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Date: 27 October 2026
To: Parcel Property
Attention: Fenualla O'Brien
Email: fenualla@parcelproperty.com.au
Ref: AVH1015D_1

North Ellenbrook (West), Local Structure Plan 1 - Local Water Management Report

RESPONSE TO PEER REVIEW DOCUMENT

Dear Fenualla,

We note that Parcel Property has commissioned Emerge Associates to conduct a peer review of the "*North Ellenbrook (West), Local Structure Plan 1 - Local Water Management Report*" [LWMR] (Avant Hydro, May 2026) (ref: AVH1015A_2).

A copy of the Emerge letter review "*Peer Review of Local Water Management Strategy – Local Structure Plan Area 1 (North Ellenbrook West) – Lot 112, 114 and 1808 Chudalup Road, Bullsbrook*" dated 20 October 2026 (ref: EP26-099-001A DPC) is attached for reference. We note in this letter the suburb of Bullsbrook is referenced as Sandridge.

The purpose of the review is to assess whether the water management strategy documented in the LWMR has been prepared in accordance with current guidelines and criteria, and if any amendments to the strategy are warranted.

Whilst the review indicates the LWMR is generally consistent with current industry practice, it identified six aspects for additional consideration/response with suggestions. These aspects can all be readily addressed and our response to these aspects are shown in Table 1 attached, with no updates to the LWMR considered required.

The review concludes the LWMR has been prepared using an appropriate methodology and provides a sound basis for managing water within the North Ellenbrook (West) Local Structure Plan 1 (Sandridge) area.

We welcome this peer review and trust it provides Parcel Property and the City of Swan with confidence in the water management strategy proposed for this site.

Please contact Matthew Yan (matt@avanthydro.com.au) should you have any any queries.

Regards,



Matthew Yan – Director/Principal Hydrologist
AVANT HYDRO

ENCL.

- *Peer Review of Local Water Management Strategy – Local Structure Plan Area 1 (North Ellenbrook West) – Lot 112, 114 and 1808 Chudalup Road, Bullsbrook*" dated 20 October 2026 (ref: EP26-099-001A DPC)
- *Table 1: Emerge Associates Aspects Identified in Peer Review of the "North Ellenbrook (West), Local Structure Plan 1 LWMR" (Avant Hydro, 2026)*

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Document Reference: EP26-099—001A DPC

Emerge contact: Dave Coremans

20 October 2026

Attention: Fenualla O'Brien
Senior Development Manager

Delivered by email to: fenualla@parcelproperty.com.au

Dear Fenualla

PEER REVIEW OF LOCAL WATER MANAGEMENT STRATEGY – LOCAL STRUCTURE PLAN AREA 1 (NORTH ELLENBROOK WEST) – LOT 222, 224 AND 1808 CHUDALUP ROAD, BULLSBROOK

Introduction and purpose

Emerge Associates understands that the City of Swan has raised with Parcel Property broader hydrological issues identified within parts of the Swan Urban Growth Corridor. While these issues have been identified outside of land managed by Parcel Property, the City has sought assurance that similar issues are unlikely to occur within Local Structure Plan Area 1 (Sandridge), comprising Lots 222, 224, and 1808 Chudalup Road, Sandridge (the Site).

The City has also sought confirmation that the approach adopted in the Local Water Management Report (LWMR) for Local Structure Plan Area 1 remains appropriate for the Site.

The purpose of this letter is to document the review undertaken by Emerge Associates of the Sandridge Local Structure Plan 1 Local Water Management Report (Avant Hydro Consultants 2026).

The LWMR was prepared to support the Structure Plan and under the framework provided in State Planning Policy 2.9 Water and the Planning for Water Guidelines (DPLH 2025). The purpose of the review has been to consider the methodology, assumptions and conclusions of the LWMS in the context of the broader hydrological concerns raised by the City and to confirm whether any amendments to the Strategy are warranted.

