Sydney WATER

6 May 2024

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Department of Planning, Housing and Infrastructure
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Our Reference: **214001**

RE: RTS for SSD-23480429 at 253-267 Aldington Road Kemps Creek (Westgate)

Thank you for notifying Sydney Water of the RTS for SSD-23480429 at 253-267 Aldington Road Kemps Creek which provided additional information for the SSDA that proposes the construction of three buildings for use as warehousing with a total gross floor area of 45,530 square metres. The proposal also includes site preparation works, including demolition, bulk earthworks, construction of access roads, trunk drainage, site servicing, on-site detention, landscaping and 3 lot subdivision. Sydney Water has reviewed the following documents provided and provides the following comments to assist in understanding the servicing needs of the proposed development.

- Environmental Impact Statement
- Appendix C – Concept Architectural plans
- Appendix D – Riparian Constraints assessment
- Appendix N – Civil plans and report
- Appendix O – Water Cycle Management Plan
- Appendix AA – Flood Risk Assessment.

Sydney Water cannot currently support the proposed development due to matters relating to stormwater concerns. We request additional information and further clarification on stormwater servicing to progress the referral. The Department is advised to re-refer this SSDA for Sydney Water's review once stormwater issues have been addressed.

Water Servicing

The proposed development is located within the Cecil Park Reduced Water Supply Zone (WSZ) and is part of the Prospect South Delivery System.

The WSZs mentioned above are currently supplied with rural drinking water infrastructure and **do not have capacity to service developments within Mamre Road Precinct including the proposed development site prior to the delivery of major system amplifications.**

Given the current water constraints in the area, developers are carrying out a number of trunk water main upgrades under various cases with Sydney Water. The interim wastewater servicing for the proposed development is dependent on the completion of these assets.

Sydney Water is planning to deliver trunk drinking water infrastructure to increase supply to the wider Mamre Road Precinct. The anticipated delivery timeframe is beyond 2031 subject to future planning change. The ultimate servicing for the proposed site is dependent on these trunk system upgrades to be delivered by Sydney Water. The proponent can rely on the interim servicing system until the ultimate servicing becomes available.

Wastewater Servicing

At present, there is **no wastewater services** available in this area.

This development is located within the proposed wastewater pumping station SP1221 catchment via proposed trunk wastewater carriers. SP1221 will be required to transfer flows to the proposed Upper South Creek (USC) Advanced Water Recycling Centre (AWRC) via SP1222.

Sydney Water have completed concept design phase for the pumping station and carriers. The delivery date for SP1221 and carriers is currently scheduled for **Q4 2027** and subject to funding approval. The wastewater servicing is dependent on the completion of the SP1221 and carriers works.

Recycled Water Servicing

Recycled water for non-drinking water uses will be provided in the Mamre Road Precinct and will be primarily sourced from treated Stormwater and supplemented from AWRC or the Drinking Water system, as recommended by the Sub-Regional Planning Study.

Sydney Water confirms the requirement for recycled water mains and connections as per the scheme plan for the Mamre Road Precinct. The requirements will include that each lot must have a frontage to a recycled water main that is the right size and can be used for connection of the lot to the recycled water main. It is assumed that the development will have the connection to the recycled water network along Bakers Lane. This part of the system is in the pressure reduced zone. The proposed size for the recycled water main on Bakers Lane are DN150.

In addition to the above, the Mamre Road recycled water reticulation network will initially be supplied by the adjacent potable water reticulation network. This arrangement will remain until supply of treated stormwater and/or recycled wastewater from AWRC is established. Once the stormwater and recycled water supply is established, the connections between the potable water and recycled water networks must be decommissioned. The proponent must clearly show the locations of any cross connections between the potable water network and recycled water network on the design plans which need to be reviewed by Sydney Water. The proponent must also provide the finished surface levels to Sydney Water.

Stormwater Servicing

The proposed stormwater infrastructure **does not** align with the Mamre Road Precinct Integrated Stormwater Scheme Plan and the proponent has provided insufficient information, evidence, or justification for Sydney Water to accept or endorse the changes.

