



**CLEANAWAY** WESTERN SYDNEY  
**ENERGY & RESOURCE  
RECOVERY CENTRE**



# Western Sydney Energy and Resource Recovery Centre **EIS Summary**

October 2020



# *Proposal Overview*



# Introduction

Each year 1.6 million tonnes of waste is generated in Western Sydney and sent to landfill! Instead of landfill, we are proposing to turn non-recyclable waste into valuable electricity – powering more than 79,000 homes and businesses.

The proposed Western Sydney Energy and Resource Recovery Centre (WSERRC) will use proven, safe and sustainable energy-from-waste technology to manage waste that cannot be recycled.

If approved, construction will commence in 2021 - creating 900 direct construction jobs and an additional 700-1,200 indirect construction jobs over three years. 50 highly skilled local jobs will be created during operation.

The WSERRC is being developed by Cleanaway and Macquarie Capital.

Cleanaway has a long track record of delivering high quality waste and recycling services to the NSW community. We are committed to maximising resources at every stage, from waste avoidance, to re-use, recycling and energy recovery.

Macquarie Capital is a leading equity investor, participant and sponsor in the development and construction of global renewable energy infrastructure assets and is currently developing Australia's first thermal waste to energy project, Avertas Energy in Western Australia.

The WSERRC is classified as a State Significant Development (SSD) and is required to prepare an Environmental Impact Statement (EIS) to inform the assessment process. This process is managed by the Department of Planning, Industry and Environment (DPIE).

The EIS describes the proposal in detail and assesses the potential social and environmental impacts that may occur during the proposal's construction and operations. In the EIS, the measures to manage and mitigate impacts are described.

This brochure is not a formal part of the EIS submission. It provides the community with a high-level summary of the EIS prepared for the WSERRC. The full EIS documents are available at: <https://www.planningportal.nsw.gov.au/major-projects/project/25896>



# Proposal description

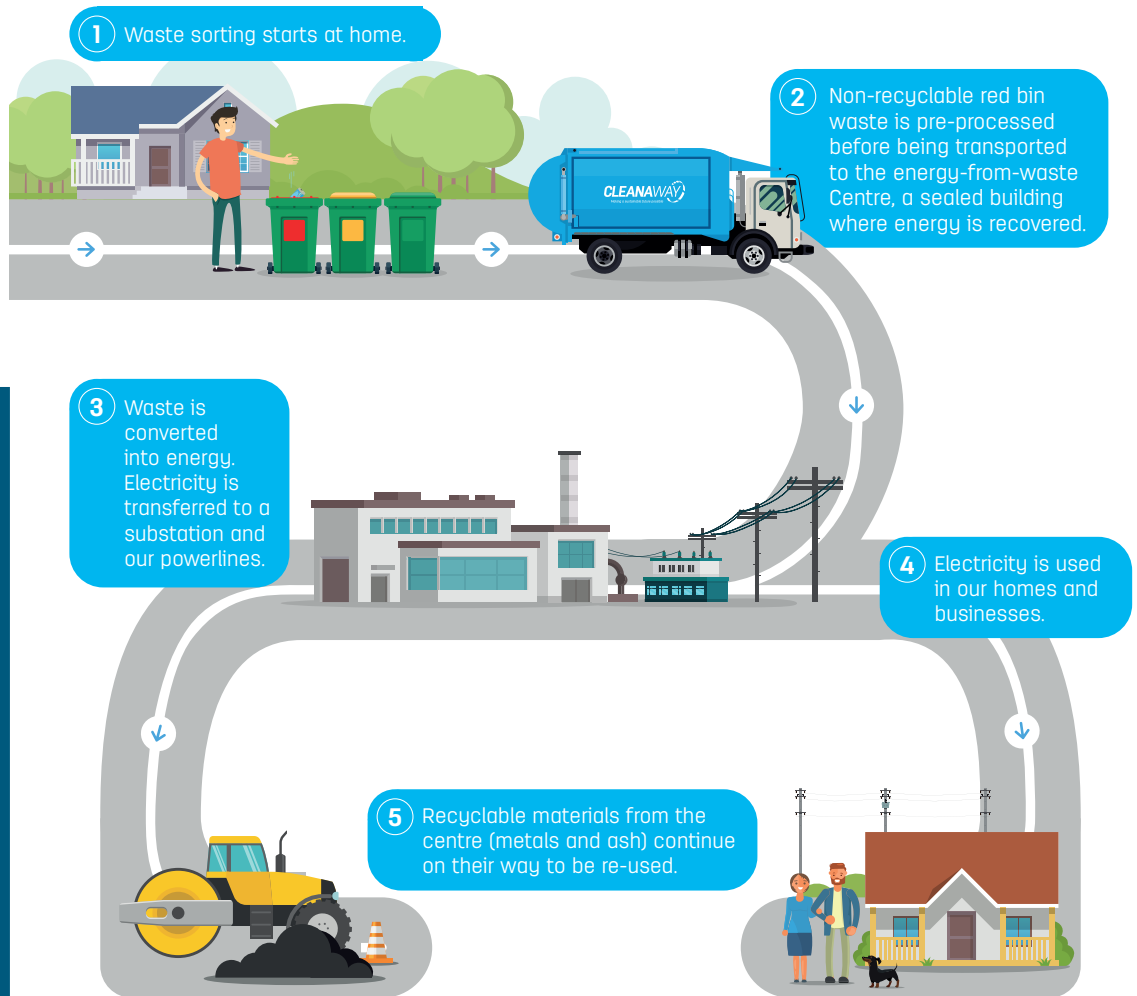
The WSERRC will use energy-from-waste technology to thermally treat up to 500,000 tonnes per year of residual municipal solid waste and residual commercial and industrial waste that would otherwise be sent to landfill. Residual waste is the waste we put in the red bin after we have separated out our recycling.

