Prepared for: Co.Op Studio

Stormwater Management Strategy
Tamworth Regional Aquatic Centre
Jack Smyth Drive, Hillvue NSW

Author: Nicholas Ha
Job No: 230459
Reference No: 230459-008-SWMS-CL-NH
Revision: A
Date: 14 March 2025

Contents

Appendices

1 Introduction

CREO Structures (CREO) have been engaged by Co.Op Studio to produce a Stormwater Management Strategy (SWMS) for the proposed development of the Tamworth Regional Aquatic Centre located at Jack Smyth Drive, Hillvue NSW. This report outlines the stormwater management plan for the proposed development on the site.

This document will outline the proposed drainage strategy to ensure that 'best practice' guidelines for qualitative and quantitative treatment are met, in accordance with relevant authority requirements and the Tamworth Council's drainage design guidelines.

2 Design Philosophy

The stormwater management strategy proposed for the Tamworth Regional Aquatic Centre development has been developed to satisfy the following design philosophy:

- Provide the developed condition with an improved drainage response in comparison to that of the existing condition to minimise impacts on the existing drainage infrastructure and surrounding roadways and property that services and adjoins the development site.
- Provide the developed condition with a drainage infrastructure design that refers to Tamworth Regional Council's Engineering Design Minimum Standards (Version 2, May 2023).

Further to the abovementioned technical guidelines, this report also complies with Tamworth Council's Flood Advice Conditions, Tamworth Council's legal point of stormwater discharge advice (LPOD), and what is considered to be industry best practice water sensitive urban design (WSUD) principles.

3 Existing Conditions

3.1 Site Characteristics

The proposed works involves the construction of a new aquatic centre as follows:

- The construction of a new primary building incorporating the indoor 50m pool hall, tiered seating arrangement, warm water pool hall, gym and program rooms, change facilities and various amenities to compliment the new sports centre.
- Carparking works (i.e. regrading, kerbing, retaining, surfacing, and landscaping works) for the northern and southern side of the building.
- Road works to:
    - Jack Smyth Drive for a new turning lane providing vehicular access into the new aquatic centre carpark.
    - Longyard Drive for new kerbing and road drainage from the western roundabout to nominally 10m beyond the new western cross-over from the new aquatic centre.
- Provision of a swale diversion along the eastern boundary and upgrades to the northern Greg Norman basin to accommodate the 1% AEP overland flows from the southern boundary and On-site Detention (OSD) required from the new development.

Refer to the architectural site plan drawing attached in Appendix A for clarity.
The above summarised works are intended to be delivered as one complete project.

The existing site is subject to flood inundation with all proposed works having been assessed, designed and documented in accordance with the recommendations from RAIN consulting based on available council flood information and the generation of a post-development flood model.

3.2 Existing Catchment

The existing catchment within the site boundaries that forms the aquatic centre site is approximately 4.7081ha / 47,081m^2.

The existing catchment is primarily permeable area consisting of grassed areas, sparce trees, and a central swale falling south to north. The site is bounded by Jack Smyth Drive on the south, Longyard Drive to the north, Stockmans Way on the west, and Tamworth Hockey Association to the east.

It is important to note that much of the northern and southern catchments outside the proposed carparking surfaces are existing grassed areas and noted as not being serviced by the proposed new development's in-ground drainage infrastructure. Those

areas are generally reliant on stormwater surface infiltration through the soft-scaped areas and overland flows during the more extreme inundation flood events.

Below is the summary of existing site areas:

- Total Site Boundaries Area: 4.7081ha / 47,081m^2
- Area of Site Excluded from Strategy (as described above): 2.3968 ha / 23,968m$^{2.}$
- Area of Site Included in Strategy / Development Catchment Area: 2.3113ha / 23,113m$^{2.}$

Based on preliminary assessment, much of the existing site's stormwater drainage infiltrates into the existing grassland areas with more extreme rainfalls are funnelled north via the existing swale towards the Greg Norman basin via a culvert under Longyard Drive.

The existing site was analysed utilising the Swinburne Method, we note the following:

- The amount of flow that is considered to be the permissible site discharge (PSD) is the Minor Storm Event (20% AEP) and Major Storm Event (1% AEP) as the benchmark for the pre-developed flows.
- These pre-developed flows will be applied when determing the project's on-site stormwater detention (OSD) requirements as discussed later within this report.
- Table 1 below outlines the calculated flows for the 20% AEP (1 in 5 year ARI) and 1% AEP (1 in 100 year ARI) pre-devlopment flow that will be applied as the PSD.

Table 1: Calculated Peak Flows for the Pre-Developed Site

Parameter	Developed Flows	
	Pre-Development 20% AEP (5 year)	Pre-Development 1% AEP (100 year)
Peak Flows	267.0 L/s	611.0 L/s

4 Developed Conditions

4.1 Developed Catchments

The catchment areas as defined in Section 3.2 for the developed conditions of the site are as follows:

- Total Site Boundaries Area: 4.7081ha / 47,081m^2
- Area of Site Excluded from Strategy (as described above): 2.3968 ha / 23,968m$^{2.}$
- Area of Site Included in Strategy / Development Catchment Area: 2.3113ha / 23,113m$^{2.}$

The existing site was analysed utilising the Swinburne Method, we note the following:

- The amount of flow that is considered to be the permissible site discharge (PSD) is the Minor Storm Event (20% AEP) and Major Storm Event (1% AEP) as the benchmark for the pre-developed flows.
- These pre-developed flows will be applied when determing the project's on-site stormwater detention (OSD) requirements as discussed later within this report.
- Table 2 below outlines the calculated flows for the 20% AEP (1 in 5 year ARI) and 1% AEP (1 in 100 year ARI) post-devlopment flow that will be applied as the sites developed flows for the assessment of the OSD requirements.

Table 2: Calculated Peak Flows for the Developed Site

Parameter	Developed Flows	
	Post-Development 20% AEP (5 year)	Post-Development 1% AEP (100 year)
Peak Flows	459.0 l/s	1049.0 l/s

4.2 Legal Point of Stormwater Discharge (LPOD)

The LPOD connection for this site will be made to the Greg Norman basin to the north of the property; via an existing culvert along the south side of Longyard Drive (determined by survey on site) as noted within Figure 1 below (Tamworth Regional Aquatic Centre site is hatched in blue with the red dash line noting the existing stormwater flow path).

The development site will be serviced by a single LPOD connection point to the existing outlet that is the existing culvert under Longyard Drive to service the site's generated stormwater flows and to enable a gravity-based drainage system that complies with the stormwater management guidelines.

