APPENDIX H

BIODIVERSITY ASSESSMENT DOCUMENTATION

APPENDIX H1

BDAR WAIVER APPLICATION

BDAR Waiver Request

Central Sydney Industrial Estate

BDAR Waiver Request

Client: VE Property Pty Ltd

ABN: 57 623 469 625

Prepared by

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Quality Information

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Proponent name	VE Property Pty Ltd
ABN	57 623 469 625
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1.0 BDAR Waiver request

1.1 Introduction

VE Property Pty Ltd (VE Property) propose to develop the Central Sydney Industrial Estate (the Project) within the former Shell/Viva refinery site at Clyde, NSW. The project includes the construction and subdivision of eight industrial lots for future development into industrial facilities by others, as well as the development of Lot 6, Downer Sustainable Road Resource Centre. The Project also includes the construction of roads and relevant utilities, including stormwater. A 30 metre riparian management zone is proposed along the southern boundary of the site.

As part of the secretary's environmental assessment requirements (SEARs) for the Project a biodiversity development assessment report (BDAR) was requested. Given the highly degraded nature of the site VE Property requests that this requirement be formally waived, as per section 7.9(2) of the *Biodiversity Conservation Act 2016* on the basis that the Project will:

- Clear only isolated landscaping trees with no native understorey
- Not result in adverse impacts on threatened species or ecological communities
- Not affect any areas designated as coastal wetland under *State Environmental Planning Policy (Coastal Wetlands) 2018*.
- Result in negligible adverse impacts upon adjacent waterways, and
- Set aside, manage and enhance the riparian zone along Duck River, including areas previously occupied by refinery infrastructure.

Despite this request, biodiversity impacts associated with the proposal have been assessed in detail in the project EIS, including the provision of a biodiversity report. Also accompanying the EIS is a vegetation management plan (VMP), prepared in accordance with the guidelines for development on waterfront land (Natural Resources Access Regulator 2019). This assessment and VMP consider the relevant extent of potential impacts associated with the construction and operation of the Project and provide suitable measures to mitigate impacts. As such, biodiversity impacts associated with the Project are considered to be adequately managed.

1.2 Project information

Table 1 BDAR Waiver request information requirements

	BDAR Waiver request information requirements
Proponent name	VE Property Pty Ltd
Project Name	Central Sydney Industrial Estate
Name and Ecological qualifications of person completing	Jamie McMahon - 19 years' experience in ecological impact assessment and ecological assessment - Bachelor of Environmental Science (Hons) Biological Sciences - Certified Environmental Practitioner – Impact Assessment Specialist No. 1003
Site street address, Lot and DP, local government area	9 Devon Street, Rosehill NSW 2142, DP 1168951, City of Paramatta
Description of existing development site	Clyde Fuel Import Terminal
Location map showing the	Refer to Figure 1. Refer to Figure 3 to Figure 7 for site context photographs.

	BDAR Waiver request information requirements
development site in the context of surrounding areas and landscape features	
Site Map	Refer to Figure 1
Project Description	Viva Energy own the Clyde Fuel Import Terminal at Rosehill NSW. Over the past seven years the site has been converted from a facility refining raw products into fuels into terminal only where pre-refined fuels are stored after being imported form oversees. The conversion of the site into a terminal has resulted in substantial parts of the site becoming surplus to use, including the western area. This site has been cleared of refinery infrastructure for several years and has been partially used for temporary activities such as new car storage. The site has recently received development consent for a remediation program to rehabilitate contaminated soils. VE Property now proposes to redevelop this part of the terminal into an industrial estate. This would involve subdivision of the site into several smaller lots and provision of roads and other servicing infrastructure. A new Downer Sustainable Road Resource Centre is to be built on proposed Lot 6. The subdivision would be undertaken almost exclusively within lands currently left barren after the removal of refinery infrastructure. This land has development consent for a major soils remediation project which would further disturb the main body of the site and reduce any residual habitat value. The Project specifically includes the designation of a 30 metre buffer of riparian vegetation (in accordance with Natural Resources Access Regulator's Guidelines for controlled activities on waterfront land) (herein described as the riparian zone) along the southern boundary where the site meets Duck River. This area is occupied by mangroves and mixture of planted and naturally regenerated vegetation, some of which is comprised of common environmental weeds. This area contains vegetation mapped as the following threatened ecological communities: - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions The existing extent of these communities would be fully retained, with the proposed 30 metre riparian zone providing an opportunity for the enhancement of the quality and extent of these ecological communities throughout the operation of the Project.
Proposed Site Plan.	Refer to Figure 1
Site photos	See below

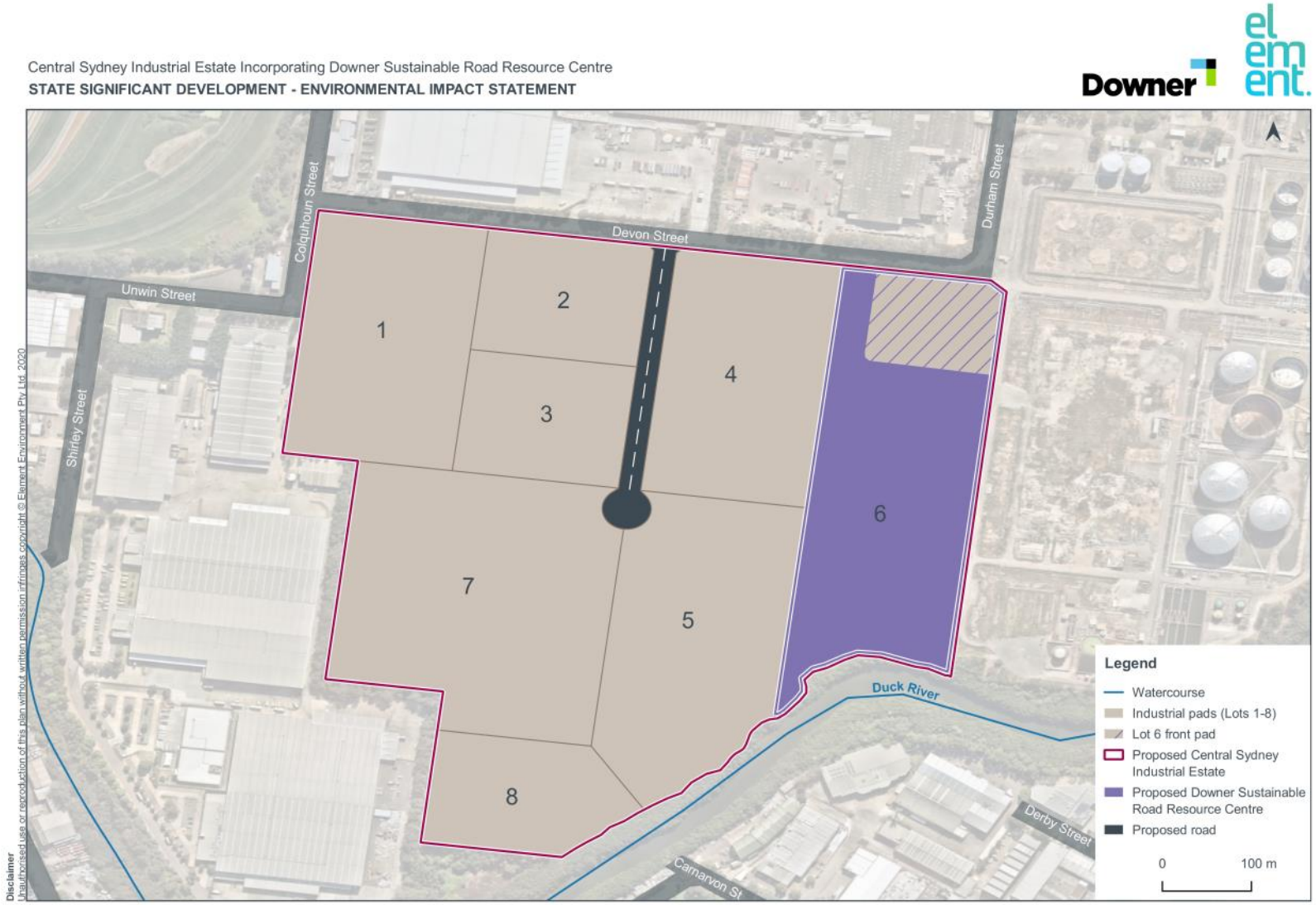


Figure 1 Site plan

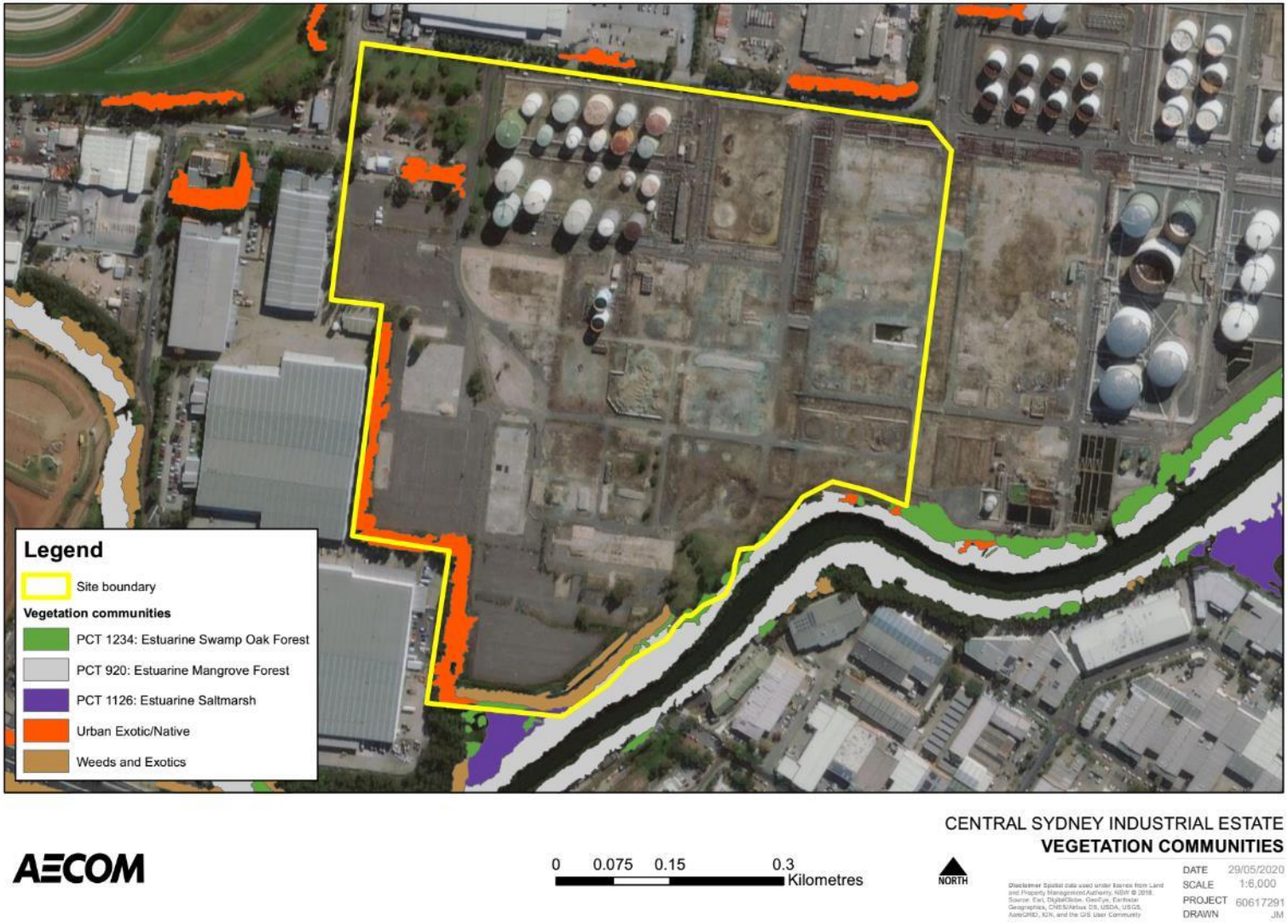


Figure 2 Vegetation communities

1.3 Site context

Refer to Figure 3 to Figure 7 for photographs showing the context of the site. These photographs focus on the southern boundary of the site where a set aside is proposed as well as the application of the vegetation management plan. The fence line visible in figures 3 and 4 is close to the edge of the existing riparian vegetation along Duck River. A substantial strip of highly disturbed land to the north (outside) this fence line is being 'set aside' as part of the proposed 30 metre riparian corridor/management zone and will be revegetated with native vegetation in accordance with the vegetation management plan. Figure 5 shows a typical view across the body of the site, demonstrating the complete lack of biodiversity value.

Figure 3 View from the southeastern corner of the Site looking west along the southern boundary

Figure 4 View from the southern boundary of the Site looking west

Figure 5 View of the main body of the site showing the general lack of vegetation

Figure 6 View along the southern boundary in the south west of the site looking west

Figure 7 View along the southern boundary in the south west of the site looking northwest and showing planted eucalypts to be retained

Table 2 Impacts of the proposed development on biodiversity values

Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Vegetation abundance 1.4(b) BC Regulation	Occurrence and abundance of vegetation at a particular site	Yes	The Project will be undertaken in a highly urbanised area with a long history or industrial development. There is no remnant native vegetation present within the proposed development footprint, though mangroves and other regenerated vegetation are present along the southern boundary with Duck River. Vegetation likely to be affected by the Project is restricted to a small amount of cultivated landscaping vegetation and naturally propagated invasive species (weeds) within the main body of the site (referred to as the construction management zone). Landscaping vegetation within the Project area includes a range of native and exotic vegetation, including Poplars, Brush Box, Callistemon and Eucalypts, all of which have been planted. Vegetation along the southern boundary, (referred to as the riparian management zone) is largely comprised of common environmental weeds and common native vegetation. Native vegetation includes Grey mangrove, *Casuarina glauca* (planted and regenerated) and *Eucalyptus tereticornis* (planted), *E. moluccana* (planted), *Melaleuca quinquenervia* (planted), *E. elata* (planted), *E. robusta* (planted), *Phragmites australis* (regenerated). Weeds present include Lantana, Cobbler's Pegs, Crofton weed, Balloon Vine, Paddy's Lucerne, Purple top, Scotch thistle, Swan plant, Green cestrum, Castor oil plant, Moth vine and Blackberry nightshade.
Vegetation integrity 1.5(2)(a) *Biodiversity Conservation Act 2016* (BC Act)	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state	Yes	The vegetation within and surrounding the Project area is mapped as urban exotic/native (refer to Figure 2), and has been extensively modified by urban development over the past 150+ years. This includes significant earthworks associated with this and other industrial sites, roads, buildings and other urban infrastructure. The composition and structure of the main body of the site retains no similarity with the vegetation that would have originally occupied the Project area or region. The Project would remove a small area of landscaping species in the north of the site, including eucalypts and a range of other native and exotic cultivated species. While the value of this vegetation within the urban context is recognised, the structure of this vegetation is poor and its loss would not likely lead to any significant biodiversity impacts. It should be noted that the mangroves and other riparian vegetation along the southern fringe of the site would be retained within the proposed riparian management zone of 30 metres from the mean high water mark. This includes mature eucalypts and casuarinas comprising important riparian habitat along Duck River. Vegetation within this zone would be subject to management for biodiversity values, as outlined in the Central Sydney Industrial Estate vegetation management plan (VMP).

Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Habitat suitability 1.5(2)(b) BC Act	Degree to which the habitat needs of threatened species are present at a particular site	Yes	Direct vegetation removal within the site would be limited to weeds and common native species regenerated within the body of the site, as well as a small area of planted native landscaping species in the northwest corner of the site. The impacts associated with this clearing has been assessed in a separate biodiversity assessment report. The Project would introduce additional lighting sources and human activity both during construction and operation. This has also been assessed in the biodiversity report which has shown no significant impacts are likely. The main development area provides no threatened flora habitat, though marine vegetation and areas mapped as threatened ecological communities are present along the southern fringe. These areas would be maintained and enhanced through the implementation of the VMP. The degree of threatened fauna habitat would be extremely low and would be limited to urban adapted species such as grey-headed flying fox. Given the proximity of the Clyde Grey-Headed Flying Fox (Pteropus poliocephalus) colony, it is likely that this species would use parts of the site, though it is noted that residential gardens (which are in abundance elsewhere in the region) are more favoured for their nectar and fruit-bearing plants. This species would not use any part of the central part of the Site given the lack of canopy vegetation.

Threatened species abundance 1.4(a) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site	Yes	The Project area contains no records of any flora listed as threatened in NSW or at the Commonwealth level. However, a small number of records of *Wilsonia backhousei* are present across the Duck River. This species is listed as vulnerable under the BC Act and is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Project would not result in any off-site impacts that would threaten or endanger these individuals. The broader area in which the Project sits has a number of records for threatened fauna, including Eastern Osprey (*Pandion cristatus*), Masked Owl (*Tyto novaehollandiae*), Green and Golden Bell Frog (*Litoria aurea*) and Grey-Headed Flying Fox (*Pteropus poliocephalus)*. The Eastern Osprey favours clear water over the mouths of estuaries and Masked Owls generally inhabit dry eucalypt forests with large tree hollows, neither of which is relevant to this Site. Green and Golden Bell Frogs are known to occur in the northeast of the terminal Site (approximately 1 km from the Site), though no habitat is present in the subject Site. Grey-Headed Flying Foxes are present throughout Sydney though are known to prefer vegetated areas with fruit and nectar bearing trees, such as residential gardens. This habitat/vegetation type is not present within the Site. The Site does not include any redundant or active buildings to be demolished. The only area of large mature trees - those along the southern boundary - would be retained as part of the proposed 30 metre riparian management zone. As such the potential for microbat habitat to be affected by the Project is negligible. On the basis of their habitat requirement and the nature of the vegetation within the body of the exiting Site the project is considered highly unlikely to result in any significant impact upon threatened fauna. The project area contains the following two threatened ecological communities: - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions The Project specifically includes the designation of a 30 metre riparian management zone along the southern boundary where the Site meets Duck River. This riparian management zone is greater in area than the current mapped extent of these ecological communities, with this area currently being partially occupied by environmental weeds and/or cleared land. The provision of

Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
			this riparian management zone, as well as the implementation of the VMP which has been developed with these communities in mind, would provide for the enhancement in both quality and extent of these communities within the Site. On this basis the proposal would result in a beneficial outcome for threatened ecological communities. Sedimentation arising from the Site earthworks would be strictly managed in accordance with the conditions of consent, as well as through the implementation of the erosion and sediment control plan during construction. The 30 metre riparian management zone would be specifically protected from these impacts. Detailed stormwater management and erosion control plans are included in the EIS for the Project (Costin Roe 2020) During operation, water quality management systems such as gross pollutant traps and other water quality devices would be implemented and maintained to reduce the potential for water quality impacts to any threatened ecological communities or Duck River generally.
Habitat connectivity 1.4(c) BC Regulation	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range	Yes	The Project area is located in a heavily industrialised and urban landscape. To the northwest of the Site is Rosehill Racecourse which is fringed with landscaping vegetation and is otherwise mowed grass. The only substantial corridor for the movement of threatened species is along Duck River to the south. This waterway is a known flight path for individuals from the Grey-headed flying fox camp on the river approximately 1.3 km to the southwest. Direct observation of this camp during the evening has demonstrated that approximately 90% of the individuals disperse to the south rather than northwards towards the Site. Further to this, the retention and enhancement of the 30 metre riparian management zone along the southern boundary of the Site would act to improve vegetation and facilitate improved movement potential for threatened species in the region.
Threatened species movement 1.4(d) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle	N/A	As outlined above the main body of the Project area is not critical to the connectivity (genetic or otherwise) of populations of threatened species. The development of the Site would not place any threatened flora or fauna populations at risk either directly or through discouraging movement. The proposed designation and enhancement of the riparian management zone along the southern boundary would act to improve the potential for the movement of threatened species compared to the current scenario.

Biodiversity value	Meaning	Relevant (Yes or NA)	Explain and document potential impacts including additional impacts prescribed under the *Biodiversity Conservation Regulation 2017* (BC Regulation)*
Flight path integrity 1.4(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference	N/A	The Project would be developed at existing ground level and would not result in any obstruction to overflight patterns of threatened or other protected species.
Water sustainability 1.4(f) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.	N/A	The Project would not alter any naturally occurring waterbodies. Construction impacts would be managed in such a way as to minimise sediment escape and hence reduce the potential for impacts upon any nearby waterbodies, natural or otherwise, including Duck River. The Project would not alter hydrological regimes in the area (water level or water quality of Duck River) such that any habitat for threatened species or ecological communities would be placed at risk. An assessment of impacts upon aquatic habitats has been undertaken within the associated biodiversity report. This assessment indicated that there would be no significant impact upon the quality of the aquatic environment or the adjacent coastal wetland area.

