



Australian Government

Department of the Environment

Referral of proposed action

Project title: Western Sydney Stadium

Prepared by: Eco Logical Australia Pty Ltd

Prepared for: Infrastructure NSW

1 Summary of proposed action

Short description

Infrastructure NSW on behalf of VenuesNSW are proposing the Western Sydney Stadium Project (the Project). The Project and its associated approval will be staged to reflect the scope of work and design process for the new stadium precinct.

The first stage of the Project will involve the initial application for the concept proposal and demolition works to accommodate the Western Sydney Stadium (Stage 1) (subject of this Referral). The concept proposal includes a new 30,000 seat stadium on the site of the existing stadium and a new at grade car park of up to 500 bays to the north and west of the existing stadium (the Site) (Error! Reference source not found.). Approval for construction for the stadium will be sought as part of Stage 2 of the Project, once a detailed design is confirmed.

The Site comprises the existing stadium and stadium complex, surface car parking facilities (to the north and west of the stadium), Parramatta Swimming Centre to the east of the stadium (located on Crown Land), and a training field to the south of the stadium.



Figure 1: Location of site

1.2 Latitude and longitude

Refer to **Figure 2** for locations of these data points.

Latitude	Longitude
-33.80722	151.00187
-33.80733	151.00184
-33.80852	151.00147
-33.80917	151.00127
-33.81017	151.00095
-33.80970	150.99935
-33.81028	150.99931
-33.81026	150.99863
-33.80921	150.99869
-33.80888	150.99884
-33.80817	150.99852
-33.80812	150.99836
-33.80790	150.99787
-33.80763	150.99800
-33.80753	150.99859
-33.80723	150.99913
-33.80719	150.99914
-33.80706	150.99907
-33.80687	150.99875
-33.80673	150.99889
-33.80693	150.99924
-33.80699	150.99927
-33.80689	150.99947
-33.80670	150.99985
-33.80619	150.99975
-33.80611	151.00000
-33.80676	151.00049
-33.80666	151.00057
-33.80697	151.00088
-33.80708	151.00112
-33.80722	151.00187

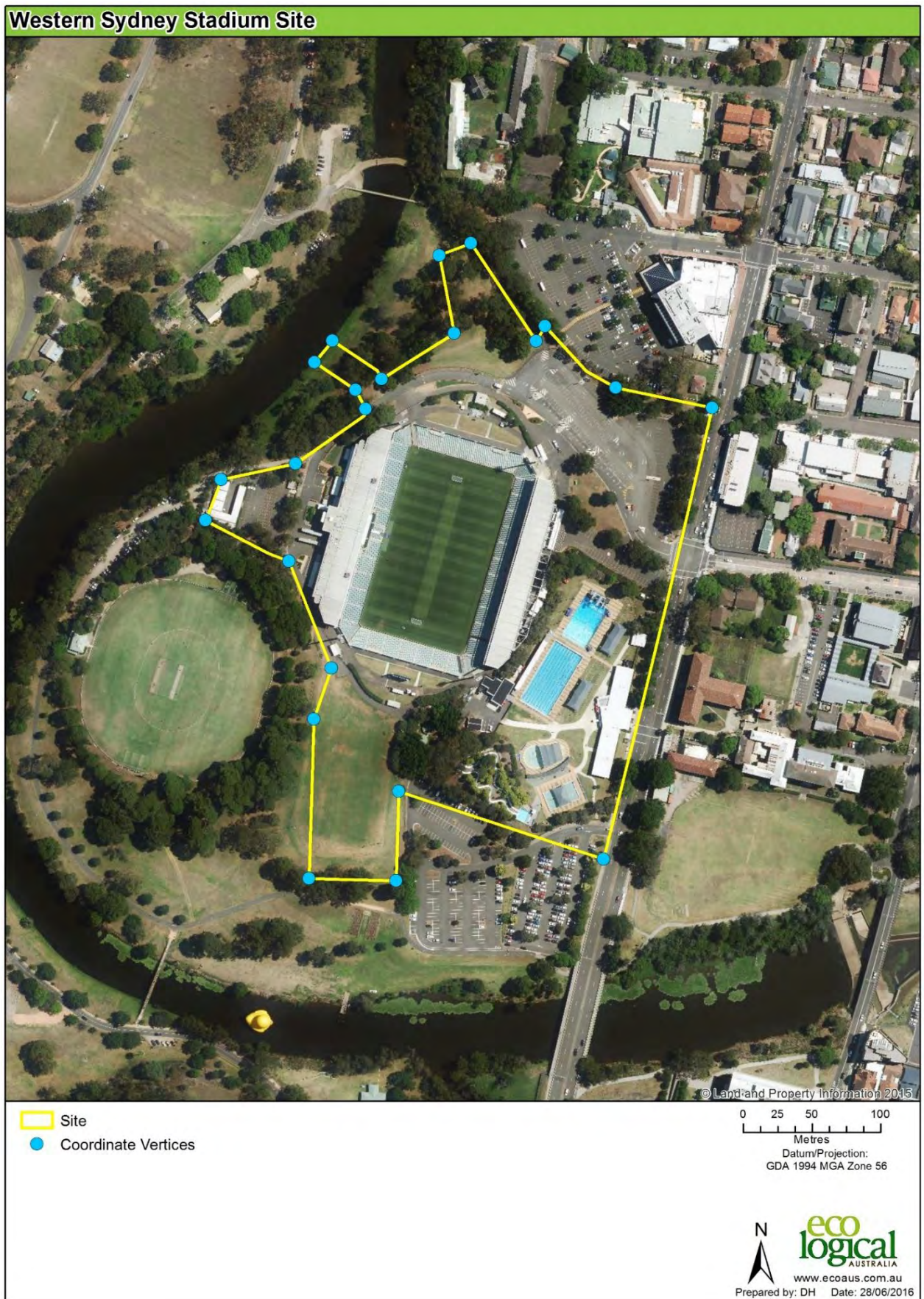


Figure 2: Boundary points of the Western Sydney Stadium Project Site

1.3	Locality and property description	The proposed action is located approximately 25 kilometres west of Sydney Central Business District (CBD). The Site is situated within the broader context of Parramatta Park, approximately one kilometre north-west of Parramatta Station and the Parramatta central business district (CBD). The Site is bounded by the Parramatta River to the west and O'Connell Street to the east. The Site comprises the existing Parramatta Stadium, surface car parking facilities (to the north and west of the stadium), Parramatta Swimming Centre to the east of the stadium (located on Crown Land), and a training field to the south of the stadium.	
1.4	Size of the development footprint or work area	The proposed Stage 1 impact area covers an area of approximately 7.49 ha.	
1.5	Street address of the site	11-13 O'Connell Street Parramatta	
1.6	Lot description	The Site is legally described as Lots 951, 952, 953, 954, 955, 956, 957, 958, 959, 961, 962, 963 in Deposited Plan (DP) 42643 and Crown Land Lot 80-3000 (part). Figure 3 identifies the tenure and Lot / DP for each land parcel within the Site.	
1.7	Local Government Area and Council contact (if known)	The project is wholly within the City of Parramatta Council Area. Council's contact officer is: Alan Middlemiss 02 9806 5000 amiddlemiss@parracity.nsw.gov.au	
1.8	Time frame	Demolition works are scheduled to commence in late 2016 / early 2017. Particular focus will be placed on minimising impact to the operation of the adjoining pool facilities (Parramatta Swimming Centre) over the 2016/2017 summer months. To achieve this requirement, demolition would generally commence on the west stand and progress to the east stand area. This would allow progressive commencement of construction works on the west side of the site once demolition is complete. The demolition works for the existing stadium, Parramatta Swimming Centre and ancillary infrastructure are planned to be completed by mid 2017.	
1.9	Alternatives to proposed action	☒	No
		☐	Yes, you must also complete section 2.2
1.10	Alternative time frames etc	☒	No
		☐	Yes, you must also complete Section 2.3. For each alternative location, time frame, or activity identified, you must also complete details in Sections 1.2-1.9, 2.4-2.7 and 3.3 (where relevant).
1.11	State assessment	☐	No
		☒	Yes, you must also complete Section 2.5
1.12	Component of larger action	☒	No
		☐	Yes, you must also complete Section 2.7
1.13	Related actions/proposals	☒	No
		☐	Yes, provide details:
1.14	Australian Government funding	☒	No
		☐	Yes, provide details:
1.15		☒	No

Great Barrier Reef Marine Park

☐

Yes, you must also complete Section 3.1 (h), 3.2 (e)

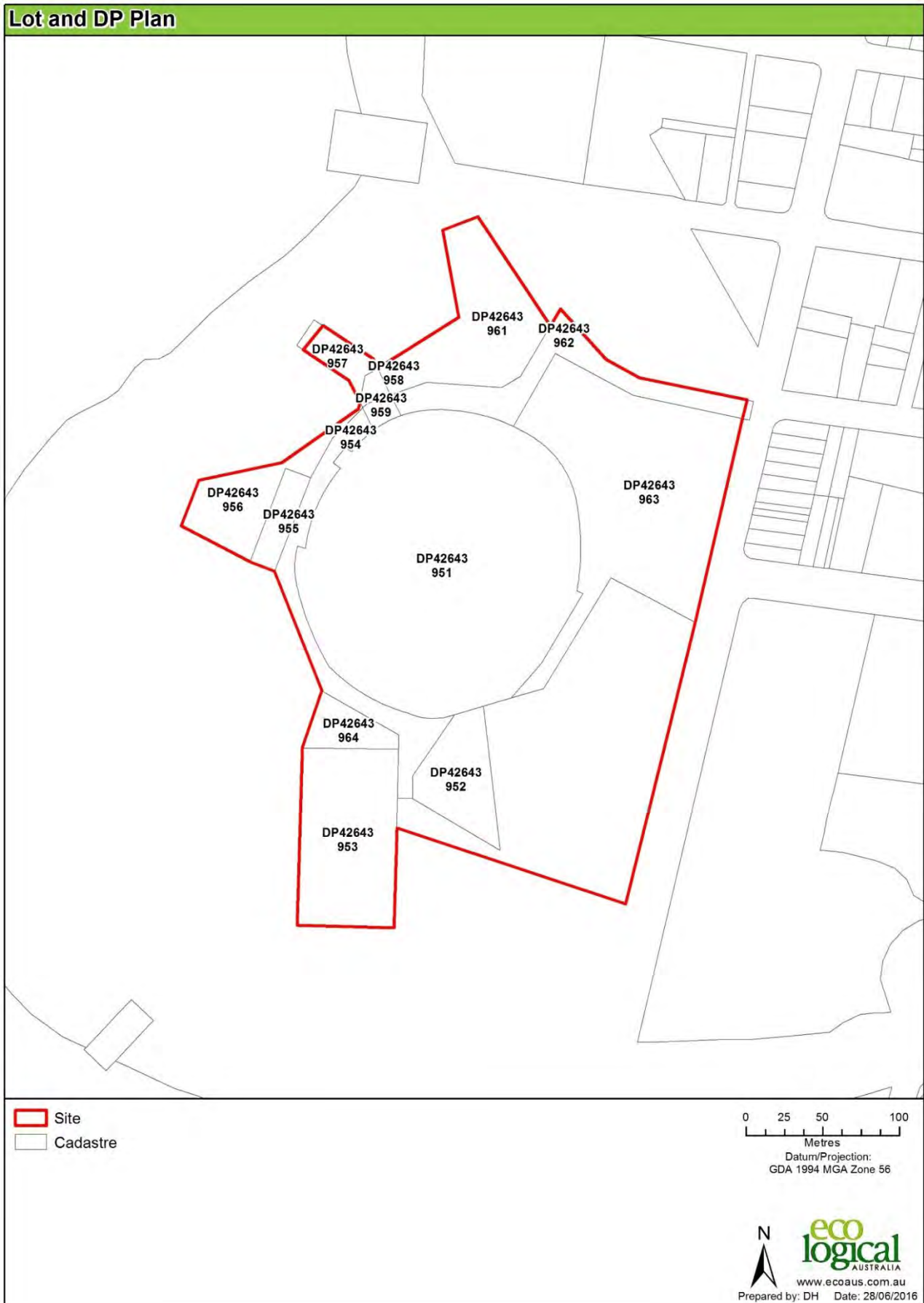


Figure 3: Lot and DP Plan

2 Detailed description of proposed action

2.1 Description of proposed action

In September 2015, the NSW Government announced a package of works to renew the Sydney Stadium network over the next decade. The Western Sydney Stadium Project (the Project) forms a key part of this package and involves a proposal to construct a new 30,000 seat stadium on the site of the existing stadium in Parramatta (the Site). Assessment and approval for the Project will be undertaken in two stages under Section 83B of the *Environmental Planning and Assessment Act 1979* (EP&A Act):

- initial application for the concept proposal and demolition works to accommodate the Western Sydney Stadium (Stage 1) (subject of this Working Paper); and
- a second separate application for the detailed design and subsequent construction and operation of the Western Sydney Stadium (Stage 2).