The process shown here will generate up to 58 megawatts of electricity - some of which will be used to power the facility itself and up to 55 megawatts supplied to the electricity grid, powering our homes and businesses.

The WSERRC will use moving grate combustion technology and advanced air pollution control systems.

This technology is well established and is safe. It has been used around the world for more than 50 years and has been continuously improved as technology has advanced. The proposal is designed to meet the European Industrial Emissions Directive and Best Available Techniques Reference document.

**These are the current highest standards in the world for energy-from-waste.**





The Centre will recover and recycle metals that would otherwise go to landfill. The Centre will also produce an inert ash (called bottom ash) that can be re-used in construction activities.

The proposal includes the establishment of an on-site Visitor and Education Centre, which will help educate the community on waste reduction, the circular economy, best practice recycling and energy-from-waste.

The WSERRC is located at 339 Wallgrove Road, Eastern Creek. This is an ideal location as it is an industrial area surrounded by existing waste management and industrial facilities. It is well connected by major roads, including the Westlink M7 Motorway.



# Why do we need energy from waste?

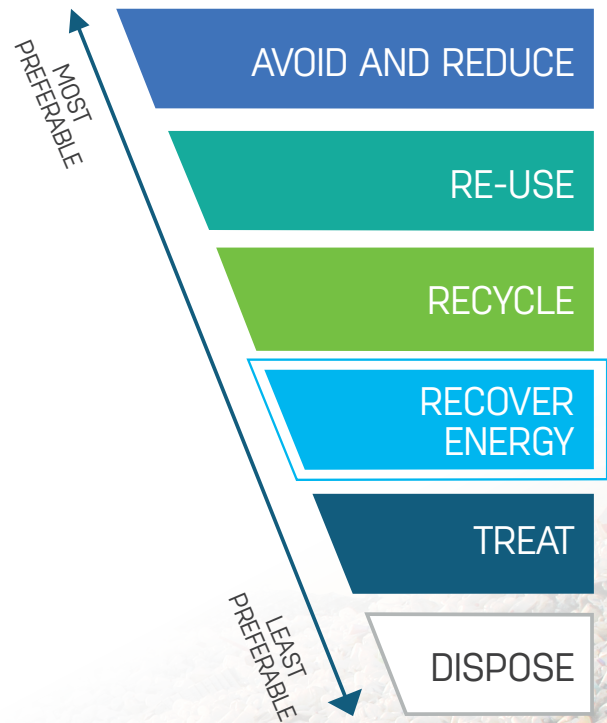
Currently, we send 1.6 million tonnes of waste in Western Sydney to landfill each year. This approach to managing our waste is problematic as we lose valuable resources. Using landfill creates social, economic and environmental issues, many of which are left for our future generations to deal with.

The waste hierarchy is shown here. It describes an order of preference for how waste should be managed to achieve the best possible environmental outcomes. Energy-from-waste is higher in the waste hierarchy than landfill as it falls under the 'recover energy' band, and landfill falls under 'dispose'.

