

2668867 Ontario Inc.

# 155 Dun Skipper Drive

# **Design Brief**

December 8, 2025

# 155 Dun Skipper Drive

**Design Brief** City of Ottawa

**Development Application File: D07-12-24-0169** 

December 8, 2025

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## 1 Introduction

# 1.1 Scope

Arcadis Professional Services (Canada) Inc. (Arcadis, formerly IBI Group) has been retained by 2668867 Ontario Inc. to prepare the necessary engineering plans, specifications and documents to support the proposed amended Site Plan Application for the subject property in accordance with the policies set out by the Planning and Development Branch of the City of Ottawa. This Brief will present a detailed grading and servicing scheme to support the Phase 2 site plan adjustment and will include sections on-site grading, water supply, wastewater management, minor and major stormwater management, and erosion and sediment control.

# 1.2 Subject Site

The proposed development is part of the previously approved Leitrim Home Hardware site, which is located at the southwest corner of the Bank Street and Dun Skipper Drive intersection. The approved site plan is approximately 2.5 hectares in size and is also bounded by the Idone subdivision to the south and east. Please refer to **Figure 1.1** below for more information regarding the site location.



Figure 1.1 Subject Site Location

The subject property consists of a Home Hardware building (Building A) and three other proposed buildings (Building B-D) with two vehicular accesses. The approved site plan is included in **Appendix A**. Although the subject site will eventually include four buildings, the property owner plans to phase the site development. The first phase includes only Building A, associated parking, and vehicular connection to both Bank Street and Dun Skipper Drive. Please refer to 119351-001 Site Servicing Plan for Phase 1 limits, included in **Appendix A**. Phase 1 was fully

constructed in 2022. The previous site plan identified Building B as a 500-bed hotel, while the new site plan changed it to a mixed use apartment building (1-bed: 87 units; 2-bed: 36 units; 3-bed: 18 units) with commercial area on the ground floor.

A site plan of the proposed development is included in **Appendix A**.

#### 1.3 Previous Studies

Design of this project has been undertaken in accordance with the following reports:

 Design Brief – Bank Street Development, 4836 Bank Street prepared by IBI Group, April 2019, Revised April 2020

An engineering pre-consultation with the City of Ottawa was held in October 2023 regarding the proposed development. Notes from this meeting is included in **Appendix A**.

#### 1.4 Geotechnical Considerations

Paterson Group Inc. was retained to prepare a geotechnical investigation for the site. The objectives of the investigation were to prepare a report to:

- Determine the subsoil and groundwater conditions at the site by means of test pits and boreholes
- To provide geotechnical recommendations pertaining to the design of the proposed development including construction considerations

The geotechnical investigation report PG2934-1 Dated October 4, 2024 confirmed that the site consists of fill underlain by glacial till. The fill generally consists of silty sand with some gravel. The glacial till underlying the fill consists of compact to very dense, brown to grey silty sand with gravel, cobbles and boulders.

The report contains recommendations which include but are not limited to the following:

- Fill used for grading beneath the proposed development to meet OPSS Granular 'A' or Granular 'B' Type II
  placed in lifts no greater than 300 mm compacted to 98% SPMDD
- Pavement Structures as identified below

Table 1-1 Pavement Structure – Car Only Parking Areas on Podium Deck

Local Road – Parking Areas	Thickness
12.5 Asphaltic Concrete	50 mm
OPSS Granular A Base	200 mm
Thermal Break	Depends on grade of insulation

Table 1-2 Pavement Structure - Access Lanes, Fire Routes and Heavy Truck Parking Areas on Podium Deck

Local Road	Thickness
12.5 Asphaltic Concrete	40 mm
19.0 Asphaltic Concrete	50 mm
OPSS Granular A Base	300 mm
Thermal Break	Depends on grade of insulation

Table 1-3 Pavement Structure - Car Only Parking Areas on Overburden

Local Road – Parking Areas	Thickness
12.5 Asphaltic Concrete	50 mm
OPSS Granular A Base	150 mm
OPSS Granular B Type II Subbase	300 mm

Table 1-4 Pavement Structure – Access Lanes, Fire Routes and Heavy Truck Parking Areas on Overburden

Local Road	Thickness
12.5 Asphaltic Concrete	40 mm
19.0 Asphaltic Concrete	50 mm
OPSS Granular A Base	150 mm
OPSS Granular B Type II Subbase	450 mm

