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Pages:		7 + amended IWMP + plans
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27 April 2020

Amity College
c/o Outline Planning Consultants Pty Ltd
Attn: Gary Peacock

Dear Gary,

RE: ENGINEERING RESPONSE TO SUBMISSIONS RELATING TO SSD 9227 - PROPOSED AMITY COLLEGE SCHOOL CAMPUS AT NO.85 BYRON ROAD AND NO.63 INGLEBURN ROAD, LOTS 1 & 2 DP 525996, LEPPINGTON, NSW

Martens and Associates (MA) have undertaken a review of Camden Council's submission to the SSDA submission in a letter dated 8th October 2019 (attached). This response focuses on Councils' comments relating to civil engineering matters.

Council comments in Table 1 below relate to the MA engineering plan set submitted for the SSDA, drawing reference P1806493PS01-R09 revision G dated 24/07/2019.

Table 1: Response to Camden Council comments.

Item	Council comments	Response
1	The development conflicts with Council's concept design for the future signalised intersection at Byron and Ingleburn Roads. The concept design is aligned with the department's Leppington Precinct Transport and Access Strategy. The concept design may require land from the site:	The concept design for Byron Road and Ingleburn Road was not made available by Council at the time of design. Correspondence with Council was attempted on several occasions to obtain a design which we understood was in progress, the latest correspondence being 25/3/2019 to Council (David Atkin). No response was received during the design phase or since. The comments provided by Council 8/10/19 was the first chance to review Council concept road designs. The concept intersection design does not have regard for the local road which is shown within the ILP. It is unlikely that the slip lane will extend beyond the local road intersection as an intersection being located within the slip lane of an intersection is potentially a significant safety issue. We note that the intersection design with Council has been amended (as of 5 March 2020) where changes to the site boundary are no longer required.

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2	The proponent needs to consider Council's concept designs for Byron and Ingleburn Roads. The following works are required as part of the development: • the proponent must design and construct Byron Road's frontage footpath, kerb, gutter and verge which must match into the concept design levels for Byron Road, and • temporary road pavement must be designed and constructed along Byron Road (matching into Byron Road's frontage gutter lip level). Temporary cross fall grades at Byron Road must be between 1% and 5%:	Council's concept design for Byron Road and Ingleburn Road was not made available at the time the design was being undertaken. Roads in connection with the development were designed in accordance with Camden Council Growth Centre Precincts DCP (Refer to "Camden City Council Growth Centre Precincts Development Control Plan, November 2016, Section 3.3.1, pp. 53). Council's Byron Road design, including temporary connections, can be incorporated at CC stage and can be incorporated as a condition of consent.
3	The proponent must design and construct a temporary 20m long taper along Byron Road at both ends of the temporary road pavement in accordance with the applicable Roads and Maritime Services' design guides.	Noted.
4	Compliant swept paths for a 12.5m heavy rigid truck must be demonstrated between the local roads and Byron Road.	The kerb return radii and boundary splays were designed in accordance with Council's Design Engineering Specifications for urban areas (2009, Table 2.5). Swept paths for 12.5m HRV are not considered required to demonstrate compliance for a typical intersection.
5	The proponent must provide sight distance assessments for the intersection of the local roads and Byron Road. Reference should be made to Section 2 of Council's Engineering Design Specifications.	Proposed local road horizontal and vertical geometry are designed in accordance with Council's Design Specifications (2009, Section 2.4, pp. 26). Intersections of proposed local roads and Byron Road are approx. 90 degrees, which is greater than the minimum 70 degrees as per Austroads Guide to Road Design - Part 4A, Section 3.1, pp. 15. The existing grades on Byron Road around the proposed intersections are relatively flat (up to 3.5% vertical grades) which does not impede sight distances from the new local road. Additionally, the roads are to be located in a future urban environment where vehicles would likely be operating at lower speeds (50 - 60km/h). Hence, based on the above, a sight distance assessment is not considered necessary to demonstrate compliance.
6	The proponent must provide cross sections at 15m intervals along Byron Road at the property. The cross sections must show the temporary interim and ultimate Byron Road levels in relation to the development. Reference should be made to Section 2.2.3 of Council's Engineering Design Specifications.	Cross sections to be provided at S138 stage for approval. No staged road works are proposed.
7	The proponent must indicate locations of V5 lighting along Byron Road's frontage.	By others.
8	The submitted engineering plans detail that underground electrical, water and telephone services are located at the Byron Road frontage. The proponent must indicate the required relocation of these services as	A note can be added to the plans relating to services relocation. This can be conditioned as part of the consent.

