Confidential

Kemps Creek Data Centre

Biodiversity Technical Report

SYD05-06-07_Y-R-0017

Revision 2 | 16 April 2021

Job number 277863-00

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		Signature			
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Contents

1 Introduction

1.1 Purpose of this report

The purpose of this report is to assess potential biodiversity impacts associated with the Proposal.

This assessment has been prepared to assess potential biodiversity impacts due to construction and operation of the Proposal. This assessment will also outline appropriate management plans to avoid, minimise or mitigate any identified impacts.

1.2 Proposal overview

1.2.1 Site context

The identified site address that is the subject of this technical report is legally defined as 757-769 Mamre Road, Kemps Creek. The entire Site comprises a total area of approximately 17.38 hectares (ha) and is subject to the applicable provisions outlined within SEPP (WSEA) 2009. Access to the Site is currently obtained via the proposed Estate Access Roads (as approved in SSD 9522), which are accessed from Mamre Road. Access into the Site is made possible via Mamre Road, which is subject to future road widening as part of the Mamre Road Widening Project (Transport for NSW).

The Site is situated approximately 40.26 km west of the Sydney CBD, 22.11 km west of Parramatta and 11.97 km southeast of Penrith. It is within close proximity to transport infrastructure routes (predominantly the bus network), as well as sharing direct links with the wider regional road network, including Mamre Road and both the M4 & M7 Motorways. All of which provide enhanced connectivity to the Subject Site and immediate vicinity, as well as the wider locality.

Additionally, the Subject Site is located within close proximity to active transport links, such as bicycle routes, providing an additional mode of accessible transport available to the Subject Site. In its existing state, the Subject Site comprises an undeveloped land portion; however, is subject to bulk earthworks and infrastructure works under a concurrent State Significant Development (SSD) Application – SSD 9522.

The Proponent is proposing to construct and operate a Data Centre on the Subject Site. The Site is located within the Penrith Local Government Area (LGA) and is zoned IN1 General Industrial under the provisions of State Environmental Planning Policy (Western Sydney Employment Area) 2009 (SEPP (WSEA) 2009). Development for the purpose of a Data Centre is permissible with consent within the IN1 General Industrial zone pursuant to the provisions outlined with Part 3, Division 3, Clause 27 of State Environmental Planning Policy (Infrastructure) 2007 (ISEPP).

Lot 34
DP1118173

Lot 1
DP1018318

Lot X
DP421633

Lot Y
DP421633

Lot 22
DP258414

Subject Site

COMMERCIAL IN CONFIDENCE

Legend

- Proposed Site
- Lot
- SSDA 9522

Client

Job Title
Kemps Creek Data Centre

Figure Title
Site Context and Surrounding Area

Meters
0 100 200 300 400

Issue	Date	By	Chkd	Appd
D2	2021-03-03	ICD	LS	

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1:10,000	Draft

Coordinate System
GDA 1994 MGA Zone 56

Job No	Figure No
277863-00	Figure 01

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Aerial Imagery: DFSI, 2020

1.2.2 Description of the proposed development

The Site will form part of the new Kemps Creek Warehouse, Logistics and Industrial Facilities Hub being developed as a joint venture between Frasers Property and Altis Property Partner under the recently approved SSD 9522 as of 21st December 2020.

The site layout has been developed for three data centres for a total of (3 x 48MW) 144MW capacity. Full detailed design is currently underway for two 48MW centres, with the third data centre being designated as a future build. The design of these which are based on the end-client's reference design as well as applicable Australian standards.

1.3 SEARs requirements relevant to this report

Table 1 identifies the Secretary's Environmental Assessment Requirements (SEARs) and Development Control Plan (DCP) requirements which are relevant to this technical assessment.

Table 1 SEARs and DCP requirements for Biodiversity

SEARs relevant to this technical report	Where addressed in this technical report
Biodiversity impacts related to the proposed development are to be assessed in accordance with Section 7.9 of the Biodiversity Conservation Act 2016 the Biodiversity Assessment Method and documented in a Biodiversity Development Assessment Report (BDAR). The BDAR must include information in the form detailed in the Biodiversity Conservation Act 2016 (s6.12), Biodiversity Conservation Regulation 2017 (s6.8) and Biodiversity Assessment Method, including an assessment of the impacts of the proposal (including an assessment of impacts prescribed by the regulations).	A BDAR waiver will be submitted.
The BDAR must document the application of the avoid, minimise and offset framework including assessing all direct, indirect and prescribed impacts in accordance with the Biodiversity Assessment Method.	
The BDAR must include details of the measures proposed to address the offset obligation as follows: The total number and classes of biodiversity credits required to be retired for the development/project; The number and classes of like-for-like biodiversity credits proposed to be retired; The number and classes of biodiversity credits proposed to be retired in accordance with the variation rules; Any proposal to fund a biodiversity conservation action; Any proposal to conduct ecological rehabilitation (if a mining project); Any proposal to make a payment to the Biodiversity Conservation Fund.	