Figure 1: Existing Stormwater Asset Map

5 Stormwater Management Strategy

The stormwater management strategy proposed for the Tamworth Regional Aquatic Centre development has been designed to integrate the management of catchment run-off and the quality of the run-off in accordance with Tamworth Council's Flood Advice Conditions, Tamworth Council's legal point of stormwater discharge advice (LPOD), and what is considered to be industry best practice water sensitive urban design (WSUD) principles. The primary objectives of this the stormwater management strategy focus on:

- Provide flood protection treatments for public safety and to protect downstream environments by ensuring peak developed flows are safely stored within existing swale and retarding basin storage systems.
- Implementation of Water Sensitive Urban Design (WSUD) elements to treat post-developed pollutant-laden run-off to best practice environmental management (BPEM) guidelines.

The stormwater drainage systems will be designed to maximise benefits to the community based upon adequacy of design, the economy of construction and a high level of safety and amenity, including the provision to:

- Ensure hazardous situations do not arise on streets and footpaths.
- Ensure that all buildings in urban areas are protected against floodwaters to a suitable standard.
- Limit rubbish and pollutants entering the stormwater drainage system.
- Prevent erosion and sedimentation.
- Integrate drainage works into the site and immediate surrounds.
- Provide for multiple uses of land within the facility for drainage, recreation and transportation.

This section of the report defines the measures that have been integrated in the design to satisfy the above.

5.1 Rainwater Harvesting

As part of the proposed development works, the harvesting, storage and reuse of roof stormwater run-off will be implemented into the design. Note the following:

The roof is split into 3 catchments

- Catchment 1 – 2740m² of roof area is captured into Rainwater tank set 1 (2x30kL) located on the eastern façade.
- Catchment 2 – 3560m² of roof area is captured into Rainwater tank set 2 (2x45kL) located on the northeast corner.
- Catchment 3 – 918m² of roof area is directly connected into in-ground stormwater drainage due to it's proximity being too far from either rainwater tank sets.
- The harvested water from both rainwater tank sets are plumbed into a shared system into the building for toilet flushing as well as externally for irrigation, with backup supplied by domestic cold water when tanks are emptied.
- The proposed reuse demands as provided by Introba Pty Ltd are 1,500L/day (event period) for toilet flushing and 1,650L/day for irrigation.

  Refer to the hydraulic engineering advice prepared by Introba Pty Ltd for further information and details relating to the roof rainwater harvesting system attached in Appendix C.

Please note that the hydraulic engineering design and documentation associated with the project is still under development and is yet to be completed by the project consultant team. Should a more developed level of hydraulic drawings beyond that provided within Appendix C that defines the strategy for the site be required to be reviewed by Council, these can be provided at a later date once the design has progressed sufficiently.

5.2 Onsite Stormwater Detention (OSD)

We have applied the guidelines to ascertain the volume of stormwater that will need to be detained by the development site utilising the Swinburne Method.

Based on the critical condition that limits the PSD to the 20% AEP storm event for the 1% AEP developed condition flows, the sotrage required is found to be 841.102m³.

However, it has been agreed with council for this detention volume to be stored within the existing Greg Norman basin; reference (PROJ2023-0057 TRAC (Stage 1) and NICSH), Form ID: CORR041, dated 04 July 2024. The existing basin size sufficiently accomodates the existing 1% AEP flood with 100mm freeboard, with the provision of the abovementioned OSD volume expected to maintain this condition during the basin upgrade works.

Refer to Appendix B for the OSD calculation outputs from the Swinburne Method based on the abovementioned PSD and OSD criteria.

5.3 Overland Flow Path - Site

Overland Flow Path (OFP) is the designed into the surface grading throughout the site to protect the building from inundation during storm event that exceed the design rainfall event for in-ground drainage or circumstances where in-ground drainage is not properly maintained resulting in blockage.

The OFP generally travels away from the building line into the carparks, then from the west to east and into the proposed diversion swale ensuring the building is sufficiently protected from storm events exceeding 1% AEP. This is demonstrated in the Civil Layout Plan drawings.

5.4 Overland Flow Path & Catchment Flood Impact Analysis

This site is subject to inundation in the 1% AEP storm event as shown in Figure 2 below. CREO have engaged RAIN Consulting to undertake a flood modelling for the site and associated catchment and basin to enable the preparation of a Flood Impact Analysis Report to satisfy the planning and engineering conditions applicable to the site. At the time of issue of this Stormwater Management Strategy Report, the flood modelling works is in the final stages of completion and it is anticipated that the Flood Impact Analysis Report will be provided to Council for consultation and endorsement within the next two weeks.

However, the inundation overland flow conveyance and basin storage requirements have been established and agreed upon between CREO and RAIN and the diversion swale, road crossings, and general basin works intent have been captured on the civil design drawings that accompany this report. Upon conclusion and endorsement of the flood impact report, there may be minor coordination amendments required to be applied to the civil drawings to close out any remaining compliance items.

Figure 2: 1% AEP Flood Map

6 Stormwater Quality

6.1 Release Criteria

The objectives for on-site treatment relating to urban stormwater quality identify the best practice as the removal of Total Suspended Solids (TSS), Total Phosphorus (TP), Total Nitrogen (TN) and Gross Pollutants (GP). The values as set out in Table 3 below reflect the level of stormwater quality management necessary and the design criteria for WSUD treatments to meet the Tamworth Regional Council's Engineering Design Minimum Standards (Version 2, May 2023) and the CSIRO Publication; 'Urban Stormwater Best Practice Environmental Management Guidelines'.

Table 3: Objectives for Environmental Management of Stormwater

Pollutant	Receiving Water Objective	Current Best Practice Performance Objective
Total Suspended Solids (TSS)	(e.g. not to exceed the 90th percentile of 80mg/L)	80% retention of the typical urban annual load
Total Phosphorus (TP)	(e.g. base flow concentration not to exceed 0.08mg/L)	45% retention of the typical urban annual load
Total Nitrogen (TN)	(e.g. base flow concentration to not exceed 0.09 mg/L)	45% retention of the typical urban annual load
Gross Pollutants (GP)	(e.g. no litter in waterways)	70% retention of the typical urban annual load

6.2 Stormwater Quality Strategy

To achieve the water quality objectives outlined above, the proposed development was modelled using the 'Model for Urban Stormwater Improvement Conceptualisation' (MUSICX, Version 1.30.0) program.