The development application is only seeking approval for the Project (i.e. Stage 1) (**Figure 1**). Specifically, Stage 1 includes:

- Concept Plan for the Western Sydney Stadium, including parking and access facilities, ancillary infrastructure and landscaping; and,
- Staged demolition and removal of the existing stadium and associated infrastructure, including the existing stadium and the associated hardstand areas where required (footpaths, roads, car parks etc.), and Parramatta Swimming Centre.

Works associated with the removal of below ground infrastructure, excavation works, and construction of Western Sydney Stadium will be assessed under Stage 2 once a detailed design has been prepared. These works are not considered as part of the Stage 1 assessment.

An indicative site layout of the Stage 1 impact area is shown in **Figure 4**.

The Western Sydney Stadium Project would provide the following facilities:

- additional seating for approximately 10,000 more spectators via provision of a seating bowl with 30,000 seats, including 27,000 general admission seats 3,000 corporate seats
- five levels of premium box/terrace, function/lounge offerings and a number of suite offerings
- flood lighting and stadium video screens
- additional facilities for team, media, administration and amenity such as changing rooms, media rooms, and food and beverage facilities.
- a new at grade car park of up to 500 bays to the north and west of the existing stadium. The new car park would be restricted to corporate and VIP use.
- a new two way access ring road from O'Connell St, with two entry/egress points: one north of the stadium and one south of the stadium.

EIS Assessment Areas



- Site
- Demolition Works Area
- Study Area

0 25 50 100
Metres

Datum/Projection:
GDA 1994 MGA Zone 56

N
eco
logical
AUSTRALIA
www.ecoaus.com.au
Prepared by: DH Date: 30/06/2016

Figure 4: Indicative site layout with Stage 1 identified

2.2 Alternatives to taking the proposed action

Consideration of alternative proposals for the Western Sydney Stadium complex has been undertaken throughout the project to ensure that an appropriate balance is achieved between retention and enhancement of the significant biodiversity and heritage values of the Site and surrounds.

In developing the Concept Plan for the Western Sydney Stadium a number of alternatives were considered, primarily in relation to the location of the stadium bowl, access to the site, stadium facilities, and car parking provision and arrangements.

Alternatives were considered in order to respond to a number of the key constraints across the Site (including adjacent sensitive land uses, contamination, heritage views, and riparian areas) and:

- Existing topography and desire to minimise excavation/fill;
- Visual impact upon significant and historical views from the extended context;
- Proximity to O'Connell Street; and
- Circumferential pedestrian curtilage allowing ease of access to stadium.

Alternatives for the stadium included consideration of:

- The stadium bowl in its current location;
- The stadium bowl located south of its current location;
- Increased depth of the stadium below ground level to reduce overall visible height;
- Increased stadium width to fit the increased capacity within an overall height consistent with the existing stadium; and
- A combination of the above

The Proposal was selected as the preferred option as it provided the opportunity to maximise the development with the least amount of physical constraints and provided a strong foundation to further develop the Concept Plan.

In addressing existing site constraints, the Concept Plan has:

- Acknowledged existing site conditions and preferred stadium orientation while fitting in with the local context
- Addressed O'Connell St in a manner that recognises its future character and role as the primary pedestrian threshold into the site. This includes providing adequate space to allow for pedestrian flows
- Avoided any obstruction of heritage related view corridors prescribed within the Conservation Agreement relating to Old Government House and Domain (OGHD), first and foremost the vista between OGHD and the Former Kings School and Saint Patrick's Cathedral
- Minimised costly excavation by siting the stadium edge to the north of the training field mound. Further excavation can be avoided by overlapping the footprint of the existing Parramatta stadium.
- Provided adequate curtilage to Parramatta river embankment to preserve its scenic quality and permit development of future river corridor public domain
- Provided adequate curtilage to Old Kings Oval and allow for future synergetic opportunities between the two facilities
- Orientated playing field within +/-15 degrees from true north
- Allowed for direct visual connections with main stadium entrances from both Victoria Rd and O'Connell St
- Allowed for a ring road around the stadium that utilises existing carpark entrances to the north (Carpark Entry off Victoria Rd) and south (PPT Carpark entry) of the stadium
- Allowed sufficient space north of the stadium to provide for a future development area with possible connections to both the stadium and approved Parramatta Leagues Club

2.3 Alternative locations, time frames or activities that form part of the referred action

As indicated in Section 2.2 above, the development footprint has been finalised in consultation with numerous NSW agencies including Parramatta Park Trust and Parramatta City Council. Development timeframes will be further refined during detailed planning.

2.4 Context, planning framework and state/local government requirements

The Project falls within the requirements of Schedule 1 of the NSW State Environmental Planning Policy (State and Regional Development) 2011 (SRD SEPP), as the capital investment of the Project exceeds \$30 million. The Project is, therefore, classified as State Significant Development (SSD), and approval is being sought under Part 4 Division 4.1 of the EP&A Act.

Approval for the Project will be undertaken in two stages under Section 83B of the EP&A Act:

- initial application for the concept proposal and demolition works to accommodate the Western Sydney Stadium (Stage 1)
- a second separate application for the detailed design and subsequent construction and operation of the Western Sydney Stadium (Stage 2).

An Environmental Impact Statement (EIS) is being prepared in accordance with the relevant provisions of the EP&A Act. It is being prepared to address the environmental assessment requirements issued by the Secretary of the NSW Department of Planning and Environment (DP&E) reissued on 18 April 2016, and the relevant provisions of Schedule 2 of the NSW *Environmental Planning and Assessment Regulation 2000*.

Sections 89J and 89K of the EP&A Act identify authorisations that are not required for a SSD project, and authorisations that cannot be refused if necessary for carrying out a SSD. Section 89J lists the Acts or sections of Acts relating to approvals which do not apply to SSD projects.

The Site is located within the Parramatta Local Government Area (LGA) and the land use zoning is provided by the Parramatta Local Environmental Plan 2011 (Parramatta LEP). The Site is zoned as RE2 Private Recreation and RE1 Public Recreation. While not specifically required for SSD projects, the approval authority (NSW) may take into account the provisions of any EPI, including an LEP that would apply to the project if approved.

2.5 Environmental impact assessments under Commonwealth, state or territory legislation

An EIS is being prepared in accordance with the relevant provisions of the EP&A Act for an SSD project. It is being prepared to address the environmental assessment requirements issued by the Secretary of the NSW Department of Planning and Environment (DP&E) reissued on 18 April 2016, and the relevant provisions of Schedule 2 of the NSW *Environmental Planning and Assessment Regulation 2000*.

Consultation has been undertaken by Venues NSW and Infrastructure NSW as part of planning for the Western Sydney Stadium Project. Details on consultation activities are provided in the EIS (AECOM, 2016). The EIS will be placed on public exhibition in order to obtain further feedback and comment from the community.

2.6 Public consultation (including with Indigenous stakeholders)

Consultation has been undertaken by Venues NSW and Infrastructure NSW as part of planning for the Western Sydney Stadium Project. Details on consultation activities are provided in the EIS (AECOM, 2016). The EIS will be placed on public exhibition in order to obtain feedback and comment from the community.

Aboriginal community consultation is being undertaken for the Aboriginal Cultural Heritage Assessment for the project in accordance with OEH's Aboriginal Cultural Heritage Consultation Requirements for Proponents (DECCW 2010). Further details are provided in the *Western Sydney Stadium Technical Working Paper: Aboriginal Heritage of the Project EIS* (AECOM, 2016).

2.7 A staged development or component of a larger project

In September 2015, the NSW Government announced a package of works to renew the Sydney Stadium network over the next decade. The Western Sydney Stadium Project forms a part of this.

Section 83B of the EP&A Act allows for the submission of a concept proposal for the development of a site, and for which subsequent more detailed proposals to be submitted for approval as separate development applications. The application may set out detailed proposals for the first stage of the development. In line with Section 83B of the EP&A Act, Infrastructure NSW on behalf of Venues NSW will be seeking development consent for the Project in two stages.

- initial application for the concept proposal and demolition works to accommodate the Western Sydney Stadium (Stage 1)
- a second separate application for the detailed design and subsequent construction and operation of the Western Sydney Stadium (Stage 2).

The EIS currently being prepared relates to Stage 1 (i.e. the Project).

3 Description of environment & likely impacts

3.1 Matters of national environmental significance

A search using the Protected Matters Search Tool (PMST) was undertaken on 7 June 2016 with a 10 km radius of the Site. Matters of National Environmental Significance identified in the PMST are provided below.

3.1 (a) World Heritage Properties

Description

The World Heritage declared property and buffer zone for 'Old Government House and the Domain' (OGHD) is located near the Site on the western side of the Parramatta River.

Nature and extent of likely impact

A visual impact assessment was undertaken for the concept proposal (CHROFI, 2016). The assessment identified the key views from within the OGHD site and identified the potential impacts on those views as a result of the stadium envelope. The assessment concluded that the proposed stadium envelope would not exceed the criteria identified in the Conservation Agreement for the site, given that more than 80% of the stadium would be screened by existing vegetation at the two significant view points from OGH.

A historic heritage assessment was also undertaken for the concept proposal (AECOM, 2016). The assessment confirmed that provided that the concept proposal is consistent with the requirements of the Conservation Agreement, referral to the Department of Environment is not required. An assessment of impacts to heritage values associated with these viewpoints formed part of the assessment and concluded that although the potential for impacts are considered 'high', the impact could be further mitigated to 'slight/moderate' through detailed design treatments as recommended by the Urban Design and Public Realm Guidelines (CHROFI, 2016) developed for the Project. These guidelines require that the future design meet the requirements of the Conservation Agreement and include treatments such as muted colours and matt finishes. Should the detailed design deviate from this guidance, the Project would be referred at that time.

The proposed action would not result in any direct impacts on the World Heritage values of Old Government House and the Domain or on the identified buffer zone. A number of mitigation measures are outline to ensure the proposed action would also not result in any significant impacts on identified views that extend across the Site from Old Government House and the Domain and would not impact protected sight lines to and from Old Government House.

3.1 (b) National Heritage Places

Description

The National Heritage Property 'Old Government House and the Domain' is located adjacent to the Site on the western side of the Parramatta River.

The Female Factory/Lunatic Asylum Precinct of the Cumberland Hospital (East Campus) site and all of the Norma Parker Centre/Kamballa site have been nominated for inclusion on the National Heritage List. These lie to the northwest of the proposed action.

Nature and extent of likely impact

A historic heritage assessment was undertaken for the concept proposal (AECOM, 2016) and determined that there would be no direct impacts as a result of the Proposal. The assessment confirmed that provided that the concept proposal is consistent with the requirements of the Conservation Agreement, referral to the Department of Environment is not required. An assessment of impacts to heritage values associated with these viewpoints formed part of the assessment and concluded that although the potential for impacts are considered 'high', the impact could be further mitigated to 'slight/moderate' through detailed design treatments as recommended by the Urban Design and Public Realm Guidelines (CHROFI, 2016) developed for the Project. These guidelines require that the future design meet the requirements of the Conservation Agreement and include treatments such as muted colours and matt finishes. Should the detailed design deviate from this guidance, the Project would be referred at that time.

The proposed action would not result in any direct impacts on the National Heritage values of Old Government House and the Domain.

3.1 (c) Wetlands of International Importance (declared Ramsar wetlands)

Description

No Ramsar-listed wetlands occur within the Site.

Nature and extent of likely impact

N/A

3.1 (d) Listed threatened species and ecological communities

Description

Species and ecological communities identified in the PMST are listed below.

