APPENDIX H – Biodiversity Management Sub-Plan

Biodiversity Management Sub Plan

New Primary School - Gregory Hills

20231436

26 May 2023

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Biodiversity Management Sub Plan

New Primary School - Gregory Hills

Kleinfelder Project: 20231436

Prepared for:
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1.0	For Client Review	26 May 2023	Cassandra Bugir	Jake Brown	Darren Holloway
2.0	Final	29 May 2023	Jake Brown	Cassandra Bugir	Dallas Milburn/ Rob Townsend

1 INTRODUCTION

1.1 PURPOSE AND OBJECTIVES

This Biodiversity Management Sub Plan applies to the new Gregory Hills Public School approved under SSD-41306367 (the consent) on 18 May 2023, and specifically meets the requirements of Conditions B13 and B20 as detailed below.

This biodiversity management sub plan forms part of the construction environmental management plan (CEMP). The purpose of this sub-plan is to describe how impacts on flora and fauna associated with the project will be managed during the construction phase of the project. The project's potential impacts on flora and fauna have been detailed in the Ecological Assessment Report prepared by Kleinfelder. This sub-plan identifies mitigation and management measures to be implemented prior to and during the construction phase of the development to minimise any potential impacts on biodiversity, as part of the project's CEMP.

The objectives of this sub-plan include:

- Ensure biodiversity mitigation and management measures are implemented during the construction phase to avoid, minimise and manage any potential adverse impacts to flora and fauna within and adjacent to the Development Site.
- Ensure appropriate biodiversity measures are implemented to address the relevant Conditions of Consent.
- Ensure appropriate biodiversity measures are implemented to comply with relevant legislative requirements.

1.2 CONDITIONS OF CONSENT

This biodiversity management sub-plan has considered the following conditions as required by the consent:

- Condition B13

  B13. Prior to the commencement of any construction, the Applicant must submit a Construction Environmental Management Plan (CEMP) to the Certifier and provide a copy to the Planning Secretary. The CEMP must include, but not be limited to, the following:

  (a) Details of:
  (i) hours of work;
  (ii) 24-hour contact details of site manager;
  (iii) management of dust and odour to protect the amenity of the neighbourhood;
  (iv) external lighting in compliance with AS 4282-2019 Control of the obtrusive effects of outdoor lighting;
  (v) community consultation and complaints handling as set out in the Community Communication Strategy required by condition B9;

  (b) an unexpected finds protocol for contamination and associated communications procedure; procedure to ensure that potentially contaminated material is appropriately managed;

  (c) an unexpected finds protocol for Aboriginal and non-Aboriginal heritage and associated communications procedure;

  (d) Construction Traffic and Pedestrian Management Sub-Plan

  (e) Construction Noise and Vibration Management Sub-Plan

  (f) Construction Waste Management Sub-Plan

  (g) Construction Soil and Water Management Sub-Plan

  (h) Aboriginal Cultural Heritage Management Sub-Plan

  (i) Biodiversity Management Sub-Plan

  Construction Flood Emergency Management Plan

- Condition B20

B20. The Biodiversity Management Sub-Plan (BMSP) must address, but not be limited to, the following:

(a) be prepared by a suitably qualified and experienced person/s;

(b) identify areas of land where impacts on biodiversity are to be avoided as outlined in the New Primary School – Gregory Hills Ecological Assessment Report prepared by Kleinfelder and dated 20 February 2023 and set out how these areas will be protected from construction impacts;

(c) set out the measures identified in the New Primary School – Gregory Hills Ecological Assessment Report prepared by Kleinfelder and dated 20 February 2023 to minimise, mitigate and manage impacts on biodiversity including timing and responsibility for delivery of the measures.

(d) installation of Bushland Protection Fencing as required by condition B27 a-f

(e) engagement of a qualified ecologist as required by conditions B22 and B23; and

(f) a protocol for unexpected finds of threatened species as required by condition C20 a-c.

1.3 Background

Kleinfelder prepared an Ecological Assessment Report for the Gregory Hills Primary School (GHPS) during the application for the consent. The proposed GHPS includes the construction and operation of a new primary school comprising 44 learning spaces, four support learning spaces, and new communal hall, library, administrative facilities, amenities, building services, canteen, outside school hours care (OSHC) and outdoor play areas including new sport courts. The proposal also includes 60 onsite carparking spaces, dedicated bicycle and scooter parking, three kiss and drop for Supported Learning Students (SLS), tree removal and landscape works, signage, fencing, and infrastructure works.

1.4 Conditions Satisfaction Table

The table below represents that this report has addressed the condition requirements for this Biodiversity Management Sub-Plan report.

Table 1: Conditions Satisfaction Table

Condition	Condition Requirement		Document / Sub-Plan Reference
B20	**Biodiversity Management Sub-Plan**		
	The Biodiversity Management Sub-Plan (BMSP) must address, but not be limited to, the following:		
	(a)	be prepared by a suitably qualified and experienced person/s.	Appendix A
	(b)	identify areas of land where impacts on biodiversity are to be avoided as outlined in the New Primary School – Gregory Hills Ecological Assessment Report prepared by Kleinfelder and dated 20 February 2023 and set out how these areas will be protected from construction impacts.	Pg 8 Table 3
	(c)	set out the measures identified in the New Primary School – Gregory Hills Ecological Assessment Report prepared by Kleinfelder and dated 20 February 2023 to minimise, mitigate and manage impacts on biodiversity including timing and responsibility for delivery of the measures.	Table 3
	(d)	installation of Bushland Protection Fencing as required by condition B27 a-f	Table 3 and Section 3
	(e)	engagement of a qualified ecologist as required by conditions B22 and B23	Appendix A

Condition	Condition Requirement		Document / Sub-Plan Reference
	(f)	a protocol for unexpected finds of threatened species as required by condition C20 a-c	Section 3.1.1

1.5 Site Description

The site is located within the Camden Local Government Area and is within the Turner Road Precinct of the South-West Growth Centre in Dharawal Country.

