30 August 2019

Paul Sniekers
Contracts Administrator
North Construction & Building Pty Ltd
L1, 163 Lambton Road
Broadmeadow NSW 2259

Dear Paul

Re: Coastal Wetland and proximity areas impact assessment for Catherine McAuley Catholic College, Medowie

Project no.30449

Biosis Pty Ltd was commissioned by North Construction & Building Pty Ltd to undertake an assessment addressing Condition B3 (l) of the Development Consent for McAuley Catholic College (SSD 8989) at 507 Medowie Road, Medowie, NSW (the study area). Condition B3 (l) states: *"a report prepared by a suitably qualified ecologist assessing the impacts of changes to hydrology (flow regimes) and stormwater runoff quality associated with the development on the Endangered Ecological Communities (EECs), Threatened Ecological Communities (TECs), threatened species located within the coastal wetlands to the south of the site and on the overall biophysical, hydrological and ecological integrity of the mapped wetlands within the site and the adjoining lands"*

Biosis understands that North Construction & Building Pty Ltd proposes to construct an educational facility, McAuley Catholic College on behalf of Trustees of the Roman Catholic Church for the Diocese of Maitland - Newcastle (the project). This assessment is required to fulfil Condition B3(l) of the development consent.

The objective of this assessment is to use a desktop review of background documents relating to the study area, including relevant construction and stormwater plans and the Catherine McAuley Catholic College Biodiversity Development Assessment Report (BDAR) (Biosis 2018) to assess the potential impacts of changes to hydrology and stormwater runoff associated with the development on the surrounding biodiversity values. The focus of this assessment is the coastal wetland area mapped under the State Environmental Planning Policy (Coastal Management) 2018 (Coastal Management SEPP) to the south and west of the study area. The details of any potential changes to hydrology and perceived direct or indirect impacts for local biodiversity values will be detailed in this report.

Background

The approved development is to be located at 2 Kingfisher Close Medowie (Appendix 1 Figure 1). The development will involve the demolition of an existing dwelling, shed and out buildings and the construction of a primary school, high school, chapel, childcare centre, associated infrastructure and landscaping. The development will include construction and operation of stormwater infrastructure designed to ensure that post development stormwater volumes and water quality are not substantially different to pre-development values.

The study area

The study area for the purposes of this report is defined as total the construction footprint and the total area of impact within coastal wetland and its proximity area as mapped the Coastal Management SEPP. The study area is within Port Stephens Council Local Government Area (LGA). The study area is located within Lot 412 and 413 DP 1063902 and covers an area of 21 hectares. The subject site is located within the study area and is defined as the total area of disturbance; including both the construction and operational footprints. The landuse of the area surrounding the study area consists of rural, large lot and low density residential areas, a golf course, roads and further extents of SEPP mapped coastal wetlands.

Part of the southern and western section of the construction footprint intersects with the coastal wetland and its proximity area as mapped under the Coastal Management SEPP (Figure 1). The Catherine McAuley Catholic College, Medowie Biodiversity Development Assessment Report (BDAR) (Biosis 2018) has identified two plant community types (PCTs) within the study area that are consistent with threatened ecological communities (TECs) listed under the NSW Biodiversity Conservation Act 2016 (BC Act) and lie within the coastal wetland areas. These include:

- Swamp Sclerophyll Forest on Coastal Floodplains of the New South Wales North Coast, Sydney Basin and South East Corner Bioregions Endangered Ecological Community (Swamp Sclerophyll Forest EEC):
  - Restricted to PCT 1718 and located to the west and north of the study area. The subject site contains 0.22 hectares of Swamp Sclerophyll Forest EEC.
- Hunter Lowland Redgum Forest in the Sydney Basin and NSW North Coast Bioregions (Hunter Lowland Redgum Forest EEC):
  - Restricted to the PCT 1598 and located along the western edge of the study area. The subject site contains 0.17 hectares of Hunter Lowland Redgum Forest EEC.