Using energy-from-waste will help NSW achieve its waste policy targets, including diverting waste from landfill and increasing recycling.

Energy-from-waste supports our important transition to a circular economy, which is focused on maximising the value of resources. This is achieved by taking waste with no other re-use or recycling alternative and recovering the:

- energy for re-use as electricity;
- metals out of the ash to be recycled; and
- ash to be re-used in construction activities, for example in road base.





# The benefits of WSERRC

## We divert waste from going to landfill

By taking materials with no other recycling alternative and otherwise destined for landfill, a best practice energy-from-waste Centre will:

- recover value from residual waste in the form of energy;
- reduce our greenhouse gas emissions;
- require less land to be used for waste disposal; and
- reduce the legacy impacts of landfill, for example soil and water contamination from leachate, odour impacts and more.

## Re-use and recycling

The WSERRC will recover metals from the residue ash that can then be recycled. The Centre also aims to re-use the residual ash (called bottom ash). This is a common practice in Europe and means that more than 95% of the volume of non-recyclable waste entering the Centre would be diverted from landfill!

## Jobs

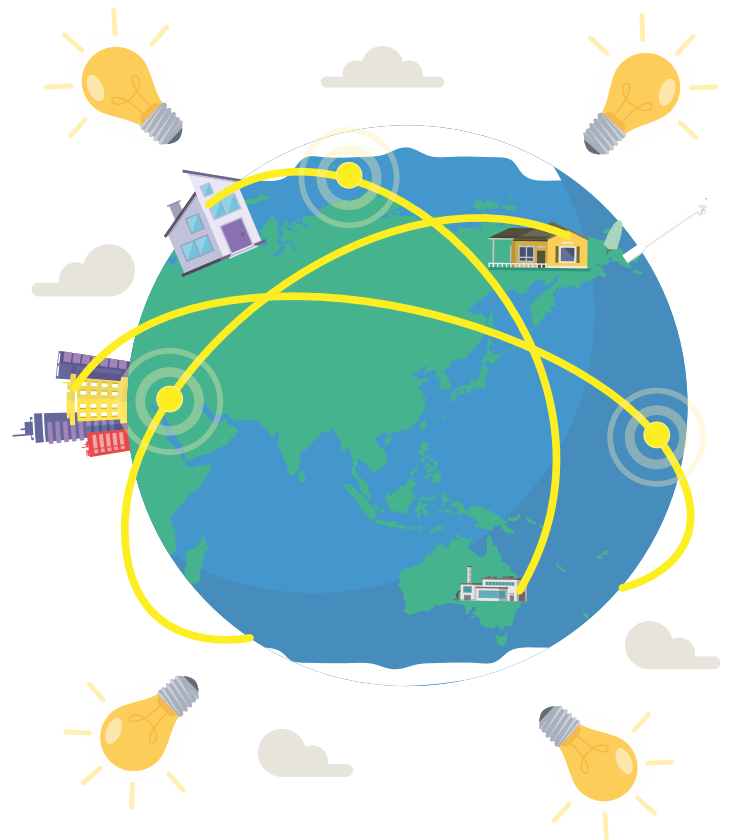
The WSERRC will create around 900 direct and 700-1,200 indirect jobs during construction and 50 highly skilled local jobs during operation - creating new skill sets and employment opportunities in Western Sydney.

## Generating electricity

The proposal will produce enough base load electricity to power more than 79,000 homes and businesses in Western Sydney. Base load energy is reliable energy, it does not depend on things that change, like wind or sunlight.

This electricity provides an alternative to fossil fuel generation, reducing net greenhouse gas emissions by around 390,000 tonnes of Carbon Dioxide (equivalent) (CO<sub>2</sub>-e) each year. This is the same as taking approximately 85,000 cars off the road each year.

There is also potential to supply energy in the form of heat and steam to nearby industrial sites.



