EfW facility in Western Sydney.

The research was carried out by an accredited organisation in accordance with the international quality standard for market and social research (ISO 20252:2012).

The research in early 2019 involved a community sample of 2,285 people, including 1,200 Greater Sydney residents, 395 residents in the Penrith LGA, 415 residents in the Blacktown LGA, and 275 residents in the Liverpool LGA. The sample was representative of a cross-section of age and gender across the region.

Themes identified from the survey results were:

- High living costs, lack of health service provision, and the affordability and availability of energy. Comparatively, waste management was less important.
- Around half of respondents (52 percent) said they were aware of, and knew at least a little bit about, EfW.
- After being provided with brief facts about four waste management options, 85 percent of people felt most positively about recycling, while 77 percent favoured EfW compared to 36 percent who felt positive towards landfill.
- About 70 percent of people said they would accept an EfW facility in NSW, while 54 percent said they would accept a facility in the Greater Sydney area, and 42 percent said they would accept a facility in industrial areas in a nearby suburb.

A community and stakeholder engagement strategy for the proposal has been developed from the above research with the following aims:

- Providing information about the WSERRC following its public announcement that is comprehensive and accessible, and actively seeking community views on the issues that should be addressed in the EIS, design, or by the project team.
- Consulting with the community while preparing the EIS and its supporting technical studies to seek views and input.

- Explaining the process for making submissions during the EIS public exhibition and assisting with that process.
- Continuing to update the community when responding to the submission including the assessment of issues raised by the community.

Additional engagement has been undertaken with government agencies to identify planning and environmental risks as an input to the site selection process. This will continue during the preparation of the EIS.

Further information about the proposal, including the programme of community and stakeholder engagement activities, can be found at [www.energyandresourcecentre.com.au](http://www.energyandresourcecentre.com.au)

## Environmental scoping

One of the important functions of the Scoping Report is to identify the issues that should be addressed in the EIS to allow the Secretary to respond to the request for SEARs.

The following issues have been identified to be assessed in the EIS, including their categorisation as either Key or Other.

Key issues:

- Waste management (including waste supply, management of residual waste and compliance with the EfW Policy Statement).
- Air quality and odour.
- Human health.
- Noise and vibration.
- Water – surface, groundwater and hydrology.
- Traffic and transport.
- Hazard and risk.
- Flora and fauna.
- Landscape character and visual amenity.
- Greenhouse gas emissions and climate risk assessment.
- Airspace operations.
- Contamination, geology and soils.
- Services and utilities.
- Social.
- Cumulative impacts.

#### Other issues:

- No issues were assigned to the category of ‘Other’ issues.

Two additional issues were considered – Heritage and Bushfire – but were ruled out from any further consideration in the EIS because of the low likelihood of any impact.

## Conclusion

Cleanaway is seeking consent for the proposal under Division 4.7 of Part 4 of the EP&A Act. The application for approval will be supported by an EIS.

This Scoping Report provides information about the proposal and the existing environment of the site and surrounding area as an input to the preparation of SEARs by the DPIE.

The EIS will address each of the SEARs and will describe how the design, construction and operation of the proposal will avoid, minimise and manage impacts on the environment, including issues that may be of concern to the community and stakeholders.

# 1 Introduction and information about the applicant

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## 1.1 Overview

The Western Sydney Energy and Resource Recovery Centre (WSERRC) (the proposal) is being delivered by Cleanaway and Macquarie Capital. Cleanaway and Macquarie Capital have entered into a joint venture agreement to plan the energy and resource recovery centre, located at 339 Wallgrove Road, Eastern Creek. The applicant is Cleanaway Operations Pty Ltd (Cleanaway).

The proposal is State significant development (SSD) as it is classified as electricity generating works with a capital investment value (CIV) of more than \$30 million under Schedule 1 of the State and Regional Development State Environmental Planning Policy (SRD SEPP) 2011. The CIV is around \$500 million.

As the site is located in the Western Sydney Parklands (WSP), it is also classified as SSD, being development that has a CIV of more than \$10 million 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<sup>1</sup>.

As shown in Figure 1, the first step in the SSD process is a request for Secretary's Environmental Assessment Requirements (SEARs). The purpose of this Scoping Report is to support a request for SEARs to the Department of Planning, Industry & Environment (DPIE) under Schedule 2 of the Environmental Planning and Assessment Regulation 2000. The Scoping Report has been prepared taking into account the Department's Scoping an EIS - Draft Guideline (June 2017) and provides an outline description of the proposal along with its potential environmental, social and economic impacts to help DPIE prepare and issue SEARs.

The SEARs define the scope of assessment and information to be provided in the environmental impact statement (EIS). Once completed, the EIS is placed on public exhibition, providing an opportunity for the community and stakeholders to make submissions that will be considered in the consent authority's assessment and determination of the application.

## 1.2 The proposal

The purpose of the proposal is to build an energy-from-waste (EfW) facility that can generate up to 55 megawatts (MW) of power by thermally treating up to 500,000 tonnes per year of residual municipal solid waste (MSW) and residual commercial and industrial (C&I) waste streams that would otherwise be sent to landfill. The proposal may also receive depleted residual food and garden organics.

The final plant design, specifications and capacity will be identified through an engineering design study and the EIS. Chapter 2 describes the proposal in more detail.

The waste feedstock received at the proposal will be waste that is left over from recycling and resource recovery operations undertaken at off-site facilities. The proposal will generate waste streams such as bottom ash, boiler ash and air pollution control residues (APCr).

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<sup>1</sup> While the site is within the Western Sydney Parklands as defined by the Land Application Map in the WSP SEPP, Clause 22 of the WSP Act 2006 indicates that land does not form part of the Parklands unless the land is Trust land or land of a government agency. The site is not Trust land or land of a government agency.

There will also be a process on site for recovering metals from the bottom ash. Bottom ash from the combustion process will be held securely in a bottom ash bunker and metals will be recovered from the bottom ash and sold to metal recyclers. After metals recovery, the residual bottom ash will be transported off-site with the final use of the ash being subject to ongoing assessment (e.g. incorporation into construction materials such as road base).

Boiler ash and APCr will likely be categorised as restricted waste under the EPA Waste Classification Guidelines and will be transported off-site for final disposal at a licenced facility.

The relationship of the proposal to other developments and the need for additional approvals is described in Section 2.5.

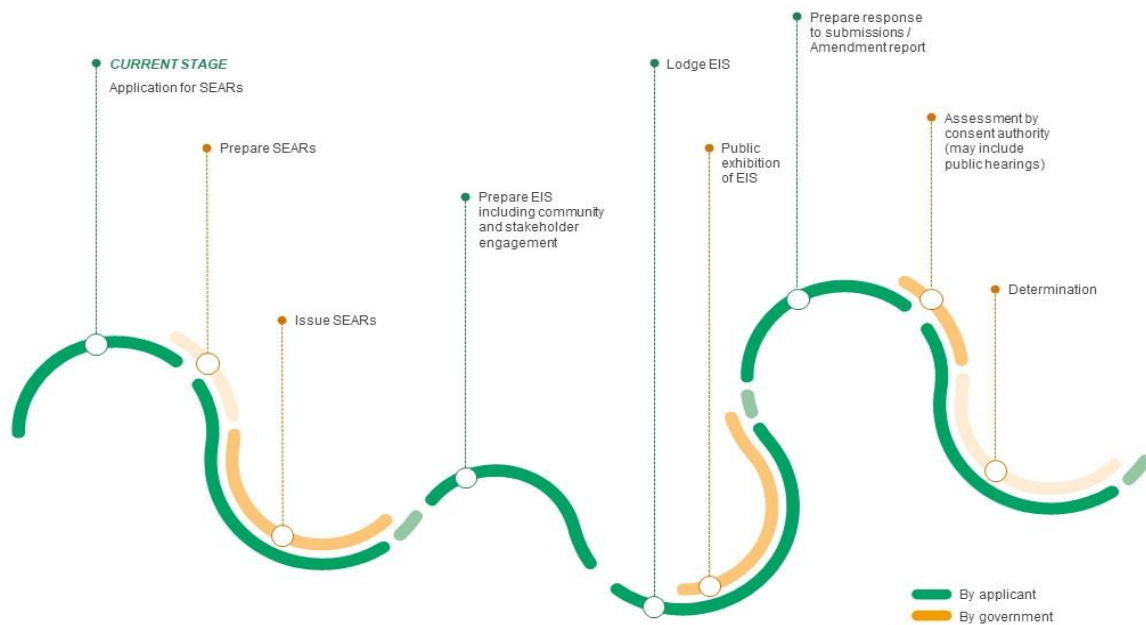


Figure 1: State significant development process



## 1.3 About the applicant

### 1.3.1 Cleanaway Operations

Cleanaway is an Australian waste management, recycling and industrial services company. Its 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 supporting Australian businesses for over 50 years through a network of state-of-the-art recycling facilities, transfer stations, engineered landfills, liquid treatment plants, medical waste treatment facilities and refineries.

Cleanaway has more than 300 sites across Australia, 5,000 vehicles and 115 licensed prized infrastructure assets. Cleanaway's Solid Waste Services business operates the largest solid waste and recycling fleet in Australia, servicing more than 88 municipal councils and over 140,000 commercial and industrial businesses.

The solid waste collection business is supported by an extensive post-collection facilities network across the country, including the Erskine Park Resource Recovery Facility in Western Sydney which is licenced to accept 300,000 tonnes of putrescible waste each year.

In 2018, Cleanaway recycled more than 380,000 tonnes of paper and cardboard, 15,500 tonnes of plastic, and 25,000 tonnes of steel and aluminium. Cleanaway captured more than 115 million cubic metres of landfill gas and generated over 135 million kilowatt hours of renewable energy, enough to power more than 27,000 homes.

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 2 billion containers recycled since the inception of the scheme, putting NSW well on track to reaching its goal of a 40 per cent 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 inert waste that would otherwise go to landfill. By using PEF instead of coal to power industry, greenhouse gas emissions are reduced while diverting up to 250,000 tonnes of waste from landfill.

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 energy and reducing the volume of waste going to landfill.

### 1.3.2 Macquarie Capital

Cleanaway has entered into a joint venture with Macquarie Capital to plan the WSERRC. Macquarie is the developer and co-investor in Australia's first energy and resource recovery centre now being built in Perth.

An experienced renewable energy developer and investor, Macquarie Capital's capability in this sector has also been enhanced by Macquarie's 2017 acquisition of the UK's Green Investment Bank, now renamed Green Investment Group, which over the past 18 months has provided a new dimension to Macquarie's Australian green energy offering.

Macquarie Capital has global capability in advisory, capital raising services, providing clients with specialist expertise, innovative advice and flexible capital solutions across a range of sectors and products including investing alongside partners and clients. It also has global capability in infrastructure, and green and conventional energy.

Macquarie Capital's renewable energy expertise is enhanced by the Green Investment Group, a specialist developer, sponsor and investor with a mission to accelerate to a greener global economy. Together, Macquarie Capital and Green Investment Group have more than 350 dedicated green energy professionals and has invested in over 30 water, biomass and energy from waste projects globally including Australia's first thermal waste to energy project, Avertas Energy at Kwinana in Western Australia.

### 1.3.3 Applicant and site details

Table 1 describes the entity making the application, details of the site and site ownership.

Table 1 Entity and site details

<b>Full name:</b>	<b>Cleanaway Operations Pty Ltd</b>
Postal address:	Level 4, 441 St Kilda Road, Melbourne, Metro Victoria (South East), VIC, 3004
Australian business number:	40 010 745 383
Nominated contact:	Nick Schutt
Contact details:	Nick.Schutt@cleanaway.com.au Tel: +61 2 8985 5609 Mob: +61 407 713 946
Name and qualifications of the person preparing the scoping report:	Jade Garth, B.EnvSc&Mgt.
Site owner(s):	ACN 635 427 262 Pty Ltd as trustee for Green Waratah Project Trust
Legal description of site:	Lot 1 DP 1059698

## 1.4 This report

The remainder of this report provides information on the:

- Proposal (Chapter 2).
- Strategic context for the proposal including relevant policies and plans that support the proposals need (Chapter 3).
- Statutory context including the environmental and planning framework under which the proposal would be assessed and determined (Chapter 4).
- Community and stakeholder engagement carried out to date and the plans for future engagement while preparing the EIS (Chapter 5).
- Environmental, social and economic issues that will be assessed in the EIS (Chapter 6).
- Conclusion (Chapter 7).

## 2 The proposal

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### 2.1 Introduction

This chapter includes:

- A description of the site and surrounding area.
- An overview of EfW, its role in the waste hierarchy and its potential contribution to managing waste in NSW.
- A description of the proposal including the site layout and operational processes along with its construction and the related development that may be needed to support the facility.
- An overview of the strategy for supplying waste to the site.

The description reflects that the proposal will be further developed in response to site planning, design, environmental and community and stakeholder engagement issues.

### 2.2 Site and surrounding area

The proposal site is located at 339 Wallgrove Road in Eastern Creek, NSW (Lot 1 DP 1059698). The site is in the Wallgrove Precinct of the Western Sydney Parklands in the Blacktown local government area (LGA). It is bounded by the M7 Motorway to the west with the Eastern Creek industrial area located farther west. The now-closed Eastern Creek landfill site is located to the north and north-east, with the operational Global Renewables waste management facility located immediately to the east. To the south, the site is bounded by the Warragamba Pipeline Corridor with the Austral Bricks facility located farther south.

The nearest residential area is located around 1 km to the south. The Erskine Park residential area is located around 3.5 km to the west with Minchinbury located around 3 km to the north.

There is no public and social infrastructure located directly at the site. While the site is within the administrative boundary of the Parklands, the closest publicly accessible area is located about 1 km north of the site.

Other forms of public and social infrastructure include the Sydney Motorsport Park located about 1.4 km north-east, the Drift School Australia, a driving school, about 1.5 km north-east and the Western Sydney International Dragway, drag racing facility, about 1.4 km east of the site.

Horsley Park Public School is the nearest education facility at over 2 km south of the site.

The Warragamba Pipeline Corridor is adjacent to the southern boundary of the site. The pipelines supply water to Prospect Reservoir, located 1.7 km of the site and to Prospect Water Filtration Plant.

Except for a few times each year, where short-term events such as hazard reduction burns, bushfires and the use of wood burning stoves affect the local ambient air quality, pollutant concentrations in the surrounding environment are typically well below the respective health-based criteria (NSW EPA, 2016).

Ambient noise local to the site is expected to be higher during the day and dominated by traffic on the M7 Motorway and Wallgrove Road and sources such as generators, air conditioning units, extraction fans, and reversing alarms associated with the existing commercial and industrial activities nearby.

A search of the Rural Fire Service (RFS) online search tool in July 2019 did not identify the site as being within a designated bushfire prone area.

The site is located within the Hawkesbury-Nepean river catchment approximately 450 m south and 750 m east of Reedy Creek and 800 m west of Eastern Creek. There are no watercourses that run through the site.

Access to the site is via an unnamed road (also referred to as the Austral Bricks Road) adjacent to the site's southern boundary. The unnamed road connects to Wallgrove Road which in turn connects to the wider road network including the M7 motorway. The existing road network provides for B-double access to the unnamed road.

A thin strip of land runs across the site splitting the site into two parts which can be seen in Figure 4. This strip of land is a right of carriageway (owned by a third party) which previously would have provided access to Wallgrove Road for the site to the east.

Poultry sheds and ancillary buildings, no longer in use for poultry activities, currently occupy the site.

At present, there is minimal existing stormwater infrastructure on site. Hardstand and paved areas drain overland towards a stormwater detention pond near the eastern boundary. Information on the pond's original purpose, form, structure, depth, and integrity is currently unknown along with the retained water quality. Historical imagery shows that the pond was built between 1956 and 1961. Preliminary consultations with Department of Primary Industry (DPI) confirmed that the pond is not ordered under the *Water Management Act 2000*.

As most of the site is cleared it holds limited ecological value except at the periphery which includes remnant Cumberland plain and eucalypt woodland. This is supplemented by occasional planted natives and patches of exotic grassland scattered throughout the site and a sedge community associated with the stormwater detention pond along the site's eastern boundary. The remnant woodland is most prevalent and intact along the site's eastern boundary. It includes patches of critically endangered Cumberland Plain woodland, despite being in a very poor condition, and threatened (regrowth) eucalypt woodland.

Desktop studies confirmed a low-level of archaeological sensitivity and potential across the site based on the distribution of registered recorded archaeological sites supported by a detailed heritage investigation record in the area.

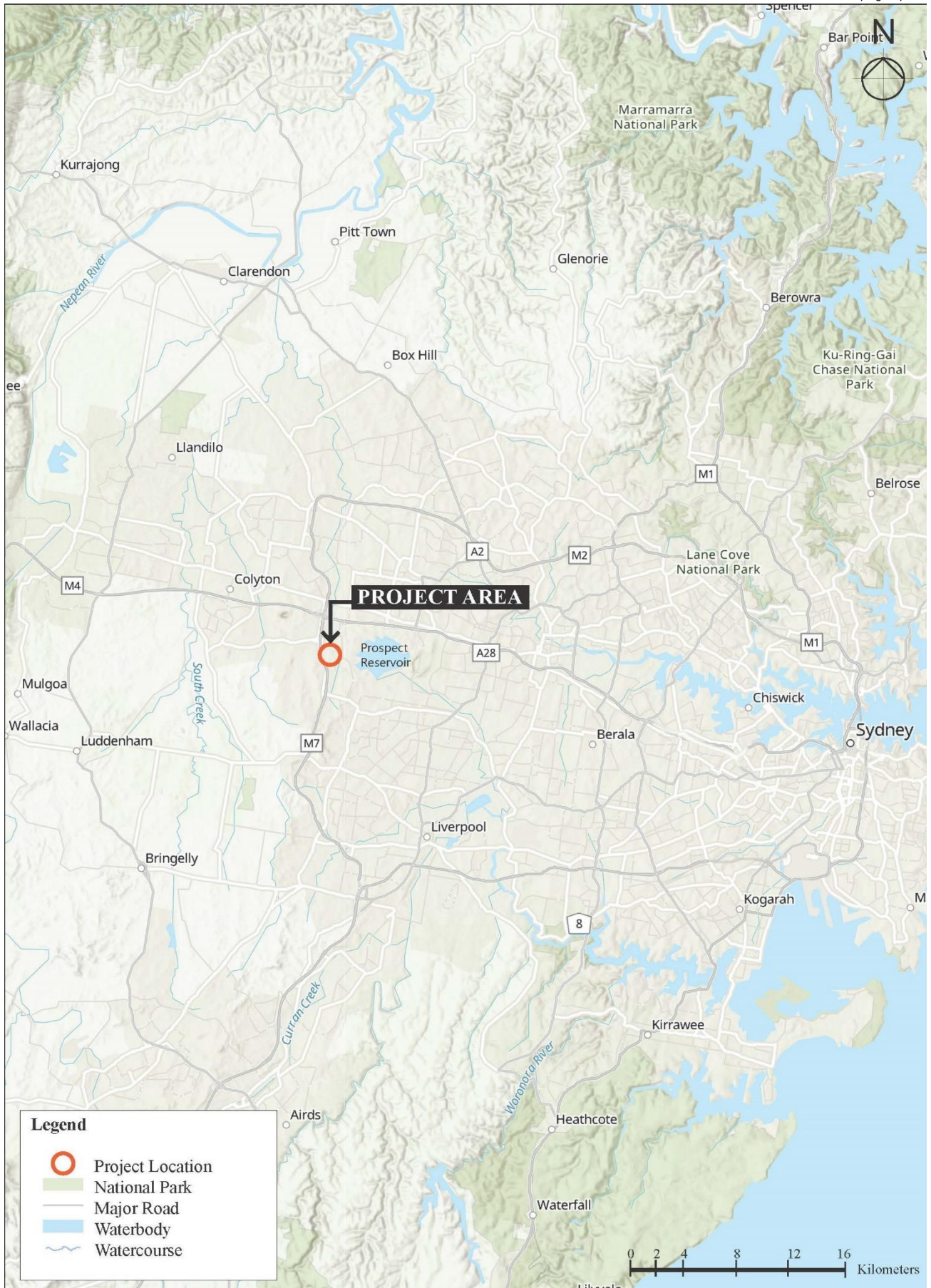
The majority of the site is overlying Bringelly Shale of Wianamatta Group with the northeast corner overlying Quaternary deposits. Bringelly Shale is described as predominantly comprising shale, claystone and siltstone, and highly compacted, weakly cemented and is known to comprise a significant amount of swelling clays. This unit is highly susceptible to weathering. Residual soil from the Bringelly Shale varies from silty clays to clayey sands and is known to be high shrink-swell soils with low wet strength.

Based on historical and current land uses and potential for off-site leachate and gas migration from the former landfill located to the east and north, there is a risk of contamination on site which will be investigated further during the EIS.

A Biosecurity Direction was issued to the site owner dated 24 January 2019 from the Department of Primary Industries (DPI) which relates to the presence of salmonella on site, associated with previous poultry activities. The current owners are working with the Department of Primary Industries to address the salmonella issue in accordance with established procedures.

Figure 2 shows the site's location in the regional context, Figure 3 shows the surrounding area and local context, while Figure 4 shows the existing site and site boundary.