The site has an area of approximately 2.926ha (by Deposited Plan). This will be reduced to 2.907ha under approved DA2022/742/1 once Long Reef Circuit has been widened.

Topography is minimal with a fall from the south-east corner (RL116.5) to the north- west corner (RL113).

The site is primarily vacant land except for an existing group of trees in the southwest corner of the site that pre-date the subdivision and development of the precinct. There is also an existing electrical substation located on the south-eastern boundary. There are easements of varying widths located to the northern boundary (Gregory Hills Drive) identified for drainage.

Table 2 below details the landscape features of the Development Site.

Figure 1: Vegetation Zones and Project Boundaries

Table 2: Landscape Features relevant to the Development Site.

Landscape Feature	Development Site
IBRA Region	**Sydney Basin -** The Development Site occurs centrally within the Sydney Basin Bioregion.
IBRA Sub Region	**Cumberland -** The Development Site occurs within the Cumberland IBRA Sub Region.
Local Government Area (LGA)	**Camden Council**
Rivers, streams and estuaries	A mapped watercourse occurs ~ 0.25km to the north (South Creek). There is also a riparian corridor next to the Development Site (**Figure 1**), however this exists as a shallow, grassed drainage line.
Wetlands	The Development Site is not in proximity to any Wetlands of Importance or RAMSAR wetlands.
Connectivity of different areas of habitat	The Development Site is not connected to any larger areas of vegetation as it is isolated by roads, residential dwellings and agricultural land (**Figure 1**).
Areas of geological significance and soil hazard features	The Development Site is not located within an area identified as having any particular geological significance. No mapping was identified that would indicate the site contains any soil hazard features. The only soil hazard is the salinity content of the soil.
Areas of outstanding biodiversity value	There are no areas of outstanding biodiversity value mapped within the Development Site.

As a result of the Ecological Assessment Report (Kleinfelder 2023) four vegetation zones were identified within the Development Site (**Figure 1**), which includes:

- ***Remnant patch of Native Woodland*** – Comprising of a stand of native species including: *Eucalyptus tereticornis* (Forest Red Gum), with a primarily exotic, managed groundcover of; *Paspalum dilatatum* (Paspalum) and *Ehrharta erecta* (Panic Veldtgrass). A mix of native grasses and herbs persist within this vegetation zone, including *Microlaena stipoides* (Weeping Grass), *Einadia hastata* (Berry Saltbush), and *Dichondra repens* (Kidney Weed).
- ***Exotic Grassland (managed)*** – Characterised by managed lawns of *Cenchrus clandestinus* (Kikuyu Grass) and *Bromus catharticus* (Prairie Grass), clover and dandelion.
- ***Planted Native/Exotic Street trees –*** Comprising of an upper canopy of exotic and native young saplings (including: *Cupaniopsis anacardioides)* planted with an exotic ground cover of *Cenchrus clandestinus* (Kikuyu Grass) and *Bromus catharticus* (Prairie Grass), clover and dandelion.
- ***Revegetated Riparian Corridor*** – Comprising of a mix of planted native species including: *Casuarina glauca* (Swamp Oak), *Eucalyptus tereticornis* (Forest Red Gum), *Lomandra longifolia* (Spiny-headed Mat-rush), *Dianella caerulea* (Blue Flax-lily), *Themeda triandra* (Kangaroo Grass), and *Typha orientalis* (Broadleaf Cumbungi) in wetter areas of the corridor.

The Remnant patch of Native Woodland within the Development Site was assigned to a *PCT 3320- Cumberland Shale Plains Woodland*. In accordance with Table 28 of the BAM (DPIE, 2020a) the removal of the eight dead/diseased trees from the Development Site does not generate ecosystem credits.

A full list of flora species identified within the Development Site is detailed in the Ecological Assessment Report (Kleinfelder 2023).

1.6 LEGISLATION AND GUIDELINES

The Ecological Assessment Report was undertaken in accordance with and/or in consideration of the following Acts and Policies:

- **Commonwealth:**
  - *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- **State (NSW):**
  - *Biodiversity Assessment Method* (BAM) (DPIE 2020f).
  - *Biodiversity Conservation Act 2016* (NSW) (BC Act).
  - *Biodiversity Conservation Regulation 2017* (NSW) (BC Regulation).
  - *Biosecurity Act 2015* (NSW).
  - *Coastal Management Act 2016*.
  - *Local Land Services Act 2013* (LLS Act)
  - *Environmental Planning and Assessment Act 1979* (NSW) (EP&A Act).
  - *Pesticides Act 1999.*
  - *State Environmental Planning Policy (Koala Habitat Protection) 2020* (NSW) (Koala SEPP).
  - *State Environmental Planning Policy (Precincts—Western Parkland City) 2021.*
  - *Water Management Act 2000* (NSW) (WM Act).
- **Local:**
  - Camden Local Environmental Plan 2010.
  - Camden Development Control Plan 2019.
  - Turner Road Precinct Development Control Plan 2007.

1.6.1 Environment Protection and Biodiversity Conservation Act 1999 (EPBC Act)

Under the EPBC Act, an approval is required for actions that are likely to have a significant impact on Matters of National Environmental Significance (MNES). An action includes a project, development, undertaking, activity or series of activities. When a person proposes to take an action they believe may need approval under the EPBC Act, they must refer the proposal to the Australian Government Minister for the Environment.

