Contact: Chris Fraser
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Our Ref: DA S29/3/97-MOD-1

Mr Paul Mitchell
City Plan Services
S6.02, 120 Sussex St
SYDNEY NSW 2000

Dear Sir,

Eastern Creek Karts (DA S29/3/97)
Section 4.55(2) Modification for Earthworks and Drainage (MOD 1)

Thank you for drainage information prepared by Martens & Associates and received by the Department on 19 April, 2021. The Department's assessment of Response to Submissions information and subsequent comments from Agencies has indicated aspects of drainage design and safety that require clarification with the appropriate designer prior to further assessment of the modification application.

A brief outline of design matters requesting clarity are attached in Attachment 1. The Department proposes to facilitate online discussion with designers to assist clarification. Subsequently, design matters may be adjusted for preparation of engineering plans and submission to the Department.

The Department requests you provide a response to design matters raised in Attachment 1. You are requested to respond to the request for information in Attachment 1 by 25 June, 2021.

If you are unable to provide the requested information within this timeframe, you are requested to provide, and commit to, a timeframe detailing the provision of this information.

If you have any enquiries, please contact Chris Fraser on the details listed at the top of this letter.

Yours sincerely,

13 May 2021

Pamela Morales
Acting Team Leader, Industry Assessments
Planning and Assessment

Attachment 1

1. Carpark access, Manoeuvring and Circulation

Plan PS01-GZ01 A dated 29 March 2021 shows manoeuvring for the design car and trailer combination with vehicles reversing in to kart service bays. To enable usage for kart preparation operations and enable track access for karts, design vehicle forward-in manoeuvres should be considered. In which case design of modules should be shown with the appropriate forward-in and circulation swept out loci for those design vehicles. In addition, please consult Endeavour Energy and ensure its designated vehicle circulation requirements have been satisfied.

2. Major System Overland Flow Paths

Plan PS01-E100 A shows drainage lines 1A102 and 1A603 rely on culvert capacity to pass almost all storms and appear not to provide a major overland flow path for storms in excess of the 20-year average recurrence interval (ARI). It should be noted that in the case of the Agreement with adjoining properties, the major system is also called to provide flood protection in case of Probable Maximum Flood (PMF). Concern is raised as minor drainage lines and major systems are specified on page D-4 of the Blacktown Drainage Design Manual (BDDM 2005). Major systems are important for safety in case of blockage and to enable flood rescue. In addition, WaterNSW has provided advice requesting the proposed drainage systems do not create impact on Prospect Reservoir land. Having regard to these concerns the Department requests the following information:

2.1 Reasons provided for excluding major systems from the design are to be argued on their merit and flooding safety;
2.2 If culvert design provides for blockage factors, analyse risk of blockage using a reasonable method such as set out in Australian Rainfall and Runoff 2019 (ARR2019) Book 6 Chapter 6, and Australian Runoff Quality (ARQ 2006) Chapter 8, given the nature of upstream catchment area and submit for consideration;
2.3 Potential partial blockage effect of any existing security fence between Prospect Reservoir land and the site, and optional gross pollutant traps over culvert inlets should be provided for in analysis;
2.4 Clarify if the proposed finish level of the access ramp over culvert 1A102 is 0.67 m above the toe of the upstream batter and clarify if TUFLOW Plan FL04 dated 16 April 2021 still requires the PMF to flow over the top batter as shown. If this is the case, please clarify PMF design peak flood depth and velocity over the access ramp.