1.4 Supporting information

As part of the EIS for the Project a biodiversity assessment and vegetation management plan have been prepared. These documents have been provided in Appendix B and Appendix C for further context.

Appendix A: Central Sydney Industrial Estate – Project Summary

17 August 2020

PO Box 1563
Warriewood
NSW 2102

ABN 45 162 835 083

Central Sydney Industrial Estate SSD – standard project description for use in independent technical studies

1 PROJECT OVERVIEW

1.1 Existing activities

1.1.1 Viva Energy

State significant development 5147 was approved in 2015 comprising conversion of the former Oil Refinery at Clyde into a finished petroleum product import, storage and distribution terminal.

Works were approved to improve terminal efficiency and to consolidate the operational footprint including demolition and clearing of the old refinery. The Western Area lands were identified as future surplus industrial land for future reuse. The project will be on this land (the site).

State significant development 9302 was lodged in 2018 for the Western Area Remediation Project (WARP). This application has been determined and will result in the remediation and issuance of site audit certification of the site. The activities described in Section 1.2 will progressively occur on remediated areas once they are certified as appropriate for development.

1.1.2 Downer asphalt, reclaimed asphalt pavement and Reconomy operations

Reclaimed asphalt pavement (RAP) is asphalt which is removed from road and other surfaces during maintenance and reconstruction of those surfaces and requires crushing and/or screening to size to allow recycling into new asphalt.

Downer EDI Works Pty Ltd (Downer) operates a facility in Camellia that receives RAP from road construction and maintenance projects and processes these materials by crushing and screening to produce up to 235,000 tonnes per annum (tpa) of recycled road products. A large portion of this processed material is transported to Downer's Unwin Street site (the Rosehill site) for use in manufacturing asphalt.

Downer's lease at the Camellia site is coming to an end and Downer is seeking to more closely integrate RAP processing and asphalt production on a single site along with its other sustainable road product ventures.

The Rosehill site comprises:

- Asphalt plant, workshop and offices (subject to many consents since 1993 and most recently DA/115/2007/A).
- Reconomy facility (DA/1069/2016) – a recycling facility that receives material from the sweeping of Sydney's road network, cleaning of drainage systems and non-destructive excavation for washing and separating. This material is then repurposed for various activities including the manufacture of asphalt. Over 95% of the material is re-used and diverted from its traditional landfill disposal.

The Rosehill site is subject to compulsory acquisition by the NSW Government for use by the Sydney Metro West project. Loss of continuity of operations at the Rosehill site would have adverse consequences for the Government due to the significant compensation which would arise and delays in government road programs due to the loss of more than 25% of the road product manufacturing capacity in Sydney. Transport for New South Wales is working closely with Downer to avoid such disruption, but seeks possession of the site in early 2022.

1.2 Proposed activities

The application proposes:

- The staged subdivision of the western area of Lot 100 DP 1168951 into eight new industrial lots.
- Prepare the lots via earthworks and civil works for future re-development (by future applications).
- Stage 1 (Sustainable Road Resource Centre) – occupy the newly created Lot 6 and construct and operate the following on the lot:
  - RAP processing operations.
  - Asphalt plant.
  - Reconomy facility.
  - A modern bitumen product manufacturing plant.

These project components are described below.

1.3 Subdivision and lot preparation

VE Property Pty Ltd (VEP) proposes the staged development of the Central Sydney Industrial Estate on lands known as the Western Area of the former Oil Refinery at Clyde. Stage 1 of the development will comprise the Sustainable Road Resource Centre, to be operated by Downer, described in the following section.

VE Property proposes the following on the site:

- The staged subdivision of the site into eight lots. Development of the lots for new industrial uses (in accordance with current zoning), which will be subject to future applications.
- Earthworks/filling to bench the lots to form a flat pad in the northern half of the site then gradually grading down to towards Duck River in the southern half of the site.
- Construction of a new public access road running south from an intersection with Devon Street, providing access to those lots that don't front onto Devon Street, in accordance with Parramatta Council specifications.
- Implementation of erosion and sediment controls to manage water quantity and quality over the lots until they are sold and developed, when permanent water management infrastructure will be installed.
- The extension of key municipal services to suit the needs of each of the lots comprising:
  - Potable water – potentially construction of a ring main linking the main under Colquhoun Street to the main under Durham Street (subject to separate approval by Sydney Water).
  - Wastewater (sewer) – extension of the rising main along Devon Street and minor sideline extension of the gravity sewer along Colquhoun Street (subject to separate approval by Sydney Water).
  - Electricity – supply may be required to each lot from the high voltage line along Devon Street (subject to separate approval by Endeavour Energy).
- A 30 m riparian corridor along Duck River.
- Development of Lot 6 (Stage 1) for the land uses described below.

1.4 Stage 1 –Sustainable Road Resources Centre

1.4.1 Overview

The conceptual Stage 1 layout is shown in Figure 1. Stage 1 will be aligned north-south as per the Lot 6 orientation and will comprise the separate facilities described in the following sections.

1.4.2 Site preparation and construction

Site preparation (civil works) will take approximately 30 weeks and will comprise:

- Site establishment – installation of site office, generator and toilet.
- Earthworks/filling - to bench the lot to form two flat pads, one in the northern third of the lot and the other in the southern two thirds of the lot.
- Drainage – stormwater management structures will be constructed.
- Services – water, sewer, electrical, gas and telecommunications services will be installed.
- Footings and slabs – after the ground surface is prepared, footings will be excavated/piled and filled with concrete in areas where structures will require stabilisation, and concrete building pads will be poured.
- Pavement areas of Lot 6 requiring extra stabilisation and strengthening (eg heavily trafficked areas) will be paved with concrete and remaining areas will be paved with asphalt.
- Barriers – aluminium, concrete and/or water filled plastic barriers will be installed in areas where traffic must be separated from pedestrian areas and/or to prevent vehicles crossing lanes/protect structures.
- Line marking and signage – lines will be marked on internal roads and speed limit and other signs will be erected.

The Stage 1 components will be constructed simultaneously and some activities will overlap with the civil works. Construction of the Stage 1 components will typically comprise:

- Construction of concrete foundations including piled foundations for certain plant.
- Construction of frames for sheds.
- Erection and installation of plant.
- Installation of tanks and silos.
- Wall and roof cladding
- Stormwater connection.

Construction will typically occur between 6am-6pm Monday-Friday and 7am-1pm Saturday. Construction outside of these hours will be required on both weekdays and weekends including Sundays. Construction on public holidays will be avoided.

1.4.3 Asphalt plant

A fixed Ammann Universal HRT Stationary asphalt plant will be constructed on Lot 6, which will produce up to 550,000 tpa of asphalt and will comprise:

- Cold feed bins to receive aggregate, sand and RAP.
- Conveyors to transport aggregates to a dryer.
- Conveyors to transport RAP to a mixer.
- Hot aggregate storage bins.
- Hot RAP storage bins.
- A mixer for mixing materials in weighted proportions.
- A batch tower with a screen deck for sizing the hot aggregates.
- Weigh hoppers for aggregates, bitumen, lime baghouse fines and RAP weighing.
- Enclosed bucket elevator for elevating the heated aggregates to the top of the batch plant.
- Hot bitumen storage tanks with bitumen pumped from these to the batch plant.
- Lime filler silo to receive lime and pneumatic conveyors to convey lime to the batch plant.
- Fabric filter baghouse for cleaning exhaust gases from the dryer.
- Fan and stack for exhausting the gases from the baghouse.
- Recycled filler silo for storage of baghouse reclaimed fines and pneumatic conveyors to convey recycled filler to the batch plant.
- Control room containing plant switchboard and controls.

- Soap spray station for lining truck trays with an anti-stick film.

The asphalt plant is 41 m high at its tallest point.

The asphalt manufacturing process will comprise drying and mixing aggregates and combining them in specified quantities with heated bitumen and a filler and discharging the resulting 'hot' and 'warm' mix into trucks. Operation of the asphalt plant will comprise:

- Delivery of virgin aggregates and sand from offsite, tipped into an underground hopper and transferred via conveyor for temporary storage in one of 16 vertical silos. Virgin aggregates and sand are then transferred to the cold feeder bins via conveyor. Reclaimed aggregates, sand and glass produced by the on-site Reconomy facility and processed RAP is temporarily stored in above ground storage bays, then transferred to the asphalt plant cold feeder bins by front end loader.
- Imported filler material will be pneumatically pumped into silos from tankers and bitumen will be stored in heated/insulated tanks at approximately 160˚C.
- Aggregates in the cold feeder bins will be metered by belt feeders into the rotary dryer.
- Filler will be pneumatically conveyed and bitumen pumped into a weigh hopper then discharged into a pugmill mixer for mixing with aggregates. Exhaust emissions will be drawn off into a bag house for treatment with recovered fines reused in the asphalt process.
- Asphalt will be transferred to hot asphalt storage bins.
- The inside of the truck bodies are sprayed with bitumen release agent at the spray station (truck spray gantry), then trucks drive below the hot storage bins and are loaded. Pre-mix (cold mix asphalt) can be loaded into trucks as required.

1.4.4 Reclaimed asphalt pavement facility

As Downer's lease at the Camellia site is coming to an end, it is proposing to relocate the RAP operations to Lot 6.

Up to 250,000 tpa of RAP will be cold planed from pavements with specialist equipment and transported in tip trucks (truck and trailers or semi-trailers) to the site. It will then be stored on gravel hard stand areas.

The RAP plant will be inside an approximately 12 m high shed that will be enclosed on the north, west and south sides. The east side will be open so the front-end loader can feed the RAP plant and remove the finished products.

The RAP will be crushed and screened on an as required basis for use in the onsite production of asphalt (as a substitute for aggregates and bitumen) or for export for pavement materials. Up to 90,000 tpa of RAP will be stored on site at any one time on a 10,000 m^2 stockpile area. Stockpiles will be a maximum 10 m high.

1.4.5 Bitumen products plant

A next generation, co-located bitumen emulsion plant is proposed on Lot 6 to produce approximately 15,000 tpa of bitumen products for use in onsite asphalt production and export offsite. This investment would mark a first for Downer to have not only a combined blending facility but also situating the investment on the same site as its asphalt and Reconomy plant.

The bitumen products plant will comprise:

- Maximum 6 m high shed with roller door access on the southern side containing:

- 150 t emulsifier and emulsion additives store containing up to 150 intermediate bulk containers.
- 60 kilolitre (kl) kerosene store.
- Office and toilet.

- An additional 8 m high shed for the overflow storage of emulsifier and emulsion additives.
- Maximum 6 m high toner additive storage shed with roller door access on the southern and western sides.
- Two 80 kl 12 m high (total 160 t) bitumen tanks.
- Four 80 kl 12 m high warm emulsion and seven 60 kl 12 m high cold emulsion tanks (total 740 t).

1.4.6 Reconomy facility

Downer proposes to replicate the Reconomy facility from the Unwin Street site at Lot 6. The facility will process up to 40,000 tpa of road sweepings, gully waste and mud from non-destructive excavation, and will comprise:

- Receipt of incoming material into handling pits adjacent to the resource recovery plant. The handling pits will be impermeable and partially sunk into the ground.
- Material will be separated during the recovery process and temporarily stockpiled adjacent to the recovery plant at the separation points and removed as required. Recovered aggregates will be beneficially reused almost immediately in the adjacent asphalt plant and will require an external storage bay as a collection point prior to transport to the asphalt plant by front end loader.

The Reconomy facility will comprise:

- Conveyors.
- Hoppers.
- Trommel.
- Log washer.
- Clarifier.
- Water tanks.
- Water pumps.
- Centrifuge.
- Screen deck (with vibrator).
- Wash screens (with vibrator).
- Eddy current separator.
- Hydrocyclone and ferromagnetic separator.

The maximum height of fixed equipment will be 8 m and an in-ground pit will be 2 m below ground surface.

Downer intends to beneficially reuse the recovered aggregates and sand (approximately 20,000 tpa) in asphalt production and application to road surfaces. The proposed beneficial reuse of recovered aggregate and sand will reduce the use of virgin aggregate and sand from quarries in NSW. Recovered plastics, toner cartridges, glass and rubber are also likely to be incorporated into the production of asphalt, replacing filler and/or aggregate.

Downer does not propose to reuse the recovered organic material in the production of asphalt. The recovered organic material will be transported to an approved composting facility for beneficial reuse. Recovered metals will be transported to an appropriate metal recycling facility for beneficial reuse.

Any remaining recovered material which cannot be directly reused in the asphalt plant could be transported to recycling facilities near the site.

There will be a water recycling plant to treat water used during the process and a storage tank for future re-circulation of treated water or disposal as trade waste. The water loss factor for the resource recovery plant is low due to a portion of the incoming waste material being wet or semi-dry.

1.4.7 Ancillary infrastructure, hours of operation and employment

The Sustainable Road Resources Centre will also comprise the following ancillary infrastructure to facilitate the above land uses:

- 34 car parking bays.
- 25 truck parking bays.
- Site offices.
- Laboratory.
- Workshop building.
- Weighbridges.
- Stormwater management infrastructure.
- Services and utilities including an electrical substation.
- Landscaping, fencing and signage.

The Sustainable Road Resources Centre is proposed to operate 24-hours a day, seven days a week, 365 days a year. This reflects the demand for asphalt to be provided at night due to government demands that road works minimize interference with traffic.

Construction and operation of the Sustainable Road Resources Centre will employ the personnel over the shifts summarised in Table 1.

Table 1 Construction and operational personnel

Component	Role	Shift	Personnel
Construction	Civil works	6am-6pm	35
	Asphalt plant	6am-6pm	17
	RAP facility	6am-6pm	14
	Reconomy facility	6am-6pm	13
	Bitumen products plant	6am-6pm	6
Asphalt plant	Laboratory and plant	6am-6pm	10
		6pm-6am	11
RAP facility	Operator	6am-6pm	3
		6pm-6am	2
Bitumen products plant	Operator	6am-6pm	4
Reconomy facility	Manager	7am-5pm	1
	Supervisor	5am-3pm	1
	Operator	7am-7pm	1
		6pm-6am	1
Weighbridge	Operator	6am-2pm	3
		2pm-10pm	3
		10pm-6am	3
Other	Asphalt and RAP facility management staff	8am-5pm	5

Appendix B: Central Sydney Industrial Estate – Biodiversity Assessment

Refer to Appendix H3 of the EIS

Appendix B: Central Sydney Industrial Estate – Vegetation Management Plan

Refer to Appendix M of the EIS

APPENDIX H2

BDAR WAIVER APPROVAL

Our ref: EF20/21442

VE Property Pty
c/- Neville Hattingh
Element Environment
PO BOX 1563
WARRIEWOOD NSW 2102

27 August 2020

Dear Mr Hattingh

Subject: Request to waive requirement to prepare a Biodiversity Development Assessment Report

I refer to your correspondence received on 20 August 2020 seeking to waive the requirement to prepare a biodiversity development assessment report (BDAR) to be submitted with the state significant development application for the Central Sydney Industrial Estate and Downer Sustainable Road Products Complex (SSD 10459).

Description of proposed development

The development seeks to construct and subdivide eight industrial lots, as well as the construction and operation of the Downer Sustainable Resource Centre.

Under section 7.9(2) of the *Biodiversity Conservation Act 2016* (BC Act):
"*Any such application is to be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on the biodiversity values*".

This letter is to confirm that the Planning Secretary of the Department of Planning, Industry and Environment has determined that the proposed development as described above is not likely to have any significant impact on biodiversity values and that a BDAR is therefore not required to accompany any application for development consent for the proposed development.

As delegate of the Planning Secretary within the Planning and Assessment Division of the Department, I have determined that the proposed development is not likely to have any significant impacts on biodiversity values (see determination attached dated 27 August 2020). Evidence that the delegate of the Secretary within the Environment, Energy and Science Division (Acting Director – Greater Sydney) has made the determination is also attached, dated 27 August 2020. If there are any amendments to the proposed development, a fresh request for a BDAR waiver determination will be required or a BDAR may need to be prepared.

Should you have any further enquiries, please contact David Koppers – Senior Environmental Assessment Officer, Planning and Assessment, at the Department on (02) 9373 2869.

Yours sincerely,

Joanna Bakopanos
A/ Director, Industry Assessments - Planning and Assessment Division
As delegate of the Planning Secretary

Encl: 1. Determination, Department of Planning, Industry and Environment, (delegated position within Environment Energy and Science Group

2. Determination, Department of Planning, Industry and Environment, (delegated position within Planning and Assessment Division

Determination under section 7.9(2) of the **Biodiversity Conservation Act 2016**

I, Joanna Bakopanos, A /Director [Industry Assessments, Planning and Assessment], of the Department of Planning, Industry and Environment, under section 7.9(2) of the *Biodiversity Conservation Act 2016*, determine that the proposed development is not likely to have any significant impact on biodiversity values and therefore a Biodiversity Development Assessment Report is not required

Proposed development means the construction and subdivision of eight industrial lots, as well as the construction and operation of the Downer Sustainable Resource Centre. If the proposed development changes so that it is no longer consistent with this description, a further waiver request is required.

If you do not lodge the development application related to this determination for the proposed development within 2 years of the issue date of this determination, you must either prepare a BDAR or lodge a new request to have the BDAR requirement waived.

Joanna Bakopanos
A /Director
Industry Assessments
Planning and Assessment
Department of Planning, Industry and Environment
(as delegate of the Planning Secretary)

Date 27 August 2020

Our ref: DOC20/683096
Senders ref: SSD10459 (City of Parramatta)

David Koppers
Senior Environmental Assessment Officer
Industry Assessment
Planning and Assessment Group
NSW Department of Planning, Industry and Environment
4 Parramatta Square,
12 Darcy Street
PARRAMATTA NSW 2150

Dear Mr Koppers,

Request for Biodiversity Development Assessment Report Waiver for Central Sydney Industrial Estate and Downer Sustainable Road Products Complex, 9 Devon Street, Rosehill (SSD 10459)

I refer to the request to waive the requirement for a biodiversity development assessment report (BDAR) to be submitted with the above State Significant Development Application for Central Sydney Industrial Estate and Downer Sustainable Road Products Complex.

I have reviewed the information provided by the applicant in the BDAR waiver application prepared by AECOM dated 18 August 2020 and determined that the proposed development is not likely to have any significant impact on biodiversity values. The application, therefore, does not need to be accompanied by a BDAR.

The determination is attached for you to provide to the applicant.

Please note that if the proposed development is changed so that it is no longer as described in Schedule 1 of the determination, the applicant will need to a lodge a new waiver request or prepare a BDAR. Also attached for your information is the decision report prepared by EES. The decision report should not be provided to the applicant without EES approval.

If you have any questions about this advice, please do not hesitate to contact Bronwyn Smith, Senior Conservation Planning Officer on 9873 8604 or Bronwyn.smith@environment.nsw.gov.au

Yours sincerely

27/08/2020

Daylan Cameron
A/Director Greater Sydney
Climate Change and Sustainability
Environment, Energy and Science

BDAR waiver decision report

Project Name: Proposed Development – Central Sydney Industrial Estate & Downer Sustainable Road Products Complex

SSI/SSD Application Number: SSD 10459

Proponent: VE Property Pty Ltd

Date request received: 21 August 2020

Biodiversity value	**Meaning**	**Relevant (✓or NA)**	**Potential impacts**	
			Applicant comment/justification	**EES comment**
Vegetation abundance 1.4(b) BC Regulation	Occurrence and abundance of vegetation at a particular site		The Project will be undertaken in a highly urbanised area with a long history or industrial development. There is no remnant native vegetation present within the proposed development footprint, though mangroves and other regenerated vegetation are present along the southern boundary with Duck River. Vegetation likely to be affected by the Project is restricted to a small amount of cultivated landscaping vegetation and naturally propagated invasive species (weeds) within the main body of the site (referred to as the construction management zone). Landscaping vegetation within the Project area includes a range of native and exotic vegetation, including Poplars, Brush Box, Callistemon and Eucalypts, all of which have been planted. Vegetation along the southern boundary, (referred to as the riparian management zone) is largely comprised of common environmental weeds and common native vegetation. Native vegetation includes Grey mangrove, *Casuarina glauca* (planted and regenerated) and *Eucalyptus tereticornis* (planted), *E. moluccana* (planted), *Melaleuca quinquenervia* (planted), *E. elata* (planted), *E. robusta* (planted), *Phragmites australis* (regenerated). Weeds present include Lantana, Cobbler's Pegs, Crofton weed, Balloon Vine, Paddy's Lucerne, Purple top, Scotch thistle, Swan plant, Green cestrum, Castor oil plant, Moth vine and Blackberry nightshade.	This conclusion is supported. Aerial photos have been provided, which demonstrate that there is unlikely to be any remnant vegetation remaining at the site.