MUSIC is a modelling program that evaluates whether stormwater improvement measures specified for proposed development sites are capable of meeting specified objectives, both from a hydrologic and water quality perspective.

Due to the constraints on site around spatial issues, hydraulic flows, and mainly costs, conventional Water Sensitive Urban Design (WSUD) assets, such as sediment basins, wetlands, bioretention basins etc. are not a feasible option for the broader site other than the carpark. Therefore, proprietary products are proposed to be used for both primary (gross pollutants and sediments) and tertiary treatment (nitrogen and phosphorus) in conjunction with stormwater raingardens integrated into the carpark layout.

The WSUD treatment measures proposed to service each component of the development are as follows:

- 87.5% of the total roof area stormwater runoff is harvested for reuse within the building for toilet flushing and externally irrigation.
- All stormwater drainage from the buildings (i.e. from harvesting tank overflows and roof drainage / downpipes not connected to harvesting systems), and all external pool concourse pavements are collected via surface drainage pits, grated trenches, and in-ground pipework pass through an Atlan Flowfilter model HS.2500/16 prior to flowing into the proposed diversion swale. Refer to Appendix D for the Atlan Flowfilter product data sheet.
- The carpark isles will grade toward the kerb and gutters that direct flows towards strategically located raingardens. The raingardens will be equipped with catchment pits to service the embedded ag-drains as well as capture overflow during storm events that exceed the 20% AEP (5 year). The area / extent of rain garden provisions is shown within the civil drawings.

Below is the summary assessment and treatment train output extracted from our MUSIC model based on the abovementioned treatment provisions:

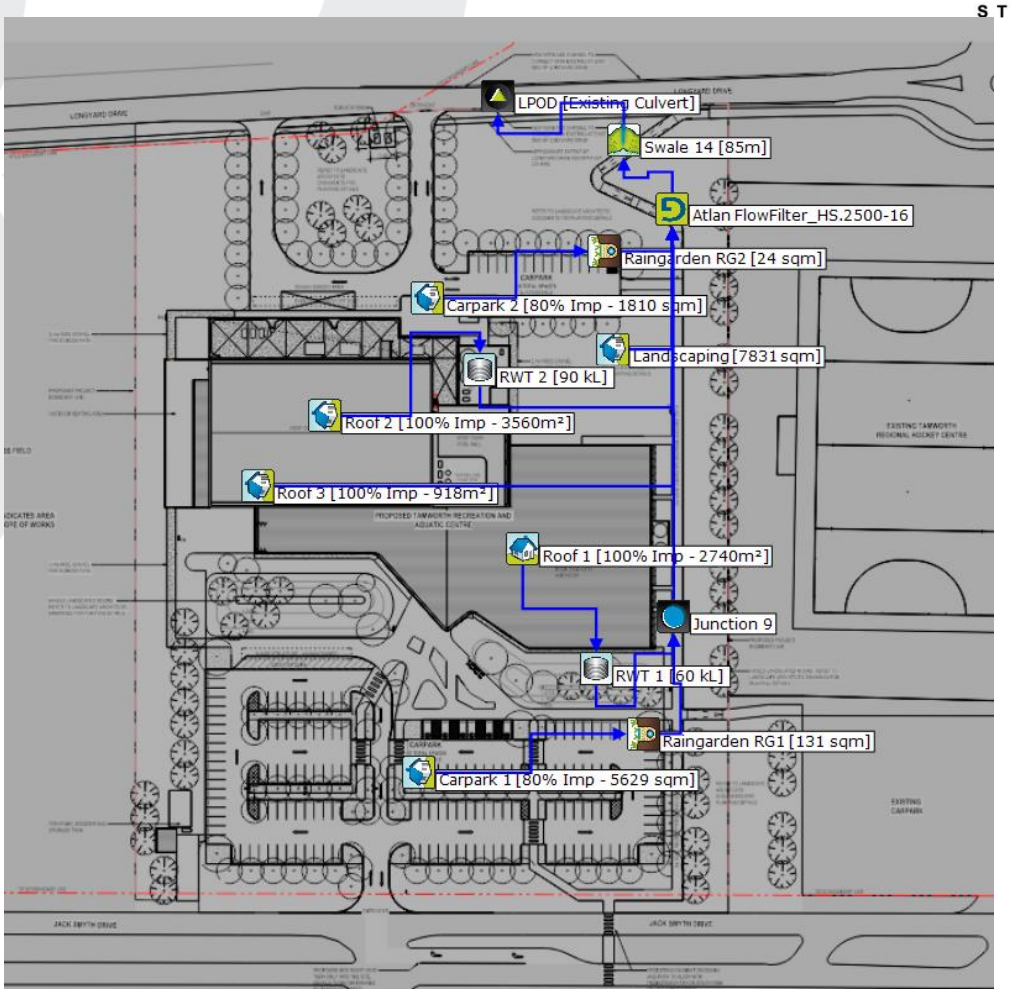


Figure 3: Treatment Train as Modelled in MUSICX

For clarity, Table 6 below summarises the treatment train effectiveness.

Table 4: Treatment Train Effectiveness Summary

	Sources	Residual Load	Percentage Reduction (%)	Authority Target Reduction (%)
Flow (ML/yr)	14.58	13.26	9.09%	NA
Total Suspended Solids (kg/yr)	2760	288.2	89.56%	70.00%
Total Phosphorus (kg/yr)	5.132	1.765	65.61%	45.00%
Total Nitrogen (kg/yr)	32.24	17.3	46.34%	45.00%
Gross Pollutants (GP)	359.1	0	100%	80.00%

Upon request, Creo Consultants can provide Tamworth Council with the MUSIC model file for verification purposes as may be required as part of the review and approval process.

6.3 Drainage Maintenance

6.3.1 Maintenance Responsibility

As the property owner and facility operator, Tamworth Council will be responsible for maintaining all drainage infrastructure on the site that is described within this strategy report.

6.3.2 Treatment Devices Maintenance Requirements

The various treatment devices proposed within this report shall be maintained as follows:

- **Raingardens:** The carpark raingardens shall be maintained as follows:
    - Bi-annual scheduled inspections and maintenance that includes the removal of all litter, debris, assessment of established plant health and replanting as may be required, and any other maintenance relating to rectification of any divots, holes or other damage that may be caused by vehicles or vandalism.
- **AtlanFlowfilter Unit:** The Flowfilter units shall be maintained as follows:
    - Quarterly scheduled inspections and maintenance that includes the removal of sediments and gross pollutants via vacuum truck from within the unit, and backwashing of the cartridge filter units.
    - 5 Yearly scheduled maintenance that includes the removal and replacement of the cartridge filter media.