Of the nine MNES listed under the Act, those considered relevant to the Development Site are potential impacts on listed threatened species or communities and potential impacts on migratory species listed under international agreements. The need for site-by-site approvals under the EPBC Act for the approved actions is no longer required if the actions are consistent with the endorsed Program. Any proposal on land that is certified under the *Growth Centres Biodiversity Certification* is in accordance with the endorsed program. As such, as the proposed development occurs on land that is certified under the *Southwest Growth Centre Biodiversity Certification*, the actions are in accordance with the endorsed programme and approval under the EPBC Act is not required. One EPBC Act listed threatened fauna species (Grey-headed Flying-fox [*Pteropus poliocephalus*]) was assessed to have a Moderate likelihood of occurrence within the Development Site as a foraging site. It was determined that impacts to MNES are unlikely as no foraging trees will be removed. An EPBC referral to the Commonwealth Minister for the Environment is not recommended.

1.6.2 Biodiversity Conservation Act 2016 (NSW)

The NSW *Biodiversity Conservation Act 2016* (BC Act), the NSW *Biodiversity Conservation Regulation 2017* (BC Regulation) and amendments to the *NSW Local Land Services Act 2013* (LLS Act) commenced on 25 August 2017. The legislation aims to “maintain a healthy, productive and resilient environment for the greatest well-being of the community, now and into the future, consistent with the principles of ecologically sustainable development”. The BC Act repeals several pre-existing Acts, most notably the *NSW Threatened Species Conservation Act 1995* (TSC), the *NSW Nature Conservation Trust Act 2001* and the *NSW Native Vegetation Act 2003*.

The Development Site is subject to certification under the *Growth Centres Biodiversity Certification* the proposed development must be compliant with the provisions of the Certification, and Relevant Biodiversity Measures (RBMs) listed in the Order to confer Biodiversity Certification on the State Environmental Planning Policy (SEPP) (Sydney Region Growth Centres) 2006, conferred under the (now repealed) *TSC Act 1995*.

The proposed development is unlikely to have a significant impact on any threatened species, as the area to be modified is predominantly exotic grassland (managed). Remnant native vegetation (*Eucalyptus tereticornis* stand) will be retained except for 8 dead/diseased trees to be removed (per arborist's report). The proposed development will result in direct impacts to 2.72 ha of Exotic Grassland (Vegetation Zone 2), 0.05 ha of the groundcover within Vegetation Zone 1, and 0.01 ha of Planted Native/Exotic Trees along the road verge. The proposed development will not result in impacts to native vegetation or important fauna habitat. The Development Site is considered potential marginal foraging habitat for only highly mobile local threatened fauna species listed under the NSW BC Act and Commonwealth's EPBC Act, such as the Grey-headed Flying-fox (*Pteropus poliocephalus*) (Vulnerable [BC and EPBC Act]) with impacts to these species were not considered significant.

1.6.3 Koala SEPP 2020

The proposed Development Site is in Camden Council LGA, which is not listed in Schedule 1 of the Koala SEPP 2020 and there are no approved KPoM's for the LGA. Therefore, the Koala SEPP 2020 does not apply to the GHPS Development.

1.6.4 Biosecurity Act 2015 (NSW)

Under the Biosecurity Act 2015 (NSW) all plants are regulated with a general biosecurity duty "to prevent, eliminate or minimise any biosecurity risk they may pose. Any person who deals with any plant, who knows (or ought to know) of any biosecurity risk, has a duty to ensure the risk is prevented, eliminated or minimised, so far as is reasonably practicable." Under the Act, a biosecurity impact "is an adverse effect on the economy, environment, or the community that arises, or has the potential to arise, from a biosecurity matter." Species which require control prior to and post construction of the Project to ensure they are not spread due to works, include the high threat species *Senecio madagascariensis* (Fireweed) and *Lycium ferocissimum* (African Boxthorn).

1.6.5 *Coastal Management Act 2016*

The Coastal Management SEPP gives effect to the objectives of the *Coastal Management Act 2016* from a land use planning perspective, by specifying how development proposals are to be assessed if they fall within the coastal zone. It defines the four coastal management areas in the Act through detailed mapping and specifies assessment criteria that are tailored for each coastal management area. Councils and other consent authorities must apply these criteria when assessing proposals for development that fall within one or more of the mapped areas. No Areas of Coastal Wetland, mapped under the Coastal Management SEPP, occur within the Development Site.

1.6.6 *Pesticides Act 1999*

The *Pesticides Act 1999* promotes and encourages the protection of human health, environment and property in the use of pesticides. It is an offence under this Act to harm or damage a person or property, or a non-targeted animal or plant. In particular it is an offence to use a pesticide that harms a threatened or protected plant or animal. Removal and treatment of weeds on the Development Site should be undertaken in accordance with the requirements of this Act which includes ensuring compliance with a label or permit on, or accompanying, a pesticide.

1.6.7 Water Management Act 2000

Mitigation measures to reduce the potential of indirect impacts to the watercourse and broader Riparian Corridor are detailed in Table 3.

2 BIODIVERSITY VALUES

Flora and fauna field surveys were conducted by Kleinfelder on 20 June 2022. These surveys were undertaken to determine the likelihood of occurrence of threatened flora and fauna species within the Development Site.

2.1 VEGETATION

As stated above in Section 1, four vegetation zones were identified within the Development Site, these include:

- Remnant Woodland.
- Exotic Grassland (Managed).
- Planted Native/Exotic Street Trees.
- Revegetated Riparian Corridor.

2.2 FLORA

2.2.1 Habitat Suitability

The Development Site is characterised by managed exotic grassland (i.e. lawns and fallow field), parks, stand of native *Eucalyptus*, and planted native and exotic trees. These areas are subject to significant disturbance by their regular use by the public (i.e. high pedestrian traffic, use of sporting fields and open space), and continual maintenance of the vegetated areas (i.e. mowing of lawns and garden maintenance). Habitat for threatened flora species was considered to be generally absent within the Development Site.

