NSW GOVERNMENT | Public Works

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MEMORANDUM

TO	Holly Archer, Cessnock City Council
CC	
FROM	Hulya Tugcu, NSW Public Works
DATE	17 September 2013
SUBJECT	Response to Draft Conditions
ATTACHMENTS	Appendix 1 & 2 (9 pages)

This memorandum responds to the conditions raised by Cessnock City Council in their proposed conditions issued on the 5th September 2013 for the proposed development at Kurri Kurri TAFE. The issues raised by Council and our comments have been summarised in the Table below.

<table>
<tr><th>Item Reference</th><th>Council's Condition Reference</th><th>NSW Public Works Responses</th></tr>
<tr><td>1</td><td>Deferred Commencement Condition

<u>SCHEDULE 1</u>
1. The following deferred commencement condition must be complied with to the satisfaction of Council within six (6) months of the date of determination of the development consent:

The applicant shall provide details of an on-site detention design for the newly proposed buildings. The on-site detention design will need to include plans and calculations in accordance with Council's 'Engineering Requirements", 'Australia Rainfall and Runoff 1987' and all relevant Australian Standards. This consent will not operate until the documentary evidence has been submitted to and approved by Council.</td><td>Our assessment shows that the proposed works on the TAFE site will create an increase of about 18% (or approximately 0.17 ha) in impervious area.

In accordance with Council's Development Control Plan (DCP) a stormwater management concept plan has to be prepared and to cater for the proposed works on the school site. The piped stormwater system has been designed to cater for a capacity of the 20 year ARI storm event and provision of long-term overland flow paths to carry for the major flows up to the 100 year ARI storm event. Also On-Site Detention (OSD) and WSUD initiatives have been designed to control stormwater runoff from the development site based on the principal of restricting post-development discharge to pre-development rates for all storm events up to and including the 100 year ARI event.

On-site Detention (OSD) involves temporary storage and controlled releases of stormwater generated from the proposed works, with benefits for downstream residents in small rainfall and large storm events. OSD system must be properly maintained to ensure that stormwater flows from the site are regulated for the life of the development.

Hydrological calculation for the OSD system has been carried out in accordance to AR&R1987, as a result of the increase in impervious areas for upto the 100 year ARI storm. Refer to Tables 1 and 2 and Appendix 1 details.

Table 1 Peak Flow Estimates for Post Development Condition
<table>
<tr><th rowspan="2">Design Storm (ARI)</th><th colspan="3">Estimate Peak Flow (m^3/s)</th></tr>
<tr><th>Pre-Development</th><th>Post Development</th><th>Post Development with OSD</th></tr>
<tr><td>100 year</td><td>0.03</td><td>0.06</td><td>0.06</td></tr>
</table>
Table 2 OSD Requirements Summary
<table>
<tr><th>Increased in Impervious Area (ha)</th><th>OSD Storage Volume Required (m^3)</th><th>PSD (m^3/s)</th></tr>
<tr><td>0.17</td><td>55</td><td>0.02</td></tr>
</table>
Notes: *Refer to Figure 1 for Cumulative Storage Curve.</td></tr>
</table>

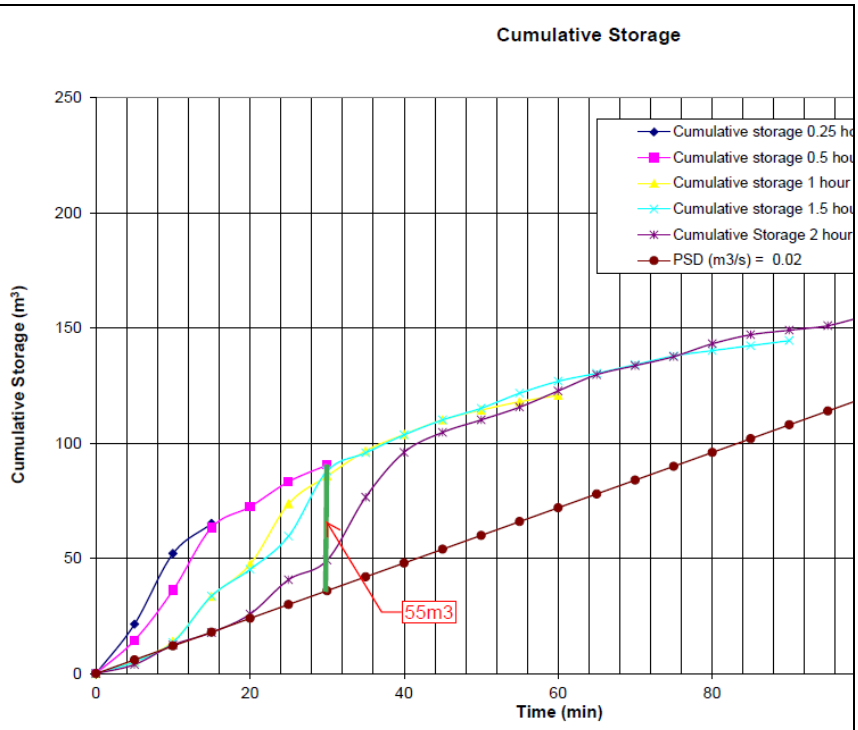

Figure 1 – Cumulative Storage Curve

Therefore the required OSD storage for the proposed developments is 55 m^3.