Sydney Water notes that the plans submitted request a reduction in the trunk drainage width and realignment of stormwater infrastructure that is substantially different to the December 2023 exhibited Mamre Road Stormwater Scheme Plan. Sydney Water recommends that the Department **defer** the approval of the SSDA application until these stormwater matters are addressed.

See **Attachment 1** for preliminary comments on how the proposed stormwater design needs to respond to the Scheme plan and **Attachment 2** for Sydney Water's standard minimum application requirements for considering changes to trunk drainage channels.

Any proposed variations to the adopted Scheme will only be considered by Sydney Water where they meet the Innovation Principle (15) in the Stormwater Management Framework for Aerotropolis and Mamre Road Precincts and the Stormwater Scheme Principles. Principle 15 states that:

"All innovation proposals are subject to assessment and approval by Sydney Water. This includes the feasibility of any solutions on a long-term operating perspective as well as the integration to existing decision making for the stormwater scheme".

Sydney Water requires a meeting with the proponent to discuss the required regional stormwater infrastructure for this site. Following this meeting, Sydney Water then can review a revised design that seeks to vary the Scheme, upon submission of minimum application requirements. The proponent will be required to enter into Sydney Water's Flexible Planning Agreement process to enable this detailed review and assessment.

Under this Agreement, proposals will be assessed by Sydney Water against the design guidelines and scheme principles that balance a range of outcomes that the Scheme must achieve, including long term operating costs and capability, cumulative impact, strategic intent, recognition of Country, blue green corridors, biodiversity, and equity for other landowners, etc. However, there is no guarantee that the proposed design will be accepted through this process.

Whilst we make every effort to provide clear timeframes to the development industry under these Agreements, they generally consist of a 12-week process, and we will provide the proponent with regular updates as we make this assessment.

Next Steps:

- Sydney Water requires a meeting with the proponent to discuss the required regional stormwater infrastructure for this site. The proponent is advised to arrange a meeting through their Sydney Water case manager.
- Following this meeting, Sydney Water then can review a revised design that seeks to vary the Scheme, upon submission of minimum application requirements.
- The DPHI is advised to defer the approval of this SSD and re-refer this application to Sydney Water for review once stormwater concerns have been addressed.

Should the Department require any further information in regard to general servicing and the referral, please contact the Growth Planning Team via urbangrowth@sydneywater.com.au. Should the proponent require specific stormwater inquiries they should contact Craig Bush via westernsydney@sydneywater.com.au.

Yours sincerely,

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Attachment 1 – Preliminary stormwater design review comments

1. Trunk drainage channel design

1.1. Trunk drainage width change compared to scheme plan (40 to 20m)

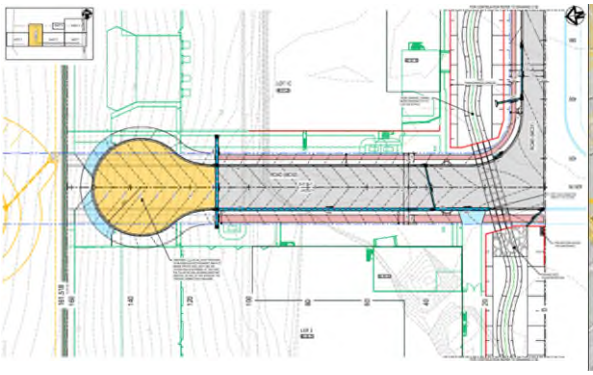
a. Lack of information on flow velocity and volumes to determine if downsizing of channel is possible. There is no information provided regarding the incoming flows from the north (Frasers) and east (east of Aldington Road). Note the channel from the north is not removed but is a hybrid channel and detention basin system, which will still need to provide trunk drainage properties.