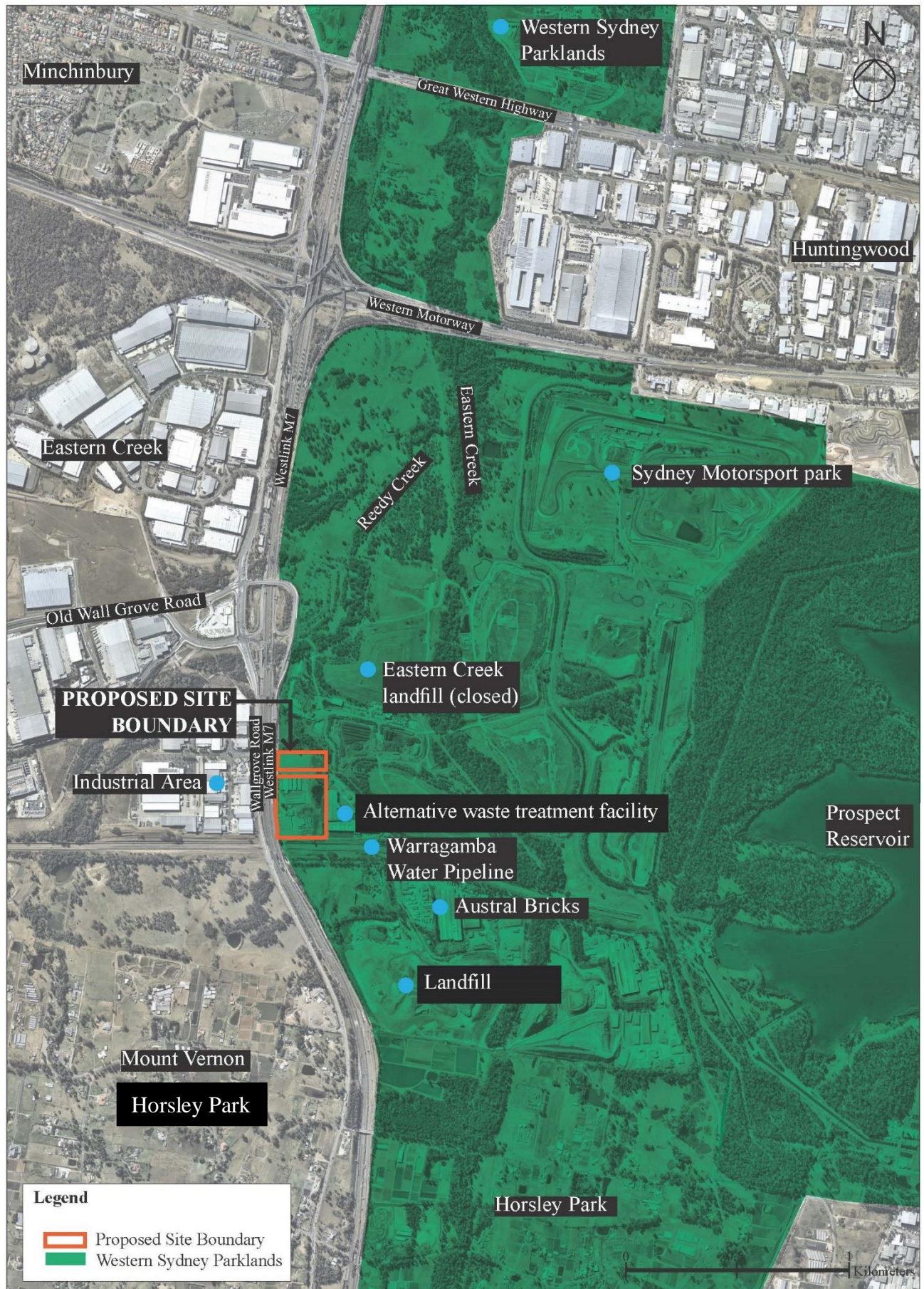


**ARUP**

REGIONAL CONTEXT PLAN

Figure 2: Site location and regional context





# ARUP

## LOCAL CONTEXT PLAN

Figure 3: Surrounding area and local context





# ARUP

## SITE PLAN

Figure 4: Existing site and site boundary

## 2.3 Overview of energy-from-waste

### Energy-from-waste technology

Cleanaway and Macquarie Capital reviewed operational EfW facilities around the world to identify a technology that was reliable and with a proven track record in terms of its human health and environmental performance. This focused on technologies commonly used in the European Union (EU) because of the similarities with the NSW waste market and the close-alignment between the two jurisdictions in their approach to regulating EfW.

The long track-record of successfully operating EfW facilities in the EU provides a source of reference facilities that can be used to demonstrate their environmental and social performance.

In the EU, EfW is regulated through the Industrial Emissions Directive (IED)<sup>2</sup> and its corresponding reference document on Best Available Technique for EfW technologies (BREF)<sup>3</sup>. Both the IED and the BREF set stringent standards for air quality, health impacts, energy recovery, resource efficiency and operational controls. These standards are either equivalent to or more stringent than NSW air quality standards established through the *Protection of the Environment Operations (POEO) Act 1997*.

The BREF was adopted in 2006. As air pollution control technology in EfW facilities has improved rapidly, a draft BREF with more stringent emission standards was published in 2018<sup>3</sup> above. Experience from operational EfW facilities in the EU shows that actual air emissions are significantly within standards required by the IED and BREF, including the more stringent draft BREF standards, and that health impacts are acceptably managed.

The basis of the combustion technology for the WSERRC is to use an advanced moving grate. This is the most common proven method that allows for the efficient combustion of waste in accordance with BREF as it achieves the required combustion temperatures and stability to guarantee complete combustion. As of 2017, this method had been used in 492 facilities in the EU (Confederation of European Waste-to-Energy Plants<sup>4</sup>), providing a clear demonstration that it is a safe method to recover energy from waste. Proven flue (waste) gas treatment solutions employed in the EU would also be used to achieve and maintain emission limits in accordance with the IED and BREF.

### Waste hierarchy

The waste hierarchy, shown in Figure 5, is a set of priorities to guide decision making for the efficient use of resources. In NSW, it underpins the objectives of the *Waste Avoidance and Resource Recovery Act 2001*.

The waste hierarchy establishes an order of preference for how waste should be managed to help achieve the best possible environmental outcomes—waste avoidance is the best option, followed by reuse, recycling, energy recovery, treatment and disposal as a last resort.

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<sup>2</sup> European Parliament and Council, Directive 2010/75/EU of the European Parliament and of the Council of 24 November 2010 on industrial emissions (integrated pollution prevention and control).

<sup>3</sup> European Commission, Best Available Techniques (BAT) Reference Document for Waste Incineration, Final Draft (December 2018)

<sup>4</sup> <http://www.cewep.eu/waste-to-energy-plants-in-europe-in-2017/>

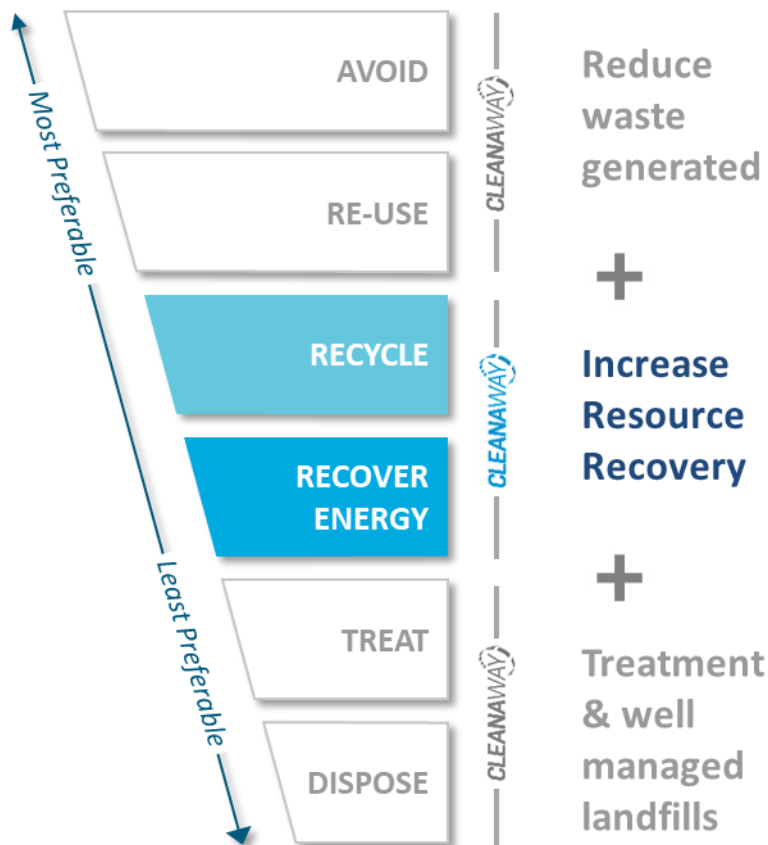


Figure 5: Waste Hierarchy

Energy recovery plays an important role in the waste hierarchy. While Australia has similar rates of recycling of MSW to some European countries, many of these countries achieve significantly higher rates of landfill diversion through the use of EfW. In countries achieving close to 100 per cent landfill diversion – Germany, Netherlands and Denmark - EfW accounts for between 35 and 50 per cent of this diversion<sup>5</sup>.

### Energy-from-waste in NSW

In NSW, demand for EfW is driven by:

- Resource recovery targets and high landfill levies.
- The need to divert waste from landfill to achieve recovery targets of more than 1.2 million tonnes every year.
- Population growth driving an increase in waste generation.
- The commercial viability of EfW due to increasing landfill levies and gate fees<sup>6</sup>.

<sup>5</sup> OECD, Australian National Waste Report 2018, Department of Environment and Energy.

<sup>6</sup> The charge levied upon a given quantity of waste received at a waste processing facility

EfW can also provide part of the solution to addressing Sydney's declining landfill airspace. Sydney relies on two putrescible waste<sup>7</sup> landfills to meet its waste disposal needs. From 2037, this would be limited to one location, Veolia's Woodlawn facility (220 km from the proposal site), following the expected closure of the SUEZ facility at Lucas Heights.

The total volume of MSW and C&I waste currently disposed to landfill in the Metropolitan Levy Area is approximately 3.27 million tonnes. This waste could potentially be used for energy and resource recovery.

Table 2: Volumes of MSW and C&I waste in the Metropolitan Levy Area

	Generated tonnes	Recovered tonnes	Disposed tonnes
MSW	2,959,000	1,218,000 (41.1%)	1,741,000 (58.9%)
C&I	3,007,000	1,469,000 (48.9%)	1,538,000 (51.1%)
TOTAL	5,966,000	2,687,000 (45%)	3,279,000 (55%)

Source: NSW EPA Waste Progress Report 2017-18. Metropolitan Levy Area comprises the Sydney metropolitan area, the Illawarra region and Hunter region

The proposal will target residual MSW and C&I waste in the Western Sydney market where current disposal to landfill is approximately 1.6 million tonnes per annum.

Cleanaway has a large number of existing contracts with Councils and businesses in Sydney for the collection of MSW and C&I waste and will continue to win new contracts as Councils and businesses renew their service providers. This waste is sent to Cleanaway's network of post-collection recycling and resource recovery facilities, including the Erskine Park Resource Recovery Facility in Western Sydney. Residual MSW and C&I waste from these facilities will provide the feedstock for the EfW proposal. The facility also has the flexibility to accept organic depleted waste where Councils transition to food and garden organic (FOGO) waste collection systems.

The MSW and C&I waste streams in Sydney typically comprise contaminated organics, plastics, paper and cardboard, metal and wood. Cleanaway and Macquarie Capital are conducting a longitudinal study of the Sydney MSW and C&I waste streams to develop a detailed understanding of the waste composition and calorific value.

<sup>7</sup> Putrescible waste is solid waste that contains organic matter capable of being decomposed and is typically part of municipal solid waste and commercial and industrial waste streams.

## **NSW Energy from Waste Policy Statement**

The EfW Policy Statement requires an application for an Energy Recovery Facility (ERF) (the term used in the EfW Policy Statement to describe facilities that thermally treat non-eligible waste fuels) to demonstrate that it meets several criteria.

ERFs must demonstrate that they will be using current international best practice techniques, particularly with respect to process design, emission control and monitoring, receipt of waste and management of residuals. They must use technologies that are proven, well understood and capable of handling the expected variability and type of waste feedstock.

This must be demonstrated through reference of fully operational plants using the same technologies and treating similar waste streams in other comparable jurisdictions.

Best international practice is defined by the European Industrial Emissions Directive (IED) Best Available Technology Reference (BREF) document as described earlier. Cleanaway is committed to designing the WSERRC consistent with the revised BREF, including revised emission limits.

Cleanaway has visited a number of operating EfW facilities in Europe and is currently in the process of identifying facilities to act as suitable reference facilities which have similarity in technologies, waste streams and regulatory framework.

In addition to implementing current best practice techniques, ERFs must ensure that they meet the technical, thermal efficiency and resource recovery criteria of the Policy Statement.

The technical criteria require the ERF to ensure that the gas resulting from the combustion process is raised to the correct temperature for the required time with continuous monitoring and measurement of specified emission and operational parameters.

Thermal efficiency criteria require the ERF to demonstrate that at least 25 per cent of the energy generated from the thermal treatment of the material will be captured as electricity (or an equivalent level of recovery for facilities generating heat alone).

Resource recovery criteria require the ERF to demonstrate that the feedstock is residual from bona fide resource recovery operations. Table 1 of the Policy Statement defines the percentage of the total waste received at a processing facility that may be supplied to the ERF as residual waste. Where the waste is sourced from a collection system with high levels of source separation, the percentage of residual waste that may be supplied to the ERF is higher.

The EIS will provide a detailed assessment against the requirements of best international practice and technical, thermal and resource recovery criteria in the EfW Policy Statement.



## 2.4 Proposal description

### Overview

The proposal is to:

- Build an EfW facility to thermally treat up to 500,000 tonnes per annum of residual municipal solid waste (MSW) and commercial and industrial (C&I) waste that would otherwise be sent to landfill.
- Generate up to 55 MW of power.
- Capture incinerator bottom ash from the EfW process and recover metals from the bottom ash with the recovered metals to be recycled. After metals recovery, the residual bottom ash will be transported off-site with the final use of the ash being subject to ongoing assessment (e.g. incorporation into construction materials such as road base).
- Capture and temporarily store boiler bottom ash and air pollution control residues and transport to a licenced off-site facility for final disposal.
- Build a visitor centre to help educate and inform the community on the circular economy, recycling, resource recovery and EfW.
- Build the site infrastructure needed to support the proposal including internal roads, weighbridges, parking and hardstand areas, stormwater infrastructure, fencing and landscaping.

The proposal is described under the following headings:

- Site layout.
- Operational processes.
- Flue gas treatment air pollution control.
- Management of residuals.
- Waste supply strategy.
- Construction method.
- Related development and other approvals required.

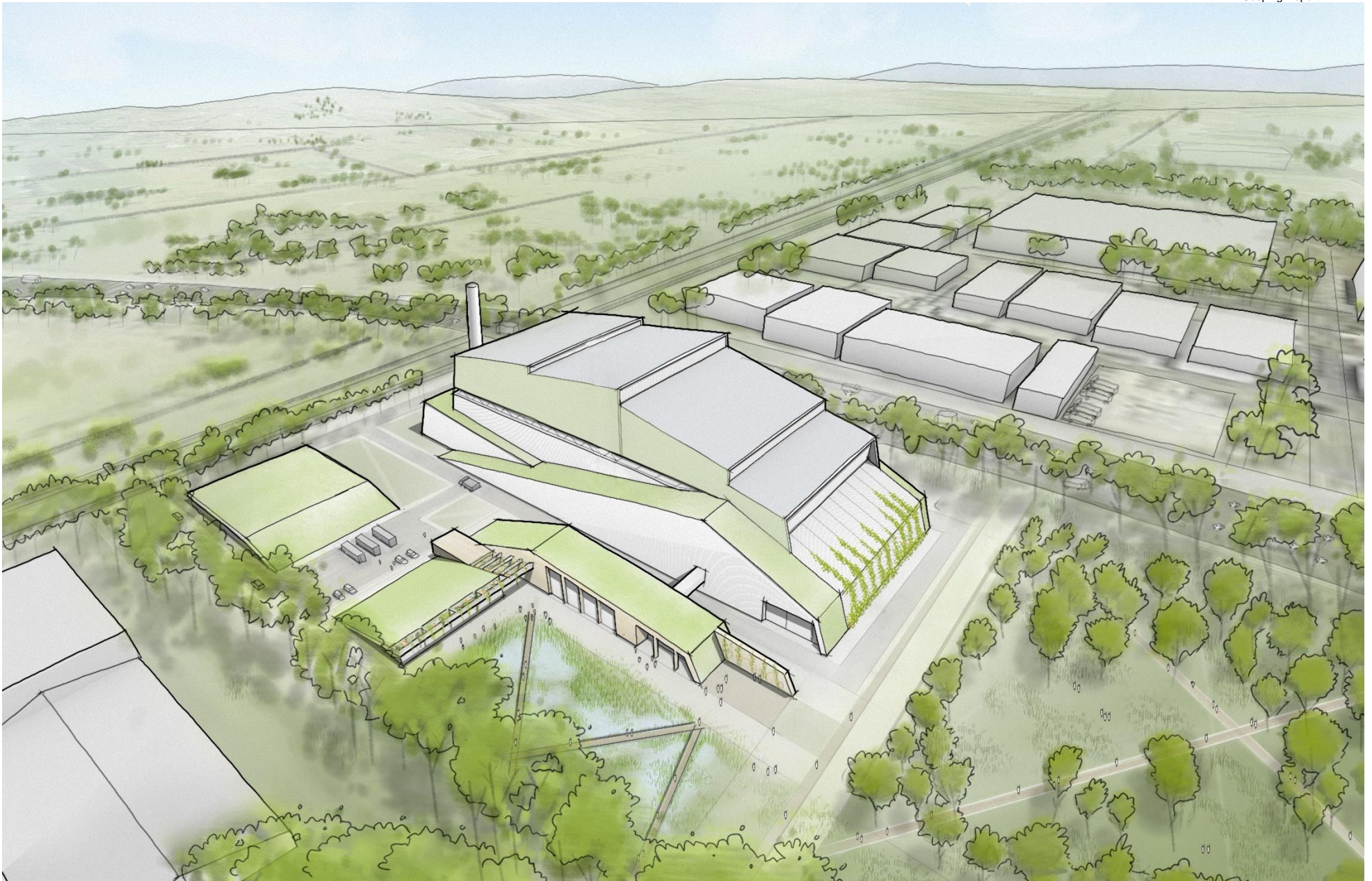


Figure 6: Indicative aerial perspective

## Site layout

Figure 6 provides an indicative aerial perspective of the site.

### EfW facility

The main components of the EfW facility would include a(n):

- Fully-enclosed waste receiving hall and access ramp.
- Bunker to temporarily store the waste feedstock, which would include overhead cranes to mix and load the process lines.
- Boiler hall comprising the process lines, a moving grate, furnace, boiler, flue gas treatment plant and stack (note: the design and height of the stack will be developed during the preparation of the EIS).
- Bag filter area.
- Steam turbine hall and generator set.
- Air-cooled steam condenser unit.
- Dedicated area including silos for storing consumables and materials for the flue gas cleaning process.
- Bottom ash storage area.
- Boiler ash and air pollution control residues storage area.
- Onsite water pumping station.
- Diesel generator.
- Visitor centre to facilitate tours and to help educate and inform the community on the circular economy, recycling, resource recovery and EfW.

The facility would be enclosed and the waste receiving hall would operate under negative pressure to limit odour emissions.

### Supporting infrastructure

The supporting infrastructure would include:

- Receiving weighbridges and associated gatehouse.
- Administrative buildings.
- Hard and soft landscaping.
- Internal service roads and car parks.



- A dedicated site access off the unnamed road located off Wallgrove Road that provides access to the Austral Bricks site. The access may be upgraded to handle the volume of waste vehicles arriving and leaving site every day.
- Stormwater and drainage infrastructure.

## Operational processes

Figure 7 illustrates a typical EfW process with the corresponding steps described in Table 1 Table 3.

The development application would seek approval for 24 / 7 operations. The proposal would create around 50 jobs during operation.

Once approved and constructed, the proposal will be managed by a facility operator with experience in running similar facilities. The facility operator will be contractually engaged through Cleanaway and will be responsible for operating the facility in accordance with all approved environmental management protocols and emission limits.

Table 3: Steps in the operational process

Step	Description
Step 1: waste deliveries and weighing area (weighbridge)	<p>Waste will be delivered to site by enclosed waste delivery vehicles. The route taken to site will depend on the origin of the waste, however all vehicles would enter the site via the site entrance off the unnamed road (Austral Bricks Road).</p> <p>The vehicles will be weighed on arrival and electronically catalogued, including information on the type and source of waste.</p> <p>Outbound vehicles will also be weighted and electronically catalogued.</p>
Step 2: waste receipt, intake and storage	<p>Waste delivery trucks will drive into the waste receiving hall, through fast acting roller shutter doors, located on the southern elevation of the building. Waste will be unloaded into chutes which convey the waste to the storage bunker.</p> <p>Deliveries can also be diverted to an inspection and quarantine area in the receiving hall if required. Inspections will be carried at a regular frequency as part of the quality assurance process for the incoming waste and in response to any uncertainties about the type and source of the waste identified at the weighbridge.</p> <p>Empty vehicles would exit the receipt hall, circulate around the site and exit over the outbound weighbridge back onto the unnamed road.</p> <p>Unsuitable waste would be rejected, and arrangements will be made for its removal to a licenced facility.</p> <p>Waste feedstock will be temporarily stored in the bunker. The bunker will have sufficient capacity to store approximately one week's normal throughput of waste.</p> <p>Bunker grab cranes will mix the waste, then feed it onto a chute to the moving grate.</p> <p>Activities in the reception hall will be monitored by operators in the control room, either directly or by CCTV cameras.</p> <p>The receipt hall and bunker would be operated under negative pressure to contain odour within the building and to capture odour in the combustion process.</p>
Step 3: combustion process	<p>Waste combustion will take place as it slowly moves along a grate. The grate will slope away from the waste feed chute. The movement of the grate floor components and the slope of the grate will cause the waste, as it burns, to move forward and downwards from the feed point to the ash discharge point. Movement of the grate floor components will also agitate the waste so that new surfaces will be continuously exposed to the flames. The rate at which the waste moves will be controlled to optimise combustion.</p> <p>The residence time of waste in the furnace will be approximately one hour.</p>

Step	Description
	<p>The main sections of the grate will be water cooled.</p> <p>Ash from the combustion process will be discharged into a water bath and then to the bottom ash bunker.</p> <p>Primary combustion air is drawn into the furnace from the waste bunker and reception hall, thus keeping these areas under negative pressure and preventing the release of odours and dust from these areas to the outside.</p> <p>The waste feed rate, the supply of combustion air and the grate speed will be controlled by an advanced combustion control system which will measure flow rate, flue gas oxygen and combustion temperature in order to obtain the best possible operational conditions and maximise steam production. This will also ensure that the technical criteria in the EfW Policy Statement are addressed.</p>
Step 4 to Step 6: energy recovery process	<p>Hot flue gases will pass through a heat recovery boiler where they will be gradually cooled while the excess heat is used to superheat steam.</p> <p>Cooled flue gases will pass into the treatment system (Step 8 to Step 11).</p> <p>Superheated steam will drive a conventional turbine to produce electricity.</p> <p>Heat can be extracted from various stages of the steam turbine and exported to other users.</p> <p>Power output is expected to be 55 MW.</p>
Step 7: ash / residue management	<p>Ash from the combustion process will be discharged into a water bath and then to the bottom ash bunker. The final use of the ash is subject to ongoing assessment (e.g. incorporation into construction materials such as road base).</p> <p>Metals will be recovered from the ash for recycling.</p> <p>Boiler ash and air pollution control residue will be collected and transported off-site to a facility licenced to receive restricted waste.</p>
Step 8 to Step 11: flue gas treatment / air pollution control (APC)	<p>The primary means of reducing NO<sub>x</sub> in the flue gases is to optimise the combustion process to reduce the formation of NO<sub>x</sub> by oxidation of the nitrogen in the combustion air.</p> <p>Flue gas cleaning will reduce NO<sub>x</sub>, acids, heavy metals and dioxins and furans.</p> <p>Flue gas particulate matter will be captured in bag filters.</p> <p>Cleaned flue gases would then be sent to the stack where they would be emitted at speed to support their adequate dispersion.</p> <p>Emissions monitoring equipment will be located in the flue gas duct so that the composition of the flue gas emitted will be the same as that monitored.</p> <p>Continuous monitoring will be undertaken for a range of parameters including: oxides of nitrogen (NO<sub>x</sub>), sulphur dioxide (SO<sub>2</sub>), particulates (dust), hydrogen Chloride (HCl), hydrogen fluoride (HF), total organic carbon (TOC), carbon monoxide (CO), temperature, oxygen content, flue gas flow.</p> <p>Regular monitoring will be undertaken for the heavy metals.</p>
Water use	<p>Boiler make-up water and flue gas quenching are the main water sources.</p> <p>Water is used to rapidly cool the bottom ash as it leaves the combustion grate to prevent dust generation.</p> <p>The steam leaving the turbine will be cooled and condensed to water in a condenser.</p> <p>The condensate will then be returned to the boiler feed water system.</p>