The report contains recommendations which include but are not limited to the following:

- Pipe bedding and cover: The pipe bedding for water and pipes placed on a relatively dry, undisturbed subgrade surface should consist of at least 150 mm of OPSS Granular A material. Where the bedding is located upon silty clay the thickness of the bedding material should be increased to a minimum of 300 mm of OPSS Granular A. The bedding layer should extend to the spring line of the pipe. Cover material, from the spring line to at least 300 mm above the obvert of the pipe should consist of OPSS Granular A. The bedding and cover materials should be placed in maximum 300 mm thick lifts compacted to a minimum of 99% of the material's SPMDD.
- The excavation side slopes above the groundwater level extending to a maximum depth of 3 m should be cut back at 1H:1V or flatter. The flatter slope is required for excavation below groundwater level.

# 2 Water Supply

# 2.1 Existing Conditions

As previously noted, the proposed development is located west of Bank Street and south of Dun Skipper Drive. The subject site is flanked on both the north and east sides by existing watermains. Existing 400mm diameter watermains are included in both Bank Street and Dun Skipper Drive. Both watermains fall within the City of Ottawa's pressure district Zone 4C which will provide the water supply to the site. As part of Phase 1, a 200mm watermain has been built to connect to the existing 400mm watermain in Bank Street and Dun Skipper Drive, to create a looped system to service the site.

## 2.2 Design Criteria

#### 2.2.1 Water Demands

Water demands have been calculated for the development using consumption rates from Table 4.2 of the Ottawa Design Guidelines – Water Distribution. Buildings A, C and D are one or two-storey retail buildings. Building B was identified as a 4-storey hotel with an estimated 500 beds, while the proposed site plan changed to an apartment building (1-bed: 87 units; 2-bed: 36 units; 3-bed: 18 units) with commercial area on the ground floor. A summary of the water consumption rates is as follows:

Commercial Shopping Center 2500 I/1000m<sup>2</sup>/day Other Commercial 28,000 l/gross ha/day Residential 280 I/cap/day 2.1 persons/unit 2 Bedroom Apartment 1 Bedroom Apartment 1.4 persons/unit ICI Average Day Demand 28,000 l/gross ha/day ICI peak Daily Demand 42,000 l/gross ha/day ICI Peak Hour Demand 75,600 l/gross ha/day

A watermain demand calculation sheet is included in **Appendix B** and the total water demands are summarized as follows:

Average Day 0.96 l/s
 Maximum Day 2.26 l/s
 Peak Hour 4.89 l/s

## 2.2.2 System Pressure

The Ottawa Design Guidelines – Water Distribution (WDG001), July 2010, City of Ottawa, Clause 4.2.2 states that the preferred practice for design of a new distribution system is to have normal operating pressures range between 345 kPa (50 psi) and 480 kPa (80 psi) under maximum daily flow conditions. Other pressure criteria identified in Clause 4.2.2 of the guidelines and Fire Underwriters Survey (FUS) 2020 are as follows:

Minimum Pressure Minimum system pressure under peak hour demand conditions shall not be less

than 276 kPa (40 psi)

Fire Flow During the period of maximum day demand, the system pressure shall not be less

than 150 kPa (22 psi) during a fire flow event.

Maximum Pressure In accordance with the Ontario Building/Plumbing Code, the maximum pressure

should not exceed 552 kPa (80 psi). Pressure reduction controls will be required for buildings where it is not possible/feasible to maintain the system pressure

below 552 kPa.

#### 2.2.3 Fire Flow Rates

The subject site plan contains 3 storage buildings (Building A, C & D) and an apartment building with partial commercial ground floor (Building B). Calculations using the Fire Underwriter Survey (FUS) method were conducted to determine the fire flow requirement for Building 'A' in the approved Home Hardware site plan. Results of the calculations show a fire demand of 11,000 l/min (183.3 l/s) for Building 'A'. A copy of the FUS calculations is included in **Appendix B**.

The proposed Building B will fall under Group C and D, residential and commercial shops/Stores occupancy and combustibility. The sprinkler system will be designed and installed in accordance with NFPA-13 requirements. The sprinkler system will be supplied from the city water connection and the demand will be calculated using the hazard classification plus the appropriate inside/outside hose allowances.