	part of the design of the Byron Road frontage.	
9	The proponent must design and construct Byron Road's drainage system, aligned with Council's concept design, which caters for the developed upstream catchment (and other DAs lodged with Council) in accordance with the Leppington Precinct Water Cycle Management Strategy (2012) by Parsons Brinckerhoff. The Byron Road and internal site drainage system must accommodate the ultimate developed upstream catchment, in accordance with the Leppington precinct's indicative layout plan and the Leppington Precinct Water Cycle Management Strategy (2012) by Parsons Brinckerhoff:	Refer to our response to Item 2 above relating to Council's concept road design. Council has not yet provided the concept design for Byron Road. When provided, the information can be incorporated into the engineering plans. The current concept design has been prepared in accordance with the Leppington Precinct Water Cycle Management Strategy (2012).
10	It is recommended that the proponent reviews and considers the following documents: • Leppington Precinct Transport and Access Strategy (Department of Planning, Industry and Environment), • Leppington Precinct Water Cycle Management Strategy (Parsons Brinckerhoff), • Council's Engineering Design Specifications, • Council's Flood Risk Management Policy, • 100% concept designs (WSP) provided by Council, and • 20% concept designs (Acor) provided by Council.	MA have considered these relevant documents and achieve compliance with these documents, except for the last two items (Concept designs by WSP and Acor). We note that we are yet to be furnished with the 100% concept design by WSP and a comprehensive document for the Acor design. MA have been provided with images (screenshots) of these concept plans which are contained within Council's comments 8/10/19.
11	In accordance with the Leppington precinct's indicative layout plan and water cycle management strategy, the stormwater flows from 63 Ingleburn are to drain to the zoned drainage reserve near 75 Ingleburn Road. Due to these requirements, the following needs to be considered, modelled and incorporated into the drainage design: • overland flows should not be conveyed through 69 Ingleburn Road as this site is zoned for public open space. A drainage swale is not appropriate through this space, • the 1% annual exceedance probability (AEP) level flows, from the post development external (in accordance with the indicative layout plan and water cycle management strategy) and internal catchment, are to discharge into the drainage reserve and eventually online regional drainage basin B9, and • the development and internal roads need to be at or above the post development flood planning level (not the existing flood planning level).	The Urban Structure for 69 Ingleburn Road is considered an Open Space Network/Drainage according to Camden Growth Centre Precincts DCP Schedule Five - Leppington Priority Precinct (Figure 2-10, page 13). Additionally, the Leppington Precinct Water Cycle Management Strategy (Parsons Brinckerhoff) identifies that the site of the proposed development drains through this area and has defined it as 'drainage'. All flows from the post development external and internal catchments are directed to the road network drainage systems or spaces identified for drainage use, which the ILP indicates leads to basin B9. Existing site flows are conveyed by overland flow through 69 Ingleburn Road. The proposed development mimics the existing site flows and does not increase peak flows (refer to OSD calculations within the IWMP) nor concentrate them as the proposed discharge point is within an existing drainage depression. Nevertheless, approximately 3000 m^2 has been diverted to Pluto Avenue, to reduce the catchment discharging to 69 Ingleburn Road. All proposed development is above the FPL. The existing flood planning level extends into the site by several metres and the proposed development in this

