

Chapter 23

Cumulative impacts

23 Cumulative impacts

The SEARs require an assessment of the

‘potential impacts of all stages of the development, including any cumulative impacts of the proposed facility with any approved (but not yet constructed) developments, including The Next Generation’s proposal for an energy from waste facility at Eastern Creek (currently subject to proceedings in the NSW Land and Environment Court).’

There is no conventional method for the assessment of cumulative impacts in New South Wales. However, the following approach has been adopted:

- Confirming the scope of cumulative impact assessment by:
 - Recognising projects within a 3km radius of WSERRC, based on the spatial extent of impacts from WSERRC
 - Recognising projects that are likely to proceed by focusing on those projects that are approved but not yet constructed or at an advanced stage in the planning process
- Reviewing the New South Wales planning portal for major projects
- Reviewing environmental impact assessment data for those projects included in the scope of the cumulative impact assessment to see how their impacts may overlap with impacts from WSERRC
- Completing a qualitative cumulative impact assessment of WSERRC with the identified projects, and, where relevant, developing management and mitigation measures.

A quantitative cumulative air quality impact assessment of WSERRC with the DADI Next Generation proposal has also been prepared. It is reported in **Chapter 8 Air quality and odour** and summarised here.

23.1 Identifying relevant projects

The spatial extent of impacts from WSERRC is different for each assessment matter. Emissions-based impacts such as air, noise and health tend to have a greater spatial extent than impacts which are typically confined to the site area, such as biodiversity and heritage. However, site-based impacts may also be considered to overlap with offsite impacts if they are seen as part of a broader pattern of loss of environmental values, such as biodiversity.

Based on a 3km study area adopted for the air quality assessment, the cumulative impact assessment has also adopted a 3km radius study area.

A search of the Department's Major Projects register was performed in May 2020, to identify the approved developments within 3km of the proposal site, as well as other relevant developments not yet approved. **Table 23.1** and **Figure 23.1** describe major projects.

The Next Generation facility is expressly mentioned in the SEARs, so while it is more than 3km from the proposal site, it is included in this assessment.

Western Sydney Airport (WSA) is at least 15km away from the proposal, so potential cumulative impacts were not considered with this proposal. A review of the WSA impact assessment shows that it would not affect the background concentration levels for air quality near the proposal, as noted in the Air Quality and Odour Impact Assessment (**Technical report A**).

Table 23.1: NSW Major Projects

Location	Applicant	Proposed development	Status
Honeycomb Drive, Eastern Creek	The Next Generation (NSW) Pty Ltd	Eastern Creek Energy from Waste Facility The construction and operation of an energy from waste facility.	Currently being assessed by the NSW Land and Environment Court
780 Wallgrove Road, Eastern Creek	The Austral Brick Co Pty Ltd	Horsley Park Brickworks Plant 2 Upgrade Proposed upgrade works to existing Plant 2 brick making facility including replacement of existing two kilns, with one new kiln and alterations and additions to the existing production building. The proposal does not seek to alter the current production capacity of the site.	Approved (May 2020)
813–913 Wallgrove Road, Horsley Park	Gazcorp Pty Ltd	Gazcorp Industrial Estate Concept Proposal for an industrial estate with 16 warehouses and a concurrent Stage 1 Development Application (DA). The Concept Proposal was approved for a maximum gross floor area (GFA) of 211,550m ² across 16 development lots as well as site levels, landscaping, infrastructure services and development controls. The Stage 1 DA was approved for the construction and operation of a 45,225m ² warehouse with ancillary office space on proposed Lot 10 as well as bulk and detailed earthworks, construction of internal access roads and estate-wide street landscaping.	Approved (November 2019)
165 Wallgrove Road and 475 Ferrers Road, Eastern Creek	Western Sydney Parklands Trust	Light Horse Interchange Business Hub Eastern Creek Concept proposal for the staged development of a 29.4ha business park (known as the Light Horse Interchange Business Hub) and a detailed proposal for the Stage 1 works.	Assessment (Further information requested March 2020)