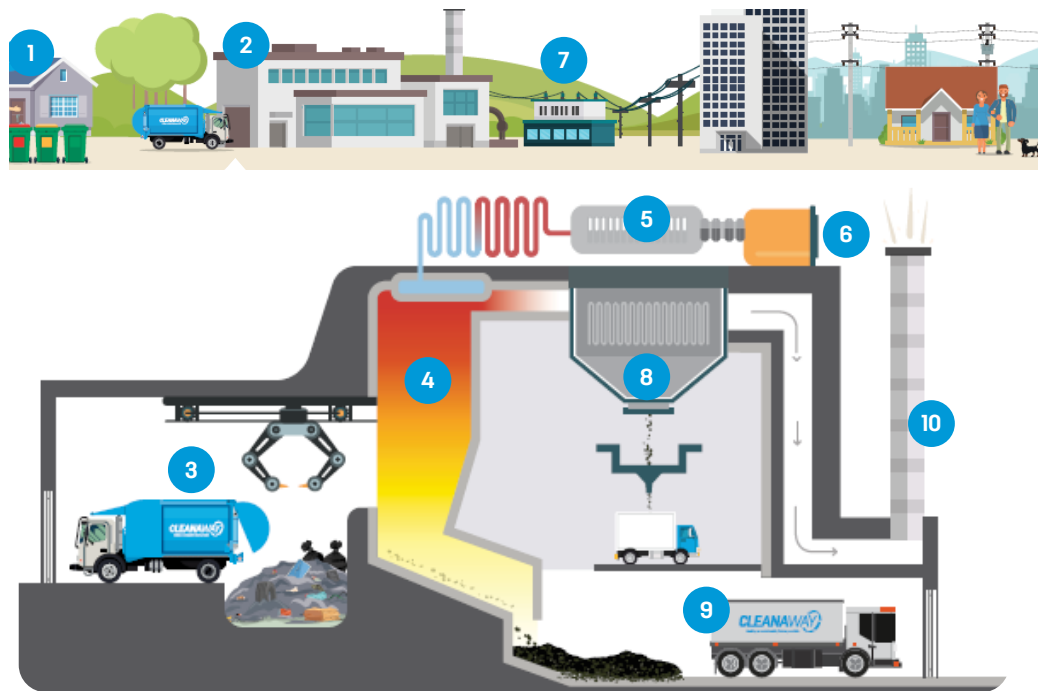
## How will it work?

The proposal will use modern, proven combustion and air pollution control technology, which has been continuously improved over the last 50 years.

The proposal is designed in accordance with strict European standards and the associated *Best Available Techniques Reference Document*. Importantly the Centre will comply with all technical criteria set out in the *NSW Energy from Waste Policy Statement*.

Waste will be collected from red bins placed on the kerbside and taken to a processing facility which will remove clean recyclables for recovery and large hazardous items that may have been placed in the red bin by mistake. The remaining residual waste will be transferred to the WSERRC.

Strict waste acceptance protocols and on-site procedures ensures only eligible waste is brought into the facility.



- 1 At home and work, we sort our waste into recyclable and non-recyclable items.
- 2 Before arrival at the energy-from-waste facility, a presorting process occurs to remove any recoverable recyclables and large hazardous items.
- 3 In the bunker, waste is mixed, ensuring consistency, by large crane claws before placement into the combustion chamber.
- 4 Waste is combusted at temperatures upwards of 850°C for over an hour as it moves along the grate. This ensures that waste combusts completely, destroying organic pollutant and odour molecules.
- 5 Water is heated during combustion creating steam which turns a turbine.
- 6 Baseload electricity is generated.
- 7 Electricity is put back into the grid and used to power homes and businesses.
- 8 Gases created during combustion pass through a multi-step flue gas treatment system, removing pollutants from the gases. The ash and pollutant residues are collected in a sealed system for treatment before disposal.
- 9 Bottom ash from the combustion process is collected and stored. Metals are recovered for recycling and the ash is sent for re-use in construction.
- 10 Cleaned gases and steam are dispersed high into the atmosphere, mixing well to ensure no impact on surrounding air quality.



In the waste bunker, waste is mixed with a large mechanical claw and then placed into the combustion chamber where it is processed at temperatures above 850°C for more than an hour. The heat creates steam, which drives a turbine and generates the electricity.

The advanced flue gas treatment system will use international best practice techniques to clean the emissions before they leave the Centre. There are several steps to the process, using both chemical and physical filters to treat the gases.

Once cleaned, 99.9% of the volume leaving the stack are gases common to air - oxygen, hydrogen, nitrogen and water vapour.