If seeking approval to use the variation rules, the BDAR must contain details of the reasonable steps that have been taken to obtain requisite like-for-like biodiversity credits.	
The BDAR must be submitted with all spatial data associated with the survey and assessment as per Appendix 11 of the BAM.	
The BDAR must be prepared by a person accredited in accordance with the Accreditation Scheme for the Application of the Biodiversity Assessment Method Order 2017 under s6.10 of the Biodiversity Conservation Act 2016.	

2 Policy and planning context

The following legislation and planning instruments were considered when conducting this assessment:

2.1 *Environmental Protection and Biodiversity Conservation Act 1999* (EPBC Act)

The EPBC Act is the Federal environmental legislation which defines matters of national environmental significance (MNES). The goal of the EPBC Act is to protect and manage the environment, especially MNES, and to conserve biodiversity.

No MNES were identified in the study area under investigations carried out for SSD 9522 which the Subject Site is located within.

2.2 *Biodiversity Conservation Act 2016* (BC Act)

The BC Act is the NSW state environmental legislation which aims to maintain a diverse and resilient environment, through conservation of biodiversity, for the benefit of current and future communities.

Section 7.9 of the BC Act requires a Biodiversity Development Assessment Report (BDAR) to be prepared for State Significant Development (SSD) projects. This is also reflected in the SEARs in Table 1. However, SSD 9522 for the master plan has received approval for removal of all native vegetation on the Subject Site and the potential for indirect impacts to biodiversity features as a result of this Proposal are negligible. A BDAR waiver for the Proposal is being prepared as it is unlikely to result in additional direct impacts.

This assessment has been included to assess likely indirect impacts and provide management strategies to avoid or minimise those impacts.

2.3 *Biodiversity Conservation Regulation 2017* (BC Regulation)

The BC Regulation is made under the BC Act and deals with matters such as protecting native animals and plants, listing criteria for threatened species and ecological communities and biodiversity assessments and approvals.

2.4 *Biodiversity Assessment Method* (DPIE, 2020) (BAM)

The BAM outlines a consistent method for accredited persons to assess biodiversity on a proposed development side, guidance on avoiding and minimising biodiversity impacts and a calculator to assess offset credits.

2.5 *Guidelines for Controlled Activities on Waterfront Land* (NRAR, 2018)

Controlled activities carried out in, on, or under waterfront land are regulated by the Water Management Act 2000 (WM Act). The NRAR administers the WM Act and is required to assess the impact of any proposed controlled activity to ensure that no more than minimal harm will be done to waterfront land as a consequence of carrying out the controlled activity. Waterfront land includes the bed and bank of any river, lake or estuary and all land within 40 metres of the highest bank of the river, lake or estuary. This means that applicants must obtain a controlled activity approval from the NRAR before commencing the controlled activity. t

The proposal does not include development within 40 metres of a high bank of a river, lake or estuary.

3 Methodology

Section 7.9 of the BC Act and the SEARs (Table 1) require a BDAR to be prepared for this project. However, SSD 9522 for the master plan has already carried out a BDAR and has received approval for removal of all native vegetation on the Subject Site as part of the development of the approved industrial subdivision.

The SEARs for the Proposal require that the biodiversity impacts of the project are assessed through a Biodiversity Development Assessment Report (BDAR), except in the case where a waiver for the preparation of a BDAR has been approved.

This section outlines the methodology used to define the baseline and undertake the environmental assessment of potential impacts of the proposal on biodiversity, including definition of the study area used as the basis of the assessment.

Indirect impacts will need to be assessed as part of the biodiversity assessment. These include impacts associated with stormwater runoff, noise, light, pollution, soil contamination, pests, and spread of invasive species and other biosecurity risks. An appropriate buffer around the Subject Site will need to be designated to understand any potential indirect impacts.

3.1 Study area

The study area for the biodiversity assessment, will focus on the Subject Site defined as 707-769 Mamre Road, Kemps Creek and assumed that entire lot will be subject to development associated with the data centre. Two utility corridors adjacent to the east of the Site connect it to Mamre Road. Any other remote intersection and road upgrades needed for construction will also need to be considered as part of the study area. Any utility upgrades offsite would be considered ‘related development’ and approved through the utility company under Part 5, eg a REF, and will not be considered a part of the Subject Site for this assessment.