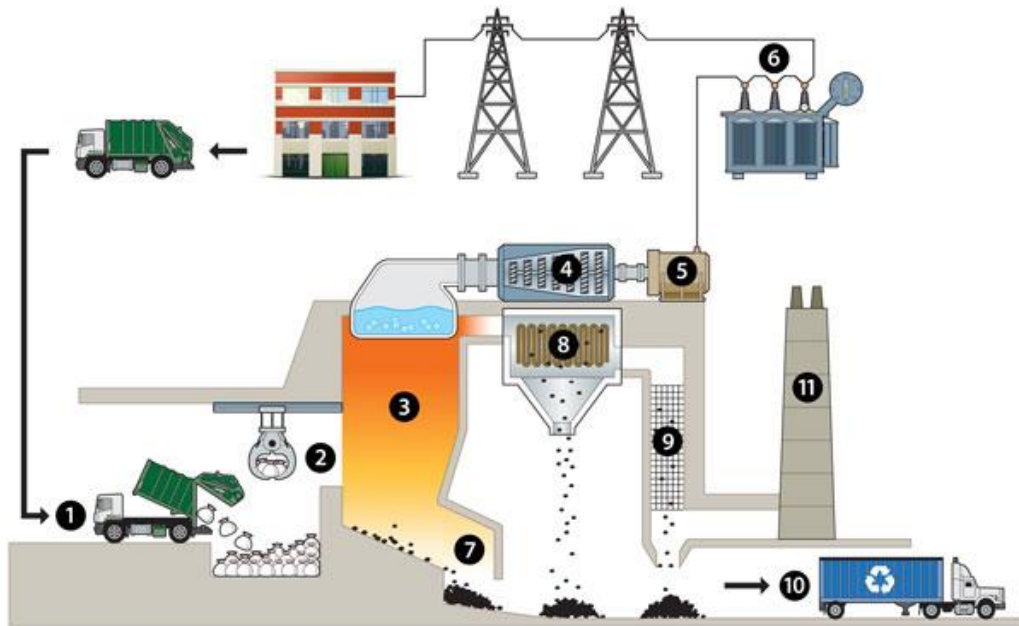


Figure 7: EfW facility indicative process

### Flue gas treatment air pollution control system

The cooled flue gases leaving the boiler pass through a series of scrubbing and cleaning processes, which comprise the Air Pollution Control (APC) system and are designed to meet best available technology emissions standards. Flue gas cleaning will reduce NO<sub>x</sub>, acids, heavy metals and dioxins and furans. Flue gas particulate matter would be captured in bag filters. Cleaned flue gases will then be sent to the stack where they would be emitted at speed to support their adequate dispersion. Emissions monitoring equipment will be located in the flue gas duct so that the composition of the flue gas emitted will be the same as that monitored.

### Monitoring

Each grate line is equipped with a dedicated Continuous Emissions Monitoring System (CEMS). The CEMS facilitates continuous online monitoring of flue gas properties and composition, thus allowing the control system to track those pollutants which can be feasibly measured online, in order to make automatic adjustments to the combustion system and the injection rates for the various APC system reagents.

For those pollutants for which online measurement is not currently feasible or sufficiently accurate, a sampling and testing regime will be established as part of the plant standard operating procedures, to ensure that the plant is constantly in compliance with its environmental obligations and to confirm the performance of the CEMS.

## Management of residuals

The EfW process will produce residual materials which will be subject to further resource recovery and recycling or disposed of at licenced facilities.

Ash from the combustion process, referred to as bottom ash, will be discharged into a water bath and then to the bottom ash bunker and metals will be recovered from the bottom ash and sold to metal recyclers.

The remaining bottom ash is inert and will either be incorporated into other construction products such as road base or disposed of at a licenced facility. This will be confirmed in the EIS.

Boiler ash and air pollution control residue will be collected and transported off-site to a facility licenced to receive restricted waste.

## Waste supply strategy

Sections 2.3 and 3 describe the residual waste streams that will provide the feedstock for the proposal.

The EIS will provide additional detail on the waste supply including the source of the waste and the location of facilities where resources are recovered from the waste to demonstrate that the feedstock is residual MSW and C&I from bona fide resource recovery operations as required by the EfW Policy Statement.

## Construction

The proposed construction staging, timing and activities will be developed while preparing the EIS. Pending approval, construction is expected to take around three years. The indicative construction method would be:

- Site establishment and enabling works, which would involve implementing construction environmental management processes; installing site fencing and worker amenities; carrying out pre-clearance inspections; clearing and levelling the development footprint; protecting, realigning and installing utilities and services where needed (e.g. the stormwater drainage), and establishing haul routes. This may include contamination remediation works if required.
- Main works, which would involve constructing and fitting-out the EfW building and installing the associated infrastructure and equipment.
- Commissioning and testing the facility.
- Finalisation work, which would include landscape planting and urban design treatments and site demobilisation.

The proposal would generate around 800 jobs during construction.

## 2.5 Related development and other approvals required

For the WSERRC to operate it may rely on additional infrastructure, referred to as related development, that may be assessed and determined under a separate process. The scope of related development, if any, will be confirmed in the EIS but may include:

- Expansion of existing resource recovery facilities and / or new facilities to recover resources from the waste streams and ensure that feedstock is residual from bona fide resource recovery operations.
- A new facility to receive, store and treat bottom ash. Options to treat and recycle this material will also be investigated (e.g. reusing in construction applications such as road base).

Depending on the scale and location, it is likely that this related development would be assessed and determined as State significant development.

## 3 Strategic context

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### 3.1 Introduction

This Chapter outlines the strategic context for the proposal including:

- Relevant government policies, strategies and plans for waste, energy and land use that support the proposal's need.
- The site's suitability for the proposed use.

### 3.2 Waste policies, strategies and plans

The NSW's waste policies are underpinned by two key objectives:

- Human health and environmental protection from the inappropriate use of waste in accordance with the *Protection of the Environment Operations Act 1997* (NSW).
- Resource management options reflecting the waste hierarchy in the *Waste Avoidance and Resource Recovery Act 2001* (NSW).

The key waste policies and strategies which are relevant to determining the need for the proposal and influencing its design are the NSW Waste Avoidance and Resource Recovery Strategy 2014-2021 (WARR Strategy) and the NSW Energy from Waste Policy Statement (the Policy Statement).

The WARR Strategy sets a landfill diversion target of 75 percent and a recycling rate of 70 percent for MSW and C&I waste by 2021-2022. The Strategy notes that reuse and recycling will remain the main avenues for diverting waste from landfill as supplemented by energy recovery in the future.

Actual recycling rates for MSW are currently short of the 2021-2022 target. They declined from 52 percent in 2010-2011 to 42 percent in 2017-2018<sup>8</sup>, highlighting the need for investment in waste infrastructure that is proven and effective.

The WARR Strategy points to the Policy Statement, released in 2014, as an important policy step to maximise resource efficiency. It also notes that the inclusion of resource recovery criteria in the EfW Policy ensures that the availability of energy recovery in NSW will not undermine current or future material resource recovery.

The EfW Policy recognises 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 environment.

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<sup>8</sup> NSW EPA, *Waste Avoidance and Resource Recovery Strategy Progress Report 2017-18* (Sydney, 2019)

The EfW Policy requires that any facility proposing to thermally treat a waste or waste-derived material that is not a listed '*eligible waste fuel*' must meet the requirements to be an energy recovery facility (ERF). The EfW Policy defines an ERF as a facility that thermally treats a waste or waste-derived material that does not meet the definition of an eligible waste fuel.

The waste that would be supplied to the WSERRC is not an *eligible waste fuel* meaning it would classify as an ERF under the EfW Policy. ERFs must meet current international best practice techniques to ensure emissions are below levels that may pose a human health or environmental risk, as detailed in Section 2.3.

The proposed WSERRC will address the objectives and requirements of the EfW Policy by targeting MSW and C&I waste that is residual from resource recovery operations and by managing impacts to avoid any unacceptable human health or environmental risks.

Other national, state and regional waste policies, strategies and plans that establish the role of EfW as part of an integrated management strategy include:

- National Waste Policy, Less Waste More Resources 2018, which aims to better-support the economy, protect community health and reduce environmental impacts by harnessing the value of materials that would otherwise be disposed of by returning them to productive use.
- NSW 2021: A Plan to Make NSW Number One (NSW 2021), as updated by the Premier's Priorities, which contributes to targets for resource recovery as identified in the WARR Strategy.
- NSW Circular Economy Policy Statement 2019, which aims to change the way products are produced, assembled, sold and used to minimise waste and reduce environmental impact. The Statement aims to support business by maximising the use of valuable resources and contributing to innovation, growth and job creation.
- Western Sydney Regional Waste Avoidance and Resource Recovery Strategy 2017-2021, which describes how the Region will contribute to the State objectives and targets established through the WARR Strategy. For Western Sydney, the aim has been to analyse future waste generation in the region and provide a combination of alternative treatment and energy recovery facilities to treat residual waste to meet the WARR Strategy targets.

### 3.3 Energy policies, strategies and plans

The proposed WSERRC is a form of utility-scale renewable energy that can contribute to meeting several Commonwealth and State objectives and targets:

- Commonwealth Renewable Energy Target Scheme, which forms part of the *Commonwealth Renewable Energy (Electricity) Act 2001*. The proposal would form an eligible generation category under the above Scheme. The large-scale renewable energy target of 33,000 GWh means that about 23.5 percent of Australia's electricity generation in 2020 needs to be from renewable sources. While it is close to the end date of the scheme, it is likely that renewable energy generation targets will extend beyond 2020.
- NSW 2021, which includes renewable energy generation targets to support the national renewable energy target (i.e. 20 percent renewable energy supply).
- NSW Renewable Energy Action Plan, which is consistent with NSW 2021 in setting a State target of 20 percent renewable energy generation by 2020.
- NSW Climate Change Policy Framework, which commits NSW to supporting the achievement of Commonwealth interim greenhouse gas emissions reduction targets of five percent below 2000 levels by 2020 and 26 to 28 percent below 2005 levels by 2030. The Framework sets an aspirational emission reduction objective for NSW of net zero emissions by 2050.

The EfW Policy emphasises that at least 25 percent of the energy generated from the thermal treatment of the waste would be captured as electricity, or an equivalent level of recovery for facilities generating heat alone.

As a source of renewable energy, the WSERRC would contribute to the renewable energy generation and emissions reduction targets described in the above policies and plans.

### 3.4 Land use policies, strategies and plans

The main strategic land use planning documents relevant to the proposal are:

- Central City District Plan (Greater Sydney Commission, 2018).
- State Environmental Planning Policy (Western Sydney Parklands) 2009 (WSP SEPP, NSW Government, 2009, see Section 4 of this Scoping Report).
- WSP Plan of Management 2030 (Western Sydney Parklands Trust, 2018).



## Central City District Plan

The site is in the Central City, one of three Cities that make up the Greater Sydney Region. The District Plan<sup>9</sup>, part of the Greater Sydney Region Plan<sup>10</sup>, sets out a vision for the Central City, which will be implemented through several objectives including ones relating to job growth and retention of industrial and urban services land.

The WSERRC would create around 800 jobs during construction and 50 jobs during operation, supporting the jobs growth objectives of the District Plan. It would also support the objective to retain industrial and urban services land by choosing to locate the facility on existing industrial land in the Wallgrove Precinct of the WSP (refer to the section on WSP Plan of Management 2030 below).

The District Plan identifies several Planning Priorities including *C19: Reducing Carbon Emissions and Managing Energy, Water and Waste Efficiently*, which gives effect to the following objectives of the Greater Sydney Region Plan 2018:

- Objective 33, a low-carbon city that contributes to net-zero emissions by 2050 and mitigates climate change.
- Objective 34, that energy and water flows are captured, used and re-used.
- Objective 35, that more waste is reused and recycled to support the development of a circular economy.

The WSERRC will contribute to these objectives by providing a renewable energy source leading to: reduced greenhouse gas emissions; capturing energy from waste materials; and emphasising the importance of only receiving residual material from higher order reuse and recycling facilities. The District Plan also identifies several actions to support implementation of the objectives. WSERRC would contribute to Action 77 of the District Plan to protect existing and identify new locations for waste recycling and management.

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<sup>9</sup> Greater Sydney Commission, Our Greater Sydney 2056: Central City District Plan – Connecting Communities (NSW Government, Sydney, 2018)

<sup>10</sup> Greater Sydney Commission, Greater Sydney Region Plan – A Metropolis of Three Cities (WSERRC Sydney, 2018)

## Western Sydney Parkland Plan of Management 2030

The Western Sydney Parklands Trust (WSPT) developed the Plan of Management 2030<sup>11</sup> that provides the strategic framework for the Parklands. The NSW Minister for the Environment and Heritage adopted the Plan of Management in December 2018.

The land use framework described in the Plan of Management identifies several land use opportunities for the WSP which include:

- Services infrastructure, where the WSP has a long-term role in providing land with low environmental or recreational value, to meet the ongoing and expanding needs of the community for services infrastructure such as electricity, gas, telecommunications, water, and sewerage.
- Business and employment, where a means of achieving financial sustainability for the WSP is to use land with low environmental or recreational values for long-term business leases. This generates income, additional local jobs and capital investment in the region.

The Plan of Management divides the WSP into sixteen precincts and includes a high-level Precinct Plan for each. The proposed site is in the Wallgrove Precinct (Precinct 6). The Plan of Management describes the existing and desired future character for the Precinct as follows:

Existing character:

- The Wallgrove Precinct (309 hectares) contains a diverse range of urban services infrastructure such as recycling, brickmaking, quarrying and the former Eastern Creek Waste Management Centre, now being decommissioned. The precinct includes agistment land adjacent to the Light Horse Interchange and the M7 Motorway.

Desired future character:

- To be an evolving precinct that includes some of the current uses such as environmental monitoring, brickmaking, agriculture and recycling sites. The precinct has potential for the development of renewable energy and recycling opportunities, agriculture, unstructured recreation and sport uses, and a potential WSPT Business Hub development.

The Plan of Management also identifies land use opportunities for the Precinct as:

- WSPT Business Hubs at sites designated by the Trust.
- Urban farming and associated facilities.
- Extraction, recycling and associated uses.
- Walking and cycling tracks.
- Unstructured recreation, sports and associated facilities.

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<sup>11</sup> Western Sydney Parklands Trust (WSPT), Plan of Management 2030 (Sydney, 2018)

- Sport, structured recreation and associated facilities.
- Environmental protection works.
- Potential Aboriginal and non-Aboriginal cultural and heritage interpretation.
- Utilities infrastructure.

The WSERRC would be consistent with the Plan of Management by using low environmental or recreational value land for utilities infrastructure and by providing employment. The desired future character for the Wallgrove Precinct includes retention of some current uses such as recycling sites and future uses such as recycling and renewable energy. The WSERRC incorporates both recycling and renewable energy and would be consistent with the Precinct's desired future character.

### 3.5 Site suitability

The site was selected following an extensive selection process that identified and assessed a long list of sites against the following criteria:

- Environmental impact and approvals risk.
- Stakeholder impact.
- Access to infrastructure and utilities.
- Size and configuration.
- Synergies with surrounding land uses.
- Site constraints (e.g. geotechnical risks).

The initial area of focus was on sites close to the Western Sydney Aerotropolis Agribusiness Precinct given the potential to provide a source of energy and heat to the commercial activities planned for the precinct, while contributing to the management of waste for the wider Aerotropolis. However, the planning framework for airspace protection would restrict the location of tall structures, such as a stack, near the Airport.

Locating the proposal to sites farther west to avoid any airspace protection restrictions raised new risks in relation to impact on rural residential locations and raised conflicts with rural land uses.

The proposed Wallgrove Road site was identified as a suitable site as it would avoid existing and planned residential areas, rural land uses and future airspace restrictions. Its location in the WSP Wallgrove Precinct would allow the WSERRC to make use of existing industrial land of low environmental and amenity value by proposing a location next to similar waste sector operations including the Global Renewables waste management facility.

Its location next to the M7 Motorway and Wallgrove Road also provides convenient road transport access.

## 4 Statutory context

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### 4.1 Introduction

This Chapter identifies the statutory framework that applies to the WSERRC development and the land on which the WSERRC would be built, including:

- Zoning and permissible land uses.
- The development assessment pathway and consent authority.
- Other NSW approvals required.
- Relevant Commonwealth planning considerations.

### 4.2 Permissibility

WSP SEPP is the principal environmental planning instrument controlling development and land use planning in the Parklands. Its aim is to put in place development controls that will enable the WSPT to develop a multi-use urban parkland for Western Sydney. All land in the Parklands is unzoned. All forms of private development other than residential or exempt development are permitted with consent. The provisions of Local Environmental Plans (LEPs) do not apply in the WSP.

The WSERRC can be characterised as electricity generating works (EGW), defined in the dictionary to the Standard Instrument Principal Local Environmental Plan (SIPLEP) as “*a building or place used for...making or generating electricity*”.

WSP SEPP also describes its relationship with State Environmental Planning Policy (Infrastructure) 2007 (ISEPP) as being:

- The development controls in Part 3 of ISEPP apply as if the WSP were in a prescribed zone under ISEPP.
- Part 3, Division 4 of ISEPP confirm that EGW is permissible with consent in a prescribed zone.

Therefore, EGW is permissible with consent in the WSP, including the proposed site.

In addition to addressing permissibility, an application for development consent would need to demonstrate the merits of the proposal by assessing its consistency with relevant strategic and statutory requirements. Part 2 of WSP SEPP identifies land use and provisions relating to development in the Parklands.

Clause 12 identifies matters to be considered by a consent authority when determining an application for development on land in the WSP (in addition to the general matters for consideration in Section 4.15 of the *Environmental Planning and Assessment Act 1979* (EP&A Act)) as follows:

*In determining a development application for development on land in the Western Parklands, the consent authority must consider such of the following matters as are relevant to the development:*

- (a) the aim of this Policy, as set out in clause 2,*
- (b) the impact on drinking water catchments and associated infrastructure,*
- (c) the impact on utility services and easements,*
- (d) the impact of carrying out the development on environmental conservation areas and the natural environment, including endangered ecological communities,*
- (e) the impact on the continuity of the Western Parklands as a corridor linking core habitat such as the endangered Cumberland Plain Woodland,*
- (f) the impact on the Western Parkland's linked north-south circulation and access network and whether the development will enable access to all parts of the Western Parklands that are available for recreational use,*
- (g) the impact on the physical and visual continuity of the Western Parklands as a scenic break in the urban fabric of western Sydney,*
- (h) the impact on public access to the Western Parklands,*
- (i) consistency with:*
  - (i) any plan of management for the parklands, that includes the Western Parklands, prepared and adopted under Part 4 of the Western Sydney Parklands Act 2006, or*
  - (ii) any precinct plan for a precinct of the parklands, that includes the Western Parklands, prepared and adopted under that Part,*
- (j) the impact on surrounding residential amenity,*
- (k) the impact on significant views,*
- (l) the effect on drainage patterns, ground water, flood patterns and wetland viability,*
- (m) the impact on heritage items,*
- (n) the impact on traffic and parking.*

Clauses 13-17 set out additional considerations for specific matters:

- Clause 13: Bulk water supply not to be impacted – consultation will be undertaken with Water NSW to manage the interface between the proposal on the Warragamba Pipeline Corridor located adjacent to the southern boundary of the site.
- Clause 14: Development in areas near nature reserves or environmental conservation areas – the site is not in or adjoining a nature reserve or conservation area.

- Clause 14A: Flood planning – the site is not in or below the flood planning level.
- Clause 15: Heritage conservation – there are no heritage items mapped for the site.
- Clause 16: Signage – any project related signage will be located and designed to comply with this Clause.
- Clause 17: Development on private land – this Clause sets out matters for consideration for development on private land in the WSP. This includes the need to carry out development on the land, the imminence of acquisition and the effect of carrying out development on acquisition costs. The application of this Clause to the proposal will be addressed during the preparation of the EIS and in consultation with the WSPT.
- Clause 17A: Essential services – the proposal will be designed to address the requirements of this Clause.
- Clause 17B: Earthworks – the proposal will be designed to address the requirements of this Clause.

A detailed assessment of how the WSERRC would address the relevant provisions of Part 2 of the WSP SEPP and Section 4.15 of the EP&A Act will be provided in the EIS.

### 4.3 Assessment pathway and consent authority

The WSERRC would be assessed and determined under Division 4.7 of the EP&A Act because of its classification as State significant development (SSD).

Clause 20 of Schedule 1 of State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP) provides that the WSERRC would be SSD as it would be for EGW and heat or cogeneration, using any energy source, including gas, coal, biofuel, distillate, waste, hydro, wave, solar or wind power, and it would have a capital investment value of more than \$30 million. The CIV for the proposal is around \$500 million.

As the site is located in the Western Sydney Parklands, it is also classified as SSD under Schedule 2 of the SRD SEPP as it is development that has a CIV of more than \$10 million on land identified as being within the Western Parklands on the Western Sydney Parklands Map within the meaning of State Environmental Planning Policy (Western Sydney Parklands) 2009.

The consent authority for SSD is either the Minister for Planning and Public Spaces or the Independent Planning Commission.

An EIS that meets the requirements set out in Schedule 2 of the Environmental Planning and Assessment Regulation 2000 (EP&A Regulation) will be required to support the State Significant Development Application (SSDA).

## 4.4 Other approvals

Section 4.41 of the EP&A Act identifies the approvals needed under other legislation that do not apply to approved SSD while section 4.42 identifies approvals required under other legislation that must be applied consistently to approved SSD.

The extent of other approvals will be confirmed in the EIS but is likely to include:

- An environmental protection licence (EPL) under the NSW *Protection of the Environment Operations Act 1997*.
- An approval under Section 138 of the NSW *Roads Act 1993*.

In addition to the SRD SEPP, ISEPP and WSP SEPP referred to earlier, other State policies may be relevant to the proposal. These will be identified and considered in the EIS and are likely to include:

- State Environmental Planning Policy No.33 Hazardous and Offensive Development.
- State Environmental Planning Policy No.55 Remediation of Land.
- State Environmental Planning Policy No.64 Advertising and Signage.

