

# HILLS SHOWGROUND STATION PRECINCT DEVELOPMENT (SSD-9653)

THE HILLS SHIRE COUNCIL REVIEW OF SSDA SUBMISSION

THS Council Response to SSD-9653, 10 December 2019, Reference FP223		WSP Response	THS Council Comments to WSP Response
<b>FLOODING AND STORMWATER MANAGEMENT</b>			
1	Flooding and overland flows within the subject site under developed conditions should be demonstrated in addition to existing conditions within the precinct and Cattai Creek. Consideration should be given to orderly development and identification of any constraints in relation to the existing and proposed stormwater network required to be provided. As per Council's Showground Precinct DCP, stormwater runoff must be treated on the development site before it discharges to a public drainage system.	Hydrologic and hydraulic modelling was beyond the scope of the IWCMS, however other recent studies undertaken as part of the Metro works were reviewed. The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016) indicates that the recently constructed on site detention basin on the north western boundary has been designed to account for all flood flows of the site (including the area covered by the IWCMS, under developed conditions). While detailed design of future development of lots will be undertaken by developers, Section 4.2.1 and 4.3. of the IWCMS has identified the type of size of treatment for each DA lot to ensure it meets the requirements before discharging to the Council road network. The final location of these treatment devices is at the discretion the developer.	<b>Not addressed.</b> An OSD system needs to be provided for the eastern section of Precinct East, located within the site, to ensure the developed flows are attenuated to pre-development levels before discharging into the drainage system at the intersection of Showground Road and Carrington Road. The fifth bulleted item of Section 6.4.3.7 of the NWRL Design Report Package No. 2109 states that the eastern section of Precinct East does not need an OSD system since an equivalent area of Precinct East drains westwards into the OSD basin near Cattai Creek. This is not an acceptable substitution considering that the catchment that actually drains eastwards to Showground Road will add more strain on the area's drainage system if the flows are not attenuated and hence potentially worsen the flooding situation in this section of Showground Road.
2	An indicative layout plan of the proposed stormwater network, stormwater treatment / management measures and overland flowpaths is required.	The IWCMS focused on the development lots as identified in the report (Precinct West, Doran Drive, Precinct East). The layout of stormwater and treatment infrastructure within these development lots will be subject to detailed design by the future developer. The layout of stormwater infrastructure beyond the project footprint was designed as part of previous works for the development of the Hills Showground station and commuter carpark. Section 3.2.2 of our report provides an overview of this infrastructure. Refer to the Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016) for complete details of the drainage system beyond the project footprint which includes the stormwater network in the road corridor.	<b>Not addressed.</b> The proposed drainage layout plans in both the IWCMS (Figure 3.2) and the NWRL Design Report Package No. 2109 (Figure 6.2) do not include the eastern section of Precinct East. Bioretention swales along road verges shown in IWCMS Figure 4.6, intended to be owned and maintained by Council, will not be supported. Water quality treatment devices will have to be located within each DA area.
3	The proposed stormwater network level of service is required to be demonstrated to ensure compliance with Council design standards.	Beyond the scope of the IWCMS. The detailed design of each DA lot should consider stormwater management within each lot. The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016), Section 6.4.3.4 states "The design has ensured that all runoff from the road surface and future development areas are captured and directed to OSD basin and proposed Carrington Road drainage systems." Section 5.4 states the drainage has been designed in accordance with Hill Shire Council (THSC) Design Guidelines – Subdivision / Development (sections, 4.14, 4.17, 4.18 and 4.8)	<b>Addressed.</b> Section 2.2.1.1 of the IWCMS mentioned design of stormwater system for each DA area will comply with Council's Design Guidelines for Subdivision/Developments.
4	Flows draining from the eastern portion of the site to the intersection of Showground Road and Carrington Road are to consider the RMS proposed stormwater network upgrades in that immediate locality.	The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016), Section 6.4.3.4 states "The design has ensured that all runoff from the road surface and future development areas are captured and directed to OSD basin and proposed Carrington Road drainage systems." The Carrington Road drainage system is the eastern most section of the project. <i>Refer to Figure 6.2 of the report</i>	<b>Not addressed.</b> Under existing conditions, the easternmost section of the Hills Showground Station Precinct drains towards the intersection of Showground Road and Carrington Road. In the developed scenario, the eastern section of Precinct East will also drain towards the same junction. Section 6.4.3 of the NWRL Design Report Package No. 2109, however, did not discuss how this area drains under both existing and developed scenarios. Section 3.2.2 of the IWCMS discussed about the existing drainage of this area but there was no mention in Section 4 of IWCMS about the drainage of the area under developed conditions. The IWCMS should state that drainage of the eastern section of Precinct East will drain towards the drainage system at the intersection of Showground Road and Carrington Road and consideration be given to the potential upgrades undertaken by RMS on the drainage system in consequence of the civil and any drainage upgrading works completed within Showground Road.
