

## ENGINEERING REPORT

FOR THE PROPOSED  
PORTSIDE WHARF – BUILDINGS 2 AND 5

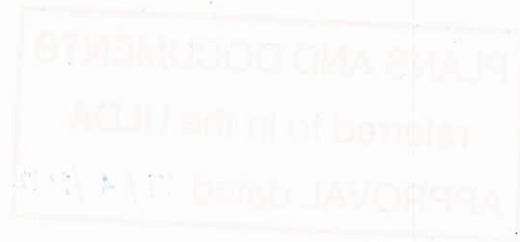
LOCATED AT  
35 HARBOUR ROAD  
HAMILTON

PLANS AND DOCUMENTS  
referred to in the ULDA  
APPROVAL dated 17 / 4 / 2012

PREPARED FOR  
BROOKFIELD MULTIPLEX DEVELOPMENTS  
BY BORNHORST & WARD PTY LTD

DECEMBER 2011

December 2011 – Portside Wharf Buildings 2 and 5

Bornhorst & Ward Project No. **11001A**

If you have any queries regarding this report please contact Nicholas Rozis

| Revision | Date     | Description   | Author | Rev. | App. |
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## **1. INTRODUCTION**

Bornhorst and Ward has been commissioned to investigate and report on the Civil Engineering and Servicing requirements pertaining to the proposed Portside Wharf – Buildings 2 and 5, located at 37 Harbour Road, Hamilton. Buildings 2 and 5 are contained within the previously approved Stage 2 Masterplan.

The location of the proposed site is indicated in Figure 1, Appendix A.

The Engineering requirements for this proposal shall be in accordance with Brisbane City Council Subdivision and Development Guidelines and City Plan 2007 which formed the basis of the original stage 2 master plan approvals.

This report outlines the preliminary design methodology and calculations in support of a Development Application and should be read in conjunction with other documents issued by the consultant team.

## **2. SITE CHARACTERISTICS**

### **2.1 LOCATION**

The proposed sites are in the centre of the Portside Wharf development, located on the southern side of Hercules Street, Hamilton. The site is bound by the Brisbane River in the south, the existing Portside Wharf development to the east, and future development to the north.

Street Address: 37 Harbour Road, Hamilton  
RP Description: Lots 802 and 805 on SP172616

### **2.2 LANDUSE**

#### **2.2.1 Existing**

The previous land use for the site prior to the construction of building 4 works was classified as industrial, primarily consisting of wharfs and hardstand areas. The site is currently being used as a site office, and a construction equipment storage area for Brookfield Multiplex, the construction of Building 4 and consists of hardstand areas. No vegetation exists on, or adjacent to the site.

#### **2.2.2 Proposed**

The proposal detailed in this report is for the construction of two High density living residential buildings. The first, building 2 will be a 16 Storey building consisting of residential units and car parking, with an approximate site coverage 3202m<sup>2</sup>. The second, building 5, is to be 15 Stories, consisting of residential units, surrounding podium and car parking, with an approximate site coverage 2885m<sup>2</sup>. The development is split over two separate areas, both of which are situated within the limit of Stage 2 works. The basement levels of both sites will be constructed as a continuation of previously approved Building 4 works. The locations of the proposed new buildings is shown in Figure 2, Appendix A.

December 2011 – Portside Wharf Buildings 2 and 5

The proposed site layouts are as follows;

- Building 2 is shown on the NRA – Site Plan – Ground External Works Plan, attached in Appendix C.
- Building 5 is shown on the Cottage Parker Floor Plan – Ground, attached in Appendix C.

## **2.3 TOPOGRAPHY AND SITE DRAINAGE**

In existing conditions prior to surrounding development works, the site was relatively flat with levels around 3.0m. As a result of previous stages and the current construction of building 4, excavation has occurred in most areas. There are a number of existing stormwater lines surrounding the site, constructed as part of the previous development stages. The site runoff for the stage 2 works, falls towards the Brisbane River at the south of the property, with the exception of Building 5 where the runoff travels towards Harbour Road, it then continues into the existing piped network before discharging into the Brisbane River.

## **3. SITE DATA**

### **3.1 SOURCES OF INFORMATION**

In order to collate existing information for the site and immediate environment, the relevant Council and governing authorities were contacted to determine whether any of the following documents, relevant to the area immediately adjacent to the development, exist:

|                              |                                                           |
|------------------------------|-----------------------------------------------------------|
| Waterway Management Plans    | - NIL                                                     |
| Catchment Management Plans   | - NIL                                                     |
| Stormwater Management Plans  | - SKM Site Based Stormwater Management Plan (August 2003) |
|                              | - Bornhorst and Ward Master Plan 2 (December 2006)        |
| Flood Studies                | - NIL                                                     |
| Infrastructure Charges Plans | - NIL                                                     |

## **4. EXISTING AND PROPOSED CIVIL WORKS AND INFRASTRUCTURE**

### **4.1 STORMWATER**

There are a number of existing drainage outlets from the development site to the Brisbane River. During Stage 1 of the Portside Wharf development, box culverts were constructed on both the western and eastern sides of the site. All drainage internal to the site currently discharges via piped networks into the existing culverts. There is currently an existing 900mm diameter stormwater pipe within the vicinity of building 5, this then continues into the piped network contained within Harbour Road where this system discharges into the Brisbane River.

The existing 900mm diameter pipe will remain the stormwater connection for Building 5. Rainwater tanks and a Gross Pollutant Trap (GPT) will be incorporated into the proposed stormwater network to adhere with stormwater quality guidelines discussed later in this report. The Rainwater tanks will harvest rain water which will be used onsite for irrigation purposes. Refer SK-C-001 attached in Appendix B for details.

Refer to Section 5.0, "Stormwater Management Plan" for further details.

#### **4.2 SEWERAGE**

As a part of previous Portside Wharf development works, the sewerage infrastructure within the catchment and in particular Remora Road was upgraded. The Northshore Hamilton Trunk master sewer has been designed to include the provision for any flows generated by this development. This sewer is to be completed in early 2013. Buildings 2 and 5 shall be completed following this with an anticipated completion date in 2014.

It is the developers intention to connect all new internal sewers to the existing 150mm diameter stub entering the site from Harbour Road. This drains to the existing 150 and 225mm diameter sewer in Hercules Street.

#### **4.3 WATER**

The Portside Wharf precinct is currently serviced by the existing water infrastructure surrounding the site. The existing infrastructure consists of 150mm diameter mains located along the north and western side of Harbour Road and the eastern side of Remora Road. Water connections to the existing Portside Wharf development consist of a number of 150mm and 100mm diameter mains, entering the site from Hercules Street and Harbour Road.

There is an existing 150mm diameter water connection crossing Harbour Road and entering the development site. As indicated on the attached SK-C-001 (Refer Appendix B), it is proposed that this is the connection point for the development. During the masterplanning stage it was determined that sufficient capacity is available within the network to cater for the developed demands from the subject site.

Refer to the Brisbane City Council Memorandum, Appendix E for further details.

#### **4.4 EARTHWORKS**

All earthworks and construction of basement levels in this area have been undertaken as a continuation of the recently approved Building 4 works. This proposal will involve construction of the two new buildings and podium levels only.

Refer to Bulk Earthworks and Standard Notes Plan attached in Appendix D for details.

#### **4.5 SITE FLOODING & OVERLAND FLOW**

A Brisbane City Council Floodwise Report has been obtained for the site. The highest Defined Flood Level (DFL) is RL2.5m AHD as a result of a Storm Tide. Brisbane River flooding can also occur to a level of RL1.7m AHD. In existing conditions, the site is approximately at RL3.0m. As the Podium Level for the development will be constructed at RL4.7m, residential areas will not be affected by flooding, and have freeboard, to the highest Defined Flood Level, exceeding 2.2m. Investigation of the Nearmap Aerial Photography Website (Map dated 14<sup>th</sup> of January) and January site visits, it is noted that the site was not affected by the January 2011 Floods.