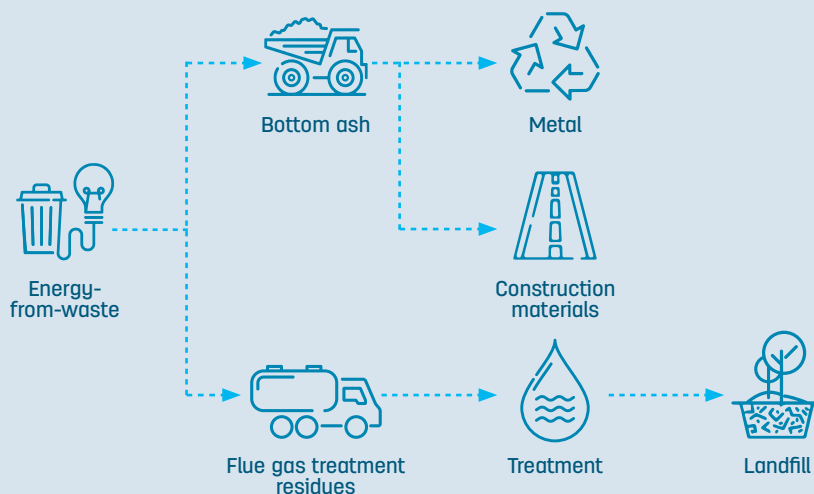
## Managing the outputs from the WSERRC

The WSERRC will reduce the volume of waste going to landfill and create solid residues as a result which must be managed. Other than electricity, the main outputs from the Centre will be:

- incinerator bottom ash – approximately 66,000 tonnes each year; and
- flue gas treatment residues – approximately 20,000 tonnes each year.

The bottom ash will be sent to a processing facility to mature and metals will be recovered for recycling. In other parts of the world, the bottom ash is re-used as a construction material. This proposal will seek to do the same, which would mean that more than 95% of the volume of non-recyclable waste entering the facility would be diverted from landfill.

The remaining five percent is flue gas treatment residues, which are typically treated and carefully disposed in a special landfill.



An architectural rendering of a large, modern building with a complex facade of brick, glass, and metal panels. The building features a prominent green roof with a wooden walkway and a glass-enclosed section. In the foreground, there is a landscaped area with tall grass and a curved wooden path. A blue overlay with white text is positioned in the lower-left corner.

# Key Assessments Summary



# Community health

A risk assessment for community health considered the potential impacts the WSERRC might have on both community and environmental health.

The assessment was undertaken in accordance with national and state guidelines. It concluded that there will be no unacceptable impact on the health of the community or the environment as a result of the operation of the WSERRC.

*The summary on Human Health Risk Assessment can be viewed in the EIS Chapter 9. The full technical report can be viewed in Technical Report B.*

## HOW WE ASSESSED HEALTH

A conservative approach was taken to assess community health risk with specialists using the data from worst-case operating conditions and the emissions described in the Air Quality and Odour Impact Assessment documents.

Further, health risk specialists assume a worst-case exposure scenario - a person being exposed to these maximum air emissions for 24 hours a day, every day, for 35 years. This will not be the case in reality but is helpful to provide a very conservative estimate of community health risk.

Preparing the health risk studies involved:

- identifying the characteristics of the community surrounding the site;
- assessing the potential health impacts as a result of the WSERRC - this includes all possible 'exposure' pathways, including breathing in (inhaling), consuming (ingestion) or skin contact;
- assessing the potential impacts on drinking water sources such as Prospect Reservoir and rainwater tanks to see potential impacts on water quality and human health; and
- identifying measures to manage any impacts on human health.

## OUTCOMES AND MITIGATION MEASURES

It was concluded that there are no unacceptable health risks associated with the operation of the WSERRC. This includes:

- no unacceptable health risks from emissions from the Centre;
- no unacceptable health risks for short-term or long-term exposure living in proximity to the WSERRC; and
- no unacceptable risks to water quality for either rainwater tanks or the Prospect Reservoir.

The design has incorporated technology that is sufficient to ensure there is no unacceptable community health risk.

## Air quality and odour

The assessment of air quality and odour measured how the WSERRC will perform against both international and NSW air emission limits. The results were that under every different operating scenario, the Centre will have minimal impact on the surrounding environment and receptors.

*The summary on Air Quality and Odour can be viewed in the EIS Chapter 8. The full technical report can be viewed in Technical Report A.*

### HOW WE ASSESSED AIR QUALITY

Air quality specialists looked at predicted air emissions across a range of scenarios, from normal expected operating conditions to a scenario that considered the maximum or worst-case emission levels possible.

