Attachment A – Detailed response to request for additional information
Glenwood High School Upgrade – State Significant Development Application

Issue	Response
DPE	
Carparking *There is currently a shortfall of car parking on-site to accommodate the existing number of staff members that drive to school. The proposal will result in an additional 27 staff members and there are no additional car parking spaces proposed as part of the application. Consequently, the proposal would result in additional cars being parked on the surrounding streets.* *The proposed mode share forecasts a substantial shift towards active transport modes. However, the site is not well serviced by public transport and no public infrastructure upgrades form part of the proposal to support the ambitious mode share shift away from private vehicle use. The Department also notes the distance to the nearest train station is a significant distance and beyond the capacity of a staff member to walk as a journey to.* *Consequently, the Department considers that the proposed short-term and long-term mode share targets cannot be relied upon in justifying the short-fall of staff car parking. Based on the existing number of staff driving to school (92%), the proposal is likely to directly result in, at a minimum, an additional 24-25 cars being parked on the surrounding streets.*	Consideration has been given to the provision of additional car parking at the site. A Traffic Statement for Additional Parking Provision has been prepared by TTW, dated 17 June 2022 which can be found at **Attachment B** that proposes an additional 25 parking spaces. This statement notes that there are an existing 93 parking spaces (including 1 accessible space) at the site for staff. These spaces are currently located to the west of the site near the western property boundary as well as the south-western corner of the site. Refer to **Figure 2.1** of in Transport and Accessibility Impact Assessment (TAIA) at **Appendix F** of the Response to Submissions (RtS). The additional provision of 25 spaces (including 1 accessible space) will bring the total amount of parking spaces on the site to 118 spaces (including 2 accessible spaces). Drawings are appended to the Traffic Statement which shows the location of these additional spaces. These drawings are also reproduced below for convenience. 

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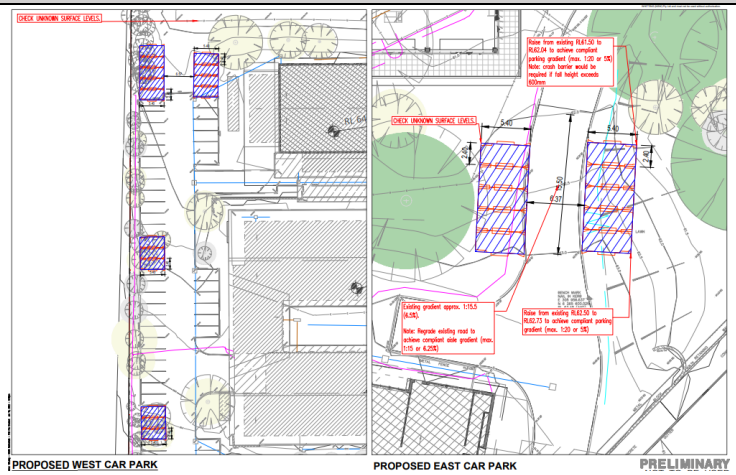
Issue	Response
Given the above, the Department requests that further consideration be given to opportunities to provide additional car parking on-site.	 10 out of the 25 proposed parking spaces are located off an internal road leading to the main school buildings. Access is gained from the eastern side of the site on Glenwood Park Drive, labelled Gate F. The existing road is to be regraded from 6.5% to 6.25% to achieve a compliant aisle gradient (a difference of approximately 300-400mm). Notably, 5 out of these 10 spaces are located on the eastern side of the road and are proposed to be filled approximately 200-500mm to achieve compliant parking gradient of 5%. Furthermore, the other 5 parking spaces on the western side of the road will occupy 64.8m^2 of play space. Notwithstanding, the development is still capable of achieving 10.34m^2 of play space per student. 15 out of the 25 car parking spaces are located to the west of the site within the existing car park. Vehicle access to these spaces is achieved via Foreman Avenue. These spaces will be provided within existing planter beds and extend northwards into grassed area and to an extent that does not impact the provision of student play space at the school. Consideration has been given to the impacts of the proposed additional spaces as it relates to traffic as well as vegetation and biodiversity. These impacts are discussed in further detail below.