5	It is stated in Section 4.7.1 of the Integrated Water Cycle Management Strategy that scour protection shall be installed at each drainage outlet to the Creek to minimise erosion. However, no discharge locations have been proposed or indicated in the concept proposal. Proposed or likely discharge locations to the creek need to be identified.	The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016), Section 6.4.3.4 states "The design has ensured that all runoff from the road surface and future development areas are captured and directed to OSD basin and proposed Carrington Road drainage systems." No drainage outlets to the creek are proposed nor required by the proposal, nonetheless the IWCMS acknowledges the potential requirement for scour protection, should any future development works require direct discharge to Cattai Creek.	<b>Not addressed.</b> Sections 4.7.1 and 4.7.3 should be revised to say that no additional drainage outlets to Cattai Creek will be required for the DA Areas. The Precinct West and Doran Drive Precinct will drain into the existing OSD basin whose outlet into Cattai Creek is already provided with scour protection.
6	It is stated in Section 4.7.3 of the Integrated Water Cycle Management Strategy that discharges to Cattai Creek would require implementation of a surface water quality monitoring program. Further information is required in this regard detailing why monitoring is required, what parameters are to be monitored and who would be responsible for the monitoring, noting that Council does not conduct a water quality monitoring program.	This has been recommended to ensure the treatment measures function as designed. The data collected could be added to the Greater Sydney Local Landcare, Sydney Water and DPIE Streamwatch dataset. Noting that a monitoring site exists on Cattai Creek some 18km downstream but there is nothing in the upper catchment region.	<b>Not addressed.</b> Council supports the proposed water quality monitoring program. However, the IWCMS should expound on what parameters will be monitored and who would be responsible for this monitoring.
7	All future development applications should demonstrate compliance with industry standards and Council requirements with respect to water management.	Refer to The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016) which demonstrates compliance for the road drainage network. Additionally, future developers will be required to demonstrate compliance with industry standards and Council requirements as part of the DA process.	<b>Addressed.</b> Section 2.2.1.1 of the IWCMS mentioned design of stormwater system for each DA area will comply with Council's Design Guidelines for Subdivision/Developments.
<b>INFRASTRUCTURE</b>			
8	Biofiltration swales proposed in a road verge, intended to be owned and managed by Council will not be supported. Swales and tree pits need to be contained to the development lots noting they treat runoff from those lots (not the road areas already addressed as part of the previous station works).	Noted. The concept strategy incorporates a minimum dimensions (150 linear metres) for bioretention areas within garden and tree beds proposed along the pedestrian and vehicle pathways. Final locations of bioretention will be at the discretion of the developer.	<b>Not addressed.</b> The IWCMS needs to state that any water quality treatment devices including bioretention swales need to be located within the DA areas and not within road verges.
9	Likely locations of proposed Gross Pollutant Traps should be demonstrated with detail as to who would be responsible for the ongoing management. Any cartridge filter treatment devices proposed to be owned and managed by Council will not be supported. Additionally, pit inserts i.e. enviropods, oceaguards or similar, are not generally supported where Council is responsible for the ongoing management and maintenance.	It is intended the works are within the development lot and therefore it is the building owner/site owner's responsibility to maintain them unless they have an agreement with Council. Signage has been recommended to ensure occupiers (and potential owners) are aware that they have a responsibility to maintain/improve water quality from the site.	<b>Addressed.</b> However, the IWCMS should include a statement that says water quality devices will be located within the DA areas and the ongoing maintenance and management of these devices will be sole responsibility of the property owners not Council.
10	Gross pollutant traps are only required as an end-of-line item whereas Precinct East is at the top of the catchment that drains to the existing road network which already deals with gross pollutants before discharging to the open channel and basin constructed downstream by others. <del>The Strategy relies on the open channel and basin constructed downstream by others, without considering whether the modelling and reporting that informed the design of that open channel and basin considered this additional runoff from a developed catchment. This needs to be more closely considered, as supplementary on-site stormwater detention may be required. A plan / sketch showing the existing and proposed stormwater management measures in the context of the subject site that speaks to the Strategy is needed.</del>	The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016), Section 6.4.3.7 states that the basin design has taken into account future development of the site, which includes these developments identified in the IWCMS.  The layout of stormwater and treatment infrastructure within the project development lots will be subject to detailed design by the future developer, however the IWCMS specifies which treatment infrastructure will be required.	<b>Not addressed.</b> GPT and filtration devices will be required for Precinct East before flows are discharged to the existing road drainage systems either in Andalusian Way/De Clambe Drive or at the intersection of Showground Road and Carrington Road.