The air quality specialists also conducted a cumulative impact assessment which considered the expected impact on air quality with the WSERRC with other approved industrial facilities in the area.

To assess potential impacts, the air quality specialists looked at:

- existing air quality surrounding the proposal site to understand if/how the proposal may change existing conditions;
- climate and ambient air data from monitoring stations in the local area surrounding the proposal site to understand how emissions will disperse in the specific atmospheric conditions in Western Sydney;

- the air emissions data from a similar operating energy-from-waste reference facility located in Dublin to assess the potential air quality impacts in Western Sydney based on air quality dispersion modelling; and
- potential odour impacts.

### OUTCOMES AND MITIGATION MEASURES

#### Air Quality

Dust impacts during site preparation and construction are expected to be minimal and a Dust Management Plan will be established to reduce impacts further.

During operation, the predicted air emissions from the Centre under all operating scenarios will comply with required standards. While the existing levels of particulates (PM2.5 and PM10) generally exceed NSW criteria, WSERRC will contribute only a very minor and indiscernible amount to the ambient air.

Measures to mitigate air impacts are included in the Centre design through the flue gas treatment technology selection and architectural design.

#### Odour

The odour assessment indicates that the proposal will be at or below the odour criteria.

Mitigation measures including negative pressure and automatic doors will ensure odour is controlled.

In NSW it is important to be able to describe similar operating facilities, called reference facilities. These facilities provide valuable, long term data on air emissions and how the emissions cleaning technology currently performs.

Our reference facilities are in Filborna, in Sweden, and Dublin, in Ireland.

The Dublin Energy-from-Waste facility is shown in the image below.

These two facilities process similar types of waste, they use the same technology including the flue gas treatment systems, and they are a similar size to the WSERRC. Information on both centres is on the [WSERRC website](#) and in the EIS documents.





# Greenhouse gas efficiency

The WSERRC will achieve a net reduction in greenhouse gas emissions.

*The summary on Greenhouse Gas Efficiency can be viewed in EIS Chapter 18. The full technical report can be viewed in Appendix N.*

## HOW WE CONSIDERED GREENHOUSE GAS EMISSIONS

To assess the greenhouse gas emissions and energy efficiencies created by the WSERRC:

- the existing environment was considered - climate trends and the link to greenhouse gas emissions; and
- the potential greenhouse gas emissions during construction and operations were calculated.

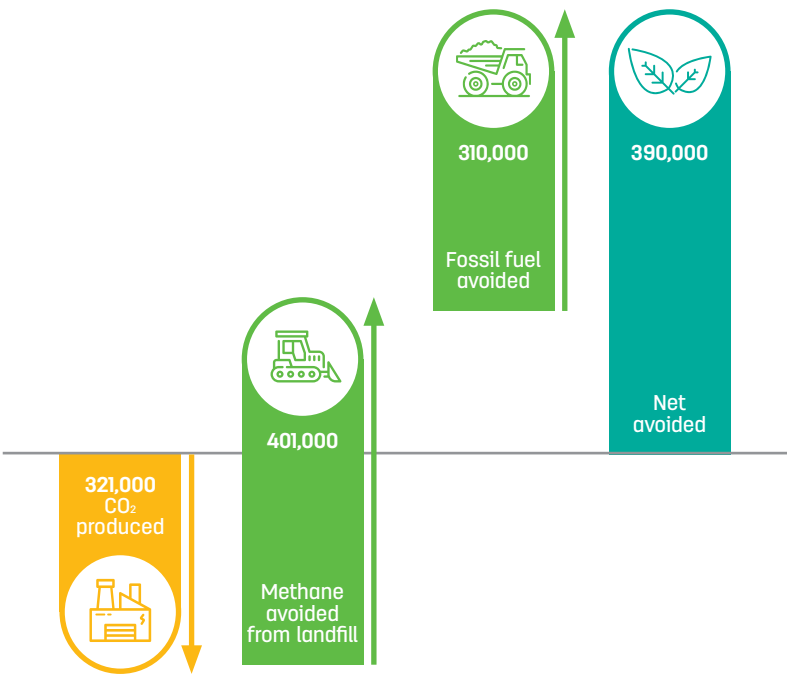
## OUTCOMES

The WSERRC is expected to generate a net reduction in climate change gases equivalent to more than 390,000 tonnes of CO<sub>2</sub>. This will be achieved by:

- WSERRC is expected to emit the equivalent of approximately 321,000 tonnes of CO<sub>2</sub>;
- electricity generation will displace CO<sub>2</sub> intensive fossil fuel electricity generation, avoiding the equivalent of 310,000 tonnes of CO<sub>2</sub>; and
- diverting this waste from landfill reduces methane gas generation equivalent to 401,000 tonnes of CO<sub>2</sub> per annum.