## 4.5 NSW waste legislation and guidelines

The Protection of the Environment Operations (Waste) Regulation 2014 (the POEO Waste Regulation) sets out provisions covering the way waste is managed in terms of storage, transportation and processing as well as reporting and record keeping requirements for waste facilities.

The Waste Classification Guidelines (EPA, 2014) provide advice and direction on classifying waste so that appropriate management of all waste types is achieved. Waste classification helps those involved in the generation, treatment and disposal of waste, to ensure the environmental and human health risks associated with their waste is appropriately managed in accordance with the POEO Act and its associated regulations.

The Waste Classification Guidelines would be relevant to the proposal with regard to classification and associated management of various waste streams generated during construction and operation of the facility. For example, bottom ash and air pollution control residues would need to be classified in accordance with the guidelines prior to processing and/or disposal.

## 4.6 Commonwealth planning considerations

The following Commonwealth legislation and guidelines may apply to the proposal or the land on which the proposal would be built:

- *Environmental Protection and Biodiversity Conservation Act 1999*, which protects matter of national environmental significance and Commonwealth land values.
- *Airport Act 1996*, which sets out the restriction of building heights under flight paths to protect the airspace, known as ‘prescribed airspace’. The Act and its supporting regulation aim to ensure that the airspace that aircraft fly in is obstacle free, that there is no turbulence in the flight path, that radar and other navigational equipment can operate free of interference and that airport safety lighting is not obscured.
- *National Airports Safeguarding Framework*, which sets out guiding principles to minimise the amenity impacts of airports on surrounding land uses and to ensure surrounding land uses do not present a safety risk to the operation of any airport.



## 5 Consultation and stakeholder engagement

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This Chapter explains the community and stakeholder engagement that has taken place to date and plans for ongoing engagement during the EIS preparation and development of the WSERRC design.

### 5.1 Community engagement

To support the site selection process and to identify the issues that should be addressed in the EIS, qualitative and quantitative research was carried out in late 2018 and early 2019 to explore community perceptions of an EfW facility in Western Sydney.

The research was carried out by an accredited organisation in accordance with the international quality standard for market and social research (ISO 20252:2012).

The quantitative research in early 2019 involved a community sample of 2,285 people, including 1,200 Greater Sydney residents, 395 residents in the Penrith LGA, 415 residents in the Blacktown LGA, and 275 residents in the Liverpool LGA. The sample was representative of a cross-section of age and gender across the region.

Themes identified from the survey results were:

- High living costs, lack of health service provision, and the affordability and availability of energy. Comparatively, waste management was less important.
- Around half of respondents (52 percent) said they were aware of, and knew at least a little bit about, EfW.
- After being provided with brief facts about four waste management options, 85 percent of people felt most positively about recycling, while 77 percent favoured EfW compared to 36 percent who felt positive towards landfill.
- About 70 percent of people said they would accept an EfW facility in NSW, while 54 percent said they would accept a facility in the Greater Sydney area, and 42 percent said they would accept a facility in industrial areas in a nearby suburb.

A community and stakeholder engagement strategy has been developed for the proposal from the above research with the following aims:

- Providing information about the WSERRC following its public announcement that is comprehensive and accessible, and actively seeking community views on the issues that should be addressed in the EIS, design, or by the project team.
- Consulting with the community while preparing the EIS and its supporting technical studies to seek views and input.
- Explaining the process for making submissions during the EIS public exhibition and assisting with that process.
- Continuing to update the community when responding to the submission including the assessment of issues raised by the community.

The community engagement tools include:

**Ways for community and stakeholders to receive information:**

- Postcard to alert people to the proposal and explain how to find out more information.
- Proposal brochure.
- Proposal website, including a video explaining the process and its objectives.
- A frequently asked question and answer document.
- Media information.

**Ways to have two-way information exchange:**

- 1800-information line.
- Proposal email address.
- Shopping centre pop-ups to talk to local communities.
- Proposal start-up workshop.
- Citizen's panel exploring the methods and results of the various technical studies before they are presented in the EIS.
- The project team attending community meetings.
- Stakeholder group roundtable discussions.

**Ways to submit information to the project team:**

- 1800-information line.
- Proposal email address.
- Feedback forms at events

## 5.2 Stakeholder engagement

Preliminary stakeholder engagement to support site selection and to identify issues to be addressed in the EIS started in early 2019.

As part of the planning approvals process, a scoping meeting (Planning Focus Meeting) was held with DPIE and relevant government agencies on Thursday 24<sup>th</sup> October 2019. The purpose of the scoping meeting was to present the WSERRC to DPIE and agencies so that they have a sufficient understanding to input into the development of the SEARs. Table 4 summarises the key points raised during the scoping meeting including a reference to where they have been addressed in the scoping report.

Table 4: Key points raised in scoping meeting

Issue raised	Response
<b>Inappropriate feedstock:</b> Potential for inappropriate feedstock to enter combustion process.	The WSERRC will implement waste receipt protocols and standard operating procedures based on existing international best practice techniques from current and comparable operational plants in the EU. The EfW Policy Statement requires proposed EfW facilities to use technologies that are proven, well understood and capable of handling the expected variability and type of waste feedstock. This must be demonstrated through reference to fully operational plants using the same technologies and treating like waste streams in other similar jurisdictions. Specific facilities will be identified in the EIS based on comparability of the waste feedstock, combustion technology and air pollution control methods.
<b>Future development:</b> What is the likelihood of the area surrounding the proposal site to be developed in the future?	The proposal site was chosen, following an extensive site selection process because of its separation distance to residential and other receptors, the predominantly industrial nature of surrounding land uses, and the proximity of transport infrastructure, among other factors. It is located in the western part of the Western Sydney Parklands which prohibits residential development. Within the Parklands, it is located in the Wallgrove Precinct (Precinct 6) which plans to retain a number of existing industrial and urban services land uses into the future. The area to the west is predominantly industrial, including the Western Sydney Employment Area (WSEA) which also prohibits residential development.
<b>Cumulative impacts:</b> How will the proposal take into account potential cumulative impacts with other EfW proposals?	Section 6.4 of the Scoping Report describes the overall approach to assessing cumulative impacts. Cumulative impacts from relevant future developments will be assessed as part of the EIS.
<b>Traffic and transport:</b> How will the proposal impact on the performance of the transport network?	A preliminary traffic assessment has been undertaken and has indicated that traffic generated as a result of the proposal will have a limited impact on the performance of the surrounding transport network. A full traffic impact assessment will be undertaken as part of the EIS. Traffic and transport is discussed in section 6.2.8 of this document.
<b>Related Development:</b> Are other facilities required to be developed in order for this project to go ahead?	The proposal will require the development of additional infrastructure to support its operation. This may include additional pre-processing infrastructure and infrastructure to store residuals from the EfW process such as ash. This infrastructure will be a combination of expansion of existing sites and new sites. Refer to section 2.5 'Related development and other approvals required'.
<b>Socioeconomic:</b> Is there opportunity to integrate the community into design to provide community benefits?	The proposal includes the development of a visitor centre on site to help educate and inform the community on the circular economy, recycling, resource recovery and EfW. Socioeconomic impacts will be investigated further as part of the EIS. Refer to section 6.2.6 'Social' of this document.
<b>Visual amenity:</b> Will the design take the current surrounding parkland into consideration in terms of visual amenity?	Refer to section 6.2.7 'Landscape character and visual amenity' of this document.

<p><b>Emergency procedures:</b> How would the facility manage unplanned shut downs?</p>	<p>During the preparation of the EIS, operating scenarios for the facility will be developed and tested. This will include an unplanned shutdown scenario.</p> <p>An unplanned shutdown is unlikely to happen because the facility will operate two lines which provide redundancy in case one line needs to shut down.</p> <p>In the unlikely event of a shutdown, waste would cease to be accepted at the facility and measures would be implemented immediately such as automatic shutoff of the waste feed, triggering of the backup generator to ensure the air emission and odour controls remain active and emergency shutdown valves are installed on all equipment.</p> <p>Emergency procedures will be developed for the facility. Emergency scenarios will be investigated, and mitigation measures prepared as part of the EIS.</p>
<p><b>Reference facilities:</b> Identification of comparable operating reference facilities.</p>	<p>The EfW Policy Statement requires proposed EfW facilities to use technologies that are proven, well understood and capable of handling the expected variability and type of waste feedstock. This must be demonstrated through reference to fully operational plants using the same technologies and treating like waste streams in other similar jurisdictions.</p> <p>There are several comparable reference facilities operating in the EU. Specific facilities will be identified in the EIS based on comparability of the waste feedstock, combustion technology and air pollution control methods.</p>
<p><b>Airspace operations:</b> Aviation and Western Sydney Airport flight path considerations need to be addressed.</p>	<p>Consultation with CASA and Western Sydney Airport Corporation (WSACo) has confirmed that the facility is unlikely to impact on the protected airspace of the new Western Sydney Airport. Further consultation will be undertaken as the details of the protected airspace are developed.</p> <p>Refer to section 6.2.12 'Airspace operations' of this document.</p>
<p><b>Contamination – construction:</b> How will contamination be managed during construction and will contamination from other sites be considered such as nearby landfills?</p>	<p>Based on historical and current land uses and potential for off-site leachate and gas migration from the former landfill located to the east and north, there is a risk of contamination on site which will be investigated further during the EIS.</p> <p>If contamination is detected, appropriate management and mitigation measures will be implemented to prevent impacts to workers or the environment.</p> <p>Refer to section 6.2.13 'Contamination, soil and geology' of this document.</p>
<p><b>Site access:</b> Interface between the proposal and the Warragamba Pipeline Corridor adjacent to the southern boundary of the site.</p>	<p>Preliminary consultation has been undertaken with WaterNSW to understand their requirements in relation to protection of the Warragamba Pipeline Corridor which runs adjacent to the southern boundary of the site. Further consultation will be undertaken with WaterNSW during the development of the EIS to ensure the design, construction and operation of the proposal does not impact on the Corridor, and that the proposal can continue to operate during any future maintenance or upgrade works to the Corridor.</p> <p>Refer to sections 6.2.8 'Traffic and transport' and 6.2.9 'Water – surface, groundwater and hydrology' of this document.</p>

Stakeholder engagement will continue while preparing the EIS and developing the design.

As a minimum it will include the following government departments and agencies:

- Air Services Australia
- Civil Aviation Safety Authority (CASA)
- Western Sydney Airport Corporation (WSACo)
- Commonwealth Department of Energy and Environment
- NSW Department of Planning, Industry and Environment (DPIE).
- Western Sydney Parklands Trust (WSPT)
- NSW Environment Protection Authority (EPA)
- Office of Strategic Lands
- Blacktown Council, Fairfield Council and other Western Sydney councils.
- NSW Department of Health
- Transport for NSW including the Roads and Maritime
- Safe Work NSW
- NSW Department of Industry, including the Office of Water
- NSW Office of Environment and Heritage (NSW OEH)
- Water NSW
- NSW Fire and Rescue

As a minimum it will include the following non-government stakeholders:

- The local Member of Parliament.
- Relevant portfolio Ministers.
- Local Government councillors.
- Local and regional environmental groups and organisations.
- Local community organisations.
- Industry groups, such as the Western Sydney Business Chamber.
- Waste management organisations.
- The Local Aboriginal Land Council.

The project team will engage with residents and community groups interested in the WSERRC, while also actively contacting residents across the Blacktown and Fairfield areas.

Further information about the proposal, including the programme of community and stakeholder engagement activities, can be found at [www.energyandresourcecentre.com.au](http://www.energyandresourcecentre.com.au)



## 6 Environmental scoping

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### 6.1 Introduction

One of the important functions of the Scoping Report is to identify the issues that should be assessed in the EIS, including the approach to assessment, to inform the Secretary in preparing SEARs.

The remainder of this chapter is structured as follows:

- Section 6.2 includes a table summarising the outcome of the environmental scoping exercise (risk assessment), identifying the issues that should be assessed in the EIS and their categorisation as ‘key’ or ‘other’ issues. This is supported by additional information describing the existing environment for each issue, the potential impacts as a result of the proposal, and the proposed approach to assessment.
- Section 6.3 documents those issues not taken forward for further assessment in the EIS and the reasons why.
- Section 6.4 provides an overview of the proposed cumulative impact assessment approach for the EIS.

### 6.2 Environmental scoping

Environmental scoping is the process used to identify the issues that will be assessed in the EIS. The methodology used for environmental scoping for the proposal involved the following steps:

- Description of the existing environment relevant to each issue (e.g. for traffic and transport, a description of the local transport network and its current performance).
- Identification of the aspects of the proposal that may interact with the existing environment to identify potential impacts (e.g. generation of additional traffic during operation of the proposal). Preliminary assessment of the impact to consider whether the impact is likely to happen and whether the consequences of the impact would be material. The concepts of likelihood and consequence are commonly used in risk assessments and have been used in a simple form for the purpose of the environmental scoping exercise.
- Likelihood of impact (negative or positive) refers to the impact that would result taking into account mitigation measures. This recognises that for many issues, mitigation is an integral part of the project description. For example, the air pollution controls which clean the air prior to its discharge are a key part of the project.

- The concept of material impact is similar to the concept of significance which is used throughout impact assessment practice. However, significance has a specific meaning within the *Environmental Planning & Assessment Act 1979*, therefore material is used to avoid any confusion.
- Consider community perceptions of potential impacts based on the findings of the community engagement undertaken to date and community responses to similar projects.
- Use the above information to categorise the issue as either ‘Key’ or ‘Other’ issues. Key issues are those where there is a likelihood of a material impact or where there is a high level of community concern about the issue. Key issues require a detailed assessment in the EIS to better understand the impact or to develop project specific mitigation measures. Other issues are those where a material impact is not likely. A less detailed assessment may be required, either because the impact is well understood or there are standard mitigation measures available to manage the impact.
- Note that most issues can be broken down into components, for example, construction dust and operational air emissions are part of Air Quality and Odour for the purposes of environmental scoping. Where one component of the issue is categorised as a ‘key issue’ and another component is categorised as an ‘other issue’, the overall issue – Air Quality and Odour – is considered to be a ‘key issue’.
- Identify issues that were considered during scoping but are not subject to any further assessment in the EIS as they are unlikely to have an impact on the receiving environment.

The use of the above assessment categories follows the approach described in the Department of Planning’s Draft EIA Guidelines for State Significant Projects, exhibited in June 2017. The Draft Guidelines described a process to identify which elements of the receiving environment (matters) are potentially impacted by a proposed development and the level of assessment needed to predict and understand the impact and mitigation measures.

The Draft Guidelines also considered cumulative impacts, where the elements of the receiving environment are affected from the combination of a proposal’s impacts and the impacts of other committed and approved projects.

The environmental scoping process is designed to allow decisions to be made using professional judgement and the best-available information at the time. It is not expected that detailed technical assessment is carried out at this stage to inform the scoping process. However, it is expected that where there are data gaps or points of uncertainty in relation to an issue, precaution is adopted, and the issue is treated as key.

Table 5 summarises the outcomes of the environmental scoping exercise, with each issue categorised as Key or Other based on the methodology described above.

Table 5: Environmental Scoping

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
Waste management	
<ul style="list-style-type: none"> <li>Key issue</li> </ul>	<p>Waste Supply - Resource Recovery Criteria:</p> <ul style="list-style-type: none"> <li>Likelihood: it is <b>unlikely</b> that waste received at the EfW facility will be non-compliant with the resource recovery criteria of the EfW Policy as waste supply arrangements would ensure waste is residual from resource recovery operations.</li> <li>Consequence: receipt of non-compliant waste would be <b>material</b> as it would result in the use of a resource which has a higher order value in the waste hierarchy and non-compliance with the EfW Policy.</li> </ul> <p>Waste Supply – Hazardous Waste:</p> <ul style="list-style-type: none"> <li>Likelihood: it is <b>unlikely</b> that hazardous waste will enter the combustion process as the waste receipt and handling process requires in-bound vehicles to provide documentation on the source and type of waste. Loads can be inspected in the receipt hall and arrangements made for unapproved waste to be transported off-site.</li> <li>Consequence: combustion of hazardous waste in the EfW process would be <b>material</b> as it would generate additional contaminants in the flue gas. Ensuring hazardous waste does not enter the combustion process is an important issue for the community.</li> </ul> <p>Residual waste management:</p> <ul style="list-style-type: none"> <li>Likelihood: it is <b>unlikely</b> that residual waste from the EfW process (bottom ash, boiler ash and air pollution control residues) will be disposed at facilities that are not approved and licenced to receive this type of waste.</li> <li>Consequence: inappropriate management and disposal of residual waste would be <b>material</b> because of the potential impacts on land and water. Residual waste management is an important issue for the community.</li> </ul>
Air quality and odour	
<ul style="list-style-type: none"> <li>Key issue</li> </ul>	<p>Air quality:</p> <ul style="list-style-type: none"> <li>Likelihood: it is <b>unlikely</b> that emissions from the stack will exceed air quality standards because of the air pollution controls incorporated into the EfW process and facility design. These controls are based on similar plants operating in the EU which demonstrate that actual emissions are consistently within best international practice standards.</li> <li>Consequence: exceedance of air quality standards as a result of emissions from the stack would be <b>material</b> because of the potential impacts on air quality and human health. Air quality is an important issue for the community.</li> </ul> <p>Odour:</p> <ul style="list-style-type: none"> <li>Likelihood: emissions of odour from the receipt hall are <b>unlikely</b> as the building operates under negative pressure with fast acting roller shutter doors containing odour within the building. Air is drawn through the combustion chamber destroying odour in the air.</li> <li>Consequence: odour emissions would be <b>not material</b> because of the distance to residential areas. Odour is an important issue for the community.</li> </ul>

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
● Other issue	<p>Air quality - construction:</p> <ul style="list-style-type: none"> <li>• Likelihood: generation of dust off-site during construction is <b>unlikely</b> with the implementation of standard construction environmental management measures.</li> <li>• Consequence: off-site dust generation would be <b>not material</b> given the separation distance to residential areas and the industrial character of surrounding land use.</li> </ul>
Human health	
● Key issue	<p>Human health – air quality:</p> <ul style="list-style-type: none"> <li>• Likelihood: exposure of people to unacceptable levels of air emissions from the stack is <b>unlikely</b> because of the air pollution controls incorporated into the EfW process.</li> <li>• Consequence: exposure of people to unacceptable levels of air emissions from the stack would be <b>material</b> because of the impact on human health. Air quality related human health risk is an important issue for the community.</li> </ul> <p>Human health – soil contamination:</p> <ul style="list-style-type: none"> <li>• Likelihood: exposure of workers to contaminants in soil disturbed and mobilised during construction is <b>unlikely</b> because of the construction environmental management and material management procedures that will be used during construction.</li> <li>• Consequence: exposure of workers to contaminants in soil is <b>material</b> because of the potential impacts on the health of workers.</li> </ul> <p>Human health – potable water quality:</p> <ul style="list-style-type: none"> <li>• Likelihood: exposure of people to unacceptable levels of pollutants being deposited on potable water sources (such as Prospect Reservoir) from air emissions from the stack is <b>unlikely</b> because of the air pollution controls incorporated into the EfW process.</li> <li>• Consequence: exposure of people to unacceptable levels of pollutants in potable water sources would be <b>material</b> because of the impact on human health. Water quality related human health risk is an important issue for the community.</li> </ul>
● Other issue	<p>Human health – disposal of contaminated soil:</p> <ul style="list-style-type: none"> <li>• Likelihood: exposure of the community from mobilisation of soil contaminants to off-site locations is <b>unlikely</b> because of the management procedures that will be used during construction.</li> <li>• Consequence: community exposure to mobilised contaminants is <b>material</b> because of the potential health impacts to the community.</li> </ul>
Noise and vibration	
● Key issue	<p>Noise – EfW operations:</p> <ul style="list-style-type: none"> <li>• Likelihood: increased noise in the area around the proposal is <b>likely</b> as a result of operation of the EfW facility.</li> <li>• Consequence: increased noise is <b>material</b> because of the potential impact on recreational users in the Parklands. However, the facility is located around 1 km from the nearest residential area.</li> </ul>

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
	<p>Noise – construction:</p> <ul style="list-style-type: none"> <li>• Likelihood: noise from construction activities is <b>likely</b>.</li> <li>• Consequence: noise impacts are <b>material</b> because of the potential impact on recreational users in the Parklands and occupants of neighbouring industrial facilities during the construction period.</li> </ul>
<ul style="list-style-type: none"> <li>• Other issue</li> </ul>	<p>Noise – transport:</p> <ul style="list-style-type: none"> <li>• Likelihood: increased noise along transport routes as result of truck movements generated by the proposal is <b>likely</b>.</li> <li>• Consequence: while truck routes are not yet known, increased noise from truck movements is <b>not material</b> as the overall contribution to traffic on the road network is minor and will be primarily located in industrial areas.</li> </ul>
Water – surface, groundwater and hydrology	
<ul style="list-style-type: none"> <li>• Key issue</li> </ul>	<p>Surface water – run-off:</p> <ul style="list-style-type: none"> <li>• Likelihood: increased surface water run-off as a result of a permanent increase in the impervious area of the site is <b>likely</b>, however, surface water management infrastructure will be incorporated into the site layout and design to minimise the risk.</li> <li>• Consequence: increased surface water run-off is <b>material</b> because of the potential impacts on Council surface water infrastructure, the Warragamba Pipeline Corridor and neighbouring properties.</li> </ul> <p>Groundwater – flow:</p> <ul style="list-style-type: none"> <li>• Likelihood: depth to groundwater is unknown, however, the proposal involves below ground structures – waste receival bunker and bottom ash storage bunker (subject to design development). Impact on groundwater is assumed to be <b>likely</b>.</li> <li>• Consequence: potential groundwater retardation and change in flow due to the construction of below ground structures is <b>material</b> because of impacts on groundwater movement and character.</li> </ul> <p>Groundwater – contaminants:</p> <ul style="list-style-type: none"> <li>• Likelihood: construction of below ground structures will <b>likely</b> impact on groundwater and may mobilise or expose contaminants in the groundwater.</li> <li>• Consequence: potential mobilisation of contaminants in groundwater is <b>material</b> because of the risk of worker and community exposure to contaminants.</li> </ul>



Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
● Other issue	<p>Water quality - construction:</p> <ul style="list-style-type: none"> <li>• Likelihood: erosion and sedimentation dispersion during construction is <b>unlikely</b> when standard construction environmental management measures are used.</li> <li>• Consequence: erosion and sedimentation dispersion during construction causing impacts on water quality is <b>not material</b> because of the distance to watercourses and the ability to manage erosion and sedimentation on site with standard construction environmental management measures.</li> </ul>
Traffic and transport	
● Key issue	<p>Traffic – network performance (operation):</p> <ul style="list-style-type: none"> <li>• Likelihood: the proposal is <b>likely</b> to generate an increase in car and truck movements on the road during operations.</li> <li>• Consequence: the impact of the increase in traffic on network performance is <b>not material</b> because traffic generated would be minor in the context of overall traffic volumes.</li> </ul> <p>Traffic – access:</p> <ul style="list-style-type: none"> <li>• Likelihood: the proposal is <b>likely</b> to generate an increase in car and truck movements and a change in vehicle types using the access to the site.</li> <li>• Consequence: the increase in car and truck movements and change in vehicle types is <b>material</b> as it will impact on the ability of the existing access to accommodate site traffic, potentially requiring upgrade to the access.</li> </ul> <p>Traffic – access upgrade / interface with Warragamba Pipeline:</p> <ul style="list-style-type: none"> <li>• Likelihood: any required upgrade to the access road will require construction works over the Warragamba Pipeline Corridor, owned by Water NSW, and is <b>unlikely</b> to cause any damage to this infrastructure and associated ecology when standard construction environmental management measures are used.</li> <li>• Consequence: the potential impact of required upgrades on the Corridor is <b>material</b> as the Corridor contains critical water supply infrastructure.</li> </ul>
● Other issue	<p>Traffic – network performance (construction):</p> <ul style="list-style-type: none"> <li>• Likelihood: construction of the proposal is <b>likely</b> to generate a temporary increase in truck and vehicle movements on the local road network.</li> <li>• Consequence: the impact of construction traffic on the local road network is <b>not material</b> as the additional vehicle movements would be negligible compared to existing volumes.</li> </ul>

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
Hazard and risk	
● Key issue	<p>Hazard and risk – incidents related to dangerous goods:</p> <ul style="list-style-type: none"> <li>• Likelihood: the storage of dangerous goods on site is <b>unlikely</b> to result in incidents which may pose a risk to employees and off-site properties as materials will be handled and stored in accordance with the relevant requirements of the Dangerous Goods Code.</li> <li>• Consequence: incidents resulting from the inappropriate handling and storage of dangerous goods are <b>material</b> because of the potential exposure of employees and off-site properties to hazards.</li> </ul>
● Other issue	<p>Hazard and risk – construction incidents related to dangerous goods:</p> <ul style="list-style-type: none"> <li>• Likelihood: worker incidents, spills and leaks and exposure to contaminated soil during construction are <b>unlikely</b> as the construction contractor will implement site safety and material handling procedures.</li> <li>• Consequence: impacts from worker incidents, spills and leaks and exposure to contaminated soil during construction are <b>material</b> because of the potential exposure of workers and off-site properties to hazards.</li> </ul>
Flora and fauna	
● Key issue	<p>Flora and fauna – terrestrial:</p> <ul style="list-style-type: none"> <li>• Likelihood: the clearing of vegetation during construction is <b>likely</b>, however, vegetation communities with habitat value are located on the eastern portion of the site and will be avoided to the extent possible through the design and layout of the site.</li> <li>• Consequence: the impact of vegetation clearing is <b>material</b> because of the presence of vegetation communities with habitat value on part of the site.</li> </ul> <p>Flora and fauna – aquatic:</p> <ul style="list-style-type: none"> <li>• Likelihood: increased surface water run-off to the pond in the eastern part of the site will <b>likely</b> affect any aquatic ecology due to dirty surface water run-off into the pond however, this risk will be managed through construction environmental management measures and permanent surface water management measures used on site.</li> <li>• Consequence: the impact of run-off on aquatic ecology is unknown and is assumed to be <b>material</b>.</li> </ul>
● Other issue	<p>Fauna – artificial light:</p> <ul style="list-style-type: none"> <li>• Likelihood: the proposal will introduce artificial light sources to the site which is <b>likely</b> to impact fauna and fauna habitat.</li> <li>• Consequence: the impact on fauna and fauna habitat from the introduction of an artificial light source is <b>not material</b> as the site is located between existing light sources such as the M7 motorway and the Global Renewables facility.</li> </ul>

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
Landscape character and visual amenity	
<ul style="list-style-type: none"> <li>● Key issue</li> </ul>	<p>Landscape and visual:</p> <ul style="list-style-type: none"> <li>● Likelihood: the proposal will introduce a new built form at a different mass and scale to the surrounding built environment which will <b>likely</b> impact on visual amenity, however architectural design of the facility will ensure this impact is minimised.</li> <li>● Consequence: the impact of the new built form on visual amenity would be <b>material</b> due to the scale of the stack and mass and scale of the main building compared to existing industrial built form in the surrounding area.</li> </ul>
Greenhouse gas emissions	
<ul style="list-style-type: none"> <li>● Key issue</li> </ul>	<p>GHG emissions:</p> <ul style="list-style-type: none"> <li>● Likelihood: the proposal is <b>likely</b> to result in a net reduction in GHG emissions due to avoidance of emissions from landfill gas and generation of renewable energy.</li> <li>● Consequence: the impact of the GHG emissions reduction is <b>material</b> as it will contribute to NSW and National policy objectives in relation to climate change and renewable energy generation.</li> </ul>
Airspace operations	
<ul style="list-style-type: none"> <li>● Key issue</li> </ul>	<p>Airspace – intrusion</p> <ul style="list-style-type: none"> <li>● Likelihood: the proposal is unlikely to intrude into the protected airspace of the new Western Sydney Airport (OLS and PAN-OPS) because of its distance from the Airport and the design of the facility. However, as the PAN-OPS for the Airport has not yet been defined, intrusion into the airspace is assumed to be <b>likely</b> for the purposes of the Scoping Report and until such time that the PAN-OPS is defined.</li> <li>● Consequence: the impact of intrusion into protected airspace is <b>material</b> as it would present a risk to aviation safety.</li> </ul>
Contamination, geology and soils	
<ul style="list-style-type: none"> <li>● Key issue</li> </ul>	<p>Contamination</p> <ul style="list-style-type: none"> <li>● Likelihood: disturbance and mobilisation of soil contaminants during construction is <b>likely</b> but risks will be managed through construction environmental management and material handling procedures.</li> <li>● Consequence: impacts of exposure to workers and off-site properties to soil contaminants is <b>material</b>.</li> </ul>

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
● Other issue	<p>Soils:</p> <ul style="list-style-type: none"> <li>• Likelihood: erosion and sedimentation dispersion during construction is <b>unlikely</b> when standard construction environmental management measures are used.</li> <li>• Consequence: erosion and sedimentation dispersion during construction causing impacts on water quality is <b>not material</b> because of the distance to watercourses and the ability to manage erosion and sedimentation on site with standard construction environmental management measures.</li> </ul>
Services and utilities	
● Key issue	<p>Connection to electricity grid:</p> <ul style="list-style-type: none"> <li>• Likelihood: it is <b>likely</b> that the proposal will require a new connection to the electricity grid to allow the export of power from the EfW facility.</li> <li>• Consequence: the capacity of the existing electricity grid infrastructure to accommodate a new connection to the site is unknown, therefore the impact is assumed to be <b>material</b>.</li> </ul> <p>Connection to other services:</p> <ul style="list-style-type: none"> <li>• Likelihood: it is <b>likely</b> that the proposal will require new connections to utility services such as water supply, drainage and wastewater.</li> <li>• Consequence: the capacity of the existing services infrastructure to accommodate new connections to the site is unknown, therefore, the impact is assumed to be <b>material</b>.</li> </ul>
Social	
● Key issue	<p>Social:</p> <ul style="list-style-type: none"> <li>• Likelihood: the proposal is <b>likely</b> to have real and perceived impacts on people and communities through a combination of impact pathways described in the above sections. Impacts can be avoided, mitigated and managed. The proposal will undertake a comprehensive community and stakeholder engagement strategy during the preparation of the EIS to address community concerns – real and perceived – about the proposal.</li> <li>• Consequence: impacts on people and communities, through a variety of impact pathways, is <b>material</b>.</li> </ul>

Issue and categorisation	Likelihood of impact (following mitigation): likely or unlikely Consequences of impact: material or not material
Heritage	
No further assessment required	<p>Heritage:</p> <ul style="list-style-type: none"> <li>• The area is low-lying and next to a first order drainage line. It therefore within an area of low Aboriginal heritage sensitivity and potential. The lack of heritage and archaeological value can be further reinforced by the level of previous disturbance associated with extensive modern land use practices.</li> <li>• Desktop studies and a site assessment confirmed a low-level of archaeological sensitivity and potential across the site based on the distribution of registered recorded archaeological sites supported by a credible and detailed heritage investigation record in the area. Consistent with these studies, neither the desktop assessment nor site inspection identified any sites, objects or archaeological potential onsite or locally. The evidence collected is therefore considered sufficient to discount heritage impacts.</li> <li>• Based on the heritage assessment undertaken to date, heritage impacts are considered <b>unlikely</b>.</li> </ul>
Bushfire	
No further assessment required	The site is not mapped as Bush Fire Prone Land (BFPL); therefore, no further assessment of bushfire risk is proposed.



The remainder of this section describes the proposed approach and scope of assessment for each of the issues identified in Table 5 for inclusion in the EIS.

For each issue, the existing environment relevant to that issue is described, with a preliminary assessment of the potential environmental impacts from building and operating the proposal followed by a description of how that impact would be assessed in the EIS.

*Several issues, particularly those where the focus is on offsite impacts, have similarities in the receiving environment relevant to their impact assessment. This includes air quality, human health, noise and vibration, hazards and risks and social impact assessment.*

*To avoid duplication, the receiving environment is described under the air quality section and referenced in each of the other sections, with any additional aspects of the receiving environment relevant to that assessment identified.*

## 6.2.1 Waste management

### Existing Environment

The existing environment for waste and feedstock management is the waste sector in Western Sydney which has been described in Chapters 2 and 3 of this report.

### Potential impacts

The potential waste management impacts are:

#### *Construction:*

- Management of waste during construction to minimise waste generation and ensure appropriate handling and disposal.

#### *Operations:*

- Demonstration that waste feedstock is residual from resource recovery operations in accordance with the EfW Policy Statement.
- Development of procedures to ensure proper handling and receipt of incoming feedstock and ensuring inappropriate waste does not enter combustion process.
- Risks associated with management of process waste by-products such as bottom ash, boiler ash and air pollution control residues.

### Approach to assessment

#### *Construction:*

- A waste management plan (WMP) would be developed to manage construction waste on site to ensure that waste is minimised.

### *Operations:*

- The waste supply strategy, including management of feedstock, is considered part of the proposal description. This is described in Section 2 and in the discussion of the EfW Policy in Section 3. The waste supply strategy in the EIS would demonstrate compliance with the resource recovery criteria of the EfW Policy Statement by describing the source of the waste and the resource recovery facilities where waste has been processed to produce the residual waste feedstock for the EfW facility.
- The assessment of residual waste would involve a characterisation study to classify the bottom ash, boiler ash, air pollution control residues and unsuitable feedstock in the receival hall in accordance with the EPA Waste Classification Guidelines. Information on these residual wastes and the proposed management approach is provided in Chapter 2.
- An assessment of how the proposal complies with the NSW EfW Policy Statement would be provided in the EIS. In addition to demonstrating how the resource recovery criteria are met and describing the approach to residual waste management, this assessment will describe how the proposal meets international best available technology in relation to emissions and process control, compare the proposal to nominated reference facilities and assess the proposal against the technical and thermal efficiency criteria in the Policy.

## **6.2.2 Air quality and odour**

### **Existing environment**

The site is located within the Wallgrove Precinct of the Western Sydney Parklands and is surrounded by other industrial businesses. The closest residential areas are located about 1km to the south.

Global Renewables waste management facility neighbours the property on the eastern boundary. There is also quarry and mining activities south of the site and waste management and former landfill activities around the site.

The M7 motorway is located immediately west of the site with the Eastern Creek industrial area located farther to the west.

There is no public and social infrastructure located at the site. The closest infrastructure is in the WSP. While the site is within the administrative boundary of these Parklands, the closest publicly accessible area is located about 1 km north of the site.

Other forms of public and social infrastructure include the Sydney Motorsport Park located about 1.4 km north-east, the Drift School Australia, a driving school, about 1.5 km north-east and the Western Sydney International Dragway, drag racing facility, about 1.4 km east of the site. The Prospect Reservoir is about 1.7 km east of the site, which is supplied by the Warragamba Pipelines that run adjacent to the southern boundary of site.

Horsley Park Public School is the nearest school at over 2 km south of the site. A childcare centre is located within the Eastern Creek industrial area approximately 1 km to the west of the site.

Except for a few times each year, where short-term events such as hazard reduction burns, bushfires and the use of wood burning stoves affect the local ambient air quality, pollutant concentrations in the surrounding environment are typically well below the respective health-based criteria (NSW EPA, 2016).

## Potential impacts

Potential air quality and odour impacts include:

### *Construction*

- Construction air quality impacts including dust from site activities and particulates from construction traffic and plant.

### *Operation*

- Operational air quality impacts are associated with emissions from the facility and cumulative air quality impacts with other emission sources. Impacts are unlikely as other comparable facilities in the EU have been successfully operating within stringent air quality standards set by the BREF. Air pollution controls used in these facilities will be incorporated into the proposal to ensure emissions are within BREF standards. Air quality impact is a key issue of concern to the community.
- Odour emissions are unlikely as the facility will operate under negative pressure with fast acting roller shutter doors to contain odour within the building. However, there has been long standing concern in the Western Sydney region about odour emissions from waste management facilities, and for this reason odour is categorised as a key issue.

## Approach to assessment

### *Construction:*

- An assessment of construction related impacts will be carried out, including dust from excavation and earthworks and changes to air quality resulting from construction-related traffic.

### *Operations:*

The following activities will be carried out to assess operational air quality impacts and inform the design of the proposal:

- A review of local air quality and meteorological data in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2017). This will be used to identify the most representative data to describe ambient conditions at the site for modelling.

- Identification of all receivers, such as residences, schools, hospitals, aged-care facilities, businesses and public open spaces, within the airshed. Key representative sensitive receivers will be identified and selected for the impact assessment.
- A quantitative assessment of operational air quality and odour emissions in accordance with the *Approved Methods for the Modelling and Assessment of Air Pollutants in New South Wales* (EPA, 2017) and related EPA guidelines such as the *Technical Framework and Technical Notes for the Assessment of Odour from Stationary Sources in New South Wales* (EPA 2006). This will involve modelling all key air pollutant and odour emissions from the site. While this will mainly focus on emissions from the facility's stack, it will also consider emissions from all other significant sources onsite such as truck movements, diesel generators (factoring in their limited use) and the waste storage bunker.
- Calibration with NSW Government Sydney air quality monitoring stations in the vicinity of the site (Prospect, Bringelly, St Marys, Liverpool).
- Installation of a temporary air quality monitoring station next to the nearest residence.
- Modelling to predict the maximum ground level pollutant and odour concentrations in the airshed under various operating scenarios and weather conditions. The modelling will also predict pollutant and odour concentrations at the identified key receivers. The modelling predictions will be used to inform the design and specification of air pollution controls in the facility with the aim of demonstrating that the WSERRC can operate to a level and standard that can treat and manage emissions so that they present no adverse human health or environmental impacts consistent with the requirements of the EfW Policy. This means demonstrating being able to operate well within the air emission limits set under Group 6 of the Protection of Environment Operations (Clean Air) Regulation 2010 and the National Environment Protection (Ambient Air Quality) Measure and IED and BREF (as discussed in Chapter 2).
- An assessment of the stack's plume-rise to evaluate its potential impact on the future operation of the Western Sydney International Airport's prescribed airspace (Section 4.6). The initial evaluation is that the stack plume rise would not cause any air turbulence in the prescribed airspace and therefore it would not affect future airport operations, nor would it present an aviation safety risk or concern.

As required under the EfW Policy, measured emissions from other operational reference site(s) will be used to guide the emissions inputs to the modelling (Section 2.3). The reference site(s) will be selected based on the ability of the site to demonstrate the effectiveness of the proposed technologies that would be adopted for this proposal to treat and abate emissions.

- Identification of mitigation measures focussing on an operational management plan that will explain the need for continuous monitoring that feeds back to facility operations, the measures to manage fugitive odour emissions, the purpose and role of a community liaison group, the consultation and complaints handling process, and the process for dealing with atypical operating conditions such as incidents and emergencies.
- Consultation with the NSW EPA, DPIE, Councils, Air Services, Civil Aviation Safety Authority (CASA) and WSA Co will continue throughout the EIS to ensure the approach to air quality assessment reflects stakeholder requirements. This will extend to discussions on the selection of operational reference sites that can effectively demonstrate the technologies that are proposed for adoption at the WSERRC.

### 6.2.3 Human health

#### Existing environment

The description of the existing environment and key sensitive receivers for the air quality section is also relevant to human health but also considers risks to neighbouring properties. The assessment will consider the related human health risks and implications from other assessments including air quality, contamination, noise, dust and hazards and risks.

Other aspects of the existing environment relevant to the human health assessment include drinking water sources, such as the Prospect Reservoir and rainwater tanks, and existing agricultural activities that are in the surrounding area and airshed.

#### Potential impacts

Potential human health impacts include:

##### *Construction*

- There is potential for worker exposure to contaminants and wider community exposure as a result of disturbance of contaminated soil. This is considered unlikely given that there are effective and proven methods to prevent any exposure risks, however, any exposure to contaminated materials may result in short-term (acute) or long-term (chronic) health impacts to workers and the wider community.

### *Operation*

- Air emissions from the stack have the potential to impact on human health. This impact is considered unlikely as other comparable facilities in the EU have been successfully operating within stringent air quality standards set by the BREF. However, the consequence of unacceptable air quality emission is considered material given that any exceedance of the NSW emissions limits may present short-term (acute) or long-term (chronic) health impacts on people living in the airshed. Health impacts are an issue of key concern to the community.
- Other impacts such as noise and hazards present a risk of human health exposure. This impact is considered unlikely as impacts can be adequately managed and mitigated.

### *Approach to assessment*

#### *Construction*

- The construction human health risk assessment will consider the risk of exposure of workers, neighbouring properties and the community to incidents, spills and leaks and contaminated soil. Construction activities would be carried out in accordance with relevant management plans designed to deal with these risks. The management plans would include guidance on handling unexpected finds so the potential for worker exposure and environmental risks can be minimised.

#### *Operations*

- The operational impact assessment will focus on identifying exposure risks from the various emissions and hazards on and offsite and informing the facility's design and operational management to avoid health impacts.
- The assessment would focus on:
  - Emission and risk sources.
  - Exposure pathways including respiratory inhalation; ingestion through accumulation in crops, milk, and animals; accumulation in drinking and other potable water sources; and through direct skin contact.
  - Consideration of short (acute) and long (chronic) term health-based risks.
- The assessment will consider direct pathways (e.g. inhalation) compared to indirect pathways (e.g. pollution deposition over rainwater tanks and the Prospect Reservoir or accumulation pathways in crops, animals, and milk). The assessment will be informed by the proposed typical and atypical operation of the pollution abatement controls proposed for the WSERRC.



- The assessment will be undertaken in accordance with the *Environmental Health Risk Assessment: Guidelines for Assessing Human Health Risks from Environmental Hazards* (enHealth 2012a) and the supporting *Australian Exposure Factor Guidance – Guidelines for Assessing Human Health Risks from Environmental Hazards* (enHealth 2012b) and *Health Impact Assessment Guidelines* (enHealth 2017).
- A consultation session was held with NSW Department of Health in 2019 regarding the proposal and further consultation will be undertaken with the NSW Department of Health and the relevant district health boards.

## 6.2.4 Noise and vibration

### Existing environment

The description of the existing environment and key sensitive receivers in the air quality section is also relevant to the noise assessment.

Ambient noise local to the site is expected to be higher during the day and dominated by traffic on the M7 Motorway and Wallgrove Road and sources such as generators, air conditioning units, extraction fans, and reversing alarms associated with the existing commercial and industrial activities nearby.

### Potential impacts

Potential noise and vibration impacts include:

#### *Construction*

- Construction activities such as earthworks and excavation and the operation of construction plant and equipment have the potential for noise and vibration impacts. Construction traffic movements to and from the site also have the potential to create noise and vibration impacts along transport routes.
- This issue is considered likely given that construction noise is unavoidable. However, this can be effectively managed and minimised through standard methods, controls, equipment selection, maintenance and controls. The consequence of this issue is considered non-material given that the surrounding land uses are primarily commercial and industrial. Construction noise may also impact recreational users in the Parklands; however, the publicly accessible areas of the Parklands are located 1 km away, reducing the potential for impacts. The consequences of construction noise impacts are considered to be non-material.

#### *Operation*

- Noise impacts from waste delivery vehicles along the haulage routes. These routes are not known at this stage; however, the potential impact is considered unlikely given the minor increase in traffic movements in the context of overall network traffic volumes.

- Operational noise impacts to recreational users in the Parklands. This impact is unlikely given that the distance from the proposal to the nearest publicly accessible areas of the Parkland and the site's location adjacent to the M7 which is the dominant noise source in the area. Noise impacts are likely to be an issue of community concern.

## Approach to assessment

### Construction

- Construction noise and vibration impacts will be assessed in accordance with the Interim Construction Noise Guideline (DECC, 2009), the Assessing Vibration; a technical guideline regarding human comfort (OEH, 2006), and BS 7385-2: Evaluation and Measurement of Vibration in Buildings (British Standard, 1993) and DIN 4150 Vibration in Buildings (German Standards, 1993). Construction traffic noise impacts will be assessed in accordance with the NSW Road Noise Policy (DECCW, 2011) and the Construction Noise and Vibration Guidelines (Roads and Maritime, 2016).
- Given the significant distance to sensitive receivers, the levels and intensity of any construction noise and vibration is not expected to be material, allowing a qualitative impact assessment during the EIS.

### Operation

- The operational facility includes various noise-generating activities, equipment and machinery, including exhaust fans, air conditioning units, turbines and diesel generators (factoring in their limited use).
- The potential for noise impacts would vary depending on operational conditions, equipment use and character, and the combination of activities taking place onsite. However, given the significant distance to sensitive receivers, operational noise impacts are not expected to be a key issue. The operational plant and equipment and site activities would not be a notable source of vibration.
- Noise impacts from the facility's operation and maintenance will be assessed in accordance with the *NSW Noise Policy for Industry* (NSW EPA, 2017).
- Operational road traffic noise will be considered and assessed in accordance the *NSW Road Noise Policy* (NSW DECCW, 2011) and *Noise Mitigation Guideline* (Roads and Maritime, 2015), however is not considered to be a key issue given the minor change in overall traffic in the context of existing volumes on the M7 Motorway that would result from the WSERRC.
- Consultation would be carried out with the NSW EPA, Council and Roads and Maritime Services. Consultation would also be carried out with neighbouring properties to discuss the potential for noise and vibration impacts on properties and other sensitive land uses.

## 6.2.5 Hazards and risks

### Existing environment

The existing environment and key sensitive receivers described in the air quality section is also relevant to the hazards and risk assessment. In addition, a search of the Rural Fire Service (RFS) online search tool in July 2019 did not identify the site as being within a designated bushfire prone area.

