Storm Water Management – Bruny Island Ferry Landside Infrastructure

Department of State Growth

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1. Introduction

This Stormwater Management Plan has been prepared by Burbury Consulting (Burbury) to assess the proposed Bruny Island Ferry Terminal Landside Works with the relevant performance criteria of the Kingborough Council (KC) Interim Planning Scheme. The assessment is included as part of a Development Application (DA) to be lodged by the Department of State Growth (Department) for the Bruny Island Ferry Terminal Landside Infrastructure Works.

The existing ferry terminal sites are located at both Kettering and Roberts Point (Bruny Island). The terminals have operated as the Bruny Island ferry terminals since their construction in circa 1983. The original designs for the terminals were based on the MV Harry O’May and MV Mangana vessels that operated the ferry run until the early 1990’s before the MV Mirambeena commenced the ferry run. More recently the MV Bowen and MV Moongalba have provided support to the Mirambeena, particularly during peak demand periods.

SeaLink Bruny Island (SeaLink) commenced operations of the ferry contract in 2018, commissioning the construction of two (2) new purpose built ferries for operations in February 2020 (MV Nairana) and March 2021.

The current ferry terminal requires extensive maintenance to fenders to support the continual operations of the ferry service. The existing terminal is also significantly restrictive to loading and unloading due to the single lane capacity of the ramps originally designed for a service 40 years ago.

Through a detailed review of current and future ferry operations the Department, in conjunction with SeaLink, has developed a refurbishment of the existing ferry terminals through the development of a second ferry berth at both Kettering and Roberts Point. The second ferry berth will allow for dual facilities at either terminal as well as support new ferry operations through improved infrastructure.

The ferry terminal upgrade is detailed in the Development Application Drawings incorporating upgrade of the existing temporary berths at each terminal adjacent to the existing ferry berth as well as upgrade to the existing ramped roadway access to the new terminal ramps.

This report provides an assessment of the stormwater infrastructure and management proposed as part of the DA. Assessment of the DA has included reference to the following KC Interim Planning Scheme Part E7 Codes for Stormwater Management.

The proposed development footprint of new sealed pavement areas are relatively small and less than 300 square metres at both terminals however the proposed new works have incorporated capture and treatment of stormwater immediately adjacent to the new ramps incorporating controlled capture and discharge in accordance with the code.

The stormwater for the proposed development more than adequately addresses the planning scheme and increases the level of management of both terminals.
2. Site Overview

2.1 Development Areas

The proposed sites for the Bruny Island Terminal Landside Infrastructure is located at Kettering and Roberts Point. It incorporates the following expanded development footprint areas requiring pavement treatment upgrades forming part of this assessment:

<table>
<thead>
<tr>
<th>Location</th>
<th>Existing Paved Area</th>
<th>Proposed New Paved Area</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kettering (Berth 2 ramp)</td>
<td>175 m²</td>
<td>415 m²</td>
</tr>
<tr>
<td>Roberts Point (Berth 2 ramp)</td>
<td>280 m²</td>
<td>550 m²</td>
</tr>
</tbody>
</table>

The development areas are less than critical size for disposal and treatment under the planning scheme however the Development Drawings incorporate proposed stormwater capture and treatment for the new ramp areas to ensure adequate collection and control of stormwater within the operating terminal expanded areas.

Other areas of the existing terminals that incorporate minor modifications are incorporated within existing previous approved and constructed stormwater infrastructure of both Kettering and Roberts Point terminals.

The proposed development areas of the new ramp infrastructure is detailed in the figures below incorporating the overall development proposal as well as proposed stormwater collection, treatment and controlled discharge.

The existing site stormwater is controlled through sealed pavements into grated pits and swale drains with controlled discharge to the adjacent waterways. Kettering queuing terminal and Ferry Road was previously upgraded with road and service infrastructure in 2016. Roberts Point queuing terminal was upgraded in late 2019.

The proposed infrastructure upgrades work within the existing infrastructure and development areas of the operating terminals whilst utilising temporary berth for terminal expansion.

2.2 Kettering Terminal

The proposed Development Application is described in the drawings and figures included in this report and incorporates:

- **General:**
  - New dual land loading ramp;
  - New vessel berthing and fendering infrastructure including berthing dolphins;
  - New widened vehicle access ramp and abutment;
  - New dedicated pedestrian access walkway and ramp to Berth 2;
  - New queuing terminal entry with gantry and ticket booths and gates;
  - New servicing upgrades to suit lighting, powered supply for new ramp structure, sewage pumpout unit, water supply point on jetty, navigation aids and stormwater infrastructure modifications to existing structures and new expanded paved ramps;

- **Stormwater Infrastructure:**
  - New 200mm wide grated trench along abutment extents;
  - New 600mm square sediment pit with 150 diameter outfall through new rip-rap revetment;
- Extension of existing DN375 RCP outfall through widened ramp and rip-rap side wall; and
- All stormwater infrastructure to incorporate trafficable lids and grates to design service vehicle loading.