11	<del>Gross pollutant traps are only required as an end-of-line item whereas Precinct East is at the top of the catchment that drains to the existing road network which already deals with gross pollutants before discharging to the open channel and basin constructed downstream by others.</del> The Strategy relies on the open channel and basin constructed downstream by others, without considering whether the modelling and reporting that informed the design of that open channel and basin considered this additional runoff from a developed catchment. This needs to be more closely considered, as supplementary on-site stormwater detention may be required. A plan / sketch showing the existing and proposed stormwater management measures in the context of the subject site that speaks to the Strategy is needed.	The Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016), Section 6.4.3.7 states that the basin design has taken into account future development of the site, which includes these developments identified in the IWCMS.  The layout of stormwater and treatment infrastructure within the project development lots will be subject to detailed design by the future developer, however the IWCMS specifies which treatment infrastructure will be required.	<b>Not addressed.</b> The IWCMS should say that no future developments particularly Precinct West will connect to the drainage channel that services the Sydney Metro car park and station box areas. If there is additional catchment that drains into this channel, it will have to be designed to cater for the additional flows.
12	All stormwater management and treatment infrastructure / devices are to be provided with appropriate inspection and maintenance access.	This needs to be considered as part of the final design by future developers.	<b>Not addressed.</b> This statement needs to be added in the ICWMS "All stormwater management infrastructure / devices, both for quantity and quality, within the DA areas will be provided with appropriate inspection and maintenance access."
<b>MUSIC MODELLING</b>			
13	MUSIC modelling created for the concept proposal has not included roads. Roads proposed in the development are required to be included in the MUSIC modelling in support of the SSDA. The MUSIC set-up needs to be provided to demonstrate the source nodes and proposed stormwater treatment train that has been modelled. This set-up should also be indicated on a site plan to indicate the location of source nodes, treatment devices and receiving nodes.	Road drainage design was included in the Design Report for North West Rail Link Operations, Trains & Systems Package No.2109 Package Title WAD Package 9 – Showground Road at New Precinct Street B (August 2016). Section 6.4.3.4 states "The design has ensured that all runoff from the road surface and future development areas are captured and directed to OSD basin and proposed Carrington Road drainage systems." With the exception of Precinct East, roads are not included within the project footprint and therefore were not included in the MUSIC modelling. Precinct East was modelled as a whole and included modelling for the local access road. A marked up concept plan showing the WSD source nodes will be provided.  <b>NOTE FOR LANDCOM: Team will provide a plan once the concept layout is confirmed</b>	<b>Not addressed.</b> Section 6.4.3.4 statement of the NWRL Design Report Package No. 2109 only tells that all runoff from road surfaces will be captured and directed to the OSD basin and the Carrington Road drainage system. It did not mention any provision of water quality treatment for the roads. In fact, Section 6.4.3.11 on page 52 of the NWRL Design Report states "No water quality measures have been provided for the proposed Council roads and Carrington Road..." Also, Figures 6.4 and 6.5 of same report indicates the roads within the Hills Showground Precinct are excluded from the MUSIC model.
14	In reference to Appendix A, A3.4 Bioretention Measures of the Integrated Water Cycle Management Strategy, the bioretention parameters modelled in MUSIC need to be amended for the concept proposal. Specifically, any bioretention system is to be lined and contain an underdrain. Additionally, review and clarification or amendment is required in regard to the nominated value of 'Unlined Filter Media Perimeter' being 0.01m. An amended MUSIC model is required to demonstrate achievement of pollutant reduction targets for the proposed development.	The proposed bioretention includes a perforated pipe at the base of the filter but the proposed bioretention swales are unlined. We note that Council development controls don't require lined grassed swales or lined bioretention swales. RMS Water Sensitive Urban Design Guide (May 2017) Section 3.4.2 states "Design of bioretention swales must consider the potential for infiltrated stormwater to impact on surrounding infrastructure which can be avoided by using such techniques as installing an impervious membrane across the shared boundary with the element and/or having them installed with a slotted pipe at the base to convey any excess water." The proposed IWCMS includes a perforated (slotted) pipe.	<b>Not addressed.</b> Due to salinity and groundwater levels in western Sydney, Council requires all bioretention system to be lined with impermeable liners all around i.e. base, walls/perimeter (refer attached Council biofiltration fact sheet). A 100 mm perforation subsoil drainage pipe also needs to be provided. Table A3.4 of Appendix A of IWCMS need to be updated to reflect the required properties of biofiltration systems.