

27th January 2023

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Attention: Stephanie Ganis

RE: New Liverpool Primary School (18 Forbes Street, Liverpool)
Civil and Flooding – Responses to Issues Raised on Mod 2

Dear Stephanie,

In response to New Liverpool Primary School – Mod 2 – RTS submission, various stakeholders in a letter (dated 5th December 2022) have provided responses to the Department of Planning and Environment regarding the EIS Mod 2 variation for the New Liverpool Primary School (NLPS). Meinhardt Group has been engaged by ADCO to address several items as listed below.

Item LCC 28 Comments

Engineering plans are to be prepared in accordance with the development consent, Liverpool City Council's Design Guidelines and Construction Specification for Civil Works, Austroads Guidelines, and best engineering practice.

Response by Meinhardt

Meinhardt can confirm that all plans have been prepared in accordance with the development consent, Liverpool City Council's (Council) Design Guidelines and Construction Specification for Civil Works, Austroads Guidelines and best engineering practice.

Item LCC 29 Comment

stormwater drainage system shall be provided generally in accordance with the concept plan/s lodged for development approval, prepared by:

Company	Job No./Drawing No.	Title	Revision/Issue	Date
Meinhardt /Bonacci	NLPPS-CV-DRG-DD-030	Stage 1 Siteworks and Stormwater Plan Sheet 1	P2	17.10.22
Meinhardt /Bonacci	NLPPS-CV-DRG-DD-031	Stage 1 Siteworks and Stormwater Plan Sheet 2	P2	17.10.22
Meinhardt /Bonacci	NLPPS-CV-DRG-DD-050	Stage 1 Siteworks and Stormwater Details – Sheet 1	P1	10.10.22
Meinhardt /Bonacci	NLPPS-CV-DRG-DD-051	Stage 1 Siteworks and Stormwater Details – Sheet 2	P1	10.10.22
Meinhardt /Bonacci	NLPPS-CV-DRG-DD-052	Stage 1 Siteworks and Stormwater Details – Sheet 3	P1	10.10.22
Meinhardt /Bonacci	NLPPS-CV-DRG-DD-030	Stage 1 Siteworks and Stormwater Plan Sheet 1	P2	17.10.22

Meinhardt /Bonacci	NLPS-CV-DRG-DD-030	Stage 2 Siteworks and Stormwater Drainage Plan Sheet 1	P1	10.10.22
Meinhardt /Bonacci	NLPS-CV-DRG-DD-031	Stage 2 Siteworks and Stormwater Drainage Plan Sheet 2	P1	10.10.22
Meinhardt /Bonacci	NLPS-CV-DRG-DD-050	Stage 2 Siteworks and Stormwater Details – Sheet 1	P1	10.10.22
Meinhardt /Bonacci	NLPS-CV-DRG-DD-051	Stage 2 Siteworks and Stormwater Details – Sheet 1	P1	10.10.22

Response by Meinhardt

Meinhardt can confirm that all civil plans have been prepared in accordance with the concept plan/s lodged for development approval and listed above.

Item LCC 30 Comment

- a. The proposed development and stormwater drainage system shall be designed to ensure that stormwater runoff from upstream properties is conveyed through the site without adverse impact on the development or adjoining properties.

Response by Meinhardt

Stormwater runoff from upstream properties will be incorporated into the on-site stormwater management and ensure no adverse impacts on adjoining properties or the subject site.

Item LCC 30 Comment

- b. Engineering plans and supporting calculations for the stormwater drainage system are to be prepared by a suitably qualified engineer and shall accompany the application for a Construction Certificate. The plan shall indicate the method of disposal of all stormwater and must include rainwater tanks, existing ground levels, finish surface levels and sizes of all pipes.

Response by Meinhardt

Meinhardt will prepare Construction Certificate plans and provide supporting calculations including a DRAINS and MUSIC model in support of the development. The plans will include a full stormwater management strategy to mitigate developed discharge flow rates, identify a legal point of stormwater discharge, provide suitable sized rainwater tank, and provide adequate drainage to cater for the minor and major storm events. All existing and design levels will be defined throughout the subject site including public domain land fronting the subject site.

Item LCC 30 Comment

- c. Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that the stormwater drainage system has been designed in accordance with Liverpool City Council's Design Guidelines and Construction Specification for Civil Works.

Response by Meinhardt

Meinhardt will provide the Certifying Authority with a Design Statement in support of the Construction Certificate plans and in accordance with LCC's Design Guidelines and Construction Specification for Civil Works.