Based on the Masterplan previously prepared by SKM, the existing piped network was designed to cater for a 1 in 100 year flood event, there was no need for additional site storage.

**4.6 EROSION AND SEDIMENT CONTROL PLAN (ESCP)**

A comprehensive Erosion and Sediment Control Plan including a construction process will be prepared for this development during the detailed design phase. The ESCP designs will be in accordance with the Institution of Engineers reference material and Brisbane City Council's Guidelines.

**4.7 BRISBANE CITY PLAN CODES**

The relevant Brisbane City Plan Codes with respect to engineering aspects for assessment of the Development Application have been addressed. The codes will assist in assessing operational works requirements. The codes addressed in this report include:-

- Stormwater Management Code.
- Services, Works and Infrastructure Code.

The completed codes can be found attached in Appendix G of this Report. The Filling and Excavation Code has been omitted as all ground works will be completed in conjunction with Building 4 works.

**4.8 ASSET HANDOVER**

It is the intention of the applicant that all stormwater quantity and quality controls within the development as detailed in this document, will remain in private property and will be maintained by the developer.

## **5. STORMWATER MANAGEMENT PLAN**

### **5.1 STORMWATER OBJECTIVES**

Several design elements were identified in relation to stormwater management issues, which are listed below;

- The proposed development can be drained;
- The stormwater management system can follow the features and functions of the natural drainage system;
- The volume, timing velocity and pollutant load of stormwater has no adverse effect on any surrounding properties or receiving waters; and
- Suitable provision is made in the design layout to accommodate for major drainage.

### **5.2 CATCHMENT DESCRIPTION**

#### **5.2.1 Existing and Proposed**

Prior to surrounding development the site was relatively flat with levels around RL3.0m. Surface water discharged via sheet flow into the Brisbane River. Since the construction of the existing Portside Wharf development, stormwater is discharged into stormwater drains provided as part of the previous stages.

The Building 2 incorporates a site area of 3202m<sup>2</sup> while Building 5 has a area of 2885m<sup>2</sup>. The proposed development will drain to existing stormwater infrastructure surrounding the site as described in Section 4.1, "Stormwater".

### **5.3 LEGAL POINT OF DISCHARGE**

The existing point of discharge from the site is the Brisbane River, to the south of the development. Building 2 will continue to discharge to the Brisbane River via the existing culverts situated under the boardwalk. Building 5 will discharge to the existing 900mm diameter pipe located in the North West of the site which connects to the piped network located in Harbour Road.

### **5.4 OPPORTUNITIES AND CONSTRAINTS**

#### **5.4.1 Site Opportunities**

The major opportunities identified for the site with respect to the application of stormwater quality and quantity controls are:

- The use of rainwater tanks to capture roofwater runoff for re-use within the site for irrigation.

#### **5.4.2 Site Constraints**

The major constraints identified for the site with respect to the application of stormwater quality and quantity controls are:

- High density developments change the runoff characteristics of the development. An increase in impervious area can result in an increased amount of runoff.
- The size of the development site restricts the space available for use in stormwater management.

## 6. STORMWATER QUANTITY

### 6.1 STORMWATER DRAINAGE METHODOLOGY

There is no intention to alter the site characteristics from the previously approved Stage 2 Masterplan. The existing infrastructure was designed for to cater for unmitigated flows generated by a 1 in 100 Average Rainfall Intensity (ARI) event from the developed catchment within the stage 2 works. Rain water tanks will be implemented within the design as required by the Queensland Development Code. Rain water captured in these tanks will be reused for irrigation onsite. Therefore there is no requirement to provide onsite detention measures in this instance, thus providing minor mitigation for ARI's less than Q1 events, reducing discharge volumes.

## 7. STORMWATER QUALITY

### 7.1 WATER QUALITY

The existing site is situated within the Brisbane River Catchment and the nearest affected waterway has been identified as the Brisbane River, located towards the south of the subject site.

As previously identified the development has previously been approved under the Stage 2 Masterplan which was initially assessed against the Brisbane City Council Guidelines. Water Quality guidelines used for this initial assessment were the *Brisbane City Council Guidelines for Pollutant Modelling, Version 7 (2003)*. Reference to Brisbane City Council MUSIC Modelling Guidelines has been made for location specific data and modelling procedures.

### 7.2 WATER QUALITY OBJECTIVES

The Water Quality Objectives for assessment of the proposed stormwater quality treatment train implemented within each of the sites is indicated in Table 3 below.

**Table 1: Water Quality Objectives – Brisbane City Council Guidelines for Pollutant Modelling**

| Target Pollutant             | Discharge Concentration |
|------------------------------|-------------------------|
| Total Suspended Solids (TSS) | 15 mg/L                 |
| Total Phosphorus (TP)        | 0.07 mg/L               |
| Total Nitrogen (TN)          | 0.65 mg/L               |

### 7.3 MODELLING/ASSESSMENT APPROACH

A quantitative assessment of stormwater runoff quality was considered for the developed scenario.

The predicted future (operational phase) discharge concentrations of key pollutants, previously identified in section 7.2, has been conducted using the *"Model for Urban Stormwater Improvement Conceptualisation (MUSIC)"*. MUSIC is a stormwater quality modelling program that provides estimates of stormwater pollution generation and the performance of stormwater management measures used in series or parallel to form a 'treatment train'. Input parameters and desired Water Quality Objectives (WQOs) specific to Brisbane were adopted in accordance with Council guidelines.

### 7.3.1 Meteorological Data

The first step in creating the MUSIC model was to select the appropriate meteorological data set (period and time step) to be used as the basis for the runoff algorithms. Section 2.2 – Meteorological Data of the reference material details the Rainfall Data and Time Step process requirements of the model. The time step used for the Music modelling process was: Brisbane 6 Minutes (1980-89).

### 7.3.2 Source Nodes

The second step taken in creating the MUSIC model was to define 'Source Nodes' or Sub-Catchments. Source nodes for modelling Brisbane Catchments were defined as per the reference material: Guidelines for Pollutant Export Modelling in Brisbane Version 7-Draft for generating pollutant loads and mitigation strategies".

The model consisted of two types of source nodes:

- Source nodes representing the urban hardstand areas.
- Source nodes representing Roof Areas.

For the purposes of this investigation Urban Residential Source Nodes have been used to model all catchments within this development as the development will consist of residential uses. An urban residential node is used to describe low to high-density residential areas and activities servicing local neighbourhood needs.

**Table 2: Source Node Catchment Details – Building 2**

| Catchment   | Node Type         | Area (Ha) | Fraction Impervious |
|-------------|-------------------|-----------|---------------------|
| Podium Area | Urban Residential | 0.167     | 65%                 |
| Roof Area   | Urban Residential | 0.135     | 100%                |
| Total       |                   | 0.302     | 82%                 |

**Table 3: Source Node Catchment Details – Building 5**

| Catchment   | Node Type         | Area (Ha) | Fraction Impervious |
|-------------|-------------------|-----------|---------------------|
| Podium Area | Urban Residential | 0.194     | 75%                 |
| Roof Area   | Urban Residential | 0.094     | 100%                |
| Total       |                   | 0.288     | 87%                 |

Source Node Parameters for each node type were based on *Brisbane City Council Guidelines for Pollutant Modeling, Version 7 (2003)*. The parameters adopted are listed in Appendix E for reference.