LWMR Review

The LWMR provides contemporary guidance to water management within the site, generally consistent with current industry practise. Some aspects of the LWMR warrant clarification. These aspects include:

1. Adopting Annual Average Maximum Groundwater Level (AAMGL) as a design datum instead of Maximum Groundwater Level (MGL) is not entirely consistent with current State and Local government expectations. This is predominantly an observation in relation to terminology adopted, as for most of the site there is little actual difference Between AAMGL and MGL.

Suggestion: Adopt language regarding MGL being the appropriate design datum, but that it can be acceptable to control groundwater down to AAMGL where site context allows.

2. Some basin designs show inverts at or below AAMGL. This should be avoided to limit inundation of POS areas.

Suggestion: Ensure that basin design inverts are above AAMGL, and have sufficient clearance to downstream discharge inverts to allow these to be designed/engineered to drain in an appropriate timeframe.

3. Waterway inverts/long sections are not provided, and comparison to pre-development flows at the overall site discharge locations is not clear. Emerge understand that a 2D model has been used to model the pre-development environment and meaningful long sections can be difficult to generate.

Suggestion: Provide long sections of waterways and/or a pre versus post development peak flow comparison at the key site discharge locations.

4. Basin inverts in relation to discharge location/waterway not clear.

Suggestion: Use analysis of waterway inverts a per comment 3 to ensure that as per comment 2 basins have adequate clearance to allow them to empty in an appropriate timeframe: Provide basin inverts which demonstrate sufficient vertical separation to be able to adopt subsoil drains beneath the basins if needed.

5. Some waterways seem to have been deleted or are not shown e.g. Sawpit Gully. Justification for the omission or modification of waterways in the spatial design of the structure plan is not provided.

Suggestion: Use a biophysical assessment for waterways to determine green/foreshore corridors that are necessary to protect the values of the waterways. If the response to managing waterways is an engineered or other response this should be documented to justify the inclusion/exclusion of waterways.

6. The LWMR assumes that most detailed civil design aspects can be addressed at subdivision stage. Some design details may be required to demonstrate that the structure plan drainage system can work (e.g. drainage corridor inverts and design). Where such design aspects rely on a broader system design (e.g. waterway design) the scale of these designs should be sufficient to allow a full comparison back to the criteria and analysis provided in the LWMR to confirm compliance.

Suggestion: LWMR to recognize that pending the scale of detailed design, the extent of design area may need to extend beyond subdivision boundaries and may warrant and update or addendum to the LWMR.

Discussion

This review of the LWMR has been undertaken as a collaborative review with Avant Hydro Consultants. Review comments have been provided by Emerge Associates to Avant Hydro Consultants and initial responses provided indicating that the comments provided can either be readily addressed or are noted.

Summary and closing

On the basis that the comments raised can be appropriately responded to or addressed, this peer review concludes that the LWMR has been prepared using an appropriate methodology and provides a sound basis for managing water within the Sandridge Local Structure Plan 1 area.

Yours sincerely
Emerge Associates



Dave Coremans
DIRECTOR WATER RESOURCES, SENIOR PRINCIPAL ENVIRONMENTAL CONSULTANT

cc: none

Encl: none

TABLE 1: EMERGE ASSOCIATES ASPECTS IDENTIFIED IN PEER REVIEW OF THE *"NORTH ELLENBROOK (WEST), LOCAL STRUCTURE PLAN 1 - LWMR"* (AVANT HYDRO, 2026) 27-Oct-26