Issue	Response
	Traffic Impacts – The Traffic Statement concludes that the additional parking spaces will not generate significant amount of additional traffic and would therefore have a minor impact. Vegetation and Trees – Reference is made to the Arboricultural Impact Assessment (AIA) prepared by Eco Logical at **Appendix I** of the RtS. It is noted that the proposed 'western' parking spaces will require the removal of several trees. However, having regard to Appendix C of the AIA, no trees of high significance are identified along the western property boundary and therefore, only trees of low and medium significance will need to be removed to facilitate these additional spaces. Although some spaces are close to trees, the proposed 'eastern' parking spaces will not require the removal of any trees. Therefore, only tree protection measures will likely be required in this case. It is likely that these measures in Section 4 of the AIA will be sufficient safeguards to protect trees within the vicinity of these additional parking works. In addition, it is noted that the proposed tree removal will result in a minor reduction in tree canopy cover at the site without any replacement tree planting. In this regard, we would welcome a condition that requires replacement tree planting elsewhere on the site, ensuring no loss in tree canopy coverage and tree numbers at the site. Biodiversity – Reference is made to the Biodiversity Development Assessment Report (BDAR) prepared by Kleinfelder at **Appendix I** of the RtS. The BDAR indicates that vegetation at Glenwood High School can be classified into five (5) vegetation zones based on floristic composition and vegetation condition. In this case, the proposed 'eastern' parking spaces will occupy 129.6m2 of Vegetation Zone 2, a low condition form of the Planted Community Type (PCT) 849. In its current form, the SSDA works impact 0.02ha of this zone. The proposed 'western' car park will increase this impact to 0.03ha. Notwithstanding, it is noted that the impact is mainly limited to groundcover.

Issue	Response
	The proposed 'western' parking spaces will occupy approximately 194.4m^2 of Vegetation Zone 3, a planted form of the PCT 849. It is noted that the SSDA works does not currently impact this zone. The development will result in a total impact of 0.019ha, including some tree removal. Notwithstanding this, it should be noted that neither of these vegetation zones constitute a Cumberland Plan Woodland Critically Endangered Ecological Community (CEEC), unlike Vegetation Zone 1. Therefore, no impacts to threatened species, threatened populations or their habitat is expected to occur as part of this additional parking spaces. Mitigation and management measures outlined in Section 5.3 of the BDAR should be sufficient to ensure that all indirect impacts to areas of high biodiversity value are avoided/mitigated. It should be noted that every effort has been made to design parking around the existing site constraints. The current design has been selected as the best location having regard to the need to minimise impacts to play space, tree and vegetation removal and biodiversity impacts, all without detracting from the streetscape.
<u>*Stormwater drainage and flood modelling*</u> *You are requested to submit a response to the issues raised in Blacktown City Council's submission (attached). Specifically, a response is required in relation to the adequacy of modelling provided to Council for both stormwater and flooding, which demonstrates and ensures Council's relevant development standards and specifications are attainable. You are requested to provide the additional stormwater and flood information requested by Council. The Department recommends that you consult with Council further regarding this.*	Additional stormwater and flood information as requested by Council has been prepared by enstruct. This information can be found at **Attachments C** to **J**. Issues raised in Blacktown City Council's submission which have been considered in these Attachments is explored further below.