In regard to swale design on the common boundary with Prospect Reservoir land the following information is requested;-

2.5 Calculate a suitable PMF flowrate appropriate for a proposed swale on the common boundary between Prospect Reservoir and the site given the sag point is located at 75% the length of the swale;
2.6 Extend the swale fully to the eastern boundary of the site and proposed extent of fill on the western side of the sag to ensure control of the relevant catchment area in the swale;
2.7 Propose swale design including surface finish and longitudinal grade (concrete bed slopes should have minimum 2.0% fall) and match with proposed finished invert levels at swale end points;
2.8 Perform hydraulic calculations for the design storm(s) in the swale ensuring BDDM 2005 freeboards of 300 mm to lip of swale;
2.9 Analyse impact of swale design on 100 year ARI and PMF design flood depths and velocities on Prospect Reservoir land;

In regard to design of the Eastern Swale in absence of a Major System overland flowpath the following information is requested;-

2.10 Calculate suitable PMF flowrate for the restricted catchment as proposed per the recent Agreement with adjoining property;
2.11 Design swale as per Sections 2.2 to 2.3 for blockage risk, and Section 2.5 to 2.8 above;
2.12 If batter extent and design creates a design issue with minimum freeboards, an independently supported and detached structure, such as a blockwork retaining wall, may be considered for purposes of providing minimum freeboard with construction wholly on the development site. Please provide structural engineering details.

3. Major Systems and Pipes in Modules

To protect the stability of batter slopes, water should be graded away from the tops of batters. While the use of kerbing may be used to define edges of a parking module, surface water should be graded away from tops of batters and adjoining properties towards the aisle centres if 100 year ARI flood depths and velocities are below safe maximums (as set out in ARR2019 Book 6 page 260). In this regard the following information is requested ;-

3.1 Carpark module grades should be shown on the plans as set out in AS 2890.1:2004 Section 2.4.6 and graded towards aisle centres. Provide a suitable all weather sealed pavement;
3.2 Concentrated major system surface flows (assume pipe blockage) should be disposed of over the western side batters by applying a scour free surface for the 100 year ARI design storm;
3.3 Arrange drainage lines 1A603 to 1A605 inclusive to cater for module aisle drainage and connect to the proposed trunk drainage system;
3.4 Perform velocity x depth calculations within carpark and access ramps to ensure design storm concentrated flows are below safe thresholds in Fig. 6.7.9 ARR2019 Book 6 page 260.

4. Carpark Safety

Batters should ensure protection of vehicles and people. Steep batters should be protected with a barrier in accordance with AS 2890.1:2004 Section 2.4.5.3. For structural stability against impact loadings, the design vehicle is either a car or the Endeavour Energy designated vehicle as appropriate to the particular barrier. Please submit details prepared by the structural engineer on the civil works plans.

5. Kart Track Safety

Given the proposed drainage layout and location of hard drainage appliances in areas currently used as track run off areas, drainage systems must not pose a risk to kart driver safety. Please submit a risk management strategy that justifies how safety for kart activities is maintained, and provide details of safety devices to be employed to protect participants. Please provide confirmation the risk management strategy is adequate should track side sand traps need to be removed to avoid erosion of those areas during design storm events and replaced with scour-free treatments.

6. Visual Impact and Landscape Design

Concerns arise in regard to removal of trees, loss of green space and lack of visual amenity of the unauthorised fill works. In this regard the following information is requested ;-

6.1 A statement from a suitably qualified person describing how landscape design can reduce visual impacts of existing fill works. The statement shall propose methods to reduce visual impacts of both the fill itself and event area activities on the fill, from the aspect of all neighbouring properties;
6.2 To permit carpark utility and service life, access ramps and carpark modules should be paved with an impervious all weather sealed surface with wheel stops, safety barriers, drainage and kerbs as required;

6.3 The balance of non-trafficable areas and batters should be landscaped with a landscape plan designed by a suitably qualified person, and includes design requirements set out in Section 6.1 above;

6.4 To avoid risk of reduced visual amenity caused by proposed carpark works, works used to grade and shape carpark aisles and modules must ensure finished surface levels are the same, or lower, than existing fill levels. Details of existing and proposed shall be clear on proposed engineering plans.

7. Endeavour Energy

Subsequent to the Department's notification of the Response to Submissions with various Agencies, it should be noted that Endeavour Energy has requested additional information necessary for them to assess and comment on proposed works prior to the Department's determination. It is suggested you make separate contact with Endeavour Energy to ensure they have appropriate details of the proposed works, which may allow them to assess and allow their general satisfaction of the proposal.