### 7.3.3 Treatment Nodes

A range of SQBMPs were considered for inclusion in the development site layout, with information on available SQBMPs primarily sourced from BCC. Each has been reviewed for its suitability for this location. For this particular development the following treatment options have been chosen for incorporation into the development design:

0

Table 4: SQBMP Selection Matrix

| SQBMP Description | Discussion                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| GPT               | <p>Gross pollutants traps are proposed to be installed in both basement levels prior to site discharge. These will collect larger pollutants and rubbish washed into the stormwater system, and also aid in removing sediments.</p> <p>Ecosol RSF 4000 Range GPT has been modelled in MUSIC. Pollutant removal rates have been input as per the manufacturers guidelines, however removal rates for Nitrogen and Phosphorus have been set at 0.</p>                                                                                                                      |
| Roof Water Tanks  | <p>As the development has significant roof area, an opportunity exists to capture and possibly supplement some forms of water supply requirements of the development.</p> <p>It is the developers intention to provide this storage volume in the form of a rainwater tank, located within the Basement Level. For the purposes of Stormwater Modelling, a 25kL rainwater tank has been assumed for each building. Roofwater would then be re-used for irrigation. The Hydraulic Engineer will be responsible for calculating the actual size of the rainwater tank.</p> |

Design details of treatment nodes can be found in Appendix E of this report. The treatment devices will be located beneath the Podium in the Basement Levels. The location of these devices will be decided by the Architect and Hydraulic Engineer during detailed design.

#### 7.4 PROPOSED TREATMENT TRAIN

From the available SQBMPs, a BMP 'Treatment Train' was developed to target each of the pollutants of concern and was subsequently incorporated into the development site layout.

Refer to Figure 3, Appendix E for Typical Treatment Train.

#### 7.5 RESULTS

The pollutant export levels for the developed phase are summarised below. The estimated pollutant removal efficiencies of each of the SQBMPs are as calculated by the MUSIC model.

Table 5: Pollutant Export Discharge – Building 2

|                     | Pollutant Removal Rates |            |            |     |
|---------------------|-------------------------|------------|------------|-----|
|                     | TSS (mg/L)              | TSS (mg/L) | TSS (mg/L) | n/a |
| Developed Mitigated | 5.30 mg/L               | 0.04 mg/L  | 0.570 mg/L | n/a |
| WQOs                | 15 mg/L                 | 0.07 mg/L  | 0.65 mg/L  | n/a |

Table 6: Pollutant Export Discharge – Building 5

|                     | Pollutant Removal Rates |            |            |     |
|---------------------|-------------------------|------------|------------|-----|
|                     | TSS (mg/L)              | TSS (mg/L) | TSS (mg/L) | n/a |
| Developed Mitigated | 5.19 mg/L               | 0.04 mg/L  | 0.552 mg/L | n/a |
| WQOs                | 15 mg/L                 | 0.07 mg/L  | 0.65 mg/L  | n/a |

The Stage 2 Master plan was originally assessed against the *Brisbane City Council Guidelines for Pollutant Modelling, Version 7 (2003)* and Water Quality Objectives were achieved by the previous development proposal. Both buildings continue to meet the Water Quality Objectives defined by Brisbane City Council as indicated in the above tables.

## 7.6 WATER QUALITY MONITORING PROGRAM

As this development discharges stormwater into the Brisbane River using stormwater quality Best Management Practices, no proposal for water quality monitoring has been made. The measures proposed for water quality and water quantity treatment are reasonably well understood and demonstrated in Brisbane. Hence it is anticipated that they are acceptable.

## **8. SUMMARY**

From the investigations conducted, it has shown that the proposed development located within the Portside Wharf Precinct can be constructed and serviced in accordance with Brisbane City Council requirements.

The Stormwater Management Plan has demonstrated that adequate treatment of stormwater quantity and quality is possible under the proposed plan. Sufficient consideration of stormwater controls has been made to demonstrate the viability of the proposed site development.

## 9. REFERENCES

- 1) Draft Australian Runoff Quality (IEAust 2003).
- 2) Brisbane City Council (1999) – Draft Design Guidelines for Stormwater Quality Improvement Devices.
- 3) Brisbane City Council (2000) Brisbane City Council's Water Quality Management Guidelines.
- 4) Brisbane City Council (2000) Guidelines on Identifying and Applying Water Quality Objectives in Brisbane City.
- 5) Brisbane City Council (2000) – Guidelines for Sediment Basin design, Construction and Maintenance
- 6) Brisbane City Council - Draft WSRD Guidelines (2003)
- 7) Brisbane City Council - Draft Design Guidelines for Stormwater Quality Improvement Devices (1999)
- 8) Brisbane City Council (October 2003) Guidelines for Pollutant Export Modelling in Brisbane – Version 7.
- 9) Water Quality management Guidelines, Part C of Brisbane City Council (2000) Subdivision and Development Guidelines
- 10) Queensland Urban Drainage Manual (2007).
- 11) Model for Urban Stormwater Improvement Conceptualisation User Manual Version 1.00. (CRC-CH 2002).
- 12) A Bibliography of Urban Stormwater Quality (Duncan 1995)
- 13) Soil Erosion and Sediment Control Guidelines for Queensland Construction Sites (1996). The Queensland Division of the Institution of Engineers, Australia.

**APPENDIX A**

**FIGURES**

December 2011 – Portside Wharf Buildings 2 and 5

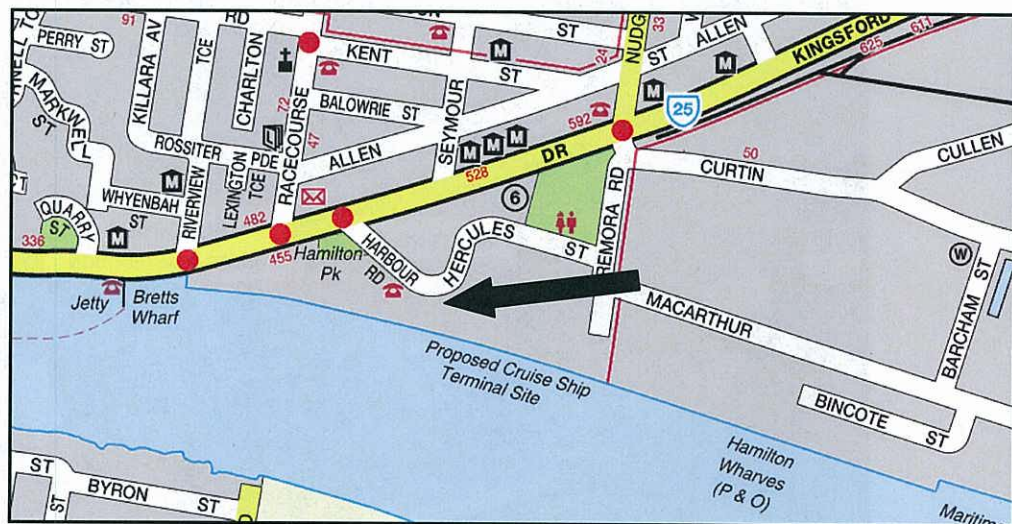
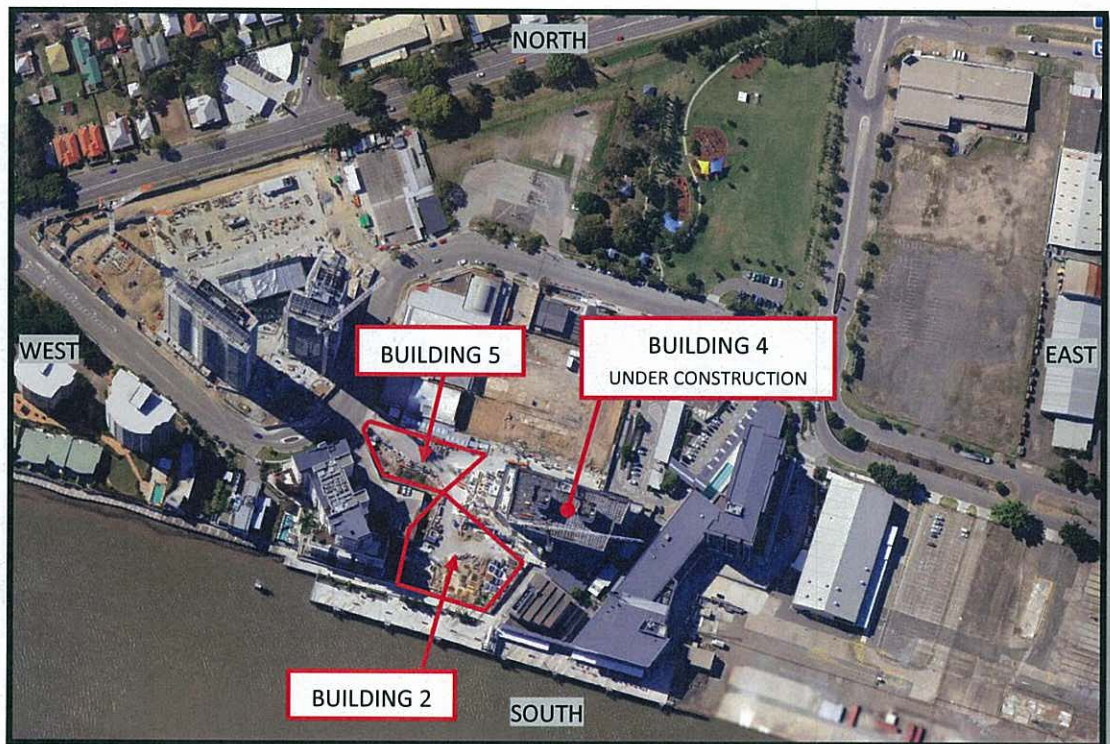