Biodiversity value	Meaning	Relevant (✓or NA)	Potential impacts	
			Applicant comment/justification	EES comment
Vegetation integrity 1.5(2)(b) BC Act	Degree to which the composition, structure and function of vegetation at a particular site and the surrounding landscape has been altered from a near natural state		The vegetation within and surrounding the Project area is mapped as urban exotic/native (refer to Figure 2), and has been extensively modified by urban development over the past 150+ years. This includes significant earthworks associated with this and other industrial sites, roads, buildings and other urban infrastructure. The composition and structure of the main body of the site retains no similarity with the vegetation that would have originally occupied the Project area or region. The Project would remove a small area of landscaping species in the north of the site, including eucalypts and a range of other native and exotic cultivated species. While the value of this vegetation within the urban context is recognised, the structure of this vegetation is poor and its loss would not likely lead to any significant biodiversity impacts. It should be noted that the mangroves and other riparian vegetation along the southern fringe of the site would be retained within the proposed riparian management zone of 30 metres from the mean high water mark. This includes mature eucalypts and casuarinas comprising important riparian habitat along Duck River. Vegetation within this zone would be subject to management for biodiversity values, as outlined in the Central Sydney Industrial Estate vegetation management plan (VMP).	This conclusion is supported. The vegetation within the footprint on site is planted so is not in a natural state.
Habitat suitability 1.5(2)(b) BC Act 6.1(1)(a) BC Regulation	Degree to which the habitat needs of threatened species are present at a particular site		Direct vegetation removal within the site would be limited to weeds and common native species regenerated within the body of the site, as well as a small area of planted native landscaping species in the northwest corner of the site. The impacts associated with this clearing has been assessed in a separate biodiversity assessment report. The Project would introduce additional lighting sources and human activity both during construction and operation. This has also been assessed in the biodiversity report which has shown no significant impacts are likely. The main development area provides no threatened flora habitat, though marine vegetation and areas mapped as threatened ecological communities are present along the southern fringe. These areas would be maintained and enhanced through the implementation of the VMP. The degree of threatened fauna habitat would be extremely low and would be limited to urban adapted species such as grey-headed flying fox. Given the proximity of the Clyde Grey-Headed Flying Fox (*Pteropus poliocephalus*) colony, it is likely that this species would use parts of the site, though it is noted that residential gardens (which are in abundance elsewhere in the region) are more favoured for their nectar and fruit-bearing plants. This species would not use any part of the central part of the Site given the lack of canopy vegetation.	This conclusion is supported. The only threatened species that are likely to utilise habitats on site are wide ranging mobile threatened fauna, and the loss of any habitats on site will have a negligible impact on these species.

Biodiversity value	Meaning	Relevant (✓or NA)	Potential impacts	
			Applicant comment/justification	EES comment
Threatened species abundance 1.4(a) and 6.1(1)(f) BC Regulation	Occurrence and abundance of threatened species or threatened ecological communities, or their habitat, at a particular site		The Project area contains no records of any flora listed as threatened in NSW or at the Commonwealth level. However, a small number of records of *Wilsonia backhousei* are present across the Duck River. This species is listed as vulnerable under the BC Act and is not listed under the Commonwealth *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act). The Project would not result in any off-site impacts that would threaten or endanger these individuals. The broader area in which the Project sits has a number of records for threatened fauna, including Eastern Osprey (*Pandion cristatus*), Masked Owl (*Tyto novaehollandiae*), Green and Golden Bell Frog (*Litoria aurea*) and Grey-Headed Flying Fox (*Pteropus poliocephalus)*. The Eastern Osprey favours clear water over the mouths of estuaries and Masked Owls generally inhabit dry eucalypt forests with large tree hollows, neither of which is relevant to this Site. Green and Golden Bell Frogs are known to occur in the northeast of the terminal Site (approximately 1 km from the Site), though no habitat is present in the subject Site. Grey-Headed Flying Foxes are present throughout Sydney though are known to prefer vegetated areas with fruit and nectar bearing trees, such as residential gardens. This habitat/vegetation type is not present within the Site. The Site does not include any redundant or active buildings to be demolished. The only area of large mature trees - those along the southern boundary - would be retained as part of the proposed 30 metre riparian management zone. As such the potential for microbat habitat to be affected by the Project is negligible. On the basis of their habitat requirement and the nature of the vegetation within the body of the exiting Site the project is considered highly unlikely to result in any significant impact upon threatened fauna. The project area contains the following two threatened ecological communities: - Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions The Project specifically includes the designation of a 30-metre riparian management zone along the southern boundary where the Site meets Duck River. This riparian management zone is greater in area than the current mapped extent of these ecological communities, with this area currently being partially occupied by environmental weeds and/or cleared land. The provision of this riparian management zone, as well as the implementation of the VMP which has been developed with these communities in mind, would provide for the enhancement in both quality and extent of these communities within the Site. On this basis the proposal would result in a beneficial outcome for threatened ecological communities.	This conclusion is supported. If any threatened species utilise habitats on site, they are likely to be wide-ranging, mobile fauna and the loss of habitats on site would have a negligible impact on the species.

Biodiversity value	Meaning	Relevant (✓or NA)	Potential impacts	
			Applicant comment/justification	**EES comment**
			Sedimentation arising from the Site earthworks would be strictly managed in accordance with the conditions of consent, as well as through the implementation of the erosion and sediment control plan during construction. The 30-metre riparian management zone would be specifically protected from these impacts. Detailed stormwater management and erosion control plans are included in the EIS for the Project (Costin Roe 2020). During operation, water quality management systems such as gross pollutant traps and other water quality devices would be implemented and maintained to reduce the potential for water quality impacts to any threatened ecological communities or Duck River generally.	
Habitat connectivity 1.4(a) and 6.1(1)(f) BC Regulations	Degree to which a particular site connects different areas of habitat of threatened species to facilitate the movement of those species across their range		The Project area is located in a heavily industrialised and urban landscape. To the northwest of the Site is Rosehill Racecourse which is fringed with landscaping vegetation and is otherwise mowed grass. The only substantial corridor for the movement of threatened species is along Duck River to the south. This waterway is a known flight path for individuals from the Grey-headed flying fox camp on the river approximately 1.3 km to the southwest. Direct observation of this camp during the evening has demonstrated that approximately 90% of the individuals disperse to the south rather than northwards towards the Site. Further to this, the retention and enhancement of the 30 metre riparian management zone along the southern boundary of the Site would act to improve vegetation and facilitate improved movement potential for threatened species in the region.	This conclusion is supported. The site does not provide connectivity to other areas. The site would only be useful as a steppingstone for wide ranging, mobile fauna.
Threatened species movement 1.4(d) BC Act 6.1(1)(c) BC Regulation	Degree to which a particular site contributes to the movement of threatened species to maintain their lifecycle		As outlined above the main body of the Project area is not critical to the connectivity (genetic or otherwise) of populations of threatened species. The development of the Site would not place any threatened flora or fauna populations at risk either directly or through discouraging movement. The proposed designation and enhancement of the riparian management zone along the southern boundary would act to improve the potential for the movement of threatened species compared to the current scenario.	This conclusion is supported. The only threatened species that are likely to use the site are highly mobile, and their movement across the landscape should not be impacted by the proposal.

Biodiversity value	Meaning	Relevant (✓or NA)	Potential impacts	
			Applicant comment/justification	EES comment
Flight path integrity 1.4(e) BC Act 6.1(1)(e) BC Regulation	Degree to which the flight paths of protected animals over a particular site are free from interference		The Project would be developed at existing ground level and would not result in any obstruction to overflight patterns of threatened or other protected species.	This conclusion is supported, there should be no or negligible impacts on flight path integrity of any species.
Water sustainability 1.4(f) and 6.1(1)(d) BC Regulation	Degree to which water quality, water bodies and hydrological processes sustain threatened species and threatened ecological communities at a particular site.		The Project would not alter any naturally occurring waterbodies. Construction impacts would be managed in such a way as to minimise sediment escape and hence reduce the potential for impacts upon any nearby waterbodies, natural or otherwise, including Duck River. The Project would not alter hydrological regimes in the area (water level or water quality of Duck River) such that any habitat for threatened species or ecological communities would be placed at risk. An assessment of impacts upon aquatic habitats has been undertaken within the associated biodiversity report. This assessment indicated that there would be no significant impact upon the quality of the aquatic environment or the adjacent coastal wetland area.	This conclusion is supported, there are unlikely to be any impacts on water sustainability as a result of the proposal.

Recommendation

It is recommended that the delegated officer:

- Considers the matters set out in this report; and
    - o determines that the proposed development is not likely to have any significant impact on biodiversity values and therefore a BDAR is not required
    - o ~~determines that, based on the information provided, it cannot be concluded that the proposed development is not likely to have any significant impact on biodiversity values and therefore a BDAR is required~~.

25/08/2020

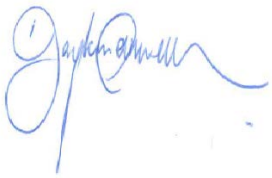
Sarah Burke **Date**
Senior Team Leader, Compliance & Regulation, Greater Sydney Branch
Environment, Energy & Science Group

Decision

I, Daylan Cameron, A/Director Greater Sydney, of the Department of Planning, Industry and Environment, having reviewed this report and the documents attached to it:

A. **determine** under clause 7.9(2) of the *Biodiversity Conservation Act 2016* that the proposed development as described in DOC20/683096 and Schedule 1 is not likely to have any significant impact on biodiversity values and therefore a BDAR is not required

B. ~~**determine** that, based on the information provided, it cannot be concluded that the proposed development as described in DOC20/683096 and Schedule 1 is not likely to have any significant impact on biodiversity values and therefore a BDAR is required~~.



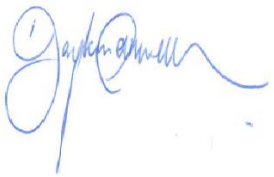
27/08/2020

Daylan Cameron **Date**
A/ Director Greater Sydney Branch
Environment, Energy & Science Group

Determination under clause 7.9(2) of the Biodiversity Conservation Act 2016

I, Daylan Cameron, Acting/Director Greater Sydney, of the Department of Planning, Industry and Environment, under clause 7.9(2) of the *Biodiversity Conservation Act 2016*, determine that the proposed development is not likely to have any significant impact on biodiversity values and therefore a Biodiversity Development Assessment Report is not required.

Proposed development means the development as described in DOC20/683096 and Schedule 1. If the proposed development changes so that it is no longer consistent with this description, a further waiver request is required.



27/08/2020

Daylan Cameron
A/Director
Greater Sydney
Environment, Energy & Science Group

Date

SCHEDULE 1 – Description of the proposed development

VE Property Pty Ltd (VE Property) propose to develop the Central Sydney Industrial Estate (the Project) within the former Shell/Viva refinery site at Clyde, NSW.

The proposed development is described as

1. The staged subdivision of the western area of Lot 100 DP 1168951 into six new super lots;
2. Prepare the lots via earthworks and civil works for future re-development (by future applications); and
3. Stage 1 (Downer Sustainable Road Products Complex) – occupy the newly created Lot 6 and construct and operate the following on the lot: - RAP processing operations. - Asphalt plant. - Reconomy facility. - A modern bituminous product manufacturing plant.

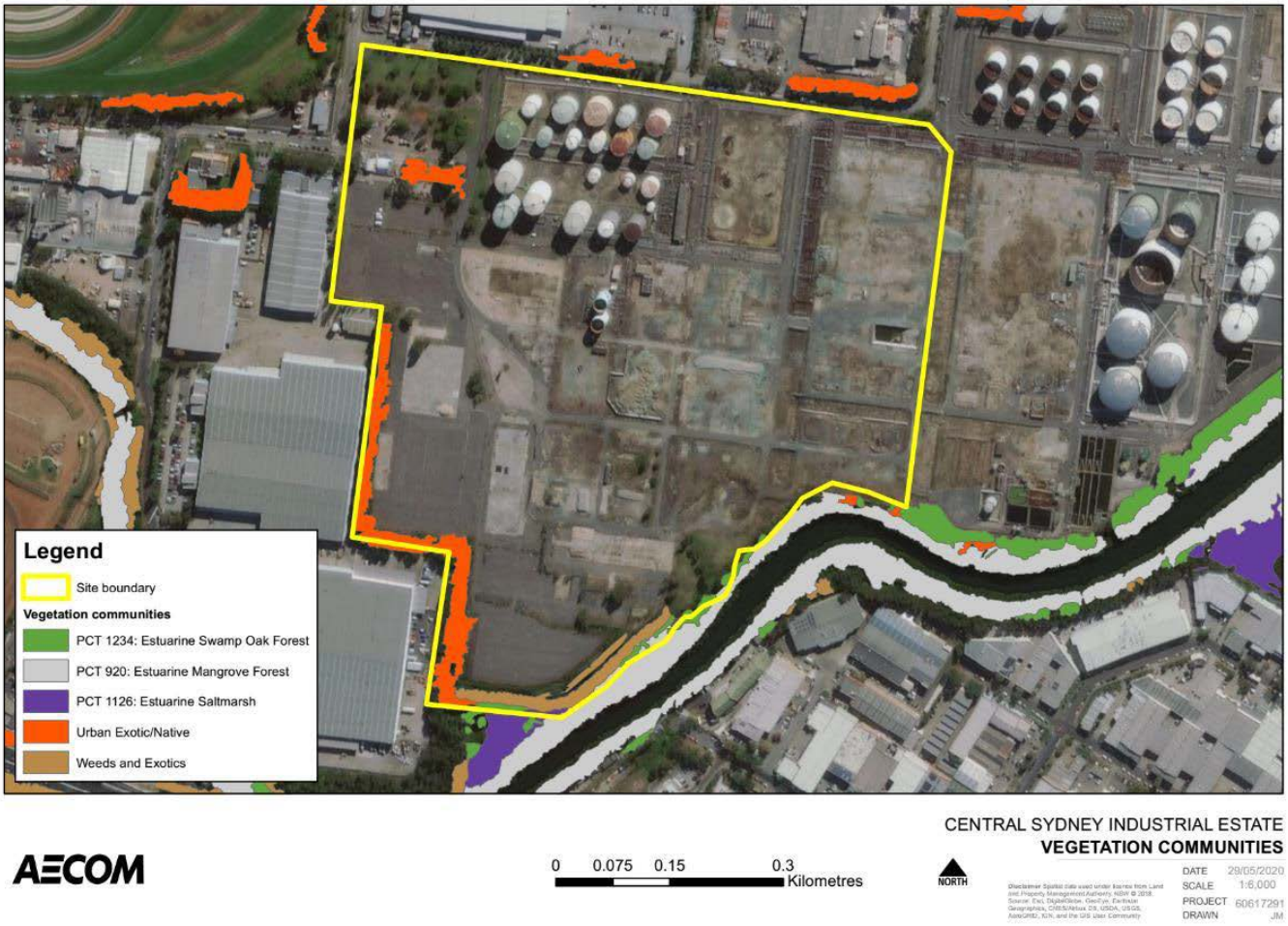


Figure 1: Aerial photo showing site boundary and vegetation on site

APPENDIX H3

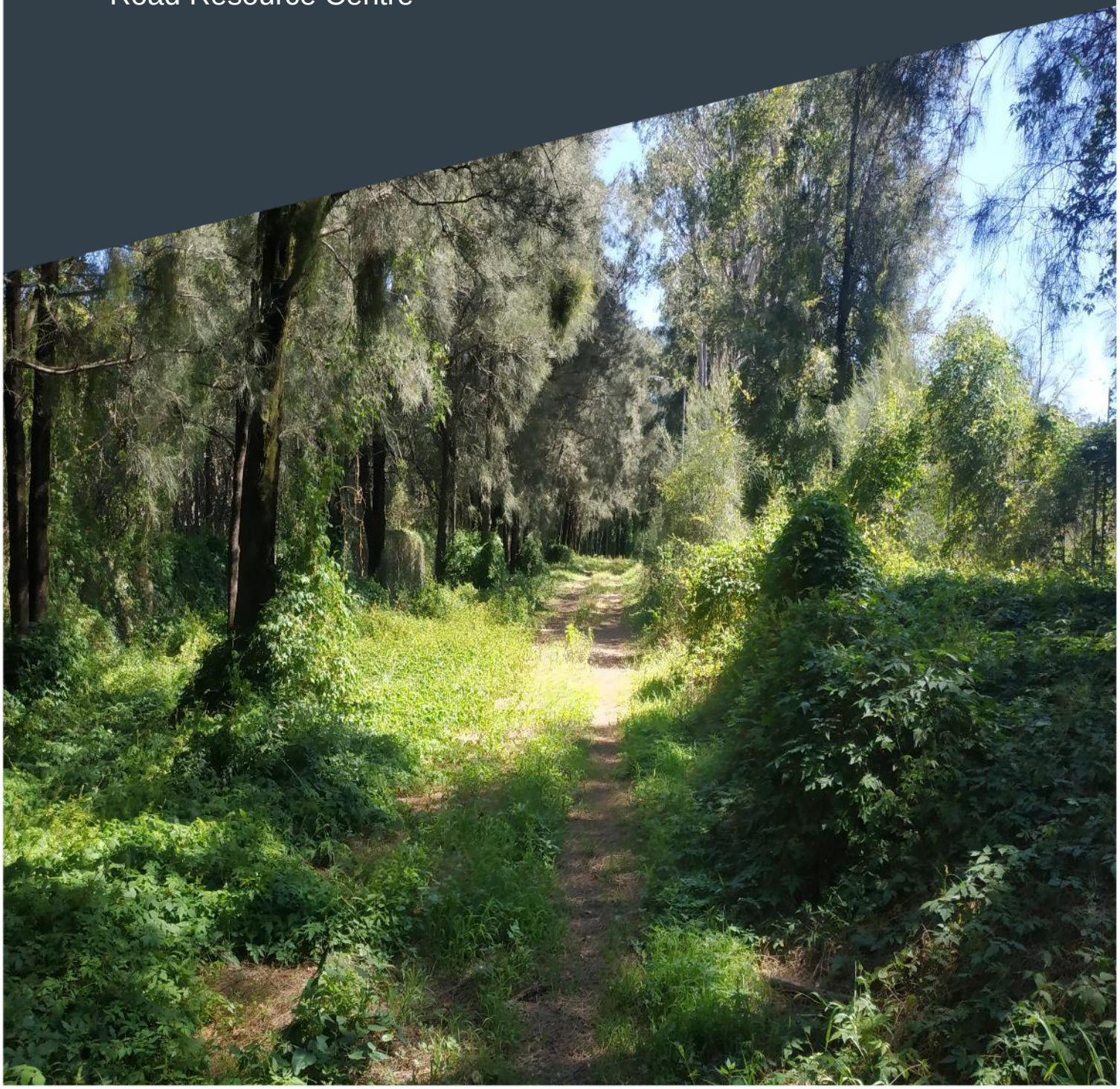
BIODIVERSITY ASSESSMENT

AECOM Imagine it. Delivered.

Central Sydney Industrial Estate
VE Property Pty Ltd
18-Aug-2020

Biodiversity assessment

Central Sydney Industrial Estate incorporating Downer Sustainable Road Resource Centre



Biodiversity assessment

Central Sydney Industrial Estate incorporating Downer Sustainable Road Resource Centre

Client: VE Property Pty Ltd

ABN: 57 623 469 625

Prepared by

AECOM Australia Pty Ltd
Level 21, 420 George Street, Sydney NSW 2000, PO Box Q410, QVB Post Office NSW 1230, Australia
T +61 2 8934 0000 F +61 2 8934 0001 www.aecom.com
ABN 20 093 846 925

18-Aug-2020

AECOM in Australia and New Zealand is certified to ISO9001, ISO14001 AS/NZS4801 and OHSAS18001.

Quality Information

Document	Biodiversity assessment
Ref	
Date	18-Aug-2020
Prepared by	Jamie McMahon

Revision History

Rev	Revision Date	Details	Authorised	
			Name/Position	Signature
1	18-Aug-2020	Final	Jamie McMahon Associate Director	

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1.0 Introduction

VE Property Pty Ltd (VE Property) proposes to develop the Central Sydney Industrial Estate (the Proposal) on an area to the west of the existing Viva Energy Clyde Terminal (the terminal). This area, referred to as the Western Area, was previously occupied by infrastructure supporting the site's previous use as a fuel refinery. Since decommissioning of the refinery in 2015 site infrastructure has been, or will shortly be, removed. Since cessation of refining on the site and the removal of most of the infrastructure the Western Area has been used for several low impact activities, such as new vehicle storage along the western edge of the property.