### Potential impacts

Potential hazard and risk impacts include:

#### *Construction*

- Health and environmental risks from accidental spills and leaks during materials handling, transfer, transport, use, and the disposal of construction materials.
- Injuries from working on a live construction site associated with the use of equipment and machinery and working near open excavations.
- Health and environmental risks from encountering contaminated land or groundwater.
- Injuries and environmental risks from natural events such as flooding and adverse weather.
- Environmental and health risks from damaging or rupturing buried services and utilities.
- These impacts are considered unlikely given the availability of standard and proven construction environmental management and material handling procedures for construction sites.

#### *Operation*

- Health and environmental impacts from onsite fires, explosions, onsite emergencies, diesel leaks from storage tanks, equipment failure, accidents, and atypical conditions.
- Cumulative impacts from current activities in the local area including other nearby waste processing activities.

## Approach to assessment

### Construction:

- Construction risks are well defined and can be managed by effective construction management processes defined under the *Work Health and Safety Act 2011*, *Storage and Handling of Dangerous Goods Code of Practice* (WorkCover NSW, 2005), and the *Environmental Protection Manual for Authorised Offices: Bunding and Spill Management, Technical Bulletin* (NSW EPA, 1997).

### Operations

- While hazardous materials are not proposed to be received at the WSERRC, a preliminary risk screening will be completed as part of the EIS to determine if the proposal constitutes potentially hazardous or offensive development. The risk assessment will be in accordance with *State Environmental Planning Policy No. 33 - Hazardous and Offensive Development and Applying SEPP 33* (DoP, 2011), with a clear indication of the class, quantity and location of all dangerous goods and hazardous materials associated with the WSERRC. This will define the need to carry out a more detailed preliminary hazard analysis in accordance with *Hazardous Industry Planning Advisory Paper No. 6: Hazard Analysis* (NSW Government, 2011).
- The assessment will describe the contingency measures and plans to deal with accidents, incidents and emergencies.

## 6.2.6 Social

### Existing environment

The description of the existing environment and key sensitive receivers for the air quality section is also relevant to the social assessment.

As noted earlier, the site has been selected to achieve a significant separation to residential areas, with the nearest residences located around 1 km to the south.

In addition, the Australian Bureau of Statistics collates census data at different scales. The site is located within the Prospect Reservoir level 2 statistical area, which covers 30.7 km<sup>2</sup>. As of 2016, 40 people lived in this area, making it the least densely-populated area in Greater Sydney except for Holsworthy.

Notwithstanding the distance to residential areas, the applicant understands that the local community will have concerns in relation to EfW and lack familiarity with the technology in a NSW context.

A comprehensive engagement strategy will be implemented during the EIS phase which is summarised in Chapter 5. Engagement with community and stakeholders will aim to communicate complex engineering and scientific information about the environmental performance of the facility drawing on experience of similar facilities in other jurisdictions including the experiences of community members living in those locations.

Reference facilities will be drawn from the EU where the regulatory framework and emission limits for EfW are recognised as international best practice. Existing EfW facilities in the EU have consistently demonstrated that emissions are significantly below the limits set out in the IED and BREF, including the new BREF which will establish more stringent limits (refer to Section 2.3).

## Potential impacts

### *Construction:*

- It would take about three years to build the WSERRC at a cost of around \$500 million and employing around 800 people. In addition to job creation, this investment would lead to an increase in the purchase of local materials and services, and indirect workforce spending in the local area; especially across the accommodation, food and beverage sectors.
- As described in other sections the potential construction-related social impacts on residences and other community infrastructure would be negligible given the site's isolated location.

### *Operations:*

- Once operational, the WSERRC would help contribute to the NSW Government objectives relating to diverting waste from landfill and recovering energy from residual waste streams while providing a source of renewable energy.
- It would do this by processing up to 500,000 tonnes of waste every year and generating up to 55 MW of power. Diverting this volume of residual waste from landfill would offer a range of long-term benefits by reducing the demand for new landfill space and providing a local and cost-effective waste management solution. The proposal would also employ 50 people fulltime.

## Approach to assessment

### *Construction and operation*

- A detailed social impact assessment would be carried out in general accordance with the *Social Impact Assessment Guideline* prepared for significant mining, petroleum production and extractive industry development (NSW Government, 2017) supplemented by the *Environmental Planning and Impact Assessment Practice Note: Socio-economic Assessment* (Roads and Maritime, 2014). The proposed engagement and consultation described in Chapter 5 would be essential in defining community and social values, expectations and outcomes. The assessment would therefore:
- Describe the social and economic profile of the communities and businesses local to the WSERRC and any related development.

- Define the community and social values, perceptions and concerns identified during consultation.
- Assess the potential positive and negative impacts from constructing, operating and maintaining the WSERRC on the community and social values of the local area, extending to Sydney and NSW where relevant.
- Clearly communicate the approach to community engagement and the process used to help gain social acceptance. This will draw on the air quality and human health assessments to provide evidence for the environmental and human health performance of the facility.
- Identify wider community values and associated economic impacts and benefits from building and operating the facility, including related property and existing and future land use impacts.
- Identify appropriate mitigation and management measures, which would focus on ongoing community engagement and partnering.

The results of the air quality, human health, noise and vibration, traffic and transport and hazard and risk assessment would inform the social impact assessment.

## 6.2.7 Landscape character and visual amenity

### Existing environment

The commercial and industrial setting of the area defines its landscape character. It is representative of several large self-contained unrelated plots separated by remnant woodland. The site is contained and framed by the M7 Motorway to the west, the Warragamba Pipelines to the south and remnant woodland to the east and north. The characteristics of the area hold limited landscape value other than the aesthetic amenity of the remnant woodland. This broadly means the landscape would not be sensitive to changes introduced by the proposal.

As the site is screened and removed from residential and other sensitive areas as described in the air quality section this reduces its zone of visual influence. The only notable receivers are road users travelling along the M7 Motorway and to a lesser extent people working at the nearby commercial facilities. None of these receivers are considered sensitive to any visual impacts that would be introduced by the WSERRC.

### Potential impacts

Potential landscape character and visual amenity impacts include:

#### *Construction:*

- General work and construction activities are unlikely to alter the landscape character given the industrial context of the wider area. The only receptors likely to be visually impacted would be road users and adjacent workers.



*Operations:*

- Potential impacts on the visual amenity of a range of surrounding receivers who would have sight of the stack and plume, and to a lesser extent, the mass and scale of the main facility building, including a reinforcement of the industrial and commercial character of this part of the M7 Motorway corridor.
- Despite the favourability of the site from a landscape perspective the WSERRC would still be visible from certain points due to its size, scale and the prominence of the stack. While the main structures would only be visible close to the site, the stack would be visible over a larger area. Architectural design would help improve the amenity value of the facility, potentially allowing it to be a landmark feature, consistent with multiple examples of EfW facilities internationally. The stack can also be integrated into the design to reduce its visual impact.
- It is unlikely that the facility would overshadow neighbouring properties while any security lighting is unlikely to have a visual impact given the site's location.

## Approach to assessment

*Construction:*

- A qualitative assessment would be carried out as the issues and risks are typical to construction sites and can be effectively managed through the implementation of industry-standard controls and management plans.

*Operations*

- A landscape character and visual impact assessment would be carried out in general accordance with the Guideline Note for Landscape and Visual Assessment (Australian Institute of Landscape Architects, 2018), while overshadowing impacts would be considered and assessed in accordance with best-practice guidelines such as the UK's Site Layout Planning for Daylight and Sunlight: A Guide to Good Practice (Building Research Establishment, 2011). Light pollution impacts will be assessed against Australian Standard AS 4282: 1997, Control of the Obtrusive Effects of Outdoor Lighting.
- Photomontages, light spill plots and overshadowing diagrams would be prepared as needed to help inform the assessment. The assessment will inform the social impact assessment to understand the social response to the proposal's visual impact.

## 6.2.8 Traffic and transport

### Existing environment

Access to the site is via an unnamed road off Wallgrove Road, which in turn connects to the M7 Motorway and M4 Motorway. West of Wallgrove Road, Roads and Maritime Services has carried out several road upgrades to service development in the Western Sydney Employment Area. This includes the Lenore Drive/Erskine Park Link Road, which connects the Erskine Park Industrial Area; the location of Cleanaway's Erskine Park Resource Recovery Facility. As a result, the wider road network servicing the site likely has sufficient capacity to accommodate the additional traffic generated by the WSERRC.

The only section of the route that is not currently marked on the Roads and Maritime Services' Restricted Access Vehicle Map as being suitable for B-doubles is the unnamed road off Wallgrove Road, however video evidence confirms its use by heavy vehicles to access the Austral Bricks facility. The bridge under the M7 Motorway on the approach road is therefore sufficiently high to provide heavy vehicle clearance.

The unnamed access road from Wallgrove Road and site access over the Warragamba Pipelines may need upgrading and strengthening to support the increase in heavy vehicle traffic.

### Potential impacts

The potential traffic and transport impacts are:

#### *Construction:*

- Construction traffic may temporarily impact on network and junction performance; however, construction traffic volumes would be minor in the context of overall network volumes.

#### *Operation:*

- Operational traffic may impact on the performance of the road network and junctions. This is considered unlikely as the additional traffic generated by the proposal is likely to be minor in the context of overall network traffic volumes.
- The existing access to the site may need to be upgraded to accommodate the volume and types of vehicles generated by the proposal. Access upgrades would require coordination with Water NSW to manage any potential impacts on the Warragamba Pipeline Corridor which runs beneath the existing access road.
- Sufficient vehicle parking and queuing distances will be provided on site to avoid any off-street parking and queuing of waste delivery vehicles onto the public road.

## Approach to assessment

### *Construction:*

- A qualitative assessment will be carried out to identify the increase in traffic and to help develop associated management plans to ensure there are no safety or congestion impacts on local roads.

### *Operations:*

- Potential traffic and access impacts may result from a permanent increase in waste delivery, staff and visitor vehicles to and from site and a possible associated increase in road pavement deterioration. A quantitative traffic impact assessment would be carried out in accordance with Roads and Maritime Service and Austroads standards to identify existing baseline conditions, consider the suitability and capacity of the existing road network, calculate the impact of the uplift in construction and operational traffic and identify any road or intersection upgrade requirements on the network.
- Consultation with Water NSW and Roads and Maritime would be used to understand the upgrade, widening and strengthening requirements for the access road over the Warragamba Pipeline Corridor.

## 6.2.9 Water – surface, groundwater and hydrology

### Existing environment

#### Surface water and drainage

The Proposal is located within the Hawkesbury-Nepean river catchment approximately 450m south and 750m east of Reedy Creek and 800m west of Eastern Creek. There are no water-courses that run through the site. Prospect Reservoir is located about 1.7 km east of the site. WaterNSW owns and manages the Warragamba to Prospect Pipelines corridor (Pipelines corridor) which forms the southern boundary of the site. The pipelines are critical water supply infrastructure, conveying water from Warragamba Dam to the Prospect Water Filtration Plant, and are an integral component of the Sydney drinking water supply system.

At present, there is minimal existing stormwater infrastructure on site. Hardstand and paved areas drain overland towards a stormwater detention pond near the eastern boundary. Information on the pond's original purpose, form, structure, depth, and integrity is currently unknown along with the retained water quality. Historical imagery shows that the pond was built between 1956 and 1961. Preliminary consultations with DPIE confirmed that the pond is not ordered under the Water Management Act.

An additional area of asphalt hardstand has recently been laid. This area drains to a swale that flows west-to-east and discharges to another stormwater detention pond near the northeast corner of the site. A small culvert has been installed in this area.

## **Flooding**

The NSW Planning Portal, (viewed in August 2019) demonstrated that the site is not located on flood prone land. The Blacktown Local Environmental Plan (LEP) 2015 was also reviewed which does not include any flood mapping.

## **Groundwater**

There are limited groundwater data and records directly for the site, further investigation will need to be undertaken to identify the levels and confirm there will be no interaction with groundwater levels during excavation works.

The geological units within the project area are considered low permeability and would act as an aquitard (i.e. a zone that restricts the flow of groundwater from one aquifer to another). Therefore, risks to the project as a result of groundwater flow direction, potential inflows to excavations and water quality are considered to be low.

## **Potential impacts**

Potential impacts include:

### *Construction*

- Potential impacts to the groundwater quality and characteristics from dewatering excavations.
- Potential mobilisation of contaminants in groundwater.
- Potential for erosion and sediment dispersion impacting on the area's water quality during construction.
- The proposed demolition, excavation, earthworks and construction have the potential to affect existing surface water overland flow patterns across the site.

### *Operation:*

- Potential groundwater retardation and flow and condition impacts due to the installation of the waste bunker and bottom ash bunker below ground.
- Capture and treatment of stormwater to ensure appropriate quality prior to off-site discharge.
- Water required to meet process requirements will place an additional demand on water supply to the site.
- Potential deposition of contaminants from air emissions on drinking water sources.

## Approach to assessment

### *Construction:*

- Water quality, pollution management, sediment and erosion impacts can be avoided and managed by controls that are typically and commonly implemented on construction sites as set out in *Managing Urban Stormwater: Soils and Construction Volume 1 and Volume 2* (Landcom, 2004 and DECC, 2008). These are standard measures that are proven effective mitigation measures introduced on construction sites.
- Assessment of impacts on groundwater as a result of excavation of the waste receival bunker.

### *Operation:*

- A qualitative assessment of the potential impacts on surface water and groundwater would be undertaken for the EIS, including evaluation of water quality impacts during construction and operation and where the groundwater assessment will be guided by the data collected during the geotechnical investigation. The assessment would consider relevant NSW Government guidelines and legislation, including the *Water Act 1912* and *Water Management Act 2000*.
- The water assessment, working with the air quality and human health risk assessment teams, will assess the potential for air emissions from the facility to deposit on drinking water sources such as Prospect Reservoir, and the impacts on water quality and human health. This will consider the requirements of the WSP SEPP that requires developments have a Neutral or Beneficial Effect (NorBE) on the water quality of the bulk water infrastructure in the WSP.
- While the concentrations are sufficiently low and the volume of water sufficiently large to ensure there would be no potential to affect drinking water supplies there would be some change, which may be so small to be immeasurable.
- Water management measures would be prepared as part of the EIS to address the management of surface water during construction and operation, including erosion and sediment control requirements. The need for water inputs such as for dust suppression would also be assessed.
- A detailed water balance to identify potential and available water sources, water demand for all key stages of operations, and water recycling opportunities would be included in the impact assessment including measures to minimise potable water demand.

## 6.2.10 Flora and fauna

### Existing Environment

As most of the site is cleared it holds limited ecological value except at the periphery which includes remnant Cumberland plain and eucalypt woodland. This is supplemented by occasional planted natives and patches of exotic grassland scattered throughout the site and a sedge community associated with the stormwater detention pond along the site's eastern boundary. The remnant woodland is most prevalent and intact along the site's eastern boundary. It includes patches of critically endangered Cumberland Plain woodland, despite being in a very poor condition, and threatened (regrowth) eucalypt woodland. An initial site visit estimated there being 0.74 hectares of Cumberland Plain woodland and 0.35 hectares of regrowth eucalypt woodland onsite, which is sufficient to classify as a threatened ecological community under State legislation. However, neither community is in sufficient condition to meet the definition thresholds for classification and protection under Commonwealth legislation.

Despite there being no recent survey, there is limited potential for threatened flora and fauna onsite given the lack of supporting habitat. That said four threatened flora species and 11 threatened fauna species have been recorded within 2.5 km of the site, which are associated with Cumberland Plain and eucalypt woodland. This means there is a low potential for them to occur onsite, possibly extending to species using the artificial structures in the area. The only fauna incidentally observed onsite were common, urban adapted-birds.

### Potential impacts

Potential impacts on flora and fauna include:

#### *Construction and operations:*

- Potential impacts on terrestrial flora and relating to clearance of vegetation and habitat during construction. While the site has been substantially cleared, there are areas of vegetation and habitat value along the eastern boundary. The layout and design of the site will aim to avoid these areas to the extent possible.
- Introduction of additional artificial light sources may impact on fauna habitat on the site. However, as the site is located between the M7 and an existing industrial facility, sources of artificial light already exist.

### Approach to assessment

#### *Construction and operation:*

- There is the potential to clear approximately 1 hectare of State-protected threatened ecological community however the expected loss is likely to be far less due to the intention to retain the peripheral planting to the extent possible. Any larger trees lost to the proposal maybe hollow-bearing meaning they may provide supporting roosting habitat for threatened bird (little eagle and square-tailed kite) and owl (masked owl) species. These species may also forage on small native and exotic mammals and birds in the open grassland areas.



- Depending on the final design and construction methods there is some risk of impacting on bats roosting and foraging in the adjacent culverts, swales and stormwater detention ponds. The culverts, swales and stormwater detention ponds may also support green and golden bell frog, which are known to use areas of standing and poor water quality, while the Cumberland Plain land snail has also been recorded in the area.
- Potential operational impacts mainly relate to ongoing key threatening processes from the introduction of artificial light, carrying out of general site activity and/or the effects from a change in water or sediment quality from an accidental spill or leaks. All these impacts can be effectively mitigated using industry-standard measures and effective operational management and emergency response plans.
- The spread of biosecurity species, attraction of pest species and the spread and prefoliation of controlled and noxious weeds are issues that also need considering along with other typical key threatening processes.
- Consistent with the requirements of SSD is the need to assess the proposal's impact under the *Biodiversity Assessment Method* (NSW OEH, 2017) while preparing a Biodiversity Development Assessment Report to determine the need for offsetting the proposal's ecological impacts. The above assessment will be informed through seasonally targeted surveys for green and golden bell frog, bat and Cumberland Plain land snail. This will include surveying for hollow-bearing trees, stick nests and structural cracks and crevices.
- Consultation with NSW OEH and Council will be carried out to help define any offset requirements any possible ecological enhancement measures.

### 6.2.11 Heritage

Kelleher Nightingale Consulting was engaged to undertake an Aboriginal and non-Aboriginal heritage assessment of the site in July 2019 ahead of its purchase. The assessment was carried out in general accordance with the *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH 2010) and other best practice guidelines. It included desk-based searches supplemented through a site inspection.

### Existing Environment

The area is low-lying and next to a first order drainage line. It therefore is within an area of low Aboriginal heritage sensitivity and potential. The lack of heritage and archaeological value can be further reinforced by the level of previous disturbance associated with extensive modern land use practices and the there being no Aboriginal or non-Aboriginal heritage records onsite or locally.

Desktop modelling confirmed a low-level of archaeological sensitivity and potential across the site based on the distribution of registered recorded archaeological sites supported by a credible and detailed heritage investigation record in the area.

Consistent with these studies, neither the desk assessment nor site inspection reported in identified any sites, objects or archaeological potential onsite or locally. The evidence collected in 2019 is therefore considered sufficient to discount heritage impacts.

## 6.2.12 Airspace operations

### Existing environment

The airspace around any airport is protected to ensure operational safety. For this reason, Australian Government regulations have long-recognised the need to restrict building heights under flight paths to protect the airspace; known as ‘prescribed airspace’. The regulations ensure that the airspace aircraft fly in is obstacle free, there is no turbulence in the flight path, radar and other navigational equipment can operate free of interference and airport safety lighting is not obscured.

This is regulated through the creation of obstacle limitation surfaces (OLS) and procedures for navigational services: aircraft operations (PAN-OPS) surfaces around airports. The ‘prescribed airspace’ around Western Sydney Airport has not been fully defined. Currently, the OLS is defined and sits at 222 m above the site, however the PAN-OPS will only be defined in two years. While the design of the WSERRC is still being developed, it is expected to be significantly within the OLS.

### Potential impacts

Potential impacts to airspace operations are:

#### *Operations:*

- Intrusion of the building, stack or plume into the future Western Sydney Airport OLS and PAN-OPS. Currently, the OLS is defined and sits at 222 m above the site. While the design of the proposal is still being developed, the building, stack and plume (following preliminary modelling) is expected to be significantly within the OLS.

### Approach to assessment

#### *Operations:*

- The EIS will assess whether the proposal intrudes into protected airspace. Preliminary consultations with the Civil Aviation Safety Authority (CASA) and Western Sydney Airport Corporation (WSA Co.) indicates that the proposal would not impact on the airport’s prescribed airspace. However, this will be confirmed through ongoing consultation while also confirming no intrusion into or turbulence disturbance of the prescribed airspace.

### 6.2.13 Contamination, soil and geology

#### Existing environment

The majority of the site is overlying Bringelly Shale of Wianamatta Group with the northeast corner overlying Quaternary deposits.

Bringelly Shale is described as predominantly comprising shale, claystone and siltstone, and highly compacted, weakly cemented and is known to comprise a significant amount of swelling clays. This unit is highly susceptible to weathering. Residual soil from the Bringelly Shale varies from silty clays to clayey sands and is known to be high shrink-swell soils with low wet strength.

Based on historical and current land uses and potential for off-site leachate and gas migration from the former landfill located to the east and north, there is a risk of contamination on site.

A Biosecurity Direction was issued to the site owner dated 24 January 2019 from the Department of Primary Industries which related to the presence of salmonella on site, associated with previous poultry activities. The current owners are working with the Department of Primary Industries to address the salmonella issue in accordance with established procedures.

#### Potential impacts

The potential impacts relevant to contamination, soil and geology include:

##### *Construction:*

- Construction on site has the potential to mobilise contaminants in the soil and ground water with potential implications for the suitability of the site for its proposed use, worker exposure and off-site migration of contaminants.
- Potential for erosion and sediment dispersion impacting on the area's water quality.

#### Approach to assessment

##### *Construction:*

- A site investigation will be undertaken as part of the EIS to confirm the presence of contaminants. This will assist in quantitatively characterising the soil, groundwater and gas setting beneath the site through a conceptual site model. If the site investigation confirms that site remediation is required, a remediation action plan would be prepared. Approval for the remediation works will either be sought as part of a separate approval or integrated with the approval for the WSERRC.

- Impacts from construction on soil and geology is unlikely to be material. However, given that there are many igneous rock bodies identified in the vicinity of the site, and the presence of mapped dykes within the close vicinity of the site (approximately 500m - 700m distance), it is possible that basaltic dykes associated with these igneous bodies maybe present beneath the site area. If dykes are confirmed as present, they could provide a preferential pathway for water (and therefore transport route for contaminants (to or from the site) on a much wider scale.
- The assessment framework for assessing and managing contamination risk is provided by:
  - The Contaminated Land Management Act 1997
  - State Environmental Planning Policy (SEPP) No. 55 – Remediation of Land and the Contaminated Land Planning Guidelines which sets out the requirements for planning authorities when considering if a site suitable is suited for its intended use.

There are no expected operation and maintenance impacts in regard to contamination, soils and geology.

## 6.2.14 Services and utilities

### Existing environment

There are currently two options for the facility to connect to the electricity grid:

- An existing overhead 132kV feeder crosses Wallgrove Road approximately 400 m north of the site.
- Existing overhead/underground 33kV feeder (48C) is located along the western side of Wallgrove Road, adjacent to the site.

