BEKKER

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Project No.: 63012
January 20, 2016

STRUCTURAL
CIVIL
AND
WATERPROOFING
ENGINEERS

DRAINAGE CONCEPT PROPOSAL

FOR

MIXED - USE DEVELOPMENT

80 – 88 REGENTS STREET,

REDFERN

January 20, 2016

This document has been prepared as part of the Development Application submission to Council.
The document and attached drawings do not form part of the Construction Certificate documentation

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CONTENTS

1-Drainage Concept Proposal

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DRAINAGE CONCEPT PROPOSAL
MIXED - USE DEVELOPMENT
80 – 88 REGENT STREET
REDFERN

EXISTING:

The proposed development site is located in the western side of Regent Street with a total site area of 822 m^2. The survey confirms that the site slopes from the north eastern corner approx. 5% to the western boundary and approx. 6% to the southern boundary.

Currently the site is fully developed with an assumed impervious coverage of 100%.

Survey has confirmed the street drainage around the site is as depicted on the Council provided heliograph (attached). The diagram shows a Council drainage system that flows on Regent Street adjoining the property boundary. The street drainage around the site is towards the south along Regent Street and towards the west along Marian Street. Our site will be directed to drain to the kerb and gutter and to the existing Council pit located at Regent Street.

The Sydney Council stormwater design criteria 'Stormwater Drainage Connection Information' specifies that the 100year Average Recurrence Interval (ARI) post-development site run-off is to be limited to the pre-development 5 year ARI site run-off and site discharge calculated accordingly.

PROPOSED:

It is proposed to demolish the existing buildings and redevelop with a new mixed-use building complex comprising a small retail tenancy, childcare centre and 80 new apartments units over 18 floor levels with an undercroft car parking facilities.

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It is proposed to provide a storage facility at the northern side of the property below the proposed Childcare Outdoor floor level.

Storage system will contain a Rainwater Reuse Tank (RRT) that drains to the kerb and gutter in Regent Street. Rainwater Re-use Tank (RRT) will be used for landscape watering only.
The size of the storage system is 4.6m L x 3.55m W x 1.13m D providing 18.4m^3 storage.
The rainwater from paved areas, balconies and pervious areas directed to drain to the new Gross Pollutant Pit located at the boundary of the Regents Street then to the existing Council pit in Regent Street.

Storage system

The RRT will accept rainwater from approx. 365m^2 roof which will drain directly into the RRT system.

Approx. 365m^2 of roof will discharge into the storage, with all downpipes discharging into the storage fitted with an early first flush system to remove debris from the roof water. The overflow from the storage system will drain to the kerb and gutter in Regent Street.
Our Drains model stormwater calculations confirm that the size of the storage provided is adequate and discharge from the RRT will be restricted to 16l/s.

The RRT structure will be installed as concrete structure cast below the proposed Childcare Outdoor floor level. Access opening of 600mmx900mm will be located at the top of the tank to provide maintenance access for the tanks that will be fitted with step irons for access.

RRT discharge will be regulated by a machined stainless steel orifice plate of 120mm diameter over a 150mm diameter discharge pipe. The orifice plate will be protected by a trash screen of Lysaghts Maximesh RH3030 or similar.

Should an unexpected blockage of the RRT tank system occur, the emergency overflow from the RRT tank will drain through a 100mm dia emergency overflow pipes to the kerb and gutter in Regent Street.

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Paved areas, balconies and pervious areas will bypass the RRT and drain by gravity directly into the new Gross Pollutant Pit and then to the Existing Council Pit at Regents Street.

All basement carpark and driveway seepage or surcharge waters will be collected and drained to a seepage collection pit and then pumped to the new Gross Pollutant Pit.

Sydney DCP Section 3.7

The design is carried out to comply with 'Sydney DCP - Section 3.7 Water and Flood Management' requirements.

Yours faithfully,

PAUL BEKKER ENGINEERING DESIGN BURO PTY LTD

Paul Bekker BE. M IEAust. CP Eng. M ACEA

2-Council information

a - existing Council stormwater drains

b – Council DCP extracts

Maggie Mai

From: "Alphonsus Rajaratnam" <arajarat@cityofsydney.nsw.gov.au>
Date: Friday, 27 November 2015 10:32 AM
To: <bekker@spin.net.au>
Cc: "Lisa Mamone" <LMamone@cityofsydney.nsw.gov.au>
Attach: 88 Regent Street Redfern-Stormwater.pdf
Subject: 88 Regent Street, Redfern

Hi Jan,

Please find attached the location of stormwater pipe system fronting Regent Street.

It should be noted that the accuracy of the drawing cannot be verified.