A 200m metre buffer has been assessed using desktop sources as part of a landscape biodiversity assessment, with primarily desktop sources of information used to assess any biodiversity constraints at a landscape scale. This buffer has been defined to provide an assessment of the potential for indirect impacts to biodiversity features, including impacts from noise, air quality, light spill and surface water quality.

This section describes the biodiversity features relevant to the Subject Site, in the context of the approved Kemps Creek Warehouse, Logistics and Industrial Facilities Hub (SSD9522).

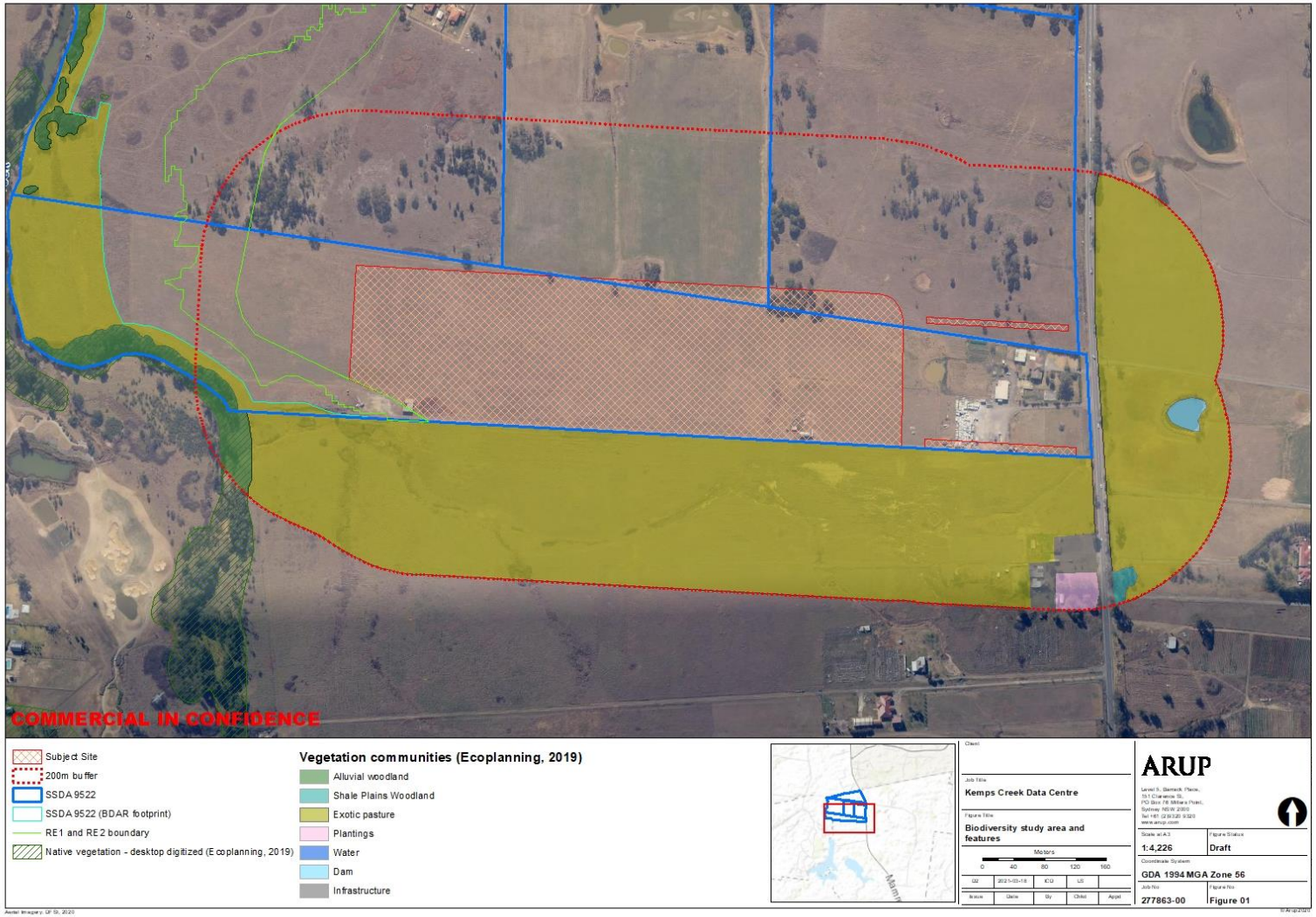

Figure 2 Biodiversity study area and features

3.2 Desktop assessment

A desktop assessment was carried out to establish the existing baseline environment within the study area to determine presence of threatened species, ecological communities under the EPBC Act and BC Act. Desktop assessments included investigations from the following sources:

- Biodiversity Values map (OEH 2018)
- Western Sydney vegetation map
- Atlas of NSW Wildlife (Environment, Energy and Science Group (EES), 2021)
- EPBC Act Protected Matters Search Tool (PMST) (Department of Agriculture, Water and the Environment (DoAWE), 2021)
- NSW Vegetation Information System (VIS) classification database (OEH, 2015)
- Google Street View photography and Satellite imagery
- Bureau of Meteorology (BOM) Atlas of Groundwater Dependent Ecosystems (BOM, 2021)
- NSW Threatened Species Profile Database (OEH, 2015)
- Biodiversity Development Assessment Report Mamre South Precinct, Kemps Creek, Proposed Industrial Subdivision (Ecoplanning, 2019) submitted as part of the EIS for SSD9522.

