Document:	Stormwater Quality Management Report
Project:	Lindfield Learning Village Phase 2 & 3
Location:	100 Eton Road Lindfield
Prepared for:	NSW Department of Education
Revision:	F
Date:	18/07/2019
Project Reference:	21701-003

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Document Title	Stormwater Quality Management Report
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Client	NSW Department of Education
Document version	F
Date	18/07/2019
EWFW Project Reference	21701-003
File path:	W:\217xx\21701 - Lindfield Learning Centre Stage 2\003 - Flood Modelling Stage 2\Reports\Music Report REV [F].docx

Document Version Control

Rev	Date	Description of Release	Prepared By	Checked By	Approved By
A	10/01/2018	Original Issue	S.Bahrow	L DeGioia	D DeGioia
B	14/01/2018	Amendments	S.Bahrow	L DeGioia	D DeGioia
C	24/06/2018	Revised Areas & Runoffs	S.Bahrow	L DeGioia	D DeGioia
D	11/07/2019	Amendments	S Bahrow	L DeGioia	D DeGioia
E	17/07/2019	Amendments	S Bahrow	L DeGioia	D DeGioia
F	18/07/2019	Amendments	S Bahrow	L DeGioia	D DeGioia

EXECUTIVE SUMMARY

Overview

This **Stormwater Quality Management Report** has been prepared by **EWFW** on behalf of the NSW Department of Education and School Infrastructure NSW (the Applicant). It accompanies a Response to Submissions Report in support of State Significant Development Application (SSD 16_8114) for Lindfield Learning Village (the site).

On 24 October 2018 the Minister for Planning granted partial development consent to SSD 8114 for Phase 1 construction and operation of a new school for 350 students. The remainder of SSD 8114 (as originally proposed) has not yet been granted consent and has been subject to further investigation, assessment and engagement with the relevant agencies (DPE, RFS, OEH, RMS, TfNSW) and Council.

The Response to Submissions and supporting documents seek approval for the remainder of SSD 8114, being:

Phase 2(a) of construction:

- Minor internal works within the approved Phase 1 area to accommodate an additional 35 students.
- The additional 35 students (a total of 385 enrolled students) is needed for Day 1 Term 1 2020, prior to Phase 2(b) being completed.
- Phase 2(a) will occur immediately on approval to allow the additional students for Day 1 Term 1 2020.

Phase 2(b) of construction:

- Works to accommodate 1,050 students (including the approved 350).
- Repurposing of the Phase 1 area.
- A loop road around the southern portion of the site for emergency vehicles, buses and drop off and pick up vehicles.

Phase 3 of construction:

- Works to accommodate an additional 950 students in the western wing of the building.

Vegetation management will be required to achieve the necessary APZ. The SSD does not seek approval for vegetation management outside the site boundary.

The purpose of this **Stormwater Quality Management Report** is for water quality discharges.

Hydrologic and hydraulic modelling for this catchment and conveyance corridor has been undertaken.

Due to current construction a complete site survey was unable to be obtained. This report is based on survey information available, architectural and landscaping documentation for construction. The extent of the hydraulic model is restricted to the extent of survey. As a consequence of this, the model has a “glass wall” along the extent of survey and accurate flood levels from the west of the site cannot be determined.

On review of your project, and assessment of all the required elements, we do not foresee any costly items, or technical issues that would preclude this development from proceeding.

The concept drainage design and water quality modelling meet all council criteria and state environmental criteria

The site is able to be developed without adversely impacting on the downstream water quality. (Based on the current design)

Within the report, your attention is drawn to the stormwater and onsite detention requirements. There will be a requirement for water quality devices may have an impact on some of the open green space.

CONTENTS

1. INTRODUCTION

1.1. PURPOSE

The preparation of this water quality report is based on our understanding of the requirements and our understanding of the local conditions and constraints in attempting this type of development.

In undertaking the preparation of this water quality report, EWFW hereby advised that it has no control over any approvals, additional 3rd party requirements, competitive development costs, nor does it have any control over any increase in statutory fees or future availability of external water quality capacity.

This water quality report & summary produced by EWFW will therefore be provided on the basis of its best judgement as an experienced and qualified engineering consultant, familiar with the construction industry.

1.2. SITE LOCATION

1.3. AUTHORITY

Authority to undertake this report was provided by Department of Education

1.4. GOVERNING AUTHORITIES

The following Governing Authorities and Regulations shall have jurisdiction over the services:

Authority
Local Council – Ku-ring-gai Shire Council

2. TECHNICAL INFORMATION

2.1. STORMWATER

The purpose of this document is to provide a summary of the Water Quality report for the proposed Lindfield Learning Village Stage 2 & 3 located at 100 Eton Road Lindfield and to provide Ku-ring-gai Council (KC) with the background information to take into account during their assessment of the SSDA RTS.

The existing stormwater infrastructure within the vicinity of the subject site is complex.

We have used a Drains model file to assess our development effects to existing drainage system, and overland flows ensure the proposed design represent the existing stormwater network and runoffs as accurately as possible.

2.2. BACKGROUND

1. We reviewed the detailed survey, provided by Client. This survey described the subject site in detail but did not contain enough information on the existing pit and pipe network adjacent to the site.

2. A Drainage Asset search was made to Ku-ring-gai Council of their asset information within the subject site and surrounds. This information was unavailable.

3. A surveyor was engaged to carry out a further detailed survey of, inter alia, the existing stormwater pipe and pit networks around the surrounding sites. The provision of this additional survey was essential in quantifying the existing stormwater assets and network topology exact locations, pit geometry, and discharge locations.