2.2.2 Flora Survey Results

During site inspection (20 June 2022) a list of flora species present within the Development Site were analysed, whilst targeted searches were completed for threatened flora species known to occur within the locality. Impacts to these species were not considered significant as they are not proposed for clearing. There are however a total of eight trees proposed to be removed from the site as part of this development. The trees are permissible to be removed in line with the DCP and Biodiversity and Conservation SEPP whereby these trees represent a safety risk as they are dead or have a high risk of falling limbs. Existing information on the flora and fauna of the Development Site and the locality, including relevant threatened biota, was obtained from Regional Vegetation Mapping, and BioNet Atlas of NSW Wildlife (DPE, 2022a) for previous records of threatened species, populations and ecological communities (as listed under the BC Act) within a 5 km radius of the Development Site. No threatened flora species were recorded within the Development Site.

2.3 FAUNA

An assessment of fauna habitat within the Development Site determined that the site contained three bird nests and a riparian corridor, yet no other important habitat features (i.e. hollow-bearing trees, waterbodies, leaf litter, fallen timber/hollow logs, etc.). The site is also characterised by limited vegetative structural complexity with a small number of mature remnant *Eucalyptus tereticornis* trees and managed exotic groundcover. It was therefore determined that the site likely only constitutes foraging habitat for common local species and highly mobile threatened species, albeit part of a broader habitat range within the locality. One threatened fauna species (Grey-headed Flying-fox [*Pteropus poliocephalus]*) was recorded within the Development Site.

3 BIODIVERSITY MANAGEMENT

3.1 OVERVIEW

Management measures include the standard environmental safeguards from the SINSW Planning Compliance Team and the Ecological Assessment Report (Kleinfelder 2023) which contains mitigation and management measures for biodiversity values (Table 3 below).

Table 3: Mitigation and management measures for the development

Impact	Action and Outcome	Responsibility	Timing
Direct Impact/prescribed Impact			
Clearing of native vegetation	▪ Avoid and minimise clearing impacts to native vegetation where possible. ▪ Clearly delineate the boundaries of the project footprint to prevent any unnecessary clearing beyond its extent. This includes physical demarcation of the extent of the proposed APZs along the boundary with retained vegetation. ▪ Ensure vehicle and equipment parking areas and stockpile areas are identified and positioned to avoid areas containing ecological value. Stockpiling must not occur within, or in proximity (5m) to, areas of native vegetation retained under the proposed development. ▪ Appropriate signage such as 'no go zone' or 'environmental protection area' should be installed surrounding the area of retained native vegetation. ▪ Clearly identify and communicate the location of any 'no go zones' in site inductions. ▪ Tree protection measures currently implemented include temporary fencing to protect retained trees adjacent to the Development Site (the Cumberland Woodland Patch and Riparian Corridor) with appropriate signage. Tree protection measures should consider allowances for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009). ▪ Where required to complete the proposed development (e.g. new carpark construction), existing TPZ measures will be modified under the supervision of the project Arborist to ensure adequate protection is maintained in accordance with AS4970-2009. ▪ The Arborist report (refer 9622-[4] prepared by Raintree Consulting) nominates ongoing general tree protection measures The report also nominates hold points which will be adhered to.	Construction site manager and Arborist	Prior to and during vegetation clearing
Removal of vegetation resulting in fauna injury and mortality	▪ Appropriate exclusion fencing around any retained trees and vegetation to be retained adjacent to the Development Site should be erected, considering allowance for Tree Protection Zones in accordance with AS4970 (Standards Australia, 2009).	Construction site manager and suitably qualified/trained fauna handler	Prior to and during tree clearing

Impact	Action and Outcome	Responsibility	Timing
Impacts to surface and groundwater quality and quantity due to sediment run-off and/or contaminant runoff into adjacent watercourses	▪ Source controls such as sediment fences, mulching and jute matting will be utilised where appropriate. ▪ Site-based vehicles and plant equipment will carry spill kits. ▪ Erosion and sediment control will be required for the development in accordance with Managing Urban Stormwater: Soils and Construction (Landcom, 2004) prior to commencement of construction. ▪ Limit the use of pesticides in the project footprint where possible to avoid contamination of nearby watercourses/wetland areas.	Construction site manager	During vegetation clearing, construction and operation
Vehicle collision with fauna	▪ Speed limits within the Development Site should be limited to 40 km/hr during construction. ▪ The Development Site should be separated from vegetated areas throughout the construction and operational phases of the development. This separation should be achieved through physical barriers including fencing and appropriate signage.	Construction site manager	During construction and operation
Indirect Impact			
Transfer of weeds and pathogens to and from site.	▪ The fungal pathogens *Phytophora cinnamomi* and Myrtle Rust (*Puccinia psidii*) are known to occur in the Camden LGA, however, it is unknown if they occur within the Development Site. These pathogens can have devastating impacts on native plant communities and inhabiting fauna if not properly managed. ▪ All plant and equipment brought on to site should be assessed (or declared) as clean of biological contamination. ▪ Ensure soil seed material is not transferred.	Construction site manager	During vegetation clearing, construction and operation

Impact	Action and Outcome	Responsibility	Timing
Noise, vibration, lighting, waste and air pollution impacts to adjacent sensitive habitat areas	▪ Increased human activity (from workers and traffic levels) directly adjacent to sensitive habitat areas may cause disturbance to flora and fauna species in adjoining habitat. ▪ Impacts from construction and operational activities, such as disturbance to an animal's normal behaviour patterns due to noise, vibration, lighting or dust may cause areas of previously suitable habitat to become sub-optimal and may cause fauna species to vacate areas previously suitable. ▪ Measures to mitigate impacts on flora and fauna from noise, vibration, waste, light and air pollution such as: ▪ Enforce 'carry-in, carry-out' policy regarding rubbish and waste materials generated on-site during construction to avoid waste materials entering adjacent vegetation. ▪ Restriction of public access and associated impacts from domestic pets, waste dumping and damage to adjoining vegetation must be enforced pre, during and post construction. ▪ Levels of lighting within the site will be reduced to a minimal level to reduce any adverse effects upon the essential behavioural patterns of light-sensitive fauna. ▪ Lighting should comply with Australian Standard AS4282 (INT) 1997 – Control of Obtrusive Effects of Outdoor Lighting. ▪ Noise minimisation practices in accordance with DPE recommendations. ▪ Dust control measures such as covering loads where required; amending operations under excessive wind conditions including ceasing operations if required; use of water tankers as required, to control dust; rehabilitation through vegetation of surfaces to be left unsealed; and truck wheel washes or other dust removal measures.	Construction site manager	During construction and operation