The Proposal's location within the wider Mamre South Precinct, Kemps Creek, Western Sydney Employment Area has been taken into account for this assessment. The biodiversity features of the Subject Site and surrounds and characterised by limited biodiversity values due to previous agricultural land use, and increasing urbanisation and industrial land uses associated with future development.

Of particular relevance to this assessment is the approval of the Kemps Creek Warehouse, Logistics and Industrial Facilities Hub (SSD9522). This State Significant Development application was subject to an Environmental Impact Statement (EIS) and Biodiversity Development Assessment Report (BDAR) prepared by Ecoplanning (2019). The conditions of consent for SSD9522 permit the clearing of 9.28 ha of native vegetation, including all native vegetation within and directly adjacent to the Subject Site for this application.

The likelihood of impacts on aquatic and terrestrial vegetation and fauna is likely to be minimal, so additional targeted field survey were not completed for this assessment.

4 Existing environment

4.1 Landscape features

4.1.1 Bioregions and landscapes

The study area is located entirely within the Cumberland IBRA subregion (version 7) and within the NSW Sydney Basin IBRA region (version 7).

Vegetation across the Cumberland IBRA subregion (version 7) is interspersed with patches of remnant native vegetation due to historical farming and urbanisation. The area will also experience significant urbanisation as we plan for A Metropolis of Three Cities.

The Subject Site occurs in the *Cumberland Plain* Mitchell Landscape which also dominates the 200m buffer area reviewed in this report.

4.1.2 Rivers, streams and estuaries

No waterways are located within the Subject Site. However, South Creek is within the 200m buffer area assessed for this Proposal. While there are no mapped waterways within the Subject Site, there are low-lying areas within the study area which may have once been part of drainage networks through the area.

South Creek, a fifth order stream classified under the Strahler System, flows in a northerly direction and is approximately 180m to the west of the Subject Site. Kemps Creek, a second order tributary of South Creek flows west, just south of the Subject Site. NRAR recommendations for fifth order streams state that a vegetated riparian zone (VRZ) width of 40 metres is required on each side of the watercourse as measured from the top of the high bank. Second order streams require a VRZ width of 20m either side of the high bank. This is covered under the vegetation management plan for SSD 9522 for South Creek and works are no within 20m of the high bank of the second order Kemps Creek. Stormwater run-off needs to be treated before discharging into the riparian corridor or VRZ.

No important wetlands, as defined by the BAM are within the Subject Site or the buffer zone. No threatened ecological communities are located within the Subject Site or the buffer zone.

4.1.3 Habitat connectivity

The vegetation within the Subject Site has been historically cleared for farming and is now comprised of mostly exotic grasses (Ecoplanning, 2013). There is alluvial woodland vegetation along the riparian corridor along South Creek. These vegetation corridors provide the only connected vegetation through this landscape as the surrounding environment is highly modified for farming or urban development.

Desktop studies show some Shale Plains Woodland and Alluvial Woodland within the Subject Site and 1500 metre buffer. However, since the assessment area

for SSD 9522 has approval for clearing, these remnant vegetation and biodiversity value areas would not be relevant for the assessment of impacts for this proposal

4.1.4 Areas of outstanding biodiversity value

The study area does not have any areas of outstanding biodiversity value as defined under the BC Act.

4.2 Site context

4.2.1 Native vegetation

Within the 1500 metre buffer around the SSD 9522 site, of which the Subject Site is located within, 228.29 hectares of vegetation was mapped which is a native vegetation cover of 16% (Ecoplanning, 2019).

Prior to the approval of SSD9522, the Subject Site was mapped as containing predominantly 'cleared land' and 'exotic grassland' due to historic clearing and subsequent introduction of exotic grasses and weeds (Ecoplanning, 2019). Any remnant native vegetation within the Subject Site, such as the very small patches of Alluvial Woodland and Shale Plains Woodland, has been approved for clearing under SSD 9522 and is not considered as part of this assessment

The vegetation integrity of the Subject Site and surrounding landscape has been significantly altered from a near natural state in composition, structure and function. A vegetation integrity score of 0 was given to the SSD 9522 area, including the Subject Site (Ecoplanning, 2019 – Table 3.6).