Issue	Response
Blacktown City Council	
Key Drainage Issues *1. Civil Engineering Design Report by Enstruct Group Pty Ltd project no. 6393 revision C dated 9 November 2021 and Stormwater Management Plans in Appendix D of Civil engineering Design Report project no. 6393 revision a dated 9 November 2021:* *i. Provide OSD catchment plan demonstrating which areas drain to the OSD and areas bypassing.* *ii. Provide a MUSIC catchment plan that shows both the land use and the areas contributing to each specific device. To make this more understandable it may be easier in many cases to split these into two separate plans. Include all bypassing catchments.* *iii. The 1% AEP flows from the site are to be directed to the OSD. Demonstrate how the surface flows in excess of the pipe capacity are directed to the OSD system.* *iv. The OSD Deemed to Comply Tool Spreadsheet levels do not match the OSD design and also includes incorrect design details for the proposed Filter Cartridges. The spreadsheet is to be amended to include correct Design Filter Cartridge Flows and Filter Cartridges flows with 1% AEP HED. Ensure details and levels are reflected in the design subsequently.*	1. A revised Civil Engineering Design Report has been prepared by enstruct (found at **Attachment C**) which addresses the below items: i. A catchment plan drawing has been added to Appendix B of the Civil Engineering Design Report (Drawing No. CV-0200). This plan shows catchment areas which drain to the OSD. ii. The catchment plan drawing (Drawing No. CV-0200) shows catchment areas identical to the MUSIC model. iii. The 1% AEP flows are piped to the OSD tank. A DRAINS model is provided for review at **Attachment D**. Furthermore, the catchment plan drawing (Drawing No. CV-0200) shows catchment areas draining to the OSD system. iv. The OSD and stormwater management plans in Appendix C of the Report have been changed to suit the deemed to comply requirements. Refer to Appendix B of the Revised Design Report and the OSD deemed to comply tool spreadsheet at **Attachment F** for these requirements**.** v. Drawing 0201(A) has been amended as follows: a) Downpipe locations are shown on drawing CV-0201. Downpipes collect and discharge into the proposed rainwater tank. The pipes from the roof are separate to the in-ground stormwater system. b) Rainwater tank volumes added to the Civil Report. Pre-treatment information is also referenced in the revised Civil Report. Refer to Section 6.1. c) A 375mm diameter pipe is noted as RCP on drawing CV-0201. d) Existing Pit 1 and connecting pipe level information added to drawing CV-0201. e) Drawing 0201 now shows stormwater pipe inverts and pit levels. f) Catchment plan CV-0200 has now been included. Pits grate size and type have been upgraded to suit the catchment plan. Refer to pit size schedule on CV-0001. Furthermore, invert levels for all pipes have been shown on drawing CV-0201.

Issue	Response
v. On drawing 0201 (A): *a) It seems all the roof water is bypassing the rainwater tank and discharging directly into the stormwater line. Show how the roof water gets to the rainwater tank. Provide a separate system for roof water and surface drainage. Pits between the roof lines (i.e. charged pipes) are to be sealed.* *b) Provide details of the rainwater tank including pre-treatment, volumes, sections, dimensions etc.* *c) The 375 mm diameter outlet to the existing stormwater Pit 1 is to be RCP.* *d) Provide levels of the existing street Pit 1 and confirm the connection level to this pit.* *e) Clearly show details of all pits including surface levels and invert levels.* *f) It is unclear whether Pits 18 and 27 are treating surface flows and all or only part of the upstream pipe flows as well. Provide detail for Pit 18 and 27 showing all invert levels for all pipes.* *g) OceanGuards should treat a maximum of 1000 m2 of non-roof areas and 1500m2 of roof areas. All OceanGuards are to be clearly notated as "200 micron OceanGuards".*	g) All roof areas, as shown on 0201 are directed to the Rainwater Tank for cleaning and reuse. It is confirmed that non roof area draining to pits have an area no greater than 1000m^2. Moreover, OceanGuard notations are shown on drawing CV-0201. Oceanguard detail noted on drawing CV-0212 as 200 microns. Refer to report section 6.1.2 for Oceanguard reference. h) Pipe invert and pit levels provided on drawing CV-0201 which indicates the oceanguard pit baskets are above the connecting pipes. i) Pipe invert and pit levels provided on drawing CV-0201 which indicates the oceanguard pit baskets are above the connecting pipes. j) Oceanguard detail now provided on drawing CV-0212. Refer to report section 6.1.2 for more details on the oceanguard. vi. Drawing 0213(A) has been amended as follows: a) These pipe sizes are correct. Pipe decreases as we are slowing the water flows from the property as required by Blacktown City Council 'Engineering Guide for Development – 2005'. A DRAINS model provided for review at **Attachment D**. Should the tank block, discharge is directly to the street. Maximum flow rate will be dependent on tank in flow rate. b) OSD tank design shown on drawing CV-0212 has revised to meet the OSD Deemed to Comply Tool Spreadsheet. The spreadsheet is provided for review at Appendix B of the Report and **Attachment F**. c) Drawing 0213 has been updated with 100mm false floor, baffle distance, and operation with a sealed lid. d) Drawing 0213 has been updated with 100mm false floor, baffle distance, and operation with a sealed lid. e) Dimensions added to Drawing CV-0213 indicating chamber sizes.