3.1.1 Unexpected Finds

In addition to the above measures, unexpected finds of any threatened flora or fauna species shall be recorded and, the location it was found and the location it was translocated to, taken with a GPS. Appropriate actions required will be discussed between the construction contractor and the project ecologist and include contact and reporting to the NSW Department of Environment. An Unexpected Finds register shall be kept by the contractor.

3.1.2 Permits and Approvals

If any unexpected finds occur on the Development Site during the construction phase the project ecologist should be engaged to determine whether any additional permits, licenses or approvals are required.

3.1.3 Monitoring Program

Due to the nature of the eight dead/diseased trees to be removed, a project ecologist should be engaged by the contractor. The Project Ecologist will compile a report at completion identifying compliance with vegetation removal during construction (i.e. no excess vegetation has been removed) moved at the completion of the project. It is considered that due to the nature of the vegetation to be removed that no regular on-site monitoring is required unless an unexpected find occurs.

3.1.4 *Non-Conformances*

Any non-conformances (i.e. not meeting legislative requirements) will have corrective and/or preventative actions identified and implemented. Evidence is to be maintained for non-conformances.

3.1.5 *Plan Updates*

During construction works should any processes, construction work, unexpected finds, etc. result in a change to the development, then a review of this sub-plan should be undertaken to identify whether this sub-plan requires updating.

4 CONCLUSIONS

This BMSP has been prepared for the Gregory Hill Primary School site approved under SSD-41306367 (the consent) in May 2023, and specifically meets the requirements of Conditions B13 and B20. This biodiversity management sub plan forms part of the construction environmental management plan (CEMP).

The preparation of this sub-plan builds upon the recommendations of the Ecological Assessment Report included survey efforts targeting threatened flora and fauna species known to occur within the locality. Survey findings have concluded that there is only one threatened fauna species (Grey-headed Flying-fox [*Pteropus poliocephalus*]) recorded foraging within the Development Site. Relevant management measures are outlined within Table 3 above in this sub-plan to ensure the construction works continue to manage and mitigate any potential impacts on the site.

As part of the works associated with this project, there are a total of eight trees that are to be removed from site due to being dead or high risk of falling limbs. These trees are shown on Figure 1 of the Ecological Assessment Report and have been appropriately assessed by an arborist in accordance with chapter 2.4 3(b) of the Camden Council DCP and in accordance with chapter two of the Biodiversity and Conservation SEPP. In the case of these trees, when confirmed and adequately assessed by a qualified arborist the DCP does not apply. There is also no requirement to assess the removal of these trees in accordance with the biocertification order on a certified site such as the Development Site. In addition, the BC Act is not triggered by their removal.

As the proposed development occurs on land that is certified under the Growth Centres Biodiversity Certification and will not result in the removal of native vegetation, important fauna habitat or impact threatened species (as listed under the BC Act and EPBC Act) the development is considered compliant with the RBMs listed in the Order. Furthermore, the proposed actions are in accordance with the Relevant Biodiversity Measures detailed within the Certification Order, as such approval under the EPBC Act is not required.

5 REFERENCES

Department of Planning, Industry and Environment (DPIE) (2020a). *BioNet Atlas of NSW*. Available at: http://www.bionet.nsw.gov.au/

Department of Planning, Industry and Environment (DPIE) (2020b). *BioNet Vegetation Classification.* Available at: https://www.environment.nsw.gov.au/research/Visclassification.htm

Department of Planning, Industry and Environment (DPIE) (2020c). *BioNet Threatened Biodiversity Data Collection*. Available at: https://www.environment.nsw.gov.au/threatenedSpeciesApp/

Department of Planning, Industry and Environment (DPIE) (2020d). *Threatened Biodiversity Profile Search*. Available at: https://www.environment.nsw.gov.au/threatenedspeciesapp/

Department of Planning, Industry and Environment (DPIE) (2020e). *NSW Threatened Species Scientific Committee – Final Determinations*. Available at: https://www.environment.nsw.gov.au/topics/animals-and-plants/threatened-species/nsw-threatened-species-scientific-committee/determinations/final-determinations

Department of Planning, Industry and Environment (DPIE) (2020f). *Biodiversity Assessment Method*. Published by the Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Department of Planning, Industry and Environment (DPIE) (2020h). *Surveying threatened plants and their habitats - NSW survey guide for the Biodiversity Assessment Method*. Published by Environment, Energy and Science, Department of Planning, Industry and Environment, Parramatta, NSW.

Kleinfelder (2023) New Primary School – Gregory Hills Ecological Assessment Report. Report to School Infrastructure NSW.

APPENDIX A: KLEINFELDER PERSONNEL

Jake Brown

Environmental Advisor

Jake is an environmental advisor with 6 years experience. He has undertaken a range of environmental projects across NSW, ACT and Qld. Ecology experience includes work as a Fauna Spotter Catcher, threatened flora and fauna surveys, Flora and Fauna assessments, plant identification, diurnal and nocturnal opportunistic surveys. He has assisted on BAM plots and work for EIS such as stag watching. More broadly Jake has also worked on Reviews of Environmental Factors (REFs) and Environmental Impact Statements (EIS), compliance reporting and Management Plans.