Nature and extent of likely impact

The likelihood of presence or absence of species and ecological communities identified through the PMST has been assessed. This assessment took into account results of field surveys, suitable on site habitat, local knowledge and professional judgement. The results are presented in the tables below.

Five terms for the likelihood of occurrence of species and communities have been used and are defined as follows:

- “Known” = the species was or has been observed on the site
- “Likely” = a medium to high probability that a species uses the site
- “Potential” = suitable habitat for a species occurs on the site, but there is insufficient information to categorise the species as likely to occur, or unlikely to occur
- “Unlikely” = a very low to low probability that a species uses the site
- “No” = habitat on site and in the vicinity is unsuitable for the species

Ecological Community	EPBC Act	Likelihood of occurrence
Blue Gum High Forest in the Sydney Basin Bioregion	Critically Endangered	No
Castlereagh Scribbly Gum and Agnes Banks Woodlands of the Sydney Basin Bioregion	Endangered	No
Coastal Upland Swamps in the Sydney Basin Bioregion	Endangered	No
Cooks River / Castlereagh Ironbark Forest of the Sydney Basin Bioregion	Critically Endangered	No
Cumberland Plain Shale Woodlands and Shale-Gravel Transition Forest	Critically Endangered	No
Shale Sandstone Transition Forest of the Sydney Basin Bioregion	Endangered	No
Subtropical and Temperate Coastal Saltmarsh	Vulnerable	No
Turpentine-Ironbark Forest in the Sydney Basin Bioregion	Critically Endangered	No
Western Sydney Dry Rainforest and Moist Woodland on Shale	Critically Endangered	No

Scientific Name	Common Name	EPBC Act	Habitat Associations	Likelihood of Occurrence
FAUNA				
Invertebrates				
<i>Pommerhelix duralensis</i>	Dural Land Snail	Endangered	Dural Land Snail favours area of shale sandstone transition in forest habitats that have good native cover and woody debris. Shelters under bark and rocks or occasionally under leaf litter and lighter woody debris. Mainly feeds on the fruiting bodies and hyphae of fungi (TSSC 2015).	No
Fish				
<i>Epinephelus daemeli</i>	Black Rockcod, Black Cod, Saddled Rockcod	Vulnerable	Black cod generally inhabit near-shore rocky and offshore coral reefs at depths down to 50 m, but are occasionally recorded from deeper waters. In coastal waters adult black cod are found in rock caves, rock gutters and on rock reefs (DSEWPAC 2012).	No
<i>Macquaria australasica</i>	Macquarie Perch	Endangered	Habitat for the Macquarie perch is bottom or mid-water in slow-flowing rivers with deep holes, typically in the upper reaches of forested catchments with intact riparian vegetation. Macquarie perch also do well in some upper catchment lakes. In some parts of its range, the species is reduced to taking refuge in small pools which persist in midland-upland areas through the drier summer periods.	No
<i>Prototroctes maraena</i>	Australian Grayling	Vulnerable	Historically, this species occurred in coastal streams from the Grose River southwards through NSW, VIC and TAS. On mainland Australia, this species has been recorded from rivers flowing east and south of the main dividing ranges. This species spends only part of its lifecycle in freshwater, mainly inhabiting clear, gravel-bottomed streams with alternating pools and riffles, and granite outcrops but has also been found in muddy-bottomed, heavily silted habitat. Grayling migrate between freshwater streams and the ocean and as such it is generally accepted to be a diadromous (migratory between fresh and salt waters) species.	No
Amphibians				
<i>Heleioporus australiacus</i>	Giant Burrowing Frog	Vulnerable	Forages in woodlands, wet heath, dry and wet sclerophyll forest (Ehmann 1997). Associated with semi-permanent to ephemeral sand or rock based streams (Ehmann 1997), where the soil is soft and sandy so that burrows can be constructed (Environment Australia 2000).	No

<i>Litoria aurea</i>	Green and Golden Bell Frog	Vulnerable	This species has been observed utilising a variety of natural and man-made waterbodies (Pyke & White 1996) such as coastal swamps, marshes, dune swales, lagoons, lakes, other estuary wetlands, riverine floodplain wetlands and billabongs, stormwater detention basins, farm dams, bunded areas, drains, ditches and any other structure capable of storing water (DECC 2007). Fast flowing streams are not utilised for breeding purposes by this species (Mahony 1999). Preferable habitat for this species includes attributes such as shallow, still or slow flowing, permanent and/or widely fluctuating water bodies that are unpolluted and without heavy shading (DECC 2007). Large permanent swamps and ponds exhibiting well-established fringing vegetation (especially bulrushes– <i>Typha</i> sp. and spike rushes– <i>Eleocharis</i> sp.) adjacent to open grassland areas for foraging are preferable (Ehmann 1997; Robinson 1993). Ponds that are typically inhabited tend to be free from predatory fish such as Mosquito Fish (<i>Gambusia holbrooki</i>) (DECC 2007).	No
<i>Litoria raniformis</i>	Southern Bell Frog, Growling Grass Frog, Green and Golden Frog, Warty Swamp Frog	Vulnerable	Relatively still or slow-flowing sites such as billabongs, ponds, lakes or farm dams, especially where bulrushes (<i>Typha</i> sp., <i>Eleocharis</i> sp. and <i>Phragmites</i> sp.) are present (DECC 2007; Ehmann 1997). This species is common in lignum shrublands, black box and River Red Gum woodlands, irrigation channels and at the periphery of rivers in the southern parts of NSW (DECC 2007). This species occurs in vegetation types such as open grassland, open forest and ephemeral and permanent non-saline marshes and swamps (DECC 2007). Open grassland and ephemeral permanent non-saline marshes and swamps have also been associated with this species (Ehmann 1997).	No
<i>Mixophyes balbus</i>	Stuttering Frog	Vulnerable	A variety of forest habitats from rainforest through wet and moist sclerophyll forest to riparian habitat in dry sclerophyll forest (DECC 2007) that are generally characterised by deep leaf litter or thick cover from understorey vegetation (Ehmann 1997). Breeding habitats are streams and occasionally springs. Not known from streams disturbed by humans (Ehmann 1997) or still water environments (NSW Scientific Committee 2002).	No
Reptiles				
<i>Caretta caretta</i>	Loggerhead Turtle	Endangered	Nesting occurs on open sandy beaches. Feeding of adults in inshore environments occurs in tidal and subtidal areas in muddy bays, seagrass meadow areas and rocky and coral reefs (DotE 2016d).	No
<i>Chelonia mydas</i>	Green Turtle	Vulnerable	Nesting occurs mainly in proximity to warmer waters and is not known from NSW. The feeding of adults can occur in inshore areas, where they mostly feed on algae and seagrass. Primarily a warm-water species that may occasionally venture south (DotE 2016g).	No

<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery Turtle, Luth	Endangered	Nesting occurs in sandy beaches, with more successful hatching occurring in beaches having coarser sands. The feeding is mainly over the continental shelf on pelagic jellyfish and tunicates and adults are highly mobile. Little information on use of inshore habitats exist but would mainly relate to concentrations of favoured food (jellyfish) (DotE 2016h).	No
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Vulnerable	Nesting occurs on tropical beaches and is not known from NSW. Adults will feed on sponges and other invertebrates, seagrasses and algae. They are an infrequent visitor to northern NSW and favour tidal and subtidal rocky reef habitat (DotE 2016n).	No
<i>Hoplocephalus bungaroides</i>	Broad-headed Snake	Vulnerable	Typical sites consist of exposed sandstone outcrops and benching where the vegetation is predominantly woodland, open woodland and/or heath on Triassic sandstone of the Sydney Basin (DECC 2007). They utilise rock crevices and exfoliating sheets of weathered sandstone during the cooler months and tree hollows during summer (Webb & Shine 1998). Some of the canopy tree species found to regularly co-occur at known sites include <i>Corymbia eximia</i> , <i>C. gummifera</i> , <i>Eucalyptus sieberi</i> , <i>E. punctata</i> and <i>E. piperita</i> (DECC 2007).	No
<i>Natator depressus</i>	Flatback Turtle	Vulnerable	This is a primarily tropical species nesting and residing mainly in areas north from 25° south. Feeding is mainly on invertebrates in sub-tidal soft-bottomed inshore habitats (DotE 2016q).	No
Birds				
<i>Anthochaera phrygia</i> (a.k.a <i>Xanthomyza phrygia</i>)	Regent Honeyeater	Critically Endangered	Associated with temperate eucalypt woodland and open forest including forest edges, wooded farmland and urban areas with mature eucalypts, and riparian forests of River Oak (<i>Casuarina cunninghamiana</i>) (Garrett 1993). Areas containing Swamp Mahogany (<i>Eucalyptus robusta</i>) in coastal areas have been observed to be utilised (NPWS 1997). The Regent Honeyeater primarily feeds on nectar from box and ironbark eucalypts and occasionally from banksias and mistletoes (NPWS 1995). As such it is reliant on locally abundant nectar sources with different flowering times to provide reliable supply of nectar (Environment Australia 2000).	Unlikely
<i>Botaurus poiciloptilus</i>	Australasian Bittern	Endangered	Terrestrial wetlands with tall dense vegetation, occasionally estuarine habitats (Marchant & Higgins 1990). Found along the east coast and in the Murray-Darling Basin, notably in floodplain wetlands of the Murrumbidgee, Lachlan, Macquarie and Gwydir Rivers (Marchant & Higgins 1990; NPWS 1990). Reedbeds, swamps, streams, estuaries (Simpson & Day 1999). Favours permanent shallow waters, edges of pools and waterways, with tall, dense vegetation such as sedges, rushes and reeds on muddy or peaty substrate. Also occurs in Lignum <i>Muehlenbeckia florulenta</i> and Canegrass <i>Eragrostis australasica</i> on inland wetlands (NSW Scientific Committee, 2010).	Unlikely

<i>Calidris canutus</i>	Red Knot, Knot	Endangered	Inhabits intertidal mudflats, sandflats and sandy beaches in sheltered coasts, near estuaries and lagoons and sometimes on wave-cut rock platforms and reefs. Breeding does not occur in Australia (DotE 2016a).	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	Critically Endangered	Mainly occur on intertidal mudflats in sheltered coastal areas and around non-tidal swamps lakes and lagoons near the coast. They will occur in both fresh and brackish waters. Breeding does not occur in Australia (DotE 2016b).	Unlikely
<i>Calidris tenuirostris</i>	Great Knot	Critically Endangered	Prefers sheltered coastal habitats with large intertidal mudflats or sandflats, including around bays, harbours, estuaries and lagoons. Occasionally seen in mangroves, rock platforms and swamps. It rarely occurs inland. Breeding does not occur in Australia (DotE 2016c).	No
<i>Charadrius leschenaultii</i>	Greater Sand Plover, Large Sand Plover	Vulnerable	Favours littoral and estuarine habitats in the coastal zone, mainly occurring on sandy, shelly or muddy beaches with large intertidal mudflats or sandbanks. Generally found in marine influenced or brackish estuarine areas, rocky islands, rock platforms as well as sandy estuarine lagoons. Breeding does not occur in Australia (DotE 2016e).	No
<i>Charadrius mongolus</i>	Lesser Sand Plover, Mongolian Plover	Endangered	Usually occurs in coastal littoral and estuarine environments, with large intertidal sandflats or mudflats in sheltered bays, harbours and estuaries and occasionally sandy ocean beaches, coral reefs, wave-cut rock platforms and rocky outcrops. It also sometime occurs in short saltmarsh or among mangroves. Breeding does not occur in Australia (DotE 2016f).	No
<i>Dasyornis brachypterus</i>	Eastern Bristlebird	Endangered	Habitat is characterised by dense, low vegetation including heath and open woodland with a heathy understorey; in northern NSW occurs in open forest with tussocky grass understorey; all of these vegetation types are fire prone. Age of habitat since fires (fire-age) is of paramount importance to this species; Illawarra and southern populations reach maximum densities in habitat that has not been burnt for at least 15 years; however, in the northern NSW population a lack of fire in grassy forest may be detrimental as grassy tussock nesting habitat becomes unsuitable after long periods without fire; northern NSW birds are usually found in habitats burnt five to 10 years previously.	No
<i>Diomedea exulans antipodensis</i> (a.k.a. <i>D. antipodensis</i>)	Antipodean Albatross	Vulnerable	A large pelagic bird with feeding occurring on the open ocean with fish, cephalopods and crustacea being targeted. Breeding does not occur in Australia (DotE 2016j).	No
<i>Diomedea exulans gibsoni</i> (a.k.a <i>D. antipodensis gibsoni</i> ; <i>D. gibsoni</i>)	Gibson's Albatross	Vulnerable	A large pelagic bird with feeding occurring on the open ocean with fish, cephalopods and crustacea being targeted. Breeding does not occur in Australia (DotE 2016i).	No
<i>Diomedea epomophora</i> (sensu stricto)	Southern Royal Albatross	Vulnerable	A large pelagic bird with feeding occurring on the open ocean with fish, cephalopods and crustacea being targeted. Breeding does not occur in Australia (DotE 2016k).	No