Method

Information provided by North Construction & Building as well as other key information and legislation reviewed for this assessment include:

- Biosis, *Catherine McAuley Catholic College, Medowie Biodiversity Development Assessment Report*
- De Witt Consulting, *Environmental Impact Statement: Proposed Catholic College 2 Kingfisher Close and 507 Medowie Road, Medowie*.
- MPC Consulting Engineers *Proposed School 507 Medowie Road Medowie Stormwater Management Plan*
- NSW Government; Department of Planning, Industry and Environment *Development Consent for McAuley Catholic College (SSD 8989) at 507 Medowie Road, Medowie*.
- NSW Government, *SEPP (Coastal Management) 2018*.

The implications for the project were assessed in relation to key biodiversity legislation and policy including:

- *Environment Protection and Biodiversity Conservation Act 1999* (EPBC Act).
- *Environmental Planning and Assessment Act 1979* (EP&A Act):
  - State Environmental Planning Policy (Coastal Management) 2018
- *Biodiversity Conservation Act 2016*.

- *Water Management Act 2000* (WM Act).

Findings

The subject site consists of a total area of approximately 8.1 hectares, which will drain towards the south-west and into the mapped coastal wetland and its proximity area. No natural water courses have been identified on the subject site. An open swale drainage line has been identified at the southern end of the study area. The water catchment of the subject site also includes runoff from neighbouring catchment areas as indicated through topographic mapping of the area.

A Stormwater Management Plan has been prepared by MPC Consulting Engineers which lays out proposed designs and principles for Medowie Catholic College's stormwater system addressing the requirements of Port Stephens Council DCP. The system utilises stormwater harvesting (rainwater tanks) and stormwater detention to ensure that run-off from the site replicates pre-developed conditions. To comply with the *Protection of the Environment Operations Act 1997* the plan utilises a system of envirpod inserts, infiltration tanks, gross pollutant traps and bio-retention basins to reduce stormwater pollutant levels including suspended solids, nutrients (phosphorus and nitrogen), gross pollutants (litter and organic debris), sedimentation and erosion resulting from changes to flow velocity. MUSIC software was used by MPC Consulting Engineers to model water quality measurements through the planned stormwater system. The modelling includes the volume of flow through the system, the quantity of pollutant inputs from various sources into the stormwater system and the predicted residual load exiting the system and possibly entering the coastal wetland and its proximity area. The values produced from the MUSIC software are displayed in Table 1. In order to confirm predicted water quality results from the MUSIC modelling it is recommended that appropriate water quality analysis be conducted.

Table 1 Water Quality (MUSIC) Model *(MPC– Stormwater Management Plan)*

Parameter	Sources	Residual Load	% Reduction
Flow (Ml/yr)	64	62.5	2.4
Total Suspended Solids (kg/yr)	8830	938	89.4
Total Phosphorus (kg/yr)	99.3	21.7	78.2
Total Nitrogen (kg/yr)	124	64.1	48.8
Gross Pollutants (kg/yr)	1110	0	100

According to the Stormwater Management Plan a total of eight headwall units for the discharge of stormwater are proposed to be placed on the western and southern sides of the subject site. A number of these units are located within the mapped coastal wetland area. In accordance with Division 1, Clause 10 of the Coastal Management SEPP any development carried out on land identified as "coastal wetlands" may be carried out only with development consent.

The Stormwater Management Plan also identifies principles and recommendations set out by the NSW Department of Housing to reduce erosion and sediments entering the coastal wetlands during the developments construction. These practices include; planning erosion and sediment controls alongside engineer designs ahead of earthworks with consideration of site constraint assessments, minimising soil exposure, conserving the topsoil where possible, controlling water flowing through the site, reducing run-off velocities, trapping soil and water pollutants and completing rehabilitation works as soon as possible. Sediment and erosion controls will be implemented in accordance with NSW Environmental Protection Authority Site Work Practices and include; silt fences, catch drains, sediment traps, grassing and stabilization

of embankments and drainage outlets, stabilised stockpile areas, scour protection at discharge locations and stabilised site access for vehicles.