		area is several metres above this level and will not result in offsite flooding impacts. We note that the NSW State government does not show flooding on the site. Fig 2-3 Flood Prone Land contained in schedule 5-Leppington Priority Precinct which forms part of the Camden Growth Centre Precinct DCP, show that the 1% flood levels does not encroach the site.
12	The proponent must provide the DRAINS model to Council for assessment. The model must indicate the following in accordance with Council's Engineering Design Specification: • full drainage system accommodation for 20% AEP events and full conveyance of 1% AEP event overland flows within the road reserve (<200mm depth), • 50% blocked pits for 1% AEP events, • post development upstream catchments without temporary on-site detention, and • minimum 1% pipe grade.	The concept stormwater design demonstrates an appropriate drainage system can be provided to service the site and this information can be relied upon for the purposes of granting a development consent. Camden Growth Centre Precincts DCP does not require this level of assessment (ie. detailed design of pit and pipe and overland flow paths). Council's Engineering Design Specifications apply once a Development Application has been approved. It is considered that hydraulic modelling of individual pit and pipes is best dealt with at detailed design (CC stage). This level of detail will be provided at construction certificate stage (CC) once approval has been granted and can be conditioned as part of the development consents. No DRAINS assessment was requested in the SEAR's requirements issued by Council dated 20/4/2018. This was also not requested at a meeting with Council, dated October 2018. Overall catchment flows have been calculated via DRAINS modelling for the purposes of OSD design. Detailed hydraulic analysis is expected to be required at detailed design (CC) stage. DRAINS models can be provided for OSD sizing. The proposed design nominates a length of pipe with grades of less than 1%. Minimum pipe grades and design requirements can be conditioned as part of consent. A consent such as this is typical and considered achievable for the proposed development.
13	The following issues are identified with the applicant's integrated water management plan and engineering plans: • in Section 4.1, the minor storm event is the five year annual recurrence interval (ARI), not the two year ARI. Reference should made to Section 3.4.2 of Council's Engineering Design Specifications, and • catchment plans for the Byron Road and internal drainage systems must be provided.	Section 4.1 of the report is amended, see attached the updated Integrated Water Management Plan. Camden Growth Centre Precincts DCP does not require concept catchment plans, these are generally produced with hydraulic analysis at construction certificate stage and not considered necessary for concept DA stage. Refer to similar nearby recently approved school approved by Camden Council on Heath Rd Leppington. No catchments were required.
14	The ramps to the basement car parks must be designed in accordance with AS 2890.1-2004. Insufficient information has been provided to assess this.	by others (architect)
15	The basement car park areas must be designed in accordance with AS 2890.1-	by others (architect)

	2004. Insufficient information has been provided to assess this.	
16	The basement car park areas shall be provided with suitable stormwater drainage systems. This is likely to be a pump out system which must be designed in accordance with AS 3500.3.2-1998. This must discharge into the on-site detention tank and appropriate additional water quantity provision will be required to achieve the targets set in Council's Engineering Design Specifications.	A concept basement drainage is included in the amended engineering plans. Detailed design is to be undertaken at detailed design (CC) stage.
17	Road 1 is an already constructed half road known as Pluto Avenue. The design of road 1 (extension of the pavement) must be consistent with the as built levels.	The proposed design is consistent with the approved CC design of Pluto Avenue. This can be incorporated as a condition of consent.
18	The half road construction of road 1 must provide the crown at the middle of the road carriageway. Appropriate keying into the existing pavement is required (300mm bridging at each layer (3 layers)). The new pavement width must be approximately 4.5m instead of the 3.5m shown on civil plan no. PS01-D201 revision E.	Pavement keying details is considered a detailed design issue and is to be approved via Council's S138 approvals process (see comment at 21 below). The design is consistent with the approved CC design of Pluto Avenue (half road), which includes the crown and 1m of pavement on the north eastern side (for a carriageway width of 5.5m).
19	The design for road 2 shall be extended 50m into the adjoining property (69 Ingleburn Road) to demonstrate that the design is suitable for the adjoining property and vicinity.	The engineering plans have been updated to include the extension of road 2. Refer to the attached plan ref P1806493PS01
20	A bond should be provided to decommission the temporary turning head at end of road 2 and reconstruct it to its ultimate condition when the adjoining property is developed and the turning head is no longer required. This can be addressed via a condition of consent.	Noted. This can be incorporated as a condition of consent.
21	A road works application pursuant to Section 138 of Roads Act 1993 is required for works carried out along Pluto and Byron Roads.	Noted. This can be incorporated as a condition of consent.
22	The Byron Road road pavement must be constructed at the same stage as the bus bay.	Noted. This can be incorporated as a condition of consent.
23	The final pavement design shall be carried out in accordance with a geotechnical site investigation by a suitably qualified engineer.	Noted. This can be incorporated as a condition of consent.
24	Road designs are to be in accordance with Council's Engineering Specifications.	Noted. This can be incorporated as a condition of consent.
25	Stormwater drainage designs are to be in accordance with Council's Engineering Design Specifications.	Noted. This can be incorporated as a condition of consent.
26	All sag pits must have minimum 2.4m lintels and on-grade pits must have minimum 1.8m lintels.	Noted. This can be incorporated as a condition of consent.
27	Drainage line 1A701 (stage 1) must be clarified (refer to drainage longitudinal section drawing no. PS01-E310 revision A).	The drainage design has been amended to discharge water to Pluto Avenue (refer to Item 11). As a consequence of these changes, the stage 1