<i>Diomedea exulans</i> (sensu lato)	Wandering Albatross	Vulnerable	A large pelagic bird with feeding occurring on the open ocean with fish, cephalopods and crustacea being targeted, as well as carrion. Breeding does not occur in mainland Australia (DotE 2016l).	No
<i>Diomedea sanfordi</i>	Northern Royal Albatross	Endangered	A large pelagic bird with feeding occurring on the open ocean with fish, cephalopods and crustacea being targeted. Breeding does not occur in Australia (DotE 2016m).	No
<i>Grantiella picta</i>	Painted Honeyeater	Vulnerable	A nomadic species that typically inhabits Boree, Brigalow and Box-Gum Woodlands and Box-Ironbark Forests with abundant mistletoe (DECC 2007). It is a specialist feeder on the fruits of mistletoes growing on woodland eucalypts and acacias, preferring <i>Amyema</i> sp mistletoe (DECC 2007).	No
<i>Lathamus discolor</i>	Swift Parrot	Endangered	Breeds in Tasmania between September and January. Migrates to mainland in autumn, where it forages on profuse flowering Eucalypts (Blakers et al. 1984; Schodde and Tidemann 1986; Forshaw and Cooper 1981). Hence, in this region, autumn and winter flowering eucalypts are important for this species. Favoured feed trees include winter flowering species such as Swamp Mahogany (<i>Eucalyptus robusta</i>), Spotted Gum (<i>Corymbia maculata</i>), Red Bloodwood (<i>C. gummifera</i>), Mugga Ironbark (<i>E. sideroxylon</i>), and White Box (<i>E. albens</i>) (DECC 2007).	Unlikely
<i>Limosa lapponica baueri</i>	Bar-tailed Godwit (<i>baueri</i>), Western Alaskan Bar-tailed Godwit	Vulnerable	Prefers coastal habitats with intertidal mudflats or sandflats, including around bays, harbours and tidal estuaries, feeding in shallow water and near the water's edge. They roost on sandy beaches, sandbars and spits and in near-coastal saltmarsh. Known to occur in the Parramatta River Estuary but these habitats not present at the site under consideration. Breeding does not occur in Australia (TSSC 2016a).	No
<i>Limosa lapponica menzbieri</i>	Bar-tailed Godwit (<i>menzbieri</i>), Northern Siberian Bar-tailed Godwit	Critically Endangered	Prefers coastal habitats with intertidal mudflats, sandflats or banks, including around bays, harbours, coastal lagoons and estuaries. Other records are from ponds, salt lakes, brackish wetlands near coasts and rock platforms. Feeding is in shallow water and near the water's edge in tidal estuaries and harbours. They roost on sandy beaches, sandbars and spits and in near-coastal saltmarsh. Known to occur in the Parramatta River Estuary but these habitats not present at the site under consideration. Breeding does not occur in Australia (TSSC 2016b).	No
<i>Macronectes giganteus</i>	Southern Giant Petrel	Endangered	As an opportunist scavenger and predator this species is attracted to ocean sewage outfalls and carrion in the water and on the shore. Feeding is on a range of marine animals that can be taken from the water surface, birds (including seabirds and penguins) and also kelp, krill, jellyfish and even rabbits. Mainly oceanic and coastal around breeding islands and over the continental shelf. Breeding does not occur on the Australian mainland (DotE 2016o).	No

<i>Macronectes halli</i>	Northern Giant Petrel	Vulnerable	Primarily oceanic and inshore near islands and coasts. Feeding is on a range of marine animals that can be taken from the water surface, birds (including seabirds and penguins) and also kelp, krill, jellyfish and carrion. It is also attracted to sewage outfalls. Breeding does not occur on the Australian mainland (DotE 2016p).	No
<i>Numenius madagascariensis</i>	Eastern Curlew	Critically Endangered	Mainly found in sheltered coasts including estuaries, harbours, bays, inlets and coastal lagoons, on mudflats and sandflats often with beds of seagrass. May also occur on ocean beaches and coral reefs, rock platforms and on rocky islets. Often among saltmarsh and mangroves, and roosts on dry beach sand and occasionally trees and on oyster racks. Breeding does not occur in Australia (DotE 2016r).	No
<i>Pachyptila turtur subantarctica</i>	Fairy Prion	Vulnerable	Occurs near the coast during rough weather, but is mainly over oceanic waters and over the continental slope. Feeds on krill and other small crustaceans, but will also eat small quantities of fish and pteropods. Breeding does not occur on the Australian mainland (DotE 2016s).	No
<i>Rostratula australis</i>	Australian Painted Snipe	Endangered	Prefers fringes of swamps, dams and nearby marshy areas where there is a cover of grasses, lignum, low scrub or open timber (DECC 2007). Nests on the ground amongst tall vegetation, such as grasses, tussocks or reeds (<i>ibid.</i>). Breeding is often in response to local conditions; generally occurs from September to December (DECC 2007). Roosts during the day in dense vegetation (NSW Scientific Committee 2004). Forages nocturnally on mud-flats and in shallow water (DECC 2007). Feeds on worms, molluscs, insects and some plant-matter (<i>ibid.</i>).	No
<i>Sternula nereis nereis</i>	Australian Fairy Tern	Vulnerable	The Fairy Tern (Australian) nests on sheltered sandy beaches, spits and banks above the high tide line and below vegetation. The subspecies has been found in embayments of a variety of habitats including offshore, estuarine or lacustrine (lake) islands, wetlands and mainland coastline (Higgins & Davies 1996). The bird roosts on beaches at night (DSEWPAC 2012).	No
<i>Thalassarche bulleri</i>	Buller's Albatross, Pacific Albatross	Vulnerable	A pelagic bird feeding on the open ocean above the continental shelf with cephalopods being targeted, as well as fish, tunicates and crustacea. Breeding does not occur in Australia (DotE 2016t).	No
<i>Thalassarche cauta cauta</i>	Shy Albatross, Tasmanian Shy Albatross	Vulnerable	Mainly marine (over the continental shelf waters), but occasionally inshore and into bays and harbours, this species is the only albatross endemic to Australia. Breeding occurs offshore and feeding is primarily over the continental shelf and occasionally in enclosed (harbours, bays) water. Cephalopods, fish, crustacea and tunicates are the main foods (DotE 2016u).	No

<i>Thalassarche cauta steadi</i>	White-capped Albatross	Vulnerable	A pelagic bird feeding on the open ocean and above the continental shelf with fish and cephalopods probably being targeted. Breeding does not occur in Australia (DotE 2016v).	No
<i>Thalassarche eremita</i>	Chatham Albatross	Endangered	A pelagic bird feeding on the open ocean and above the continental shelf with fish and cephalopods being targeted. Breeding does not occur in Australia (DotE 2016w).	No
<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross	Vulnerable	A pelagic bird feeding on the open ocean and above the continental shelf with fish, molluscs and crustacea being targeted. Breeding does not occur in Australia (DotE 2016x).	No
<i>Thalassarche melanophris</i>	Black-browed Albatross	Vulnerable	A pelagic bird feeding on the open ocean and above the continental shelf with fish, molluscs and crustacea being targeted. Breeding does not occur on the mainland of Australia (DotE 2016y).	No
<i>Thalassarche cauta salvini</i> (a.k.a. <i>T. salvini</i>)	Salvin's Albatross	Vulnerable	A pelagic bird feeding on the open ocean above the continental shelf with fish and cephalopods being targeted. Breeding does not occur in Australia (DotE 2016z).	No
Mammals				
<i>Dasyurus maculatus maculatus</i>	Spot-tailed Quoll, Spotted-tailed Quoll, Tiger Quoll (SE Mainland Population)	Endangered	The Spotted-tailed Quoll inhabits a range of forest communities including wet and dry sclerophyll forests, coastal heathlands and rainforests (Mansergh 1984; DECC 2007j), more frequently recorded near the ecotones of closed and open forest. This species requires habitat features such as maternal den sites, an abundance of food (birds and small mammals) and large areas of relatively intact vegetation to forage in (DECC 2007). Maternal den sites are logs with cryptic entrances; rock outcrops; windrows; burrows (Environment Australia 2000).	No
<i>Isodon obesulus obesulus</i>	Southern Brown Bandicoot	Endangered	This species is associated with heath, coastal scrub, heathy forests (Menkhorst & Knight 2004), shrubland and woodland on well drained soils. This species is thought to display a preference for newly regenerating heathland and other areas prone to fire (Menkhorst & Seebeck 1990).	No
<i>Petauroides volans</i>	Greater Glider	Vulnerable	Favours areas with taller Eucalyptus forests and in particular areas with a diversity of eucalypts and availability of large hollows for shelter. The diet is mainly made up of foliage of eucalypts and sometimes flowers. Higher altitude sites are favoured, but the altitudinal range is from sea level to at least 1200 m altitude (TSSC 2016c).	No
<i>Petrogale penicillata</i>	Brush-tailed Rock-wallaby	Vulnerable	Rocky areas in a variety of habitats, typically north facing sites with numerous ledges, caves and crevices (Strahan 1995).	No

<i>Phascolarctos cinereus</i>	Koala	Vulnerable	Associated with both wet and dry Eucalypt forest and woodland that contains a canopy cover of approximately 10 to 70% (Reed et al. 1990), with acceptable Eucalypt food trees. Some preferred Eucalyptus species are: <i>Eucalyptus tereticornis</i> , <i>E. punctata</i> , <i>E. cypellocarpa</i> , <i>E. viminalis</i>	No
<i>Pseudomys novaehollandiae</i>	New Holland Mouse	Vulnerable	A small burrowing native rodent with a fragmented distribution across Tasmania, Victoria, New South Wales and Queensland. Inhabits open heathlands, open woodlands with a heathland understorey and vegetated sand dunes. A social animal, living predominantly in burrows shared with other individuals. The home range of the New Holland Mouse ranges from 0.44 ha to 1.4 ha and the species peaks in abundance during early to mid stages of vegetation succession typically induced by fire (DSEWPC 2010)	No
<i>Chalinolobus dwyeri</i>	Large-eared Pied Bat	Vulnerable	The Large-eared Pied Bat has been recorded in a variety of habitats, including dry sclerophyll forests, woodland, sub-alpine woodland, edges of rainforests and wet sclerophyll forests (Churchill 1998; DECC 2007). This species roosts in caves, rock overhangs and disused mine shafts and as such is usually associated with rock outcrops and cliff faces (Churchill 1998; DECC 2007).	Unlikely
<i>Pteropus poliocephalus</i>	Grey-headed Flying-fox	Vulnerable	Inhabits a wide range of habitats including rainforest, mangroves, paperbark forests, wet and dry sclerophyll forests and cultivated areas (Churchill 1998, Eby 1998). Camps are often located in gullies, typically close to water, in vegetation with a dense canopy (Churchill 1998).	Known
FLORA				
<i>Acacia bynoeana</i>	Bynoe's Wattle	Vulnerable	<i>Acacia bynoeana</i> is found in central eastern NSW, from the Hunter District (Morisset) south to the Southern Highlands and west to the Blue Mountains, and has recently been found in the Colymea and Parma Creek areas west of Nowra. It is found in heath and dry sclerophyll forest, typically on a sand or sandy clay substrate, often with ironstone gravels (DECC 2007).	No
<i>Acacia gordonii</i>		Endangered	<i>Acacia gordonii</i> is restricted to the north-west of Sydney, occurring in the lower Blue Mountains in the west, and in the Maroota/Glenorie area in the east, within the Hawkesbury, Blue Mountains and Baulkham Hills local government areas. Grows in dry sclerophyll forest and heathlands amongst or within rock platforms on sandstone outcrops (DECC 2007).	No
<i>Acacia pubescens</i>	Downy Wattle	Vulnerable	<i>Acacia pubescens</i> occurs on the NSW Central Coast in Western Sydney, mainly in the Bankstown-Fairfield-Rookwood area and the Pitt Town area, with outliers occurring at Barden Ridge, Oakdale and Mountain Lagoon. It is associated with Cumberland Plains Woodlands, Shale / Gravel Forest and Shale / Sandstone Transition Forest growing on clay soils, often with ironstone gravel (NPWS 1997; Benson and McDougall 1996).	No