Calculations using the Fire Underwriting Survey (FUS version 2020) were conducted to determine the fire flow requirement for the site. Results of the analysis provides a maximum fire flow rate of 10,000 l/min (166.7 l/s) for Building B. Therefore, 11,000 l/min (183.3 l/s) is used for fire flow in the hydraulic analysis. A copy of the FUS calculations is included in **Appendix B**.

## 2.2.4 Boundary Conditions

The City of Ottawa has provided hydraulic boundary conditions at two locations, one at the existing main on Dun Skipper Drive at the entrance to the site and the other is on the existing Bank Street main at the Bank Street entrance. Boundary conditions have been supplied for the 2019 existing conditions and for the future SUC zone reconfiguration. HGL under basic day scenario is higher in pre-SUC condition while peak hour and max day is lower. Therefore, the existing condition Max HGL is used for the basic day analysis to determine the maximum pressure as it represents the highest HGL elevation. For the peak hour and max day plus fire analysis the existing condition is used in the analysis as these represent the lowest HGL elevations. A copy of the boundary conditions is included in **Appendix B** and summarized as follows:

Table 2-1 Hydraulic Boundary Conditions – Dun Skipper Dr. (Pre-SUC Pressure Zone Reconfiguration)

Criteria	Hydraulic Head (m)	Pressure (psi)
Max HGL (Basic Day)	154.6	78.3
Peak Hour	143.9	63.1
Max Day + Fire Flow (11,000 L/m)	125.1	36.3

Ground elevation: 99.5 m

Table 2-2 Hydraulic Boundary Conditions – Bank Street (Pre-SUC Pressure Zone Reconfiguration)

Criteria	Hydraulic Head (m)	Pressure (psi)
Max HGL (Basic Day)	154.6	79.1
Peak Hour	143.9	63.9
Max Day + Fire Flow (11,000 L/m)	124.6	36.4

Ground elevation: 99.0 m

Table 2-3 Hydraulic Boundary Conditions - Dun Skipper Dr. (Post-SUC Pressure Zone Reconfiguration)

Criteria	Hydraulic Head (m)	Pressure (psi)
Max HGL (Basic Day)	147.3	67.9
Peak Hour	144.6	64.1
Max Day + Fire Flow (11,000 L/m)	140.2	57.8

Ground elevation: 99.5 m

Table 2-4 Hydraulic Boundary Conditions – Bank Street (Post-SUC Pressure Zone Reconfiguration)

Criteria	Hydraulic Head (m)	Pressure (psi)
Max HGL (Basic Day)	147.3	68.7
Peak Hour	144.3	64.5
Max Day + Fire Flow (11,000 L/m)	139.2	57.2

Ground elevation: 99.0 m

## 2.2.5 Hydraulic Model

A computer model for the subject site has been developed using the InfoWater Pro program by Autodesk. The model includes the existing watermain and boundary condition at Dun Skipper Drive and Bank Street.

# 2.3 Proposed Water Plan

## 2.3.1 Proposed Water Plan

In order to provide additional reliability to the system in case of a watermain break, two connections to the City's watermain system were proposed and constructed in Phase 1. One proposed connection is to the existing 400 mm watermain within the Dun Skipper Drive right of way and the other proposed connection is to the 400 mm watermain in Bank Street. The approved water plan, Drawing 119351-001 Site Servicing Plan, is included in **Appendix B**. The proposed fire hydrant layout also includes an unobstructed path of no more than 45m between the hydrant and

Siamese connections as required by the Ontario Building Code. Refer to the general plan of services **Drawing C-001** for detailed watermain layout for the proposed development.

#### 2.3.2 Hydraulic Analysis

The hydraulic model was run under basic day conditions to determine the maximum pressure for the site. The minimum pressure for the site is determined in the peak hour analysis using the provided boundary condition. The site are serviced by two connections to the existing 400 mm watermains on Dun Skipper Drive and Bank Street. All watermains are 200 mm diameter except for the 150 mm diameter stubs which services Buildings 'A', 'B' and 'D". There are three fire hydrants, represented by nodes TH-010, TH-030 and T-150 in the model. Nodes TH-010 and TH-030 are adjacent to Buildings 'A' and 'D' with a fire demand of 11,000 l/min, which have been built in Phase 1. Node T-150 is adjacent to Buildings 'B' with a fire demand of 10,000 l/min. An existing hydrant on Dun Skipper Drive also provides fire protection to Building 'B' and is represented by Node S15-300 in the water model. Results of the analysis for the site are summarized in Section 2.3.2. Water model schematic and detailed model results are included in **Appendix B**.

