28th July 2026

Taylor Planning

Dear Emma,

Stormwater and Flood Management – Parkburn Development" drafted by Woods dated 26/06/2026.

Introduction

Mott MacDonald was engaged by Central Otago District Council 3rd July 2026 to provide a high-level review of the "Stormwater and Flood Management – Parkburn Development" drafted by Woods dated 26/06/2026.

Background

Parkburn development is a relatively large greenfield development consisting of residential and commercial lots. It is located in Pisa, Cromwell, just north of Pisa Village and just upstream of Lake Dunstan. The purpose of this assessment is to provide a high-level review of the "Stormwater and Flood Management – Parkburn Development " drafted by Woods, dated 26/06/2026 concentrated on the flood risk assessment documented in this report. Following includes some assumptions and limitations related to this high-level review:

- This is a high-level review of the details provided in the shared report, concentrating on their flood risk assessment.
- Only the report was reviewed (i.e. External references, supporting documents and the hydraulic model were not included in this review).

Key findings

- Catchment 1 (refer to Figure 6 in Pg. 18) is proposed to be managed by soak pits, however, no details on infiltration tests conducted is documented to confirm suitability of this option. Moreover, the report does not reference any infiltration testing to confirm whether onsite stormwater disposal is a viable option for the proposed development.
- Catchment 2 (refer to Figure 6 in Pg. 18) is proposed to be managed by a primary network. With reference to 4.2.4 CODC 2008 addendum developer is "*to demonstrate that stormwater cannot be disposed of on-site prior to any consideration being given for connection to councils trunk system*". Discussion is provided as to why infiltration was not considered for this zone in Pg. 20 (assumed based on relatively low ground level compared to the lake level). *Please provide additional detailed explanation.*

- The proposed design of the primary system is for a minimum of 5Yr ARI (Pg. 23). As per NZS4404: 2004 Table 4-1 -Residential and rural residential; areas must design their primary network for a minimum of 5Yr ARI.
- The proposed development has a bridge crossing a stream that drains relatively large stormwater catchment and is also part of the flood dominated alluvial fan (Pg. 24). This bridge is a critical asset, as per the current development plans, provides the only access to Zone D (Pg 18). For now assumed okay. It is assumed that the bridge will be designed in accordance with the relevant standards and specification requirements during the detailed design phase. CODC should also consider the potential for future upstream development when assessing and finalising the bridge design to ensure adequate long-term capacity and resilience.
- Section 6.5.3 (Pg. 33) of report doesn't specify the minimum freeboard required and the secondary flow / flood depths. It would have been good if they noted the predicted 10-year ARI and up to a 100-year ARI including climate change storm event.
    - Flooding is predicted at some of the lots (Zone A) in this development (Pg. 86 and Figure 16 in Pg. 72).
    - Note that 100 Yr ARI flooding scenario assumed a pipe blockage scenario (i.e. all pipes less than 600 mm were assumed blocked - Pg. 26).
    - The flood modelling results maps should provide the flood depths and available freeboard for the properties at risk. This will be used evaluate the lot specific compliance of 0.5 freeboard from 1% AEP flood level to finished floor levels. *Please provide lot-by-lot FFL/freeboard schedule against the 1% AEP plus climate change flood level.*
- Flood hazard is high at certain section of the proposed roadway (Zone A), this is in the 100Yr blockage scenario (Pg. 87 and Figure 19 – Pg 74 and Figure 20 - Pg. 75). Freeboards and safe access to and from the property should be specified during detailed design phase.
- Hydraulic neutrality was not assessed/discussed in this report. If required by CODC during Engineering Acceptance, council to advise the developer or consultants to prepare one as per ORC guidelines or other relevant guidelines.
- Elements of stormwater treatment (Pg. 20, 22) were discussed in this report. They are generally following Auckland's GD01 specifications.

Other

- The report provides a flood risk assessment based on a HEC-HMS and HEC-RAS modelling.
- Model extents – As per figure 3 in their report (Pg. 12) Catchment model extent does not cover the full extent of the identified overland flow paths. It is unclear why some of the identified overland flow paths were excluded. However, this was deemed a minor anomaly.
- Ground model – Based on a Landpro data – Not clear on the resolution of this model. Given preliminary design, this was assumed a minor consideration.

- Roughness – Based on typical engineering judgement. Water and lots are relatively high. However, not relevant or not deemed to be an issue.
- SCS method is used to model the runoff.
- Curve Number/Impervious area – Assumed 60% for lots and 100% roads. Agree with using 100% for roads, however, for lots 60% is at the lower end of probable percentage of impervious area. As per Plan change 19, a minimum of 20% of the lot must be landscaped. This implies that 80% can be developed (i.e. 80% made impervious). They have noted that the design is to accommodate the MPD scenario (Pg. 24). Given this is a small catchment, this is not flagged to be a notable issue.
- Their basis for on-site disposal was using Cauldwell pits (Pg. 20), which is the recommended design for soakage by CODC.
- Infiltration test – Noted that they have undertaken (Pg. 10 Table 1), however, no details of this was part of this report. The report notes test pits were created (Pg. 17) however, no infiltrations rates were collected. The report does provide some commentary on why catchment 1 is planned to have a soakage zone and then Zone A~D to be drained by a primary system (Pg 20). As noted above, CODC to seek detailed explanation.
- Curve Number (CN's) - It is unclear on their method to derive the CN's and what curve numbers they have assumed over the model extent (Pg. 60). They have possibly used "Soil drainage class" to infer curve numbers (Figure 5 Pg. 60). The LRIS layer FSL Soil Drainage Class, indicates different drainage capabilities than what is indicated in Figure 5 (Pg. 60). The higher the Curve Number (CN), the greater the runoff generated. The CN values adopted in the assessment are generally at the lower end of the typical range, resulting in lower estimated runoff volumes. However, as only a portion of this runoff is conveyed through the bridge crossing (with the remainder draining elsewhere within the catchment, refer to Figure 2, Page 57), this assumption was not considered critical at the preliminary design stage. The capacity of the stream and bridge should be assessed further during the detailed design phase to confirm that they can adequately accommodate the design flows.
- Rainfall – All below items were deemed appropriate.
    - Hydrograph – Nested storm, peaking at the midday (Pg. 58)
    - 1% AEP RCP 8.5 (2081-2100) design event (Pg. 4)
    - Critical duration – 24 Hour depths are used (Pg. 58) (Appropriate – however hydrograph was not part of the report to confirm correct profile).

Yours faithfully

Stacey Coy
Three Waters Development Manager