Memo

To:	Christopher Fraser
From:	Tony Merrilees
Date:	21 January 2022
Topic:	Lot 3, 4 and 5 /DP1225803 42 Hanson Pl, Eastern Creek (Concrete Recycling) Amended comments
File no:	MC-19-00002 REF-21-001351 SSD 9774

Following a further review of the application the following amended items are to be addressed.

2 Flooding Issues:

- Section 5.3 of the Water Cycle Management Plan (WCMP) dated August 2021 prepared by Martens details the flooding flows at the trapped low point at the end of cul-de-sac. Martens identify a 1% AEP overland flow of 2.667 m^3/s entering the property and note a trapezoidal channel 10 m wide and 0.8 m deep is required to convey this flow.

  However, there are no details of how this flow overtops the kerb or boundary and how these flows are safely collected and then directed to the swale and on to the estate wetland and detention basin. The flow width at the boundary is likely to be much larger than the 10 m wide channel. When reviewing the contours in the cul-de-sac around the trapped low point these contours appear to suggest that the overtopping flows are initially directed to 22 Hanson Place (lot 62), however google street view and Council's GIS contours suggest that this survey information is outdated and will not give a true indication of how excess flows are directed. Additional survey is required to correctly understand the actual overtopping of the cul-de-sac and ensure the swale width is increased sufficiently to collect and direct the flow to the main design swale with freeboard and that the main building is protected.

  Provide detailed hydraulic flood modelling that demonstrates the behaviour and extent of flows overtopping the cul-de-sac in a 1% AEP event. Where the modelling demonstrates that the width of flow exceeds the 10 m wide swale detail what measures are required to safely collect such flows and direct these back into the swale without adversely impacting the proposed building within the site or in particular the adjoining development at 22 Hanson Place. Show both pre and post development modelling to show no impacts on 22 Hanson Place.

Where such modelling demonstrates some of this flow enters the main driveway to lots 4 and 5, detail how such flows are collected and conveyed to the estate basin to ensure no adverse impacts to the main building and operations of the site. In addition, are there safety issues for access/egress from the site down a steep driveway in such 1% AEP events and how is this addressed.

3 Drainage Issues:

a The concept plans by Martens are general and do not contain a sufficient level of detail to make a proper assessment. Amended drainage details are required to address the following.

- This is a large site and the number of pits supplied to collect these flows are insufficient. The number of inlet pits needs to be increased.
- All the drainage calculations are to be redone based on the entire area being fully paved (100% impervious), other than the Grevillea Street upstream flow swale at the south and east of lots 4 and 5.
- Provide a DRAINS model or other hydraulic calculations to justify that the internal pit and pipe system can collect and convey the 5% AEP flows to the estate basin. Where the difference between the 1% AEP and the 5% AEP flows cannot be safely conveyed overland to the estate basin the pit and pipe system is to be designed for the 1% AEP flows.
- On drawing E100(C) and E101(A) notate levels on the contours and bold say the 5 m contour depending on the contour interval.
- On drawing E100(C) provide a minimum 25 kL rainwater tank in lot 3 collecting all the roofwater off the Sales Office and Production Office. The rainwater tank water is to be used for flushing the toilets of all these offices and the weighbridge toilet (if provided). Lot 3 is currently an independent lot and the height difference between the current rainwater tanks in lot 5 and toilets in lot 3 is significant and this leads to a better outcome.
- In Council's review of the main separation building in lot 5 is that there are no toilets in this facility. Please confirm.
- In the Water Cycle Management Plan (WCMP) prepared by Martens provide a strategy for the use of water for dust suppression as to how rainwater will be used first, followed by stormwater and only then use mains water. e.g. there is no mains water top up of the rainwater tank, and only mains top up of the stormwater tank.
- On drawing E100(C) the use of a swale to collect 1% AEP surface flows along the southern boundary of lot 3 appears flawed where these two areas (lots 3 and 4) may be integrated from a work perspective. i.e. several access points for vehicle movements across the swale may be required. If not ignore. Contours are not clear as to the relative levels.
- On drawing E100(C) for lot 3 provide either a raised planter bed or more clearly define the swale (with sizes) along the full length of the Hanson Place road boundary to direct surface flows to the GPT.
- On drawing E100(C) the swale to collect 1% AEP surface flows along the southern boundary of lot 3 is substantially undersized to convey the 1% AEP flows with the site 100 % impervious. Amend details on drawing E200 (B). Also, the western end of the swale flows is to be directed to a pit and piped to an inlet pit upstream of the GPT as swale currently travels uphill. Detail how the excess 1% AEP flows discharge to Hanson Place

