

Our ref: DOC22/109891-24

Your ref: SSD-10360337

Gavin Ho

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Dear Gavin,

**Request for advice – St Philip’s Christian College Cessnock Campus – Cessnock LGA**

I refer to your Major Projects Portal request dated 15 February 2021 in which the Infrastructure Assessment Division of the Department of Planning and Environment (the Department) invited Biodiversity and Conservation Division (BCD) for advice in relation to the Environmental Impact Statement (EIS) for the alterations and additions to St Philip’s Christian College Cessnock Campus, located at the corner of Lomas Lane and Wine Country Drive, Nulkaba (Lot 1 DP 126765, Lot 1 DP 744377, Lot 2 DP 600895 and Lot 518 DP 87571).

Biodiversity and Conservation Division’s (BCD) has reviewed the EIS and relevant appendices, including the Biodiversity Development Assessment Report (BDAR), the Preliminary Engineering Design Report and Flood Impact Assessment in relation to the impacts on biodiversity and flood risk assessment.

BCD’s recommendations are provided in **Attachment A** and detailed comments are provided in **Attachment B**. If you require any further information regarding this matter, please contact Steven Crick, Senior Team Leader, on 02 4927 3248 or via email at [huntercentralcoast@environment.nsw.gov.au](mailto:huntercentralcoast@environment.nsw.gov.au)

Yours sincerely



**Joe Thompson**  
**Director Hunter Central Coast Branch**  
**Biodiversity and Conservation Division**

**Date: 27 March 2022**

Enclosure: Attachments A and B

## BCD's recommendations

### St Philip's Christian College Cessnock Campus

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1. The BDAR needs to meet the minimum requirements for information, maps, tables, and data detailed in Table 24 of the *Biodiversity Assessment Method 2020* to enable detailed review by BCD.
2. The vegetation surveys should be completed in accordance with the *Surveying threatened plants and their habitats* NSW survey guide.
3. The BDAR should clarify the Strahler stream order of Black Creek and include a discussion around appropriate buffers and any wetlands that may be directly or indirectly impacted by the proposed development.
4. BCD advises that the proponent should provide further information as to the flood risk, including any changes to the timing of the inundation of Lomas Ln and any accessways to properties from that road.
5. BCD recommends that the proponent review and amend the current detailed flood emergency response plan (FERP). It is suggested that any approvals for further development of the site be contingent on a review of the adequacy of an amended detailed FERP.
6. BCD recommends that additional colour graduations, above 60.25m are added to Figures B8 and C8 in the flood impact assessment.
7. BCD recommends that the estimated climate change impact on flood levels, for the design life of the development, be included in the 1% AEP flood level. The minimum floor level should be based on the 1% AEP flood level (including climate change) plus 500mm freeboard.

## BCD's detailed comments

### St Philip's Christian College Cessnock Campus

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#### Biodiversity

##### 1. Key information is missing from the biodiversity assessment

Table 24 of the *Biodiversity Assessment Method 2020* (the BAM) lists the minimum information requirements for a BDAR. Several of these requirements are missing from the information provided in the EIS, including:

- Data including plot field data, plot field data sheets, GIS coordinates, shapefiles and report maps as separate .jpeg files are missing.
- The BAM Calculator has not been submitted via the Biodiversity Offsets and Agreement Management System
- Figures and tables should include all relevant details listed in Table 24. For example, the Site and/or Location map should include the IBRA region and subregion and areas of connectivity.

BCD cannot fully assess the BDAR without this information.

##### Recommendation 1

The BDAR needs to meet the minimum requirements for information, maps, tables, and data detailed in Table 24 of the *Biodiversity Assessment Method 2020* to enable detailed review by BCD.

##### 2. The vegetation survey guide referenced in the BDAR is out of date.

Section 3.2 of the BDAR references the *NSW Guide to Surveying Threatened Plants* as a guide to inform the vegetation survey methods. This guide is dated 2016 and has been superseded by the *Surveying threatened plants and their habitats* which was published in 2020.

##### Recommendation 2

The vegetation surveys should be completed in accordance with the *Surveying threatened plants and their habitats* (2020) NSW survey guide.

##### 3. There is inadequate discussion of waterways and wetlands.

The Strahler stream order of Black Creek is unclear. Section 2.1.3 of the BDAR identifies Black Creek as a 4<sup>th</sup> Order stream, however Figure 2 indicates that it is a 5<sup>th</sup> order stream. A 40-metre riparian corridor should be applied for a 4<sup>th</sup> or 5<sup>th</sup> order stream, in accordance with Table 14, Appendix E of the BAM.

No discussion has been provided on wetlands which may be affected by the proposed development.

### Recommendation 3

The BDAR should clarify the Strahler stream order of Black Creek and include a discussion around appropriate buffers and any wetlands that may be directly or indirectly impacted by the proposed development.