Location	Applicant	Proposed development	Status
17 Roberts Road, Eastern Creek	Hindmarsh Construction Australia Pty Ltd	Roberts Road Data Centre Construction and operation of a data storage facility.	Response to submissions (Requested February 2020)
194–202 Chandos Road, Horsley Park	Jemena Gas Networks (NSW) Ltd	Western Sydney Green Gas Project A 5-year trial to construct a Power to Gas facility at an existing Facility at Horsley Park, inject hydrogen gas into the Sydney secondary gas distribution network, supply it for bus refuelling, and/or for power generation back into the grid.	Assessment (Further information requested May 2019)
Lot 3 DP 1225803, Lot 4 DP 1225803 and Lot 5 DP 1225803, Eastern Creek	Hanson Construction Materials Pty Ltd	Eastern Creek Resource Recovery Facility Construction and operation of a resource recovery facility comprising a concrete recycling plant with a processing capacity of 100,000tpa and a material storage depot with a capacity of 36,000tpa.	Prepare EIS (SEARs issued February 2019)
Lot 1 DP1077822, Lots A, B and C DP408966 and Lot 2 DP 1062965	Sydney Metro	Sydney International Speedway Construction and operation of a new speedway (Sydney International Speedway), including a clay-based racetrack, support infrastructure for competitors, support infrastructure for spectators and ancillary infrastructure and services.	Prepare EIS (SEARs issued May 2020)



Eastern Creek Energy from Waste Facility,
The Next Generation (NSW) Pty Ltd

Eastern Creek Resource Recovery Facility,
Hanson Construction Materials Pty Ltd

Light Horse Interchange Business Hub Eastern Creek,
Western Sydney Parklands Trust

Roberts Road Data Centre,
Hindmarsh Construction Australia Pty Ltd

Sydney International Speedway,
Sydney Metro

Gazcorp Industrial Estate,
Gazcorp Pty Ltd

Horsley Park Brickworks Plant 2 Upgrade,
The Austral Brick Co Pty Ltd

Western Sydney Green Gas Project,
Jemena Gas Networks (NSW) Ltd

Legend

- Developments
- Site Boundary
- 3 Km Buffer

Source: Esri, DigitalGlobe, GeoEye, Earthstar Geographics, CNES/Airbus DS, USDA, USGS, AeroGRID, IGN, and the GIS User Community/DFSI 2020

Figure 23.1: Major projects surrounding the proposal site

23.2 Cumulative impact assessment

Table 23.2 outlines the key impacts for each project and the potential cumulative impacts which may arise when considered with impacts from WSERRC. These are considered both construction and operation impacts.

Table 23.2: Identification of key impacts and potential cumulative impacts

Proposed development	Key impact	Potential cumulative impact with WSERRC
Eastern Creek Energy from Waste Facility (Next Generation)	<ul style="list-style-type: none"> • Air quality and odour • Human health • Noise • Traffic • Waste • Social • Biodiversity 	<ul style="list-style-type: none"> • Air quality and odour • Human health • Waste • Social • Biodiversity • Soils and water
Horsley Park Brickworks Plant 2 Upgrade	<ul style="list-style-type: none"> • Air quality and odour • Biodiversity • Noise • Traffic • Visual 	<ul style="list-style-type: none"> • Air quality and odour • Noise • Traffic • Visual • Biodiversity • Soils and water
Gazcorp Industrial Estate	<ul style="list-style-type: none"> • Traffic • Noise • Biodiversity 	<ul style="list-style-type: none"> • Traffic • Noise • Biodiversity • Soils and water
Light Horse Interchange Business Hub Eastern Creek	<ul style="list-style-type: none"> • Traffic • Contamination • Flooding • Biodiversity 	<ul style="list-style-type: none"> • Traffic • Biodiversity
Roberts Road Data Centre	<ul style="list-style-type: none"> • Noise and vibration • Visual • Traffic • Biodiversity 	<ul style="list-style-type: none"> • Noise • Traffic
Western Sydney Green Gas Project	<ul style="list-style-type: none"> • Air quality and odour • Hazards and risks • Noise and vibration • Traffic 	<ul style="list-style-type: none"> • Air quality and odour • Traffic

Proposed development	Key impact	Potential cumulative impact with WSERRC
Eastern Creek Resource Recovery Facility	<ul style="list-style-type: none"> • Air quality and odour • Human health • Noise • Traffic • Visual • Social 	<ul style="list-style-type: none"> • Air quality and odour • Human health • Traffic
Sydney International Speedway	<ul style="list-style-type: none"> • Traffic • Noise and vibration • Biodiversity • Aboriginal heritage • Air quality and odour 	<ul style="list-style-type: none"> • Traffic • Noise

The potential cumulative impacts mainly relate to air quality and odour, noise, biodiversity and traffic impacts. These are assessed in more detail in **Table 23.3**.