The Proposal provides for the development of the Central Sydney Industrial Estate over the Western Area (hereafter referred to as 'the Site'). The Proposal includes eight industrial lots, including one larger lot dedicated to Downer's Sustainable Road Resources Centre. The development of the Proposal would involve bulk earthworks to provide future building pads, subdivision, construction of roads and drainage and other utilities, as well as the construction of the Downer facility. Future industrial development on other lots within the site would be subject to their own separate planning applications.

The Western Area is also the subject of a recently consented state significant development application (SSDA) for the remediation of soils. The successful remediation of the western area is required prior to the area being used for alternate purposes. Any impacts from the Central Sydney Industrial Estate upon vegetation and habitat would be limited to construction activities themselves and any areas not disturbed by the remediation SSDA.

AECOM Australia Pty Ltd (AECOM) have been engaged by VE Property to prepare a biodiversity assessment to support the Central Sydney Industrial Estate SSDA. This report outlines the methodology applied, the investigations undertaken, likely biodiversity impacts and proposed measures to avoid, mitigate or offset biodiversity impacts. The results, analysis and conclusion of the assessment are presented below.

It should be noted that VE Property have applied for the requirement to prepare a Biodiversity Development Assessment Report (BDAR) under the *Biodiversity Conservation Act 2016* be waived. The waiving of the requirement to prepare a BDAR is considered appropriate as:

- The site is significantly disturbed, having been subject to heavy industrial development for over 70 years
- The site would be further disturbed as part of the (now approved) soil remediation works
- The part of the site proposed for subdivision and further development currently exhibits little to no biodiversity value (see detail below), and
- The southern fringe of the site, being the only area that currently includes any substantial biodiversity value, would be fully retained and augmented by the proposal, leading to an overall beneficial impact on biodiversity values.

2.0 The proposal

The Proposal involves the following elements:

- Subdivision of the Western Area into eight lots
- Undertake preparatory works for future site development on each lot (in future applications) including bulk earthworks and provision of an internal road and utilities
- Construction and occupation on new Lot 6 for the purposes of the Downer Sustainable Road Products Complex.

The proposed lot layout of the subdivided Western Area is provided in Figure 1 below.

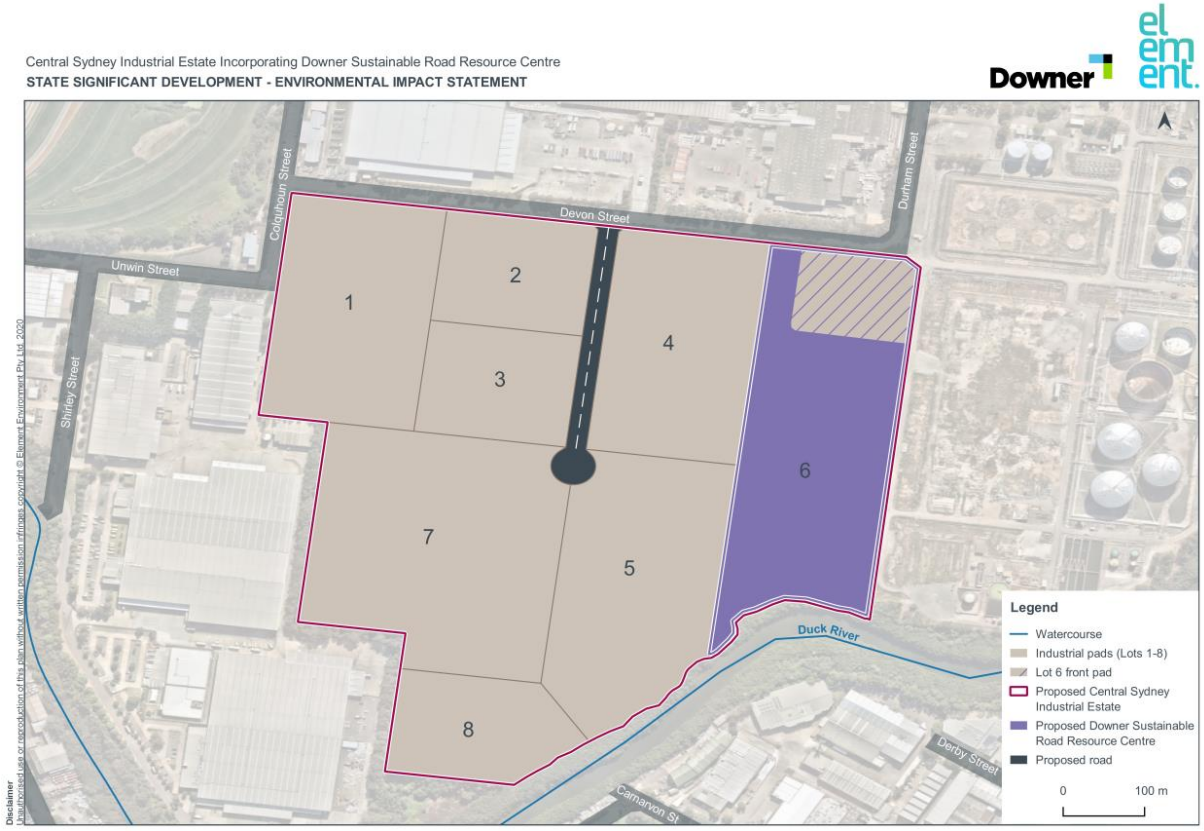


Figure 1 Proposed lot layout

The Proposal includes earthworks throughout the site to meet required flood levels, allow for site drainage and to provide pad areas for future development. A vegetated buffer (referred to herein as the riparian zone) is proposed to be maintained along the southern boundary, where the site interfaces with Duck River. This riparian zone would extend back into the main site a minimum 30 metres from the mean high water mark. -

The site plan in Figure 1 includes an easement carrying on south of the proposed cul-de-sac, terminating at Duck River. This easement has been included for a potential future road and bridge to Carnarvon Street in Silverwater, though the construction of these elements is not included as part of this Proposal and would be subject to future environmental assessment.

It should be noted that the recently consented remediation SSDA will involve earthworks, removing and/or rehabilitating soil within the Western Area, along with all other surface infrastructure. This would also result in the removal of most, if not all, existing vegetation (outside the 30 metre riparian zone).

3.0 Secretary's environmental assessment requirements

SEARs were received from DPIE dated 28 May 2020, which included comments from relevant government agencies. All relevant DPIE biodiversity SEARs as well as the biodiversity assessment requirements of other government agencies are included in Table 1 and Table 2, with comments provided on how each requirement has been addressed and where it is addressed in this report or other supporting reports.

Table 1 Secretary's environmental assessment requirements

Requirement	How addressed
An assessment of the proposal's biodiversity impacts in accordance with the Biodiversity Conservation Act 2016, including the preparation of a Biodiversity Development Assessment Report (BDAR) where required under the Act, except where a waiver of the preparation of BDAR has been granted.	An application has been made for the requirement for a BDAR to be waived for this project, as outlined in section 1.0
And assessment of the proposal's impact (including stormwater/surface water discharge) upon the adjacent coastal wetland area, in accordance with *State Environmental Planning Policy (Coastal Management) 2018*	Addressed in Section 7.2
Assessment of the proposal's impact upon Duck River, key fish habitat, riparian corridors and aquatic ecosystems, in accordance with the relevant Department of Primary Industries guidelines.	Addressed in Section 7.2

Table 2 Agency comments received alongside the SEARs

Agency	Requirement	Relevant section of report where SEAR addressed	Comment
DPIE	SEARs (outlined above)	Sections 1.0 and 7.2	Addressed as outlined above
DPI Fisheries	The riparian vegetation to the south of the area contains important mangrove ecosystems. It is afforded protection under the FM Act, *Biodiversity Conservation Act* and the EPBC Act. It is also mapped as Coastal Wetlands under the Coastal Management SEPP, while this is acknowledged on p.31 of the Scoping Report, your appreciation of the importance of this ecologically sensitive area needs to be reflected in the forthcoming EIS.	Section 7.2	The proposal has been designed with specific attention towards managing direct and indirect impacts upon the riparian corridor of Duck River. Primarily this is achieved through the avoidance of development within a 30 metre buffer of the high water mark, which encompasses the entirety of the areas mapped as coastal wetlands, as well as all areas of mangrove and saltmarsh.
	The same area is also mapped as Type 1, Class 1 Key Fish Habitat (KFH). As such, our Policy and Guidelines recommend a 100m riparian buffer. This is significantly more than is currently proposed (30m). Reducing this buffer must be justified and shown how it will not impact on the waterway.	Section 7.2	The implementation of a 100 metre buffer is not considered practical within the urban environment of Sydney. The proposal includes specific set aside of a 30 metre buffer, including ongoing management action to promote its health and resilience from invasive species. This corridor is considered appropriate given it is consistent with the NSW Natural Resources Access Regulator's *Guidelines for controlled activities on waterfront land.*
	DPI Fisheries requires the ecological study to assess how the storm/surface water may affect the EEC riparian vegetation and aquatic ecosystem it interfaces.	This report and Section 7.8	The proposal would not result in significant adverse impacts upon EEC riparian vegetation and/or aquatic ecosystem interfaces.
Environment, Energy and Science Group	Various requirements pertaining to the preparation of a BDAR	Not addressed	A waiver from the need to prepare a BDAR has been prepared.

Agency	Requirement	Relevant section of report where SEAR addressed	Comment
	The EIS must assess the impact of the development on hydrology, including: … b. Effects to downstream rivers, wetlands, estuaries, marine waters and floodplain areas. c. Effects to downstream water-dependent fauna and flora including groundwater dependent ecosystems. …	This report and Section 7.8	The proposal would include appropriate water quality management during both construction and operation. As such the potential for adverse impacts the water quality of Duck River, Parramatta River and Sydney Harbour is considered to be low. Following from this, the potential for impacts upon downstream flora, fauna and groundwater dependent ecosystems is also low.
City of Parramatta Council	In order to assist in achieving connectivity within the precinct, the following matters should be addressed within the EIS: •The provision of a 40m riparian corridor along Duck River	Section 4.0	A 30 metre buffer is specified by the Natural Resources Access Regulators' Guidelines for Development on Waterfront Land.
	It is noted that the applicant is requesting a Biodiversity Development Assessment Report (BDAR) waiver due to the high level of past disturbance and lack of vegetation within the site. It is noted that a BDAR was submitted with the previous SSD application lodged for this site (remediation) as it adjoins the Duck River riparian corridor that is included on the Biodiversity Values Map under the *Biodiversity Conservation Act 2016*. The previous BDAR confirms that the site is largely devoid of native vegetation or other potential habitat outside the Duck River riparian corridor, which contains Mangrove Forest and Swamp Oak Floodplain Forest Endangered Ecological Community (EEC). Whilst the scoping report states that the proposed development will be located outside the riparian corridor and there will not be any direct impacts to the native vegetation, it identifies the potential for indirect impacts from runoff and that a new stormwater outlet may be required. Any proposed stormwater infrastructure (including pipes and an outlet into Duck River) would likely be located on land included on the biodiversity values map and may trigger the need for a BDAR.	This requirement is satisfied by this report generally and the associated vegetation management plan (Appendix A)	This report comprises a flora and fauna assessment with respect to the proposed development and takes into account all relevant direct, indirect and prescribed impacts. As noted by the council, and as outlined within this document, the proposal would avoid direct impacts to EECs present within the site, including *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Sydney Basin* and *Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion*. Further to this, the riparian corridor of Duck Creek area in which these EECs are present would be subject to two years of vegetation management utilising recognised bush

Agency	Requirement	Relevant section of report where SEAR addressed	Comment
	Notwithstanding this, as the proposed works have the potential to indirectly impact the Duck River riparian corridor (and associated native vegetation including EEC), the following are recommended for inclusion in the SEARs: a. Prepare a Flora and Fauna Assessment report that addresses the following (but not limited to): Assessment of direct (e.g. riparian vegetation removal for stormwater infrastructure), indirect (e.g. noise, dust, light spill, sedimentation, erosion, runoff) and prescribed (e.g. water quality, water bodies and hydrological processes) impacts as per the *Biodiversity Conservation Regulation 2017* Tests of Significance for any threatened species, ecological communities or their habitats as per Part 7 of the *Biodiversity Conservation Act 2016* Determination of whether potential stormwater infrastructure within the Duck River riparian corridor triggers the Biodiversity Offsets Scheme. b. Prepare a Vegetation Management Plan (VMP) to guide the establishment of a 40m wide vegetated riparian zone along Duck River consistent with the NSW Department of Industry Guidelines for controlled activities on waterfront land - Riparian Corridors (2018). The VMP is to provide for a complete vegetation stratum (trees/shrubs/groundcovers) utilising species from locally endemic vegetation communities.		regeneration techniques. This is expected to substantially improve the condition of any EECs within the area, as well as provide for the ongoing resilience of the are against future weed invasion, a persistent threat in this area. The vegetation management plan has been prepared in accordance with NSW Department of Industry Guidelines for controlled activities on waterfront land - Riparian Corridors (2018) and is included as Appendix A.

4.0 Legislative context

The state significant development application for these works would be prepared according to Part 4 of the *Environmental Planning and Assessment Act 1979* (EP&A Act). The consent authority would be either the Minster for Planning (or their delegate) or the Independent Planning Commission (IPC).

In addition to the EP&A Act, the following legislation has been considered during the preparation of this report:

- The *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act) requires that Commonwealth approval be obtained for certain actions, and establishes an assessment and approvals system for actions that have, or are likely to have, a significant impact on Matters of National Environmental Significance (MNES)
- The *Biodiversity Conservation Act 1996* (BC Act) protects threatened flora and fauna species and ecological communities and their habitats within NSW. Section 7.9 of this Act requires that a development application for state significant development be accompanied by a biodiversity development assessment report unless the Planning Agency Head and the Environment Agency Head determine that the proposed development is not likely to have any significant impact on biodiversity values. This determination is made in response to a BDAR waiver application. A BDAR waiver application has been prepared for this project and will be submitted to DPIE prior to the lodgement of the EIS
- The *Fisheries Management Act 1994* (FM Act) protects threatened species, populations and ecological communities of fish and marine vegetation, and other living resources of NSW waters. Species listed under this act are considered alongside those of the BC and EPBC Acts. It should be noted that sections 201, 205 and 219 of the FM Act do not apply in respect of State Significant Development and as such the implications of these sections are not considered in this report
- The *Biosecurity Act 2015* manages threats including invasive species such as weeds and fauna pests.

The objects of the *Water Management Act 2000* (WM Act) are to provide for the sustainable and integrated management of the water sources of the state for the benefit of both present and future generations. Under this act development within the 'riparian corridor' on waterfront land is regulated as a 'controlled activity' to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the activity.

It should be noted that section 4.41 of the EP&A Act turns off the need for a controlled activity approval (CAA) to be obtained for State Significant Development. Despite this this project considers and meets the guidelines in relation to development on waterfront land in order to demonstrate best practice in the development.

For the purposes of the WM Act, the riparian corridor consists of the channel, plus the 'vegetated riparian zone' (VRZ) on both banks of a waterway. The width of the required riparian corridor is determined by the width of the VRZ as specified within the Natural Resource Access Regulator's *Guidelines for controlled activities on waterfront land*, as outlined below.

Table 3 Recommended riparian corridor widths

Watercourse type	VRZ width (each side of the watercourse)
1st order	10 metres
2nd order	20 metres
3rd order	30 metres
4th order and greater	40 metres

In order to determine the stream order for Duck Creek as it passes the site reference has been made to the Department of Industry's Hydroline Spatial Data. This confirms that Duck River in this location is

a third order stream (Figure 2). As such the relevant VRZ width for Duck River as it passes the Site is 30 metres.

Comments received on the project's scoping report from the Department of Primary Industries states that the riparian corridor width for a waterway of this type under the *Policy and Guidelines for Fish Habitat Conservation and Management* should be 100 m. It is suggested that such a riparian buffer is not practical or appropriate for the site on the basis that:

a) The site has been subject to heavy historic developed resulting in the complete absence of native vegetation outside the proposed 30 metre buffer across the majority of the site

b) The land beyond the proposed 30 metre buffer has been historically filled and as such the surface is higher than the waterway. As such it would not be possible to recreate the original mangrove flats in this area without substantial earthworks

c) The strict implementation the riparian buffer proposed under this policy throughout the developed parts of Sydney would all but preclude any waterfront development along any parts of Sydney Harbour or the Parramatta or Nepean/Hawkesbury Rivers.

d) The application of the proposed 30 metre buffer would still result in a substantial and permanent improvement in the ecological health of the riparian corridor and the associated aquatic ecosystem of the heavily degraded Duck River

e) All other guidelines provided in the DPI guideline would be met by the development, including delineation of the riparian zone, retention of existing vegetation, rehabilitation and revegetation of disturbed areas, weed control and an ongoing monitoring regime.

It should be noted that a 30 m riparian corridor was proposed in the WARP EIS and approved.

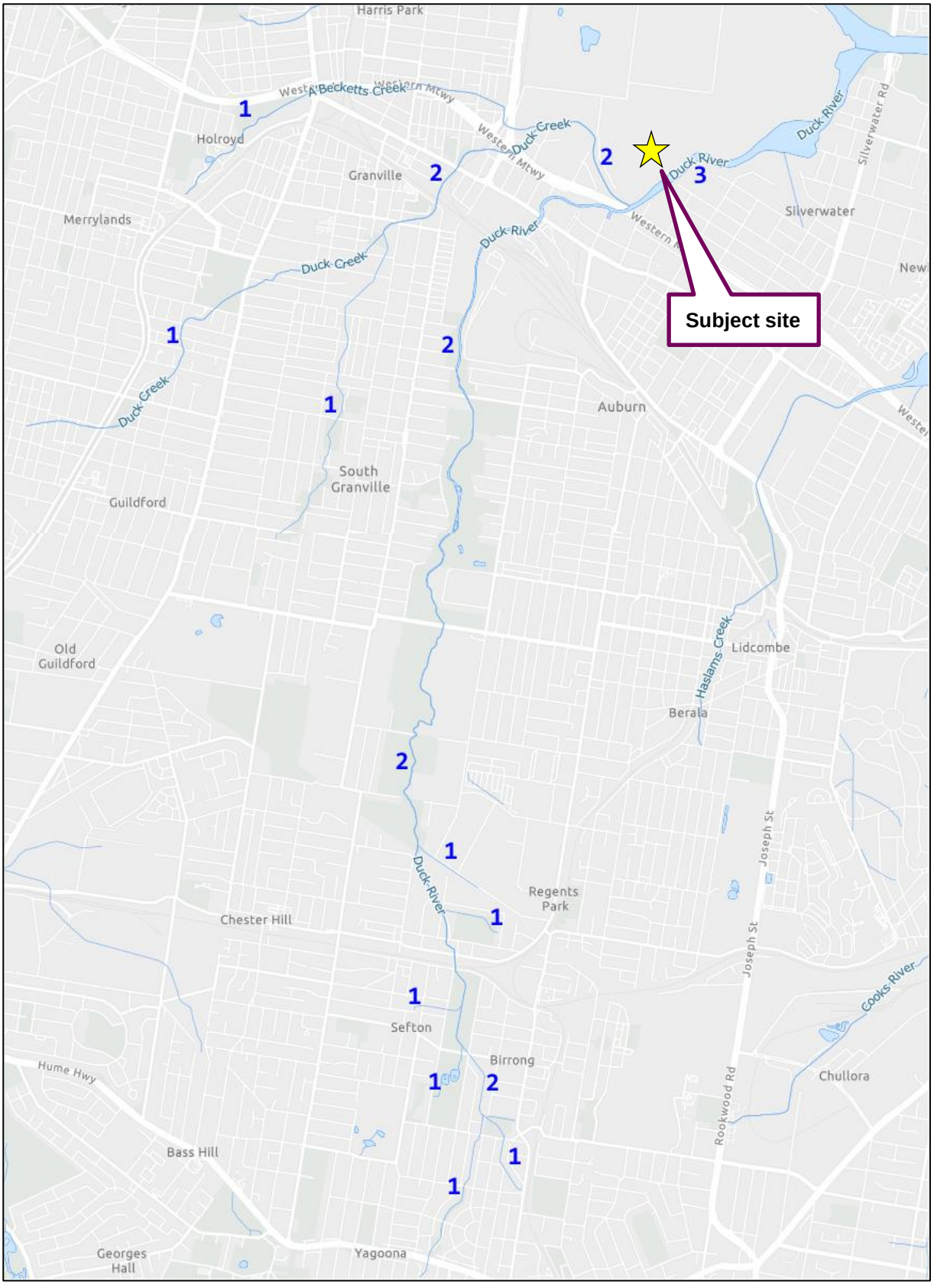


Figure 2 Stream order for Duck River with the subject site denoted by the yellow star.