Education

Master of Environmental Management and Sustainability

Graduate Certificate of Archaeology

Bachelor of Social Science (Hons)

Environmental Management Systems (Auditing)

AHCFAU303 – Respond to Wildlife Emergences

Project Experience Examples

Recent Projects

- Dunloe Sands Pottsville NSW. Rehabilitation and Revegetation Management Plan.
- Newcastle Inner City Bypass Fauna Spotter Catcher
- Liddell Power station EIS - Threatened Flora and Fauna surveys, Stag Watches and
- Bayswater Power station pipeline project – Fauna Spotter Catcher

Previous Projects

- Reddens Quarry Biodiversity Development Assessment Report Diurnal Survey
- Narromine Quarry Biodiversity Development Assessment Report BAM Plots and surveys
- Cessnock City Council Landslips Flora and Fauna Reports
- MidCoast Council Section 70 and 80 Branch Lane Flora and Fauna Reports
- Mittagong Rail Upgrade Koala SAT test for Flora and Fauna Report
- Residential Subdivision, Mount Hutton NSW. Statement of Environmental Effects.
- Residential Subdivision, Hawks Nest NSW. Statement of Environmental Effects.
- Bridge upgrade Weston NSW. Review of Environmental Effects, and GIS mapping.
- Bridge upgrade Laguna NSW. Review of Environmental Effects, Nocturnal Ecology survey, and GIS mapping.
- Service Station Dubbo NSW. Risk Screening Assessment (SEPP 33), GIS Mapping
- Service Station Scone NSW. Risk Screening Assessment (SEPP 33), GIS Mapping
- Service Station Williamtown NSW. Risk Screening Assessment (SEPP 33), GIS Mapping
- Power Station, Kangaroo Valley NSW. Cyanobacteria yearly compliance reporting.
- Minor works Review of Environmental Effects for upgrading a rest stop on the Kidman Way at Curraweena about 60 kms south of Bourke.
- Minor works Review of Environmental Effects for upgrading the intersection of HW5 Great Western Highway and Rankin Street at Bathurst.
- Review of Environmental Factors for the removal of vegetation for bushfire hazard reduction at five sites along the M7 Westlink in western Sydney.

- Minor works Review of Environmental Effects for the widening and strengthening of HW8 Barrier Highway East Musheroo between 129.192 and 137.669 kms west of Cobar.
- Minor works Review of Environmental Effects for the intersection of the Pacific Highway and Failford Road, Failford NSW
- Preliminary Environmental Investigation for the upgrade of MR217 and Dora Creek Road, Dora Creek NSW.
- Project Review of Environmental Factors for the replacement of a culvert on the - M1 Motorway at Kelley's Creek, Helensburgh NSW.
- Minor works Review of Environmental Effects for HW27 Golden Highway Bolaro rehabilitation 6.0 to 8.0 kms west of Dunedoo NSW.
- Project Review of Environmental Factors for the initial seal of HW21 Cobb Highway Springdale and Springdale South upgrades, between 48.272 kms and 58.222 kms north of Ivanhoe NSW.
- Minor works Review of Environmental Effects for the widening and rehabilitation of HW11 Oxley Highway between 4.1 and 9.8 kms west of Gilgandra NSW.
- Project Review of Environmental Factors for the initial seal of HW21 Cobb Highway Rosewood and Rosewood South upgrades, between 94.463 kms to 103.662 kms north of Ivanhoe NSW.
- Project Review of Environmental Factors for the initial seal of HW21 Cobb Highway Halfway Tree and Bushley upgrades, between 87.172 kms to 94.463 kms north of Ivanhoe NSW.
- Gravel pit Winton shire Qld. Aboriginal heritage assessment, operational management plan, ecological field recording, community and government consultation and GIS.
- Gravel pit Longreach region Qld. Aboriginal heritage assessment, operational management plan, community and government consultation and GIS.
- New land fill Barcaldine Qld. Aboriginal heritage consultation, EPL licencing, GIS.

Cassandra Bugir

Education

PhD in Conservation Science

MSc in Anthrozoology

BSc in Ecology and Evolutionary Biology

Training & Certifications

NSW White Card

First Aid Certification

Ecologist

Cassandra Bugir is a new Ecologist at Kleinfelder with over four years' previous experience in flora and fauna conservation. Previous projects have involved a variety of technical disciplines including surveying methods- anabat, camera trapping, capture-mark-release, visual surveys, and auditory surveys, reporting, public outreach/education, and fauna handling. Cassandra has developed a career emphasizing threatened terrestrial and aquatic fauna and their habitat requirements.

Project Experience

Cessnock City Council

- Vegetation and Fauna surveying and preparing Flora Fauna Reports for Flood and Landslips Recovery

University of Newcastle- Conservation Science Research Group

- ENVS 3001- Environmental Conservation in Watagans and Barrington Tops
    - Fauna trapping or capturing and handling Antechinus sp., Rats, various frog species, Skinks/Lizards including Goanna, Gliders, Owls and Goshawks, and Quolls for student education.
- Research assistant for Kooragang and Ash Island *Litoria aurea* study
    - Capturing of various species of frogs for surveys, swabbing (Chytrid), microchipping (recapture data), and biobanking (hormonal induction of genetic material and web punches).

Denver Zoo (Colorado, USA)

- Zookeeping
    - Handling and husbandry of various species of birds.
- Wildlife Caring
    - Caring and handling for squirrels, Foxes, Coyotes, Racoons, nonvenomous snakes, and various species of birds.

