

Stormwater Quality Report

RPA Hospital Proposed Multi-storey
Staff Carpark

80813231



Prepared for
Health Infrastructure

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1 Stormwater Targets

City of Sydney Council's stormwater management requirements are detailed in Council's DCP 2012 (DCP Section 3.7.3 Stormwater Quality).

As per Section 3.7.3 Stormwater Quality, development of a site greater than 1,000 m² must undertake a stormwater quality assessment to demonstrate that the development will achieve the post-development pollutant load standards indicated in Table 1-1.

Table 1-1 Urban Stormwater Quality Targets, DCP 2012

Pollutant	Minimum Reduction
Total Suspended Solids (TSS)	85%
Total Phosphorus (TP)	65%
Total Nitrogen (TN)	45%
Gross Pollutants	90%

2 MUSIC Model

2.1 Base Information

A Model for Urban Stormwater Improvement Conceptualisation (MUSIC) model was prepared in computer model Version 6.1 (Build 0.767) in accordance with the Draft NSW MUSIC Modelling Guidelines, August 2010. Metrological stations near the development site were reviewed in reference to distance from the development site, completeness of data record, dates of data record and type of data record.

Historical pluviography data was taken from Meteorology Station Number 066062 at Sydney Observatory from 03/01/1913 to 31/08/2010 as it is the closest station with good long term data record.

For evapotranspiration, the average Sydney PET data was used.

2.2 Source Nodes

The source nodes as modelled in MUSIC are:

- New multi-level carpark
- Carpark Driveway and Brodie Street extension

Rainfall thresholds for the source nodes were obtained from Table 3-6 of the Draft NSW MUSIC Modelling Guidelines, August 2010.

Stormwater pollutant loads for source nodes and pollutant generation parameters for various land use categories and surface types were adopted from Table 3-9 and Table 3-10 of the Draft NSW MUSIC Modelling Guidelines, August 2010 respectively.

The models were run with pollutant export estimation method set to “stochastically generated”.

2.3 Treatment Nodes

A treatments train has been modelled in MUSIC as part of the water quality management. The treatment nodes used are:

- Pit insert baskets and Grated inlets
- Humes HumeGard
- Humes Jellyfish JF-1800-4-1

Runoff from the multi-storey car park roof, driveways and Brodie Street extension will be collected in the proposed OSD tank in carpark Level 0b. Discharge from the OSD tank will be routed through the proposed water quality treatment devices (Humes HumeGard and Jellyfish JF-1800-4-1) before discharging into the existing Council stormwater pit at the intersection of Church Street and Lucas Street.

The OSD tank is modelled as a temporary detention and does not provide any water quality treatment. It is a requirement of Council's DCP 2012 to control stormwater discharge from the site via an OSD tank.

The MUSIC model layout of the modelled source nodes and treatment nodes is shown in Figure 2-1 below.

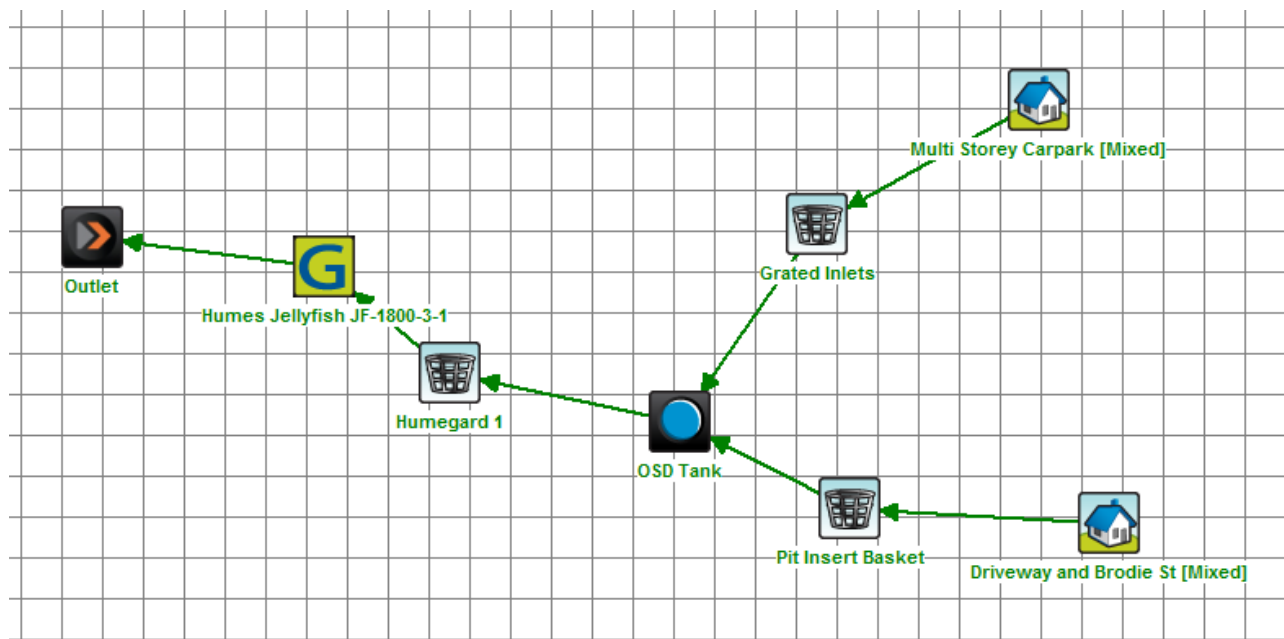


Figure 2-1 MUSIC Model Treatment Train Layout

2.3.1 Pit Inserts and Grated Drains

To limit the ingress of any large pollutants before the runoff is collected in the proposed OSD, pit insert baskets are proposed for Brodie Street extension and grated inlets are proposed for the runoff from multi-storey carpark.

2.3.2 Humes HumeGard and Humes JellyFish

A Humes HumeGard and a Humes 'JellyFish' JF-1800-3-1 primary and tertiary stormwater treatment devices are proposed for treating runoff from the driveway, Brodie Street extension and multi-storey carpark roof.

The HumeGard system is a pollution control device that is specifically designed to remove gross pollutants and coarse sediments (≥ 150 micron), from stormwater runoff. The Humegard treatment node within the MUSIC model was provided by Humes.

The Jellyfish reduces suspended solids and nutrient levels in the site's stormwater runoff and provides effective treatment over a very small footprint. The JellyFish treatment node within the MUSIC model was provided by Humes and is available in a number of configurations.

2.4 Results

Results of the MUSIC model show the nominated treatment train exceed the nominated pollutant removal targets. The table below presents a summary of the MUSIC model results.

Table 2-1 Summary of MUSIC Model Results

Pollutant	Minimum Reduction	Achieved Reduction	Comments
Total Suspended Solids (TSS)	85%	86.5%	Treatment exceeds minimum
Total Phosphorus (TS)	65%	71.1%	Treatment exceeds minimum
Total Nitrogen (TN)	45%	59.7%	Treatment exceeds minimum
Gross Pollutants	90%	99.9%	Treatment exceeds minimum

The above results demonstrate compliance with the minimum pollutant reduction targets.