Figure 1: Locality Map

UBD Map: Brisbane UBD, Map 240 – C1

December 2011 – Portside Wharf Buildings 2 and 5

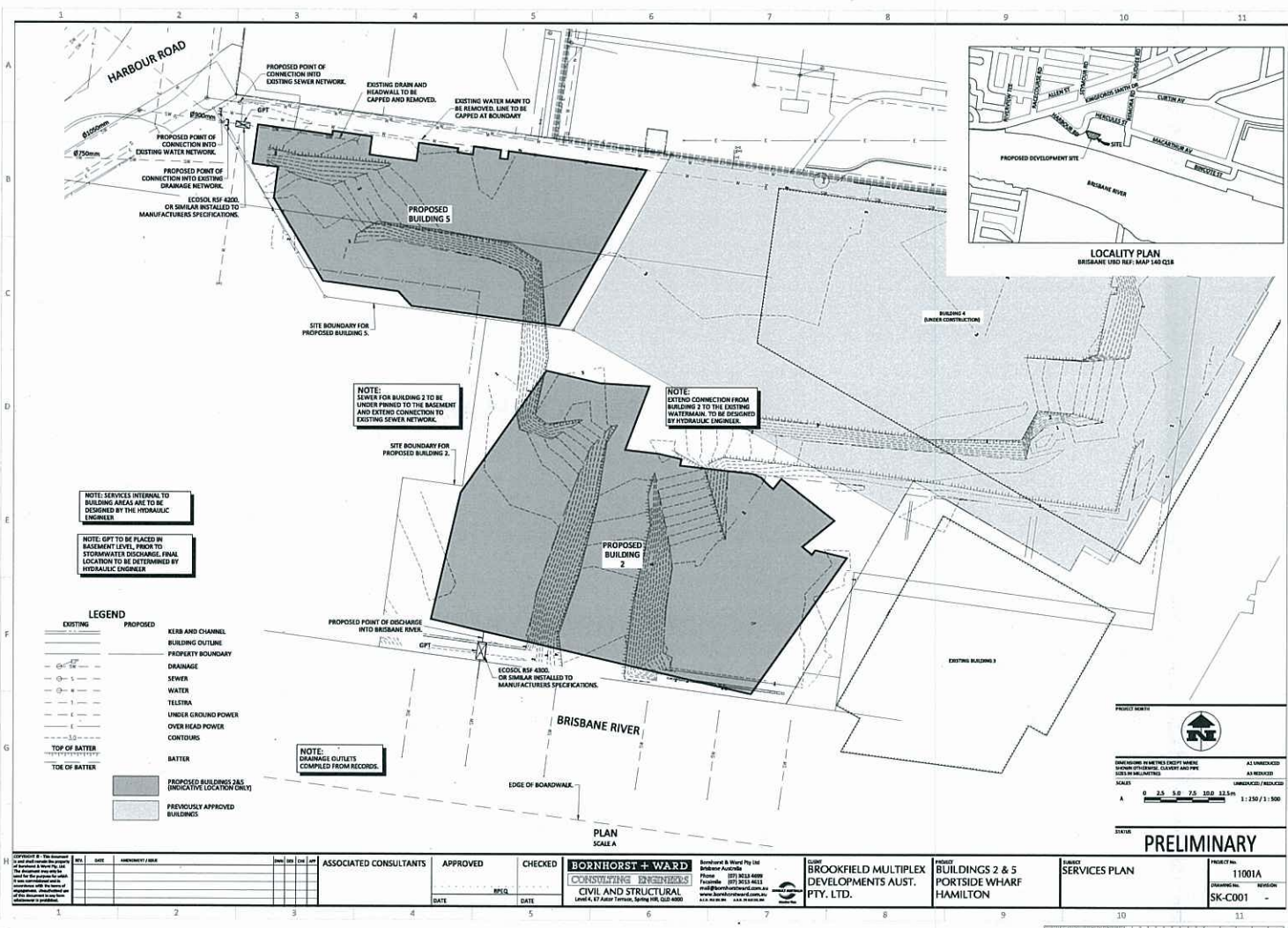


**Figure 2 : Site Map - 37 Harbour Road, Hamilton**

Retrieved from Nearmap.com © on 12<sup>th</sup> December 2011

**APPENDIX B**

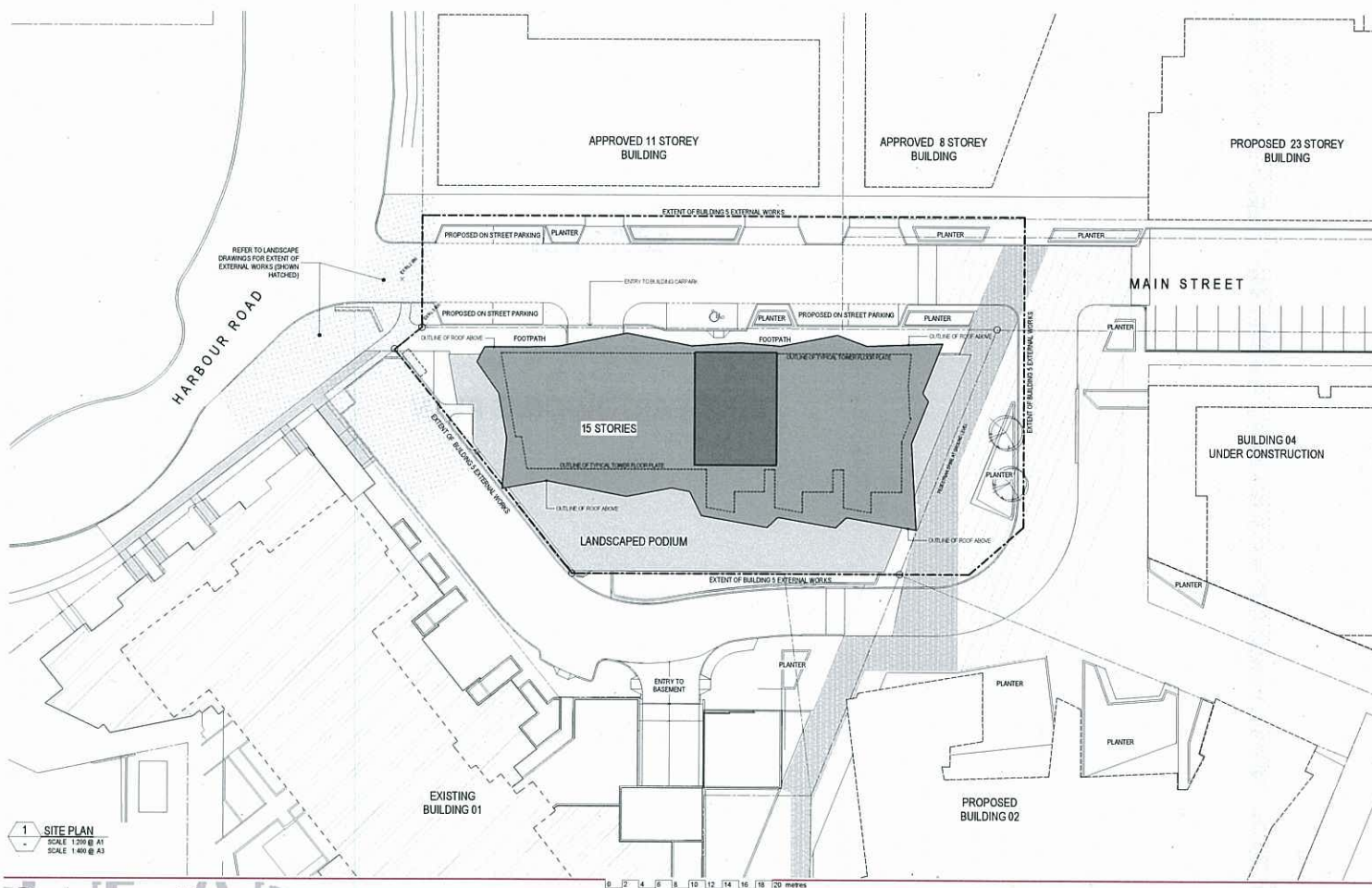
**SERVICES PLAN**



**APPENDIX C**

**SITE PLANS**





## Schematic

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**APPENDIX D**

**BULK EARTHWORKS PLAN**



|                                                              |  |                                                           |  |                                                                                                                                                          |  |                                                                               |  |                                                                      |  |                                      |  |                                                                             |  |
|--------------------------------------------------------------|--|-----------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|----------------------------------------------------------------------|--|--------------------------------------|--|-----------------------------------------------------------------------------|--|
| <b>APPROVED</b><br><b>NOV 2009</b><br><b>DATE 20/09/2009</b> |  | <b>CHECKED</b><br><b>NONAME</b><br><b>DATE 20/09/2009</b> |  | <b>BORNHORST + WARD</b><br><b>CONSULTING ENGINEERS</b><br><b>CIVIL AND STRUCTURAL</b><br><small>Level 4, 47 Anson Terrace, Spring Hill, QLD 4000</small> |  | <b>CLIENT</b><br><b>BROOKFIELD MULTIPLEX DEVELOPMENTS AUSTRALIA PTY. LTD.</b> |  | <b>PROJECT</b><br><b>BUILDINGS 2 &amp; 5 PORTSIDE WHARF HAMILTON</b> |  | <b>SUBJECT</b><br><b>SITE LAYOUT</b> |  | <b>PROJECT NO.</b><br><b>11001A</b><br><b>EXAMINATION</b><br><b>SK-C002</b> |  |
|--------------------------------------------------------------|--|-----------------------------------------------------------|--|----------------------------------------------------------------------------------------------------------------------------------------------------------|--|-------------------------------------------------------------------------------|--|----------------------------------------------------------------------|--|--------------------------------------|--|-----------------------------------------------------------------------------|--|

**APPENDIX E**

**MUSIC DATA**

Table 1: Recommended MUSIC Runoff Generation Parameters

| Parameter                           | Urban Residential (All Nodes) |
|-------------------------------------|-------------------------------|
| Field Capacity (mm)                 | 200                           |
| Infiltration Capacity Coefficient a | 50.0                          |