Issue	Response
h) OceanGuards treating only surface flows require a minimum clear depth of 500 mm below the grate to any inlet or outlet pipe obvert. OceanGuards treating surface flows and upstream pipe flows require a minimum clear depth of 500 mm from the invert of the upstream pipes to be treated, to the obvert of the outlet pipe. Where these pits are treating upstream pipe flows the inverts of all pipes in and out of the pit are to be shown. *i) Where OceanGuards (Enviropods) are designed to treat upstream pipe flows, the invert levels on all pipes discharging to and from the pit are to be clearly shown. Provide a minimum clear depth of 500 mm from the invert of the upstream pipes to be treated to the outlet pipe obvert.* *j) Provide a pit detail with an Oceanguard fitted.* *vi. On drawing 0213 (A):* *a) The 450 mm diameter inlet pipe into the Stormfilter chamber is smaller than the 375 mm diameter outlet pipe from the OSD tank discharging to Councils existing drainage system. Provide details to ensure that the overflow from the OSD tank can surcharge safely to the street and away from any class*	f) Drawing CV-0213 shows calculations and configuration of the OSD tank which meets the requirements of BCC 'Engineering Guide for Development – 2005'. Drawing CV-0213 now shows the baffle as required for the stormwater tank. g) Weir calculations added to drawing CV-0213. Weir size corrected to suit calculations.

Issue	Response
rooms and does not impact adjacent properties. *b) The design levels in the OSD tank do not match the S3QM Certificate Results or the OSD Deemed to Comply Tool Spreadsheet. Ensure consistency between the design.* *c) Provide more details for the Stormfilter tank such as false floor level and thickness, impermeable baffle distance upstream of Stormfilter weir etc.* *d) Provide details of how the overflow chamber will operate with the sealed lid.* *e) On the tank plan view, provide separate dimensions for the OSD tank and Stormfilter Chamber.* *f) Provide a sealed impermeable baffle, or hood set 250 mm upstream of the Stormfilter weir and extending from the sealed underside of the tank to 400 mm below the top of the weir for the 690 mm Stormfilter cartridge to contain floatables including oil. The Stormfilter weir level is to be set 770 mm above the false floor.* *g) The minimum length of the Stormfilter weir (L) is to be increased to provide a maximum velocity of 0.4 m/s under the baffle during peak flow (i.e. L > Q100 / (0.4 x 0.25), or L > 10 x Q100) in m, where Q100 is in m3/s). Provide calculations.*	