<i>Allocasuarina glareicola</i>		Endangered	<i>Allocasuarina glareicola</i> is primarily restricted to the Richmond district on the north-west Cumberland Plain, with an outlier population found at Voyager Point. It grows in Castlereagh woodland on lateritic soil (DECC 2007).	No
<i>Asterolasia elegans</i>		Endangered	<i>Asterolasia elegans</i> is restricted to a few localities on the NSW Central Coast north of Sydney, in the Baulkham Hills, Hawkesbury and Hornsby LGAs. It is found in sheltered forests on mid- to lower slopes and valleys, in or adjacent to gullies (DEC 2005).	No
<i>Caladenia tessellata</i>	Thick Lip Spider Orchid	Vulnerable	<i>Caladenia tessellata</i> occurs in grassy sclerophyll woodland, often growing in well-structured clay loams or sandy soils south from Swansea, usually in sheltered moist places and in areas of increased sunlight (DEC 2005). It flowers from September to November (DEC 2005).	No
<i>Cryptostylis hunteriana</i>	Leafless Tongue Orchid	Vulnerable	<i>Cryptostylis hunteriana</i> is known from a range of vegetation communities including swamp-heath and woodland (DEC 2005). The larger populations typically occur in woodland dominated by Scribbly Gum (<i>Eucalyptus sclerophylla</i>), Silvertop Ash (<i>E. sieberi</i>), Red Bloodwood (<i>Corymbia gummifera</i>) and Black Sheoak (<i>Allocasuarina littoralis</i>); where it appears to prefer open areas in the understorey of this community and is often found in association with the Large Tongue Orchid (<i>C. subulata</i>) and the Tartan Tongue Orchid (<i>C. erecta</i>) (DEC 2005). Bell (2001) has identified Coastal Plains Scribbly Gum Woodland and Coastal Plains Smoothed-barked Apple Woodland as potential habitat on the Central Coast. Flowers between November and February, although may not flower regularly (DEC 2005; Bell 2001).	No
<i>Darwinia biflora</i>		Vulnerable	<i>Darwinia biflora</i> is an erect or spreading shrub to 80cm high associated with habitats where weathered shale capped ridges intergrade with Hawkesbury Sandstone, where soils have a high clay content (NPWS 1997).	No
<i>Eucalyptus camfieldii</i>	Camfield's Stringybark	Vulnerable	<i>Eucalyptus camfieldii</i> is associated with shallow sandy soils bordering coastal heath with other stunted or mallee eucalypts, often in areas with restricted drainage and in areas with laterite influenced soils, thought to be associated with proximity to shale (DEC 2005).	No
<i>Genoplesium baueri</i>	Yellow Gnat-orchid	Endangered	Known from coastal areas from northern Sydney south to the Nowra district. Previous records from the Hunter Valley and Nelson Bay are now thought to be erroneous. Grows in shrubby woodland in open forest on shallow sandy soils.	No

<i>Leptospermum deanei</i>	<i>Leptospermum deanei</i>	Vulnerable	<i>Leptospermum deanei</i> has been recorded in Hornsby, Warringah, Ku-ring-gai and Ryde LGAs, in woodland on lower hill slopes or near creeks, at sites with sandy alluvial soil or sand over sandstone (DEC 2005). It has also been recorded in riparian scrub dominated by <i>Tristaniopsis laurina</i> and <i>Baeckea myrtifolia</i> ; woodland dominated by <i>Eucalyptus haemastoma</i> ; and open forest dominated by <i>Angophora costata</i> , <i>Leptospermum trinervium</i> and <i>Banksia ericifolia</i> (DEC 2005).	No
<i>Melaleuca biconvexa</i>	Biconvex Paperbark	Vulnerable	<i>Melaleuca biconvexa</i> occurs in coastal districts and adjacent tablelands from Jervis Bay north to the Port Macquarie district. It grows in damp places often near streams (PlantNet 2011).	No
<i>Melaleuca deanei</i>	Deane's Paperbark	Vulnerable	Found in heath on sandstone (DEC 2005), and also associated with woodland on broad ridge tops and slopes on sandy loam and lateritic soils (Benson and McDougall 1998).	No
<i>Pelargonium</i> sp. <i>striatellum</i>	Omeo Stork's-bill	Endangered	In NSW, <i>Pelargonium</i> sp. <i>striatellum</i> (G.W. Carr 10345) is known from the Southern Tablelands (PlantNet 2011). Otherwise, only known from the shores of Lake Omeo near Benambra in Victoria where it grows in cracking clay soil that is probably occasionally flooded (Walsh & Entwisle 1999). The species is known to occur in habitat usually located just above the high water level of irregularly inundated or ephemeral lakes. During dry periods, the species is known to colonise exposed lake beds. It is not known if the species' rhizomes and/or soil seedbank persist through prolonged inundation or drought (DSEWPAC 2012).	No
<i>Persoonia hirsuta</i>	Hairy Persoonia	Endangered	<i>Persoonia hirsuta</i> occurs from Singleton in the north, south to Bargo and the Blue Mountains to the west (DECC 2007). It grows in dry sclerophyll eucalypt woodland and forest on sandstone (PlantNet 2011).	No
<i>Persoonia mollis</i> subsp. <i>maxima</i>		Endangered	Deep gullies or on the steep upper hillsides of narrow gullies incised from Hawkesbury Sandstone, characterised by steep side-slopes, rocky benches and broken scarps, with creeks fed by small streams and intermittent drainage depressions. Occurrences of this plant have been recorded on the dry upper-hillsides of gullies and in more exposed aspects (Scribbly Gum <i>E. haemastoma</i> , Grey Gum (<i>E. punctata</i>) (NPWS 1999).	No
<i>Persoonia nutans</i>	Nodding Geebung	Endangered	Associated with dry woodland, Castlereagh Scribbly Gum Woodland, Agnes Banks Woodland and sandy soils associated with tertiary alluvium, occasionally poorly drained (Benson and McDougall 2000). Endemic to the Western Sydney (Benson and McDougall 2000).	No

<i>Pimelea curviflora</i> var. <i>curviflora</i>		Vulnerable	<i>Pimelea curviflora</i> var. <i>curviflora</i> is confined to the coastal area of Sydney between northern Sydney in the south and Maroota in the north-west. It grows on shaley/lateritic soils over sandstone and shale/sandstone transition soils on ridgetops and upper slopes amongst woodlands (DECC 2007). Associated with the Duffys Forest Community, shale lenses on ridges in Hawkesbury sandstone geology (Pittwater Council 2000).	No
<i>Pimelea spicata</i>	Spiked Rice-flower	Endangered	In western Sydney, <i>Pimelea spicata</i> occurs on an undulating topography of well-structured clay soils, derived from Wianamatta shale (DEC 2005). It is associated with Cumberland Plains Woodland (CPW), in open woodland and grassland often in moist depressions or near creek lines (Ibid.). Has been located in disturbed areas that would have previously supported CPW (Ibid.).	No
<i>Pterostylis gibbosa</i>	Illawarra Greenhood	Endangered	Known from a small number of populations in the upper Hunter Valley (Milbrodale), the Illawarra region (Albion Park and Yallah) and near Nowra (DEC 2005). Plants grow in a variety of woodland and open forest communities with shallow rocky soils.	No
<i>Pterostylis saxicola</i>	Sydney Plains Greenhood	Endangered	Terrestrial orchid predominantly found in Hawkesbury Sandstone Gully Forest growing in small pockets of soil that have formed in depressions in sandstone rock shelves (NPWS 1997). Known from Georges River National Park, Ingleburn, Holsworthy, Peter Meadows Creek, St Marys Tower (NSW Scientific Committee 1999).	No
<i>Syzygium paniculatum</i>	Magenta Lilly Pilly	Vulnerable	This species occupies a narrow coastal area between Bulahdelah and Conjola State Forests in NSW. Payne (1991) reports that the species appears absent from Terrigal formation shales, on which the gully rainforests occur. <i>S. paniculatum</i> is summer flowering (November-February), with the fruits maturing in May (DECC 2007).	No
<i>Thesium australe</i>	Austral Toadflax	Vulnerable	Widespread throughout the eastern third of NSW but most common on the North Western Slopes, Northern Tablelands and North Coast. Occurs in grassland or grassy woodland. Often found in damp sites in association with Kangaroo Grass (<i>Themeda australis</i>) (DECC 2007). The preferred soil type is a fertile loam derived from basalt although it occasionally occurs on metasediments and granite.	No

***Pteropus poliocephalus* (Grey-headed Flying-fox) – Vulnerable**

Background

The *Pteropus poliocephalus* (Grey-headed Flying-fox - GHFF) plays an important ecological function and is regarded as a 'keystone' species for its role in pollination and seed dispersal for forests. It is widely distributed across the coastal and near coastal regions of eastern Australia from Melbourne through to Central Queensland. The species has suffered a large decline in its overall population size as a result of habitat loss through vegetation clearing and illegal shooting.

The GHFF is a highly mobile species and has been recorded travelling up to 2000 km within a nine month period (DotE 2014). The species is known to forage widely within the vicinity of their roost sites, travelling up to 50 km a night in search of food which comprises a mix of nectar from Eucalypts, Banksias and Melaleucas as well as fruit

(DotE 2014). The food sources favoured by the species can be spatially and temporally variable and as such the species moves in response to the abundance of forage resources (DECCW 2009).

A GHFF roost or camp established at Parramatta North in 2003. Disturbance related to the use of machinery within the camp in 2007 triggered the relocation of GHFF into a satellite camp on the west bank of the Parramatta River. The camp on the western side of the river has grown and continues to be utilised by the species. The extent of the Parramatta North GHFF camp fluctuates depending on environmental conditions (e.g. available food in the area), and the camp boundaries and flights paths are mapped in **Figure 5** based on ecological surveys undertaken by ELA between 2014 - 2016.

Recent targeted surveys of the Parramatta River GHFF camp undertaken by ELA in June 2016 found that 80 to 90 % of the camp flew out in a north-west direction towards Parramatta Park and 10 – 20% of the camp fly south along the river. In addition, previous monitoring of the camp by ELA in October 2015 found that the main flight paths out of the camp were south along Parramatta River and to the east towards the Parramatta Leagues Club. During both surveys no GHFF individuals flew over the Site.

Events are regularly held at the existing Parramatta Stadium, less than 150 m from the GHFF camp. It is understood that the numerous sporting and entertainment events held at the existing stadium, have had no obvious detrimental effect on the GHFF camp. The camp also appears to be resilient to some nearby construction noise and human activity, as demonstrated during the recent repairs to the Chapel and Southwest Range on the Norma Parker Centre / Kamballa site, as part of the Parramatta North Urban Transformation Project for Urban Growth NSW, which are approximately 20 m from the camp.

Under the 2015 Australian Government Referral Guideline for Management Actions in Flying-fox Camps, the GHFF camp at Parramatta is recognised as being 'nationally important' because it contained more than 10,000 GHFF in more than one year in the last ten years. The camp has been estimated to contain up to 20,000 individuals and is a known breeding camp for the species. Recent surveys found the camp has approximately 14,000 GHFF.

Likely impact

There will be no direct impact to the GHFF or their habitat as a result of the planned works. The following indirect impacts on GHFF *may* occur as a result of the Project:

- Construction and demolition noise levels of between –52 - 57 dB(A)
- Periodic elevated noise levels during events of between –52 - 73 dB(A)
- Elevated and sustained light levels
- Increased stress (as evidenced by a greater parasite loads, lower body condition, greater number of vocalisations, diurnal fly outs / emergence, abandonment of habitat / GHFF camp) as a result of disturbance to fauna species and their habitats during events

It is important to note that events are regularly held at the existing Parramatta Stadium. It is assumed that some of the above indirect impacts may already be occurring as a result of current events held at Pirtek stadium. ELA is not aware of any associated GHFF camp monitoring to assess the impacts of current events associated with the stadium.