There is a small section of retained riparian vegetation along South Creek that has been retained as part of the approval for the industrial subdivision associated with SSD9522. This vegetation is classified as Alluvial Woodland, PCT 835 - Forest Red Gum - Rough-barked Apple grassy woodland on alluvial flats of the Cumberland Plain, Sydney Basin Bioregion. It is located over 150m to the west o the Subject Site and is buffered by proposed areas zoned as RE1 in the industrial subdivision master plan approved under SSD9522.

To the south of the Subject Site there is limited biodiversity values, as presented in the native vegetation mapping in the SSD9522 BDAR (Ecoplanning, 2019). The land to the south contain exotic grassland, with small areas of Alluvial Woodland in the South Creek riparian zone.

4.2.2 Threatened flora species

No threatened flora species were detected through desktop assessments within the 200m buffer of the Site. However, 29 individuals of *Grevillea junipera* subsp. *junipera* were identified in the Mamre South Precinct area by Ecoplanning. This is listed as vulnerable under the BC Act and species credits would be retired to offset their clearing impacts as part of the conditions of consent for SSD 9522

Similarly, ecosystem credits for the Cumberland Plain Woodland, which is classified as Critically Endangered in the BC Act and EPBC Act, and River-flat

Eucalypt Forest, which is classified as Endangered under the BC Act, would be bought to offset their clearing impacts.

No threatened flora species or ecosystems will be present at the Subject Site and habitat connectivity is unlikely to be affected by the construction and operation of the Proposal.

4.2.3 Invasive flora

There are exotic, non-indigenous and invasive flora species identified by Ecoplanning (2019) for SSD 9522. These include *Photinia serratifolia** (Chinese Photinia), *Axonopus fissifolius**, *Briza subaristata**, *Eragrostis curvula**, *Hypochaeris radicata** and *Paspalum dilatatum**.

4.2.4 Fauna species and habitats

SSD 9522 conducted a field survey to determine fauna species in the Mamre South Precinct. Of the 42 species recorded, there were 34 birds, two frogs, five mammals and one reptile. Three species were non-native. No threatened fauna species were recorded.

Habitat connectivity is unlikely to be affected by the construction and operation of the Proposal as there are no fauna corridors within or adjacent to the Site. The South Creek riparian zone is located between 150-180m to the west of the Site

A desktop search for microbat colonies was carried out to satisfy the requirements of Penrith City Council DCP Control 21:

"Where a development footprint contains or is within 100 m of known microbat colonies or habitat likely to support microbat colonies, street lighting must not attract insects such as warm coloured LED light."

Several microbat species potentially have habitat in the area, including:

- Little Bentwing-bat (Miniopterus australis)
- Eastern Bentwing-bat (Miniopterus schreibersii oceanensis)
- Eastern Freetail-bat (Mormopterus norfolkensis)
- Yellow-bellied Sheathtail-bat (Saccolaimus flaviventris)

While these bats are known to occur in the Cumberland IBRA subregion where the Proposal is located, no suitable breeding habitat occurs within the Subject Site or the 200m meter buffer zone and there is a low to moderate likelihood of occurrence in the study area as use of foraging habitat. Construction and operation of the Proposal are unlikely to affect microbat colonies, habitat or flight path.

Table 2 Recent microbat records (from Ecoplanning, 2019 Appendix B)

Scientific name Common Name	Legal status	Number of records	Closest record and date	Most recent record and proximity
Miniopterus australis Little Bentwing-bat	BC Act: V	1	3.4 km (27/10/2018)	3.4 km (27/10/2018)
Miniopterus schreibersii oceanensis Eastern Bentwing-bat	BC Act: V	3	1.6 km (26/06/2016)	1.6 km (26/06/2016)
Mormopterus norfolkensis Eastern Freetail-bat	BC Act: V	5	1. 3 km (17/11/2009)	2.9 km (7/02/2012)

4.2.5 Pest animals

As the Subject Site is located within a wider context of disturbed and urbanised land, it is probable that pest animals exist in the landscape. Pest animals listed as significant pest animals in NSW that are likely to occur include: *Vulpes vulpes* (European Red Fox), *Oryctolagus cuniculus* (European Rabbit), *Felis catus* (Feral Cat). Predation by the European Red Fox, feral cats and competition and land degradation by rabbits are Key Threatening Processes (KTP) listed under the EPBC Act. Predation by the European Red Fox, feral cats and competition and grazing by the feral European rabbit are KPTs listed under the BC Act.

The Proposal is unlikely to introduce or encourage pests to the area or increase predation pressure on native fauna.