To determine if the development will introduce significant changes to water quality entering the coastal wetland and its proximity area it is important to consider background water quality inputs form current landuse in the area surrounding and upstream of the site. According to topographical mapping the surrounding landuse upstream of the study area consists predominately of an 18-hole golf course, residential housing and roads. Various land use practices such as the use of fertilizers and pesticides, runoff from impervious surfaces, and erosion/sedimentation due to landscape and vegetation modification, golf courses introduce various pollutants including phosphorus, nitrogen, suspended solids and gross pollutants into aquatic ecosystems (Klein, 1999). Residential areas and roads also introduce various stormwater pollutants into aquatic ecosystems. Common residential pollutants include gross pollutants, nitrates, phosphates, heavy metals, surfactants, petrochemicals and sediments which can be introduced through activities such as landscape modification, increased road surfaces, gardening, construction and spillages (DEC, 2006). Landuse activities from both the golf course and surrounding residential areas could feasibly introduce higher background pollutant and volume loadings than that of the study area's modelled residual loadings (Table 1). However in order to verify background water quality levels from areas upstream of the site and to compare them to predicted water quality levels in the MUSIC model it is recommended that appropriate water quality analysis be conducted.

If water quality inputs from land use areas upstream of the study area are considered, modelled residual loading volumes from the development's stormwater system should not lead to significant alterations to water quality currently entering the coastal wetland, its proximity area and surrounding TECs identified in the BDAR and their ecological integrity. If the development is completed with appropriate sedimentation and erosion control measures as planned, the increase in erosion and volumes of sediment potentially entering and impacting upon the coastal wetlands and TECs will be negligible. Appropriate water quality analysis should be conducted to verify current water quality parameters and compare them to predictions from the stormwater management plan. Relevant plans and guidelines should be adhered to when implementing these measures.

Conclusion

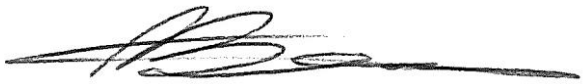
Appropriate water quality analysis should be conducted to verify background water quality from areas upstream of the subject site and to verify that water quality as predicted by the MUSIC modelling will not significantly affect water quality currently entering the coastal wetland.

Unless already obtained, development consent is required for the proposed headwall units planned within the SEPP mapped coastal wetlands, in accordance with Division 1, Clause 10 of the Coastal Management SEPP.

If operated and constructed with approved plans and procedures, stormwater pollutants and flow rate exiting the development site and entering the coastal wetland should not change significantly from conditions currently present given the context of current land usage. As such the stormwater management associated with the construction and operation of the proposed Medowie Catholic College should not have a significant effect on the current EECs, TECs and threatened species located within the coastal wetlands or on the current biophysical, hydrological and ecological integrity of the coastal wetland. However, appropriate water quality analysis should be conducted to verify current levels and provide a comparison.

I trust that this advice is of assistance to you however please contact me on 0418 577 661 if you would like to discuss any elements further.

Yours sincerely



Adam Baus

Project Aquatic Ecologist

References

Biosis 2018. *Catherine McCauley Catholic College, Medowie BDAR*. Report for Webber Architects. Authors: A Barreto, S Allison, C Corden, Biosis Pty Ltd, Newcastle. Project no.26652

DEC. 2006. Managing Urban Stormwater Harvesting and Reuse. New South Wales Government Department of Environment and Conservation, Sydney