Over the life of the Centre, these figures will vary.

## ANNUAL CO<sub>2</sub>E NET REDUCTION IN GREENHOUSE GAS EMISSION (TONNES PER ANNUM)



# Noise

Noise levels from the operation of the WSERRC are expected to be negligible.

*The summary on Noise can be viewed in EIS Chapter 13. The full technical report can be viewed in Appendix I.*

## HOW WE ASSESSED NOISE

To assess what the noise impact for residents may be, specialists measured the current, or background, noise levels in the area.

The anticipated noise from the WSERRC was identified. The impact of this was then considered at the nearest residential locations. The predicted noise levels are calculated using worst-case conditions.

## OUTCOMES AND MITIGATION MEASURES

As with many construction activities, the building of the WSERRC may create noise levels that impact residential, commercial and industrial locations. These impacts can be managed and reduced, and this will be described in a Construction Noise and Vibration Management Plan.

Noise that will be generated from the WSERRC once operational is predicted to comply with noise criteria during standard weather conditions. In weather conditions such as light winds where the noise is carried further, noise volumes may result in a minor exceedance at nighttime for the closest residents. This is less than 2 decibels, which is barely recognisable above background noise levels.

It is expected that the detailed design of the WSERRC will be able to mitigate noise exceedances and ensure the proposal can comply with noise criteria.

# Traffic and transport

The impact of traffic and transport coming to the WSERRC site is expected to be negligible. The Westlink M7 Motorway and Wallgrove Road are both major roads located adjacent to the site.

*The summary on Traffic and Transport can be viewed in EIS Chapter 15. The full technical report can be viewed in Appendix K.*

## HOW WE ASSESSED TRAFFIC AND TRANSPORT IMPACTS

Traffic volumes were modelled using existing traffic and the expected future traffic generated by the WSERRC. Specialists examined the nearest intersections at Wallgrove Road and Austral Bricks Road, the Austral Bricks Road and the site access road.

## OUTCOMES AND MITIGATION MEASURES

While the WSERRC will generate additional traffic, both intersections will maintain their existing 'level of service' during construction and operation.

A Green Travel Plan will be prepared for staff at the WSERRC, that encourages sustainable travel. Bicycle parking will be provided.





# Site architecture and visual impacts

Architectural design has focused on integrating the Centre into the local context.

*The summary on Landscape and Visual can be viewed in the EIS Chapter 16. The full technical report can be viewed in Appendix L. More information on the site architecture can be viewed in Appendix B Architectural and Landscape Design.*

## HOW WE CONSIDERED VISUAL IMPACTS

Specialists considered the new building, its location and existing viewpoints from locations surrounding the site.

## OUTCOMES AND MITIGATION MEASURES

The proposal will result in a new building in the area and this will be a noticeable change for a number of viewpoints. There may be visual impacts for those residents located closest to the WSERRC. The Horsley Park area is rural residential. It was assessed that this area will have a moderate to low level local character impact and a moderate to high level visual amenity impact.

The design of the WSERRC had the objectives of:

- considering its surroundings;
- invigorating the surrounding ecosystem;
- embracing innovation; and
- providing a Visitor and Education Centre

while providing for the functional constraints of a highly engineered operating facility. The design uses vertical blade walls to create an incremental increase in height.

Different claddings are used including transparent walls to create interest, with large green walls at each end.

The site will be rehabilitated with native trees and a bioretention basin, to reinvigorate the local ecosystem.

Use your smartphone to scan the QR code or visit the [website](#) to see a [video](#) on the development of the site architecture



# Community and stakeholder engagement

From the outset, it has been important to engage the community and stakeholders in a genuine, two-way discussion in order to understand concerns and issues that need to be addressed.

A range of activities were run to gather input from the community, including door knocking, pop-ups and workshops. Additionally, a dedicated website, 1800 line and email address were established to provide easily accessible information on the WSERRC.