Issue	Response
2. Flood modelling and Flood report by Enstruct Group Pty Ltd project no. 6393 revision B dated 13 October 2021: *i. The flood report is vague and does not provide critical information carried out for the flood modelling. Provide details of blockages, pipes, total catchment area, boundary conditions, flows, velocities etc.* *ii. Allow for a maximum isolated rise in flood level of 0.02 m external to the site in the 1% AEP event as a result of the development.* *iii. All buildings in the floodplain (including both existing and proposed) are to be modelled as complete (i.e. 100%) blockages in the flood model. Simply applying Mannings 'n' value as suggested in Table 1 of the report is not accepted.* *iv. The post-development DEM is to be included to accurately represent any proposed ground level changes (i.e. cut and fill areas) in the post development model. This includes fill for areas such as driveway.* *v. Adopt an impervious area of minimum 80% for the catchment. Amend the DRAINS model and flood report accordingly.* *vi. The maximum travel times for impervious catchment is 12 minutes and pervious catchment is 14 minutes. Amend the DRAINS model and catchment areas breakdown accordingly.*	2. A Revised Flood Report has been prepared by enstruct at **Attachment H** which addresses the below items: i. All pipes are assumed and modelled blocked. Refer section 2.2. All other information is included in report with the TUFLOW at **Attachment G**. ii. The 1% AEP flood extents do not inundate the school site. As the proposed development does not interact with the 1% AEP, i.e., the school is flood free from the 1% AEP catchment flood flow. Refer to Figure 13. iii. Flood model has been revised to include existing and proposed buildings as 100% blockages. Refer section 2.1. iv. The post-development DEM can be found at **Attachment I.** v. An impervious area of 80% for the catchment has been adopted for DRAINS model. vi. Travel times have been adopted in the DRAINS model. vii. Refer to Section 4.9 showing the flood hazard maps. viii. The proposed development does not interact with the 1% AEP (i.e. the school is flood free from the 1% AEP catchment flood flow). ix. Refer to the DRAINS Models and TUFLOW at **Attachments D** and **G**, respectively. x. Refer to the DRAINS Models and TUFLOW at **Attachments D** and **G**, respectively. Note, revised modelling and Flood Report do not result in any changes to both the *Overland Flow Statement* at Appendix J of the RtS and *Flood Emergency Management Plan* that accompanied our RFI letter dated 9 June 2022.

Issue	Response
vii. The flood report is to include flood maps for both the existing and post developed scenarios for the various storm events. This report is to include flood maps for the velocity, depths, hazard etc. *viii. Provide a flood difference map (developed - existing) for the 1% AEP. Include a 0 to 20 mm category with gradations below or above this figure.* *ix. Ensure the inflow hydrograph in TUFLOW matches the DRAINS hydrology model.* *x. Provide the DRAINS hydrology and amended TUFLOW model electronically to Council.*	
3. MUSIC Modelling *i. The MUSIC model breakdown is incorrect and includes only one node representing the proposed development. The model is to be amended to include appropriate nodes representing the proposed land-use draining to the specific water quality devices. The model is to include the total proposed developable area (including bypass areas). The land-use breakdown is to be in accordance with Chapter 9 of Councils WSUD Developer Handbook 2020.* *ii. The MUSIC model includes total development area of 4000 m2 whereas the OSD Deemed to Comply Tool Spreadsheet includes 6500 m2. Amend the MUSIC*	3. MUSIC Modelling has been revised by enstruct at **Attachment E** which addresses the below items: i. MUSIC model has been revised with corrected catchment to suit drawing CV-0200. ii. The catchment in the MUSIC model has been revised. MUSIC catchment replicates the areas shown in drawing CV-0200. Refer to Appendix B in the Civil Report for the revised OSD deemed to comply tool spreadsheet. iii. The civil report indicates how the proposed water quality system meets the targets. Note, no hydrocarbons are specifically targeted as the site is a school and not a commercial or industrial site. iv. The MUSIC model has been revised to include rainwater reuse in line with the number of toilets provided as part of the proposed development. Refer to report section 6.1.4 for rainwater tank information. The rainwater tank is still sized to accommodate a minimum of 78% of non-potable water demand for the development. However, we welcome a condition to be imposed for the tank to be sized to accommodate 80% of demand. v. The MUSIC model has been revised to include rainwater reuse.