4.2.6 Groundwater dependent ecosystems

Desktop studies using the BOM Atlas of Groundwater Dependent Ecosystem (BOM, 2021) identified several GDEs within the wider vicinity of the Subject Site or on the edges of the 1500 meter buffer zone.

South Creek is an aquatic GDE and several vegetation patches along South Creek and in surrounding suburbs including Orchard Hills, Luddenham and Erskine Park are considered Terrestrial GDEs.

5 Assessment of potential construction impacts

This section outlines the potential direct or indirect impacts to biodiversity features as a result of the construction of the project. Management measures are outlined in Section 7 and residual impacts are summarised in Section 8.

5.1 Vegetation

5.1.1 Threatened flora species and ecological communities

Construction of the Proposal that occurs within the Subject Site is unlikely to impact threatened flora species and ecological communities. However, any utility upgrades offsite would be considered 'related development' and approved through the utility company under Part 5, eg a REF. These offsite construction areas are not considered part of the Subject Site or this assessment as they are unknown at this stage.

5.1.2 Vegetation removal

Removal of vegetation for the construction of the Proposal will not be required as SSD 9522 has approved all clearance and the bulk earthworks and civil works for the Site will be completed under this prior approval. There will be no direct removal of native vegetation required for this Proposal.

5.1.3 Groundwater dependent ecosystems

Construction is not anticipated to directly impact GDEs as there are no GDEs located in the Subject Site. GDEs may be indirectly impacted by incorrect handling and disposal of construction waste and waste water if these get into South Creek and GDEs downstream of South Creek.

This bulk earthworks and civil works for the Site will be developed as part of the approved works under SSD 9522

5.2 Fauna

5.2.1 Threatened fauna

No threatened fauna species were identified in the study area and it is not anticipated that construction activities would attract any threatened fauna. Thus, no direct construction impacts are anticipated to affect threatened fauna species. Indirect impacts such as reduced foraging habitat may impact some mobile species with large ranges such as birds and bats. However, considering the abundance of similar vegetation types in the wider area, the impact of the construction of the Proposal to threatened fauna is considered low.

5.2.2 Habitat and wildlife connectivity corridors

Loss of vegetation and habitat on the Subject Site will not occur as part of the Proposal due to Mamre South Precinct vegetation clearance approved as part of SSD9522. Vegetation along riparian corridors of South Creek and Cosgroves Creek provide the only connected vegetation habitat through this landscape as the surrounding environment is highly modified for farming or urban development. No direct or indirect impacts are anticipated to impact fauna and their breeding habitats in these corridors. Direct impacts to wildlife connectivity corridors will not be severed in the wider area by the construction of the Proposal.

It is possible that slight adverse indirect impacts to foraging or flight path habitat will be impacted. However, considering the abundance of similar vegetation in the wider area, this impact is negligible.

Indirect impacts to vegetation along riparian corridors and the waterways may arise from incorrect waste and waste water handling procedures which would have an impact to habitat and wildlife connectivity.

Water and waste management plans would be implemented with appropriate measures to avoid and mitigate this risk. Given these measures, the potential for impact to habitat and wildlife connectivity is considered low.

5.2.3 Injury and mortality

Construction of the Proposal will involve some machinery and a slight increase in road traffic and people movement to and from the construction site.

No threatened species were recorded at the Subject Site or within the study area, habitat potential is considered low and the Subject Site is not part of a connectivity corridor. Thus, injury and mortality to threatened species is considered low.

It is possible that some individuals may be present on site. Of the 42 species recorded in the Mamre South Precinct assessment, 34 were birds which are highly mobile and will be able to move quickly away from oncoming traffic or movement or machinery. There were two frog, five mammal and one reptile species. These are less mobile and may not move away fast enough, resulting in possible injury or mortality.

Management measures in the construction management plan should be implemented to avoid and mitigate the potential for injury and mortality to fauna. Given these safeguards, the potential for injury and mortality during construction is considered low.

5.3 Invasive flora and fauna

5.3.1 Weeds

Some exotic flora species were identified (Section 4.2.3) and other opportunistic weed species may occur or be introduced to the Subject Site through the

movement of machinery and construction workers. However, given the urban context, there is negligible possible impact. Measures to limit the spread of weeds into or from the site during construction will be included in the CEMP.

5.3.2 Pests and pathogens

Given the urban context of the Subject Site, the construction of the Proposal is unlikely to increase or introduce pathogens such as *Uredo rangelli* (Myrtle Rust), *Phytophthora cinnamomi* (Phytophthora), *Batrachochytrium dendrobatidis* (Chytrid Fungus), or pests such as foxes, cats or rabbits to the area due to the highly modified landscape and proximity to large urban roads and industry.

