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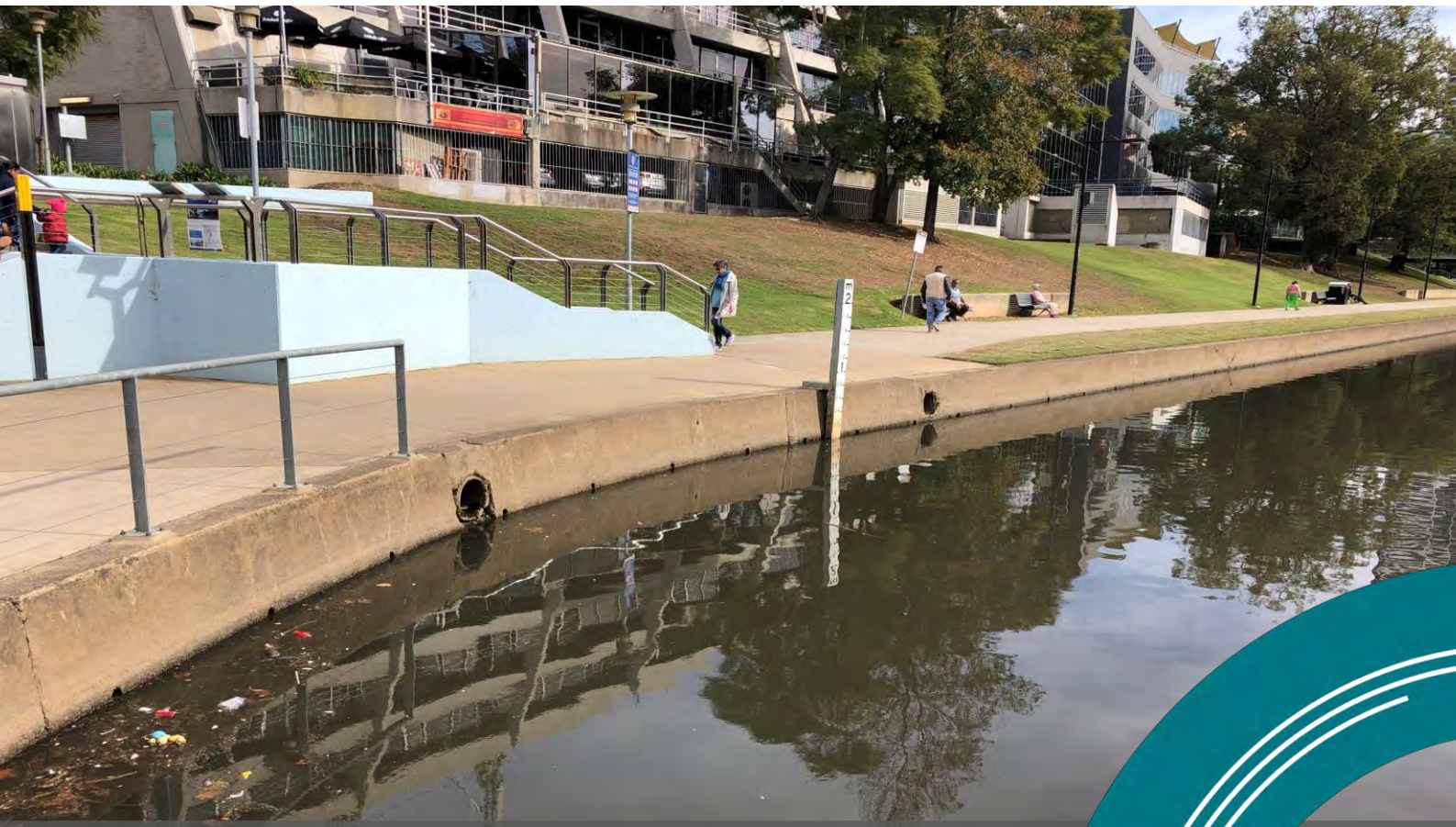

CIVIL ENGINEERING REPORT: STORMWATER MANAGEMENT REPORT

Charles Street Square

Corner of Charles Street and Phillip Street, Parramatta NSW 2150

PREPARED FOR
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Civil Engineering Stormwater Management Report

Revision Schedule

Date	Revision	Issue	Prepared By	Approved By
11.06.2020	1	For Information	D.Tenhave	T.Howe
16.06.2020	2	For REF	D.Tenhave	T.Howe

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1. General

1.1 Introduction

Northrop Consulting Engineers Pty Ltd (Northrop) have been engaged by Spackman Mossop Michaels to prepare the Civil Engineering design and documentation in support of a Review of Environmental Factors for the proposed development at the corner of Charles Street and Phillip Street, Parramatta NSW 2150.

This report covers the works shown as the Northrop Drawing Package required for the development of the site including:

- Stormwater Drainage
- Water Quality

1.2 Related Reports and Documents

This report is to be read in conjunction with the following reports and documents:

1. Landscape Architectural Plans provided by Spackman Mossop Michaels,
2. Parramatta Development Control Plan 2011
3. City of Parramatta Development Engineering Design Guidelines 2018
4. Site survey prepared by YSCO Geomatics, dated 7.05.2019
5. Australian and New Zealand Standard AS/NZS 3500.3:2018 Plumbing and Stormwater Drainage.
6. Civil Engineering REF package prepared by Northrop; Job Number 182116, dated 22.05.2020.