Cumulative construction impacts

During construction, the proposal has the potential to cause cumulative impacts if other developments are built at the same time. Construction impacts which could result in cumulative impacts include noise, air quality and odour and transport, which may generate social impacts in terms of the change in amenity experienced by people living and working in the surrounding areas.

The construction timeframes for the surrounding developments are unknown. A worst-case scenario would be that all proposed development construction timeframes overlapped. While this is unlikely, it has been used as the basis for the assessment.

As construction impacts are temporary in nature and can be managed by applying standard construction environmental management measures, construction related impacts are not considered significant. The proximity of the site and the other developments to major transport infrastructure, including the Westlink M7 motorway, minimises construction traffic related impacts and the distance to residential areas minimises noise, air quality and other amenity impacts.

Cumulative operation impacts

Once the proposal is operational, it has the potential to cause cumulative impacts that relate to air quality and odour and consequently human health impacts, noise, traffic, waste, social and visual impacts. These cumulative impacts are inherently mitigated against in the embedded design of the proposal and by making sure the proposal operates in compliance with necessary licences and approvals.

Table 23.3: Potential cumulative impacts during construction and operation of the proposal

Impact	Assessment
Cumulative construction impacts	
Noise	<p>WSERRC</p> <ul style="list-style-type: none"> The proposal's site location surrounded by industrial uses and major roadways and the distance to sensitive receivers mitigates its noise impact. The proposal construction noise and vibration impacts will be managed by a Construction Noise and Vibration Management Plan (CNVMP). <p>Cumulative noise assessment</p> <ul style="list-style-type: none"> The likelihood of a cumulative construction noise impact is from the four projects to the south or west of the proposal area and the south west residential area (Horsley Park). It is likely that noise impacts at the residential area would be influenced by the closest project, with WSERRC being located furthest from this area. In addition, each project would manage construction noise impacts within their conditions of consent and in line with a construction noise management plan, which is the most effective way of avoiding and minimising cumulative impacts. Even assuming a worst-case scenario of every project being constructed at the same, the noisiest activities are likely to occur for a short time within individual construction programmes.
Traffic	<p>WSERRC</p> <ul style="list-style-type: none"> The traffic assessment (Technical report K) modelled the proposed construction traffic against the Gazcorp Industrial Estate proposed intersection upgrades at Wallgrove Road and Austral Bricks Road intersection (and their traffic load). The results showed that even with the proposal's construction traffic, the same level of service would be maintained for the intersection. All construction vehicles would be able to park onsite, avoiding offsite parking impacts on the road network. <p>Cumulative traffic assessment</p> <ul style="list-style-type: none"> The Gazcorp Industrial Estate and Horsley Park Brickworks Plant 2 Upgrade have the potential for direct cumulative impacts as these projects will impact the same intersections as the proposal. Other projects are far enough away to avoid cumulative impacts. The construction period for Horsley Park Brickworks Plant 2 Upgrade will be 2.5 years and could coincide with the WSERRC construction period. If there was overlap during construction periods, this could cause cumulative traffic impacts on the Austral Bricks Road and Wallgrove Road intersection. A draft Construction Transport Management Plan (CTMP) has been prepared and would be updated by the appointed contractor. This will help manage and mitigate any construction traffic impacts and consider cumulative impacts if other projects are constructed at the same time. Each major project would require a similar CTMP to be prepared and carried out during construction.