- On drawing E100(C) for lot 3 the configuration of the GPT and the pipe and swale flows is incorrect. Provide a new inlet pit and position the GPT downstream of the new pit, pipe and swale configuration to ensure these flows can all be treated.
- On drawing E100(C) for lot 3 the GPT nominated is too small. Provide either an Ocean Protect Vortsentry HS 21, Ocean Protect OceanSave OS-1112, SPEL Vortceptor SVO.140 or Rocla CDS 1012.
- On drawing E100(C) for lot 5 based on Section 5.3 of the Water Cycle Management Plan (WCMP) dated August 2021 prepared by Martens detail the widening of the swale to convey the widened flow width at the trapped low point at the end of cul-de-sac into the main swale. Provide a section through the trapezoidal channel 10 m wide and 0.8 m deep and show the relative floor level of the main building particularly at the critical eastern end.
- On drawing E100(C) and drawing E101(A) detail how an eductor truck and other maintenance vehicles can reach the large estate GPT and the estate bioretention basin clear of the main building and allowing entry and egress from this area in a forward direction.
- Ensure any changes to drawing E100(C) detailed above are repeated on drawing E101(A) where they overlap.
- Detail how the 1% AEP flows for lots 3, 4 and 5 in excess of the pipe capacity are directed to the detention basin.
- On drawing E101(A) for lot 5 the GPT nominated single HS24 is too small. Provide either twin Ocean Protect Vortsentrys HS 24, Ocean Protect OceanSave OS-1618, SPEL Vortceptor SVO.360 or Rocla CDS 1518.
- A combination of trench grates and kerb entry pits are required for the ramp down from the end of the cul-de-sac.
- It is not clear what finish is proposed throughout the development for the storage of materials and vehicles. This finish needs to be detailed. Council's recommendation as an industrial site is for all the area to have an all-weather sealed finish such as new concrete or bitumen. A compacted natural earth finish is not acceptable. The material must be capable or carrying the heavy axle loads of the trucks proposed on site. Where a recycled product finish is proposed such as concrete or bitumen then additional water quality treatment is required due the potential contaminated runoff such as raised pH, dissolved salts and chemicals that would not normally be considered under the estate treatment train. Such treatment cannot be assessed in MUSIC. Where recycled concrete, or bitumen, or similar is nominated, provide a treatment regime in addition to the GPT, from a competent person experienced in such treatment to ensure the runoff quality is of a sufficient standard to safely discharge to the estate bioretention or wetland.
- Amend drawing E200 (B) to address the following
    - At the schematic of the above ground rainwater tanks show some type of pre-treatment before discharging to the tanks.
    - The schematic of the above ground rainwater tanks air space of 200 mm does not match the 375 mm overflow pipe size. Review tank size to achieve the minimum volume.
    - The schematic of the above ground rainwater tanks shows 300 mm pipes. Nominate PVC (including overflow) otherwise up pipe sizes if using concrete.
    - For the swales provide catchment calculations based on 100% impervious catchment.
    - For the swales review the dimensions and allow for 100 mm freeboard.

- The splitter pit details are incorrect. The diversion weir cannot be lower than the storage level in the stormwater tank. Lower the storage level in the stormwater tank to match or be below the weir level.
- The configuration of the Splitter Pit details and the Underground Stormwater tank Layout is incorrect. Direct the 675 mm outlet pipe straight to the existing discharge pipe to the estate basin and NOT to the stormwater tank. Likely reposition the GPT to the south and the 675 mm pipe to the north.
- Review the sizing of the 675 mm inflow pipe based on the 100 % impervious upstream catchment and increase as required.
- Amend the Underground Stormwater tank Layout to provide 1200 x 1200 access to the main tank and ensure both access points are sealed. Suggest for WHS use twin 1220 x 600 lids. Relocate the access point to the main tank to be above the pump for maintenance.
- Amend the Underground Stormwater Tank Layout to show a minimum storage of 30 kL below overflow level.
- Note the changes to the GPT device detailed above.
- Review the size of the 600 mm pipe to the estate basin. Currently have twin 375 mm pipes and a 675 mm pipe discharging to a 600 mm pipe. Provide a supplementary parallel pipe from the 675 mm connection pipe upstream of the GPT to convey the minimum 5% AEP flows to the estate basin based on 100% impervious. Nominate the invert level on the 600 mm pipe.

- On drawings E300(B), E301(B) and E302(A) nominate the design for the 5% AEP, show the flows and the HGL

Tony Merrilees

Drainage Development Assessment Team Leader