2.3. WATER QUALITY

2.3.1. During Construction – Sediment and Erosion Management

Council's Stormwater Management policy (Ku-ring-gai Council DCP) requires stormwater quality control on all developments to reduce the amount of suspended solids, total phosphorous and total nitrogen from leaving the developed site

It is proposed to provide retrofitting where possible Eco Sol 1500um screens all pits, prior to the Water quality / sediment control ponds. On the R4 catchment provide a Spel water clean FTM or another approved equivalent device.

MUSIC Modelling was used to model water quality pre and post development cycles.

- Water Quality and catchment hydrology has been derived by MUSIC (Version 6.3 – Jun 2018) software package. Water quality levels have been addressed as shown below.
- Below are the results for the treatment train modelling, capturing and treatment of pollutants.

Council requires Stormwater quality modelling and preparation of a Stormwater Concept Plan and Erosion & Sediment Control Plan.

In this instance the modelling was carried out using MUSIC Version 6.3.

The measures to be used on the site incorporate five (5) On-Site Stormwater / settlement ponds with an overall total capacity of Total capacity of 1257 cubic meters,

- Pond R4 has an area of 131 sq^2 meters & 85 m^3 storage
- Pond B1 zone D has an area of 172 sq^2 meters & 110 m^3 storage
- Pond B1 zone C has an area of 627 sq^2 meters & 402 m^3 storage with 50kL basin Pond R1 has an area of 197 sq^2 meters & 129 m^3 storage
- Pond R1 & B5 an area of 738 sq^2 meters & 531 m^3 storage

2.3.2. Post Construction – For Occupation

All drainage pits will be retrofitted with a 1500um trash filter screen fitted internally prior to water entering the in-ground drainage system.

A 20kL terraced rain garden system is to be installed to meet the water quality requirements of Ku-ring-gai Council as derived by the water quality modelling. This terraced rain garden system is needed to meet the quality requirements of the entire site.

2.3.3. Water Quality Information - Criteria for both phases above

Stormwater from the drainage system enters the Lane Cove River downstream

The MUSIC model was established for the site utilizing multiple discharge sources node for the Treatment nodes were setup for the Road catchments prior entering the ponds

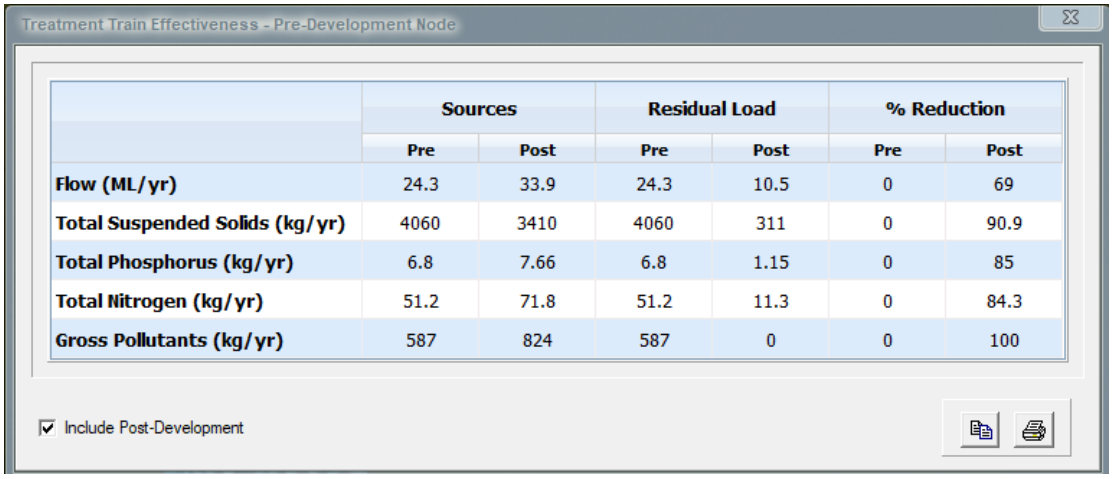
The model compared the pre-development and post-development scenarios.

Below is Council requirement the following performance targets to be met as a minimum: -

Pollutant	Retention Criteria
Total suspended solids, including *sediment* and other fine material less than 5mm	85% retention of average annual load
Total Phosphorous	65% retention of average annual load
Total Nitrogen	45% retention of average annual load
Gross Pollutants	90% retention of average annual load

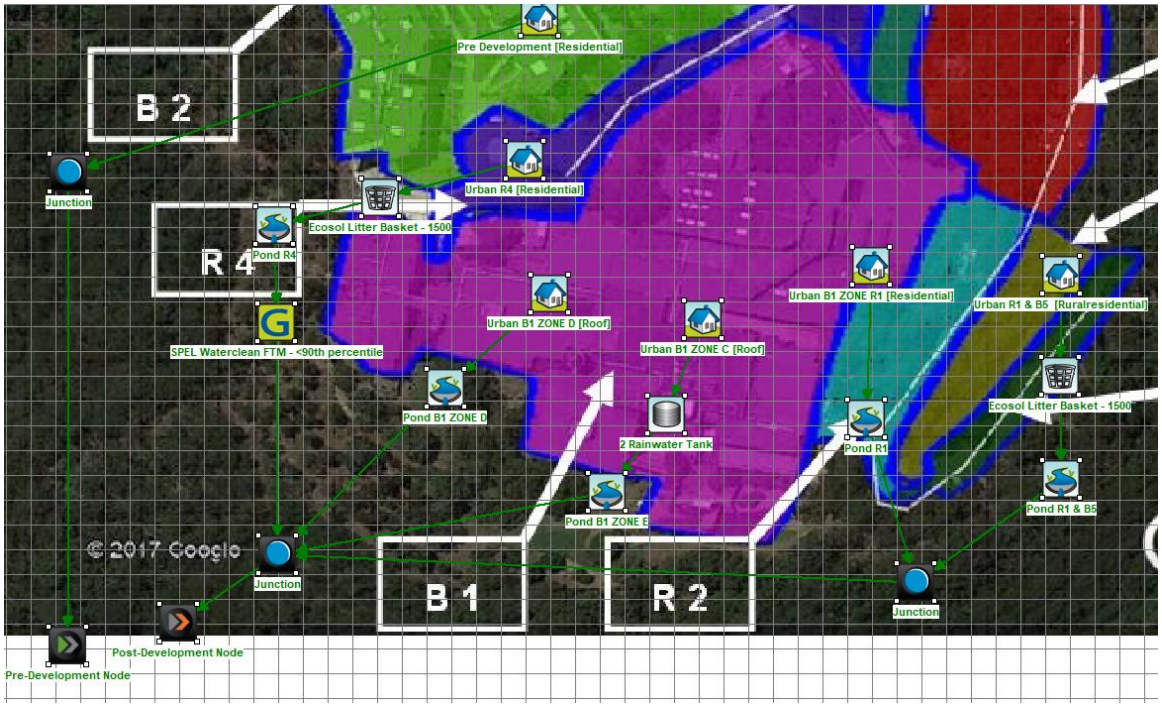
The modelling results must also compare cumulative frequency curves of pollutant concentrations before and after development. They must show that pollutant concentrations after development will be better or equal to previous pollutant concentrations for 50-98% of the time.