| Infiltration Capacity Exponent b    | 1.0                           |
| Rainfall Threshold (mm)             | 1.0                           |
| Soil Capacity (mm)                  | 400                           |
| Initial Storage (%)                 | 10                            |
| Daily Recharge Rate (%)             | 25                            |
| Daily Baseflow Rate (%)             | 5.0                           |
| Initial Depth (mm)                  | 50                            |

Table 2: Music Base and Stormflow Concentration Parameters for Brisbane Catchments

| Land Use Type                 | Parameter | TSS ( $\text{Log}_{10}\text{mg/L}$ ) |            | P ( $\text{Log}_{10}\text{mg/L}$ ) |            | N ( $\text{Log}_{10}\text{mg/L}$ ) |            |
|-------------------------------|-----------|--------------------------------------|------------|------------------------------------|------------|------------------------------------|------------|
|                               |           | Base Flow                            | Storm Flow | Base Flow                          | Storm Flow | Base Flow                          | Storm Flow |
| Urban Residential (All Nodes) | Mean      | 1.00                                 | 2.18       | -0.97                              | -0.47      | 0.20                               | 0.26       |
|                               | Std Dev   | 0.34                                 | 0.39       | 0.31                               | 0.31       | 0.20                               | 0.23       |

Table 3: GPT Input Parameters

| Pollutant                    | Removal Efficiency |
|------------------------------|--------------------|
| Gross Pollutants (GP)        | 90%                |
| Total Suspended Solids (TSS) | 50%                |
| Total Nitrogen (TN)          | -                  |
| Total Phosphorus (TP)        | 20%                |

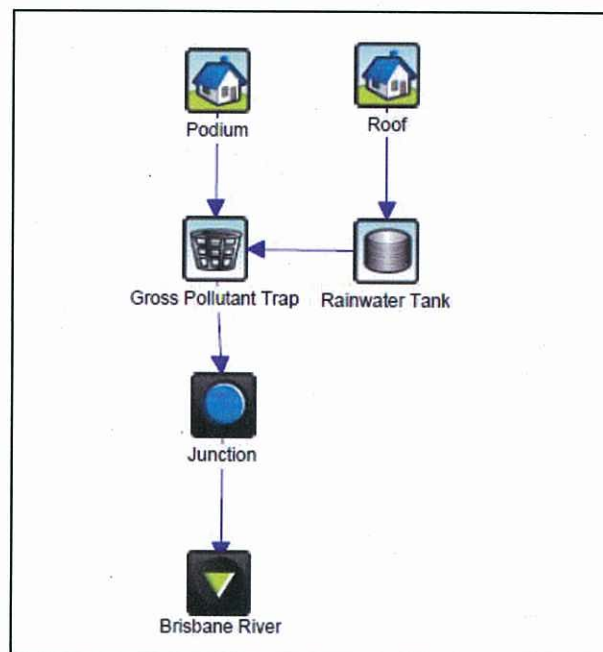


Figure 3 : Typical Treatment Train

December 2011 – Portside Wharf Buildings 2 and 5

**APPENDIX F**

**BRISBANE CITY COUNCIL MEMORANDUM**

# MEMORANDUM



*Dedicated to a better Brisbane*

To: **Bornhorst & Ward Consulting Engineers** Date: **11/09/2009**  
Attn: **Kris Rensch**  
CC:  
From: **Peter Dobraszkiewicz**  
Re: **Development Assessment**  
**Portside Wharf, Hamilton ( Building 5 - Hercules St)**  
File : **BART S 03-08-03**  
**S1-EFPS 09-04**

## **Asset Management Services**

TC Beirne Centre  
Level 2, 315 Brunswick Street Mall  
Fortitude Valley Qld 4006  
GPO Box 1434  
Brisbane Qld 4001

Phone: 07 3403 3825

Facsimile: 07 3403 1068  
Email: Peter.dobraszkiewicz@brisbane.qld.gov.au  
Internet: www.brisbane.qld.gov.au

Kris,

I refer to your e-mail of 19<sup>th</sup> May 2009 requesting advice on the water supply and sewerage infrastructure required to service the proposed development at Hercules St, Hamilton (Portside Wharf – Building 5).