7 Conclusions and Recommendations

This document provides a holistic approach to managing the stormwater infrastructure to be implemented as part of the Tamworth Regional Aquatic Centre development.

The report addresses the following key aspects:

- Retardation of 20% AEP and 1% AEP storm events exiting the site to match the conditions established by the Tamworth Council's Specification – Stormwater Management guideline on the volumes are provided within the Greg Norman basin upgrade north of Longyard Drive.
- Compliance with best practice stormwater quality treatment requirements for discharge to the existing drainage.
- For the catchment, it is recommended that the following infrastructure is implemented:
    - Installation of a detention system totalling a storage volume of 841m^3.
    - Provision of stormwater roof harvesting for 87.5% of the total building roof area, plumbed to all toilets and external irrigation use.
    - Provision of an Atlan Flowfilter model HS.2500/16 treatment device for all captured drainage from the new building, carparking and landscaped areas.
    - Provision of rain gardens to service the carpark stormwater runoff to for pollutant removal.

8 Construction Environmental Management

It is the sole responsibility of the engaged contractor to manage and control all site conditions, specifically soil erosion and sediment control during construction works. The contractor shall be required to prepare and submit a site environmental management plan to Council and all other relevant authorities prior to commencement of any works on site.

The commentary within this report is indicative only, again noting documentation and implementation of construction environmental management systems is the responsibility of the contractor.

All works shall comply with the EPA, Tamworth Council and all other relevant authority guidelines relating to soil erosion and sediment control during construction.

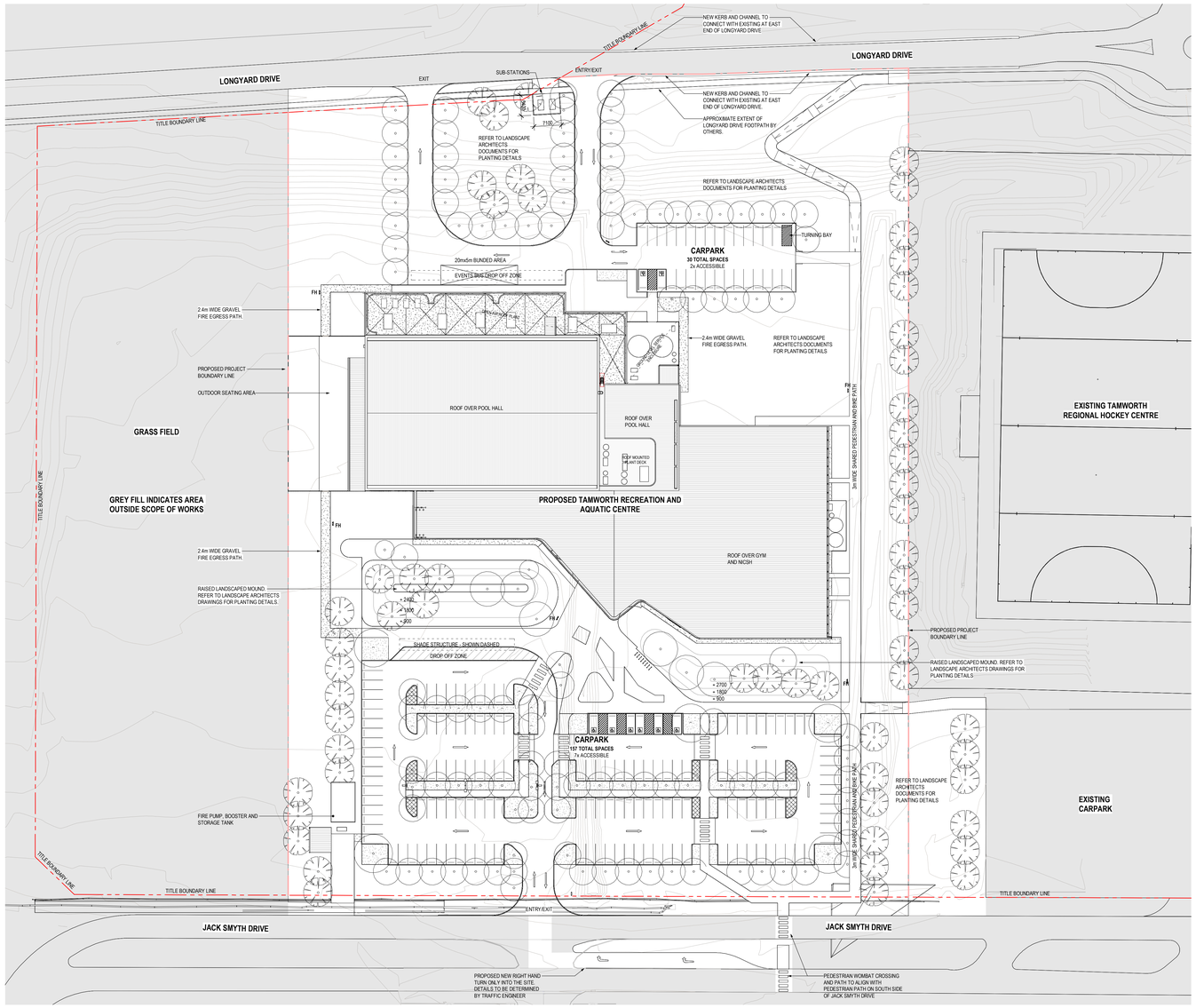
8.1 Soil Erosion & Sediment Control

The contractor shall submit a detailed environmental management plan that adequately considers soil erosion and sediment control measures. Consideration shall be given to:

- Establish a single stabilised entry/exit point.
- Install sediment fence(s) along the low side of the site.
- Divert up-slope water around the work site and appropriately stabilise any drainage channels.
- Clear only those areas necessary for building work to occur.
- Stockpile topsoil within the sediment-control zone.
- Stabilise exposed earth banks via vegetation, erosion control blankets etc.
- Install on-site waste receptacles e.g. mini-skips, bins, reo cages. These should be covered to prevent waste being moved by wind.
- Maintain all control measures in good working order.
- Revegetate or otherwise stabilise the site.

All control measures are to be checked daily prior to the commencement of any construction activities on said day.