Below is the overall site treatment train cycle.

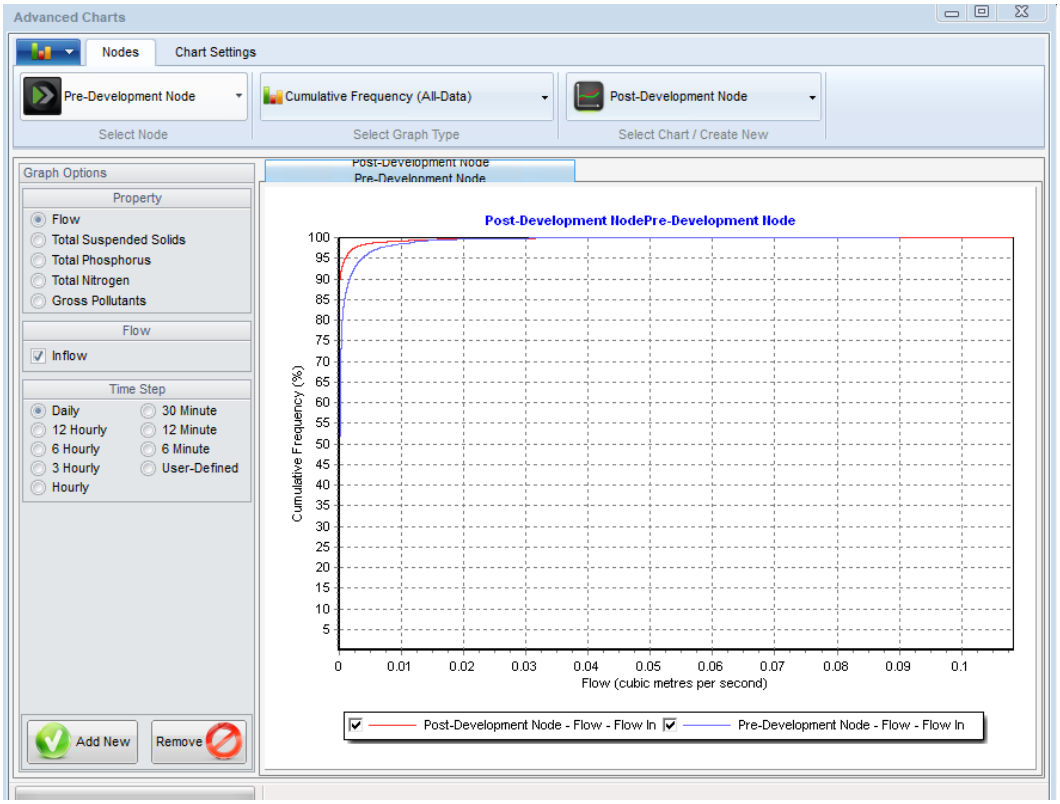


	Sources		Residual Load		% Reduction	
	Pre	Post	Pre	Post	Pre	Post
Flow (ML/yr)	24.3	33.9	24.3	10.5	0	69
Total Suspended Solids (kg/yr)	4060	3410	4060	311	0	90.9
Total Phosphorus (kg/yr)	6.8	7.66	6.8	1.15	0	85
Total Nitrogen (kg/yr)	51.2	71.8	51.2	11.3	0	84.3
Gross Pollutants (kg/yr)	587	824	587	0	0	100