Item LCC 31 Comment

Prior to the issue of a Construction Certificate the Certifying Authority shall ensure that details of a stormwater pre-treatment system have been provided on the stormwater plans and that the design meets pollutant retention criteria in accordance Council's Development Control Plan.

The Construction Certificate must be supported by:

- Specification & installation details of the stormwater pre-treatment system
- The approval of an operation and maintenance manual/ schedule for the stormwater pre-treatment system
- A copy of the approved operation and maintenance manual/ schedule shall be submitted to Liverpool City Council with notification of the Construction Certificate issue.

Response by Meinhardt

Meinhardt will provide the Certifying Authority with a Design Statement in support of the Construction Certificate plans including details of a stormwater pre-treatment system in accordance with Council's Development Control Plan. All operational and maintenance manuals/schedules of the stormwater quality improvement system will be provided to Council.

Item NSW 10 Comment

Planning proposal is to have all appropriate civil drainage infrastructure provided, and impacted stormwater network up-graded as required, as part of the project, so as to fully prevent of any and all overland flow from the School /Edu site onto Health lands and Burnside Dr.

Response by Meinhardt

Adequate on-site stormwater drainage will be provided for all storm events up to the 100-year ARI event. Increased stormwater flows from NLPS development will be mitigated to predevelopment rates using an on-site detention system. The on-site stormwater management will ensure that the natural stormwater flow path is not exacerbated. These design criteria are consistent with Council's Development Control Plan.

Item NSW 11 Comment

SWSLHD objects to any 'internal driveway' classification, and associated possible down-spec, and requests that DPE ensure that any and all the civil works associated with the internal road and civil works are to current standards for a public road built and best practices in road and civil drainage design and construction.

Response by Meinhardt

The proposed internal road (Link-road) will include staff parking, a 'kiss and drop' zone and a turning circle. The road pavement will be designed to cater for the anticipated traffic flow and in accordance with Ausroads standards. The associated road drainage will be suitable designed in accordance with Council's DCP requirements. The link-road will convey surface runoff via kerb & channel and concrete lined dish drains. Surface runoff will enter into an underground drainage network via grated inlet pits and drain to an on-site detention system.

Item NSW 12 Comment

Drainage points on the internal roads turning circle / waste-area appear lacking in SW drainage, pits and grates. As does any drainage across the various hard stands and open areas of courts, playing fields on the southern part of the site (which appear to not have any drainage), nor does there appear to be any drainage along the boundary with Burnside Drive. Refer drawing NLPS-CV-DRG-DD-005/P2 for example. This is a concern and is hopefully addressed in planning approval conditions. If additional drainage along Burnside Drive boundary is not possible, as a minimum, we would request and suggest substantial overland flow mitigations via landscape design solutions.

Response by Meinhardt

The on-site stormwater drainage system has been adequately designed to capture and convey all generated stormwater runoff from the development for storm events up to the 100-year ARI event. The stormwater management system has been designed in DRAINS to ensure stormwater flows from the developed site are mitigated to pre-development rates. In accordance with Liverpool's DCP, all minor storm events (up to and including the 20-year ARI event) will be conveyed via an underground drainage system while all major events (up to and including the 100-year ARI event) will be conveyed via overland flow.

The subject-site drains from west to east on an average slope of 1% towards Burnside Drive. All proposed buildings and hardstand zones will be designed with stormwater drainage as described above. There is no proposed buildings or hardstand zones proposed south of the on-site detention system. The natural topography of this land will not be altered and will mimic pre-existing conditions. Sub-soil drainage has been proposed to prevent water logging and to assist with drainage. This approach is consistent with Council's DCP.

The waste-area adjacent to the link-road turning circle will need to be contained and drain to sewer due to contamination issues.

Item NSW 13 Comment

Sufficient natural landscaped bunding, falls, civil drainage and general drainage network capacity improvements are needed to prevent any overland flow onto Burnside Drive and LHD/HAC lands.

Response by Meinhardt

As discussed above, buildings and hardstand zones proposed on NLPS development have been designed to capture the 20-year storm event via a new drainage system and convey overland flows up to the 100-year storm event into an on-site detention system. Overland flows draining onto Burnside Drive have decreased due to the new stormwater drainage system proposed on NLPS. Council requires that all developments not adversely impact downstream properties due to stormwater runoff. A DRAINS model has been prepared which identifies reduced flows draining onto Burnside Drive due to the proposed development. Stormwater flows draining on Burnside Drive will not be exacerbated due to the proposed development.