## **Flooding and flood risk**

### **4. The flood impact assessment needs to provide further information on the impacts of the development to on-site and off-site flood risk**

The project's SEARs (SSD-10360337) require the proponent to "assess the impacts of the development, including any changes to flood risk on-site or off-site".

The flood impact assessment currently provides information on the post development impact on peak flood levels (afflux). This is discussed in 5.2.2 of the report and illustrated in figures D1 – D8.

Further information on changes to the following flood risk parameters should be provided to enable BCD to assess any potential impacts:

- peak flood level timings, particularly for the inundation of Lomas Ln. Changes to the timing of inundation of Lomas Lane, in different AEP events, may impact the potential evacuation of the school and other properties on that road.
- impacts on the access to other properties adjacent to Lomas Ln. This would include any changes to AEP events or timings that the accessways become inundated and un-trafficable.

### Recommendation 4

BCD advises that the proponent provide further information as to the flood risk, including any changes to the timing of the inundation of Lomas Ln and any accessways to properties from that road.

### **5. Further emergency management information is required to support increasing the number of school occupants that may be stranded on-site in rare flood events.**

The school is designated as a low flood island for emergency management purposes. This is the worst-case scenario for flood risk, as evacuation routes are inundated before the school property is inundated. If the school occupants are not evacuated prior to the inundation of the evacuation routes they will be trapped at the school during the flood event. The school occupants will need to shelter in place in a higher refuge room as the flood inundates the entire school area.

The report "estimated that the 4-hour duration storm as the governing storm duration and suggested that the effective warning time during a PMF event would be in the order of 1 to 1.5 hours". This short effective warning timeframe would suggest evacuation of the school may not be possible resulting in the occupants being trapped on-site in rare flood events.

The flood impact assessment prepared by BMT for the current proposed development has assessed the preliminary flood emergency response plan (FERP) prepared by Worley Parsons (2009) in support of the original proposed school development.

The Worley Parsons (2009) preliminary FERP recommended that a detailed FERP will need to be developed in close coordination with the SES and Council. BCD has not been provided with evidence that this has taken place.

Noting the high flood emergency management risk to the school, BCD requires the detailed FERP to be developed, reviewed, and amended and presented by BMT in the current flood assessment to support an increased number of school occupants. BCD suggests that any approvals for further development of the site be contingent on a review of the adequacy of an amended detailed FERP.

#### Recommendation 5

BCD recommends that the proponent review and amend the current detailed flood emergency response plan (FERP). It is suggested that any approvals for further development of the site be contingent on a review of the adequacy of an amended detailed FERP.

### **6. The flood impact assessment does not provide sufficient PMF level information in the figures**

Figures B8 and C8 only have one red colour graduation for the PMF water level, that correlates to > 60.25m. Further information is required for assessing flood risk of the PMF for emergency management and compared with other AEP events for the proposed development / adjacent properties.

#### Recommendation 6

BCD recommends that additional colour graduations, above 60.25m are added to Figures B8 and C8 in the flood impact assessment.

### **7. Minimum floor levels should include climate change in the design flood event**

The current flood impact assessment recommends minimum floor levels based upon the 1% AEP event plus 500mm freeboard. BMT's report predicts that potential increases in rainfall intensity of 20% due to climate change, will increase the maximum 1% AEP flood levels on the site by up to 300mm.

Section 5.3 of the report states "that school building floor levels (designed based on the height of the 1% AEP + 0.5m freeboard) would remain higher than the 1% AEP peak flood levels under the climate change scenario."

The NSW Floodplain Development Manual (2005) outlines why a freeboard component is recommended in flood planning levels - "the purpose of freeboard is to provide reasonable certainty that the reduced risk exposure provided by the selection of a particular flood as the basis for the flood planning level is actually provided given the following factors":

- uncertainties in the estimates of flood levels,
- differences in water levels due to local factors,
- wave action,
- climate change,
- cumulative effect of subsequent infill development of existing zoned land.

The flood impact assessment is proposing to use 300mm of the 500mm freeboard for climate change. This will not allow sufficient potential variations in the other factors that are incorporated in the freeboard. It should be noted that the knowledge of predicted climate change has increased significantly since 2005 when the Floodplain Development Manual was prepared. It is also current best practice to include climate change in the AEP flood levels, independent of freeboard, for major developments.

The *Cessnock DCP chapter 9 – Development on Flood Prone Land, Appendix 1 – Major Flood Assessment Reports* requires assessment of flood levels for all AEP events including climate change.

#### Recommendation 7

BCD recommends that the estimated climate change impact on flood levels, for the design life of the development, be included in the 1% AEP flood level. The minimum floor level should be based on the 1% AEP flood level (including climate change) plus 500mm freeboard.