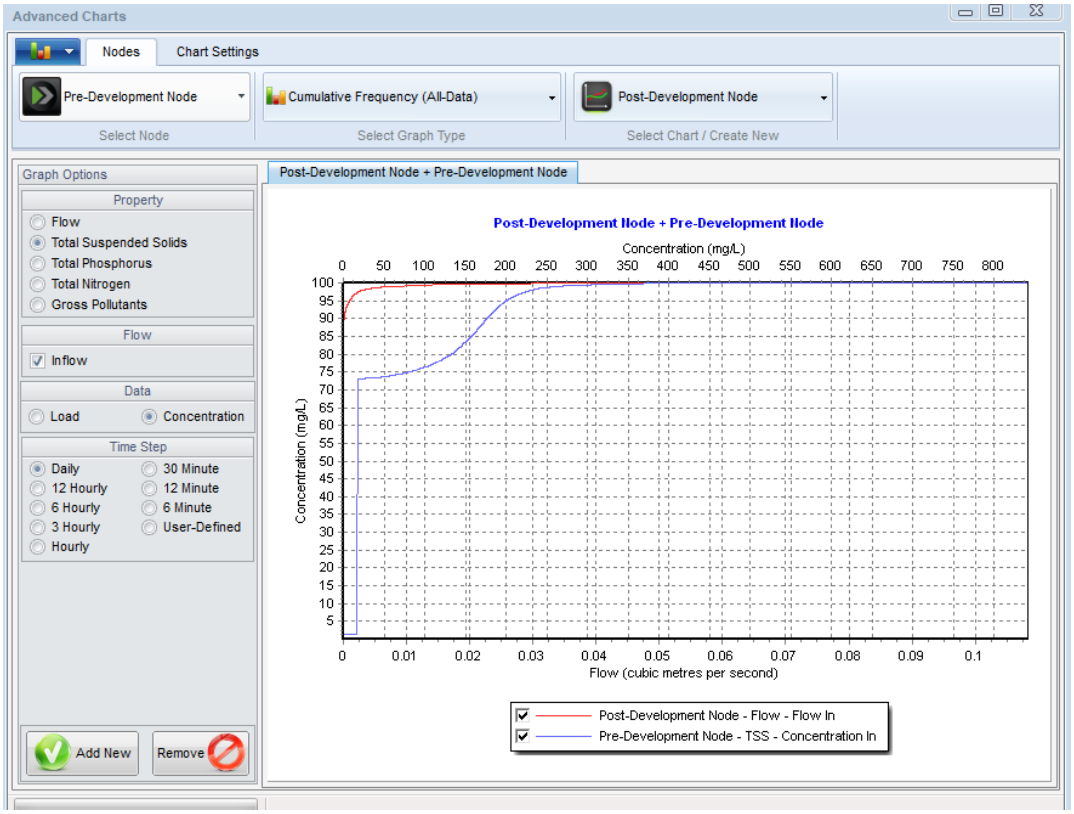
Above results show a reduction of total nitrogen, phosphorus and solids, below is the schematic layout of the treatment train cycle. (Shown below)



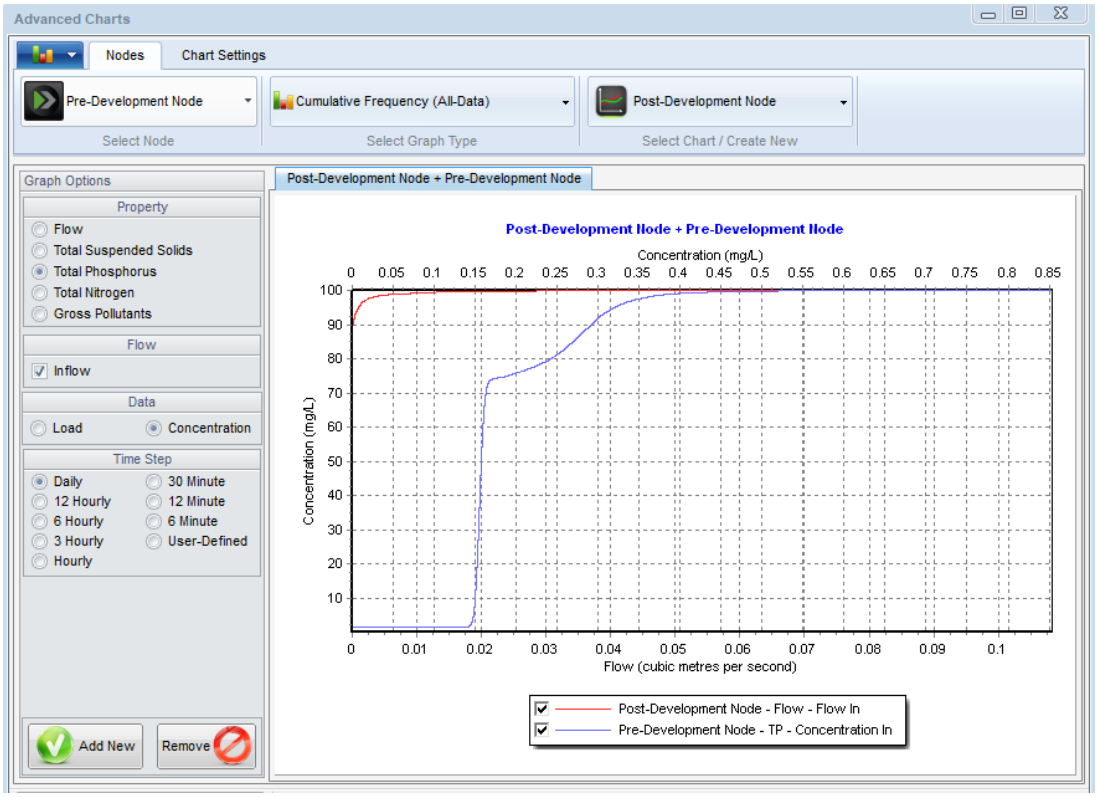
Treatment cycle schematic for the entire site.