Education

Bachelor of Applied Science (Environmental)

Diploma of Marine Sciences

Training & Certifications

Approved Protected Plant Assessor (DES)

Fauna Spotter Catcher Accreditation - Respond to Wildlife Emergencies

Venomous Snake Handling Course

Defensive Driving and 4WD Accredited

NSW Order 43 Coal Medical

Qld Generic Coal Board Induction (S11)

Oil & Gas Industry Safety Induction

OH&S White Card

Working at Heights

Dallas Milburn

Client Account Manager & Senior Ecologist

Dallas Milburn is a Senior Ecologist with over fourteen years' experience in environmental assessment and management. Projects have ranged across Queensland and NSW and have involved a variety of technical disciplines across a wide range of market sectors including mining, oil and gas, infrastructure, development, Defence, and Local and State Government works.

Dallas has developed a strong understanding of Commonwealth and State legislation, regulatory drivers, and reporting. Additionally, terrestrial habitat quality assessments, significant impact assessment, biodiversity offsetting, threatened species, and feral animal and weed management. Additionally, Dallas has worked across a number of infrastructure projects with a focus on approvals and environmental compliance.

Project Experience

Project Manager and Senior Ecologist – Environmental Assessment Report – Greenvale Training Area, Department of Defence 2022

Kleinfelder were engaged by the Department of Defence, under the Australian Singapore Military Training Initiative (ASMTI), to assess and design a 350km firebreak around the 300,000ha proposed Greenvale Training Area (GVTA) in Northern Queensland.

An Ecological Assessment was undertaken by helicopter, along with Geotechnical Investigations, around the perimeter of the remote site which involved Traditional Owner engagement. Ecological surveys identified numerous Matters of National and State Environmental Significance, which were incorporated into an Environmental Assessment Report addressing all criteria recognised under the EPBC Act, an assessment of significance including risk evaluation and mitigation, and Self-Assessment regarding referral of the project to the Directorate of Environmental Planning, Assessment and Compliance (DEPAC) under the EPBC Act.

Geotechnical investigations identified unstable and dispersive soils throughout the project area along with the chance of Naturally Occurring Asbestos and Uranium, which was detailed in a Geotechnical Factual Report for the project. All information regarding ecology and geotechnical was fed into the design team responsible for developing the fire trail around the perimeter boundary. The project is ongoing and include novation to CPB Contractors for the Delivery Phase.

Project Manager and Senior Ecologist – AGL Macquarie Liddell Power Station Biodiversity Development Assessment Report, Liddell NSW 2022

Kleinfelder was engaged by AGL Macquarie to undertake a biodiversity assessment to support the decommissioning of the Liddell Power Station and development of a clean energy hub including solar energy and grid scale battery construction along with a hydrogen production facility. Kleinfelder undertook targeted surveys for threatened flora, fauna, and ecological communities to inform a Biodiversity Development Assessment Report to support the Development Application. The project also involved a Referral to the Department of Agriculture, Water, and Environment for potential impacts to Matters of National Environmental Significance.

As part of the broader project and Environmental Impact Statement, Kleinfelder are delivering a Detailed Site Assessment for Contamination on the site, along with Ecological and Heritage services.

Project Manager and Senior Ecologist – Environmental Assessment Report - Bruce Highway (Ten Mile Creek, Proserpine-Bowen), Transport and Main Roads 2020

Kleinfelder undertook an Environmental Assessment Report (EAR) for a civil infrastructure project to increase the safety and enhance the capacity of the existing carriageway.

The desktop and field surveys covered a 13km section of the Bruce Highway. The EAR analysed the water, soil and biodiversity of the project area. A desktop survey identified initial areas of historical and current concern, while field efforts were dedicated to verifying existing vegetation, soil types, wildlife presence/abundance.

The assessment found Federally listed ecosystems present onsite, Koala activity using efficient trace method techniques, and a population of *Eucalyptus raveretiana* (listed under the EPBC Act). An impact assessment was undertaken on all matters of significance, and strategies were recommended to mitigate environmental impact during construction works. A Self-Assessment found that, through effective avoidance and minimisation, the project would not result in a significant action and a referral to the Federal Minister was not required.

Project Manager and Senior Ecologist – Environmental Assessment Report for the Goorganga Wetland Overtaking Lanes Project, Transport and Main Roads 2019

An Environmental Assessment Report (EAR) was undertaken for the proposed construction of overtaking lanes along the Bruce Highway through the Goorganga Plains. The EAR considered the impacts, from the construction of the overtaking lanes, on the water, soils and ecology of the project area which was in proximity to high ecological significance wetlands and a wetland protection area. A desktop study determined the Matters of National Environmental Significance (MNES) and Matters of State Environmental Significance (MSES) that could be potentially impacted by the road construction. The desktop study was followed by a field survey to confirm / determine existing soil types, water quality, vegetation types and the fauna using habitat in the project area. The outcomes were that the impacts from construction of the overtaking would not be significant as long as the management plans to minimise those impacts were followed.

Project Manager and Senior Ecologist – Rolleston Open cut Expansion Project Ecological Offset Monitoring and Baseline Assessment for Phase 2 Offsets, Glencore 2018

Kleinfelder undertook ecological assessments of two offset areas for annual monitoring of established offset sites for Brigalow and Natural Grasslands TEC's. Habitat quality assessment BioCondition methodology was delivered along with additional condition assessments across 1000ha for condition of fences, weed distribution, pest animal impacts, biomass for grazing and bushfire mitigation. Additionally, Kleinfelder established 41 monitoring plots and conducted baseline assessment using the Guidelines for Terrestrial Quality Habitat Assessment (2017) for 24 separate State and Commonwealth offset matters. Matters included TEC's (Brigalow, Semi Evergreen Vine Thicket, Natural Grasslands, King Bluegrass, and Coolabah) and Threatened Species (Ornamental Snake, Black Breasted Quail, and Squatter Pigeon), Regional Ecosystems, watercourses, wetlands, and connectivity. Reporting analysed all offset polygon assessments areas for habitat condition, impacts from weed pest and erosion, biomass and threat of bushfire. Recommendations were developed that aligned with management objectives and completion criteria for offset matters.