5.0 Methodology

This assessment has been prepared on the basis of desktop analysis and a site inspection undertaken by Jamie McMahon (CEnvP IA), a qualified and experienced ecologist from AECOM Australia Pty Ltd.

An ecological inspection was undertaken of the Site at Clyde, NSW. The inspection was carried out on 6 November 2019 and lasted approximately three hours. Weather during the inspection was warm and clear with no cloud and a temperature of approximately 27 degrees. Rainfall registered for the day at Sydney Olympic Park was 0.8 mm, though none was apparent at the site. In the previous seven day only one day recorded any rain, being 19.4 mm on 4 November 2019.

This assessment takes into account the full Site. Desktop studies have extended beyond the Site where relevant.

The aim of the site inspection was to:

- confirm the status of any vegetation community/communities present
- confirm the presence or absence of any threatened species or ecological communities within or near the proposal area
- confirm the presence of coastal wetland areas and/or areas of biodiversity value
- discern potential measures relevant to the maintenance of biodiversity values as part of the proposal.

The site inspection was undertaken alongside Viva Energy staff, who indicated the specific areas proposed for earthworks. During the inspection it was not possible to access areas to the south of the perimeter fence due to safety and accessibility reasons. This area was however clearly visible through the chain wire fence, and is not proposed for development in any case.

The site inspection focused upon the strip of land to be retained along the southern boundary of the proposed development, immediately to the north of the southern perimeter fence, though the body of the Site was also noted. As outlined above, the main body of the Site is subject to a separate SSDA consent for the remediation of soils, meaning that the majority of the proposal area would be cleared of vegetation and excavated prior to the commencement of works for this development. Vegetation clearing required as part of the remediation SSDA has been assessed and consented separately and is not included in this assessment.

The site inspection was undertaken primarily as a ground truthing exercise in order to confirm desktop results. No detailed surveys, including biometrics, aquatic survey or fauna trapping, were undertaken.

6.0 Existing environment

6.1 Overview

Table 4 considers an overview of the site, including relevant environmental controls and sensitivities.

Table 4 Environmental controls and sensitivities

Environmental Considerations	In the study area?
Is the Proposal located within a National Park?	No
Is the Proposal located within land reserved or dedicated for preservation of other environmental protection purposes?	No
Is the Proposal located within a World Heritage Area?	No
Is the Proposal located within an Environmental Protection Zone under an environmental planning instrument?	No
Is the Proposal located within land identified as a wilderness area?	No

Environmental Considerations	In the study area?
Is the Proposal located within a wetland area dedicated under the Ramsar Wetlands Convention?	No
Does the site contain critical habitat?	No
Is the area mapped as Key Fish habitat?	Yes
Is the area mapped on the Biodiversity Values map?	Yes, riparian area only
Is the area mapped on the Native Vegetation Regulatory Map?	No (excluded land)

6.2 Site photographs

Figure 3 View from the south eastern corner of the site looking west

Figure 4 View approximately 50 m west of the southeastern corner of the site looking east

Figure 5 View approximately 100 m west of the southeastern corner of the site looking east, showing industrial remnants

Figure 6 View from approximately the centre of the southern boundary looking southwest

Figure 7 View along the southern boundary looking west

Figure 8 View towards the southwestern boundary within an area with previous tree planting

Figure 9 View along the southern boundary towards the southwestern corner looking west

6.3 Site and layout

The proposal area is located at Clyde, NSW, approximately 16.5 kilometres northwest of the Sydney CBD (as the crow flies). The area is located on Durham Street, Clyde and is within the Paramatta City Council Local Government Area (LGA).

The proposal is located within land zoned as 'IN3 Heavy Industry', and is surrounded on three sides by the Viva Terminal and other existing industrial premises. To the south is Duck River, which is fringed by mangroves on both banks. On the other side of the river is further industrial development. A larger area of mangroves is present on the southern bank of the river to the east of the site, with the Viva Terminal wetlands area located within the northeast corner of the existing operational terminal. The Parramatta River is located beyond the wetland area, approximately 1.4 km to the northeast of the proposal area. The nearest substantial area of fully publicly accessible green open space is Sydney Olympic Park, approximately 2.2 km to the east, though it is noted that Rosehill Racecourse is located immediately northwest across Colquhoun Street.

The Site itself is generally flat, having been the subject of extensive historic earthworks to accommodate the refinery. The Site retains a minor slope towards the south, facilitating drainage towards Duck River and the onsite wastewater treatment system (part of the refinery and now used for the terminal). Nearly all ex-refinery infrastructure within the Site has now been removed, including tanks, pipes and some roadways. Isolated areas of hardstand and small retaining walls and bunds are still present in some areas, though it is expected that much of this infrastructure would be removed as part of the consented remediation SSDA activities.

The southern boundary of the Site is fringed by native and exotic vegetation (see further detail below).

Parts of the proposal area (along the southern boundary) fall within land classified as 'coastal wetland' under *State Environmental Planning Policy (Coastal Management) 2018* (Coastal Management SEPP) (Figure 10). It should be noted that the works proposed as part of this proposal would not encroach into the riparian zone along the Duck Creek boundary, with the exception of the construction of environmental protection works for the management of water quality.

The riparian zone would be no narrower than 30 metres from the mean high water mark, and greater than 30 metres in some places depending on existing vegetation. Clause 10 of the Coastal Management SEPP requires that certain development, including environmental protection works, carried out within identified as 'coastal wetlands' requires consent. Clause 11 of this policy further outlines that all such development, except for environmental protection works, is declared to be designated development.

As the proposed works in the riparian zone will already be subject to development consent Clause 10 is satisfied. On the basis that these works comprise 'environmental protection works' Clause 11 is not activated and the development would not be declared to be designated development.

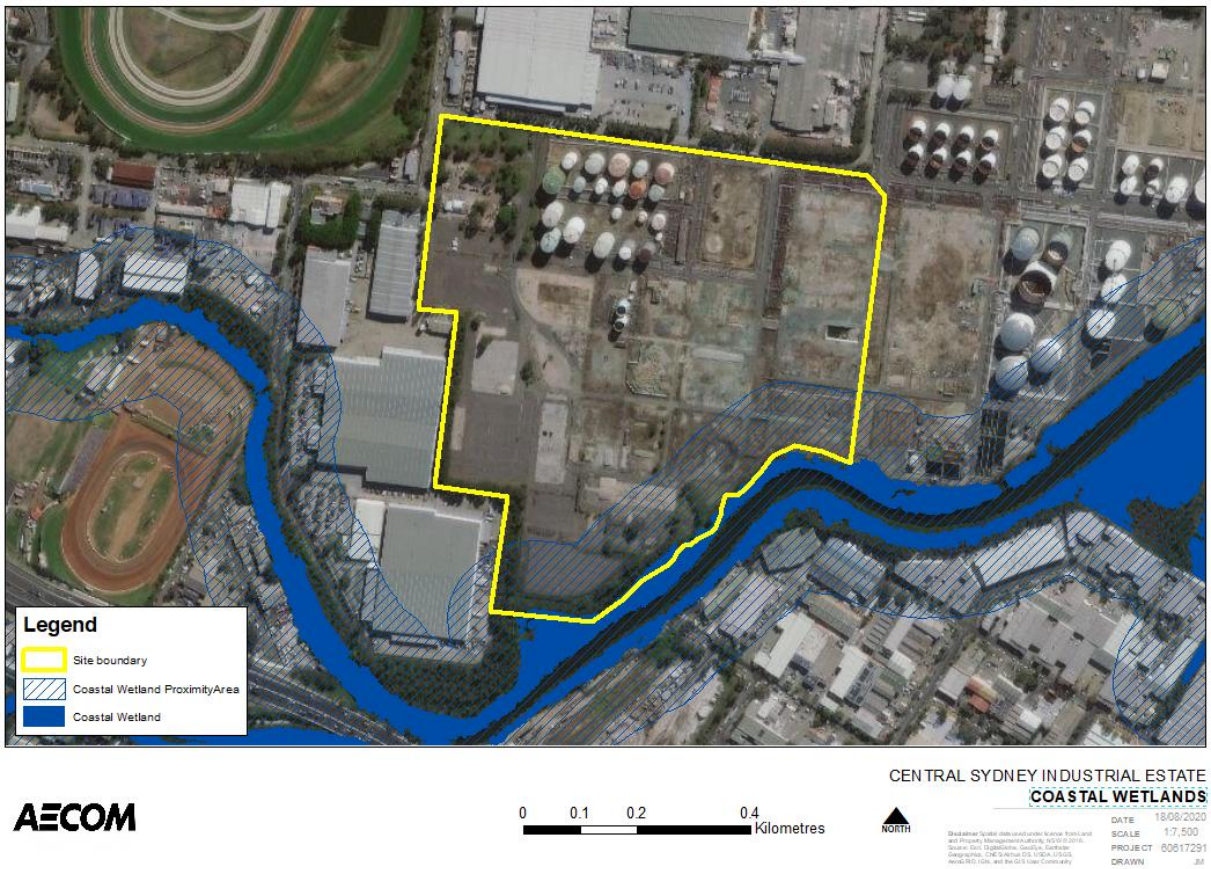


Figure 10 Coastal Wetland areas and coastal proximity areas

6.4 Desktop searches

A search of the NSW Bionet Atlas and the Commonwealth Protected Matters Search Tool (PMST) indicated the potential for 143 threatened or migratory species to be present within a 10 km x 10 km area centred on the proposal area (Figure 11). This includes highly mobile species such as Grey-headed flying fox, Glossy Black-Cockatoo and Eastern Osprey, as well as plants such as *Acacia bynoeana* and *Pimelea spicata*. It should be noted that the PMST returned a large number of exclusively marine species such as albatross and leatherback turtle that are highly unlikely to occur in this location and as such were excluded.

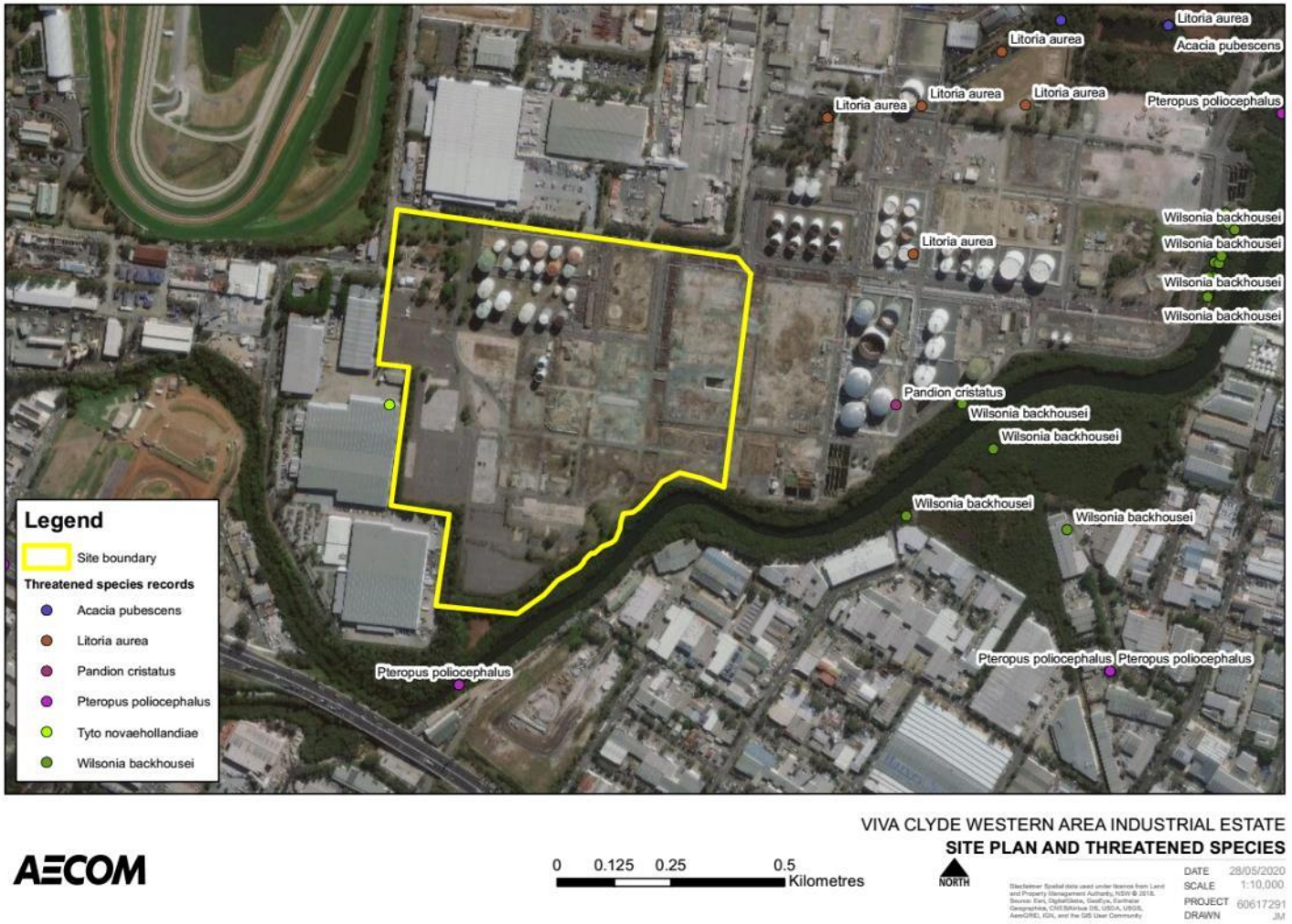


Figure 11 Threatened species records

Duck River, as it flows past the Site, is considered key fish habitat under the *Fisheries Management Act 1994*. As noted above, mangroves present along the Site's interface with Duck River are also protected by Section 205 of this Act.

Desktop searches indicated that the edge of the Site, bordering Duck River, contains three vegetation communities:

- **PCT 910: Swamp Oak swamp forest fringing estuaries, Sydney Basin Bioregion and South East Corner Bioregion**. This community is equivalent to Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Sydney Basin, which is listed as endangered under both NSW and Commonwealth legislation.
- **PCT 920: Mangrove Forests in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion**. This PCT is not equivalent to any threatened ecological community, though it is noted that mangroves are classified as protected marine vegetation under section 205 of the *Fisheries Management Act 1994*.
- **PCT 1126**: Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion. This community is equivalent to Coastal Saltmarsh in the New South Wales North Coast, Sydney Basin and South East Corner Bioregions, which is listed as endangered under NSW legislation and vulnerable under Commonwealth legislation.

These communities are mapped in Figure 12.

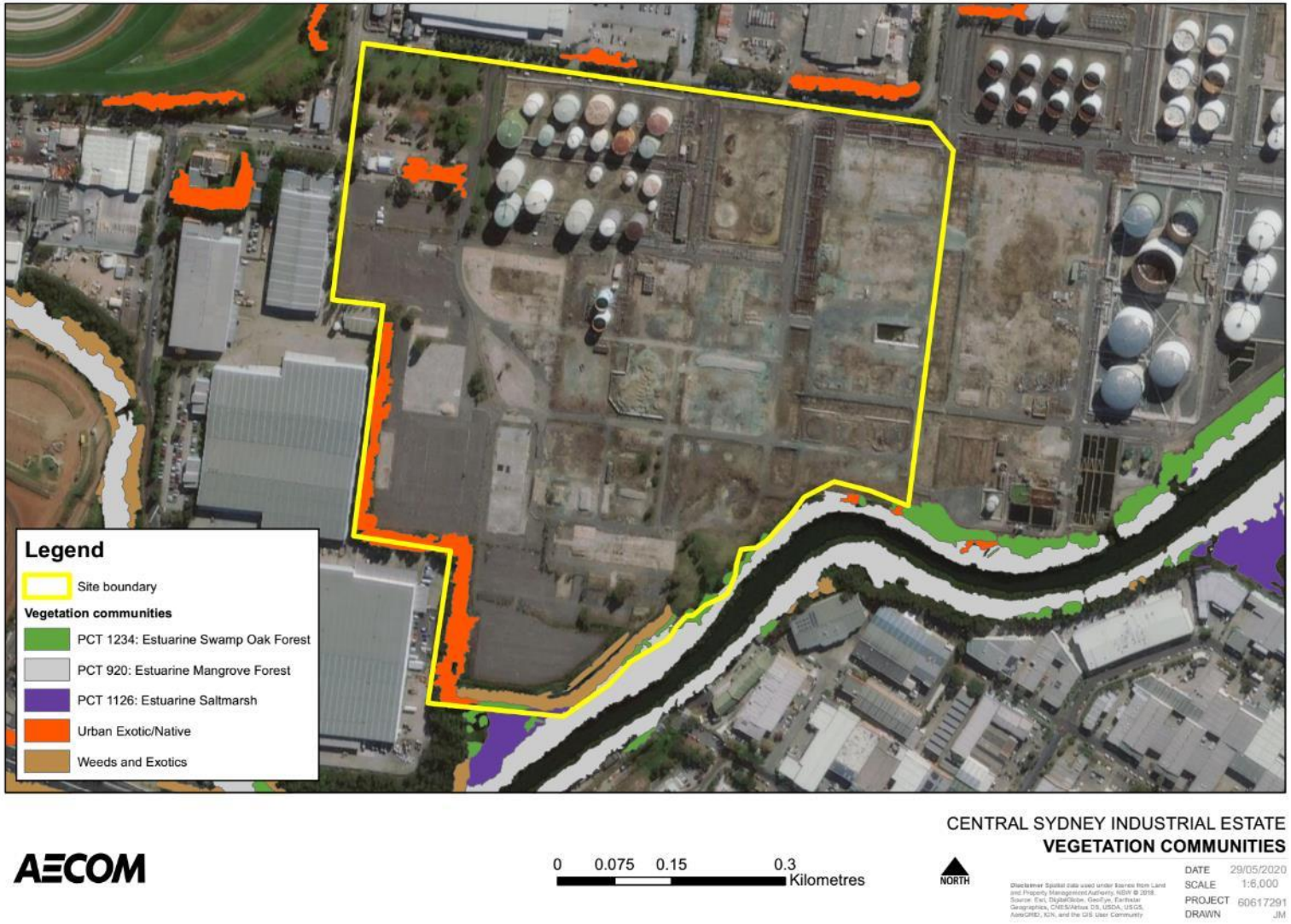


Figure 12 Plant community types within the Site

6.5 Inspection results

Conditions during the inspection were warm, approximately 27 degrees with scattered cloud and light wind. There had been a small amount of rain throughout the week prior to the survey (19.4 mm in the previous seven days). Despite this the site was relatively dry, with no evidence of standing or flowing water through any drainage channels.

The main body of the Site is generally characterised by an open flat area, much of which is occupied by hardstand, short retaining walls and rubble related to previous refinery infrastructure. The southern perimeter is generally covered in a mix of native and exotic grasses, with areas of planted and regenerated midstorey and canopy vegetation.

Native vegetation observed along the southern perimeter of the western area included:

- *Casuarina glauca* (Swamp oak)
- *Elymus repens* (Couch grass)
- *Phragmites australis*
- *Eucalyptus robusta*
- *Eucalyptus tereticornis* (Forest red gum)
- *Eucalyptus moluccana* (Grey box)
- *Melaleuca quinquenervia*
- *Eucalyptus elata*

Exotic vegetation observed along the southern boundary included:

- Lantana (*Lantana camara*)
- Balloon vine (*Cardiospermum grandiflorum*)
- Cobblers Pegs (*Bidens pilosa*)
- Fleabane (*Conyza bonariensis*)
- Paddy's Lucerne (*Sida rhombifolia*)
- Purple top (*Verbena bonariensis*)
- *Paspalum* sp.
- Blackberry (*Rubus fruticosus*)
- Scotch thistle (*Onopordum acanthium*)
- Coral tree (*Erythrina* x *sykesii*)
- Swan plant (*Gomphocarpus fruticosus*)
- Green cestrum (*Cestrum parqui*)
- Blackberry nightshade (*Solanum nigrum*)
- Castor oil plant (*Ricinus communis*)
- Moth vine (*Araujia sericifera*).

Fauna observed around the western area included:

- Superb Fairy Wren (*Malurus cyaneus*).
- Satin bowerbird (*Ptilonorhynchus violaceus*)
- Yellow-faced honeyeater (*Lichenostomus chrysops*)
- Australian raven (*Corvus coronoides*).