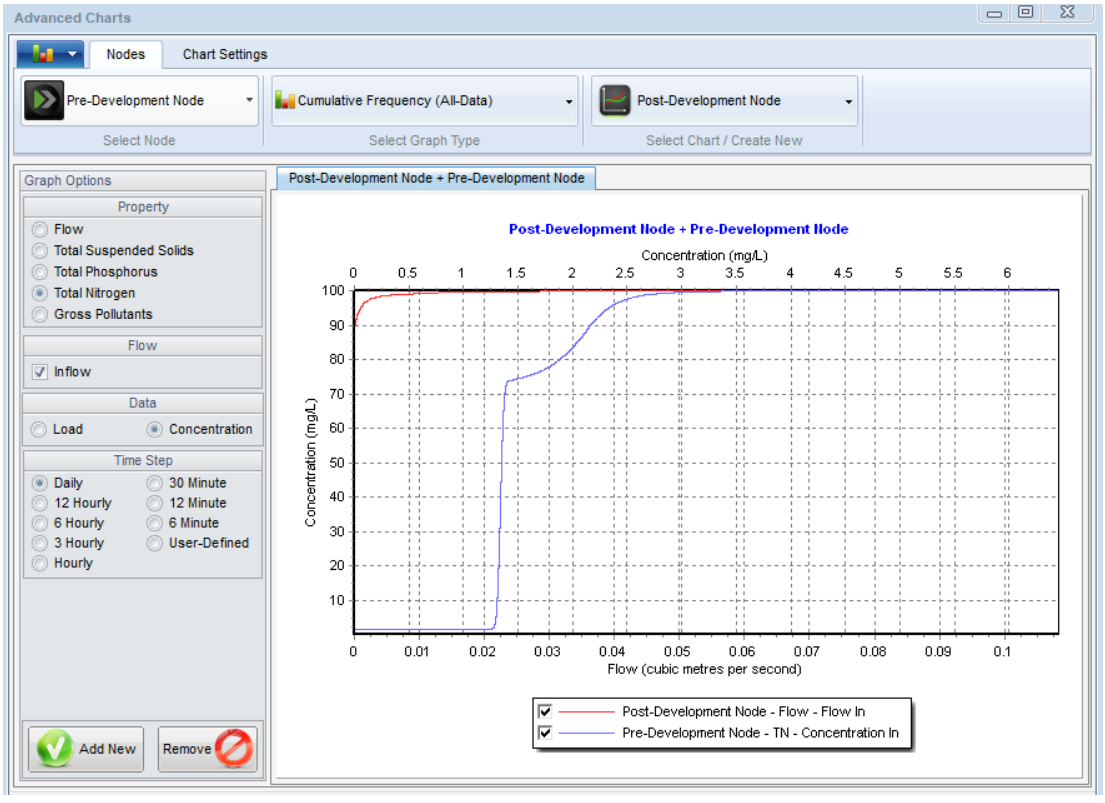
Above results, are the total flows of the treatment train cycle, Post vs. Pre-development.



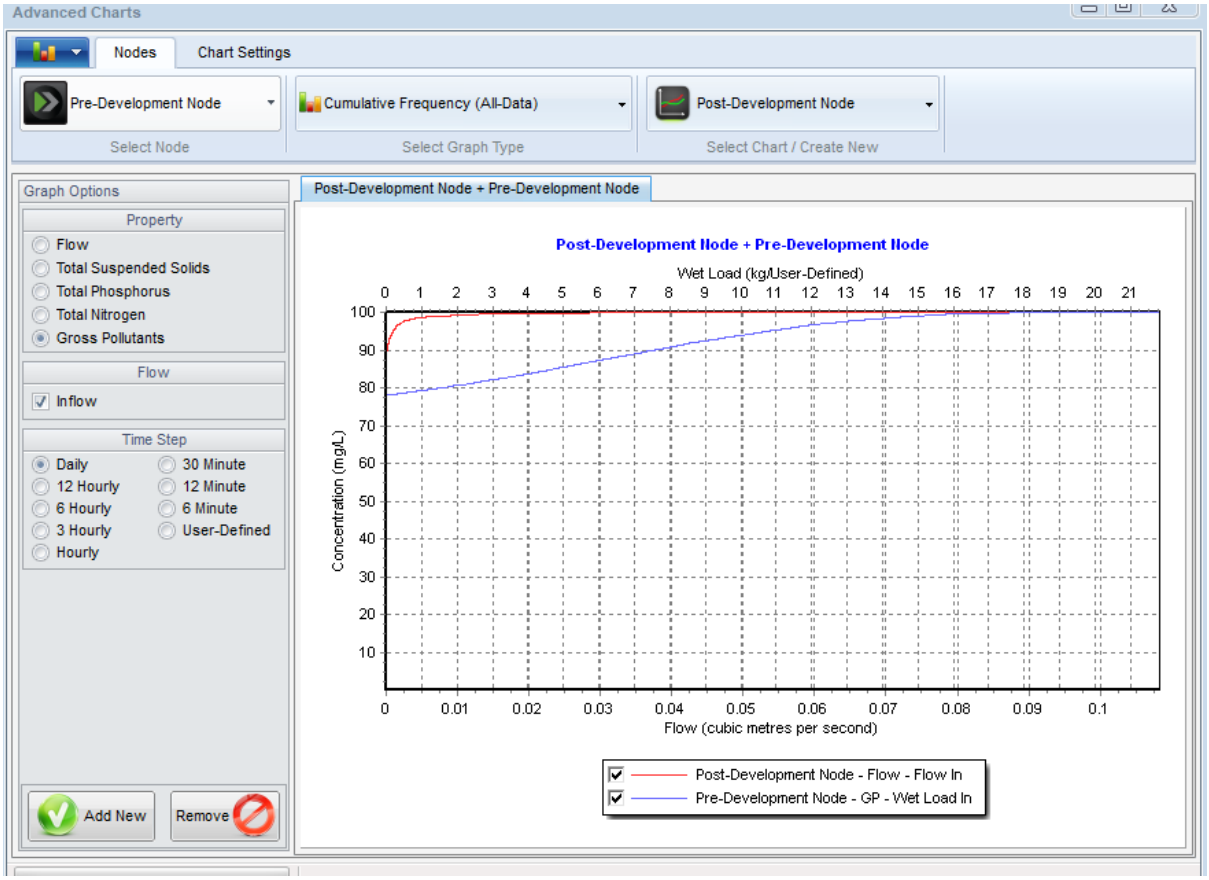
Above results, the TSS (total suspended solids) of the treatment train cycle. Post vs. Predevelopment



Above results, the TP (total phosphorus) of the treatment train cycle.



Above results, the TN (total nitrogen) of the treatment train cycle.



Above results, the GP (Gross Pollutants) of the treatment train cycle.