Appendix A Architectural Site Plan



UNCONTROLLED DOCUMENT - NOT FOR CONSTRUCTION

REV.	DESCRIPTION	DATE	APP
C	60% DESIGN DEVELOPMENT	10/09/2025	SC
B	ISSUED FOR APPROVAL	04/07/2025	SC
A	ISSUED FOR REVIEW	13/06/2025	SC

CLIENT Tamworth Regional Council

CO.OP STUDIO
Level 6, 54 Wellington Street, Collingwood, 3066
Office: +61 452 281 614
admin@co-opstudio.com.au

PROJECT
Tamworth Regional Aquatic Centre and Northern Inland Centre of Sport and Health

PROJECT NUMBER
100358

DRAWING
SITE PLAN

SCALE 1 : 500 @ A0

DRAWN BY Author

UNCONTROLLED DOCUMENT

DRAWING NO. A101

REVISION

FILE NAME Autodesk Docs://Tamworth RAC/100358_Tamworth RAC_R23_360.rvt

DATE PRINTED 10/09/2025 1:45:12 PM

Appendix B Stormwater Onsite Detention Tank Calculations

STORMWATER DETENTION CALCULATOR

CREO CONSULTANTS PTY LTD

Client:	CO.OP STUDIOS
Project:	TAMWORTH REGIONAL AQUATIC CENTRE

IFD STORM DATA — IFD IMPORTED CORRECTLY; COEFFICIENTS IMPORTED CORRECTLY

https://data.arr-software.org/

Engineer:	NH
Job Number:	230459
Date:	14/03/2025
Revision:	A

creo CONSULTANTS

Predeveloped Conditions:

Catchment Area (ha)	2.3113
Time of Concentration (min)	10
Fraction Impervious	30%

Fraction Impervious Calculator	
Impervious Area (m²)	6933.9
Pervious Area (m²)	16179.1
Total Area (m²)	23113
Fraction Impervious	30%

	Annual Exceedence Probability						
	63.2%	50.0%	20.0%	10.0%	5.0%	2.0%	1.0%
Intensity (mm/hr)	60.36	68.19	93.12	110.32	127.33	150.35	168.57
Coefficient of Runoff	0.377	0.400	0.447	0.471	0.494	0.541	0.565
Q (m3/s)	0.146	0.175	0.267	0.333	0.404	0.522	0.611

Developed Conditions:

Catchment Area (ha)	2.3113
Time of Concentration (min)	10
Fraction Impervious	85%

Fraction Impervious Calculator	
Impervious Area (m²)	19646.05
Pervious Area (m²)	3466.95
Total Area (m²)	23113
Fraction Impervious	85%

	Annual Exceedence Probability						
	63.2%	50.0%	20.0%	10.0%	5.0%	2.0%	1.0%
Intensity (mm/hr)	60.36	68.19	93.12	110.32	127.33	150.35	168.57
Coefficient of Runoff	0.646	0.687	0.768	0.808	0.848	0.929	0.970
Q (m3/s)	0.250	0.301	0.459	0.572	0.694	0.897	1.049

STORAGE CALCULATION

Retard Flows up to:	1%	AEP
Predeveloped Flow:	0.611	m³/s
OR Restrict flows to:	0.267	m³/s

FROM TABLE BELOW: **STORAGE REQUIRED (m³): 841.102** *Using the* **Swinburne Institute of Technology 1987 Method**

Storm Duration (min)	Flow Rate In (l/s)	Volume In (m³)	Volume Out (m³)	Storage Required (m³)
1	1917.331	115.040	16.040	66.921
2	1637.202	196.464	32.079	140.325
3	1506.475	271.165	48.119	207.007
4	1413.098	339.144	64.159	266.965
5	1332.172	399.652	80.198	319.453
10	1052.042	631.225	160.397	510.928
15	877.739	789.965	240.595	629.568
20	753.237	903.885	320.794	703.389
25	666.086	999.129	400.992	758.533
30	596.987	1074.577	481.191	793.882
45	460.035	1242.094	721.786	841.102
60	377.864	1360.309	962.381	839.019
90	282.620	1526.146	1443.572	764.261
120	228.461	1644.921	1924.762	642.440
180	168.700	1821.963	2887.144	338.292
270	124.502	2016.933	4330.715	-188.524
360	100.847	2178.287	5774.287	-748.955
540	75.946	2460.658	8661.431	-1910.156
720	62.251	2689.244	11548.574	-3125.142
1080	47.622	3085.907	17322.861	-5615.623
1440	39.529	3415.340	23097.148	-8173.334
1800	34.300	3704.433	28871.435	-10771.383
2160	30.503	3953.188	34645.722	-13409.772
2880	25.336	4378.089	46194.296	-18759.158
4320	19.173	4969.722	69291.444	-29716.099
5760	15.438	5335.460	92388.592	-40898.936
7200	12.824	5539.842	115485.740	-52243.127
8640	10.832	5615.141	138582.889	-63716.403
10080	9.338	5647.412	161680.037	-75232.706