The main level finished floor elevation for Building B will be approximately 100.85m. Under peak hour condition, the hydraulic head is 143.89m. The head difference to the main level is 43.04m which converts to a water pressure inside the building is 422 kPa, which exceeds the minimum requirement of 276 kPa per the City guidelines.

The minimum pressures of 276kPa are not achieved when the floor levels are higher than 14.90m under the peak hour conditions. Therefore, the pressures are not achieved at elevation 115.75m. The 5<sup>th</sup> floor elevation is approximately 114.95m and the 6<sup>th</sup> floor elevation is approximately 118.25m. The minimum pressures are not provided for levels higher than 5<sup>th</sup> floor. Therefore, booster pumps are required and shall be designed by a qualified mechanical engineer at building permit stage.

## 2.3.3 Modeling Results

The hydraulic model was run under basic day, maximum day with fire flows and under peak hour conditions. Results of the hydraulic model are included in **Appendix B** and summarized as follows:

•	Basic Day (Max HGL) Pressure Range (kPa)	510.54 - 542.39
•	Peak Hour (Min HGL) Pressure Range (kPa)	405.64 - 437.53
•	Fire Flow @ 11,000 L/min Residual Pressure (kPa)	168.21 – 199.61
•	Residual Pressure @ 150 kPa Available Fire Flow (I/s)	209.22 - 330.22

A comparison of the results and design criteria is summarized as follows:

Maximum Pressure	No nodes in basic day scenario exceed 552 kPa (80 psi), therefore no pressure reducing
	4 1

control is required for the buildings in this development.

Minimum Pressure All nodes in the model exceed the minimum value of 276 kPa (40 psi). Considering this is

a 9-storey apartment building, the water pressure at the  $6^{th}$  to 9th levels drop below the minimum pressure. Therefore, booster pumps are required for the proposed building.

Fire Flow The minimum design fire flow under maximum day conditions with minimum system

pressure of 150 kPa is 209.22 l/s for retail which exceeds the requirement of 183.3 l/s

(11,000 l/min) from Section 2.3.3.

# 3 Wastewater Disposal

## 3.1 Existing Conditions

The subject site is located within the Leitrim Development Area where sanitary flows ultimately outlet to the Leitrim Sanitary Pumping Station. As part of the adjacent downstream developments, the outlet sanitary sewer system for the subject site was completed. A 200mm diameter sanitary sewer in Dun Skipper Drive was constructed as part of the Pathways Phase 1 project. That sewer (at MH1A) was also sized for the upstream Idone commercial lands. To service Building A (Home Hardware) in Phase 1, a 200mm diameter sanitary sewer has been built within the site. A copy of the sanitary sewer design sheet and drainage area plan for the approved overall site 119351-400 can be found in **Appendix C**.

# 3.2 Design Criteria

The sanitary sewers for the subject site will be based on the City of Ottawa design criteria. It should be noted that the sanitary sewer design for this study incorporates the latest City of Ottawa design parameters identified in Technical Bulletin ISTB-2018-01. Some of the key criteria will include the following:

Average commercial flow = 28,000 l/s/ha

• Peak ICI flow factor = 1.5 if ICI area is > 20% total area

1.0 if ICI area is ≤ 20% total area

Inflow and Infiltration Rate = 0.33 l/s/ha

Minimum Full Flow Velocity = 0.60 m/s

Maximum Full Flow Velocity = 3.0 m/s

Minimum Pipe Size = 250 mm diameter (for ICI lands per OSDG)

## 3.3 Recommended Wastewater Plan

The on-site sanitary system will consist of a network of 200mm PVC sewers installed at normal depth and slope and will provide a single service connection to each commercial building. The sewers have been designed using the criteria noted above in Section 3.2 and outlet via a connection to the sanitary sewer (*EXMH6138A*) within the Dun Skipper Drive right of way. The Dun Skipper sanitary sewer was designed assuming 4.07 Ha of commercial lands from the subject site, including upstream Idone commercial property, with a total flow of 4.67 l/s. As noted previously, Building B was originally approved as a 500-bed hotel. The proposed new building will include less units (141 units in total) and less building area. This site generates approximately 6.23 l/s. The minor (1.56 l/s) increase in flow to MH 6138A has negligible impact on the system as it has over 76% spare capacity up to MH 6136A.