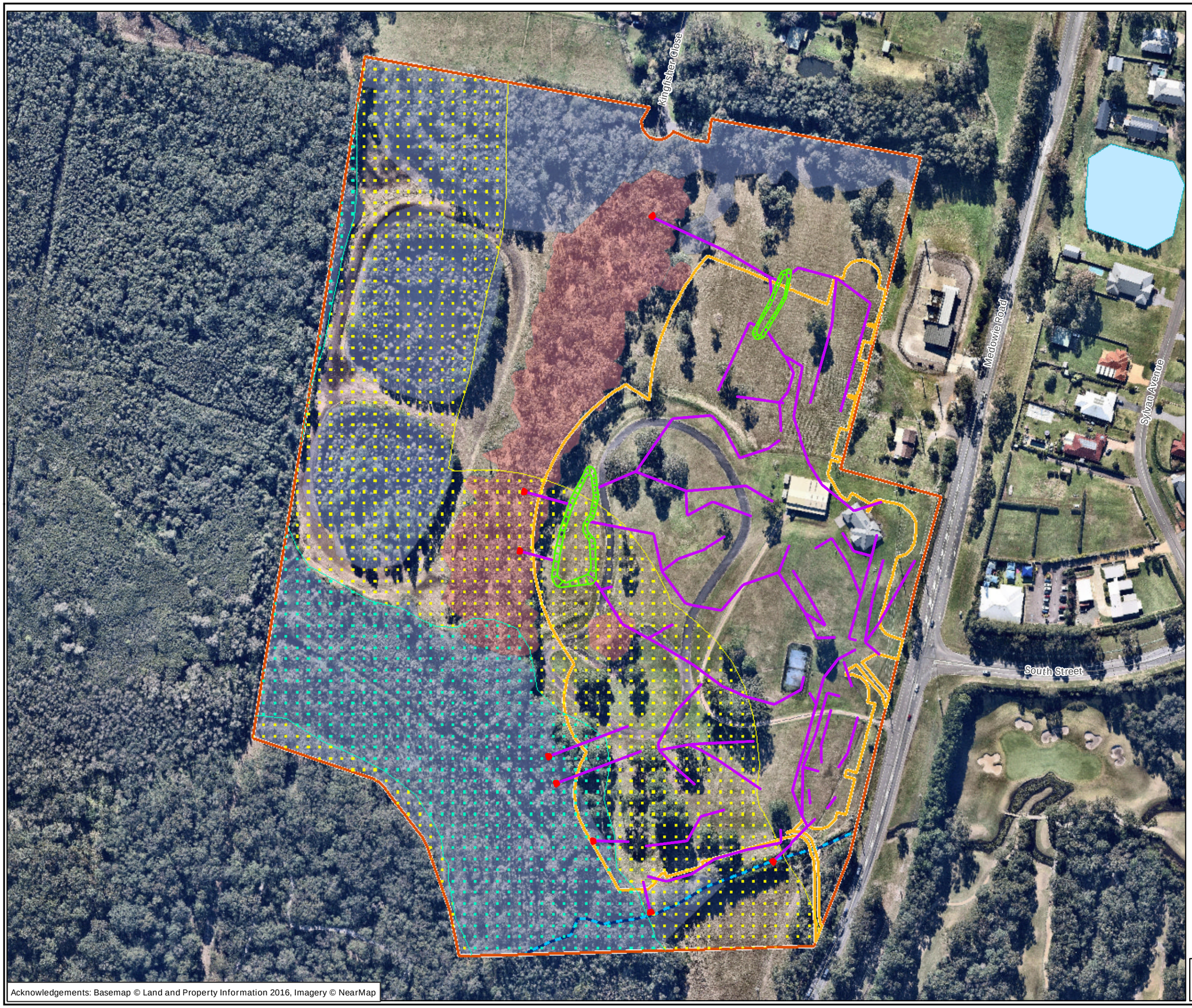
De Witt Consulting 2018. *Environmental Impact Statement: Proposed Catholic College 2 Kingfisher Close and 507 Medowie Road, Medowie – Lot 412 and Lot 413 DP 1063902*

Klein R D. 1999. *Protecting the Aquatic Environment from the Effects of Golfcourses*. Community & Environmental Defense Services, Maryland

MPC Consulting Engineers 2018, *Proposed School – 507 Medowie Road, Medowie, Stormwater Management Plan*

NSW Government: DPIE 2019. *Development Consent for McAuley Catholic College (SSD 8989).*

Appendix 1 Figure 1



Legend

- Study area
- Subject site
- HydroLine (Biosis 2018)

Stormwater plan

- Headwall
- Stormwater pipeline
- Retention pond

SEPP Coastal Management

- Coastal Wetlands
- Coastal Wetlands Proximity Area

Threatened Ecological Community

- Hunter Lowland Redgum Forest EEC
- Swamp Sclerophyll Forest EEC

Figure 1 Study area and coastal wetland

0 40 80 120

Metres

Scale: 1:2,349 @ A3

Coordinate System: GDA 1994 MGA Zone 56

Biosis Pty Ltd

Albury, Ballarat, Melbourne,
Newcastle, Sydney, Wangaratta & Wollongong

Matter: 30449
Date: 30 August 2019,
Checked by: SNA, Drawn by: AEDM, Last edited by: skumar
Location:P:\30400s\30449\Mapping
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