The proposed development has been assessed as a multi unit development (132 Units)

### **Water**

An assessment of the water supply available at the site has been completed including computer modelling of the network under peak demand and fire flow conditions. The assessment indicates the existing infrastructure has the capacity to supply water to the proposed development in accordance with Brisbane City Council's Standards of Service.

### **Sewer**

The discharge of waste water from the proposed development is expected to be 4.50 l/s.

An assessment of the sewerage network servicing the site has been completed including computer modelling of the network under peak wet weather flow conditions. The assessment indicates that the existing 150mm and 225mm gravity sewer in Hercules St has adequate capacity to serve the proposed development.

Modelling also indicates the 1350-mm gravity sewer in Kingsford Smith Drive is currently operating outside Brisbane City Council Standards at PWWF and is subject to surcharge.

Major capital works required to augment the capacity of this sewer are scheduled for commencement in Councils Capital Improvement Program in 2022 to 2026.

Because the expected discharge will not have a significant impact on operating levels in the S1 sewer which is over 18 metres deep it is therefore considered unreasonable to require an upgrade of the sewer as a condition of development for this site.

If you need further advice regarding this development please call me on 340 33307.

Regards,

David Morrow  
Senior Engineer  
Feasibilities & Developer Services  
**BCC WATER DISTRIBUTION**

**APPENDIX G**

**BRISBANE CITY PLAN CODES**

| PERFORMANCE CRITERIA                                                                                                                                | ACCEPTABLE SOLUTIONS                                                                                                                                                                                        | SOLUTION <sup>1</sup> | COMMENTS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | COUNCIL USE ONLY |
|-----------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>Road construction</b>                                                                                                                            |                                                                                                                                                                                                             |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |                  |
| <b>P1</b><br>Land used for urban purposes must be serviced adequately with regard to water, waste disposal, drainage, telecommunication and energy. | <b>A1</b><br>The land is provided with: <ul style="list-style-type: none"> <li>Reticulated water, sewerage, drainage, electricity and telephone services.</li> <li>Gas service where reasonable.</li> </ul> | ✓                     | <b>Water:-</b><br>This area of the site is currently serviced by a 150mm diameter water connection crossing Harbour Road. It is proposed that this is utilised for the development.<br><b>Sewer:-</b><br>There is an existing 150mm diameter sewer entering the site from Harbour Road. It is proposed that this is utilised for the development.<br><b>Stormwater:-</b><br>There is an existing 900mm diameter stormwater line entering the site. This will be the connection point for all internal drainage.<br><b>Electricity:-</b><br>There is Energex assets in Harbour Road and Hercules Street.<br><b>Telecommunications:-</b><br>There are Telstra assets in the vicinity of the site. It is assumed that existing connections will be maintained.<br><b>Gas:-</b><br>There is Gas reticulation in the vicinity of the site. |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this Proposal

**SERVICES, WORKS AND INFRASTRUCTURE CODE**  
**Performance Criteria and Acceptable Solutions**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SOLUTION <sup>1</sup> | COMMENTS                                                                                           | COUNCIL USE ONLY |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------------|------------------|
| <b>P2</b><br>Frontage to the site must provide the following to an appropriate urban standard: <ul style="list-style-type: none"> <li>• an effective, high quality paved roadway</li> <li>• an effective, high quality roadway kerb and channel</li> <li>• safe, high quality crossings over channels and walkways</li> <li>• safe, accessible high quality bikeways</li> <li>• a safe, accessible, high quality public walkway compatible and integrated with the surrounding environment</li> <li>• provision of and alteration to required public utilities</li> <li>• effective drainage</li> <li>• appropriate conduits to facilitate the provision of required street lighting systems and traffic signals</li> </ul> | <b>A2</b><br>The following are provided or already exist at the frontage of the site, to the standard that would have applied if the development formed part of a new subdivision: <ul style="list-style-type: none"> <li>• concrete kerb and channel</li> <li>• forming and grading to walkways</li> <li>• crossings over channels and walkways</li> <li>• a constructed bikeway</li> <li>• a constructed walkway, minimum 1.2m wide and full width from the property line to the kerb in Multi-purpose Centres</li> <li>• reconstruction of any damaged public walkway in concrete</li> <li>• construction of the carriageway</li> <li>• payment of costs for required alterations to public utility mains, services or installations</li> <li>• construction of and required alterations to public utility mains, services or installations</li> <li>• drainage works</li> <li>• installation of electrical conduits</li> </ul> | ✓                     | The frontages of the site will be in accordance with BCC's subdivision and development guidelines. |                  |

1. Solution: ✓ = Acceptable Solution  
 A/S = Alternative Solution  
 N/A = Not applicable to this Proposal  
**Portside Wharf – Buildings 2 and 5**

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**SERVICES, WORKS AND INFRASTRUCTURE CODE**  
**Performance Criteria and Acceptable Solutions**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                      | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                               | SOLUTION <sup>1</sup> | COMMENTS                                                                                                                                                                                                                                         | COUNCIL USE ONLY |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>P3</b><br>Building design and layout must provide for additional infrastructure to facilitate future telecommunication services and providers (e.g. fibre optic cable) | <b>A3.1</b><br>Conduits, cabling or ducting is provided in all residential, community, commercial and industrial buildings of a sufficient diameter to enable two or more carriers to service the building. An underground access connection pit and "lead in" duct is provided in the footpath, plus a conduit from the property boundary to: <ul style="list-style-type: none"> <li>• a designated entry point in each building</li> <li>• each lot in community title developments</li> <li>• each floor and tenancy in multi-occupancy buildings</li> </ul> All work is to be in accordance with relevant Building Codes and Australian Standards<br><br><i>Note: An accurate, digital 'as built' three dimensional location plan will need to be supplied for all infrastructure provided in the footpath</i> | ✓                     | Conduits, cabling and ducting will be provided in the buildings of a sufficient diameter to enable effective service of proposed and future buildings. All work will be in accordance with the relevant Building Codes and Australian Standards. |                  |

1. Solution: ✓ = Acceptable Solution  
 A/S = Alternative Solution  
 N/A = Not applicable to this Proposal

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**Portside Wharf – Buildings 2 and 5**

**SERVICES, WORKS AND INFRASTRUCTURE CODE**  
**Performance Criteria and Acceptable Solutions**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | SOLUTION <sup>1</sup> | COMMENTS                                                                                     | COUNCIL USE ONLY |
|----------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|----------------------------------------------------------------------------------------------|------------------|
|                      | <p><b>Additional requirements for Multi-unit Dwellings of more than 4 storeys and 20 units or Centre Activities with a gross floor area of 2500m<sup>2</sup> or greater:</b></p> <p><b>A3.2</b></p> <p>New buildings are provided with:</p> <ul style="list-style-type: none"> <li>• a co-located equipment room</li> <li>• a central (vertical) riser duct within the core of the building</li> <li>• a telecommunications closet on each floor</li> <li>• distribution by underfloor or suspended ceiling ducts</li> <li>• designated wireless area on roof with structural capability</li> </ul> <p>All work is to be in accordance with relevant Building Codes and Australian Standards</p> <p><i>Note: A signed statement must be submitted to Council by a competent person (as defined in the Standard Building Regulation 1993) confirming that the premises as built complies with these requirements, when final building certification is issued.</i></p> | ✓                     | <p>All work is to be in accordance with relevant Building Codes and Australian Standards</p> |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this Proposal  
**Portside Wharf – Buildings 2 and 5**