AS 3500.3 Stormwater Drainage;

Australian Rainfall and Runoff;

I am an appropriately qualified and competent person in this area and as such can certify that the design and performance of the design systems comply with the above.

This certification shall not be construed as relieving any other party of their responsibilities, liabilities or contractual obligations.

3. INFORMATION SOURCES, ASSUMPTIONS, LIMITATIONS AND LIABILITY

3.1. PROJECT INFORMATION SOURCES

Document / programs	Version
BOM (Bureau of Meteorology	
Drains	2018 .09
12D	Ver. 11
Music	Ver. 6.3

Table 3.1 – Project information sources

3.2. ASSUMPTIONS AND LIMITATIONS

The information contained in this document is provided for the sole use of the recipient and no reliance should be placed on the information by any other person. In the event that the information is disclosed or furnished to any other person, EWFW accepts no liability for any loss or damage incurred by that person whatsoever as a result of using the information.

This report is prepared in good faith and with due care for information purposes only and should not be relied upon as providing any warranty or guarantee as to the nature and condition of the building and/or its services or equipment. In particular, attention is drawn to the nature of the inspection and investigations undertaken and the limitations these impose in determining with accuracy the state of the building, its services or equipment.

Due to the limitations of our access to services in the preparation of this report, users of this report should not rely on any statements or representations contained within, but should undertake further and more detailed investigations to satisfy themselves as to the correctness of any statement or representation contained in this report.

3.3. LIABILITY

EWFW shall not be held liable for any loss or damage resulting from any defect of the building or its services or equipment or for any non compliance of the building or its services or equipment with any legislative or operational requirements, whether or not such defect or non compliance is referred to or reported upon in this report, unless such defect or non compliance should have been apparent to a competent Engineer undertaking inspection of the type undertaken for the purpose of preparation of this report.

4. APPENDICIES

4.1. APPENDIX A: MUSIC LINK REPORT

KU-RING-GAI COUNCIL

MUSIC-*link* Report

Project Details		Company Details	
Project:	Lindfield	**Company:**	EWFW
Report Export Date:	3/07/2019	**Contact:**	
Catchment Name:	Lindfield	**Address:**	Lindfield
Catchment Area:	3.473ha	**Phone:**	
Impervious Area*:	59.24%	**Email:**	
Rainfall Station:	66062 SYDNEY		
Modelling Time-step:	6 Mnutes		
Modelling Period:	1/01/1963 - 31/12/1993 11:54:00 PM		
Mean Annual Rainfall:	1275mm		
Evapotranspiration:	1261mm		
MUSIC Version:	6.3.0		
MUSIC-link data Version:	6.31		
Study Area:	Ku-ring-gai Council		
Scenario:	Ku-ring-gai		

* takes into account area from all source nodes that link to the chosen reporting node, excluding Import Data Nodes

Treatment Train Effectiveness		Treatment Nodes		Source Nodes	
Node: Junction	**Reduction**	**Node Type**	**Number**	**Node Type**	**Number**
Flow	66.3%	Pond Node	5	Urban Source Node	6
TSS	89.7%	Rain Water Tank Node	1		
TP	83.1%	Generic Node	1		
TN	82.9%	GPT Node	2		
GP	100%				

Comments

UTS Linfield Redevelopment Stage 2

KU-RING-GAI COUNCIL

MUSIC link

Passing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
GPT	Ecosol Litter Basket - 1500	Hi-flow bypass rate (cum/sec)	None	None	100
GPT	Ecosol Litter Basket - 1500	Hi-flow bypass rate (cum/sec)	None	None	100
Pond	Pond B1 ZONE D	% Reuse Demand Met	None	None	0
Pond	Pond B1 ZONE E	% Reuse Demand Met	None	None	0
Pond	Pond R1	% Reuse Demand Met	None	None	0
Pond	Pond R1 & B5	% Reuse Demand Met	None	None	0
Pond	Pond R4	% Reuse Demand Met	None	None	0
Post	Post-Development Node	% Load Reduction	None	None	66.3
Post	Post-Development Node	GP % Load Reduction	70	None	100
Post	Post-Development Node	TN % Load Reduction	45	None	82.9
Post	Post-Development Node	TP % Load Reduction	45	None	83.1
Post	Post-Development Node	TSS % Load Reduction	80	None	89.7
Pre	Pre-Development Node	% Load Reduction	None	None	0
Pre	Pre-Development Node	GP % Load Reduction	None	None	0
Pre	Pre-Development Node	TN % Load Reduction	None	None	0
Pre	Pre-Development Node	TP % Load Reduction	None	None	0
Pre	Pre-Development Node	TSS % Load Reduction	None	None	0
Urban	Pre Development	Area Impervious (ha)	None	None	1.662
Urban	Pre Development	Area Pervious (ha)	None	None	0.989
Urban	Pre Development	Total Area (ha)	None	None	2.652
Urban	Urban B1 ZONE C	Area Impervious (ha)	None	None	0.606
Urban	Urban B1 ZONE C	Area Pervious (ha)	None	None	0.241
Urban	Urban B1 ZONE C	Total Area (ha)	None	None	0.848
Urban	Urban B1 ZONE D	Area Impervious (ha)	None	None	0.165
Urban	Urban B1 ZONE D	Area Pervious (ha)	None	None	0.066
Urban	Urban B1 ZONE D	Total Area (ha)	None	None	0.232
Urban	Urban B1 ZONE R1	Area Impervious (ha)	None	None	0.164
Urban	Urban B1 ZONE R1	Area Pervious (ha)	None	None	0.102
Urban	Urban B1 ZONE R1	Total Area (ha)	None	None	0.267
Urban	Urban R1 & B5	Area Impervious (ha)	None	None	0.467
Urban	Urban R1 & B5	Area Pervious (ha)	None	None	0.718
Urban	Urban R1 & B5	Total Area (ha)	None	None	1.186
Urban	Urban R4	Area Impervious (ha)	None	None	0.653
Urban	Urban R4	Area Pervious (ha)	None	None	0.286
Urban	Urban R4	Total Area (ha)	None	None	0.94