No.	Emerge Associates LWMR Comment (20 Oct 2026)	Emerge Associates LWMR Suggestion	Avant Hydro Response (27 Oct 2026)
1	Adopting Annual Average Maximum Groundwater Level (AAMGL) as a design datum instead of Maximum Groundwater Level (MGL) is not entirely consistent with current State and Local government expectations. This is predominantly an observation in relation to terminology adopted, as for most of the site there is little actual difference between AAMGL and MGL.	Adopt language regarding MGL being the appropriate design datum, but that it can be acceptable to control groundwater down to AAMGL where site context allows.	AAMGL is equivalent to natural surface, and therefore also MGL, at 6 of the 7 basin locations (see Table 16). Notwithstanding, adopting MGL as a design datum over the rest of the site is over conservative, particularly when there is subsoil drainage to manage groundwater levels which is typically set at AAMGL. Use of AAMGL for design is consistent with the DWMS strategy approved by both State and Local Government. It is also consistent with DWER's Controlled Groundwater Guideline policy. *ACTION: No change to LWMR required.*
2	Some basin designs show inverts at or below AAMGL. This should be avoided to limit inundation of POS areas.	Ensure that basin design inverts are above AAMGL, and have sufficient clearance to downstream discharge inverts to allow these to be designed/engineered to drain in an appropriate timeframe.	Text in Section 6.5.2 and Table 16 indicates all proposed basin inverts are above AAMGL, and basins are also underlain by subsoil drainage to prevent ponding (except for cO which will be a lake). *ACTION: No change to LWMR required.*
3	Waterway inverts/long sections are not provided, and comparison to pre-development flows at the overall site discharge locations is not clear. Emerge understand that a 2D model has been used to model the pre-development environment and long sections can be difficult to generate.	Provide long sections of waterways and/or a pre versus post development peak flow comparison at the key site discharge locations.	2D flood modelling has been performed as a refinement to broad scale 2D hydraulic flood modelling performed by GHD for the Tonkin Highway design to determine pre-development flows. The 2D flood modelling was performed using a 4 m digital elevation model with a rain on grid approach and is more accurate than a 1D model (Appendix D). Catchment and Tailwater conditions are outlined in Section 6.4. Notwithstanding, drainage basins are offline to the waterways, and basin discharge is at pre-development flow rates into the waterway. Pro-rata calculation of allowable (pre-development) peak discharge rates for each catchment is detailed in Table 12. Pre- and post-development catchment/basin discharges are detailed in Table 16 which shows post-development peak outflows are similar to or below pre-development. Note that flows are also held back by the Tonkin Highway culverts. *ACTION: No change to LWMR required.*
4	Basin inverts in relation to discharge location/waterway not clear.	Use analysis of waterway inverts a per comment 3 to ensure that as per comment 2 basins have adequate clearance to allow them to empty in an appropriate timeframe. Provide basin inverts which demonstrate sufficient vertical separation to be able to adopt subsoil drains beneath the basins if needed.	Basin inverts have all been designed above the 1% AEP modelled water level at Tonkin Highway (tailwater condition) and are therefore sufficiently above the adjacent waterway inverts (see text in Section 6.4.3 and Table 16). Basins are also underalin with subsoil drianage to prevent ponding of water. *ACTION: No change to LWMR required.*
5	Some waterways seem to have been deleted or are not shown e.g. Sawpit Gully. Justification for the omission or modification of waterways in the spatial design of the structure plan is not provided.	Use a biophysical assessment for waterways to determine green/foreshore corridors that are necessary to protect the values of the waterway. If the response for managing waterways is an engineered or other response this should be documented to justify the inclusion/exclusion of waterways.	All mapped waterways are detailed on report Figures. Figure 14 highlights sections where realignment of waterways will be required. The waterway through the proposed District Centre is currently through open pasture and will be integrated into a swale. Sawpit Gully within the southern section of the LWMR area is nearly all within the proposed MRWA interchange and design & realignment of this channel will be by MRWA and independent of this LWMR. ACTION: No change to LWMR required.
6	The LWMR assumes that most detailed civil design aspects can be addressed at subdivision stage. Some of these may be required at structure planning stage to demonstrate that the structure plan drainage system can work (e.g. drainage corridor inverts and design). Where such design aspects rely on broader system design (e.g. waterway design) the scale of these designs should be sufficient to allow a full comparison back to the criteria and analysis provided in the LWMR to confirm compliance.	LWMR to recognize that pending the scale of detailed design, the extent of design area may need to extend beyond subdivision boundaries and may warrant update or addendum to the LWMR.	The LWMR development area is across two pre-development lots, both managed by Parcel Property. A Subdivision WMR with detailed design will be prepared for the entirety of the LWMR area, except for areas associated with the future MRWA interchange. Any potential changes associated with detailed civil design in the developed areas can be captured in the SWMR prepared for the area and an addendum/update to the LWMR is therefore unlikely. *ACTION: No change to LWMR required.*