5.4 Indirect impacts

Indirect impacts are difficult to quantify as these may include cumulative impacts from existing and future surrounding development, second and third order impacts and changing environmental conditions due to climate change.

Indirect impacts to biodiversity include potential increases in noise, vibration, light spill and movement of people and machinery. These impacts may occur throughout the whole construction phase and during all construction times as outlined in Section 1.2.2 Description of the proposed development.

Indirect impacts include:

- Nocturnal and diurnal birds' behaviour and wellbeing may be affected by daytime and night-time construction noise and vibration, however these impacts to the area of retained riparian vegetation along South Creek is expected to be negligible due to the buffer distance of 150-180m.
- Common bat species which use sound to navigate may be affected by construction noise and vibration if construction occurs during dawn or dusk
- Resident fauna, such as birds, frogs, mammals and reptiles (Section 4.2.4) may temporarily avoid areas near the Subject Site
- Night lighting may attract insects, which in turn can affect fauna behaviour and feeding activity or cause navigational impacts
- Increased movement of people and machinery may introduce pathogens or weeds to the area
- Unsafe waste and water handling may result in impacts to riparian vegetation, water quality of South Creek and impacts to downstream habitats.

Effective construction management plans and water, waste and contamination plans will be implemented to avoid, mitigate and manage these impacts to biodiversity. Thus, construction of the Proposal is unlikely to have significant indirect impacts.

6 Assessment of potential operational impacts

This section outlines the potential direct or indirect impacts to biodiversity features as a result of the operation of the Proposal. Management measures are outlined in Section 7 and residual impacts are summarised in Section 8.

Operation will occur 24 hours a day, seven days a week and activities associated with the Proposal would include:

- General maintenance of equipment
- Office and facility activities
- Waste removal
- Movement of people and cars
- Delivery of goods.

These operational activities are relatively minor and would not involve large scale ground disturbance, vegetation clearance or other actions that would potentially have a significant impact to biodiversity.

6.1 Vegetation

Operation of the Proposal is unlikely to impact any vegetation, including threatened flora species, threatened ecological communities, vegetation removal or groundwater dependent ecosystems. Other operational activities such as people and car movement are anticipated to occur along designed roads within the precinct, any trampling or disruption to surrounding vegetation is thus unlikely to occur.

6.2 Fauna

6.2.1 Threatened fauna

No threatened fauna were identified in the study area and it is not anticipated that operation of the Proposal would attract any to the site.

6.2.2 Habitat and wildlife connectivity

Operation of the facility is not anticipated to significantly increase or reduce habitat and wildlife connectivity due to the highly modified, urban and industrial context. However, urbanised and highly adaptable fauna such as birds and lizards may return to the site once construction impacts have concluded. The facility may provide habitat opportunity for birds to roost or rest on top of the building.

Indirect impacts to vegetation along riparian corridors and the waterways may arise from incorrect waste and waste water handling procedures. Water and waste management plans for the operational phase of the Proposal would be implemented with appropriate measures to avoid and mitigate this risk. Given

these measures, the potential for impact to habitat and wildlife connectivity is considered low.

6.2.3 Injury and mortality

Injury and mortality to wildlife is considered low during the Proposal's operational phase due to the anticipated dispersion of resident fauna during construction. Any returning wildlife would be highly adapted to urbanisation and possibly already aware of the risks of people and traffic movement. Thus, injury and mortality to fauna during the operation phase is unlikely to have a significant effect on biodiversity.

6.3 Invasive flora and fauna

Given the design of the Proposal, where the building boundaries go up to the edge of the site boundary, it is unlikely that exotic flora species, opportunistic weed species, pests and pathogens would have an impact on biodiversity during the Proposal's operation. Plant selection in landscaping works should include appropriate, locally occurring native species and avoid those that have the potential to be invasive.

6.4 Indirect impacts

Indirect impacts due to operation of the Proposal may include cumulative impacts from existing and future surrounding development, second and third order impacts and changing environmental conditions due to climate change.

Cumulative impacts to biodiversity are likely to occur due to the highly industrialised urban context along South Creek. South Creek flows north and eventually joins into the Hawkesbury-Nepean river which flows west, then south along the edge of the Blue Mountains. The Mamre South Precinct and the Aereotropolis are anticipated to undergo construction and become highly urbanised places in the future. Thus, cumulative effects from industry is to be avoided as habitat and biodiversity in the north, west and south would potentially be affected. Thus, robust water management plans in the whole Penrith City Council region would be needed to avoid these cumulative effects.