The acoustic assessment (AECOM 2016) for the project measured existing background noise levels, and likely noise levels during construction and events, at various sensitive receivers. The recorded noise levels at the nearest receiver (1 Fleet Street, North Parramatta), which was approximately 180 m from the existing stadium. The assessment predicted construction and demolition noise levels of between 52 - 56 dB(A), and periodic elevated noise levels during events of between 52 - 73 dB(A). Noise levels predicted for large sporting events held at the proposed Western Sydney Stadium complex are in the order of magnitude higher than construction noise.

Existing noise levels during events at Parramatta Stadium, have not been measured as part of this report due to time constraints. However, it is understood that numerous sporting and entertainment events have been held at the stadium and also within Parramatta Park, with no obvious detrimental effect on the GHFF camp. The predicted noise levels for construction and events are assumed to be similar to existing event noise levels (AECOM 2016), and are not anticipated to increase and disturb the GHFF camp. However, the frequency of events is predicted to double, from 22-23 games per year to 42-43 games per year, which may have an impact on the GHFF camp.

It is uncertain if such an increase in background noise levels on a more frequent basis would cause stress to GHFF and other fauna potentially inhabiting the park. The greatest risk of impact occurs from sudden loud noises at sensitive times for fauna such as during emergence and return to roosts at dusk and dawn and during breeding and lactation (October – January for GHFF and microchiropteran bat species that may inhabit the site). Where possible, excessive noise will be minimised, particularly around dusk and dawn when fauna are emerging to feed or returning to rest and during breeding season. Noise during events will also be managed under the existing Parramatta Stadium Noise Management Plan (PCCD 2008).

The lighting concept design has not yet been finalised, however, ELA understand that lighting within the stadium will be consistent with the existing lighting, and there will not be any lighting directed at the GHFF camp or regular flight paths. It is also noted that the vegetation to the west of the Site would screen some of the light at or below canopy height.

A number of specific recommendations regarding noise and the use of artificial lighting during events and construction will be needed to mitigate against any negative impacts from the proposed works.

The likely impact to the GHFF is summarised by responding to the MNES Significant Impact Guidelines 1.1 criteria:

Significant impact criteria	Response
Lead to a long-term decrease in the size of an important population of a species	By retaining the camp in situ, the proposed action aims to minimise the risk of a decrease in GHFF population size in the short to medium term. The Project will result in the removal of 0.84 ha of planted native / exotic vegetation, representing potential foraging habitat for the GHFF. However, the species is considered likely to use the vegetation proposed for removal on an occasional basis and would not be dependent on the foraging resources within the Site. Noise levels predicted for large sporting events held at the stadium complex are in the order of magnitude similar to construction noise. In fact, construction noise is lower than the predicted sporting event noise during the evening and night. It is understood that numerous sporting and entertainment events have been held at Parramatta Stadium and also within Parramatta Park, and to date the size of the GHFF camp has remained relatively consistent within normal annual fluctuations in the camp. Mitigation measures will also be implemented to minimise excessive noise particularly around dusk and dawn when fauna are emerging to feed or returning to rest and during breeding season. Noise levels during events will also be managed under the existing Parramatta Stadium Noise Management Plan (PCCD 2008).
Reduce the area of occupancy of an important population	The Project will result in the removal of 0.84 ha of potential foraging habitat for the GHFF. The GHFF camp will be left in situ and no roosting habitat would be impacted. There is extensive areas of higher quality foraging habitat adjacent to the Site in Parramatta Park and the LGA. Therefore, the species is considered likely to use the vegetation proposed for removal on an occasional basis and would not be dependent on the foraging resources within the Site.
Fragment an existing important population into two or more populations	By avoiding impacts within the camp, the proposed action aims to minimise the risk of further fragmentation of the population. The area of foraging habitat that would be impacted for the proposed development is already fragmented and surrounded by similar habitat and would not be fragmented into two or more patches.
Adversely affect habitat critical to the survival of a species	The proposed works will not directly impact the camp, although will result in the removal of 0.84 ha of planted native / exotic

	vegetation, representing potential foraging habitat for the GHFF. There is extensive areas of higher quality foraging habitat adjacent to the Site in Parramatta Park and within the LGA. Therefore, the species is considered likely to use the vegetation proposed for removal on an occasional basis and would not be dependent on the foraging resources within the Site.
Disrupt the breeding cycle of an important population	Mitigation measures will need to be implemented to minimise excessive noise particularly around dusk and dawn when fauna are emerging to feed or returning to rest and during breeding season. Noise levels during events will also be managed under the existing Parramatta Stadium Noise Management Plan.
Modify, destroy, remove or isolate or decrease the availability or quality of habitat to the extent that the species is likely to decline	The extent or quality of vegetation within the camp will not be affected by the proposed action. The Project will result in the removal of 0.84 ha of planted native / exotic vegetation, representing marginal foraging habitat for the GHFF. However, there is extensive areas of higher quality foraging habitat adjacent to the Site in Parramatta Park and the LGA.
Result in invasive species that are harmful to a vulnerable species becoming established in the vulnerable species' habitat	The camp is already weed infested. The proposed action will not increase the risk of introducing an invasive species that could affect the GHFF habitat.
Introduce disease that may cause the species to decline	There is a possibility for the proposed increase in frequency of events to cause increased stress levels within the camp. However, given that the GHFF camp has experienced similar levels of disturbance from events held at the current stadium, it is unlikely that GHFF will suffer increased stress from the proposed events.
Interfere substantially with the recovery of the species	The Project aims to support recovery of the species by retaining the camp in situ and retaining foraging habitat where possible.

On the basis of the above, it is considered unlikely that the proposed action will result in a significant impact to the GHFF. However, it is anticipated that mitigation measures and monitoring would be required.

GHFF Camp Location and Flight Paths



- Site
- Grey-headed Flying-fox Camp
- ➔ GHFF Flight Path

0 125 250 500
Metres

Datum/Projection:
GDA 1994 MGA Zone 56



eco
logical
AUSTRALIA

www.ecoaus.com.au

Prepared by: DH Date: 28/06/2016

Figure 5: GHF camp location and flight paths

3.1 (e) Listed migratory species

Description

A PMST search was undertaken with a 10 km radius of the Site. A full listing of migratory species identified in the PMST is provided below. No listed migratory species are considered likely to occur within the Site.

Nature and extent of likely impact

Scientific Name	Common Name	EPBC Act	Likelihood of occurrence
Migratory			
<i>Apus pacificus</i>	Fork-tailed Swift	Migratory Marine Bird	Unlikely
<i>Ardea alba</i>	Great Egret	Migratory Wetlands Species	No
<i>Ardea ibis</i>	Cattle Egret	Migratory Wetlands Species	Unlikely
<i>Arenaria interpres</i>	Ruddy Turnstone	Migratory Wetlands Species	No
<i>Calidris acuminata</i>	Sharp-tailed Sandpiper	Migratory Wetlands Species	No
<i>Calidris canutus</i>	Red Knot	Migratory Wetlands Species	No
<i>Calidris ferruginea</i>	Curlew Sandpiper	Migratory Wetlands Species	No
<i>Calidris melanotos</i>	Pectoral Sandpiper	Migratory Wetlands Species	
<i>Calidris ruficollis</i>	Red-necked Stint	Migratory Wetlands Species	No
<i>Calidris tenuirostris</i>	Great Knot	Migratory Wetlands Species	No
<i>Caretta caretta</i>	Loggerhead Turtle	Migratory Marine Species	No
<i>Charadrius bicinctus</i>	Double-banded Plover	Migratory Wetlands Species	No
<i>Charadrius leschenaultii</i>	Greater Sand Plover	Migratory Wetlands Species	No
<i>Charadrius mongolus</i>	Lesser Sand Plover	Migratory Wetlands Species	No
<i>Chelonia mydas</i>	Green Turtle	Migratory Marine Species	No
<i>Cuculus optatus</i>	Oriental Cuckoo	Migratory Terrestrial Species	Unlikely
<i>Dermochelys coriacea</i>	Leatherback Turtle, Leathery turtle, Luth	Migratory Marine Species	No
<i>Diomedea antipodensis</i>	Antipodean Albatross	Migratory Marine Bird	No
<i>Diomedea epomophora</i> (sensu stricto)	Southern Royal Albatross	Migratory Marine Bird	No
<i>Diomedea exulans</i> (sensu lato)	Wandering Albatross	Migratory Marine Bird	No
<i>Diomedea gibsoni</i>	Gibson's Albatross	Migratory Marine Bird	No
<i>Diomedea sanfordi</i>	Northern Royal Albatross	Migratory Marine Bird	No
<i>Eretmochelys imbricata</i>	Hawksbill Turtle	Migratory Marine Species	No
<i>Gallinago hardwickii</i>	Latham's Snipe	Migratory Wetlands Species	Unlikely
<i>Gallinago megala</i>	Swinhoe's Snipe	Migratory Wetlands Species	Unlikely
<i>Gallinago stenura</i>	Pin-tailed Snipe	Migratory Wetlands Species	Unlikely
<i>Heteroscelus brevipes</i>	Grey-tailed Tattler	Migratory Wetlands Species	No
<i>Hirundapus caudacutus</i>	White-throated Needletail	Migratory Terrestrial Species	Unlikely
<i>Lamna nasus</i>	Porbeagle, Mackerel Shark	Migratory Marine Species	No
<i>Limosa lapponica</i>	Bar-tailed Godwit	Migratory Wetlands Species	No
<i>Limosa limosa</i>	Black-tailed Godwit	Migratory Wetlands Species	No
<i>Macronectes giganteus</i>	Southern Giant Petrel	Migratory Marine Bird	No
<i>Macronectes halli</i>	Northern Giant Petrel	Migratory Marine Bird	No
<i>Manta alfredii</i>	Reef Manta Ray, Coastal Manta Ray, inshore Manta ray, Prince Alfred's Ray, Resident Manta Ray	Migratory Marine Species	No

Scientific Name	Common Name	EPBC Act	Likelihood of occurrence
Migratory			
<i>Manta birostris</i>	Giant Manta Ray, Chevron Manta Ray, Pacific Manta Ray, Pelagic Manta Ray, Oceanic Manta Ray	Migratory Marine Species	No
<i>Merops ornatus</i>	Rainbow Bee-eater	Migratory Terrestrial Species	Unlikely
<i>Monarcha melanopsis</i>	Black-faced Monarch	Migratory Terrestrial Species	Unlikely
<i>Monarcha trivirgatus</i>	Spectacled Monarch	Migratory Terrestrial Species	No
<i>Motacilla flava</i>	Yellow Wagtail	Migratory Terrestrial Species	Unlikely
<i>Myiagra cyanoleuca</i>	Satin Flycatcher	Migratory Terrestrial Species	Unlikely
<i>Natator depressus</i>	Flatback Turtle	Migratory Marine Species	No
<i>Numenius madagascariensis</i>	Eastern Curlew	Migratory Wetlands Species	No
<i>Numenius minutus</i>	Little Curlew	Migratory Wetlands Species	No
<i>Numenius phaeopus</i>	Whimbrel	Migratory Wetlands Species	No
<i>Pandion haliaetus</i>	Osprey	Migratory Wetlands Species	Unlikely
<i>Philomachus pugnax</i>	Ruff	Migratory Wetlands Species	Unlikely
<i>Pluvialis fulva</i>	Pacific Golden Plover	Migratory Wetlands Species	No
<i>Rhipidura rufifrons</i>	Rufous Fantail	Migratory Terrestrial Species	Unlikely
<i>Thalassarche bulleri</i>	Buller's Albatross, Pacific Albatross	Migratory Marine Bird	No
<i>Thalassarche cauta cauta</i> (a.k.a. <i>T. cauta sensu stricto</i>)	Shy Albatross, Tasmanian Shy Albatross	Migratory Marine Bird	No
<i>Thalassarche eremita</i>	Chatham Albatross	Migratory Marine Bird	No
<i>Thalassarche impavida</i>	Campbell Albatross, Campbell Black-browed Albatross	Migratory Marine Bird	No
<i>Thalassarche melanophris</i>	Black-browed Albatross	Migratory Marine Bird	No
<i>Thalassarche salvini</i>	Salvin's Albatross	Migratory Marine Bird	No
<i>Thalassarche cauta steadi</i> (a.k.a. <i>T. steadi</i>)	White-capped Albatross	Migratory Marine Bird	No
<i>Tringa nebularia</i>	Common Greenshank	Migratory Wetlands Species	Unlikely
<i>Tringa stagnatilis</i>	Marsh Sandpiper	Migratory Wetlands Species	No