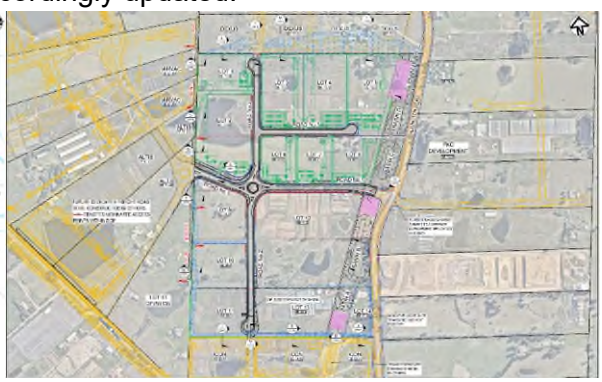
The proposal incorporates naturalised trunk drainage channel alignments as shown on the scheme plan, however with the removal of the northern incoming channel, AT&L's modelling demonstrates that flows can be contained within a 20m channel instead of the 40m channel proposed in the Scheme Plan. The naturalised trunk drainage channel will discharge in a westerly direction at the south west boundary of the site.

b. Sydney Water does not agree with the statement on the EIS (p. 45) regarding the SWC endorsement of the trunk drainage solution. The Sydney Water letter indicates it would endorse the proposal if they were able to prove the flow can be contained within the channel and if the channel adheres to the design guidelines. At this point Sydney Water are not satisfied the proposed design meets the requirements provided in Attachment 1 of the letter.

The project team have consulted with Sydney Water in the development of the revised scheme. Following extensive consultation, Sydney Water provided in principle endorsement of the trunk drainage solution on 31 July 2023 and have advised in writing that the design as proposed was suitable for SSDA lodgement. The project team will continue to consult with Sydney Water in the assessment phase of this project.

c. Stormwater on road no2 will be flowing from Fraser sites before being captured by Oceania site. Sizing of road drainage and interconnection with trunk drainage to be documented and civil plans accordingly updated.

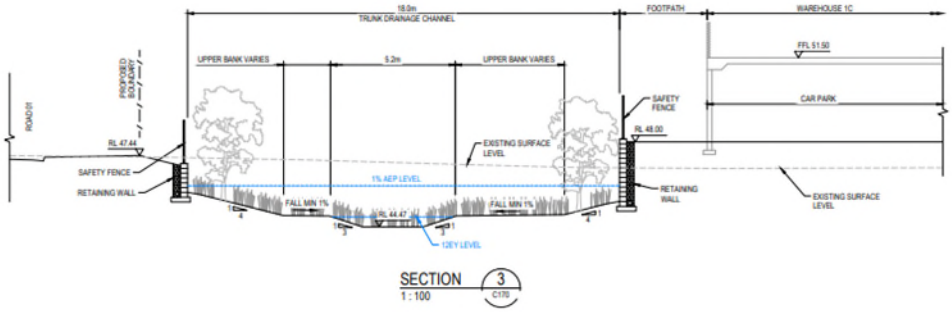




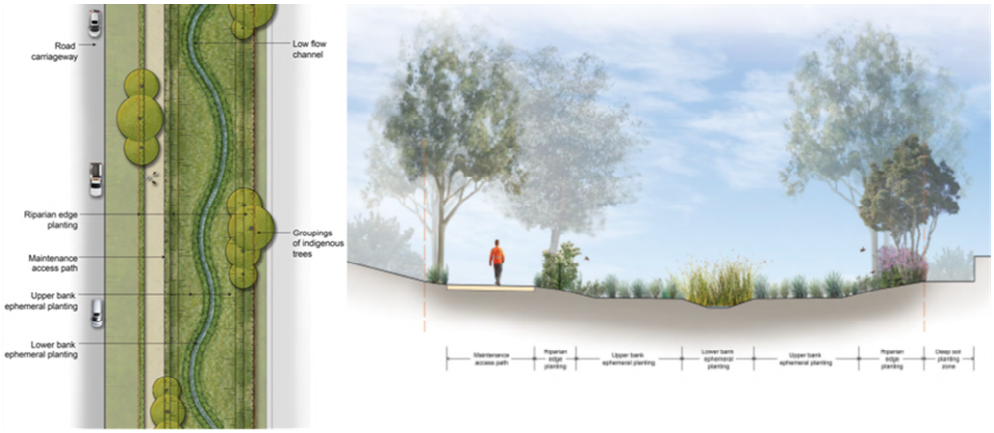
d. Please provide post-development catchment map to confirm Trunk Drainage Channel Catchment.