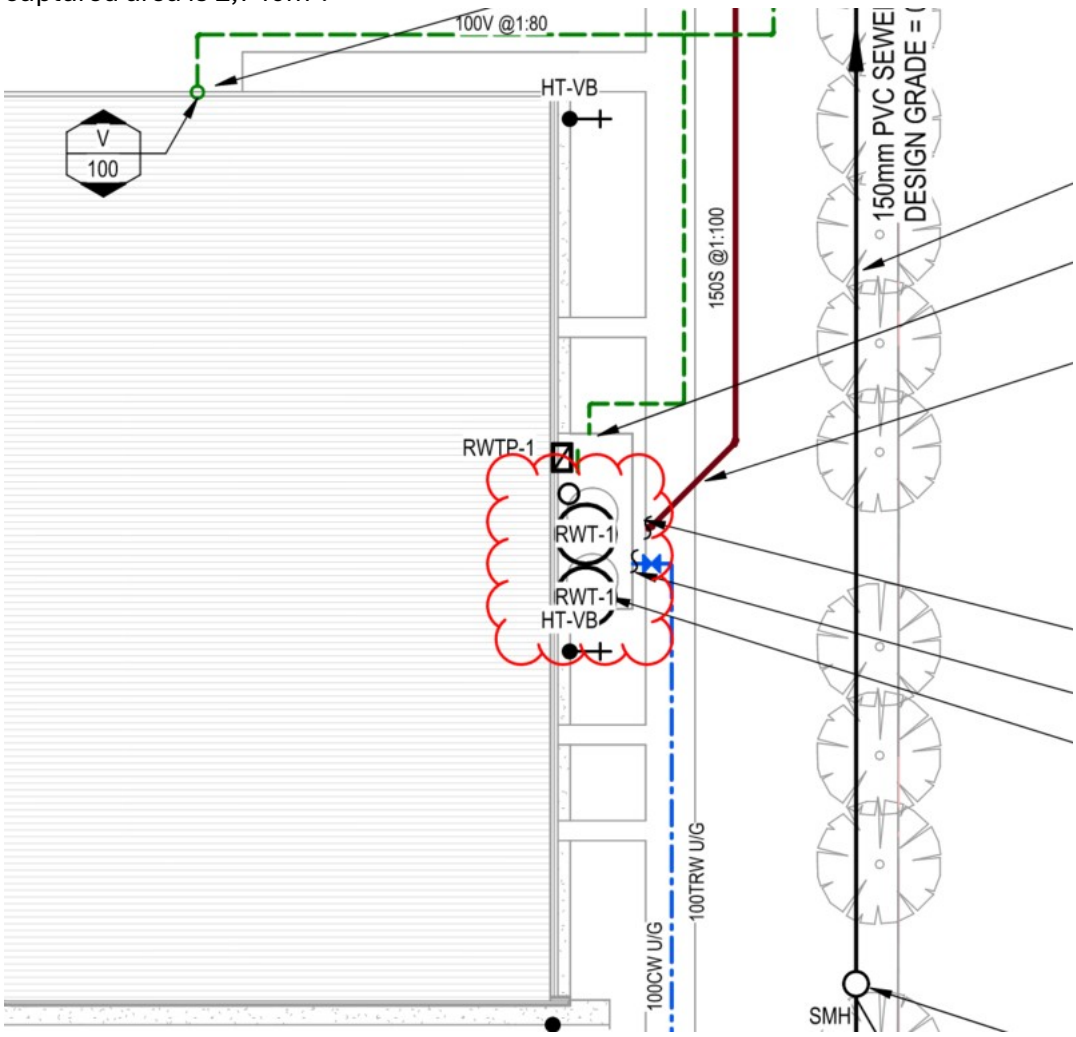
Appendix C Stormwater Harvesting and Reuse Advice

Nicholas Ha

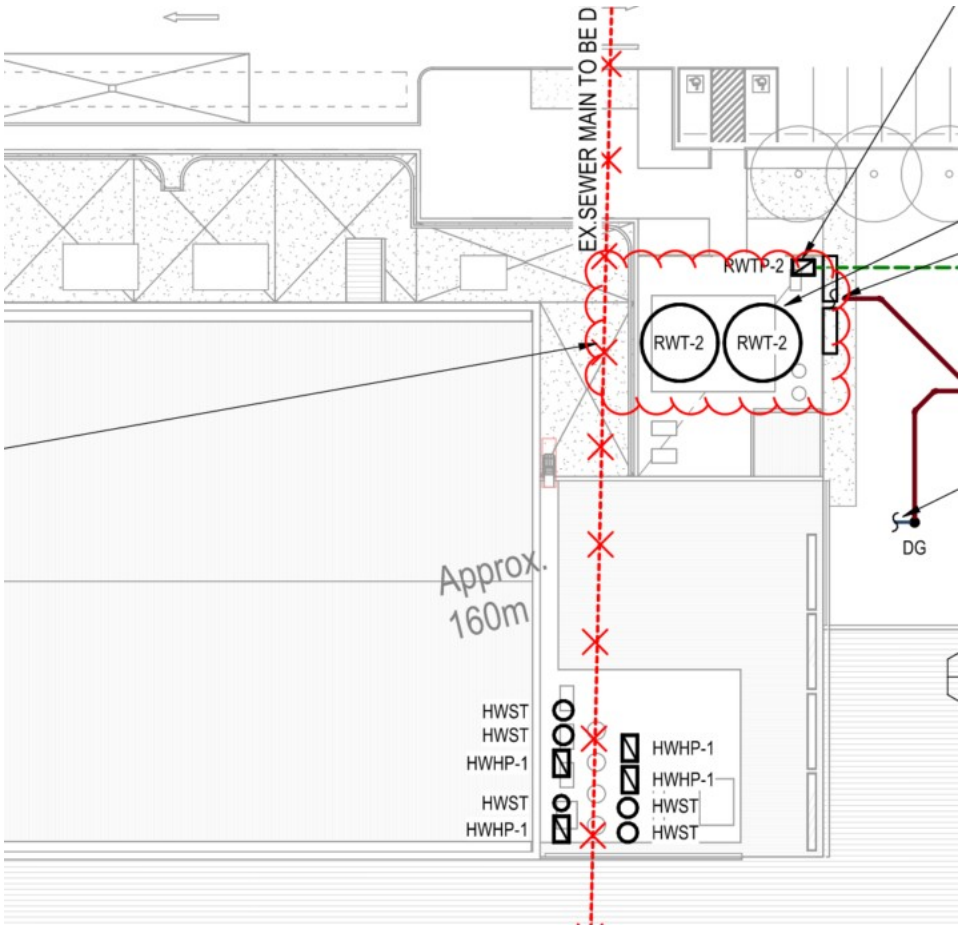
From: Harry Lung <harry.lung@introba.com>
Sent: Thursday, 13 March 2025 4:59 PM
To: Steven Carr
Cc: James Tabban; Elie Damaset; Nicholas Ha; Benjamin Wee
Subject: RE: Tamworth - Hydraulic Information on Rainwater Catchment Areas and Reuse Volumes

Hi Steven and Nicholas,

There is rainwater tank set 1 on the eastern façade shown below. The sizes of the tanks are 2 x 30,000L and the captured area is 2,740m^2.



There is rainwater tank set 2 on the northern shown below. The sizes of the tanks are 2 x 45,000L and the captured area is 3,560m^2.



Please note that we have previously reduce the size of the tanks but council has commented to keep the larger tank volume as much as physically possible.
The water closets and irrigation will be first supplied by the rainwater tanks and back up with domestic cold water. The proposed water demands for water closet is 1,500L/day (event period) and irrigation is 1,650L/day. These numbers will be finalised in 90% set.

Please let us know if any issue.

Thanks,

Harry Lung
Senior Hydraulics Engineer
T +61 294 319 431 | **M** +61 456 219 278

Introba

Designing Living Systems. Transforming Built Environments. Read more about us here.

I work flexibly and may send emails outside of working hours. I don't expect a response or action outside your own working hours.