Only certain parameters are reported when they pass validation

KU-RING-GAI COUNCIL

music@link

Failing Parameters

Node Type	Node Name	Parameter	Min	Max	Actual
Pond	Pond B1 ZONE D	Evaporative Loss as % of PET	75	75	100
Pond	Pond B1 ZONE D	Extended detention depth (m)	0.25	1	2
Pond	Pond B1 ZONE E	Evaporative Loss as % of PET	75	75	100
Pond	Pond B1 ZONE E	Extended detention depth (m)	0.25	1	2.75
Pond	Pond R1	Evaporative Loss as % of PET	75	75	100
Pond	Pond R1	Extended detention depth (m)	0.25	1	2.25
Pond	Pond R1 & B5	Evaporative Loss as % of PET	75	75	100
Pond	Pond R1 & B5	Extended detention depth (m)	0.25	1	2
Pond	Pond R4	Evaporative Loss as % of PET	75	75	100
Pond	Pond R4	Extended detention depth (m)	0.25	1	1.75
Rain	2 Rainwater Tank	% Reuse Demand Met	80	None	0

Only certain parameters are reported when they pass validation

4.2. APPENDIX B: SEDIMENT & EROSION BASINS REPORT

1. Erosion Hazard and Sediment Basins

Site Name: UTS Linfield

Site Location: Eaton Road, Linfield. NSW 2070

Precinct/Stage: Stage 2

Other Details:

Site area	Sub-catchment or Name of Structure						Notes
	Zone A	Zone B	Zone C	Zone D	Zone E		
Total catchment area (ha)	1.186	0.211	0.882	0.229	0.176		
Disturbed catchment area (ha)	0.783	0.134	0.664	0.132	0.102		

Soil analysis (enter sediment type if known, or laboratory particle size data)

Sediment Type (C, F or D) if known:	C	C	C	C	C		From Appendix C (if known)
% sand (fraction 0.02 to 2.00 mm)							Enter the percentage of each soil fraction. E.g. enter 10 for 10%
% silt (fraction 0.002 to 0.02 mm)							
% clay (fraction finer than 0.002 mm)							
Dispersion percentage	11.0	11.0	11.0	11.0	11.0		E.g. enter 10 for dispersion of 10%
% of whole soil dispersible							See Section 6.3.3(e). Auto-calculated
Soil Texture Group	C	C	C	C	C		Automatic calculation from above

Rainfall data

Design rainfall depth (no of days)	20	20	20	20	20		See Section 6.3.4 and, particularly, Table 6.3 on pages 6-24 and 6-25.
Design rainfall depth (percentile)	90	90	90	90	90		
x-day, y-percentile rainfall event (mm)	172	172	172	172	172		
Rainfall R-factor (if known)	3470.67	3470.67	3470.67	3470.67	3470.67		Only need to enter one or the other here
IFD: 2-year, 6-hour storm (if known)	12.68	12.68	12.68	12.68	12.68		

RUSLE Factors

Rainfall erosivity (*R*-factor)	3470.67	3470.67	3470.67	3470.67	3470.67		Auto-filled from above
Soil erodibility (*K*-factor)	0.04	0.04	0.04	0.04	0.04		RUSLE LS factor calculated for a high rill/interrill ratio.
Slope length (m)	190.63	93.25	76.6	46.1	39.2		
Slope gradient (%)	9.65	11.2	8.4	13	17.2		
Length/gradient (*LS*-factor)	4.78	3.72	2.11	2.80	3.56		
Erosion control practice (*P*-factor)	1.3	1.3	1.3	1.3	1.3	1.3	
Ground cover (*C*-factor)	1	1	1	1	1	1	

Sediment Basin Design Criteria (for Type D/F basins only. Leave blank for Type C basins)

Storage (soil) zone design (no of months)	9	6	3	4	2	2	Minimum is generally 2 months
Cv (Volumetric runoff coefficient)	0.63	0.63	0.63	0.63	0.63		See Table F2, page F-4 in Appendix F

Calculations and Type D/F Sediment Basin Volumes

Soil loss (t/ha/yr)	862	671	381	505	642		
Soil Loss Class	6	5	4	5	5		See Table 4.2, page 4-13
Soil loss (m^3/ha/yr)	663	516	293	389	494		Conversion to cubic metres
Sediment basin storage (soil) volume (m^3)	389	35	49	17	8		See Sections 6.3.4(i) for calculations
Sediment basin settling (water) volume (m^3)	1285	229	956	248	191		See Sections 6.3.4(i) for calculations
Sediment basin total volume (m^3)	1674	264	1005	265	199		

NB for sizing of Type C (coarse) sediment basins, see Worksheet 3 (if required).

2. Flow Calculations

Peak flow is given by the Rational Formula: $Qy = 0.00278 \times C_{10} \times F_Y \times I_{y,\,tc} \times A$

where:

Q_y	is peak flow rate (m^3/sec) of average recurrence interval (ARI) of "Y" years
C_{10}	is the runoff coefficient (dimensionless) for ARI of 10 years.
F_y	is a frequency factor for "Y" years.
A	is the catchment area in hectares (ha)
$I_{y,\,tc}$	is the average rainfall intensity (mm/hr) for an ARI of "Y" years and a design duration of "tc" (minutes or hours)

Time of concentration (t_c) = $0.76 \times (A/100)^{0.38}$ hrs

Note: For urban catchments the time of concentration should be determined by more precise calculations or reduced by a factor of 50 per cent. Place an x in the appropriate row below to automatically halve the time of concentration for that sub-catchment.