1.2. Issues with the proposed trunk drainage design

a. Sydney Water is not satisfied with the current design with the 1% flows touching both the retaining walls. This will impact the structural integrity of the walls during high flow events which could impact the performance of the channels. The 1% flows will need to be contained within the naturalised channel bank and not against any retaining wall.



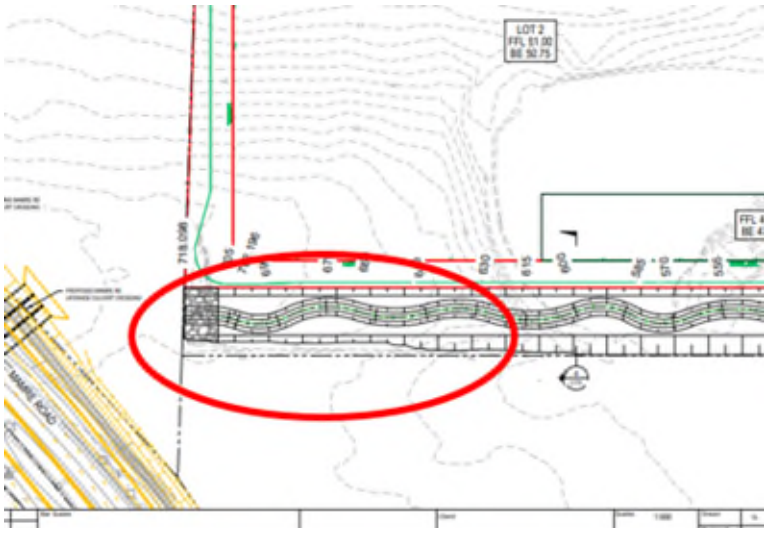
b. There is no dedicated maintenance access along the channel. This will need to be included in the updated channel concept design.



c. The channel having retaining walls with a fence on both sides provides a safety risk if someone is caught in the channel during high flow events. The designer is to ensure there are suitable egress options at regular intervals to reduce risk. Note maintenance access to the channel via stairs (current proposal) will not be supported by Sydney Water, however it would be supported if it was for public safety considerations.
d. The longitudinal grades under the transmission easement will need to be discussed with Sydney Water. Noting that 15 to 20 metres between drop structures is unlikely to be the best solution due to maintenance issues.
e. The connection from Frasers will need to be shown in more detail and coordinated with Frasers to minimise erosion potential.

f. The design of all stormwater outlets into the trunk drainage channel should follow the Stormwater connections to natural waterways Guidelines. Note the example below does not have sufficient angle with the channel flow.

g. There is a general lack of design and ideally more cross sections of the channel are required to be able to appropriately assess the design. In particular, regarding the western end of the channel, Sydney Water are uncertain as to why the channel batters have changed.



2. Interim solution

2.1. Design issues/concerns

a. The basin inlet and outlet design will need to be approved by Sydney Water. The design will need to show no impact on Trunk Drainage Channel performance and flooding.
b. Note the Inlet and outlet of temporary detention basin in Stage 1 are to be commissioned and decommissioned at the developer's expense, and will not be reimbursed.
c. Sydney Water will need more information regarding how the temporary basin in Stage 1 will function regarding the use of the channel flows, which includes external catchments/lots. Sydney Water has concerns about the sizing of the basin and the impact of uncontrolled quantity of stormwater on the Oceania lot.

Attachment 2 – Modelling and design minimum requirements for changes to trunk drainage channels

The plans show a divergence in naturalised trunk drainage alignment from the *Mamre Road Precinct Stormwater Scheme Plan*. The hydraulic operation of the trunk drainage system and discharge rates are important for the safety of the area being developed as well as for achieving the environmental, cultural and stream health benefits. Applying current best practice is a prerequisite to achieving sustainable and effective naturalised trunk drainage. Sydney Water will consider this realignment however additional information is required to justify and validate the change.

