SPARKS AND PARTNERS
HYDRAULIC, CIVIL & FIRE SERVICES CONSULTANTS

Response to letter from City of Ryde Council to Department of Planning regarding exhibition of environmental assessment for concept plan application

In Response to the letter issued by City of Ryde Council, to the Department of Planning regarding the Exhibition of environmental assessment for concept plan application – residential development at 74-76 Belmore Street, Ryde and the issues raised by Council. Sparks and Partners provide the following comments.

Under the heading of Drainage and flooding, Council have raised a number of issues regarding the collection of rainwater on site and its subsequent dispersal into Council's Stormwater infrastructure located around the site.

1. **The provision of Onsite Stormwater Detention (OSD) for half the site draining north into the Council's drainage system at the intersection of Belmore Street and Junction Street is considered desirable.**

   OSD for this half of the site will be retained as per Council suggestion.

2. **Provision of OSD for the remaining half of the site drained to Council's stormwater system in Porter Street is considered not beneficial as this is draining to the bay and is located downstream of the catchment.**

   OSD was originally shown on the concept documentation as it was assumed that it would be required for this area. The subsequent Development Application (DA) drawings to be prepared will not include OSD systems for the buildings on the site which drain to the bay.

3. **Council does not believe that OSD is necessary for the site, but that the volume** (that would have been necessary) **required should be retained for internal reuse in the toilet, laundry, garden and other uses.**

   The volume calculated by Sparks and Partners for OSD will be added to any volume required under BASIX for reuse within the building as stipulated within the BASIX report. The rainwater reuse volume will be provided on the subsequent DA drawings.

PO Box 979, Parramatta NSW 2124
L1, 91 GEORGE ST PARRAMATTA
NEW SOUTH WALES 2150
TEL 02) 9891 5033 FAX 02) 9891 3898
EMAILmail@gjsparks.com.au

GJSPARKS AND PARTNERS PTY LTD ABN 83 003 690 908
QUALITY ASSURED TO ISO 9001:1994

4. **It is considered that the required OSD volume is extremely low for the large catchment area involved. Please be advised that OSD volume should be calculated based on a pre-development Permissible Site Discharge (PSD) value equal to the site being fully pervious. The design of the OSD should limit post development values (assuming 100% pervious) for all storm events and durations up to and including the 1 in 100 year storm.**

   The OSD for this site has been calculated using the DRAINS computer program and has adopted pre-development model of 100% pervious changing to 100% impervious for the post development. The discharge rates from these two models have been compared for all storms from 1 in 5yr to 1 in 100yr events for each building. The OSD volume was then calculated to reduce the post development flow from the building being modelled to reduce the flow rate to be equal or lower than the pre-development flow rate for all storm events. This process was repeated for each building. The OSD volume will be calculated when DA architectural drawings are developed. The OSD calculations well include all hard stand areas (paths, carparks and driveways) these areas will be analysed and added to OSD calculations as either draining to OSD or by-passing. The final OSD volume for each building will then be calculated for all storms taking these matters into account.

5. **In addition to the above, the proponents should ensure that stormwater discharge from the site is connected to an underground drainage system. The new underground drainage system is to be sized for the catchment area draining to it including those from external catchments for a minimum 1:20 year storm event.**

   In the concept plan proposed by Sparks and Partners, drainage from the site will connect to existing or extended Council stormwater systems located in proximity to the site. Due to the contours on the site and the provision of drainage by Council in proximity to the site there should be no external flows draining onto the site. The site itself will drain to the existing stormwater catchments as currently dictated by existing levels, and any extension of Council's stormwater system will not increase the catchment area served by the existing infrastructure. A connection point is required adjacent to the site to allow connection of internal drainage.

   All in-ground drainage provided within the site will be sized to accommodate the 1:100yr storm event as stipulated in AS3500.3:2003 Plumbing and Drainage Part 3 – Stormwater Drainage Standard. Any drainage within the street would already be designed to accommodate a 1:20yr storm event and as the catchments the site is draining to are unchanged, no additional loading will be burdened on one catchment or another. The discharge from the site during the 1:20yr event will also not exceed current levels as the provision of OSD systems will ensure that any site discharge will match or be lower than current rates. Therefore as long as the size of any drainage extended is not reduced in size the capacity of the system will remain unchanged.

6. **In the event that approval being granted the proponents should be advised that any forthcoming development applications should comply with Council's stormwater and drainage requirements.**

   All concept design work was documented to comply with Council's requirements as stated in Council's documentation and standards. The future DA Stormwater Management drawings will be designed to comply with all relevant Council policies codes and standards.

7. **With respect to the overall water management system, it is acknowledged that Water Sensitive Urban Design (WSUD) features have been incorporated into the concept design and this is supported. However, it is considered that the treatment measures proposed do fall somewhat short of typical Total Suspended Solids (TSS), Total Phosphorus (TP) and Total Nitrogen (TN) targets.**

   Refer to response by Equatica for details.

8. **Given the size and density of the development, the application should be supported by an Integrated Water Cycle Plan prepared by a suitably qualified engineer with experience in Water Sensitive Urban Design where further improvements can be made in the design. Issues to be addressed should include all issues and responses affecting the water cycle including water conservation, the quality of stormwater run-off and run-off frequency.**

   Refer to response by Equatica for details.

Yours faithfully
G J Sparks and Partners Pty Ltd

Daniel Hoogesteger (B.Eng/B.A./Dip.Eng.Prac)
Engineer