No evidence of other occupation in the form of scats or tracks was observed, although the Site would be reasonably expected to accommodate introduced vertebrates such as house mouse, rabbits and foxes.

It is likely that mature canopy and midstorey vegetation along the perimeter of the Site would provide habitat and foraging resources for arboreal mammals such as microbats, megabats, gliders and possums. This vegetation is also likely to provide occasional roosting and foraging opportunities for a variety of birds, including aquatic and marine birds that would interact with the brackish environment of Duck River and the Parramatta River/Sydney Harbour corridor more generally. Drainage channels within the Site may provide some habitat for reptiles, with lizards and snakes known to occur. Amphibians are known to inhabit the vicinity, with a population of Green and Golden Bell Frog (*Litoria aurea*), known to be present in the wetland area to the northeast of the existing terminal. None have been identified on the subject site and no potential habitat was identified.

The site inspection confirmed the presence of PCT 910 (Swamp Oak swamp forest) and PCT 920 (Mangrove Forests in estuaries). No areas of PCT 1126 (Saltmarsh in estuaries) were observed though it is noted that this occurs outside the fenced area of the Site and was not accessible dur to safety reasons.

6.6 Aquatic environment

The site is located on Duck River, within the Parramatta River/Sydney Harbour catchment. This section of Duck River is listed as Key Fish Habitat by DPI Fisheries, though is not listed as an endangered ecological community under the FM Act.

Review of threatened fish habitat mapping (DPI 2015) indicated that no threatened species are likely to be present within this stretch of Duck River. The nearest is the endangered population of Posidonia australis, the nearest known location of which is around Middle Harbour and South Head. The condition of Duck River, as well as its geomorphology and depth in the estuary, makes it highly unlikely that the river would host any population of this species in this location.

A search of the NSW DPI Fisheries Spatial Data Portal identified the river through this area as “Fair” freshwater fish community status (Figure 13).

Figure 13 Duck River - DPI Fisheries spatial data

The existing aquatic environment consists of Duck River and the riparian zone adjacent to each bank. The river is immediately flanked by Grey mangroves (*Avicennia marina*) on both sides, with a mixture of vegetation types behind. Within the subject site this includes a mixture of planted and naturally generated vegetation, including a number of environmental weeds (see Section 6.5).

Water in the river was observed to be a mid-brown colour, with evidence of elevated suspended solids. The riparian area was somewhat odorous though this is expected in mangrove areas.

This part of the river does not contain any bridges or other substantial structures that may comprise habitat for aquatic species. It was not clear from the banks to what degree the river contained snags or other subsurface habitat features.

6.7 Critical habitat

None of the land in or around the proposal area is listed as critical habitat for any species.

6.8 EPBC Matters of National Environmental Significance

The PMST identified the following TECs as potentially occurring within the proposal area:

- Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion
- Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological Community
- Coastal Upland Swamps in the Sydney Basin Bioregion
- Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion
- Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest
- Shale Sandstone Transition Forest of the Sydney Basin Bioregion
- Subtropical and Temperate Coastal Saltmarsh
- Turpentine-Ironbark Forest of the Sydney Basin Bioregion
- Western Sydney Dry Rainforest and Moist Woodland on Shale

Observations made during survey confirmed that only 'Subtropical and Temperate Coastal Saltmarsh' was present within the Site. This straddles the extreme southern border of the Site, which is not subject to any development and would be preserved as part of the Riparian Corridor protection measures outlined elsewhere in this report. As such, no further assessment is required.

No threatened or migratory species listed under the EPBC Act were recorded during the surveys. Some threatened and/or migratory species may utilise habitat within the study area for foraging or movement on occasion, however, it is noted that abundant and better quality habitat is located within the broader locality. Further, the vegetated areas within the Site likely to be utilised by these species would not be subject to clearing and would be managed as part of the Riparian Corridor protection measures.

7.0 Potential impacts

7.1 Vegetation

As outlined above, the implementation of the remediation SSDA throughout the Site will entail extensive excavation and/or rehabilitation of soils. The Site remediation EIS considered vegetation the footprint of their project area and deemed it to be absent of native vegetation.

The extent of existing vegetation across the Site is limited. Generally, this is restricted to the southern boundary with Duck River, the southwestern boundary and scattered trees in the northwest corner. Vegetation along western boundary (except for trees required to be removed to clear and clean out the existing open drainage channel) would be retained. Vegetation removal within the southern boundary would be restricted to weeds, with all native vegetation (planted and naturally generated) being retained as part of the proposed 30 metre riparian corridor.

The vegetation along the southern boundary would also be subject to management for the first two years post construction as a minimum. Management actions for this location are documented in the attached vegetation management plan (VMP) (Appendix A) and would generally include access management, weed control and erosion and sediment control. These actions would be the responsibility of the proponent. For the purposes of the VMP several vegetation zones have been identified, including the Riparian Management Zone, Construction management zone and Vegetation Buffer. The VMP includes specific management actions to be implemented across these areas to provide for improved biodiversity outcomes throughout this area.

In the northwest of the site the proposal would remove a stand of landscape plantings. This landscaping appears to date to the development of the refinery and includes a number of common landscaping species such as Brush box, *Callistemon saligna*, *Corymbia maculata*, *Eucalyptus sideroxylon*, European oak, Camphor laurel and Liquidamber. Whilst many the of the species present

are native, most are not typical of this location or within the Sydney basin generally. The loss of this vegetation is not deemed to be significant in the context of the site or the broader locality.

As outlined in the Site remediation EIS, no vegetation within the body of the site is deemed to comprise a NSW PCT.

The long-term retention and management of vegetation along the southern and western boundaries would provide a benefit to vegetation cover within the locality. This is based on the fact that this vegetation appears to be largely native regeneration and is subject to relatively low levels of weed infestation. Where vegetation has been planted suitable species have been used which are consistent with the locality.

The proposal would include the removal of any remaining vegetation within the main body of the site after the implementation of the remediation SSDA works. This is likely to be limited to scatted weeds and juvenile individuals of naturally regenerating native species, such as *Casuarina glauca*. The biodiversity impact associated loss of this vegetation would be negligible.

It should be noted that a portion of the proposed 30 metre riparian corridor was historically occupied by refinery infrastructure and is largely devoid of native vegetation. The proposed management of this zone will include fencing off of this area and revegetation to rehabilitate this land. This will result in a net benefit to biodiversity in this location.

Noting that the proposal includes both removal and long term retention of vegetation within the site the overall biodiversity impact of the proposal on vegetation would be negligible.

7.2 Aquatic impacts

Construction of the proposal has the potential to result in increased sediment runoff into the Duck River. The potential for impacts upon aquatic fauna and key fish habitat is considered to be minor given the nature of the proposal and the degraded state of the river resulting from the highly urbanised and industrial catchment. Aquatic impacts arising from the proposal would be managed through the implementation of standard soil and water safeguards outlined in Section 8.0.

To consider the consequences of aquatic impacts NSW DPI's *Policy and guidelines for fish habitat conservation and management* (the fish habitat guideline) was consulted. This document outlines the general approach to assessing impacts to key fish habitat arising from development. Based on this document Duck River is considered to be 'Type 1 - highly sensitive' habitat as well as 'Class 1 – major key fish habitat' (Table 5).

Table 5 Habitat and waterway classification – Duck River

Characteristic	Classification	Reasoning
Habitat sensitivity	TYPE 1 - Highly sensitive	SEPP 14 coastal wetlands
Waterway classification	CLASS 1 - Major key fish habitat	Marine or estuarine waterway or permanently flowing or flooded freshwater waterway (e.g. river or major creek)

As per the requirements of the fish habitat guideline an aquatic habitat assessment has been undertaken and is presented in Table 6.

Table 6 Aquatic habitat assessment

Question	Response
What are the geomorphic characteristics of the waterway?	Duck River through this location is approximately 25 m wide located between low lying mangrove flats. The surrounding land is similarly flat indicating that this site has historically been mudflats and likely colonised extensively by mangroves.

Question	Response
Is it a gully, intermittent stream or major river? Does is it have deep pools or in-stream gravel beds? Is it a wetland? Does the watercourse connect with other watercourses upstream or downstream? What is the slope/gradient?	Duck River in this location is a main river. It meanders to some degree through the urban areas of Clyde, Auburn and Chester Hill. The river is joined just upstream by Duck Creek and A'Becketts Creek. The part of the river adjacent to the proposal would be considered mangrove marsh rather than wetland, though wetlands are present up and downstream of the site.
Is it mapped as key fish habitat?	Yes
What is the flow regime of the watercourse (e.g. is it an intermittent or permanently flowing stream? What is the range of water velocity of the flow? What are the maximum and minimum or percentile flows (in megalitres/day) for the watercourse?)	The river flows permanently. Water velocity is likely to significantly vary on a seasonal basis though is generally slow. During the site inspection it was observed to flow at approximately 1 metre per second though this is likely to change according to the specific tide. The total daily flow is not known.
What are the local wave and current tidal regimes?	The river is not subject to waves but is tidal in this location.
Describe the water quality (e.g. discolouration, sedimentation, turbidity, pH, dissolved oxygen, nutrients)	The water was observed to be a mid-brown colour during the inspection with moderate clarity. The bed of the waterway was visible to a depth of approximately 0.5 m. Water quality monitoring undertaken in 2009 indicated that the river is subject to very high nutrient loads, up to 2.5 times the relevant standard. pH was generally within range and water clarity, TSS and faecal coliforms counts were poor. Dissolved oxygen was generally within range though were very low at some sampling sites. In June 2020 the river was turned bright purple by an unknown discharge.
What types of surrounding land use are present (e.g. agricultural, urban, aquaculture)?	Duck River is located within an area with over 150 years history of urbanisation and industrial land use. As such water quality is expected to be poor due to stormwater runoff and unauthorised discharges. The river has been diverted and channelised in many locations, including under main transport links such as the M4 Motorway and the Main Western Rail Line.
What is the condition of riparian vegetation (i.e. present or absent. Are the species native or exotic? Is the density of vegetation thick or sparse?)	In this stretch riparian vegetation is mainly comprised of Grey mangroves forming a fringe along the waterway ranging between 15 m and 42 m horizontally. These mangroves appear to be healthy though their density varies in certain locations, presumably due to local conditions.
What is the condition of freshwater aquatic vegetation (i.e. present or absent. Are the species native or exotic? Is the density thick or sparse? Is it continuous or sparse in coverage? What is the aerial extent of major vegetation types? Is the vegetation healthy or degraded?)	This water is not freshwater.

Question	Response
What is the condition of marine vegetation (i.e. information on type, species, shoot density and/or percentage cover, Is the vegetation continuous or sparse in coverage? What is the aerial extent? Is the vegetation healthy or degraded? Is wrack (dead seagrass or macroalgae) present?)	As outlined above riparian vegetation along the river in this location is mainly comprised of Grey mangroves forming a fringe along the waterway ranging between 15 m and 42 m horizontally. These mangroves appear to be healthy though their density varies in certain locations, presumably due to local conditions. For most of the boundary of the subject site the mangroves form a canopy with greater than 70% coverage. These mangroves appear to be healthy. No wrack is present.
Are there wetlands nearby (including freshwater wetlands and saltmarsh) (i.e. are the wetlands protected under any legislation (e.g. SEPP 14 coastal wetlands, Ramsar wetlands)?, Are the wetlands in a healthy or degraded condition?)	No wetlands are present in the immediate vicinity of the subject stretch of river. The Viva wetlands are located approximately 1 km to the northwest. The mangroves through this area are listed as Coastal Wetland under SEPP (Coastal Wetlands) 2018. The mangroves appear to be healthy, though canopy density varies depending on localise conditions.
What is the substrate type (e.g. rock, sand, gravel, silt, coral reef)?	The substrate is silt.
Are there refuge areas present (e.g. adjacent wetlands, upstream pools)?	No refuge areas are present in this stretch of river, though the Viva wetlands front onto Parramatta River, approximately 1.75 km downstream.
Are there spawning areas present (e.g. gravel beds, snags, reed beds, saltmarshes)?	The nature and degree of spawning areas is not known, though it is expected that certain species highly tolerant of degraded water quality would be present.
Are there natural or artificial barriers to fish passage upstream and downstream (e.g. waterfalls, cascades, weirs, dams, floodgates, road crossings)?	There are no apparent obstructions to fish passage in the general vicinity, though upstream the river is crossed by several major transport corridors including the M4 Motorway, the Great Western Highway and the Main Western Rail line. The nearest observable weir on (an aerial photo) is approximately 3.5 km upstream.
What types of migratory fish or other aquatic species likely to inhabit the areas (based on known distribution range within the scientific literature)?	Anecdotal evidence suggests that the river has historically had river mullet and eels, though no data on the current assemblage was available.
What is the timing of construction in relation to any fish migration seasons?	Construction would commence early 2021 in mid to late summer.
What is the timing of construction in relation to flow conditions relative to expected wet seasons?	Should construction commence early 2021 this would coincide with higher average monthly rainfalls in this part of Sydney.

Question	Response
Are there any listed threatened or protected aquatic species or 'critical habitat' under the FM Act and EPBC Act present?	A review of the DPI threatened fish maps do not indicate the potential for any threatened species to be present in this location.

Development of the industrial estate would require the construction of a reticulated stormwater system throughout the area. This would service all eight lots, as well as the proposed road through the centre of the site. Within each will be stormwater quality devices aimed at managing elements such as total suspended solids, hydrocarbons and nutrients (Phosphorous, Nitrogen etc).

After exiting the above devices, the water will pass through the formal subsurface drainage system to two outlets. One of these would service stormwater flowing off the proposed Downer facility only, with the other servicing the remaining seven lots.

The above drainage outlets would be constructed on ground previously cleared of vegetation and disturbed by the Clyde Refinery, to the rear (landward) side of the mangroves and would include appropriate rip rap and a rock apron to slow stormwater exiting the pipe prior to it draining overland into the waterway through the mangroves.

Water quality devices will be included as part of the development as well as future developments within the industrial estate. This would include gross pollutant traps, proprietary filtration systems, bio-retention basins, buffer strips, swales or other acceptable methods of treatment. The Civil Engineering and Stormwater Management report has modelled water quality arising from the development, indicating that all relevant Parramatta City Council stormwater quality measures would be met (Table 7).

Table 7 MUSIC analysis results

	Source	Residual Load	% Reduction	Target Met
Flow (ML/yr)	43	42.9	0.4	
Total Suspended Solids (kg/yr)	13900	1730	87.6	Y
Total Phosphorus (kg/yr)	23.7	5.63	76.3	Y
Total Nitrogen (kg/yr)	103	56.6	45	Y
Gross Pollutants (kg/yr)	1140	0	100	Y

The construction and operation of the proposed stormwater outlet would not involve any direct impacts upon the mangroves. Indirect impacts may arise over time with the repeated flushing of stormwater form the pipes through the mangrove area. Whilst the quality of stormwater would be managed appropriately upstream in the system it is recognised that the physical movement of water through the mangroves may cause a minor degree of scour in the long term.

State Environmental Planning Policy (Coastal Management) 2018

State Environmental Planning Policy (Coastal Management) 2018 aims to promote an integrated and co-ordinated approach to land use planning in the coastal zone in a manner consistent with the objects of the *Coastal Management Act 2016*, including the management objectives for each coastal management area, by

a) managing development in the coastal zone and protecting the environmental assets of the coast, and

b) establishing a framework for land use planning to guide decision-making in the coastal zone, and

c) mapping the 4 coastal management areas that comprise the NSW coastal zone for the purpose of the definitions in the Coastal Management Act 2016.

Clause 10 of this policy relates to area specifically mapped as 'coastal wetland' on the relevant map. In general, this clause requires that development within a coastal wetland area requires development consent. This clause also requires that a consent authority must not grant consent unless it:

'is satisfied that sufficient measures have been, or will be, taken to protect, and where possible enhance, the biophysical, hydrological and ecological integrity of the coastal wetland'.

Clause 11 of this policy relates to the 'proximity area for coastal wetlands', which is typically a 100 metre buffer of coastal wetland areas. This clause states:

Development consent must not be granted to development on land identified as "proximity area for coastal wetlands" or "proximity area for littoral rainforest" on the Coastal Wetlands and Littoral Rainforests Area Map unless the consent authority is satisfied that the proposed development will not significantly impact on—

a) the biophysical, hydrological or ecological integrity of the adjacent coastal wetland or littoral rainforest, or

b) the quantity and quality of surface and ground water flows to and from the adjacent coastal wetland or littoral rainforest.

With regard to clause 10, the proposal includes a number of measures to protect and enhance the coastal wetland area. These include:

- Implementation of a riparian corridor extending inland 30 metres from the mean high water mark of Duck River. This land would not be developed as part of the industrial estate, being set aside for conservation purposes. In areas where the corridor is currently not vegetated for the full 30 metres width additional revegetation would be undertaken.
- Implementation of a vegetation management plan for the first two years post-construction of the estate. This would include monitoring of revegetation and regeneration areas by a person qualified in bush regeneration. This would also include the removal of weeds and access control to minimise disturbance to flora and fauna. This program is intended to provide and advantage for native vegetation, enhance habitat and build resilience to weeds and other invasive species
- Installation of water treatment devices in all industrial lots. These devices will treat water to the relevant guidelines of Parramatta City Council to ensure that water deposited into the coastal wetland area would be of a suitable quality. It should be noted that at present water currently flows overland through the site and into the mangrove area, picking up sediment and potentially other pollutants as it progresses. The upgraded stormwater system would result in cleaner water that would be reticulated and discharged in a controlled manner that minimises the potential for scour in the long term.

These measures are considered sufficient to protect and enhance the biophysical, hydrological and ecological integrity of the coastal wetland.

With regard to clause 11, the proposal would not result in any significant impact upon the ecological integrity of the coastal wetland area, rather it is likely to enhance its condition in the long term.

Surface water deposited into the coastal wetland area would be of high quality and would be managed to reduce velocity and energy. In doing so stormwater discharges would flows through the mangrove are in a manner similar to the current scenario, albeit with fewer pollutants (See water quality discussion above). On this basis the quantity of water would not differ from the current scenario. and the quality would be improved. On this basis there would be no significant impact upon the integrity of the adjacent coastal wetland area.

7.3 Habitat and connectivity

As outlined above, the proposal would result in the retention of existing vegetation along the southern and western boundaries, with an area of landscaping vegetation to be removed in the northwest. Vegetation within the main body of the site (mostly weeds and juvenile regeneration) would be removed.

The vegetation within the northwest corner of the site is generally comprised of mature and semi-mature trees with isolated patches of midstorey (in the form of shrubs such as *Callistemon* sp). The understorey is regularly mowed, resulting in a generally low habitat complexity and value. Fauna typical of such areas are generally limited to urban adapted species, particularly common native and exotic urban birds and some bats.

The habitat potential for reptiles, amphibians and invertebrates is considered to be very low. On this basis the loss of this vegetation is not considered to be a significant impact, particularly noting the otherwise industrial context of the Site and locality. It is also recognised that future industrial development over the Site would bring replacement landscaping, providing an opportunity for better design in terms of species suitability, habitat complexity and coverage.

The retention and management of vegetation to the south and west of the site would provide an ongoing benefit in terms of local habitat and biodiversity outcomes. Habitat along the southern boundary is particularly important in this regard given it represents and ecotone into the adjacent mangrove area and a longitudinal corridor for the movement of wildlife along the waterway. This area provides a number of ecological niches, providing a disproportionately positive impact on the biodiversity value of the area.

Overall the impact to habitat and connectivity arising from the Proposal is considered to be neutral.

7.4 Threatened species

Whilst no threatened species were recorded during the site inspection there remains the potential that this area may be used by one or more of these mobile fauna species for shelter or breeding.

It is noted that the Clyde Grey-Headed Flying Fox (*Pteropus poliocephalus*) colony is located on Duck River, approximately 1.6 km upstream of the Site. Direct observation of this colony indicates that the Flying Foxes disperse at dusk primarily along the path of the waterway. When surveyed it was noted that the vast majority (greater than 95% of individuals) disperse to the south, following the line of Duck River. A small number of individuals disperse east and west (less than 10 during the survey), with the remainder dispersing to the north.

Whilst there is a potential that this species may forage within flowering plants along the southern boundary of the Site, it is noted that residential gardens (which are in abundance elsewhere in the region) are more favoured for their greater density of nectar and fruit-bearing plants. This species is not expected to use any part of the central portion of the Site given the lack of canopy vegetation.

Given that native vegetation within the southern boundary of the site would not be subject to any clearing, and would be enhanced in the long term as a set side area and under the management of the VMP, it is expected that impacts on this species would be negligible.