Modelling requirements:

- Initial channel sizing justification should undertaken and documented using basic Mannings models with reference to the standard drawings in the *Draft Stormwater Scheme Infrastructure Design Guideline (Dec, 2022).* This publication also provides acceptable channel roughness values, grades and sinuosity requirements.
- Before final endorsement of any proposal, all flow paths and channels shall be modelled using industry standard 1D/2D models refined to a suitable resolution to define flood flow extents and provide accurate shear force representations. Acceptable hydraulic modelling software is TUFLOW, HEC-RAS 2D and Mike-21. Other software may be permissible but should be referred to the Regional Stormwater Authority before establishing the model.
- As a minimum, trunk drainage channels shall be modelled using 5%, 1%, 0.2% AEP and PMF critical flows of the developed catchment. As described above, additional frequent flows are required to assess shear forces within the low flow channels. Shear flow modelling is only required for the developed case with the whole channel assessed using the 5% and 1% AEP critical flows.
- Where drop structures are required to meet the maximum allowable trunk drainage longitudinal grades, they must be supported by hydraulic modelling or calculations. Sydney Water's preferences are as follows:
  - Chutes – Chute (eWater), Hec-Ras (1D) or industry standard rock sizing calculations for chutes.
  - Vertical drop structures - Hec-Ras (1D)
- Mapping of the channels shall show:
  - flood extents and velocities for 1%, 0.2% AEP and PMF flood extents.
  - flood planning area i.e. the area below the flood planning level.
  - flood hazard and the flood constraints that apply to the land – utilising ARR 2019 hazard definitions.
  - climate change design flood modelling sensitivity analysis comparing the 0.2% AEP flood event as a proxy for assessing sensitivity to an increase in rainfall intensity of flood producing rainfall events due to climate change model topographical roughness mapping.
- Street/site drainage, that connects to the trunk drainage, shall be modelled to ensure that it is not adversely impacted by 1% AEP critical flows in the trunk drainage channels.

Drawing requirements:

The following drawing requirements for the proposed naturalised trunk drainage alignment are to be provided:

- Cross sections
  - Cross sections of the trunk drainage channel to demonstrate the functional placement of the feature in the developed landscape.
  - Cross sections should generally be provided at approximately 50m intervals or as required to highlight significant changes in site grades, alignment and anomaly situations.
  - Cross sections should show 'worst case situations' e.g. where retaining walls are unavoidable/highest point of a proposed retaining wall (noting that use of and height of retaining walls should be minimised). Where necessary, cross sections should also be provided where services are proposed across the channel.
  - Cross sections must extend beyond the channel boundaries to show the proposed interface with development adjacent the trunk drainage corridor.
  - Cross sections must show adherence to the typical detail for naturalised trunk drainage (compound channel) as provided in Appendix A of the *Draft Stormwater Scheme Infrastructure Design Guideline (Dec, 2022).*
- Long sections
  - Long sections of trunk drainage channel inverts and top of bank along each reach that demonstrate adherence to max grades and/or inclusion of drop structures as required.
  - Long sections must demonstrate tie in with critical points ie. existing grades at upstream and downstream points of the development.
  - Long sections should include any proposed major infrastructure crossing or parallel with trunk drainage within the corridor.
  - Pipe long sections for lines connecting to the trunk drainage channels.
- The proponent must show flood levels (1% AEP, etc) on the trunk drainage sections and long sections. Demonstrate the flood immunity level for the proposed maintenance tracks shown on the trunk drainage cross sections.
- Sydney Water does not support inundation of the retaining wall in the trunk drainage design. The proponent is to confirm if the 1% AEP event will flood the wall foundations. It is advised that Council ensure that all proposed retaining walls have been designed by a suitable qualified structural engineer and do not divert existing overland flows.

Flooding & Drainage Design

Confirm that there are no adverse flooding effects downstream of the development with the reduction of the floodplain storage during the 1% AEP event. Acceptable digital hydrologic methods are runoff routing, storage routing and time area models such as XP-Rafts, RORB, WBNM and Drains (ILSAX). Use of the Rational Method is not appropriate. ARR2019 methodology and rainfall data shall be used to assess the 5%, 1%, 0.2% AEP and PMF flowrates although when assessing the function of the low flow channel more frequent storm events will be required. This can vary, depending on location in the catchment but will typically fall between the 12EY and 4EY critical events.