Eastern and southern Australia is projected to experience an increase in intense, short duration, heavy rainfall events which is often the cause of flash flooding (CSIRO & BOM, 2020). As the Proposal is located close to South Creek, its stormwater pond and water treatment plant could spill and leak into the waterway and VRZ, leading to indirect impacts to habitat and biodiversity in the waterway and downstream. Safety measures would be implemented in the water management plan to avoid and mitigate this risk.

It is also anticipated that there would be an increase in fire weather days and a longer fire season in the next two decades (CSIRO BOM, 2020). As the Proposal would store a large amount of fuel load for back up diesel generators, any leak of fuel outside the building or any fire breach into the building during a fire event

would potentially have serious environmental impacts. A stringent bushfire mitigation plan and building fire plan would be implemented to prevent and manage this risk.

Indirect impacts such as reduced foraging habitat may impact some mobile species with large ranges such as birds and bats. However, considering the abundance of similar vegetation types in the wider area, the indirect impacts of the operation of the Proposal to fauna is negligible.

7 Environmental management measures

Table 3 Environmental management measures for biodiversity impacts

Impacts	Mitigation	Responsibility	Timing
Injury and mortality to fauna, indirect construction impacts to habitat	Construction Environmental Management Plan (CEMP) spanning pre-, during and post- construction phases. Pre-clearance protocols and fauna management protocols will be included to avoid and mitigate any potential harm or mortality (Ecoplanning, Section 6.3). The CEMP will follow best practice protocols.	Construction contractor	Pre-construction and construction
Injury or mortality to fauna	Fauna Management Plan will be included in the CEMP.	Construction contractor	Pre-construction and construction
Injury or mortality to fauna	Pre-clearance protocols will be included in the CEMP.	Construction contractor	Pre-construction and construction
If a threatened species is discovered on the Subject Site	Unexpected Find Plan will be implemented which should include: • Stop work immediately • Notify the environmental manager of the find • Determine appropriate mitigation measures with the environmental manager • Handling of fauna to be conducted by licenced or experienced persons in line with relevant guidelines • Update biodiversity offset requirements (if needed).	Construction contractor	Pre-construction and construction
Introduction or dispersion of weeds and pathogens	Machinery and boots will be checked and/or cleaned to ensure organic material containing weeds, seeds or potential pathogens would not be introduced to the Subject Site or moved outside of the Site.	Construction contractor	Pre-construction and construction

Impacts	Mitigation	Responsibility	Timing
Incorrect handling and disposal of waste and waste water if these get into South Creek and habitats downstream of South Creek	CEMP, water and waste management plans (from the water and waste chapters)	Construction contractor, Client	Construction and operation
Fuel leak, increasing bushfire risk	Bushfire Safety Plan	Client	Operation

8 Summary of residual impacts

This section provides a summary of the construction and operational risks both pre-mitigation and any residual impacts remaining after the implementation of the management measures describe in Section 7. Pre-mitigation and residual impacts are summarised in Table 4.

Table 4 Summary of pre-mitigation and residual impacts

Potential pre-mitigation adverse impact	Relevant management measures	Potential residual impact after implementation of management measures	Comment on how any residual impacts would be managed
Construction			
GDEs and other habitats may be indirectly impacted by incorrect handling and disposal of waste and waste water if these get into South Creek and habitats downstream of South Creek.	CEMP, water and waste management plans (from the water and waste chapters)	Reduced potential for waste and waste water to enter waterway. In large storms or flash flooding, waste and waste water may still enter the creek system.	Stop any activities that are making it worse/contributing to it. Tell the environmental manager. Determine appropriate environmental mitigation strategies.
Less mobile fauna species may not move away fast enough from construction machinery and result in possible injury or mortality.	CEMP and Fauna Management Plan	Reduced potential for fauna to be injured or harmed.	Tell the environmental manager. Determine appropriate environmental mitigation strategies.
Effects of construction noise, vibration, lighting and movement of people and machinery to nocturnal and diurnal birds, bats and other fauna.	CEMP	Reduced potential for fauna to be impacted.	Tell the environmental manager. Determine appropriate environmental mitigation strategies.
Operation			
Stormwater pond and water treatment plant spill or leak into South Creek and the VRZ, impacting habitat and biodiversity in the waterway and downstream.	Safety measures would be implemented in the	Reduced potential for waste and waste water to enter waterway. In large storms or flash	Determine appropriate environmental mitigation strategies.

Potential pre-mitigation adverse impact	Relevant management measures	Potential residual impact after implementation of management measures	Comment on how any residual impacts would be managed
	water management plan to avoid and mitigate this risk	flooding, waste and waste water may still enter the creek system.	
Fuel leak or fire breach during a fire event.	Bushfire Management Plan	Reduced potential for fuel leak to exacerbate a bushfire.	Determine appropriate environmental mitigation strategies.

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