Regards,

Alphonsus Rajaratnam
Development Engineer
City Infrastructure & Traffic Operations

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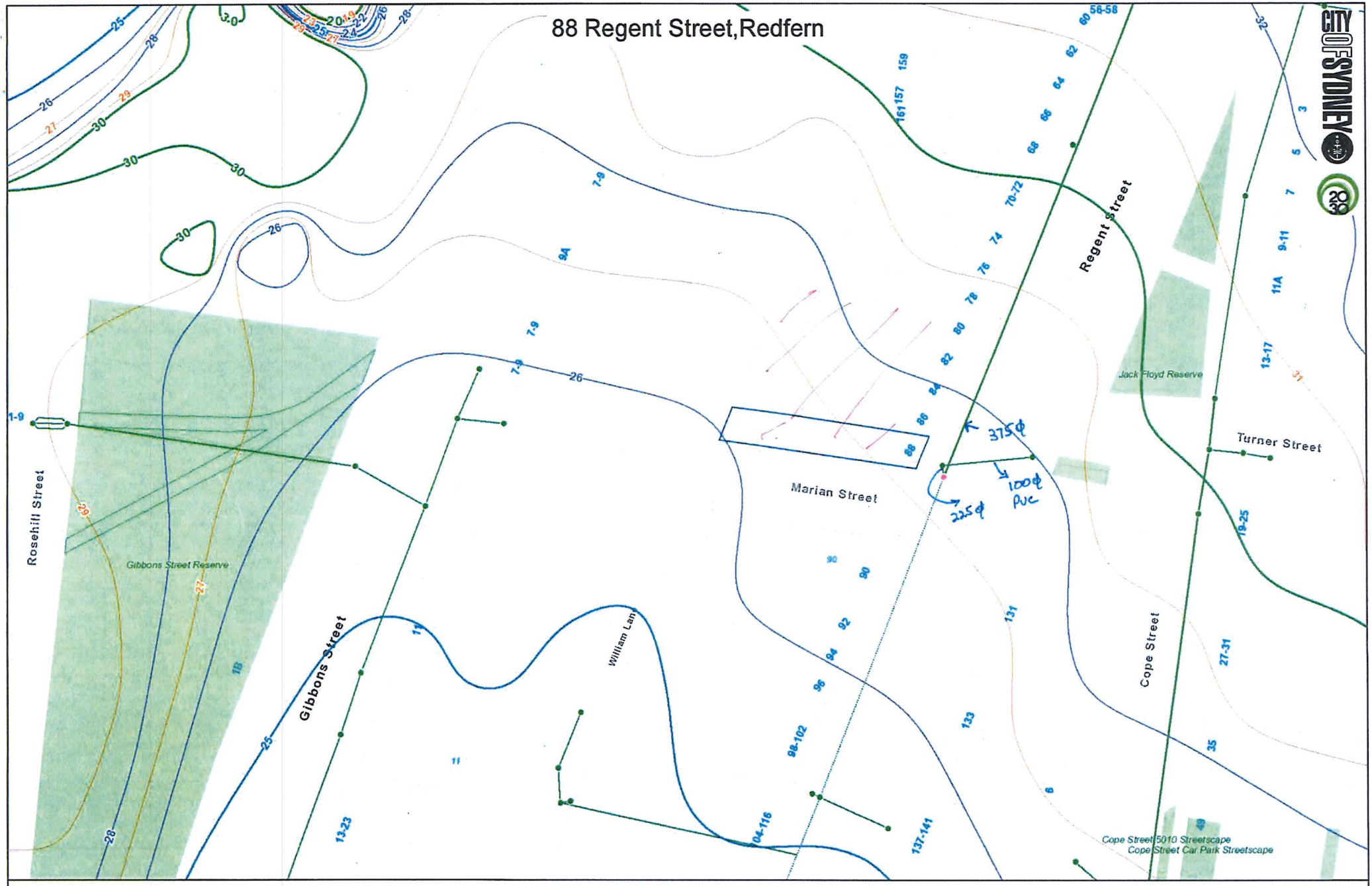
88 Regent Street,Redfern



0 15 30 60 Metres

1:542 at A3
24/11/2015

STORMWATER DRAINAGE CONNECTION INFORMATION

CITY OF SYDNEY

FOUNDED 1842

Dry-weather flow will not be permitted through kerb outlets unless the water is stored on-site and discharged using a **timed** pump between the hours of midnight and 4.00am.

The pavements and any surfaces of the public way disturbed or affected by the installation or maintenance of drainage will be restored at the expense of the owner of the property.

ii) Requirements for On-Site Detention (OSD)

- Connection to Sydney Water or Other Public Utility Authority Drainage System

For development sites that connect directly to the Sydney Water or any other public utility authority drainage system, approval is subject to the owner complying with on-site detention conditions imposed by the owner of the drainage system.

-All other Development Sites and Subdivision Sites

For all sites generally greater than 250 m^2 OSD is required in accordance with the current Sydney Water guidelines. That is, the 100yr Average Recurrence Interval (ARI) post-development site run-off must be limited to the pre-development 5yr ARI site run-off. All run-off must pass through a silt trap located on the site, before entering the City's drainage system.
For sites < 1000 m^2 the applicant may make a case to the City for exemption from the OSD requirements based on site size, nature of development and proximity to the receiving waters.

iii) Kerb Connections

- The maximum size of private drainage lines connecting to the City's kerb shall be 150mm x 100mm or circular pipes of 100mm diameter.