1.3 The Development

1.3.1 Precinct and Surrounds

The site is located at the corner of Charles Street and Phillip Street, Parramatta NSW 2150, legally described as Lot 2 DP869816 (refer Figure 1 below).

The site has an area of 3,812 m^2. The site has a frontage to Charles Street to the south, adjoins commercial properties to the east and west and Parramatta River to the north. The site is irregular in shape and currently contains Parramatta Wharf.

Figure 1 – Site Locality

1.3.2 Proposed Development

The proposed upgrades to Charles Street Square and the Ferry Wharf will improve access from the Parramatta River foreshore to the City. The area is a major gateway to downstream suburbs via the Parramatta River and through the ferry services.

To improve access, amenity and legibility for ferry commuters the following upgrades are proposed:

- New Ramps with Balustrade
- New Stairs
- Seating Terraces
- New Ferry Kiosk
- New Shelter
- Extended Concrete Pavement Area

2. Stormwater Management

2.1 Stormwater Drainage Network

2.1.1 Objectives and Controls

The stormwater strategy for the Charles Street Square development has been developed in accordance with Council's DCP and general engineering practice.

The DCP outlines the following objectives:

- To minimise the quantity of stormwater runoff including changes in flow rate and duration by disconnecting impervious areas
- To protect and enhance existing natural or constructed drainage networks including channel bed and banks by controlling the magnitude and duration of erosive flows
- To ensure that downstream flora and fauna are protected from stormwater impacts during and post construction
- To minimise surcharge from the existing drainage systems
- To minimise and control nuisance flooding and to provide for the safe passage of less frequent floods
- To ensure that on-site stormwater management measures are operated and maintained in accordance with design specifications

2.1.2 Proposed Stormwater Design

The proposed stormwater drainage layout proposes to retain the existing in-ground stormwater network where feasible and adjust surface levels where necessary to finish flush with proposed surface levels. Additional grated inlet pits and trench drains are proposed at newly formed low points and subsurface drainage will be incorporated in the design and connected to the nearest downstream drainage pits.

The site falls north, from approximately RL7.90 at Charles St to RL1.80, directly discharging to the Parramatta River. There are multiple outlets from the piped drainage network into Parramatta River.

The retained surface inlet pits are proposed to have grates/covers replaced with either sealed covers or heel-safe grates to promote pedestrian safety and maintain the functionality of the existing system.

It had been identified that minor overland flooding has potential to occur along western boundary from Charles St travelling north to the Parramatta River. This was assessed using DRAINS and survey information and determined to be due to insufficient inlet capacity of the kerb inlet pit identified below.

Figure 2 – Kerb inlet pit location

To reduce the potential for overland flooding along the western boundary it would be recommended to upgrade the kerb inlet lintel; however, this was considered beyond the scope of the proposed works.

2.2 On-site Stormwater Detention

2.2.1 Objectives and Controls

City of Parramatta Council stipulates that OSD is required as outlined in the Upper Parramatta River Catchment Trust On-Site Detention Handbook, subject to compliance with council's Stormwater Disposal Policy and current Design and Development Guidelines.

The nature of this development (i.e. public domain works) are not covered in the typical residential, commercial or industrial developments outlined, and has been assessed with relation to existing and proposed surface area finish types and generally pre-development runoff and post-development runoff.

There is a reduction in impervious area of approximately 10% in the post-development scenario compared to pre-development and considering the proximity to downstream receiving waters and height relationship to neighbouring properties, there is no need to provide an OSD facility for this development.

2.3 Stormwater Quality Management

2.3.1 Objectives and Controls

City of Parramatta Council stipulates water quality controls to minimise the transport of pollutants into Parramatta River and other waterways as a result of development.

The DCP outlines the following:

- Run-off entering directly into waterways or bushland is to be treated to reduce erosion and sedimentation, nutrient and seed dispersal
- All developments must consider the Water Sensitive Urban Design (WSUD) measures listed to achieve water quality targets

2.3.2 Proposed Water Quality Measures

Due to the nature of this development (i.e. pubic domain works) there are no specific water quality reduction targets stipulated in the DCP. However, WSUD principles have been adopted in the design through the inclusion of two raingardens and passive irrigation measures where impervious surface runoff is directed through landscaped areas. Where impervious runoff is directed to the in-ground pit and pipe system, pits will be fitted with trash racks to provide primary treatment prior to discharging into Parramatta River.

3. Conclusion

The proposed stormwater layout has been designed in accordance with AS/NZS 3500.3:2018 Plumbing and Stormwater Drainage and Council's DCP. Stormwater runoff from the proposed development is conveyed by a pit and pipe system made up of a combination of new and existing infrastructure which discharges into the Parramatta River.

On-site stormwater detention is not required for a development of this nature.

There are no specific water quality targets applicable to this development, however WSUD principles have been adopted through the implementation of raingardens and passive irrigation.