Issue	Response
model to include total developable area for the site including bypass areas. *iii. The proposed water quality system is to meet the required post development pollutant reduction targets indicated under Part J of Councils DCP.* *iv. A Rainwater tank is required to meet the water conservation targets under Part J for the development. A minimum of 80% of non-potable water demand for the development is to be met through the reuse of rainwater. Non-potable water demand is to include landscape watering and toilet/urinal flushing.* *v. MUSIC is generally used to assess the performance of the rainwater tank using the node water balance and an electronic copy of the MUSIC model needs to be provided to Council for assessment.* *vi. Allow for a minimum usage rate of 0.06 kL/day/toilet or urinal and a minimum of 0.4 kL/m2/ year for landscape watering (excluding turfed areas).* *vii. Allow for a 10% loss in rainwater tank size volume in MUSIC to that shown on the design plans. e.g. where a 50kL tank is modelled, construct a 55kL tank.* *viii. Ensure that the areas draining to surface inlet pits with OceanGuards match the engineering plans.*	vi. Reuse rate has been included in the MUSIC model. Refer section 6.1.4 and Appendix G in the Civil Report for hydraulic information on rainwater reuse. vii. Rainwater tank size has been corrected to be 55kL. viii. Drawing CV-0201 updated with surface inlet pits collecting surface flows, which matches the catchment plan drawing CV-0200. Litter baskets noted in the pit schedule on drawing CV-0001. Oceanguard detail provided on drawing CV-0212. ix. MUSIC model updated with BCC specific nodes for analysis. x. Stormfilter chamber size revised with weir dimensions shown on drawing CV-0213. xi. Stormfilter chamber size revised with weir dimensions shown on drawing CV-0213.

Issue	Response
ix. Ensure that Blacktown Council's specific MUSIC modes are used for the total development area draining to the devices. *x. The minimum Stormfilter chamber area is to be No. of Cartridges x 0.177 m2/cartridge excluding the area of the weir.* *xi. Ocean Protect has advised that the maximum storage permitted below the Stormfilter weir to ensure effective operation of the filter cartridges is limited to an equivalent volume derived from 2.0 mm of rainfall (20 m3/Ha) without losses, falling over the site area that drains to the Stormfilter chamber (ignoring any bypass area).*	
4. Submit all models (i.e. MUSIC, DRAINS, TUFLOW) and OSD Deemed to Comply Tool spreadsheet electronically to Council.	All models (i.e., MUSIC, DRAINS, TUFLOW) and OSD Deemed to Comply Tool spreadsheet have been completed by enstruct. These can be found at **Attachments D** through to **G**.
<u>Traffic Issues</u> *We remain concerned that the provision of only 93 car parking spaces for the school with increased capacity for 1,820 students and 133 staff will be relying on on-street parking to meet the parking demand. Our Traffic Engineer has been consistently opposed to the development on this aspect of the proposal during our discussions with School Infrastructure NSW. Our view remains that the reduced car parking provision on the site will put additional pressures on the surrounding on-street parking as the school is isolated and is not frequently serviced by public transport.* *The Supplementary Transport Response dated 20 April 2022 has been reviewed by our Traffic Engineer,*	In consultation with DPE, consideration has been given to the provision of additional car parking at the site. A Traffic Statement for Additional Parking Provision has been prepared by TTW, dated 17 June 2022 which can be found at **Attachment B** that proposes an additional 25 parking spaces. This provision will bring the total amount of parking spaces at the site from 93 spaces to 118 spaces. It is noted that this additional provision will help to meet the additional parking demand which would be generated by new staff based on existing modal splits (i.e., worst case scenario). We trust that this alleviates the concerns raised by Blacktown City Council.

Issue	Response
who notes that the Transport and Accessibility Impact Assessment has expected on-street parking usage to meet the shortfall in the staff parking. *In a worst-case scenario as described in the Transport and Accessibility Impact Assessment, 58 additional vehicles associated with the school will be parking on the nearby residential streets. This will impact the amenity of the residents of these nearby streets as school staff will try to park as close as possible to the school.* *We also note Transport for NSW's comments indicating that reduction in private vehicle usage is the aim of the project's transport strategy. However, Transport for NSW has not considered how this aim would be beneficial to the project. Mode-share split targets are by nature an estimate and a theoretical goal only which will need to be revised over time as the School Transport Plan is implemented and reviewed. The real impact of not providing required car park for staff will be felt by the community as we may never achieve reduction in private vehicle usage.* *The above parking shortfall situation is further exacerbated as the Department of Education's policy is not to provide parking on site to anyone at any time, and this is particularly the case for students.* *For these reasons, the proposal will not be supported in its current form.*	