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**SERVICES, WORKS AND INFRASTRUCTURE CODE**  
**Performance Criteria and Acceptable Solutions**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                  | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | SOLUTION <sup>1</sup> | COMMENTS                                                                          | COUNCIL USE ONLY |
|---------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|-----------------------------------------------------------------------------------|------------------|
| <b>P4</b><br>Major public projects promote the provision of affordable, high bandwidth telecommunication services throughout Brisbane | <b>A4</b><br>Conduits are provided in all major Council and government works projects to enable the future provision of fibre optic cabling: <ul style="list-style-type: none"> <li>when the additional expense is unlikely to be prohibitive</li> <li>when further major work is unlikely or disruption would be a major concern eg limited capacity roads</li> <li>when there is a clear gap in the telecommunication network</li> <li>when there is a clear gap in the bandwidth available to the area</li> </ul> <p><i>Note: An accurate, digital 'as built' three dimensional location plans will need to be supplied for all infrastructure provided in the road reserve</i></p> | N/A                   | The proposed development is neither a major Council nor government works project. |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this Proposal  
**Portside Wharf – Buildings 2 and 5**

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**STORMWATER MANAGEMENT CODE**  
**Performance Criteria and Acceptable Solution**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                  | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SOLUTIONS <sup>1</sup> | COMMENTS                                                                                                                                                                                                                                                              | COUNCIL USE ONLY |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>General</b>                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |                                                                                                                                                                                                                                                                       |                  |
| <b>P1</b><br>The planning of the stormwater management system must provide for the integrated management of stormwater in order to: <ul style="list-style-type: none"> <li>• minimise flooding</li> <li>• protect and enhance environmental values of receiving waters</li> <li>• maximise the use of water sensitive urban design principles</li> <li>• maximise the use of natural waterway corridors and natural channel design principles</li> <li>• maximise community benefit</li> <li>• minimise public safety risk</li> </ul> | <b>A1.1</b><br>The proposal complies with the <b>Subdivision and Development Guidelines</b> .<br><br><b>A1.2</b><br>A Site Based Stormwater Management Plan (SBSMP) is prepared for all major and minor stormwater management measures. The SBSMP must provide for the following where applicable: <ul style="list-style-type: none"> <li>• an underground and/or open drain/overland flowpath network maximising the use of natural channel design and water sensitive urban design principles</li> <li>• make provision for detention/retention storage basins</li> <li>• an Erosion and Sediment Control (ESC) Program where required by Council's <b>Erosion and Sediment Control Standard</b></li> <li>• retention of natural waterway corridors</li> <li>• public safety factors and risk management measures</li> <li>• an acceptable level of flood immunity</li> </ul> | ✓<br><br><br>✓         | The proposal complies with the <b>Subdivision and Development Guidelines</b> .<br><br>A Site Based Stormwater Management Plan (SBSMP) has been prepared and submitted as part of this Development Application for all major and minor stormwater management measures. |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this proposal  
**Portside Wharf Buildings 2 and 5**

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**STORMWATER MANAGEMENT CODE**
**Performance Criteria and Acceptable Solution**
**Job Ref No.: 11001A**

| PERFORMANCE CRITERIA                                                                                                                                                                               | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SOLUTIONS <sup>1</sup> | COMMENTS                                                                                                                                                                                                           | COUNCIL USE ONLY |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
|                                                                                                                                                                                                    | <b>A1.3</b><br>The proposal complies with any Stormwater Management Plan (SMP), Local Stormwater Management Plan (LSMP) or Waterways Management Plan (WMP) prepared by Council<br><i>Note: The Subdivision and Development Guidelines provide guidance on the level of information required for different development types.</i>                                                                                                                                             | N/A                    |                                                                                                                                                                                                                    |                  |
| <b>Flooding</b>                                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |                        |                                                                                                                                                                                                                    |                  |
| <b>P1</b><br>The proposed stormwater management system or site works must not adversely impact on flooding or drainage of properties that are upstream, downstream or adjacent to the subject site | <b>A1</b><br>The proposal meets the requirements of Council's <b>Subdivision and Development Guidelines</b> and does not result in an increase in flood level or flood duration on upstream, downstream or adjacent properties<br><i>Note: Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report (as part of a SBSMP) identifying potential flooding impacts on upstream, downstream or adjacent properties</i> | ✓                      | The proposal meets the requirements of Council's <b>Subdivision and Development Guidelines</b> and does not result in an increase in flood level or flood duration on upstream, downstream or adjacent properties. |                  |

1. Solution: ✓ = Acceptable Solution  
 A/S = Alternative Solution  
 N/A = Not applicable to this proposal  
**Portside Wharf Buildings 2 and 5**

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**STORMWATER MANAGEMENT CODE**  
**Performance Criteria and Acceptable Solution**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                                             | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                       | SOLUTIONS <sup>1</sup> | COMMENTS                                                                                                                                                                                                                        | COUNCIL USE ONLY |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>P2</b><br>The drainage network must provide capacity to safely convey stormwater run-off resulting from relevant design storm events taking into account increased run-off from roof drainage | <b>A2.1</b><br>The design demonstrates that a drainage network will be provided that will comply with Council's <b>Subdivision and Development Guidelines</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by identifying the conceptual drainage requirements for the proposal in a SBSMP.</i>                                                                | ✓                      | The design demonstrates that a drainage network will be provided that will comply with Council's <b>Subdivision and Development Guidelines</b> . Conceptual drainage requirements for the proposal are identified in the SBSMP. |                  |
|                                                                                                                                                                                                  | <b>A2.2</b><br>The design allows sufficient area to provide for a drainage network that will comply with Council's <b>Subdivision and Development Guidelines</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report (as part of a SBSMP) identifying the area required to accommodate the drainage network</i> | ✓                      | The design allows sufficient area to provide for a drainage network that will comply with Council's <b>Subdivision and Development Guidelines</b> .                                                                             |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this proposal  
**Portside Wharf Buildings 2 and 5**

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# STORMWATER MANAGEMENT CODE

## Performance Criteria and Acceptable Solution

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                                                               | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                     | SOLUTIONS <sup>1</sup> | COMMENTS                                       | COUNCIL USE ONLY |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------|------------------|
| <b>P3</b><br>Development design must reduce property damage and, where applicable, ensure public safety by ensuring that the development levels are set above the relevant design flood level or storm surge level | <b>A3.1</b><br>All development is located above minimum flood immunity levels in accordance with Council's <b>Subdivision and Development Guidelines</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels (as part of a SBSMP).</i> | N/A                    | The site is not subject to flooding.           |                  |
|                                                                                                                                                                                                                    | <b>A3.2</b><br>Road access is provided in accordance with the flood immunity levels identified in Council's <b>Subdivision and Development Guidelines</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by the submission of a hydraulic and hydrology report identifying flood levels and development design levels.</i>                     | N/A                    | The immediate area is not subject to flooding. |                  |

1. Solution: ✓ = Acceptable Solution  
 A/S = Alternative Solution  
 N/A = Not applicable to this proposal

Portside Wharf Buildings 2 and 5

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**STORMWATER MANAGEMENT CODE**  
**Performance Criteria and Acceptable Solution**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                                                                | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | SOLUTIONS <sup>1</sup> | COMMENTS                                                                                                                              | COUNCIL USE ONLY |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|---------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>P4</b><br>Any channel works that are part of the development, major drainage works or flood mitigation works must maintain and/or enhance the environmental values of the waterway corridor or drainage corridor | <b>A4</b><br>Design and construction of channel works incorporate water sensitive urban design and natural channel design features which will comply with: <ul style="list-style-type: none"> <li>Council's <b>Subdivision and Development Guidelines</b>, and</li> <li>where applicable any SMP, LSMP or WMP prepared by Council</li> </ul> <i>Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any channel works (as part of a SBSMP)</i>          | N/A                    | The proposed development does not have any channel works.                                                                             |                  |
| <b>P5</b><br>Erosion treatment works along waterway banks and associated drainage structures must maintain or enhance the environmental values of waterways                                                         | <b>A5</b><br>Design and construction of erosion treatment features incorporate natural channel design features which will comply with: <ul style="list-style-type: none"> <li>Council's <b>Subdivision and Development Guidelines</b>, and</li> <li>Council's <b>Urban Creek Erosion—Guidelines for Selecting Remedial Works</b></li> </ul> <i>Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any erosion treatment works (as part of a SBSMP)</i> | ✓                      | A Detailed Erosion and Sediment Control Program will be prepared and submitted during the Operational Works phase of the development. |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this proposal  
**Portside Wharf Buildings 2 and 5**