Item NSW 15 Comment

Overland Flow from Education site and draining network capacity

We note that Burnside Drive has been fully submerged at least three times in the first half of 2022, and partially submerged numerous times, attributed to overland flow from upstream and from the Education site onto Burnside Drive. This is not associated with 1: 100 flood risk of riverbanks being breached, as noted in the planning proposals flood risk reports, but from significant rain events experienced over 2022. We strongly request this is positively addressed in the planning approval to ensure the Hospital's main northern egress and ingress point is not adversely impacted by unmitigated waters and surge.

Response by Meinhardt

The catchment immediately upstream of Burnside Drive is undeveloped with 100% of the site identified as pervious conditions. The existing topography of the greenfield site drains from west to east onto Burnside Drive with no existing underground drainage system capturing the subject site.

The proposed on-site drainage system for NLPS has been designed in accordance with Council's DCP as described above. The generated flows from the NLPS will be captured and mitigated to pre-development levels and discharge into the existing underground drainage system in Burnside Drive. The management of stormwater runoff from NLPS will reduce overland flows discharging onto Burnside Drive. Furthermore, an existing drainage system from Liverpool Boys and Girls School will be diverted from Burnside Drive into Lachlan Street. The proposed upgrade of the stormwater drainage design will potentially reduce the occurrences of Burnside Drive inundation.

Item NSW 18 Comment

Flood Risks and interface directly and indirectly with Burnside Drive

Noted that this, flood from river banks being breached, is relatively low and unlikely (but possible, given river bank down stream of Liverpool weir, on LHAD eastern campus site came close, 1 m-1.5m, from breaching at least 3x in 2022).

Of higher implication and importance is the overland flow of water from surge and severe rain events as experienced many times over 2022, and which led to overland water flow and stormwater network being over capacity parallel to Burnside Drive and the western side of the rail-line and resulted in Burnside Dr being fully submerged 3-4 times over 2022, and partially submerged numerous times.

Response by Meinhardt

The proposed on-site drainage system will reduce surface runoff draining from the subject site onto Burnside Drive which includes an adequately sized underground drainage system and on-site detention system. Additional drainage works are proposed to divert stormwater from Liverpool Boys and Girls High School away from Burnside Drive and into Lachlan Street drainage. Proposed stormwater works will provide a positive outcome on the existing conditions.

Item NSW 19 Comment

SWSLHD strongly disagree with and contest the proposal's Meinhardt Civil design Statement (Appendix F), as it does not address the current unmitigated situation nor prospect increasingly severe future weather rain events, i.e.:

“A new stormwater drainage network has been proposed to convey generated stormwater from the new internal road. The surface runoff of the new internal road compared to the existing hardstand courts and staff carpark on the southern end of the school has not resulted in an increase in stormwater flows. There will be no net increase in generated stormwater flows of the equivalent site area. Furthermore, an increase in road catchments is being treated for typical stormwater pollutant constituents.”

Response by Meinhardt

As per Council's DCP objectives, generated stormwater runoff from developed sites must not adversely impact downstream properties for all storm events up to the 100-year ARI event. The DRAINS model prepared assesses the pre-development and post development scenario. Increase stormwater flows generated from the proposed development will be mitigated back to pre-development rates using an on-site detention system. The proposed mitigation measures have been detail on the civil plans.

Item NSW 20 Comment

It is requested that the design specifically be enhanced to address the issues outlines as SWSLHD concerns regarding multiple occurrences of Burnside Drive inundation from the west over 2022, so that this is fully mitigated and prevented.

Response by Meinhardt

The proposed on-site drainage system for NLPS has been designed in accordance with Council's DCP as described above. The generated flows from the NLPS will be captured and mitigated to pre-development levels and discharge into the existing underground drainage system in Burnside Drive. The management of stormwater runoff from NLPS will reduce overland flows discharging onto Burnside Drive. Furthermore, an existing drainage system from Liverpool Boys and Girls School will be diverted from Burnside Drive into Lachlan Street. The proposed upgrade of the stormwater drainage design will potentially reduce the occurrences of Burnside Drive inundation.

Item NSW 21 Comment

Refer comments above about overland flow mitigation and guarantees required given inundation and ongoing damage caused to Burnside Drive from overland water flow coming from the west (across, over and around the school site).

Response by Meinhardt

A design statement will be provided in support of a Construction Certificate for the proposed stormwater drainage. The certificate will identify all relevant policies, guidelines, standards, and manuals that the proposed stormwater drainage system has been designed in accordance with. The proposed design will take all appropriate measure to ensure the generated stormwater from NLPS will not exacerbate existing conditions.

Trust the above response is suffice and should additional information be required, please feel free to contact the undersigned.

Kind regards,

A handwritten signature in black ink, appearing to read 'Tristan Doherty', written in a cursive style.

Tristan Doherty
Senior Civil Engineer