A copy of the sanitary sewer design sheet can be found in **Appendix C.** Please refer to the General Plan of Services **Drawing C-001** for further details.

# 4 Site Stormwater Management

## 4.1 Existing Conditions

The 2016 Updated Serviceability Report recommended that the subject site and the upstream Idone commercial site be serviced with a 1350 mm diameter minor storm sewer. That sewer was constructed in 2017 as part of the downstream Pathway Phase 1 development and is presently terminated near the north-east corner on the subject site.

As noted previously, the subject development will be sub phased. The first phase has been fully constructed, which include Building A, associated parking, and vehicular connection to both Bank Street and Dun Skipper Drive. A 750 mm diameter storm sewer was built near the Dun Skipper Drive driveway access, and extended throughout the site to the upstream Idone commercial site. Phase 2 will only include Building B and associated parking.

## 4.2 Design Criteria

IBI Group completed the municipal infrastructure design for the Pathways Phase 1 development. That design included a review of the allowable flow from the subject site including the adjacent Idone commercial property. The "Pathways" design assumed that the allowable minor storm release rate for the two commercial sites was 760 I/s and that the 1:100 year storm event would be self-contained with no overflow to adjacent properties. The emergency overflow for events greater than the 1:100 year event would be directed to Bank Street.

The stormwater system was designed following the principles of dual drainage, making accommodations for both major and minor flow.

Some of the key criteria include the following:

Design Storm 1:2 year return (Ottawa)Rational Method Sewer Sizing 1:2 year return (Ottawa)

Initial Time of Concentration
 10 minutes

Runoff Coefficients

Landscaped AreasC = 0.20Asphalt/ConcreteC = 0.90RoofC = 0.90

Pipe Velocities
 Minimum Pipe Size
 250 mm diameter
 (200 mm CB Leads)

## 4.3 Proposed Minor System

Using the criteria identified in Section 4.2, the proposed on-site storm sewers were sized accordingly. A detailed storm sewer design sheet and the associated Storm Sewer Drainage Area plan (drawing 119351-500) for the overall site are both included in **Appendix D**. The overall Site Servicing Plan (drawing 119351-001), depicting all on-site storm sewers can be found in **Appendix A**.

The proposed minor storm sewers will range in size between 250 mm diameter and 450 mm diameter in Phase 2. The minor storm sewer outlet will be via the 750 mm diameter pipe which ultimately connects to the existing 1350 mm diameter storm sewer in Dun Skipper Drive.

The 1350 mm diameter storm sewer in Dun Skipper Drive ultimately outlets to the Findlay Creek Village SWMF. This facility provides 80% TSS removal, as such no additional on-site stormwater quality control is required within the subject lands.

A detailed storm sewer design sheet and the associated storm sewer drainage area plan is included in **Appendix D**. The General Plan of Services, depicting all on-site storm sewers can be found in **Appendix A**.

# 4.4 Stormwater Management

The subject site will be limited to a release rate established using the criteria described in section 4.2. This will be achieved through a combination of inlet control devices (ICD's) at inlet locations and surface storage.

Flows generated that are in excess of the site's allowable release rate will be stored on site in strategic surface storage areas or by the use of roof top storage and gradually released into the minor system so as not to exceed the site's allocation.

The maximum surface retention depth located within the developed areas will be limited to 300mm during a 1:100 year event as shown on the ponding and grading plans located in **Appendix D**.

Overland flow routes will be provided in the grading to permit emergency overland flow, in excess of the 100-year event, from the site.

At certain locations within the site, the opportunity to store runoff is limited due to grading constraints and building geometry. These locations are generally located at the perimeter of the site where it is necessary to tie into public boulevards and adjacent properties or in areas where ponding stormwater is undesirable. The area west of building D (Drainage Area MH6136), will flow uncontrolled to the Dun Skipper right-of-way. This uncontrolled area – 0.01 hectares in total, have an average C value of 0.5 (x1.25 as per City Comment). Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 3.10 l/s runoff (refer to Section 4.5 for the calculation). Another uncontrolled area along north and east property side, adjacent to Building B (Drainage Area UNRES) – 0.05 hectares in total, have an average C value of 0.9 (x1.25, maximum 1.0 as per City Comment). Based on 1:100 year storm uncontrolled flows, the uncontrolled areas generate 24.82 l/s runoff (refer to Section 4.5 for the calculation).