- All private drainage lines under the footpath must be laid at right angles (approx.) to the building line and /or kerb line. Private pits or manifolds are not permitted.

- A maximum number of three (3) stormwater drainage outlets shall be located in a set at any one point along the kerb and the minimum distance between the centre lines of each outlet shall not be less than 300mm.

- The distance between sets of drainage outlets shall not be less than 6 metres. The City's Asset Inspectors, Service and Quality Division, will have holes cut in the kerb for the outlets of each pipe if required.

- The private drainage lines beneath the footpath are to be constructed of uPVC pressure pipe (Class 12 to AS 1477) with a minimum wall thickness of 5mm. Mild steel is satisfactory if heavily galvanised and provided the wall thickness is a minimum of 4mm.

3.7
Water and Flood Management

Terms used in this section are consistent with the NSW Floodplain Development Manual 2005.

Objectives

(a) Ensure an integrated approach to water management across the City through the use of water sensitive urban design principles.

(b) Encourage sustainable water use practices.

(c) Assist in the management of stormwater to minimise flooding and reduce the effects of stormwater pollution on receiving waterways.

(d) Ensure that development manages and mitigates flood risk, and does not exacerbate the potential for flood damage or hazard to existing development and to the public domain.

(e) Ensure that development above the flood planning level as defined in the *Sydney LEP 2012* will minimise the impact of stormwater and flooding on other developments and the public domain both during the event and after the event.

(f) Ensure that flood risk management addresses public safety and protection from flooding.

Note: A number of flood studies are currently underway. New development will be required to conform to the flood studies once endorsed by Council.

Provisions

3.7.1 Site specific flood study

(1) When required by Clause 7.15 of *Sydney LEP 2012*, a site-specific flood study is to be prepared by a suitably qualified and experienced hydrologist in accordance with the NSW Floodplain Development Manual 2005, the NSW Coastal Planning Guideline: Adapting to Sea Level Rise, NSW Coastal Risk Management Guide: Incorporating Sea Level Rise Benchmarks In Coastal Risk Assessments and the NSW Flood Risk Management Guide: Incorporating Sea Level Rise Benchmarks In Flood Risk Assessments.

(2) The site-specific flood study is to include, but not be limited to:

  (a) a detailed topographical survey that defines flow paths, storage areas and hydraulic controls; and

  (b) flood modelling that uses appropriate hydrological and hydraulic techniques and incorporates boundary conditions.

(3) The site-specific flood study is to show pre-development and post-development scenarios, and at a minimum is to include the following information:

  (a) water surface contours;

  (b) velocity vectors;

  (c) velocity and depth product contours;

  (d) delineation of flood risk precincts; and

  (e) flood profiles for the full range of events for total development including all structures and works (such as revegetation and physical enhancements).

(4) The site-specific flood study is to assume the 'worst case scenario' conditions for blockages to pipes, culverts and other infrastructure, such that:

(a) kerb inlets are assumed to be 50% blocked;

(b) sag pits are assumed to be 100% blocked; and

(c) culverts and bridges with an open area less than six metres, measured on the diagonal, are assumed to be 50% blocked.

3.7.2 Drainage and stormwater management

These provisions are supported by the *Stormwater management map*. The map identifies the catchments with specific stormwater management requirements and also those areas where stormwater is required to be integrated with open space.

(1) A local drainage management plan is required for development on sites of:

(a) 1,000sqm or more in the Fowler's Creek catchment area and drains to Johnston's Creek as shown on the *Stormwater management map*; or

(b) 1,800sqm or more in other catchments.

(2) The Local Drainage Management Plan is to address:

(a) the hydrology of the locality and its relationship to the drainage system;

(b) the distribution of soil types and the scope for on-site infiltration;

(c) any expected rise in ground water level due to development;

(d) the role of the principal landscape components on the site for water conservation and on-site detention;

(e) the scope for on-site stormwater detention and retention, including collection of water for re-use;

(f) how any detrimental impacts on the existing natural hydrology and water quality are proposed to be minimised;

(g) how pedestrian safety is to be ensured; and

(h) integration of drainage management responses and open space areas.

(3) A suitably qualified engineer with experience in drainage design is to assess the site drainage requirements for the proposed development, and prepare the required local drainage management plan in accordance with the provisions of this DCP.

(4) Development on sites identified in the *Stormwater management map*, are to provide on-site stormwater detention within open space areas.

(5) Drainage systems are to be designed so that:

(a) on a site with an area less than or equal to 1,000sqm:

(i) stormwater flows up to the 20% annual exceedance probability event are conveyed by a minor drainage system; and

(ii) stormwater flows above the 20% annual exceedance probability event are conveyed by a major drainage system;