Some of the key concerns that were raised during these activities included potential issues around air quality and community health, odour, the location and the types of waste the Centre will process. These concerns, and more, are addressed in detail in the EIS.

If approved, the WSERRC plans to continue engaging with the community through the on-site Visitor and Education Centre, the establishment of a community reference group and a community funding package to contribute to community projects and initiatives.



# Planning process

The assessment process for the WSERRC is managed through the Department of Planning, Industry and Environment.

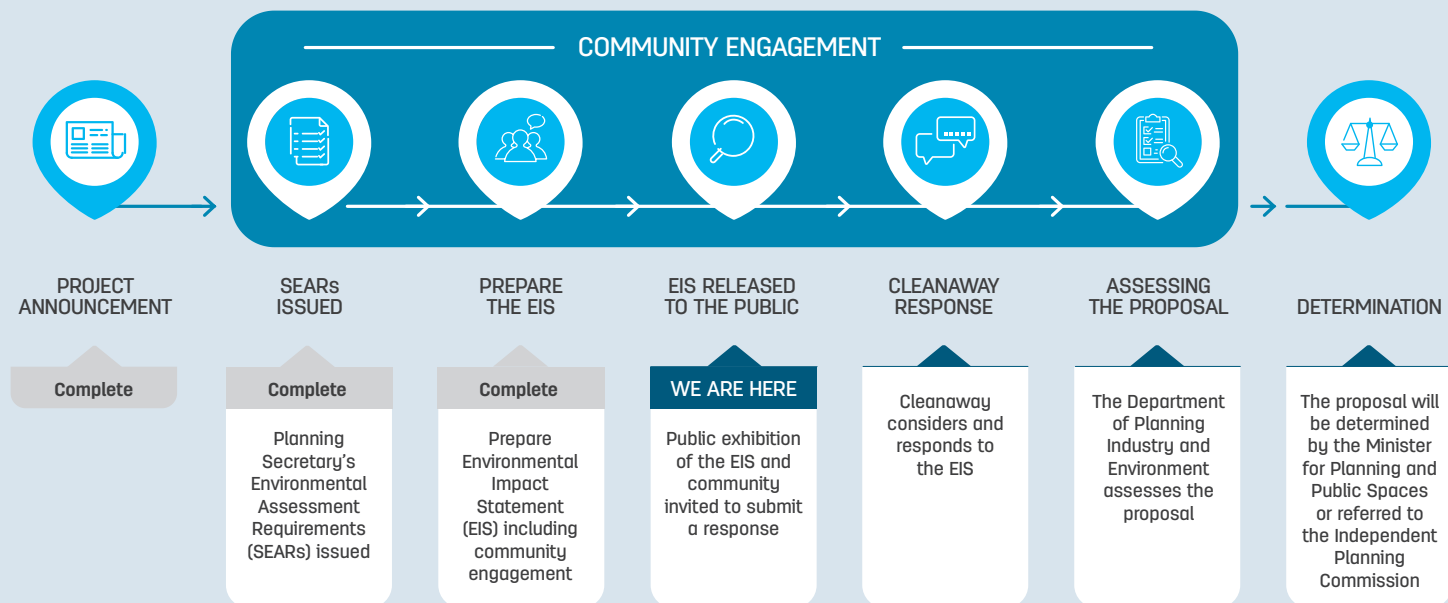
The WSERRC EIS is now on public exhibition.

The EIS will be exhibited for 42 days from 6 October 2020, ending on 16 November 2020. The community and stakeholders are invited to review the information and submit a response.

Anyone can make a submission about the proposed WSERRC to the Department of Planning, Industry and Environment. The EIS documents and information about how to make a submission is available on their website:

<https://www.planningportal.nsw.gov.au/major-projects/project/25896>

## What does that planning process look like?







## Contact us

We want to make sure everyone can get to know the proposal.

Visit our website and explore the [virtual information room](#) to find out more about the proposal and the EIS. We are always open to a conversation and welcome all who may have a question or comment on the EIS and WSERRC proposal to contact us. We can be reached through any of the contact methods below:

**Website:** [www.energyandresourcecentre.com.au/contact-us/](http://www.energyandresourcecentre.com.au/contact-us/)

**Phone:** 1800 97 37 72

**Email:** [energyandresourcecentre@cleanaway.com.au](mailto:energyandresourcecentre@cleanaway.com.au)



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*Our mission is to make a sustainable future possible.*

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