Additional surface runoff waters will be captured by the new rainwater tank system. Roof waters from Block O, P and Q will be collected via roof gutters, downpipes and into 3 x 20kL rainwater tanks.

3 x 20kL = 60kL

If 30% storage capacity of rainwater tank used for OSD = 60 kL x 0.3 = 18kL.

If 30% for OSD then you will need 55/0.3 = 183kL rainwater tank altogether.

The proposed rainwater tank system is beneficial in that it will maintain existing site permissible discharges and reduces the potable water consumption, thus allowing the harvesting and reuse of stormwater onsite, and this assists in reducing the amount of post development site discharge.

New Tank water system will be utilised as a non-potable supply for the buildings and for other secondary reuse purposes such as toilet flushing, irrigation of landscaping areas, etc. The waters collected can be treated to potable quality by UV Disinfection. Overflows from the rainwater tanks shall be directed to the proposed stormwater system.

The proposed stormwater drainage system has been designed to discharge into the storage dam downstream of the TAFE site (Approximate maximum storage capacity of 5600m^3). This downstream dam is a part of total site water cycle management scheme for the proposed sub-division. The downstream dam provides further stormwater harvesting opportunity for the site (site irrigation via a pump system) and it allows for additional OSD storage capacity for the future site redevelopment. Refer to Appendix 2 for Civil and Hydraulic drawings.

Further on-site detention storage is not specifically required for the proposed TAFE development as it has already been intended to be provided in the proposed stormwater harvesting system and downstream infrastructure as part of the total water cycle management scheme for the proposed sub division by the developer.

2	**SCHEDULE 2** **TERMS OF CONSENT** **General** 3. Any alterations to existing surface levels on the site shall be undertaken in such a manner as to ensure that no additional surface water is drained onto or impounded on adjoining properties.	The alteration to existing surface levels on the will not cause any additional surface water onto or impounded onto adjacent properties. The works will be carried out to ensure that the normal drainage system is not altered and that the runoff from the site will flow into the downstream storage. Existing downstream dam storage capacity combined with the new stormwater harvesting system will cater for additional stormwater surface runoff up to 100 year ARI storm events. Thus proposed developments will not results in loss of existing flood storage or impact the downstream adjoining properties.
3	**General** 4. On-site car parking shall be provided for a minimum of 21 vehicles and such being set out generally in accordance with Council's Car Parking Code. This brings the total requirements for on-site parking at the campus to 189 spaces.	There are currently 329 spaces on site, additional car parking spots are also being provided as part of the project. Refer to Statement of Environmental Effects (May 2013) issued with the DA.
4	**General** 6. Pursuant to Clause 94 of the Environmental Planning and Assessment Regulation 2000, all existing essential fire safety measures/services, not affected by the proposed works, within Block O, Block P and Block PP shall be assessed and certified by a suitably qualified person as operational and complying with no less than the standards applicable to the essential fire safety measure/service at the time of installation.	Current design allows for fire hydrant upgrade. We have also allowed for fire hydrant tanks to be installed. Existing Blocks O, P and PP over 1000m^2 Existing fire hydrant system and Hunter water main do not meet the current requirement. Hunter Water's Pressure and Flow statement maximum 15 l/s. The existing buildings require 20l\s.
5	**Drainage and Flooding** 7. A detailed drainage design for the disposal of surface water from the site, including any natural runoff currently entering the property and connection to the existing drainage system shall be prepared in accordance with Council's 'Engineering Requirements for Development' (available at Council's offices). Such layout shall include existing and proposed surface levels, sub-catchments and conduit sizing appropriate for the development. .	Proposed stormwater system has been designed in accordance to Council's engineering requirements for development. Refer to Appendix 2 for Civil and Hydraulic drawings.
6	8. The registered proprietor	Refer to Item 1 above for details on the proposed stormwater detention facility.

	of the land is to provide a stormwater detention facility within the boundaries of the site to reduce the peak stormwater discharge from the developed lot to that of the peak stormwater discharged from the undeveloped lot for all storm events from the 1 in 1 year to the 1 in 100 year Average Recurrence Interval (ARI) storm event. A detailed drainage design shall be prepared for the disposal of roof and surface water from the site, including any natural runoff currently entering the property. Details of on-site storage and the method of controlled release from the site and connection to an approved drainage system in accordance with Council's 'Engineering Requirements for Development'. The detailed plans, specifications and copies of the calculations, including existing and proposed surface levels, sub-catchments and conduit sizing appropriate for the development prepared by an engineer suitably qualified and experienced in the field of hydrology and hydraulics.	
7	**Bushfire Protection** 9. The following bushfire protection measures are to be implemented at the commencement of building works and maintained for the life of the development:	Response pending from consultant.
8	**DURING CONSTRUCTION** **General** *11. (a) showing the name, address and telephone number of the Principal Certifying Authority for the work, and..*	'Principal Certifying Authority' does not apply to Crown as provided by the EP&A Act Section 109R.
9	**PRIOR TO OCCUPATION** **Fire Safety** 26. The buildings must comply with the Fire Safety provisions applicable to the approved use. The applicant shall provide council and the Fire Commissioner with a copy of the Final Fire Safety Certificate and the Fire Safety Schedule relating to the required fire safety measures in accordance with Division 4 of the	Crown not required to obtain an Occupation Certificate due to the provisions of Section 109M of the EP&A Act.

	Environmental Planning and Assessment Regulation 2000 prior to occupation of the building/s or issue of an Occupation Certificate.	