3.1 (f) Commonwealth marine area

Description

N/A

Nature and extent of likely impact

N/A

3.1 (g) Commonwealth land

Description
N/A

Nature and extent of likely impact
N/A

3.1 (h) The Great Barrier Reef Marine Park

Description
N/A

Nature and extent of likely impact
N/A

3.1 (i) A water resource, in relation to coal seam gas development and large coal mining development

Description
N/A

Nature and extent of likely impact
N/A

3.2 Nuclear actions, actions taken by the Commonwealth (or Commonwealth agency), actions taken in a Commonwealth marine area, actions taken on Commonwealth land, or actions taken in the Great Barrier Reef Marine Park

3.2 (a)	Is the proposed action a nuclear action?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (b)	Is the proposed action to be taken by the Commonwealth or a Commonwealth agency?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment

3.2 (c)	Is the proposed action to be taken in a Commonwealth marine area?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(f))

3.2 (d)	Is the proposed action to be taken on Commonwealth land?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(g))

3.2 (e)	Is the proposed action to be taken in the Great Barrier Reef Marine Park?	X	No
			Yes (provide details below)

If yes, nature & extent of likely impact on the whole environment (in addition to 3.1(h))

3.3 Other important features of the environment

3.3 (a) Flora and fauna

The Site contains 54 flora species which were identified during the ecological assessment, with the focus of the survey being in and around areas of native vegetation. Of these only 33 were native or planted natives; the remainder were exotic species. Eight species are declared noxious in Parramatta LGA and one is a Weed of National Significance (WoNS).

Some of the exotic flora species have cultural heritage landscape significance.

The following table outlines the noxious species (Parramatta LGA) and WoNS identified within the Site.

Scientific Name	Common Name	Class
<i>Olea europaea</i> subsp. <i>cuspidata</i>	African Olive	4
<i>Cardiospermum grandiflorum</i>	Balloon Vine	4
<i>Ricinus communis</i>	Castor Oil Plant	4
<i>Lantana camara</i>	Lantana	4, WoNS
<i>Ipomoea</i> sp.	Morning Glory	4
<i>Opuntia</i> sp.	Prickly Pear	4
<i>Ligustrum lucidum</i>	Broad-leaved Privet	4
<i>Ligustrum sinense</i>	Narrow-leaved Privet	4

A range of fauna habitat features were observed within the Site and surrounds including riparian woodland, hollow bearing trees, fallen logs, fig trees and scattered remnant trees. Opportunistic observations were recorded of other fauna present within the Site.

An additional five threatened species listed under the NSW *Threatened Species Conservation Act 1995* (TSC Act) were considered to have potential to occur on site; *Mormopterus norfolkensis* (Eastern Free-tail Bat), *Miniopterus schreibersii oceanensis* (Eastern Bentwing-bat), *Myotis macropus* (Large-footed Myotis), *Scoteanax rueppellii* (Greater Broad-nosed Bat) and *Ninox strenua* (Powerful Owl).

3.3 (b) Hydrology, including water flows

The Site is characterised by its position adjacent to the Parramatta River. The Parramatta River is one of the main tributaries of Sydney Harbour and is mapped as Key Fish Habitat by NSW Fisheries. The Parramatta Valley is generally flat, with river banks varying from gentle grades in tidal reaches to steep tiered banks in freshwater sections. The majority of its catchment is urban/industrial land use, with few undisturbed tributaries. Due to the large impervious catchment, the hydrology is substantially modified, with waters flowing faster and warmer than a vegetated catchment. Water quality is highly impacted from contaminants and altered chemistry from this land use.

3.3 (c) Soil and Vegetation characteristics

The Site is a mixed-use zone comprising built environments and remnant vegetation, native regrowth, planted exotics and weeds. Refer to Section 3.3 (e) below for further detail.

3.3 (d) Outstanding natural features

The Site does not contain any additional outstanding natural features.

3.3 (e) Remnant native vegetation

Remnant native vegetation within the Site and surrounds was identified as River-flat Eucalypt Forest, which is an Endangered Ecological Community listed under the TSC Act. It is characterised by a native canopy of *Eucalyptus tereticornis* (Forest Red Gum), *Angophora floribunda* (Rough-barked Apple), *Casuarina glauca* (Swamp Oak) and *Casuarina cunninghamiana* (River Oak). *E. amplifolia* (Cabbage Gum), *E. robusta* (Swamp Mahogany) and *E. moluccana* (Grey Box) were present in lower numbers. Native shrubs included *Bursaria spinosa* (Blackthorn), *Acacia decurrens* (Sydney Green Wattle), *Pittosporum undulatum* and *Acacia longifolia* (Sydney Golden Wattle), while the ground cover included the natives *Microlaena stipoides* (Weeping Grass), *Commelina cyanea*, *Lomandra longifolia* (Spiny Mat-rush) and *Dichondra repens* (Kidney Weed).

Condition of the vegetation within the Site was variable with most patches in low to moderate condition. Patches in moderate condition contained a tree canopy, with a sparse mid and ground layer. Weeds were common and in some parts of the patch dominant.

3.3 (f) Gradient (or depth range if action is to be taken in a marine area)

The gradient across the Site is relatively flat away from the upper terraces of the Parramatta River. The river terraces are steep in parts.

3.3 (g) Current state of the environment

The Site is located within an urbanised environment located to the immediate west and north-west of the Parramatta CBD, and is surrounded by mixed land use comprising urban residential, educational, industrial interspersed with areas of open space. The vegetation condition is moderate to poor due to weed and rubbish infestation. The river bank has been modified and is largely stable at this time due to vegetated banks. The environment on the site (including vegetation and landform) is heavily modified due to the use of the site for a range of different uses over the last 200 years.

3.3 (h) Commonwealth Heritage Places or other places recognised as having heritage values

The existing Parramatta Stadium complex is not a heritage item. Parramatta Stadium adjoins Old Government House and Domain although not on Parramatta Park Trust land. The following heritage listings influence the Site:

- Old Government House and Government Domain (Parramatta Park) are located on the western side of Parramatta River. This site is part of a group of eight convict-related places across Australia that are included on the National Heritage List and one of 11 sites that make up the Australian Convict listing on the World Heritage List.
- The stadium is within the catchment of Old Government House Views and Settings, delineated as being 'highly sensitive'.
- The majority of the trees within the Parramatta Park land, has been planted during the twentieth century (as noted from historical aerial photos in the Statement of Heritage Impact) however, none of these trees will be impacted by the proposed works.

3.3 (i) Indigenous heritage values

The Site contains significant Aboriginal heritage values for the Burramatta clan of the Darug people.

The Parramatta Archaeological Landscape Management study identifies the Site as being of moderate importance to the local and broader Aboriginal community. Although no Aboriginal places have been identified, the area has been identified as being with Archaeological Management Unit (AMU) 2243118, and having moderate research potential.

Further details are available in the Western Sydney Stadium Aboriginal Cultural Heritage Assessment Statement of Heritage Impact AECOM (2016).

3.3 (j) Other important or unique values of the environment

The Site does not contain any other important or unique values that have not already been described.

3.3 (k) Tenure of the action area (eg freehold, leasehold)

Figure 3 identifies the tenure of land parcels within the Site.

3.3 (l) Existing land/marine uses of area

Land uses within the Site include the Parramatta Stadium, Parramatta Swimming Centre, Old Kings Oval and within a broader context, Parramatta Park. The precinct contains the existing stadium complex and related buildings, car park and open space. The existing infrastructure are interspersed with vegetation and are framed by an almost continuous band of vegetation along the eastern bank of the Parramatta River.

3.3 (m) Any proposed land/marine uses of area

The land will be redeveloped for a mix of uses including entertainment and recreation.

4 Environmental outcomes

The main environmental outcomes of the proposed action are summarised as follows:

- Retention of the GHFF camp in situ
- Retention of GHFF foraging habitat across the site where possible
- Retention, conservation and enhancement of highly significant views and vistas and other landscape elements

5 Measures to avoid or reduce impacts

The GHFF camp is listed under the EPBC Act as nationally significant. Measures to avoid or reduce impacts to the GHFF roosting and foraging habitat within the Site include:

- Strict erosion and sediment control measures must be implemented on Site to protect the retained vegetation, especially downslope towards the adjacent RFEF EEC, to the west. Sediment control is to be routinely inspected after rainfall events and periodically inspected during normal conditions.
- No new buildings will be built within 50 m of the GHFF camp.
- All contractors are to be made aware of the presence of threatened fauna (GHFF) in adjacent habitats.
- Considerations of disease risk is to be included in all Occupational Health and Safety (OH&S) Safe Work Method Statements for all event related and/or recreational activities undertaken within proximity to the camp.
- Noise management strategies during demolition and construction include:
 - o Ensure all plant and equipment is maintained to Australian Standards to minimise noise generation.
 - o Position plant and equipment as far from the GHFF camp as possible.
 - o Shield noise at its source, where possible.
 - o Avoid construction at dawn (before 7am) when the GHFF are returning to the camp to roost.
- Schedule building demolition and restoration that is to be done within 50 m of the camp outside the GHFF breeding season (i.e. when the ratio of lactating or late-pregnancy females and/or dependent young is greater than 5% of the population in the camp). If emergency works are needed within 50 m of the camp during the GHFF breeding season, an ecologist would be required to closely monitor animal health and be authorised to temporarily stop work if needed.
- Commission an ecologist with suitable experience to monitor the health of the GHFF during the breeding season when construction is between 50-100 m of the camp boundary. If GHFF become too stressed they can abort young. The ecologist would have authority to stop noisy construction work if the GHFF are stressed. The work would be allowed to resume at night

when the camp is empty or when the ecologist determines that the GHFF are no longer stressed and at risk.

- Light spill management measures include not shining lights toward the GHFF camp or foraging habitat during construction or in the long term.
- Avoid landscape plantings that may encourage the increased use of GHFF within the Western Sydney Stadium complex.
- Commence noise generation at low levels during sound check and event, and work up to maximum volume gradually to allow GHFF and other fauna time to acclimatise to the noise.
- Light spill management measures include not shining lights toward the GHFF camp or foraging habitat during events.
- There is potential for the camp to shift south over time into the RFEF located along the western boundary of the Site, and has the potential to increase the risk of future conflict between people and the camp (e.g. noise, odour, faecal drop). Management actions to deter GHFF from roosting in this area include the use of deterrents, such as olfactory signals and physical obstruction).

These measures will be further refined during detailed planning.

The OGHD is listed as a world heritage site and a Conservation Agreement exists under the EPBC Act. The Project is consistent with the requirements of the Conservation Agreement which have been adopted by the Urban Design and Public Realm Guidelines (CHROFI, 2016) for the Project, thereby reducing impacts. The concept proposal will be further refined during detailed planning for Stage 2 of the Project.

6 Conclusion on the likelihood of significant impacts

6.1 Do you THINK your proposed action is a controlled action?

☒	No, complete section 5.2
☐	Yes, complete section 5.3

6.2 Proposed action IS NOT a controlled action.

The GHFF camp is the only Matter of National Environmental Significance directly affected by the Project. However, consideration has also been given to ensuring that the significant cultural heritage values (at the site and in the surrounding area) and other important ecological values of the site are retained, restored and enhanced.

As discussed in Section 3.1 (d), no direct impacts to the GHFF are anticipated, and only a small amount of vegetation, representing potential foraging habitat for the GHFF, will be removed.

Indirect impacts such as light and noise have the potential to impact the camp. However, the acoustic assessment (AECOM 2016) predicted noise levels for large sporting events held at the proposed Western Sydney Stadium complex are in the order of magnitude similar to construction noise. In fact, construction noise is lower than the predicted sporting event noise during the evening and night. In addition, lighting within the stadium will be consistent with the existing lighting, and there will not be any lighting directed at the GHFF camp or regular flight paths. It is also noted that the vegetation to the west of the Site would screen some of the light at or below canopy height.