Structure Details									Notes
Name	Zone A	Zone B	Zone C	Zone D	Zone E				
Catchment Area (ha)	1.1863	0.211	0.882	0.229	0.176				
Place an x here to halve tc									Place an x if disturbed catchment
Time of concentration (tc)	8	4	8	5	4				minutes

Rainfall Intensities									
1-year, tc	80.3	95.3	80.3	95.3	95.3				Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. The time of concentration (tc) determines the duration of the event to be used
2-year, tc	102.6	121.9	102.6	121.9	121.9				
5-year, tc	130.2	154.1	130.2	154.1	154.1				
10-year, tc	145.9	172.4	145.9	172.4	172.4				
20-year, tc	167	196.9	167	196.9	196.9				
50-year, tc	194.2	228.7	194.2	228.7	228.7				
100-year, tc	214.9	252.65	214.9	252.65	252.65				
C10 runoff coefficient	0.85	0.85	0.85	0.85	0.85				Use AR&R or Table F3, pg F-6

Frequency Factors									
FF, 1-year	0.8	0.8	0.8	0.8	0.8	0.8	0.8	0.8	Can use 0.8 for a construction site
FF, 2-year	0.85	0.85	0.85	0.85	0.85	0.85	0.85	0.85	Can use 0.85 for a construction site
FF, 5-year	0.95	0.95	0.95	0.95	0.95	0.95	0.95	0.95	Can use 0.95 for a construction site
FF, 10-year	1	1	1	1	1	1	1	1	Generally always 1
FF, 20-year	1.05	1.05	1.05	1.05	1.05	1.05	1.05	1.05	Can use 1.05 for a construction site
FF, 50-year	1.15	1.15	1.15	1.15	1.15	1.15	1.15	1.15	Can use 1.15 for a construction site
FF, 100-year	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.2	Can use 1.2 for a construction site

Flow Calculations									Notes
1-year, tc (m^3/s)	0.18	0.038	0.134	0.041	0.032				
2-year, tc (m^3/s)	0.244	0.052	0.182	0.056	0.043				
5-year, tc (m^3/s)	0.347	0.073	0.258	0.079	0.061				
10-year, tc (m^3/s)	0.409	0.086	0.304	0.093	0.072				
20-year, tc (m^3/s)	0.492	0.103	0.365	0.112	0.086				
50-year, tc (m^3/s)	0.626	0.131	0.465	0.142	0.109				
100-year, tc (m^3/s)	0.723	0.151	0.537	0.164	0.126				

NB for flow calculations on sediment basin spillways, see Worksheet 3 (if required).

3. Sediment Basin Spillway Design

Structure Details

Structure Name	Zone A	Zone B	Zone C	Zone D	Zone E		Auto-filled from Worksheet 1
Catchment Area (ha)	1.1863	0.211	0.882	0.229	0.176		Auto-filled from Worksheet 1
Time of concentration (tc)	4	2	4	2	2		Auto-calculated assuming tc is halved

Rainfall Intensities (IFD Values)

1 year, tc	80.3	95.3	95.3	95.3	95.3		Enter the relevant rainfall intensities (in mm/hr) for each of the nominated rainfall events. The time of concentration (tc) determines the duration of the event to be used
2 year, tc	102.6	121.9	121.9	121.9	121.9		
5 year, tc	130.2	154.1	154.1	154.1	154.1		
10 year, tc	145.9	172.4	172.4	172.4	172.4		
20 year, tc	167	196.9	196.9	196.9	196.9		
50 year, tc	194.2	228.7	228.7	228.7	228.7		
100 year, tc	214.9	252.65	252.65	252.65	252.65		
C_{10} runoff coefficient	0.85	0.85	0.85	0.85	0.85		Use AR&R or Table F3, pg F-6
Design ARI event (select):	20	20	100	100	100	100	Select design ARI (years) from dropdown
Frequency Factor	1.05	1.05	1.2	1.2	1.2	1.2	Auto-filled based on selected ARI
Flow Calculation	0.492	0.103	0.632	0.164	0.126		Auto-calculated based on selected ARI

4. Volume of Type C (Coarse) Sediment Basins

Type C Basin Design Criteria

Structure Name	Zone A	Zone B	Zone C	Zone D	Zone E		Auto-filled from Worksheet 1
Catchment Area (ha)	1.1863	0.211	0.882	0.229	0.176		Auto-filled from Worksheet 1
Sediment type (C, F or D)	C	C	C	C	C		Auto-filled from Worksheet 1
Design rainfall event	1	1	1	1	1		Choose design event from dropdown
Flow volume (m^3/s)	0.18	0.038	0.159	0.041	0.032		Calculated from IFD values above
Area Factor	4100	4100	4100	4100	4100	4100	Default is 4,100. See pg 6-12
Depth of settling (water zone) (m)	0.6	0.6	0.6	0.6	0.6	0.6	Minimum is 0.6m (pg 6-12)

Type C Basin Volume Calculations

Basin Surface Area (m^2)	738	155.8	651.9	168.1	131.2	Not Type C	Auto-calculated
Settling (water) zone volume (m^3)	442.8	93.5	391.1	100.9	78.7	Not Type C	Auto-calculated
Storage (soil) zone volume (m^3)	88.3	11.8	33	8.7	8.6	Not Type C	Auto-calculated
Total basin volume (m^3)	531.1	105.3	424.1	109.6	87.3	Not Type C	Auto-calculated

Basin Shape

Enter length:width ratio	3	3	2	3	3	3	E.g. for 3:1 (L:W) enter 3.
Length (m)	47.1	21.6	36.1	22.5	19.8	N/A	These figures should be taken as a guide only. Detailed calcs might be required.
Width (m)	15.7	7.2	18.1	7.5	6.6	N/A	