Appendix D Proprietary Treatment Device Data

FlowFilter

Cartridge filter for tertiary stormwater treatment

atlan.com.au

Atlan® STORMWATER

FlowFilter is a specialist stormwater filtration system that is purpose-built to reduce the footprint of WSUD on constrained projects. Manufactured, designed, and engineered in Australia using fibre-reinforced polymer (FRP) this generational asset is supplied with a 25-year warranty & 100-year design life.

This innovative approach to stormwater treatment uses an up-flow filtration process. With minimal head drop required between inlet and outlet, these devices are suitable for installation on flat sites or low gradient developments. The stormwater is treated within the unit by the following processes: sedimentation, filtration, adsorption, and precipitation.

The FlowFilter has been extensively laboratory and field tested for the removal of pollutants – including heavy metals, total suspended solids (TSS), and nutrients (Phosphorous and Nitrogen).

APPLICATIONS

- Car parks & shopping centres
- Council depots
- Industrial estates
- Heavy vehicle maintenance
- Transport depots & loading bays
- Tunnels
- Highways & transport corridors
- Recycling yards
- Airport aprons & tarmacs

FEATURES

- Manufactured, designed, and engineered in Australia at our FRP production facility.
- Lightweight, easy to install and minimal on-site lifting requirements (no crane required).
- Reduced on-site footprint.
- Up-flow filtration process suitable for flat sites requiring only 250 mm of hydraulic head.
- Scalable sizes with variable cartridge configurations from 1 to 39 filter cartridges.
- SQIDEP testing has verified the capabilities of the filter system for flow rates of 4 LPS (litres per second) per filter cartridge.
- Treatment flow rates from 2.5 litres per second (LPS) to 156 litres per second installed in offline configuration.
- Custom-designed inline systems available.
- Installed in trafficable and non trafficable applications.

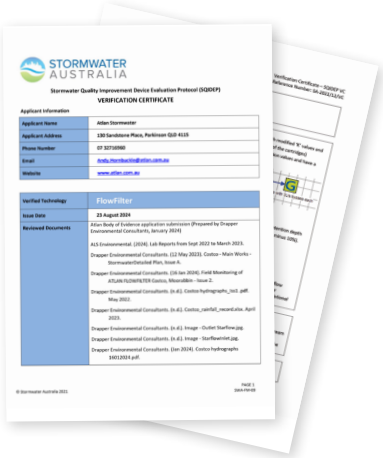
SPECIFICATIONS

MODEL	NO. CARTRIDGE	TFR	ID (m)	HEIGHT (m)	INLET/ OUTLET (mm)
400 SERIES					
HS.400/1	1	2.5 LPS	1.13	1.5	100
HS.400/2	2	5 LPS			
HS.400/3	3	7.5 LPS			
1200 SERIES					
HS.1200/4	4	12 LPS	1.20	2.60	225
1500 SERIES					
HS.1500/4	4	16 LPS	1.50	2.00	225
HS.1500/5	5	20 LPS			
HS.1500/6	6	24 LPS			
1850 SERIES					
SHS.1850/7	7	28 LPS	1.85	2.00	225
2200 SERIES					
HS.2200/7	7	28 LPS	2.20	2.50	225
HS.2200/8	8	32 LPS			
HS.2200/9	9	36 LPS			
2500 SERIES					
HS.2500/10	10	40 LPS	2.50	2.70	300
HS.2500/11	11	44 LPS			
HS.2500/12	12	48 LPS			
HS.2500/13	13	52 LPS			
HS.2500/14	14	56 LPS			
HS.2500/15	15	60 LPS			
HS.2500/16	16	64 LPS			
3000 SERIES					
HS.3000/17	17	68 LPS	3.00	2.85	300
HS.3000/18	18	76 LPS			
HS.3000/19	19	76 LPS			
HS.3000/20	20	80 LPS			
HS.3000/21	20	84 LPS			
3500 SERIES					
HS.3500/22	22	88 LPS	3.50	2.95	375
HS.3500/23	23	92 LPS			
HS.3500/24	24	96 LPS			
HS.3500/25	25	100 LPS			
HS.3500/26	26	104 LPS			
HS.3500/27	27	108 LPS			
HS.3500/28	28	112 LPS			
HS.3500/29	29	116 LPS			
HS.3500/30	30	120 LPS			
HS.3500/31	31	124 LPS			
4000 SERIES					
HS.4000/32	32	128 LPS	4.00	3.25	375
HS.4000/33	33	132 LPS			
HS.4000/34	34	136 LPS			
HS.4000/35	35	140 LPS			
HS.4000/36	36	144 LPS			
HS.4000/37	37	148 LPS			
HS.4000/38	38	152 LPS			
HS.4000/39	39	156 LPS			

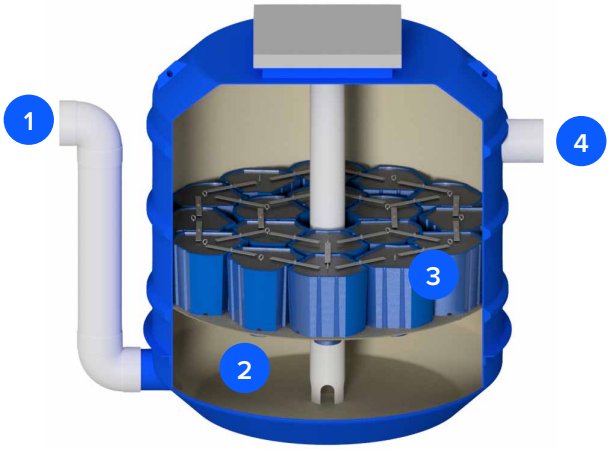
Tested Treatment Efficiencies*

POLLUTANT	EFFICIENCY
Gross Pollutants (GP)	100%
Total Suspended Solids (TSS)	95%
Total Phosphorus (TP)	93%
Total Nitrogen (TN)	45%
Lead (Pb)	90%
Zinc	53%

*Contact Atlan to confirm approved performance for the project LGA



FlowFilter is SQIDEP approved after passing Stormwater Australia's rigorous testing and performance assessment process.