To minimise the risk of significant impacts from surrounding activities in the short and long term, new buildings will be located at least 50 m from the camp; demolition and construction activities will be restricted, particularly during sensitive periods in the GHFF life-cycle, and noise during events will be managed under the existing Parramatta Stadium Noise Management Plan (PCCD 2008).

GHFF foraging and roosting habitat will be retained, and the camp will not be further fragmented. The proposed action is therefore not considered to be a controlled action.

6.3 Proposed action IS a controlled action

Matters likely to be impacted

☐	World Heritage values (sections 12 and 15A)
☐	National Heritage places (sections 15B and 15C)
☐	Wetlands of international importance (sections 16 and 17B)
☐	Listed threatened species and communities (sections 18 and 18A)
☐	Listed migratory species (sections 20 and 20A)
☐	Protection of the environment from nuclear actions (sections 21 and 22A)
☐	Commonwealth marine environment (sections 23 and 24A)
☐	Great Barrier Reef Marine Park (sections 24B and 24C)
☐	A water resource, in relation to coal seam gas development and large coal mining development (sections 24D and 24E)
☐	Protection of the environment from actions involving Commonwealth land (sections 26 and 27A)
☐	Protection of the environment from Commonwealth actions (section 28)



Commonwealth Heritage places overseas (sections 27B and 27C)

7 Environmental record of the responsible party

	Yes	No
7.1 Does the party taking the action have a satisfactory record of responsible environmental management? Provide details Venues NSW manage Parramatta Stadium under a number of existing management plans. These include an Asbestos Management Plan, Noise Management Plan and Emergency Evacuation Plan. An Environment Protection Licence was also previously held for wet weather discharge to Parramatta River (Parramatta Stadium Trust). This licence was surrendered in 2002.	x	
7.2 Has either (a) the party proposing to take the action, or (b) if a permit has been applied for in relation to the action, the person making the application - ever been subject to any proceedings under a Commonwealth, State or Territory law for the protection of the environment or the conservation and sustainable use of natural resources? If yes, provide details		x
7.3 If the party taking the action is a corporation, will the action be taken in accordance with the corporation's environmental policy and planning framework? If yes, provide details of environmental policy and planning framework Venues NSW manage Parramatta Stadium under a number of existing management plans. These include an Asbestos Management Plan, Noise Management Plan and Emergency Evacuation Plan. An Environment Protection Licence was also previously held for wet weather discharge to Parramatta River (Parramatta Stadium Trust). This licence was surrendered in 2002.	x	
7.4 Has the party taking the action previously referred an action under the EPBC Act, or been responsible for undertaking an action referred under the EPBC Act? No Provide name of proposal and EPBC reference number (if known)		x

8 Information sources and attachments

(For the information provided above)

8.1 References

- Australian Government Department of the Environment 2013. *Matters of National Environmental Significance – Significant Impact Guidelines 1.1 Environmental Protection and Biodiversity Conservation Act 1999*.
- Comber Consultants 2015. *Parramatta North Urban Transformation Aboriginal Cultural Heritage Assessment Report*. Prepared for UrbanGrowth NSW and OEH.
- Department of Environment, Climate Change and Water NSW 2009. *Draft National Recovery Plan for the Grey-headed Flying-fox Pteropus poliocephalus*. Prepared by Dr Peggy Eby. Department of Environment, Climate Change and Water NSW, Sydney.
<http://www.environment.nsw.gov.au/resources/threatenedspecies/08214dnrpflyingfox.pdf>
- Department of the Environment 2014. *Pteropus poliocephalus in Species Profile and Threats Database*. Department of the Environment, Canberra.
http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=186
- Department of the Environment 2016a. *Calidris canutus in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=855
- Department of the Environment 2016b. *Calidris ferruginea in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=856
- Department of the Environment 2016c. *Calidris tenuirostris in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=862
- Department of the Environment 2016d. *Caretta caretta in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1763
- Department of the Environment 2016e. *Charadrius leschenaultii in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=877
- Department of the Environment 2016f. *Charadrius mongolus in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=879
- Department of the Environment 2016g. *Chelonia mydas in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1765
- Department of the Environment 2016h. *Dermochelys coriacea in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1768
- Department of the Environment 2016i. *Diomedea antipodensis gibsoni in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82270
- Department of the Environment 2016j. *Diomedea antipodensis in Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64458

- Department of the Environment 2016k. *Diomedea epomophora* (sensu stricto) in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1072
- Department of the Environment 2016l. *Diomedea exulans* (sensu lato) in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1073
- Department of the Environment 2016m. *Diomedea sanfordi* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64456
- Department of the Environment 2016n. *Eretmochelys imbricata* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1766
- Department of the Environment 2016o. *Macronectes giganteus* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1060
- Department of the Environment 2016p. *Macronectes halli* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=1061
- Department of the Environment 2016q. *Natator depressus* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=59257
- Department of the Environment 2016r. *Numenius madagascariensis* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=847
- Department of the Environment 2016s. *Pachyptila turtur subantarctica* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64445
- Department of the Environment 2016t. *Thalassarche bulleri* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64460
- Department of the Environment 2016u. *Thalassarche cauta cauta* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82345
- Department of the Environment 2016v. *Thalassarche cauta steadi* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=82344
- Department of the Environment 2016w. *Thalassarche eremita* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64457
- Department of the Environment 2016x. *Thalassarche impavida* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64459
- Department of the Environment 2016y. *Thalassarche melanophris* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=66472
- Department of the Environment 2016z. *Thalassarche salvini* in *Species Profile and Threats Database*. Department of the Environment, Canberra. Accessed 16 Jun 2016, http://www.environment.gov.au/cgi-bin/sprat/public/publicspecies.pl?taxon_id=64463

- NBRS+Partners 2016. *Statement of Heritage Impact: Pirtek Stadium Upgrade, O'Connell St, Parramatta* Prepared for AECOM.
- TSSC 2015. Conservation Advice: *Pommerhelix duralensis*, Dural Land Snail. Threatened Species Scientific Committee, Department of the Environment, Canberra.
- TSSC 2016-. Conservation Advice: *Limosa lapponica baueri*, Bar-tailed Godwit (western Alaskan). Threatened Species Scientific Committee, Department of the Environment, Canberra.
- TSSC 2016-. Conservation Advice: *Limosa lapponica menzbieri*, Bar-tailed Godwit (northern Siberian). Threatened Species Scientific Committee, Department of the Environment, Canberra.
- TSSC 2016-. Conservation Advice: *Petauroides volans*, greater glider. Threatened Species Scientific Committee, Department of the Environment, Canberra.

8.2 Reliability and date of information

The information utilised to prepare this referral has been prepared by suitably qualified consultants who are experienced in their areas of expertise, or is information that has been prepared and disseminated by the Australian or New South Wales Governments. The information prepared has been subject to peer review processes internally. The information utilised is considered to be current and suitable for use to support the preparation of this referral.

8.3 Attachments

		✓ attached	Title of attachment(s)
You must attach	figures, maps or aerial photographs showing the project locality (section 1)	✓	See Figure 1 and 2
	GIS file delineating the boundary of the referral area (section 1)	✓	Attached to email
	figures, maps or aerial photographs showing the location of the project in respect to any matters of national environmental significance or important features of the environments (section 3)	✓	See Figure 5
If relevant, attach	copies of any state or local government approvals and consent conditions (section 2.5)	N/A	
	copies of any completed assessments to meet state or local government approvals and outcomes of public consultations, if available (section 2.6)	✓	See Attachment B
	copies of any flora and fauna investigations and surveys (section 3)	✓	See Attachment B
	technical reports relevant to the assessment of impacts on protected matters that support the arguments and conclusions in the referral (section 3 and 4)	✓	See Attachment B
	report(s) on any public consultations undertaken, including with Indigenous stakeholders (section 3)	✓	See Attachment C and D

9 Contacts, signatures and declarations

Project title:

9.1 Person proposing to take action

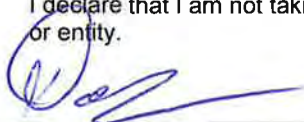
1. Name and Title: David Riches, Executive Director
2. Organisation: Infrastructure NSW
3. EPBC Referral Number :
- 4: ACN / ABN : 85 031 302 516
5. Postal address P O Box R220, Royal Exchange NSW 1225
6. Telephone: 02 8016 0100
7. Email: David.Riches@insw.com
8. Name of designated proponent (if not the same person at item 1 above): Venues NSW
9. ACN/ABN of designated proponent (if not the same person named at item 1 above): 26 283 293 435
- I qualify for exemption from fees under section 520(4C)(e)(v) of the EPBC Act because I am:
- ☐ an individual; OR
- ☐ a small business entity (within the meaning given by section 328-110 (other than subsection 328-119(4)) of the *Income Tax Assessment Act 1997*); OR
- ☐ not applicable.

If you are small business entity you must provide the Date/Income Year that you became a small business entity:

- I would like to apply for a waiver of full or partial fees under Schedule 1, 5.21A of the [EPBC Regulations](#). Under sub regulation 5.21A(5), you must include information about the applicant (if not you) the grounds on which the waiver is sought and the reasons why it should be made:
- ☐ not applicable.
- Declaration

I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.
I agree to be the proponent for this action.
I declare that I am not taking the action on behalf of or for the benefit of any other person or entity.

Signature



Date 7 July 2016

Signature

Date

9.2 Person preparing the referral information (if different from 9.1)

Name Rebecca Dwyer
Title Ecologist
Organisation Eco Logical Australia
ACN / ABN (if applicable) 87 096 512 088
Postal address PO Box 12 Sutherland NSW 1499
Telephone 02 8536 8634
Email rebeccad@ecoaus.com.au
Declaration I declare that to the best of my knowledge the information I have given on, or attached to this form is complete, current and correct.
I understand that giving false or misleading information is a serious offence.

Signature



Date 21 June 2016

REFERRAL CHECKLIST

NOTE: This checklist is to help ensure that all the relevant referral information has been provided. It is not a part of the referral form and does not need to be sent to the Department.

HAVE YOU:

- ☐ Completed all required sections of the referral form?
- ☐ Included accurate coordinates (to allow the location of the proposed action to be mapped)?
- ☐ Provided a map showing the location and approximate boundaries of the project area?
- ☐ Provided a map/plan showing the location of the action in relation to any matters of NES?
- ☐ Provided a digital file (preferably ArcGIS shapefile, refer to guidelines at Attachment A) delineating the boundaries of the referral area?
- ☐ Provided complete contact details and signed the form?
- ☐ Provided copies of any documents referenced in the referral form?
- ☐ Ensured that all attachments are less than three megabytes (3mb)?
- ☐ Sent the referral to the Department (electronic and hard copy preferred)?

Attachment A: Geographic Information System (GIS) data supply guidelines

If the area is less than 5 hectares, provide the location as a point layer. If the area greater than 5 hectares, please provide as a polygon layer. If the proposed action is linear (eg. a road or pipeline) please provide a polyline layer.

GIS data needs to be provided to the Department in the following manner:

- Point, Line or Polygon data types: ESRI file geodatabase feature class (preferred) or as an ESRI shapefile (.shp) zipped and attached with appropriate title
- Raster data types: Raw satellite imagery should be supplied in the vendor specific format.
- Projection as GDA94 coordinate system.

Processed products should be provided as follows:

- For data, uncompressed or lossless compressed formats is required - GeoTIFF or Imagine IMG is the first preference, then JPEG2000 lossless and other simple binary+header formats (ERS, ENVI or BIL).
- For natural/false/pseudo colour RGB imagery:
 - o If the imagery is already mosaiced and is ready for display then lossy compression is suitable (JPEG2000 lossy/ECW/MrSID). Prefer 10% compression, up to 20% is acceptable.
 - o If the imagery requires any sort of processing prior to display (i.e. mosaicing/colour balancing/etc) then an uncompressed or lossless compressed format is required.

Metadata or 'information about data' will be produced for all spatial data and will be compliant with ANZLIC Metadata Profile. (http://www.anzlic.org.au/policies_guidelines#guidelines).

The Department's preferred method is using ANZMet Lite, however the Department's Service Provider may use any compliant system to generate metadata.

All data will be provide under a Creative Commons license (<http://creativecommons.org/licenses/by/3.0/au/>)