A feasibility assessment for the preferred connection option and any other preferred options identified will be prepared and will be documented in the EIS.

A dial before you dig (DBYD) desktop search was undertaken to confirm the availability for sewerage, water and telecoms connections. Results were obtained from Sydney Water, Nextgen, AARNet, NSW-ACT survey marks, Telstra, Endeavour Energy, National Broadband Network (NBN) and Jemena.

Connection to these existing networks is considered feasible however confirmation from each utility provider is required which will be addressed as part of the utilities feasibility study.

Regarding gas, connection to an existing network is difficult due to the distance from the site. The utilities feasibility assessment will consider the potential to use diesel or supply the site with off-grid gas.

Consultation with utility providers will be undertaken during the preparation of the EIS.

The scope of the WSERRC for which approval would be sought will include works to connect to utilities except for the connections to the electricity grid. The scope of works to connect to the electricity grid will be confirmed as part of the utilities feasibility assessment which will also confirm the assessment and approval pathway for these works.

### 6.2.15 Greenhouse gas

#### Existing environment

Greenhouse gas emissions (GHG) for this Proposal would be categorised into three main types, as underpinned by The Greenhouse Gas Protocol:

- Scope 1: Direct emissions associated with the carrying out of an activity or the operation of a facility. This would be the emissions generated by fuel combustion from construction plant and equipment.
- Scope 2: Indirect emissions created as a result of the generation of electricity used during the carrying out of an activity or the operation of a facility. This would be the emissions generated by the electricity consumed.
- Scope 3: Indirect emissions generated in the wider economy as a consequence of the carrying out of an activity or the operation of a facility. This would be the embodied energy of main construction materials, and fuel combustion associated with transportation.

The Proposal is anticipated to divert large quantities of non-recyclable waste material away from landfill resulting in:

- A large reduction in future landfill greenhouse gas (GHG) emissions (GHG), of which approximately 50% is methane (a strong greenhouse gas);
- Potentially reduce greenhouse gas emissions by around 450,000 tonnes of CO<sub>2</sub>-e per year, equivalent to taking approximately 100,000 cars off the road each year;
- Potential to offset and provide a renewable energy source to neighbouring facilities currently using fossil fuel generated energy sources;
- Considerable amount of energy recovery from the waste compared to the gas extraction from landfill;
- Deliver a net reduction in greenhouse gas emissions on a lifecycle assessment basis, when all offsets are taken into consideration and in the absence of any landfill gas capture for flaring or electricity generation;
- Reduce the need to build new putrescible landfills;
- Enhance energy security for NSW by providing alternative base load, renewable alternative to base load fossil fuel generation, while supplementing existing intermittent renewable energy.

## Potential impacts

### *Construction:*

- Construction of the proposal would result in GHG emissions

### *Operations:*

- Operation of the proposal would result in a net reduction in GHG emissions by avoiding waste going to landfill and generating renewable energy to replace fossil fuel source.

## Approach to assessment

### *Construction:*

- An assessment of potential GHG due to the construction of the proposal will be carried out in accordance with the guidance and emission factors outlined in the National Greenhouse Accounts Factors (Department of the Environment, 2018) to avoid and manage potential GHG emissions.

### *Operations:*

- An assessment of potential increases in GHG emissions due to the operation of the proposal will be carried out in accordance with the guidance and emission factors contained in the National Greenhouse Accounts Factors (Department of the Environment, 2018) to avoid and manage potential GHG emissions.

## 6.3 Issues not considered for further assessment in the EIS

The environmental scoping exercise in Table 5 identifies two issues – Heritage and Bushfire Risk - that are considered to not require any further assessment in the EIS on the basis that the proposal activities are unlikely to have any material impact on their values.

## 6.4 Cumulative impacts

The EIS will include an assessment of the cumulative impacts of the proposal with other projects. The method for identifying other projects will draw on existing cumulative impact assessment guidelines, which will look at their residual impacts that have the potential to interact with impacts predicted from this proposal.

This will involve assessing cumulative impacts of projects:

- Not yet under construction or operation but have a high likelihood of proceeding, indicated by their stage in the planning process.
- That are likely to have significant impacts that have spatial and temporal overlaps with the proposal (i.e. impacting on the same receivers over the same timescales).
- Projects for which information on impacts is available to allow a meaningful assessment to be undertaken.



The approach to cumulative impact assessment will also identify a cut-off point beyond which no additional projects will be considered in the assessment to allow the EIS program to be met.

A preliminary list of other projects to be included in the cumulative impact assessment will be developed for discussion with Department of Planning, Industry and Environment.

## 7 Conclusion

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Cleanaway is seeking consent for the proposal under Division 4.7 of Part 4 of the EP&A Act. The application for approval will be supported by an EIS.

This Scoping Report provides information about the proposal and the existing environment of the site and surrounding area as an input to the preparation of SEARs by the DPIE.

The ‘key issues’ that have been identified for further detailed assessment during the preparation of the EIS are:

Key issues:

- Waste management (include waste supply, management of residual waste and compliance with the EfW Policy Statement).
- Air quality and odour.
- Human health.
- Noise and vibration.
- Water – surface, groundwater and hydrology.
- Traffic and transport.
- Hazard and risk.
- Flora and fauna.
- Landscape character and visual amenity.
- Greenhouse gas emissions.
- Airspace operations.
- Contamination, geology and soils.
- Services and utilities.
- Social.
- Cumulative impacts.

Other issues:

- No issues were assigned to the category of ‘Other’ issues.

Two additional issues were considered – Heritage and Bushfire – but were ruled out from any further consideration in the EIS because of the low likelihood of any impact.

The EIS will address each of the SEARs and will describe how the design, operation and construction of the proposal will avoid, minimise and manage impacts on the environment, including issues that may be of concern to the community and stakeholders.

## Appendix A

### Aboriginal and Non-Aboriginal Heritage Assessment



**339 Wallgrove Road, Eastern Creek NSW**  
**Aboriginal and Non-Aboriginal Heritage Assessment**

Prepared for Arup

August 2019

Ref. 1903

**KELLEHER NIGHTINGALE CONSULTING PTY LTD**  
**Archaeological and Heritage Management**  
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## Document Information

Project Name	339 Wallgrove Road, Eastern Creek: Aboriginal and Non-Aboriginal Heritage Assessment
Project Number	1903
Version	0.1
Client Name	Arup
Recipient	Maria Caruda
Issue Date	August 2019
Prepared by	Dr Matthew Kelleher; Ana Jakovljevic; Ben Anderson
Approved by	Dr Matthew Kelleher

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## 1 Introduction

Arup engaged Kelleher Nightingale Consulting to undertake an Aboriginal and non-Aboriginal heritage assessment of 339 Wallgrove Road, Eastern Creek NSW (the study area) (Figure 1). An energy from waste facility is proposed for the property.

The Aboriginal archaeological heritage assessment was undertaken in reference to the Department of Planning, Industry and Environment (DPIE) (formerly Office of Environment and Heritage [OEH]) *Due Diligence Code of Practice for the Protection of Aboriginal Objects in New South Wales* (OEH 2010). The non-Aboriginal heritage assessment follows the same DPIE standard and best practice guidelines.

The heritage assessment followed a step by step method of assessment which is designed to give proponents a baseline level of information outlining opportunities and constraints related to heritage. The relevant steps are:

- database search: Aboriginal heritage information management system (AHIMS) and known heritage information sources
- landscape assessment
- desktop assessment and
- site inspection.

### 1.1 Summary of findings

The heritage assessment and associated inspection of the study area did not identify any Aboriginal archaeological or non-Aboriginal heritage objects or areas of archaeological potential. The study area had been disturbed by modern land use practices and natural processes. The property exhibited no heritage constraints for the proposed development following completion of the environmental impact assessment process.



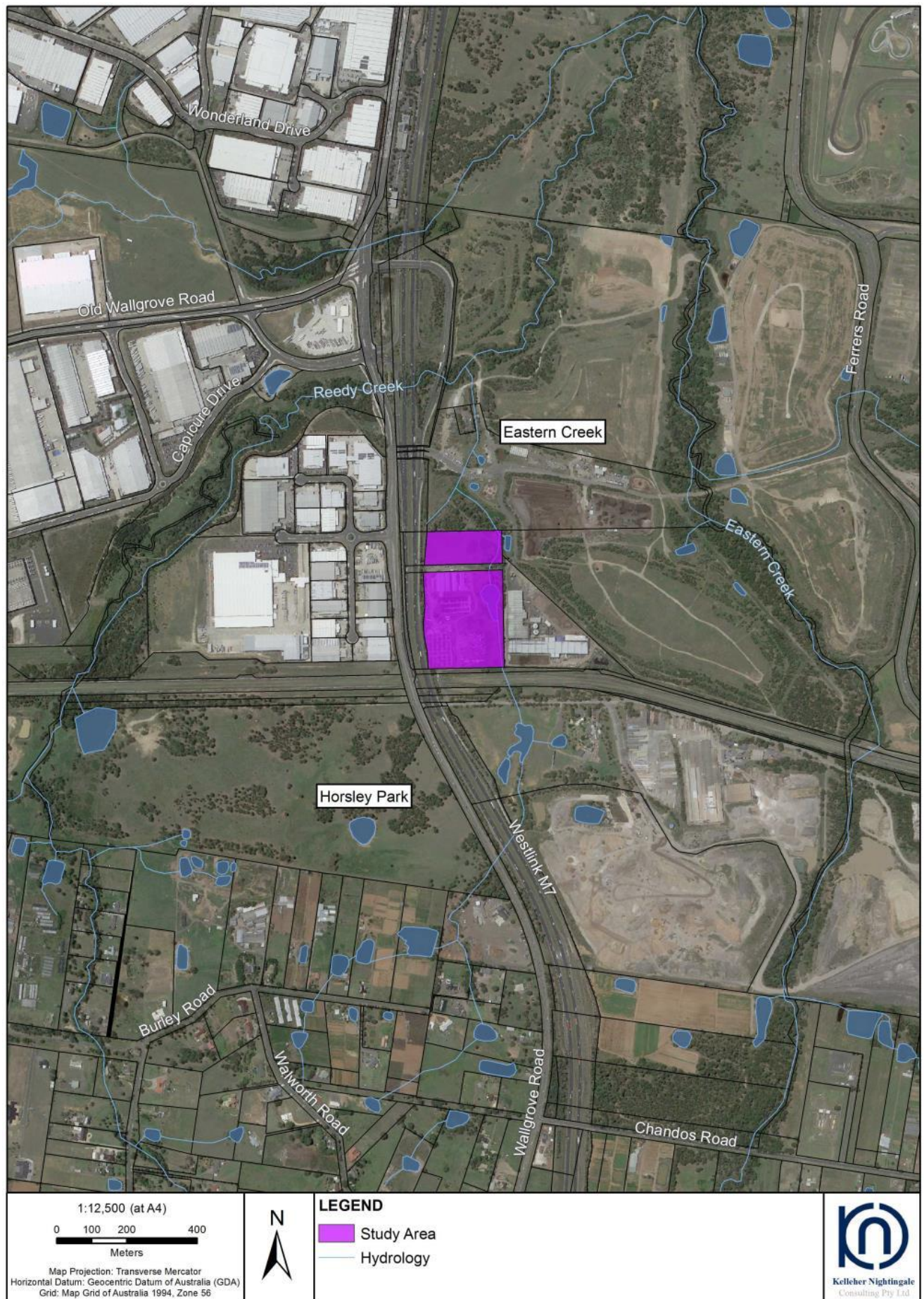


Figure 1. Location of the study area

## 2 Assessment Process

### 2.1 Database Search Aboriginal

A search of the DPIE AHIMS was conducted on 25 July 2019 to identify registered (known) Aboriginal sites within or adjacent to study area. The search results are contained in Appendix A. The AHIMS database search was conducted for Lot 1 DP1059698 with a buffer of 1,000 metres (AHIMS Client Service ID: 437407).

The spatial distribution of registered Aboriginal sites within these coordinates is shown on Figure 2. The frequency of site types within the AHIMS database search area is summarised in Table 1.

**Table 1. Site features and context from AHIMS database search**

Site Context	Site Feature	Number	Frequency
Open	Artefact Scatter	17	63%
	Isolated Artefact	3	11%
	Modified Tree (Carved or Scarred)	1	4%
	Modified Tree (Carved or Scarred) and Artefact	1	4%
	Potential Archaeological Deposit (PAD)	5	18%
<i>Total</i>		27	100%

There are no Aboriginal archaeological sites on AHIMS that are located within the study area. A total of 27 Aboriginal archaeological sites are located within 1km of the study area. Two artefact scatter sites have duplicate recordings: EC3 (AHIMS 45-5-2578/45-5-2593), and EC8 (AHIMS 45-5-2582/45-5-2598); therefore, there is a total of 25 Aboriginal archaeological sites recorded within 1km of the study area.

The closest AHIMS site to the study area is artefact scatter site EC8 (AHIMS 45-5-2582) (Figure 2). Site EC8 was recorded during an archaeological survey for the Eastern Creek Waste Management Facility, located to the immediate east of the study area. One isolated artefact was recorded approximately 60m east of Eastern Creek in an area of disturbance and exposure. Site EC8 has previously been assessed as having low integrity with negligible research potential and low archaeological significance (Navin Officer 2000: 24).

A duplicate recording of this site is located, according to the AHIMS coordinates, approximately 1km to the west, within Lot 4 DP1159804 on the eastern banks of Reedy Creek (AHIMS 45-5-2598). The original AHIMS recording of this site places it approximately 1km east of the study area, although the coordinate provided on AHIMS locates it to the immediate east of Reedy Creek, approximately 900m west of the study area. Later revision of the site location on AHIMS (erroneously) placed the site to the immediate south of the study area, within Lot 100 DP1168236.

Review of the AHIMS site cards resulted in confirmation that both recorded locations of EC8 on AHIMS records are not accurate. The correct location of isolated artefact EC8 is 60m east of Eastern Creek as shown on Figure 3 in Navin Officer 2000; therefore, site EC8 (both AHIMS 45-5-2582 and AHIMS 45-5-2598) is located 1km east of the study area.



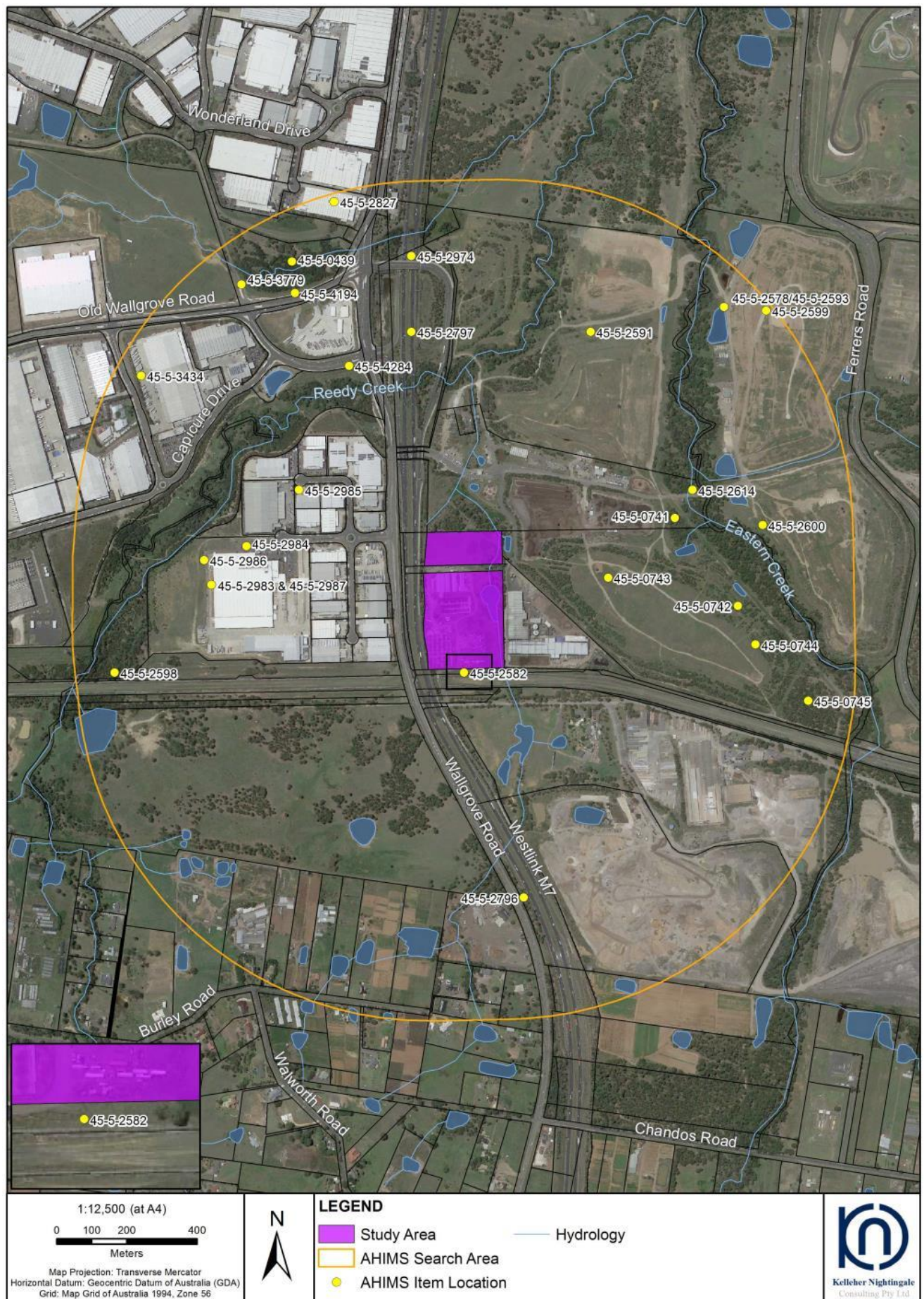


Figure 2. Aboriginal heritage AHIMS database search results

## 2.2 Database Search Non-Aboriginal

A search was undertaken of the following statutory and non-statutory heritage registers:

- State Heritage Register and State Heritage Inventory
- Heritage Act - s.170 NSW State Agency Heritage Registers
- Blacktown Local Environmental Plan 2015
- State Environmental Planning Policy (SEPP) –Western Sydney Parklands 2009
- Australian Heritage Database
- Historic sites of Blacktown (community webpage)

No non-Aboriginal items are listed on heritage registers for the study area.

### Office of Environment and Heritage State Heritage Register (SHR)

There are no historic heritage sites listed on the State Heritage Register (SHR) within the study area. The closest site on the SHR is 'Prospect Reservoir' located approximately 1.5km east of the study area (Figure 3).

### Blacktown Local Environmental Plan (LEP) 2015 and the Office of Environment and Heritage State Heritage Inventory (SHI)

There are no items listed on Blacktown LEP and SHI within the study area.

The closest heritage item to the study area is 'Southridge House' (I23), located 920m north-west, on Southridge Street, south of Old Wallgrove Road (Figure 3). The statement of significance taken from the SHI listing reads as follows:

Representative example of relatively intact example of a modest mid nineteenth century farmhouse within the Blacktown Council area. It has good examples of joinery work of the period in the windows and architraves. The land within 50m radius has the potential to contain relics of former buildings or uses of the site.

### State Environmental Planning Policy (SEPP) (Western Sydney Parklands) 2009

There are no items listed on the SEPP Western Sydney Parklands 2009 within the study area.

The closest item is 'Prospect Reservoir and surrounding area' (I4), located approximately 1.5km east of the study area (Figure 3). The item was assessed as having state significance.

### Roads and Maritime Services s.170 Register

There are no items listed on the Roads and Maritime Services S.170 register located within or within 1km of the study area.

### Historic Sites of Blacktown Webpage

There are no items listed on the Historic Sites of Blacktown Webpage.

The closest item is the 'Beehive Well', located at the intersection of Great Western Highway (Western Motorway M4) approximately 600m north of the study area. An example of a typical stone-capped beehive well that was built in the early 1800's, used for travellers and settlers. It was built by ex-convict and settler William "Lumpy" Dean and was most likely used by the occupants of a homestead that was nearby but since demolished. There is no statement of significance for this item.



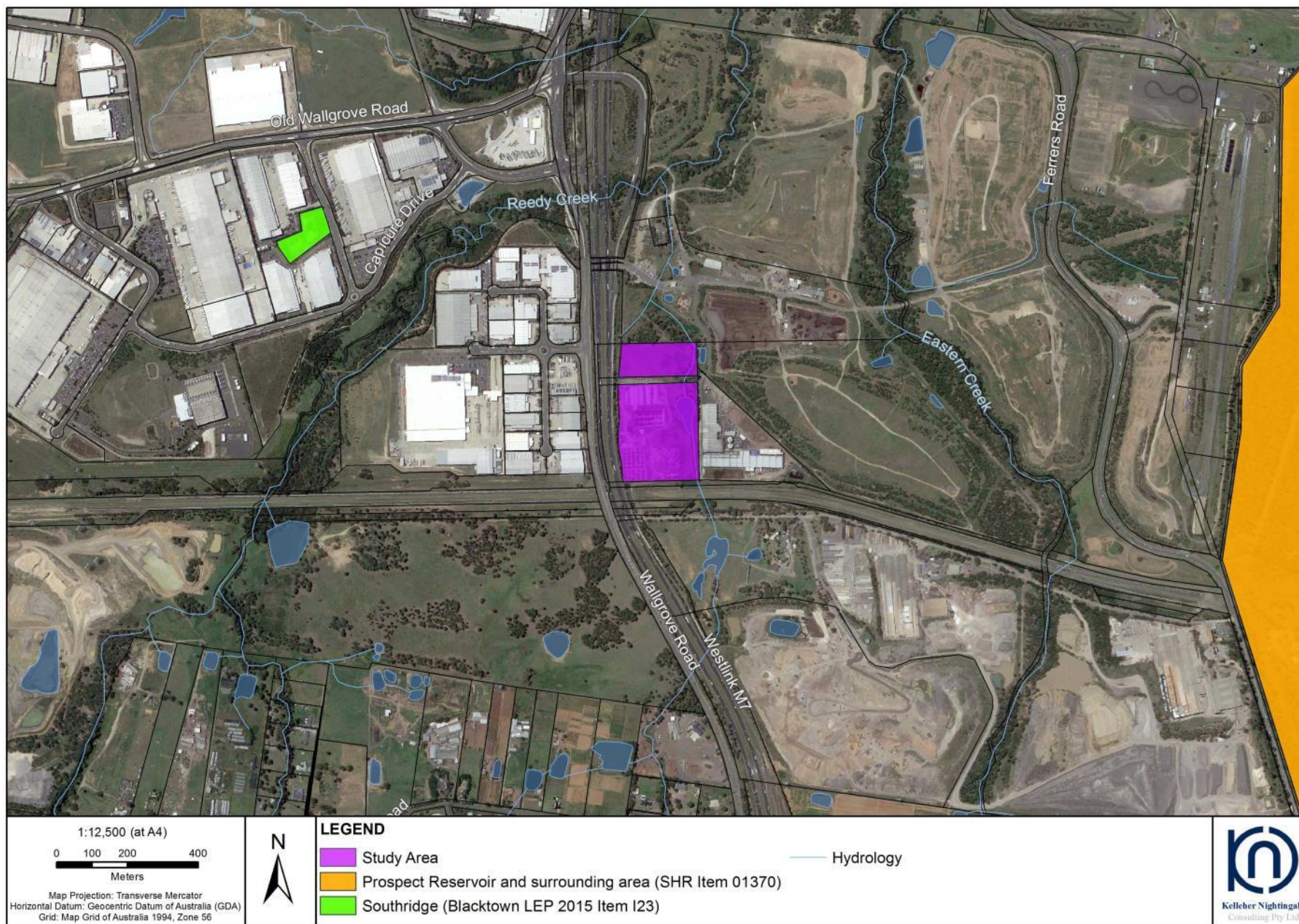


Figure 3. Non-Aboriginal database search results

### 2.3 Desktop Assessment

Desktop modelling identified low levels of archaeological sensitivity for the study area based on the distribution of registered archaeological sites and information from heritage investigations in the area. The general vicinity of the study area has been subject to extensive archaeological investigations. A number of studies have resulted in the development of a comprehensive site predictive model for Aboriginal sites on the Cumberland Plain. Sensitivity for the occurrence of Aboriginal archaeological sites and their complexity will vary according to: permanence of water, distance from water, landforms with low levels of erosion or flooding, vistas and proximity to lithic resources. Archaeological potential will then be dependent on the levels of previous ground disturbances, which is directly influenced by the recent land use practices and/or land modifications.