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# **STORMWATER MANAGEMENT CODE**

## **Performance Criteria and Acceptable Solution**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                                                                                                                                                                                                      | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                   | SOLUTIONS <sup>1</sup> | COMMENTS                                                                             | COUNCIL USE ONLY |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|--------------------------------------------------------------------------------------|------------------|
| <b>P6</b><br>Bridges and culverts provided for flood immunity to minimise traffic disruption must improve public safety and allow for fauna movement and recreation corridors where these needs are identified                                                                                                            | <b>A6</b><br>The design complies with Council's <b>Subdivision and Development Guidelines</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any bridge or culvert works (as part of a SBSMP).</i>                                                                                 | N/A                    | Neither bridges nor culverts are proposed for this development.                      |                  |
| <b>P7</b><br>The design and construction of detention and retention storage features must: <ul style="list-style-type: none"> <li>• achieve acceptable impacts on environmental values</li> <li>• provide for recreational use where possible</li> <li>• achieve acceptable risk to public safety and property</li> </ul> | <b>A7</b><br>The design complies with Council's <b>Subdivision and Development Guidelines</b> and where applicable any SMP, LSMP or WMP prepared by Council.<br><i>Note: Compliance with this acceptable solution can be demonstrated by the provision of conceptual details of any detention and retention storage features (as part of a SBSMP).</i> | N/A                    | The design does not include construction of detention or retention storage features. |                  |

1. Solution: ✓ = Acceptable Solution  
 A/S = Alternative Solution  
 N/A = Not applicable to this proposal  
**Portside Wharf Buildings 2 and 5**

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**STORMWATER MANAGEMENT CODE**  
**Performance Criteria and Acceptable Solution**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                            | SOLUTIONS <sup>1</sup> | COMMENTS                                                                          | COUNCIL USE ONLY |
|-------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------|------------------|
| <b>Water Quality and Drainage</b><br>Low Risk Development                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 |                        |                                                                                   |                  |
| <b>P1</b><br>Water quality impacts must be minimised using best practice techniques | <b>A1.1</b><br>The design provides for stormwater quality best management practices that are sufficient to treat the target pollutants and will comply with the Council's <b>Subdivision and Development Guidelines</b> .<br><i>Note: Compliance with this acceptable solution can be demonstrated by indicating the areas that are to be set aside for water quality best management practices. For most development this can be achieved by determining pollutant loads using hand calculations as set out in Council's <b>Guidelines for Pollutant Export Modelling in Brisbane</b> and identifying the type and size of stormwater quality best management practices based on their efficiencies identified in Council's <b>Subdivision and Development Guidelines</b>.</i> | N/A                    | This development has not been classified as 'Low Risk' in terms of water quality. |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this proposal  
**Portside Wharf Buildings 2 and 5**

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# STORMWATER MANAGEMENT CODE

## Performance Criteria and Acceptable Solution

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                           | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                    | SOLUTIONS <sup>1</sup> | COMMENTS                                                                          | COUNCIL USE ONLY |
|----------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-----------------------------------------------------------------------------------|------------------|
|                                                                | <b>A1.2</b><br>Stormwater quality best management practices are designed, constructed and maintained in accordance with Council's <b>Subdivision and Development Guidelines</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by providing conceptual detail of how stormwater quality will be managed (as part of a SBSMP).</i>                                                                                             | N/A                    | This development has not been classified as 'Low Risk' in terms of water quality. |                  |
| <b>P2</b><br>Release of sediment laden stormwater is minimised | <b>A2</b><br>All development complies with Council's <b>Erosion and Sediment Control Standard</b><br><i>Note: Compliance with this acceptable solution can be demonstrated by providing conceptual details of how the requirements of Council's <b>Erosion and Sediment Control Standard</b> will be met (conceptual SBSMP). This will generally be conditioned and may require the submission of a subsequent detailed SBSMP for operational works</i> | N/A                    | This development has not been classified as 'Low Risk' in terms of water quality. |                  |

1. Solution: ✓ = Acceptable Solution  
 A/S = Alternative Solution  
 N/A = Not applicable to this proposal

Portside Wharf Buildings 2 and 5

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**STORMWATER MANAGEMENT CODE**  
**Performance Criteria and Acceptable Solution**

Job Ref No.: 11001A

| PERFORMANCE CRITERIA                                                                                                                              | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                   | SOLUTIONS <sup>1</sup> | COMMENTS                                                                                                                                                                                  | COUNCIL USE ONLY |
|---------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| High Risk Developments                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                        |                        |                                                                                                                                                                                           |                  |
| <b>P3</b><br>Environmental values and water quality objectives of receiving waters within or downstream of the proposal are protected or enhanced | <b>A3.1</b><br>Relevant water quality objectives for receiving waters are identified and site specific discharge standards met<br><i>Note: Compliance with this acceptable solution may be demonstrated by following the process outlined in the Management of Urban Stormwater Quality Planning Scheme Policy. This can be documented in a SBSMP.</i> | ✓                      | The relevant water quality objectives for the receiving waters have been met.                                                                                                             |                  |
|                                                                                                                                                   | <b>A3.2</b><br>The design provides for stormwater quality best management practices that are sufficient to treat the target pollutants and will comply with the Council's Subdivision and Development Guidelines.                                                                                                                                      | ✓                      | The design provides for stormwater quality best management practices that are sufficient to treat the target pollutants and comply with Council's Subdivision and Development Guidelines. |                  |
|                                                                                                                                                   | <b>A3.3</b><br>Stormwater quality best management practices are designed, constructed and maintained in accordance with Council's Subdivision and Development Guidelines.<br><i>Note: Compliance with this acceptable solution can be demonstrated by providing conceptual detail of how stormwater quality will be managed (as part of a SBSMP).</i>  | ✓                      | Stormwater quality best management practices will be designed, constructed and maintained in accordance with Council's Subdivision and Development Guidelines.                            |                  |

1. Solution: ✓ = Acceptable Solution  
A/S = Alternative Solution  
N/A = Not applicable to this proposal
- Portside Wharf Buildings 2 and 5**

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**STORMWATER MANAGEMENT CODE**  
**Performance Criteria and Acceptable Solution**

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| PERFORMANCE CRITERIA                                           | ACCEPTABLE SOLUTIONS                                                                                                                                                                                                                                                                                                                                                                                                                                                         | SOLUTIONS <sup>1</sup> | COMMENTS                                                                                                                                             | COUNCIL USE ONLY |
|----------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|
| <b>P4</b><br>Release of sediment laden stormwater is minimised | <b>A4</b><br>All development complies with Council's <b>Erosion and Sediment Control Standard</b><br><i>Note: Compliance with this Performance Criteria/Acceptable Solution can be demonstrated by providing conceptual details of how the requirements of Council's <b>Erosion and Sediment Control Standard</b> will be met (conceptual SBSMP). This will generally be conditioned and may require the submission of a subsequent detailed SBSMP for operational works</i> | ✓                      | An Erosion and Sediment Control Plan will be prepared during detailed design. This will comply with Council's Erosion and Sediment Control Standard. |                  |

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