Impact	Assessment
Cumulative construction impacts	
Social	<p>WSERRC</p> <ul style="list-style-type: none"> Potential negative social impacts during construction correlate to the anticipated visual, noise, air quality and traffic impacts. The social impacts are how these impacts are experienced and valued by people including their perceptions of impact. The proposal would also have the positive social impact of creating employment and business opportunities along the supply chain during construction. <p>Cumulative social assessment</p> <ul style="list-style-type: none"> Construction activities that overlap can exacerbate the potential effects of construction, for example increased construction noise and traffic volumes. This may intensify the potential social impacts associated with changes to movement and access and reduced amenity. There is potential for construction fatigue to be experienced by nearby receivers where they are impacted by the proposal's construction and other nearby construction activities. The overlap of development can result in issues with sourcing construction workers, materials and equipment. However, as construction makes up a large proportion of the workforce (19%) and businesses (21%) in the local study area, this risk is low. A Community management strategy will also be developed through the construction phase, which will include the formation of a Community Reference Group (CRG), contact protocols and communication strategy with nearby neighbours, residents and businesses.
Heritage	<p>WSERRC</p> <ul style="list-style-type: none"> There are no known Aboriginal archaeological sites or areas of Aboriginal archaeological potential or non-Aboriginal heritage features within the proposal area, so the proposal is unlikely to impact on Aboriginal or non-Aboriginal heritage. An unexpected finds protocol will be followed during construction. <p>Cumulative heritage assessment</p> <ul style="list-style-type: none"> While other projects may result in heritage impacts, the proposal is unlikely to contribute to any cumulative heritage impacts.

Impact	Assessment
Cumulative construction impacts	
Biodiversity	<p>WSERRC</p> <ul style="list-style-type: none"> • The proposal will require the removal of 0.45ha of Cumberland Shale Plain Woodland. Site landscaping and restoration of cleared native vegetation communities, ecological communities and impacted aquatic habitats is proposed following construction of the facility to minimise impacts to biodiversity. <p>Cumulative biodiversity assessment</p> <ul style="list-style-type: none"> • The surrounding projects will require the following vegetation removal: <ul style="list-style-type: none"> ○ The Next Generation proposal would require the removal of about 0.27ha Cumberland Plain Woodland and 2.89ha Eucalypt River flat forest. Offsetting will be achieved with about 0.54ha of Cumberland Plain Woodland and 4.98ha of River Flat Eucalypt Forest to be regenerated or replanted. ○ Horsley Park Brickworks Plant 2 Upgrade requires vegetation clearing including the loss of 0.11ha of degraded Cumberland Plain Woodland. ○ The Gazcorp Industrial Estate project will require the removal of Shale Hills Woodland, Shale Plain Woodland and Alluvial Woodland. ○ The Light Horse Interchange Business Hub project will require the removal of Cumberland Plain Woodland and Shale-Gravel Transition Forest. ○ The Roberts Road Data Centre project would require the removal of Red Gum Forest. Offsets are proposed to mitigate this impact. ○ The Western Sydney Green Gas project will have no impacts on biodiversity. ○ The Eastern Creek Resource Recovery Facility and the Sydney International Speedway are also likely to have biodiversity impacts, although the extent of these are not known as the EIS has not been prepared. • For projects that have been approved (Gazcorp Industrial Estate and Horsley Park Brickworks Plant 2 Upgrade) the total amount of Cumberland Shale Plain Woodland to be cleared would be 13.2ha. So, in combination with the WSERRC proposal's clearing of 0.45ha, the total Cumberland Shale Plains Woodland to be cleared would be about 13.6ha. • While there may be cumulative impacts of vegetation clearing, particularly for the Cumberland Shale Plain Woodland, all projects will mitigate these impacts by either replanting with native vegetation or offsets. For those projects not offering an offset, like the WSERRC proposal, the quantity of clearing and/or the quality of the vegetation being cleared must have been assessed to not be significant enough to require an offset (no or minimal impact).