Figure 1  Kettering Terminal – existing infrastructure
Figure 2  Proposed Development Site Plan – Kettering

Figure 3  Kettering Terminal – Stormwater Management
2.3 Roberts Point Terminal

- **General:**
  - New dual land loading ramp;
  - New vessel berthing and fendering infrastructure including berthing dolphins;
  - New widened vehicle access ramp and abutment;
  - New dedicated pedestrian access walkway and ramp to Berth 2;
  - New queuing terminal entry and minor modifications to turning areas for bus turning;
  - New servicing upgrades to suit lighting, powered supply for new ramp structure, navigation aids and stormwater infrastructure modifications to existing structures and new expanded paved ramps;

- **Stormwater Infrastructure:**
  - New 200mm wide grated trench along abutment extents;
  - New 600mm square sediment pit with 150 diameter outfall through new rip-rap revetment;
  - Extension of existing open channel drain outfall through widened ramp and rip-rap side wall; and
  - All stormwater infrastructure to incorporate trafficable grates to design service vehicle loading.

**Figure 4 Existing Site Plan – Roberts Point**
Figure 5  Proposed Development Site Plan – Roberts Point

Figure 6  Roberts Point Terminal – Stormwater Management
3. Code Assessment

The following assessment has been provided against the Stormwater Code E7.

3.1 E7.7.1 Stormwater Drainage and Disposal

<table>
<thead>
<tr>
<th>Acceptable Solutions</th>
<th>Performance Criteria</th>
</tr>
</thead>
<tbody>
<tr>
<td>A1 Stormwater from new impervious surfaces must be disposed of by gravity to public stormwater infrastructure.</td>
<td>P1 Stormwater from new impervious surfaces must be managed by any of the following:</td>
</tr>
<tr>
<td></td>
<td>a. disposed of on-site with soakage devices having regard to the suitability of the site, the system design and water sensitive urban design principles</td>
</tr>
<tr>
<td></td>
<td>b. collected for re-use on the site;</td>
</tr>
<tr>
<td></td>
<td>c. disposed of to public stormwater infrastructure via a pump system which is designed, maintained and managed to minimise the risk of failure to the satisfaction of the Council.</td>
</tr>
</tbody>
</table>

Response:
- The proposed Development incorporates extension of the existing road surfaces and new drainage infrastructure on site, collection, control and discharge at both terminal sites;
- The existing stormwater infrastructure at both sites has been assessed and proposed for extension to suit the new landside access ramp widening and abutment arrangements;
- The paved areas of the ramps will be captured at the abutment of the new loading ramp at both sites for discharge immediately below the new terminal ramp;
- The cut-off drains will incorporate sediment pits and discharge controlled at new rock rip-rap face to ensure discharge minimises contaminates from discharging into the waterway as well as controlling erosion at the new proposed discharge point;

A2 A stormwater system for a new development must incorporate water sensitive urban design principles for the treatment and disposal of stormwater if any of the following apply:
- the size of new impervious area is more than 600 m²;
- new car parking is provided for more than 6 cars;
- a subdivision is for more than 5 lots.

Response:

P2 A stormwater system for a new development must incorporate a stormwater drainage system of a size and design sufficient to achieve the stormwater quality and quantity targets in accordance with the State Stormwater Strategy 2010, as detailed in Table E7.1 unless it is not feasible to do so.
- The expanded areas of pavements at both terminals is described in Section 2 above and is less than 240 square metres expanded area at Kettering and 270 square metres at Roberts Point terminal;
- The proposed expanded ramp is for vehicle access from the existing queuing areas and onto the vessel and hence only trafficable through unloading and loading (i.e. vehicle movements);
- Whilst parking or stationary vehicles over the expanded areas will be controlled or limited through ferry operations new stormwater infrastructure is proposed with cut-off drain at the ramp abutment as well as sediment pit to capture sediments before discharge below the proposed new dual lane ramps; and
- The proposed design can readily achieve the State Stormwater Strategy targets for stormwater quality through small capture of area, cut-off drain to capture wide extents of drainage area, sediment pit controls and managed discharge of the stormwater pit.

**A3**
A minor stormwater drainage system must be designed to comply with all of the following:

a. be able to accommodate a storm with an ARI of 20 years in the case of non-industrial zoned land and an ARI of 50 years in the case of industrial zoned land, when the land serviced by the system is fully developed;

b. stormwater runoff will be no greater than pre-existing runoff or any increase can be accommodated within existing or upgraded public stormwater infrastructure.

**P3**
No Performance Criteria.

**Response:**
- The new pavement areas of the ramp will contain all drainage from the edge of the existing ramps roadway to the new ramp abutment through a continuous cut-off drain and sediment pit;
- Stormwater system will meet design requirements nominated above.

**A4**
Not applicable – not a major stormwater system.