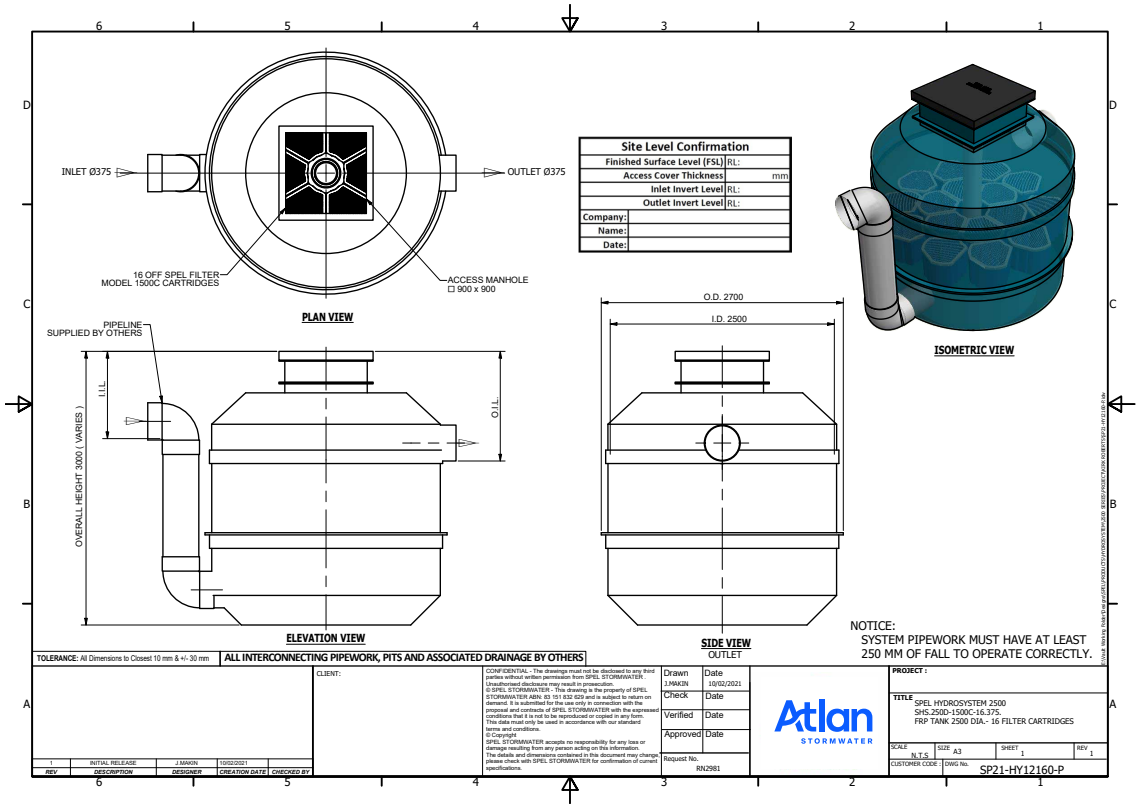


Operating System

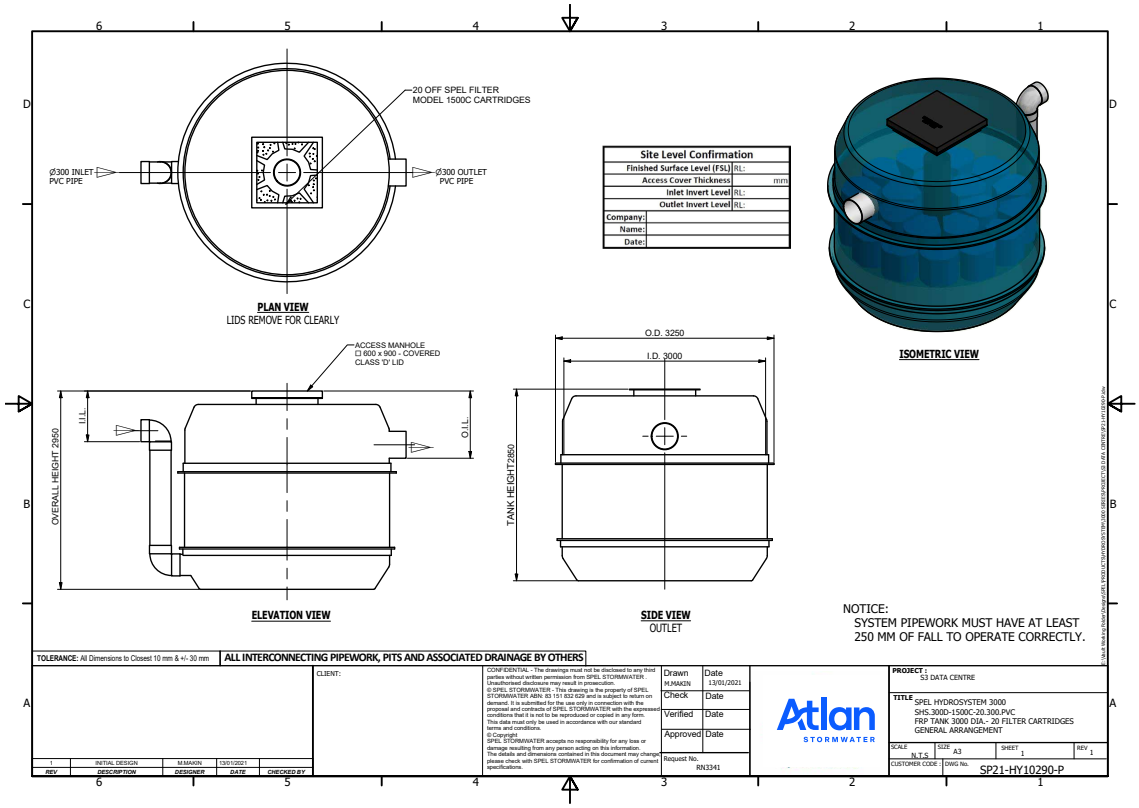
1. Stormwater from catchment enters the offline FlowFilter inlet.
2. Sediment is retained within the sump area.
3. Filter cartridges operate in an up-flow process. The fine sediment is physically removed, and dissolved pollutants are precipitated and adsorptively bound to the filtration media.
4. Treated water flows from cartridges to outlet and into downstream water network.

DRAWINGS

Model HS.2500



Model HS.3000



FlowFilter

Cartridge filter for tertiary stormwater treatment

'We believe clean waterways are a right not a privilege and we work to ensure a Joy in Water experience for you, with your children and grandchildren.'

Andy Hornbuckle

Atlan® STORMWATER

P 1300 773 500 | +61 2 8705 0255 | sales@atlan.com.au
ACT | NSW | NT | QLD | SA | TAS | VIC | WA | NZ
To contact your local branch visit **www.atlan.com.au**

0924