With respect to other threatened species identified in desktop searches, the existing near comprehensive clearing across the Site suggest that any usage by these species is not expected to be extensive, nor to the degree that these threatened or migratory species are likely to specifically rely on parts of the area proposed for future development. It is also noted that the Proposal includes a commitment to protect and enhance the riparian zone along the southern boundary, which will provide for a beneficial outcome for threatened species.

7.5 Threatened ecological communities

The following threatened ecological communities were recorded within the site:

- Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Sydney Basin (NSW: Endangered, Commonwealth: not listed)
- Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion (NSW: Endangered, Commonwealth: Vulnerable)

The area occupied by these communities would be avoided by the development. These areas are also part of the 30 metre riparian corridor provided along the southern side of the Site and as such would be subject to conservation measures, including the implementation of a vegetation management plan for two years following construction.

On the basis of the above the project would not have any significant impact on any threatened ecological communities. Other direct and indirect impacts

During the construction of the Proposal there is the potential for the following direct and indirect biodiversity impacts.

Direct disturbance through increased presence of people and machinery

Construction of the proposal would involve the presence of large machinery, vehicles, equipment and construction workers. Given the ongoing demolition of refinery infrastructure and remediation of soils, activity associated with the Project would not present a substantial change from the current scenario. As such there is not expected to result in any substantial impact given the relatively low level of habitat present.

Increased site runoff and sedimentation leading to decreased water quality in Duck River

During construction the Site will be subject to substantial earthworks for the construction of roads, utilities, stormwater infrastructure and building pads, with construction of plant, equipment and other buildings on Lot 6. The potential for erosion and subsequent sedimentation would be managed through the implementation of an erosion and sediment control plan, which includes temporary sediment basins and sediment fencing during earthworks and hydroseeding/grassing and establishing individual sediment basins on each of the completed pads on all lots, which will remain in place until these lots are developed (subject to future development applications). Providing this is implemented erosion and sedimentation impacts arising from works within the main body of the Site are expected to be negligible.

The construction of the new reticulated stormwater network within the site will include connection to Duck River in two locations. The first of these would drain the proposed Lot 6 to the east of the Site. Water draining from this lot would flow to a bioretention basin. Here the stormwater would be treated to bring it up to water quality standards specified by Parramatta City Council. From this basin water would flow through a pipe under the riparian corridor towards an outlet fitted with a dispersion apron, including rip rap for the purposes of reducing water velocity and preventing scour. This apron would discharge into the rear of the mangrove area, being the upper reaches of the high tide in this location.

The second stormwater outlet would be a similar arrangement slightly south (upstream) of the lot 6 outlet. This would drain the remainder of the lots. This outlet would deal with water draining from each lot with their own individual water quality treatment device that would have to comply with relevant council water quality guidelines for water leaving their site.

In both cases above it is noted that stormwater would drain into the existing mangrove area. It is noted that at present water currently flows overland across the site towards the river, before flowing into the rear of the mangrove area. Given that all stormwater reaching this point will have passed through water quality improvement device(s), and that water flowing out of the pipes would be subject to velocity reductions and scour protection via the rip rap, the potential for scour and sedimentation within the mangrove area is expected to be minimal.

Changes to hydrological processes

As outlined above, the proposal would include changes to the management of stormwater within the site. This would include the formalisation of the drainage of most of the area into a reticulated system. Whilst this would substantially change the existing overland flow patterns within the Site it would not substantially alter the overall volume of water leaving the site and draining into Duck River. As such the impact upon local flooding or other high flow events would not change.

Potential for introduction of weeds during construction

The movement of vehicles and personnel into and throughout the Site has the potential to facilitate the spread of weeds. For the main body of the Site this risk is deemed to be low given that most of this area will be subject to ongoing and future earthworks and construction. The main risk area is the riparian corridor along the southern boundary, though it is noted that this area is already subject to invasion by several environmental weeds.

Weed impacts upon the riparian corridor would be managed through the implementation of the vegetation management plan, including two years maintenance post-construction. This would seek to

initially remove established weeds, undertake revegetation and continue weeding for the period during which the new vegetation establishes. Beyond this initial two year period it is expected that the site will have become established and will retain a degree of resilience to future weed invasion.

The operation of the proposal would not present any ongoing risk in terms of the spread of weeds.

Additional light spill and noise

Construction of the proposal would involve an increased level of noise and night lighting across the site. However, as outlined above, the site is largely devoid of habitat and as such the potential for disturbance of fauna is low. Light and noise disturbance impacts associated with construction would be managed through the implementation of mitigation measures such as the directional use of lighting.

Whilst the specific nature of operations across most of the site are not currently known it can be expected that these will involve the movement of large vehicles, equipment and goods. These impacts would be of a similar nature to many other highly urbanised areas of Sydney and are note expected to result in disproportional disturbance to fauna.

Light spill would be managed through the use of directional lighting, with particular emphasis on avoiding unnecessary light spill into the riparian corridor.

Increased potential for vehicle strike

The potential for native animal vehicle strike during construction and operation is considered to be very low based upon:

- The general lack of fauna habitat across the site
- The slow speed of construction and operational vehicles, the latter of which would be subject to site speed limits
- The very low volume of traffic associated with the small number of industrial lots.

On this basis the overall impact from vehicle strike is deemed to be low.

Mitigation

During construction and operation these issues would be managed through the implementation of standard construction mitigation measures as outlined below. Providing these are implemented the overall biodiversity impact associated with the above factors is considered to be negligible to minor.

7.6 Cumulative impacts

In order to incur a cumulative impact alongside another project it is first necessary for the project alone, to demonstrate at least a moderate adverse impact. As outlined above, the project would be undertaken in an area largely devoid of flora or fauna habitat. Further, the project would include revegetation and two years' worth of management for the purposes of improving the ecological health of the riparian corridor.

On this basis the construction and operation of the central Sydney industrial estate is not considered to result in an overall adverse impact greater than minor and as such the potential for the project to result in cumulative impacts alongside other nearby developments is considered negligible.

7.7 Key threatening processes

As outlined throughout this report the Site is currently largely devoid of habitat. The only notable habitat present, along the southern boundary, would be retained and augmented through revegetation and management according to recognised bush regeneration methods. As such the Project itself would not contribute to any recognised key threatening processes at a state or Commonwealth level.

8.0 Mitigation measures

Within the context of the proposed future use of the proposal area as an active industrial area, and to the extent that is safe and practicable, consideration should be given to implementing the management measures described in Table 8 to protect and enhance existing ecological assets and values. These measures are proposed to be implemented during the construction phase, including earthworks and drainage.

The management measures provided are broadly listed in order of priority for managing biodiversity values.

Table 8 Proposed mitigation measures

Objective	Ref	Management measure
Vegetation	A1	The existing native vegetation along Duck River is to be demarcated as a no-go zone and is to include appropriate signage. Access to the 30m riparian corridor (outside the existing native vegetation) during construction is to be limited to personnel and equipment required to install the stormwater outfalls and for revegetation works in accordance with the Vegetation Management Plan. After the stormwater outfalls and revegetation works are complete, the 30 m riparian corridor will be permanently fenced.
	A2	Vegetation and habitat values within the Site should be managed as per the Vegetation Management Plan.
Protection of native flora	B1	If unexpected threatened flora species are discovered, stop works immediately and contact DPIE - Environment, Energy and Science group for advice.
Protection of fauna and habitat	C1	If unexpected threatened fauna species are discovered, stop works immediately and contact DPIE - Environment, Energy and Science group for advice.
	C2	If impacts to aquatic environments are observed within the vicinity of the work area (e.g. spill of any chemicals or substantial runoff of sediment), works at that location should cease and the NSW Environment Protection Authority and/or Parramatta City Council should be contacted for further advice.
	C3	Operational lighting should be directional and aimed away from the riparian corridor to avoid disturbance to nocturnal animals, particularly bats and birds.
Weeds and disease	D1	Control the movement of vehicles, machinery and human traffic into the riparian corridor during construction by demarcation and/or signage so as to minimise the potential for introduction and spread of weeds. After construction, access to the 30 m riparian corridor will be controlled by permanent fencing.

9.0 Conclusion

Overview of key findings

The Proposal would involve civil and earthworks, including the construction of new roads and drainage within the Site, alongside the development of Downer's Sustainable Road Resource Centre over Lot 6.

The only area of substantial vegetation and habitat within the site was identified as the planted and regenerated native and exotic vegetation along the southern boundary of the site (the riparian corridor). This vegetation is partially classified as coastal wetland, as well as containing two threatened

ecological communities: *Swamp Oak Floodplain Forest of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions - Sydney Basin* and *Saltmarsh in estuaries of the Sydney Basin Bioregion and South East Corner Bioregion*.

As outlined above, the project would avoid all direct impacts to these communities, with indirect impacts subject to a range of management and mitigation measures, including ongoing vegetation management.

No other threatened flora or fauna were recorded during field surveys that are considered to have a moderate or high likelihood of occurring within the study area and hence impacts upon these are considered to be negligible.

The proposal would involve a small amount of removal of planted and exotic vegetation within the main body of the site, however, overall, the proposal would result in a net benefit to biodiversity values through the establishment of a 30 metre riparian corridor. The proposal would include revegetation of this area using appropriate native species, with a vegetation management plan, including recognised bush regeneration methods, being implemented for two years post construction to manage weed invasion and encourage the establishment of native vegetation to a level of self-sustainment.

Based on the limited physical extent of proposal, the highly disturbed nature of the site and the implementation of the recommended management measures, the overall impact of the proposal upon threatened and non-threatened biodiversity is considered to be minor.

Appendix A - Vegetation Management Plan

Refer to Appendix M of the EIS

Appendix B – Protected Matters Search Tool results

EPBC Act Protected Matters Report

This report provides general guidance on matters of national environmental significance and other matters protected by the EPBC Act in the area you have selected.

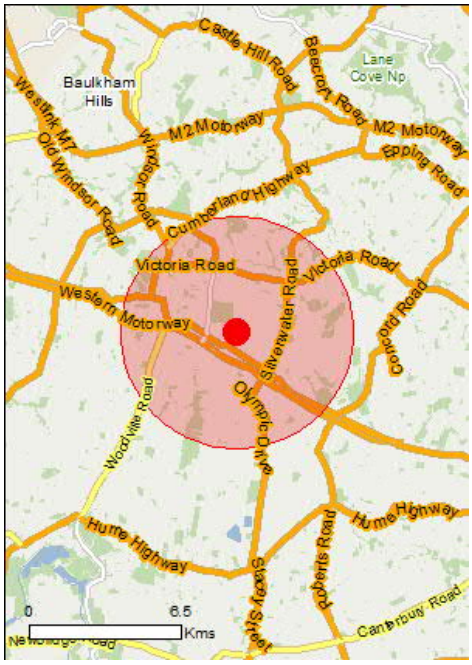
Information on the coverage of this report and qualifications on data supporting this report are contained in the caveat at the end of the report.

Information is available about Environment Assessments and the EPBC Act including significance guidelines, forms and application process details.

Report created: 06/12/19 16:48:03

Summary
Details
- Matters of NES
- Other Matters Protected by the EPBC Act
- Extra Information

Caveat
Acknowledgements



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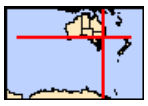

Summary

Matters of National Environmental Significance

This part of the report summarises the matters of national environmental significance that may occur in, or may relate to, the area you nominated. Further information is available in the detail part of the report, which can be accessed by scrolling or following the links below. If you are proposing to undertake an activity that may have a significant impact on one or more matters of national environmental significance then you should consider the Administrative Guidelines on Significance.

World Heritage Properties:	2
National Heritage Places:	2
Wetlands of International Importance:	None
Great Barrier Reef Marine Park:	None
Commonwealth Marine Area:	None
Listed Threatened Ecological Communities:	9
Listed Threatened Species:	72
Listed Migratory Species:	56

Other Matters Protected by the EPBC Act

This part of the report summarises other matters protected under the Act that may relate to the area you nominated. Approval may be required for a proposed activity that significantly affects the environment on Commonwealth land, when the action is outside the Commonwealth land, or the environment anywhere when the action is taken on Commonwealth land. Approval may also be required for the Commonwealth or Commonwealth agencies proposing to take an action that is likely to have a significant impact on the environment anywhere.

The EPBC Act protects the environment on Commonwealth land, the environment from the actions taken on Commonwealth land, and the environment from actions taken by Commonwealth agencies. As heritage values of a place are part of the 'environment', these aspects of the EPBC Act protect the Commonwealth Heritage values of a Commonwealth Heritage place. Information on the new heritage laws can be found at http://www.environment.gov.au/heritage

A permit may be required for activities in or on a Commonwealth area that may affect a member of a listed threatened species or ecological community, a member of a listed migratory species, whales and other cetaceans, or a member of a listed marine species.

Commonwealth Land:	19
Commonwealth Heritage Places:	2
Listed Marine Species:	67
Whales and Other Cetaceans:	None
Critical Habitats:	None
Commonwealth Reserves Terrestrial:	None
Australian Marine Parks:	None

Extra Information

This part of the report provides information that may also be relevant to the area you have nominated.

State and Territory Reserves:	1
Regional Forest Agreements:	None
Invasive Species:	52
Nationally Important Wetlands:	2
Key Ecological Features (Marine)	None

Details

Matters of National Environmental Significance

World Heritage Properties [Resource Information]

Name	State	Status
Australian Convict Sites (Old Government House and Domain Buffer Zone)	NSW	Buffer zone
Australian Convict Sites (Old Government House and Domain)	NSW	Declared property

National Heritage Properties [Resource Information]

Name	State	Status
Historic		
Old Government House and the Government Domain	NSW	Listed place
Parramatta Female Factory and Institutions Precinct	NSW	Listed place

Listed Threatened Ecological Communities [Resource Information]

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Name	Status	Type of Presence
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Endangered	Community may occur within area
Coastal Swamp Oak (Casuarina glauca) Forest of New South Wales and South East Queensland ecological community	Endangered	Community likely to occur within area
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	Community may occur within area
Cooks River/Castlereagh Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	Community likely to occur within area
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	Community likely to occur within area
Turpentine-Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	Community likely to occur within area
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	Community may occur within area

Listed Threatened Species [Resource Information]

Name	Status	Type of Presence
Birds		
Anthochaera phrygia Regent Honeyeater [82338]	Critically Endangered	Species or species habitat known to occur within area
Botaurus poiciloptilus Australasian Bittern [1001]	Endangered	Species or species habitat known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Calidris tenuirostris Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area
Dasyornis brachypterus Eastern Bristlebird [533]	Endangered	Species or species habitat may occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea antipodensis gibsoni Gibson's Albatross [82270]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Grantiella picta Painted Honeyeater [470]	Vulnerable	Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica baueri Bar-tailed Godwit (baueri), Western Alaskan Bar-tailed Godwit [86380]	Vulnerable	Species or species habitat known to occur within area
Limosa lapponica menzbieri Northern Siberian Bar-tailed Godwit, Bar-tailed Godwit (menzbieri) [86432]	Critically Endangered	Species or species habitat may occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Pachyptila turtur subantarctica Fairy Prion (southern) [64445]	Vulnerable	Species or species habitat known to occur within area

Name	Status	Type of Presence
Rostratula australis Australian Painted Snipe [77037]	Endangered	Species or species habitat known to occur within area
Sternula nereis nereis Australian Fairy Tern [82950]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri platei Northern Buller's Albatross, Pacific Albatross [82273]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta cauta Shy Albatross [82345]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche cauta steadi White-capped Albatross [82344]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis rubricollis Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat known to occur within area
Fish		
Epinephelus daemelii Black Rockcod, Black Cod, Saddled Rockcod [68449]	Vulnerable	Species or species habitat likely to occur within area
Macquaria australasica Macquarie Perch [66632]	Endangered	Species or species habitat may occur within area
Frogs		
Heleioporus australiacus Giant Burrowing Frog [1973]	Vulnerable	Species or species habitat may occur within area
Litoria aurea Green and Golden Bell Frog [1870]	Vulnerable	Species or species habitat known to occur within area
Litoria raniformis Growling Grass Frog, Southern Bell Frog, Green and Golden Frog, Warty Swamp Frog [1828]	Vulnerable	Species or species habitat may occur within area
Mixophyes balbus Stuttering Frog, Southern Barred Frog (in Victoria) [1942]	Vulnerable	Species or species habitat likely to occur within area
Insects		
Synemon plana Golden Sun Moth [25234]	Critically Endangered	Species or species

Name	Status	Type of Presence
		habitat known to occur within area
Mammals		
Chalinolobus dwyeri Large-eared Pied Bat, Large Pied Bat [183]	Vulnerable	Species or species habitat likely to occur within area
Dasyurus maculatus maculatus (SE mainland population) Spot-tailed Quoll, Spotted-tail Quoll, Tiger Quoll (southeastern mainland population) [75184]	Endangered	Species or species habitat known to occur within area
Isoodon obesulus obesulus Southern Brown Bandicoot (eastern), Southern Brown Bandicoot (south-eastern) [68050]	Endangered	Species or species habitat may occur within area
Petauroides volans Greater Glider [254]	Vulnerable	Species or species habitat likely to occur within area
Petrogale penicillata Brush-tailed Rock-wallaby [225]	Vulnerable	Species or species habitat may occur within area
Phascolarctos cinereus (combined populations of Qld, NSW and the ACT) Koala (combined populations of Queensland, New South Wales and the Australian Capital Territory) [85104]	Vulnerable	Species or species habitat likely to occur within area
Pseudomys novaehollandiae New Holland Mouse, Pookila [96]	Vulnerable	Species or species habitat may occur within area
Pteropus poliocephalus Grey-headed Flying-fox [186]	Vulnerable	Roosting known to occur within area
Other		
Pommerhelix duralensis Dural Land Snail [85268]	Endangered	Species or species habitat known to occur within area
Plants		
Acacia bynoeana Bynoe's Wattle, Tiny Wattle [8575]	Vulnerable	Species or species habitat may occur within area
Acacia pubescens Downy Wattle, Hairy Stemmed Wattle [18800]	Vulnerable	Species or species habitat known to occur within area
Allocasuarina glareicola [21932]	Endangered	Species or species habitat may occur within area
Asterolasia elegans [56780]	Endangered	Species or species habitat may occur within area
Caladenia tessellata Thick-lipped Spider-orchid, Daddy Long-legs [2119]	Vulnerable	Species or species habitat likely to occur within area
Cryptostylis hunteriana Leafless Tongue-orchid [19533]	Vulnerable	Species or species habitat may occur within area
Darwinia biflora [14619]	Vulnerable	Species or species habitat likely to occur within area
Genoplesium baueri Yellow Gnat-orchid [7528]	Endangered	Species or species habitat known to occur within area

Name	Status	Type of Presence
Melaleuca biconvexa Biconvex Paperbark [5583]	Vulnerable	Species or species habitat may occur within area
Persicaria elatior Knotweed, Tall Knotweed [5831]	Vulnerable	Species or species habitat likely to occur within area
Persoonia hirsuta Hairy Geebung, Hairy Persoonia [19006]	Endangered	Species or species habitat likely to occur within area
Persoonia nutans Nodding Geebung [18119]	Endangered	Species or species habitat likely to occur within area
Pimelea curviflora var. curviflora [4182]	Vulnerable	Species or species habitat may occur within area
Pimelea spicata Spiked Rice-flower [20834]	Endangered	Species or species habitat likely to occur within area
Pterostylis saxicola Sydney Plains Greenhood [64537]	Endangered	Species or species habitat may occur within area
Syzygium paniculatum Magenta Lilly Pilly, Magenta Cherry, Daguba, Scrub Cherry, Creek Lilly Pilly, Brush Cherry [20307]	Vulnerable	Species or species habitat likely to occur within area
Thesium australe Austral Toadflax, Toadflax [15202]	Vulnerable	Species or species habitat may occur within area
Reptiles		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Hoplocephalus bungaroides Broad-headed Snake [1182]	Vulnerable	Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Listed Migratory Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Migratory Marine Birds		
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardenna grisea Sooty Shearwater [82651]		Species or species habitat likely to occur

Name	Threatened	Type of Presence within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche steadi White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Migratory Marine Species		
Caretta caretta Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur

Name	Threatened	Type of Presence within area
Lamna nasus Porbeagle, Mackerel Shark [83288]		Species or species habitat likely to occur within area
Manta alfredi Reef Manta Ray, Coastal Manta Ray, Inshore Manta Ray, Prince Alfred's Ray, Resident Manta Ray [84994]		Species or species habitat may occur within area
Manta birostris Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray [84995]		Species or species habitat may occur within area
Natator depressus Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area
Migratory Terrestrial Species		
Cuculus optatus Oriental Cuckoo, Horsfield's Cuckoo [86651]		Species or species habitat may occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Migratory Wetlands Species		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Arenaria interpres Ruddy Turnstone [872]		Foraging, feeding or related behaviour known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or

Name	Threatened	Type of Presence
		related behaviour known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Foraging, feeding or related behaviour known to occur within area
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Foraging, feeding or related behaviour known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area
Tringa brevipes Grey-tailed Tattler [851]		Foraging, feeding or related behaviour known to occur within area
Tringa nebularia Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour known

Name	Threatened	Type of Presence to occur within area

Other Matters Protected by the EPBC Act

Commonwealth Land [Resource Information]

The Commonwealth area listed below may indicate the presence of Commonwealth land in this vicinity. Due to the unreliability of the data source, all proposals should be checked as to whether it impacts on a Commonwealth area, before making a definitive decision. Contact the State or Territory government land department for further information.