Impact	Assessment
Cumulative operation impacts	
Air quality and odour and human health	<p>WSERRC</p> <ul style="list-style-type: none"> The proposal air quality impacts are assessed with and without the Next Generation proposal emissions considered (Technical report A). Without the Next Generation emissions, predicted incremental air quality impacts are low, with the maximum predicted air quality levels below the relevant criteria for all assessed air pollutants. <p>Cumulative air quality and odour and human health assessment</p> <ul style="list-style-type: none"> The air quality assessment assessed a range of operational scenarios for WSERRC, and when including the Next Generation emissions into the background air quality levels, all predicted air quality impacts were within criteria. The AQOIA also assessed potential cumulative impacts with other surrounding projects. The existing emissions from the operating Horsley Park Brickworks are accounted for in the WSERRC assessment modelling, so cumulative impacts are inherently already considered. Furthermore, the proposed Horsley Park Brickworks Plant 2 Upgrade EIS states that the upgrade will result in an improvement in the site's overall air quality. The Western Sydney Green Gas project will operate on natural gas for the first six months of operation, and the nitrogen oxides and fugitive natural gas emissions were predicted to be negligible. Once the proposal's generator is operated on hydrogen, the only emissions from the proposal will be oxygen, water and fugitive hydrogen. So, any cumulative air quality impacts associated with the Western Sydney Green Gas Project would be negligible. It is likely that the Eastern Creek Resource Recovery Facility and the Sydney International Speedway proposals would also result in air quality impacts which could have a cumulative impact. The EIS's for these proposals have not yet been developed, so the potential cumulative impacts are unknown, however these proposals would also have to comply with requirements relating to air quality emissions. It is likely that any air quality impacts from the Sydney International Speedway would be localised to the speedway and immediate surrounding environment. Thus, these impacts are unlikely to cause cumulative impacts with the WSERRC proposal.
Noise	<p>WSERRC</p> <ul style="list-style-type: none"> The noise assessment (Chapter 13 Noise and vibration and Technical Report I) concludes that noise generated from the operation of the proposal is predicted to comply with noise criteria at all sensitive receivers during standard weather conditions. In enhanced weather conditions where the noise is carried further, a minor exceedance (less than 2dB) during the night-time period is predicted at residential receivers located to the south of the site in Horsley Park. During the detailed design stage, the building envelope and plant and equipment would be designed so the proposal can comply with noise criteria.

Impact	Assessment
Cumulative operation impacts	
	<p>Cumulative noise assessment</p> <ul style="list-style-type: none"> The noise assessment has been completed in line with the Noise Policy for Industry (NPI) (EPA, 2017). This policy defines two noise levels, project intrusiveness noise levels and project amenity noise levels. The project intrusiveness noise level aims to protect against significant changes in noise levels, while the project amenity noise level seeks to protect against cumulative noise impacts from industry and maintain amenity for particular land uses. Applying the most stringent requirement as the project noise trigger level will make sure that both intrusive noise is limited, and amenity is protected and that no single industry can unacceptably change the noise level of an area (EPA, 2017). Any future development in the local area would be subject to the same assessment process, thereby limiting the potential for cumulative noise from industrial activities over time. The likelihood of a cumulative operational noise impact is from the nearest four projects to the south or west of the proposal area and the south west residential area. This has been considered through an assessment of the individual projects noise impacts and their stated noise impacts (if known).
Traffic	<p>WSERRC</p> <ul style="list-style-type: none"> Chapter 15 Traffic and transport and Technical report K considered the trip generation from the proposal and the traffic impacts on the nearest intersections, being Wallgrove Road / Austral Bricks Road intersection and the Austral Bricks Road / site access intersection. The proposal will result in 236 two-way trips per day. The peak hour for vehicle trips would be between 09:00–10:00, with 33 vehicles arriving at the site. The traffic assessment (Technical report K) for this proposal uses the Gazcorp Industrial Estate proposed intersection upgrades in the modelling (including any the predicted traffic generated from the Gazcorp Industrial Estate project), the results indicate that although the proposal will increase the average intersection delay, the existing level of service is maintained for this intersection. <p>Cumulative traffic assessment</p> <ul style="list-style-type: none"> Potential cumulative impacts associated with transport relate to increase traffic and congestion on surrounding roads being Austral Bricks Road and Wallgrove Road. As the Gazcorp Industrial Estate traffic modelling has been included in the WSERRC assessment, the cumulative impacts have inherently been considered and the existing level of service is maintained for the Wallgrove Road / Austral Bricks Road intersection. As the design of the intersection progresses, the applicant will continue to engage with Gazcorp and the approving authorities. This will make sure that the traffic generated by the proposal is considered and any design requirements are fed into the design process.

