Appendix 1 – Hydrology and Flooding

General

The design of the project is at a preliminary stage only. Close engagement between the proponent and Sydney Water will be required as the project design development progresses.

The project has the potential to adversely influence:

- Local flooding impacts
- Stormwater drainage service levels and the ongoing protection, access to and management of Sydney Water stormwater assets
- Future flood mitigation works and opportunities to alleviate flooding of the existing community
- Urban waterway and naturalisation opportunities as part of broader urban renewal strategies

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- Notes most Stage 1 construction sites are at a low risk of flooding, located away from overland and mainstream flood areas or above coastal inundation. Flood impacts are minor.
- Notes potential flood impacts in terms of flood levels, depths, velocities and scour potential will be mitigated.
- *'… in cases where there are potential cumulative impacts, these are expected to be resulting from other proposed development(s).'*

  Potential cumulative impacts should be addressed more specifically. The project generally should not diminish or consume flood storage volumes associated with the principal flood planning level for the project - 1% AEP plus 500mm (potential exemption on merit may be considered where flood storages are associated with broad embayment areas).
- Stage 1 Clyde stabling and maintenance facility construction site would increase flood level up to 0.08 metres in and adjacent to Duck Creek and Duck River in the 5% and 1% AEP events. The increase affects several commercial and industrial properties outside of the site. These increased flood levels appear to be below the floor levels of existing buildings affected, based on ground levels and site observations.

The paper assumes *'that any current re-development of the catchment areas outside the construction sites would not increase the flood risk to the sites and that adequate controls would be provided by any future development to mitigate potential flood impacts'* which raises significant concerns regarding floodplain development equity.

The proponent is requested to engage with Sydney Water and Council at the early stages of design development specifically to address this issue, the consumption of local flood storage, potential cumulative impacts and equity considerations related to any proposal to fill the floodplain.

The extensive filling of floodplain land is not supported, and alternative design strategies must be developed and fairly assessed. Cumulative impacts should be assessed on a basis of *'everyone else who is in a similar situation as us doing as we do'*. This is a fundamental principal of sustainable flood plain development practice.

This characteristic is very concerning and has the potential to promote a demand for flood mitigation services on Sydney Water. If this issue is not adequately addressed first up, there may be potential for Sydney Water and the project designers to be in opposition.

Note the SEAR's requirement 5(d) referenced in the technical paper related to compatibility with flood storage areas of the land. The advised impacts are considered non-compliant with the stated SEAR's requirements.

Particularly, Sydney Water would be concerned if a similar strategy of landfilling per the marshalling yards near Sydenham Pit was undertaken without providing compensatory flood storage.

- These principals would also extend, where relevant, to other sites including the proposed services facility between Five Dock Station and The Bays Station not assessed within the submitted technical paper.

- Notes most sites are represented as being affected by only relatively minor flood and overland flow path impacts.

- Sydney Water advises that no buildings (include consideration of proposed future ancillary development building envelopes), permanent structures are to be located over or too close to Sydney Water stormwater assets. Refer to relevant Sydney Water build over adjacent policy and guidelines.

The development shall make adequate allowance for Sydney Water to access, inspect, maintain and safely / cost efficiently rebuild or amplify existing Sydney Water stormwater assets in the future.

Where adequate allowance is not considered immediately feasible Sydney Water will aim to work cooperatively with the project designers to identify asset relocation options acceptable to Sydney Water.

- The development shall not constrain the capability of Sydney Water or Council to undertake future flood mitigation works or activities in accordance with existing Floodplain Risk Management Plans or as may be reasonably identified by Sydney Water or Council during the more detailed flood modelling undertaken in the development of the project design.

- Where Sydney Water stormwater assets are proposed to be relocated the relocated asset shall be designed and sized to accommodate future flood mitigation aspirations as identified by Sydney Water or Council.

- Sydney Water seeks a commitment from the project designers to implement exemplary best practice Water Sensitive Urban Design of the sites and associated stormwater drainage infrastructure.

  Given location within the catchments, a green infrastructure stormwater retention strategy may be more appropriate that a proposed on-site stormwater detention approach – for example as noted in Table 5-1 HF2.

- The report refers to *'… increased smoothness of the waterways due to the concrete lining of the culverts and clearing of vegetation from the channel (which) would contribute to the increased velocities.'*

  Waterways that have been neglected in the past provide opportunity for enhancing the urban built form into the future.

  Sydney Water has in recent years invested significantly in the naturalisation of the concrete lined waterways it manages and has received strong community and government endorsement and support for this investment.

  Sydney Water would be very concerned with proposals to concrete line existing natural waterways or promote development that would constrain the potential for Sydney Water or government to further invest in the naturalisation and rehabilitation of urban waterways under its control or even more generally.

The project design should avoid causing impacts that could be considered to necessitate the concrete lining of existing urban waterways. The development should incorporate design features that align with Sydney Water's recent strategies for waterway naturalisation projects.