- Stream Order: Permanence of water was a significant factor for Aboriginal habitation in the area. There is a correlation between the increase of stream order with a higher density of artefacts and/or complexity of a site;
- Distance from water: Artefact density is the highest within 50m of second and third order streams; at fourth order waterways the density was highest between 50 to 100m from water; at first order streams there is no correlation of artefact occurrence and distance from water;
- Landform: Lowest artefact density is on the upper slopes and ridgetops with density increasing on mid to lower slopes. High artefact density is on terrace landforms, with low density on creek banks, most likely due to flooding events;
- Prominent vistas will contain selective activity areas with good survivability on low erosion ridge tops, and;
- Lithic resource: Sites in close proximity to lithics sources would have a range of size and cortex characteristics. As one moves further from the source, size of artefacts and percentage and cortex decreases.

Previous impacts to the study area are divided into three categories: low, moderate and high. High disturbance includes total removal and/or displacement of natural soils and import of fill and other construction material. These disturbances are caused by construction of houses, farming buildings, roads, tracks, dams and other excavation works. These land use practices would have removed any possibly artefact-bearing sub-surface deposits. Archaeological potential in these areas is considered to be very low. Moderate disturbance is caused by small agricultural practices including ploughing, tree removal and cattle trampling. Low disturbance is caused by partial clearance and some grazing activities. Low and moderate disturbance levels would have minimal impact on sub-surface archaeological deposits. They would cause some spatial and vertical movement of near surface cultural material, but they would not remove them in their entirety. Archaeological potential in areas that have gone through low and moderate previous disturbance is considered to be higher than areas of high disturbance.

The Precinct masterplan for the SEPP 59 Eastern Creek Business Park (Stage 3) located to the immediate west of the study area, defined three zones of archaeological sensitivity. The highest sensitivity zones were shale hillslopes, first order tributary creeklines and shale ridges and ridgetops, and was based on low levels of previous disturbance. Aboriginal sites located within these landscapes would have higher conservation potential as the number of such sites remaining across the Cumberland Plain is low. Areas around Reedy Creek located approximately 1km west of the study area were mapped in Zone 1 – having high archaeological sensitivity; areas that have been through minimal disturbance located in the vicinity of higher order waterways and hillslopes were mapped as Zone 2 – having moderate archaeological sensitivity; areas that have been significantly disturbed by sub-surface soil removal were mapped as Zone 3 – having low archaeological sensitivity and low potential for archaeological sites.

Desktop assessment did not identify any Aboriginal and non-Aboriginal sites within the study area.

## 2.4 Landscape Assessment

The study area landscape is a lower hill slope landform that is gently sloping to a minor first order drainage line running south-north along the eastern boundary. The study area is located approximately 900m east of Reedy Creek and 1km west of Eastern Creek. Both creeks are permanent, third order streams at this section of their waterways.

Geology of the study area is characterised by Bringelly Shale (Rwb) of the Wianamatta Group. It consists of shale, carbonaceous claystone, laminite, lithic sandstone, rare coal and tuff. Soils are primarily of the residual Blacktown soil landscape, consisting of shallow to moderately deep podzols, loam to clay loams topsoil to an average of 300mm overlying light to medium clays. Due to their age and slow accumulation, Blacktown soils have reasonable potential to contain archaeological deposits in open contexts. However, slow accumulation and high impact of recent land use practices often result in poor preservation of archaeological material.

The study area has undergone considerable disturbance as a result of land clearance, agricultural and light industrial practices, as well as landfill activities. These activities would have caused significant disturbance and/or removal of a wide range of Aboriginal archaeological sites (if present) including artefact scatters, scarred trees and stone arrangements.

Previous land use activities across the study area consist of:

- clearance of original vegetation
- construction of poultry and farm sheds as well as car parking areas and car yard
- installation of a dam, drainage channel and pipes.

Based on a site prediction model, areas further than 50m from third order waterways would have sporadic evidence of Aboriginal occupation. There are no raised, elevated landforms in the proximity to fresh water or lithic resources. The entire study area has been through varied episodes of previous disturbances, the majority of them consisting of high impact activities that would have removed or displaced any potential archaeological deposits.



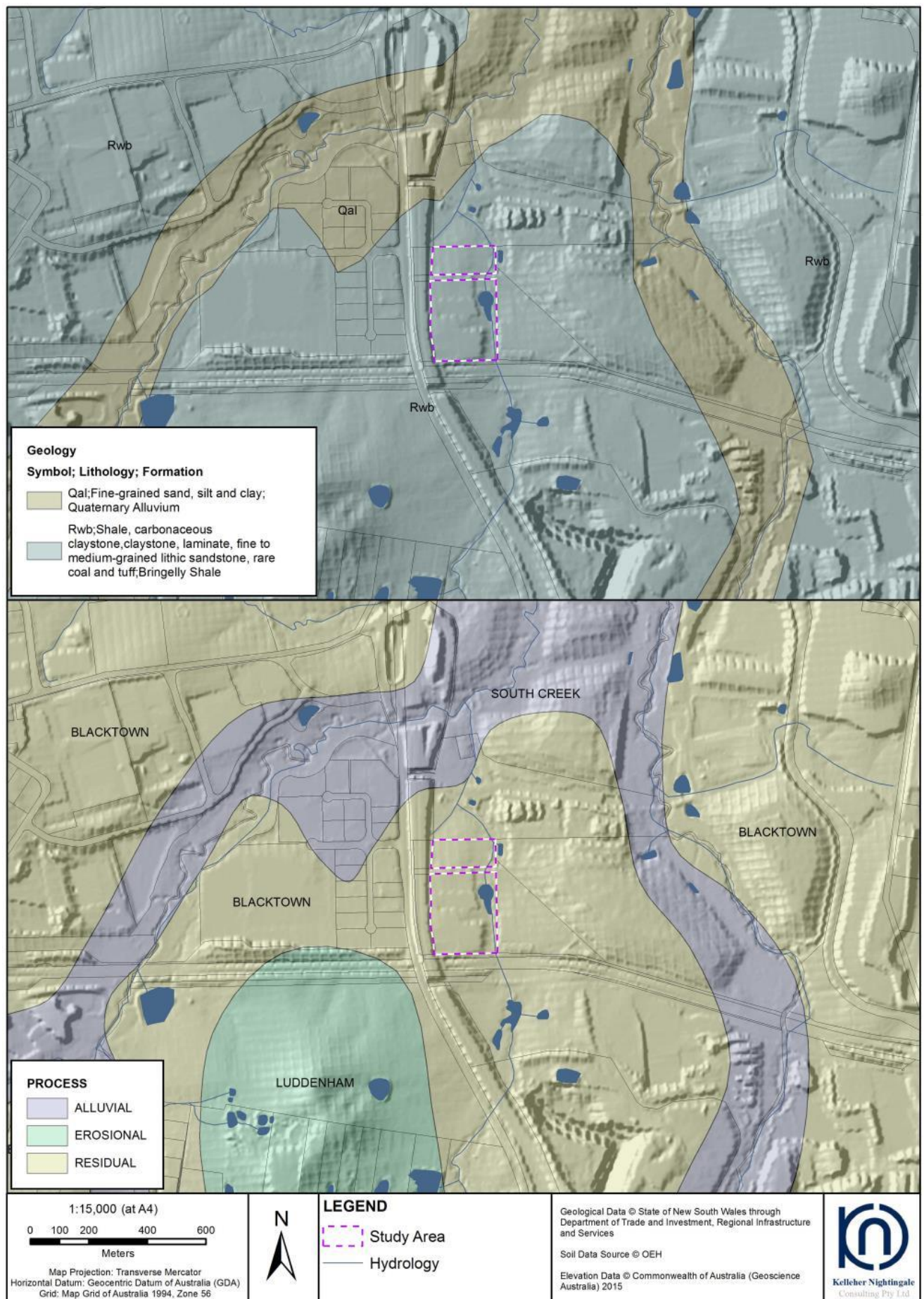


Figure 4. Geology and soil landscape within the study area.

## 2.5 Visual Inspection

A visual inspection was undertaken across the entirety of the study area by Tristram Miller, KNC archaeologist, on 25 July 2019. The visual inspection aimed to identify any Aboriginal or non-Aboriginal objects or archaeological sites and assess the potential for heritage objects to be present within the study area.

No Aboriginal or non-Aboriginal objects or areas of archaeological potential were identified during visual inspection of the study area.

The study area is situated on a lower hill slops landform that is gently sloping to a minor first order drainage line running south-north along the eastern boundary of the study area. The drainage line is a first order waterway that empties approximately 500m to the north into Reedy Creek. The study area is within a low lying area adjacent to the first order drainage line and therefore within a low sensitivity zone for Aboriginal sites.

The entire study area revealed varied levels of previous disturbance associated with extensive modern land use practices. The drainage channel has been extensively modified and disturbed as a result of infrastructure development in the area with a dam installed at the western extent of the study area. Poultry and farm sheds, as well as extensive car yard and car parking areas are present across the majority of the study area.

Vegetation across the study area had also been cleared and modified by agricultural and contemporary land use. Visibility across the study area was primarily poor due to the extent of buildings, fill material (Plate 1) and dense vegetation cover around the dam (Plate 2). Areas of exposure were few and limited to the highly disturbed and modified areas around the dam and on car park verges.



**Plate 1.** North-eastern portion of study area facing south, showing fill extending to the edge of drainage strip.



**Plate 2.** South-western portion of study area facing south, between a car yard and the drainage line, exotic weeds and embankment towards the car yard.

The visual inspection commenced in the northern portion of the study area. The entire western and central portion of Lot 1 DP1059698 revealed a recent deposition of asphalt overlying extensive clay fill material (Plate 3). The north-eastern portion of the study area had thick revegetated groundcover with an undulating landscape caused by installation of a drain pipe, most likely in association with the drainage line and dam to the south (Plate 4).



**Plate 3.** North-western extent of the study area, facing south.



**Plate 4.** North-eastern portion of the study area, facing south, showing thick vegetation cover and the drain pipe.



Visual inspection then moved along the eastern boundaries of the study area, north of the dam. A significant amount of fill material was observed around its banks as well as some levelling of the ground (Plate 5). The entire southern portion of the study area is within an extensively built area with poultry and other farm sheds constructed, as well as the car yard that has been levelled and overlain with fill and road base (Plate 6).



**Plate 5. Conditions on the western banks of the dam, facing south-west towards the poultry sheds.**



**Plate 6. South central portion of the study area, showing fill base and poultry sheds in the distance, facing west.**

### 3 Summary

No Aboriginal or non- Aboriginal heritage was identified within the study area at 339 Wallgrove Road, Eastern Creek NSW.

No Aboriginal or non-Aboriginal objects, archaeological sites or areas of archaeological potential were identified within the study area during the background research or visual inspection.

Visual inspection of the study area did not identify any Aboriginal or non-Aboriginal archaeological sites within the study area. Landform and disturbance assessment found that the study area was not archaeologically sensitive for containing Aboriginal objects due to its low-lying swampy conditions and the distance from a permanent water source. Contemporary land use practices have led to high levels of ground disturbance that would have removed or displaced any isolated archaeological material that might have been present. There is a very low likelihood of any intact archaeological deposit remaining within the study area.

No Aboriginal or non-Aboriginal objects or areas of archaeological potential were identified during the visual inspection and it is considered unlikely that Aboriginal or non-Aboriginal objects remain in open contexts throughout the study area.

## 4 Statutory Requirements

### 4.1 Aboriginal Heritage

The *National Parks and Wildlife Act 1974* (NPW Act) is the primary statutory control dealing with Aboriginal heritage in New South Wales. Items of Aboriginal heritage (Aboriginal objects) or Aboriginal places (declared under section 84) are protected and regulated under the NPW Act.

Under the Act, an “Aboriginal object” is defined as “any deposit, object or material evidence (not being a handicraft made for sale) relating to the Aboriginal habitation of the area that comprises New South Wales, being habitation before or concurrent with (or both) the occupation of that area by persons of non-Aboriginal extraction, and includes Aboriginal remains”. As such, Aboriginal objects are confined to physical evidence and are commonly referred to as Aboriginal sites.

Aboriginal objects are protected under section 86 of the Act. It is an offence to harm or desecrate an Aboriginal object, either knowingly [section 86 (1)] or unknowingly [section 86 (2)].

Section 87 (2) of the Act provides a defence against prosecution under section 86 (2) if “the defendant exercised due diligence to determine whether the act or omission constituting the alleged offence would harm an Aboriginal object and reasonably determined that no Aboriginal object would be harmed”.

Under section 87 (1) it is also a defence if “(a) the harm or desecration concerned was authorised by an Aboriginal heritage impact permit, and (b) the conditions to which that Aboriginal heritage impact permit was subject were not contravened”.

Section 89A of the Act relates to the notification of sites of Aboriginal objects, under which it is an offence if the location of an Aboriginal object is not notified to the Director-General in the prescribed manner within a reasonable time.

Under section 90 (1) of the Act “the Director-General may issue an Aboriginal heritage impact permit”. The regulation of Aboriginal heritage impact permits is provided in Part 6 Division 2 of the Act, including regulations relating to consultation (section 90N).

### 4.2 Non-Aboriginal Heritage

Places of Non-Aboriginal heritage value can be subject to different levels of recognition and protection. This protection (at local, State and Commonwealth levels) includes specific measures for the protection of heritage times. The *NSW Heritage Act 1977* (as amended 2009) is the primary statutory control dealing with Non-Aboriginal heritage within the study area. The following sections of the *Heritage Act 1977* should be considered in respect to the study area.

Section 4(1) of the *Heritage Act* (as amended 2009) states that it is an offence to *damage, despoil, move or alter a relic* or moveable object without the approval of the Heritage Council of NSW.

A *relic* is defined in the Act as follows:

**relic** means any deposit, artefact, object or material evidence that:

- (a) relates to the settlement of the area that comprises New South Wales, not being Aboriginal settlement, and
- (b) is of State or local heritage significance

Under Sections 139 and 140 of the *Heritage Act 1977*, a person may not disturb or excavate land to discover, expose or move a relic without first obtaining the permission of the Heritage Council. If relics are exposed during future works, it may be necessary to apply for a s140 permit. However, if the study area is within a State Heritage Register Listed area s60 of the *Heritage Act*, will apply as follows:

If the subject site including archaeological deposits is listed on the NSW State Heritage Register the following sections of the *Heritage Act 1977* apply:

Part 3A, Section 31 of the *Heritage Act 1977* provides that a State Heritage Register is to be maintained by the NSW Heritage Council. Items can only be listed or removed at the Direction of the Minister.

Section 57 (1) (a-h), Part 4 of the *Heritage Act 1977* states that it is an offence to damage, move, destroy or despoil a place listed on the NSW Heritage Register. If it is proposed to remove or damage an item listed on the State Heritage Register approval under s60 of the *Heritage Act 1977* must be applied for. In respect of disturbance to archaeological relics when applying for a s60 permit the Heritage Branch requires that an archaeological assessment and a research design must be submitted. The research design, which is to be prepared by the archaeologist undertaking the monitoring, should clearly set out the methodology for managing the archaeological deposits.

## 5 Conclusion

The heritage assessment and associated archaeological inspection of 339 Wallgrove Road found no Aboriginal archaeological sites or areas of potential and no non-Aboriginal archaeological items or areas of potential.

The study area exhibits a very low sensitivity for Aboriginal archaeological sites and high levels of previous disturbance. Extensive land use practices have removed or displaced any possibly isolated Aboriginal or non-Aboriginal objects from the study area. Archaeological potential for any heritage items within the entire study area is assessed as very low.

The property exhibits no heritage constraints for the proposed development following completion of the environmental impact assessment process.

## References

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- State Environmental Planning Policy (Western Sydney Parklands)* 2009. NSW Government.
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## Appendix A – AHIMS Search Results



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## AHIMS Web Services (AWS)

### Extensive search - Site list report

Your Ref/PO Number : 339 Wallgrove-

Client Service ID : 437407

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2578	EC3	AGD	56	301980	6256520	Open site	Valid	Artefact :-	Open Camp Site	98435
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Mr.Kelvin Officer							
45-5-2582	EC8	AGD	56	301240	6255480	Open site	Valid	Artefact :-	Isolated Find	98435
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Mr.Kelvin Officer							
45-5-0439	Eastern Creek W1	AGD	56	300750	6256650	Open site	Valid	Artefact :-	Open Camp Site	1018,98435
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Doctor.Susan McIntyre-Tamwoy							
45-5-0741	WDD1	AGD	56	301840	6255920	Open site	Valid	Artefact :-	Open Camp Site	98435
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Margrit Koettig							
45-5-0742	WDD 2	AGD	56	302020	6255670	Open site	Valid	Artefact :-	Open Camp Site	1501,1530,193 5,98435
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Margrit Koettig							
45-5-0743	WDD3	AGD	56	301650	6255750	Open site	Valid	Artefact :-	Open Camp Site	1501,1530,984 35
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Margrit Koettig							
45-5-0744	WDD5	AGD	56	302070	6255560	Open site	Valid	Artefact :-	Open Camp Site	98435
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Margrit Koettig							
45-5-0745	WDD 6	AGD	56	302220	6255400	Open site	Valid	Artefact :-	Open Camp Site	1530,1935,984 35
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Margrit Koettig							
45-5-2614	Eastern Creek 9	AGD	56	301890	6256000	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Navin Officer Heritage Consultants Pty Ltd							
45-5-2591	EC1	AGD	56	301600	6256450	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Navin Officer Heritage Consultants Pty Ltd							
45-5-2593	EC3 (Duplicate copy of 45-5-2578)	AGD	56	301980	6256520	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Navin Officer Heritage Consultants Pty Ltd							
45-5-2598	EC8 (Duplicate copy of 45-5-2582)	AGD	56	300245	6255480	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Navin Officer Heritage Consultants Pty Ltd							
45-5-2599	WSRA 1	AGD	56	302100	6256510	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Navin Officer Heritage Consultants Pty Ltd							
45-5-2796	WSO-IF 2	AGD	56	301410	6254840	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Mrs.Robynne Mills							
45-5-2797	WSO-OS-8	AGD	56	301090	6256450	Open site	Valid	Artefact :-		
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Mrs.Robynne Mills							
45-5-2827	AWL 4	AGD	56	300870	6256820	Open site	Valid	Artefact :-	1398	4599,98444
	<a href="#">Contact</a>	<a href="#">Recorders</a>	Dominic Steele Archaeological Consulting							
									1573,1609	

Report generated by AHIMS Web Service on 25/07/2019 for Zachary Thomas for the following area at Lot : 1, DP:DP1059698 with a Buffer of 1000 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 27

This information is not guaranteed to be free from error omission. Office of Environment and Heritage (NSW) and its employees disclaim liability for any act done or omission made on the information and consequences of such acts or omission.

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## AHIMS Web Services (AWS)

### Extensive search - Site list report

Your Ref/PO Number : 339 Wallgrove-

Client Service ID : 437407

SiteID	SiteName	Datum	Zone	Easting	Northing	Context	Site Status	SiteFeatures	SiteTypes	Reports
45-5-2974	Lucan Park PAD	AGD	56	301090	6256666	Open site	Valid	Potential Archaeological Deposit (PAD):-		
	<u>Contact</u>							<u>Permits</u>	1941	
45-5-2987	AUS 1	AGD	56	300520	6255730	Open site	Valid	Modified Tree (Carved or Scarred) :-		
	<u>Contact</u>							<u>Permits</u>		
45-5-2983	Austral 1	AGD	56	300520	6255730	Open site	Valid	Modified Tree (Carved or Scarred) :- -, Artefact : 6		
	<u>Contact</u>							<u>Permits</u>		
45-5-2984	Austral 2	AGD	56	300620	6255840	Open site	Valid	Artefact : 1		
	<u>Contact</u>							<u>Permits</u>	1994	
45-5-2985	Austral 3	AGD	56	300770	6256000	Open site	Valid	Artefact : 1		
	<u>Contact</u>							<u>Permits</u>	1994	
45-5-2986	Austral PAD 1	AGD	56	300500	6255800	Open site	Valid	Potential Archaeological Deposit (PAD):-		
	<u>Contact</u>							<u>Permits</u>	1994	
45-5-3434	Parramatta SWC PAD	AGD	56	300320	6256325	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>							<u>Permits</u>	2965,2966	
45-5-3779	Link Road PAD	GDA	56	300711	6256775	Open site	Valid	Potential Archaeological Deposit (PAD) :-		
	<u>Contact</u>							<u>Permits</u>	3206	
45-5-2600	WSRA 2	AGD	56	302090	6255900	Open site	Valid	Artefact :-		
	<u>Contact</u> Colin Gale							<u>Permits</u>		
45-5-4284	Erskine Park Link Road 2	GDA	56	301017	6256543	Open site	Valid	Artefact : 1		
	<u>Contact</u>							<u>Permits</u>	3625	
45-5-4194	CONSERVATION AREA PAD	GDA	56	300863	6256750	Open site	Valid	Potential Archaeological Deposit (PAD) : 1		
	<u>Contact</u>							<u>Permits</u>	3625	

Report generated by AHIMS Web Service on 25/07/2019 for Zachary Thomas for the following area at Lot : 1, DP:DP1059698 with a Buffer of 1000 meters. Additional Info : Archaeological Assessment. Number of Aboriginal sites and Aboriginal objects found is 27

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