		drainage line 1A701 has been made redundant and is no longer proposed. Line 1A701 has therefore been removed from the latest updated engineering plans.
28	A MUSIC model must utilise Council's Music Link parameters when modelling the water quality aspect of the stormwater management system.	Council's DCP and Engineering Design Specification do not have any requirements relating to MUSIC-link. An inconsistency is noted in Council's DCP and Engineering Design Specification [DCP requires no adverse impact on water quality (2019, Section 2.3), while Council's Engineering Specification requires 90%/85%/65%/45% reduction rates for GP, TSS, TP and TN to be achieved for the site (2009, Table 3.3.9)]. MA adopted the Water Quality targets specified in Council's Engineering Specification. Notwithstanding this, the MUSIC models were updated in accordance with Council's MUSIC-link and comply with Council's water quality requirements.
29	The proponent needs to obtain drainage easements over downstream properties where stormwater discharges into those properties.	The proposal discharges flows within the site in a manner closely mimicking the existing conditions immediately prior to entering the downstream property. Considering there is no material change in the flow regime, no easement is considered required. Refer to a recent school approval (Camden Council) nearby at Heath Rd, Leppington where an easement was not required for upslope development of a large urban subdivision discharging stormwater through a school and then land to be dedicated back to Council.
30	The on-site detention discharge point, with headwall and energy dissipater, must be located within the site. The dissipater system must be designed to comply with Council's Engineering Design Specifications.	The discharge point, headwall and energy dissipater are located wholly within the site. Further details to be provided at construction certificate stage.
Item	**Council Environmental Health comments (08/10/2019)**	**MA Response**
4 & 5	4. Further contamination testing should be carried out around the perimeter of the site's existing dwelling house and sheds which have been identified in the contamination assessment and remediation action plan. An unexpected finds protocol has been included for asbestos but there may be additional unidentified contaminants that should be tested for. 5. Council understands that the site has been subject to unauthorised material placement which is evident from a review of recent aerial imagery. Council also understands that the NSW Environment Protection Authority (EPA) is investigating the matter. Council recommends that the department seeks advice from the EPA on this matter if not already done so. It should be clearly demonstrated that the unauthorised placement of any material on the site has not contaminated it and rendered it	1. Extensive investigations have been undertaken in the vicinity of the buildings. BH5 and 23; and TPs 23, 24, 25, 26, 31, 32, 33 and 35 were all samples in close proximity to the sheds and dwellings. 2. Samples collected from each of these locations were tested for COPCs. 3. Laboratory analysis of all samples confirm that these locations are free of contamination as assessed against the appropriate provisions of the NEPM as adopted by GeoEnviro Consultancy in their assessment. 4. The presented Unexpected Find Protocol address any unexpected finds and not just asbestos. Asbestos is addressed in more detail – but the protocol is considered sufficiently general in nature to address all unexpected finds.

	unsuitable for the development. This may necessitate additional contamination testing and remediation.	Therefore we consider the assessment to be adequate and to have confirmed contamination on the site is limited to that identified in the Stage 1 and 2 Assessment and thence addressed in the project RAP.

Please call our offices if you have any further queries regarding this matter.