Name
Commonwealth Land -
Commonwealth Land - Australian & Overseas Telecommunications Corporation
Commonwealth Land - Australian Postal Commission
Commonwealth Land - Australian Postal Corporation
Commonwealth Land - Australian Telecommunications Commission
Commonwealth Land - Australian Telecommunications Corporation
Commonwealth Land - Defence Housing Authority
Commonwealth Land - Defence Service Homes Corporation
Commonwealth Land - Director of War Service Homes
Commonwealth Land - Reserve Bank of Australia
Commonwealth Land - Telstra Corporation Limited
Commonwealth Land - War Service Homes Commissioner
Defence - 1/15 RNSWL - LANCER BARRACKS - PARRAMATTA
Defence - ADFRU PARRAMATTA
Defence - LIDCOMBE MULTI-USER DEPOT
Defence - MERRYLANDS
Defence - NEWINGTON
Defence - RAAF STORES DEPOT REGENTS PARK
Defence - TIMOR BARRACKS - DUNDAS

Commonwealth Heritage Places [Resource Information]

Name	State	Status
Historic		
Lancer Barracks	NSW	Listed place
Lancer Barracks Precinct	NSW	Listed place

Listed Marine Species [Resource Information]

* Species is listed under a different scientific name on the EPBC Act - Threatened Species list.

Name	Threatened	Type of Presence
Birds		
Actitis hypoleucos Common Sandpiper [59309]		Species or species habitat known to occur within area
Apus pacificus Fork-tailed Swift [678]		Species or species habitat likely to occur within area
Ardea alba Great Egret, White Egret [59541]		Species or species

Name	Threatened	Type of Presence
		habitat known to occur within area
Ardea ibis Cattle Egret [59542]		Species or species habitat may occur within area
Arenaria interpres Ruddy Turnstone [872]		Foraging, feeding or related behaviour known to occur within area
Calidris acuminata Sharp-tailed Sandpiper [874]		Foraging, feeding or related behaviour known to occur within area
Calidris canutus Red Knot, Knot [855]	Endangered	Species or species habitat may occur within area
Calidris ferruginea Curlew Sandpiper [856]	Critically Endangered	Species or species habitat known to occur within area
Calidris melanotos Pectoral Sandpiper [858]		Species or species habitat known to occur within area
Calidris ruficollis Red-necked Stint [860]		Foraging, feeding or related behaviour known to occur within area
Calidris tenuirostris Great Knot [862]	Critically Endangered	Foraging, feeding or related behaviour known to occur within area
Calonectris leucomelas Streaked Shearwater [1077]		Species or species habitat known to occur within area
Charadrius bicinctus Double-banded Plover [895]		Foraging, feeding or related behaviour known to occur within area
Charadrius leschenaultii Greater Sand Plover, Large Sand Plover [877]	Vulnerable	Foraging, feeding or related behaviour known to occur within area
Charadrius mongolus Lesser Sand Plover, Mongolian Plover [879]	Endangered	Foraging, feeding or related behaviour known to occur within area
Charadrius ruficapillus Red-capped Plover [881]		Foraging, feeding or related behaviour known to occur within area
Chrysococcyx osculans Black-eared Cuckoo [705]		Species or species habitat likely to occur within area
Diomedea antipodensis Antipodean Albatross [64458]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea epomophora Southern Royal Albatross [89221]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea exulans Wandering Albatross [89223]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Diomedea gibsoni Gibson's Albatross [64466]	Vulnerable*	Foraging, feeding or related behaviour likely

Name	Threatened	Type of Presence
		to occur within area
Diomedea sanfordi Northern Royal Albatross [64456]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Gallinago hardwickii Latham's Snipe, Japanese Snipe [863]		Foraging, feeding or related behaviour known to occur within area
Gallinago megala Swinhoe's Snipe [864]		Foraging, feeding or related behaviour likely to occur within area
Gallinago stenura Pin-tailed Snipe [841]		Foraging, feeding or related behaviour likely to occur within area
Haliaeetus leucogaster White-bellied Sea-Eagle [943]		Breeding known to occur within area
Heteroscelus brevipes Grey-tailed Tattler [59311]		Foraging, feeding or related behaviour known to occur within area
Himantopus himantopus Pied Stilt, Black-winged Stilt [870]		Foraging, feeding or related behaviour known to occur within area
Hirundapus caudacutus White-throated Needletail [682]	Vulnerable	Species or species habitat known to occur within area
Lathamus discolor Swift Parrot [744]	Critically Endangered	Species or species habitat likely to occur within area
Limosa lapponica Bar-tailed Godwit [844]		Species or species habitat known to occur within area
Limosa limosa Black-tailed Godwit [845]		Foraging, feeding or related behaviour known to occur within area
Macronectes giganteus Southern Giant-Petrel, Southern Giant Petrel [1060]	Endangered	Species or species habitat may occur within area
Macronectes halli Northern Giant Petrel [1061]	Vulnerable	Species or species habitat may occur within area
Merops ornatus Rainbow Bee-eater [670]		Species or species habitat may occur within area
Monarcha melanopsis Black-faced Monarch [609]		Species or species habitat known to occur within area
Monarcha trivirgatus Spectacled Monarch [610]		Species or species habitat known to occur within area
Motacilla flava Yellow Wagtail [644]		Species or species habitat likely to occur within area
Myiagra cyanoleuca Satin Flycatcher [612]		Species or species habitat known to occur within area

Name	Threatened	Type of Presence
Numenius madagascariensis Eastern Curlew, Far Eastern Curlew [847]	Critically Endangered	Species or species habitat known to occur within area
Numenius minutus Little Curlew, Little Whimbrel [848]		Foraging, feeding or related behaviour likely to occur within area
Numenius phaeopus Whimbrel [849]		Foraging, feeding or related behaviour known to occur within area
Pachyptila turtur Fairy Prion [1066]		Species or species habitat known to occur within area
Pandion haliaetus Osprey [952]		Species or species habitat known to occur within area
Philomachus pugnax Ruff (Reeve) [850]		Foraging, feeding or related behaviour known to occur within area
Pluvialis fulva Pacific Golden Plover [25545]		Foraging, feeding or related behaviour known to occur within area
Puffinus griseus Sooty Shearwater [1024]		Species or species habitat likely to occur within area
Recurvirostra novaehollandiae Red-necked Avocet [871]		Foraging, feeding or related behaviour known to occur within area
Rhipidura rufifrons Rufous Fantail [592]		Species or species habitat known to occur within area
Rostratula benghalensis (sensu lato) Painted Snipe [889]	Endangered*	Species or species habitat known to occur within area
Thalassarche bulleri Buller's Albatross, Pacific Albatross [64460]	Vulnerable	Species or species habitat may occur within area
Thalassarche cauta Shy Albatross [89224]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thalassarche eremita Chatham Albatross [64457]	Endangered	Foraging, feeding or related behaviour likely to occur within area
Thalassarche impavida Campbell Albatross, Campbell Black-browed Albatross [64459]	Vulnerable	Species or species habitat may occur within area
Thalassarche melanophris Black-browed Albatross [66472]	Vulnerable	Species or species habitat may occur within area
Thalassarche salvini Salvin's Albatross [64463]	Vulnerable	Foraging, feeding or related behaviour likely to occur within area
Thalassarche sp. nov. Pacific Albatross [66511]	Vulnerable*	Species or species habitat may occur within area

Name	Threatened	Type of Presence
Thalassarche steadi		
White-capped Albatross [64462]	Vulnerable*	Foraging, feeding or related behaviour likely to occur within area
Thinornis rubricollis		
Hooded Plover [59510]		Species or species habitat known to occur within area
Thinornis rubricollis rubricollis		
Hooded Plover (eastern) [66726]	Vulnerable	Species or species habitat known to occur within area
Tringa nebularia		
Common Greenshank, Greenshank [832]		Species or species habitat known to occur within area
Tringa stagnatilis		
Marsh Sandpiper, Little Greenshank [833]		Foraging, feeding or related behaviour known to occur within area
Reptiles		
Caretta caretta		
Loggerhead Turtle [1763]	Endangered	Species or species habitat known to occur within area
Chelonia mydas		
Green Turtle [1765]	Vulnerable	Species or species habitat known to occur within area
Dermochelys coriacea		
Leatherback Turtle, Leathery Turtle, Luth [1768]	Endangered	Species or species habitat known to occur within area
Eretmochelys imbricata		
Hawksbill Turtle [1766]	Vulnerable	Species or species habitat known to occur within area
Natator depressus		
Flatback Turtle [59257]	Vulnerable	Species or species habitat known to occur within area

Extra Information

State and Territory Reserves	[Resource Information]
Name	State
Newington	NSW

Invasive Species	[Resource Information]

Weeds reported here are the 20 species of national significance (WoNS), along with other introduced plants that are considered by the States and Territories to pose a particularly significant threat to biodiversity. The following feral animals are reported: Goat, Red Fox, Cat, Rabbit, Pig, Water Buffalo and Cane Toad. Maps from Landscape Health Project, National Land and Water Resouces Audit, 2001.

Name	Status	Type of Presence
Birds		
Acridotheres tristis		
Common Myna, Indian Myna [387]		Species or species habitat likely to occur within area
Alauda arvensis		
Skylark [656]		Species or species habitat likely to occur within area
Anas platyrhynchos		
Mallard [974]		Species or species habitat likely to occur within area

Name	Status	Type of Presence
Carduelis carduelis European Goldfinch [403]		Species or species habitat likely to occur within area
Carduelis chloris European Greenfinch [404]		Species or species habitat likely to occur within area
Columba livia Rock Pigeon, Rock Dove, Domestic Pigeon [803]		Species or species habitat likely to occur within area
Lonchura punctulata Nutmeg Mannikin [399]		Species or species habitat likely to occur within area
Passer domesticus House Sparrow [405]		Species or species habitat likely to occur within area
Passer montanus Eurasian Tree Sparrow [406]		Species or species habitat likely to occur within area
Pycnonotus jocosus Red-whiskered Bulbul [631]		Species or species habitat likely to occur within area
Streptopelia chinensis Spotted Turtle-Dove [780]		Species or species habitat likely to occur within area
Sturnus vulgaris Common Starling [389]		Species or species habitat likely to occur within area
Turdus merula Common Blackbird, Eurasian Blackbird [596]		Species or species habitat likely to occur within area
Frogs		
Rhinella marina Cane Toad [83218]		Species or species habitat known to occur within area
Mammals		
Bos taurus Domestic Cattle [16]		Species or species habitat likely to occur within area
Canis lupus familiaris Domestic Dog [82654]		Species or species habitat likely to occur within area
Felis catus Cat, House Cat, Domestic Cat [19]		Species or species habitat likely to occur within area
Lepus capensis Brown Hare [127]		Species or species habitat likely to occur within area
Mus musculus House Mouse [120]		Species or species habitat likely to occur within area
Oryctolagus cuniculus Rabbit, European Rabbit [128]		Species or species habitat likely to occur within area
Rattus norvegicus Brown Rat, Norway Rat [83]		Species or species habitat likely to occur

Name	Status	Type of Presence
		within area
Rattus rattus Black Rat, Ship Rat [84]		Species or species habitat likely to occur within area
Vulpes vulpes Red Fox, Fox [18]		Species or species habitat likely to occur within area
Plants		
Alternanthera philoxeroides Alligator Weed [11620]		Species or species habitat likely to occur within area
Anredera cordifolia Madeira Vine, Jalap, Lamb's-tail, Mignonette Vine, Anredera, Gulf Madeiravine, Heartleaf Madeiravine, Potato Vine [2643]		Species or species habitat likely to occur within area
Asparagus aethiopicus Asparagus Fern, Ground Asparagus, Basket Fern, Sprengi's Fern, Bushy Asparagus, Emerald Asparagus [62425]		Species or species habitat likely to occur within area
Asparagus asparagoides Bridal Creeper, Bridal Veil Creeper, Smilax, Florist's Smilax, Smilax Asparagus [22473]		Species or species habitat likely to occur within area
Asparagus plumosus Climbing Asparagus-fern [48993]		Species or species habitat likely to occur within area
Asparagus scandens Asparagus Fern, Climbing Asparagus Fern [23255]		Species or species habitat likely to occur within area
Cabomba caroliniana Cabomba, Fanwort, Carolina Watershield, Fish Grass, Washington Grass, Watershield, Carolina Fanwort, Common Cabomba [5171]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera Bitou Bush, Boneseed [18983]		Species or species habitat may occur within area
Chrysanthemoides monilifera subsp. monilifera Boneseed [16905]		Species or species habitat likely to occur within area
Chrysanthemoides monilifera subsp. rotundata Bitou Bush [16332]		Species or species habitat likely to occur within area
Cytisus scoparius Broom, English Broom, Scotch Broom, Common Broom, Scottish Broom, Spanish Broom [5934]		Species or species habitat likely to occur within area
Dolichandra unguis-cati Cat's Claw Vine, Yellow Trumpet Vine, Cat's Claw Creeper, Funnel Creeper [85119]		Species or species habitat likely to occur within area
Eichhornia crassipes Water Hyacinth, Water Orchid, Nile Lily [13466]		Species or species habitat likely to occur within area
Genista linifolia Flax-leaved Broom, Mediterranean Broom, Flax Broom [2800]		Species or species habitat likely to occur within area
Genista monspessulana Montpellier Broom, Cape Broom, Canary Broom, Common Broom, French Broom, Soft Broom [20126]		Species or species habitat likely to occur within area
Genista sp. X Genista monspessulana Broom [67538]		Species or species habitat may occur within

Name	Status	Type of Presence
		area
Lantana camara Lantana, Common Lantana, Kamara Lantana, Large-leaf Lantana, Pink Flowered Lantana, Red Flowered Lantana, Red-Flowered Sage, White Sage, Wild Sage [10892]		Species or species habitat likely to occur within area
Lycium ferocissimum African Boxthorn, Boxthorn [19235]		Species or species habitat likely to occur within area
Nassella neesiana Chilean Needle grass [67699]		Species or species habitat likely to occur within area
Nassella trichotoma Serrated Tussock, Yass River Tussock, Yass Tussock, Nassella Tussock (NZ) [18884]		Species or species habitat likely to occur within area
Opuntia spp. Prickly Pears [82753]		Species or species habitat likely to occur within area
Pinus radiata Radiata Pine Monterey Pine, Insignis Pine, Wilding Pine [20780]		Species or species habitat may occur within area
Rubus fruticosus aggregate Blackberry, European Blackberry [68406]		Species or species habitat likely to occur within area
Sagittaria platyphylla Delta Arrowhead, Arrowhead, Slender Arrowhead [68483]		Species or species habitat likely to occur within area
Salix spp. except S.babylonica, S.x calodendron & S.x reichardtii Willows except Weeping Willow, Pussy Willow and Sterile Pussy Willow [68497]		Species or species habitat likely to occur within area
Salvinia molesta Salvinia, Giant Salvinia, Aquarium Watermoss, Kariba Weed [13665]		Species or species habitat likely to occur within area
Senecio madagascariensis Fireweed, Madagascar Ragwort, Madagascar Groundsel [2624]		Species or species habitat likely to occur within area
Ulex europaeus Gorse, Furze [7693]		Species or species habitat likely to occur within area
Reptiles		
Hemidactylus frenatus Asian House Gecko [1708]		Species or species habitat likely to occur within area

Nationally Important Wetlands [Resource Information]

Name	State
Bicentennial Park	NSW
Newington Wetlands	NSW

Caveat

The information presented in this report has been provided by a range of data sources as acknowledged at the end of the report.

This report is designed to assist in identifying the locations of places which may be relevant in determining obligations under the Environment Protection and Biodiversity Conservation Act 1999. It holds mapped locations of World and National Heritage properties, Wetlands of International and National Importance, Commonwealth and State/Territory reserves, listed threatened, migratory and marine species and listed threatened ecological communities. Mapping of Commonwealth land is not complete at this stage. Maps have been collated from a range of sources at various resolutions.

Not all species listed under the EPBC Act have been mapped (see below) and therefore a report is a general guide only. Where available data supports mapping, the type of presence that can be determined from the data is indicated in general terms. People using this information in making a referral may need to consider the qualifications below and may need to seek and consider other information sources.

For threatened ecological communities where the distribution is well known, maps are derived from recovery plans, State vegetation maps, remote sensing imagery and other sources. Where threatened ecological community distributions are less well known, existing vegetation maps and point location data are used to produce indicative distribution maps.

Threatened, migratory and marine species distributions have been derived through a variety of methods. Where distributions are well known and if time permits, maps are derived using either thematic spatial data (i.e. vegetation, soils, geology, elevation, aspect, terrain, etc) together with point locations and described habitat; or environmental modelling (MAXENT or BIOCLIM habitat modelling) using point locations and environmental data layers.

Where very little information is available for species or large number of maps are required in a short time-frame, maps are derived either from 0.04 or 0.02 decimal degree cells; by an automated process using polygon capture techniques (static two kilometre grid cells, alpha-hull and convex hull); or captured manually or by using topographic features (national park boundaries, islands, etc). In the early stages of the distribution mapping process (1999-early 2000s) distributions were defined by degree blocks, 100K or 250K map sheets to rapidly create distribution maps. More reliable distribution mapping methods are used to update these distributions as time permits.

Only selected species covered by the following provisions of the EPBC Act have been mapped:

- migratory and
- marine

The following species and ecological communities have not been mapped and do not appear in reports produced from this database:

- threatened species listed as extinct or considered as vagrants
- some species and ecological communities that have only recently been listed
- some terrestrial species that overfly the Commonwealth marine area
- migratory species that are very widespread, vagrant, or only occur in small numbers

The following groups have been mapped, but may not cover the complete distribution of the species:

- non-threatened seabirds which have only been mapped for recorded breeding sites
- seals which have only been mapped for breeding sites near the Australian continent

Such breeding sites may be important for the protection of the Commonwealth Marine environment.

Coordinates

-33.83033 151.03206

Acknowledgements

This database has been compiled from a range of data sources. The department acknowledges the following custodians who have contributed valuable data and advice:

-Office of Environment and Heritage, New South Wales
-Department of Environment and Primary Industries, Victoria
-Department of Primary Industries, Parks, Water and Environment, Tasmania
-Department of Environment, Water and Natural Resources, South Australia
-Department of Land and Resource Management, Northern Territory
-Department of Environmental and Heritage Protection, Queensland
-Department of Parks and Wildlife, Western Australia
-Environment and Planning Directorate, ACT
-Birdlife Australia
-Australian Bird and Bat Banding Scheme
-Australian National Wildlife Collection
-Natural history museums of Australia
-Museum Victoria
-Australian Museum
-South Australian Museum
-Queensland Museum
-Online Zoological Collections of Australian Museums
-Queensland Herbarium
-National Herbarium of NSW
-Royal Botanic Gardens and National Herbarium of Victoria
-Tasmanian Herbarium
-State Herbarium of South Australia
-Northern Territory Herbarium
-Western Australian Herbarium
-Australian National Herbarium, Canberra
-University of New England
-Ocean Biogeographic Information System
-Australian Government, Department of Defence
Forestry Corporation, NSW
-Geoscience Australia
-CSIRO
-Australian Tropical Herbarium, Cairns
-eBird Australia
-Australian Government – Australian Antarctic Data Centre
-Museum and Art Gallery of the Northern Territory
-Australian Government National Environmental Science Program
-Australian Institute of Marine Science
-Reef Life Survey Australia
-American Museum of Natural History
-Queen Victoria Museum and Art Gallery, Inveresk, Tasmania
-Tasmanian Museum and Art Gallery, Hobart, Tasmania
-Other groups and individuals

The Department is extremely grateful to the many organisations and individuals who provided expert advice and information on numerous draft distributions.

Please feel free to provide feedback via the Contact Us page.

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