Impact	Assessment
Cumulative operation impacts	
	<ul style="list-style-type: none"> For the Austral Bricks Road and site access intersection, the proposal will not change the level of service for this intersection, given the expected flows using the Austral Bricks Road. The nearest proposed development which could cause cumulative traffic impacts is the Horsley Park Brickworks Plant 2 Upgrade. The Horsley Park Brickworks Plant 2 Upgrade EIS concludes that the proposed development would not change the travel patterns of the existing site and would not increase traffic generation associated with the site. For all other projects, they are located far enough away so that any cumulative impacts will be negligible.
Visual	<p>WSERRC</p> <ul style="list-style-type: none"> Based on the assessment of landscape character and visual impacts (Chapter 16 Landscape and visual and Technical report L) the proposal will result in additional built form and large visual elements, such as the stack and plume which would result in a noticeable change for some visual receptors within the receiving environment. The visual impacts on the receivers are greater where the surrounding landscape has higher sensitivity, being within the Western Sydney Parklands and or rural residential areas. <p>Cumulative visual assessment</p> <ul style="list-style-type: none"> The expansion of new industrial and commercial development to the area could result in the cumulative impact of overdevelopment or loss of existing landscape character. However, as the existing environment is zoned for industrial and commercial land uses intended for these proposed major developments, these types of activities could be reasonably anticipated. The design embedded mitigation measures and careful architectural design of each development will mitigate cumulative visual impacts, as well as proposed landscaping and planting.
Waste feedstock	<p>WSERRC</p> <ul style="list-style-type: none"> An assessment of the availability of waste feedstock in combination with the Next Generation facility has been considered and is discussed in Chapter 2 Strategic context and Chapter 5 EfW policy. <p>Cumulative waste assessment</p> <ul style="list-style-type: none"> There is significantly more waste feedstock available in the Sydney Basin than the 500,000tpa design capacity of the WSERRC proposal. The Next Generation facility EIS states that it will process and thermally treat up to 552,000t of non-putrescible residual waste sourced from construction and demolition (C&D), commercial and industrial (C&I) sources as well as shredder floc. The proposed feedstock for the WSERRC facility differs from the Next Generation proposal in that it will thermally treat residual putrescible and non-putrescible waste from MSW and C&I sources. Even with increased source separation, reduction in waste generation per capita and meeting recycling targets, the Sydney Basin will still generate significant quantities of residual waste that will need to be managed.

Impact	Assessment
Cumulative operation impacts	
Social	<p>WSERRC</p> <ul style="list-style-type: none"> • Social impacts have been assessed for the proposal in Chapter 17 Social and Technical report M. Negative social impacts correlate to the anticipated visual, noise, and traffic impacts, as well as perceived social impact related to health impacts associated with air emissions. Potential employment and businesses opportunities for local and regional residents and businesses presents a positive social impact. • The proposal has strong environmental credentials and commitment to operating within the criteria stated in this EIS. The site has been chosen due to its distance from sensitive receivers, proximity to major transport corridors to avoid social impacts. <p>Cumulative social assessment</p> <ul style="list-style-type: none"> • The development of multiple similar projects in the surrounding area could compound social impacts. In particular, the combination of the proposal and the Eastern Creek Resource Recovery Facility may result in an increase of the perceived health and air quality impacts reported. In addition, the potential cumulative traffic and congestion impacts may also result in cumulative social impacts around way of life and ease of access to employment and services. There may be perceived social impacts associated with the core community value of liveability, noting a shift in the area towards more industrial use. However, industrial uses are specifically provided for in the broader policy framework and strategic direction for the area, and the proposal is part of the Western Sydney Parklands area which specifically allows for recycling and renewable energy activities. • Furthermore, the commitment to ongoing consultation with the community throughout the life of the facility will occur through the visitor and education centre, and creation of a Community Reference Group (CRG). The purpose of the CRG will be to help build long-term relationships with the community, enabling a forum for genuine discussion of construction and operation of the facility, community concerns, information requests, and local initiatives and partnerships. In addition to general CRG duties, it is anticipated that the CRG will also manage the allocation of the community funding package in line with an agreed governance framework. The CRG will be made up of community representatives, local stakeholders and council representatives, and meetings will be supported independently. It is likely that this group will be refreshed every 2 years so that a variety of community and other stakeholders are given the opportunity to participate (see Chapter 6 Engagement). These will help to mitigate cumulative social impacts.
Greenhouse gas	<p>WSERRC</p> <ul style="list-style-type: none"> • The WSERRC proposal will result in a net reduction of greenhouse gas emissions (390,000t of CO₂-e). <p>Cumulative greenhouse gas assessment</p> <ul style="list-style-type: none"> • Even if other projects do result in greenhouse gas impacts, the proposal will not contribute to negative cumulative impacts.