Project Manager and Senior Ecologist – Lake Lindsay Ecological Assessment for an EPBC Advanced Offset, Anglo American 2018.

Kleinfelder undertook ecological equivalence assessments for 200ha of vegetation proposed as an advanced offset for Brigalow TEC. Methodology followed the Guidelines for Terrestrial Quality Habitat Assessment (2017) developed specifically for Qld offsets. Reporting detailed the results of the assessment and provided information including detailed recommendations to be included in a Biodiversity Offset Management Plan to put forward to State and Commonwealth Governments for as a part of the application to legally secure and have the offset approved.

Project Manager and Senior Ecologist – Hervey's Range Road Significant Impact Assessment, Department of Transport and Main Roads 2017.

Kleinfelder were engaged to undertake an Ecological assessment to survey for Hobson's Fine-line Slider, the Greater Glider, Yakka Skink, and the Koala, to identify potential impacts under the EPBC Act. Targeted fauna surveys were undertaken along with habitat condition assessments to ascertain the suitability and importance of the habitat to each specific species. Reporting considered the proposed impact to the site and whether there was any significant impact on the species or habitat critical to their survival. A Self-Assessment was undertaken to inform TMR whether the action should be considered significant; a referral was deemed a requirement under the assessment.

Rob Townsend

Associate Environmental Advisor / NSW Team Lead – Environmental Management, Approvals and Compliance

Rob is an environmental professional twelve years experience in both private sector consultancy and in government regulatory roles. This has resulted in specialist expertise in approvals, compliance and environmental management and broad experience across the mining, quarrying and oil and gas sectors within QLD, NSW, VIC and WA.

Having gained experience in performing for both proponents (QLD, NSW, WA) and regulators (QLD, VIC), Rob is well placed to understand a wide range of environmental approvals and compliance requirements. Effective regulator liaison, and associated efficient approvals is a particular strength.

Co-ordinating Environmental Impact Statements for large projects including State Significant Developments has seen Rob gain an excellent understanding across a range of disciplines including Ecology, Surface Water, Groundwater, Noise and Air Quality, along with designing and implementing community and stakeholder consultation programs.

Having begun his career as a geoscientist, Rob understands the day to day on-site requirements of a project and so is well informed to provide effective management of project compliance.

Education

Master of Science - Geoscience

Bachelor of Science - Ecology

Training

First Aid

Class C Driver's Licence

Legal One Authorised Officer Training (Legislation, Planning, Assessment and Compliance)

Behavioural Based Safety Facilitation

Project Experience Examples

Holcim NSW Environment Manager (Acting/Secondment)

Rob has acted as NSW State Environmental Manager for Holcim over 6 months. During this time Rob has been responsible for managing environmental compliance, planning and approvals across Holcim's quarry sites and concrete plants throughout NSW and liaised effectively with all Regulators involved. The Environmental Manager role requires ongoing and constant dialogue with site staff and contractors to ensure effective implementation of management plans and environmental protection licences. The role has given Rob valuable experience in client side operations to enhance his role as a consultant.

Deep Creek Quarry Environmental Impact Statement

Rob has project managed and authored the EIS for this State Significant Development. This has involved the co-ordination, review and thorough understanding of a wide range of technical studies and impact assessments including noise, air quality, heritage, biodiversity and water. Rob has guided the client through the SEARs process and liaised with Regulators throughout the project.

Baralaba Coal Mine Environmental Impact Statement

Rob has experience of coordinating large scale projects of state and national significance through his project management of the Baralaba South Coal Mine Environmental Impact Statement. Rob identified initial environmental impacts requiring referral and further study, and then compiled the findings of a wide range of technical studies that he engaged into the EIS. This included assessment of surface and groundwater, noise, air quality, ecology, traffic, cost benefit analysis and social impact assessment to make management plans for a mine design of minimum impact.

Environmental Planning and Approvals for Oil and Gas (Various)

Delivered project approvals under both State and Commonwealth jurisdiction for field developments, Infrastructure (pipeline corridors and rig placements), decommissioning, and ongoing operations.

Within State Government performed assessment of approvals submissions against legislative requirements for onshore and offshore drilling programs and operational wells. Assessment of Carbon Sequestration Project. Assessment of annual performance reports for production facilities.

Various Schools Infrastructure, Project Management of Project Environmental Staff

Rob has acted as Project Manager for a number of Schools Infrastructure projects where the provision of Kleinfelder's staff is required to support schools developments. Examples of such projects are the Lindfield Learning Village, and Manly Vale Public School where project Ecologists were required to be provided and managed in line with the requirements of the project approvals and management plans.

Holcim / Sibelco Salt Ash Quarrying Operations

Rob has provided his expertise to both Holcim and Sibelco in the operations of the State Significant Salt Ash sand quarry complex and processing plant. This has involved producing numerous Environmental Management Plans for the sites between Tanilba Bay and Anna Bay and performing audits to ensure regulator compliance. Rob has managed the design and implementation of the groundwater monitoring program which is of particular importance in the Tomago Sandbeds and Hunter Water Special Area. Rob has also looked after the rehabilitation and offset obligation on behalf of the client.

Williamtown Sand Syndicate Quarrying Approvals

Rob has supported Williamtown Sand Syndicate throughout the approvals process for their sand quarry located in Williamtown. This has required a thorough knowledge of a wide range of environmental impacts and mitigations in the Williamtown area including flora and fauna, noise, air quality and community concerns. Rob continues to manage the air quality management program and support Williamtown Sand Syndicate in their ongoing obligations under the conditions of consent.

Reviews of Environmental Factors (Various)

Rob has project managed and authored various Reviews of Environmental Factors (REFs) for both local councils and within the private sector. Examples of such projects are numerous bridge installations for Cessnock City Council, and the installation of a fishway for AGL.