The site grading and ponding has been designed to control water generated during the 1:100-year event, with no overflow leaving the site. Please refer to the SWM calculations in **Appendix D**.

#### 4.5 Inlet Control

The allowable 2-year post-development release rate for the 2.49 Ha site can be calculated as follows:

Q<sub>allowable</sub> = 760 L/s as per IBI Pathways Phase 1 Report – EXT 4 drainage area

Total Area EXT 4 = 4.04 Ha

Subject Land share = 62% of EXT4 release rate (2.5 Ha / 4.04 Ha = 0.62)

Qallowable subject land = 468.42 L/s

As noted in Section 4.4, the landscaped area along the west property line will drain offsite uncontrolled.

Based on a 100-year event, the flow from the 0.01 Ha uncontrolled area MH6136 can be determined as:

Quncontrolled =  $2.78 \times C \times i_{100yr} \times A$  where:

**C** = Average runoff coefficient of uncontrolled area = 0.50

i<sub>100yr</sub> = Intensity of 100-year storm event (mm/hr)

= 1735.688 x  $(T_c + 6.014)^{0.820}$  = 178.56 mm/hr; where  $T_c$  = 10 minutes

**A** = Uncontrolled Area = 0.01 Ha

Therefore, the uncontrolled release rate can be determined as:

 $Q_{uncontrolled} = 2.78 \times 1.25C \times i_{100yr} \times A$ 

 $= 2.78 \times 1.25 \times 0.50 \times 178.56 \times 0.01$ 

= 3.10 L/s

The flow from the uncontrolled area UNRES to the north and east side of Building B can be determined as:

 $\mathbf{Q}_{\text{uncontrolled}} = \mathbf{2.78} \times \mathbf{C} \times \mathbf{i}_{100\text{yr}} \times \mathbf{A}$ 

 $= 2.78 \times 1.0 \times 178.56 \times 0.05$ 

= 24.82 L/s

The maximum allowable release rate from the remainder of the site can then be determined as:

Q<sub>max allowable</sub> = Q<sub>restricted</sub> - Q<sub>uncontrolled</sub>

= 468.42 L/s - 3.10 L/s - 24.82 L/s

= 440.49 L/s

Based on the flow allowance at the various inlet locations, a combination of various sizes of inlet control devices (ICDs) were chosen for the design. The design of the inlet control devices is unique to each drainage area and is determined based on several factors, including hydraulic head and allowable release rate. The inlet control devices were sized according to the manufacturer's design charts. The restrictions will cause the on-site catch basins and manholes to surcharge, generating surface ponding in the parking and landscaped areas. Ponding locations and elevations are summarized on the Ponding Plan **Drawing C-600**, and included in **Appendix D**.

#### 4.6 On-Site Detention

Any excess storm water up to the 100-year event is to be stored on-site to avoid surcharging the downstream municipal storm sewer system. Detention will be provided in parking and landscape areas and building rooftops, where feasible. As previously noted, the volume of storage is dependent on the characteristics of each individual drainage area and the ICDs were chosen accordingly. It should be noted that 0.30m of vertical separation has been provided from all maximum ponding elevations to lowest building openings. Stormwater management and on-site underground storage volume calculations, and manufacturers spec sheets are included in **Appendix D**.

#### 4.6.1 Site Inlet Control

The following Table summarizes the on-site storage requirements during 1:100-year events.

Table 4-1 Post-Development Storage Summary Table

Drainage Area	ICD Structure Location	Tributary Area (Ha)	Restricted Flow (L/s)	Storage Required (m³)	Storage Provided (m³)  Surface Underground Total		m³)
	Location	(Па)	100-year	100-year			Total
МН9/МН9В	МН8	0.14	10	44.84	20.64	10.07	30.71
MH8	CB1	0.17	16	43.02	50.59	5.58	56.17
MH5B	CB16	0.01	6	1.56	0.31	0.00	0.31
MH5A	CB17	0.09	9	25.47	0.84	5.10	5.94
CB20	CB20	0.12	15	30.02	12.51	0.00	12.51
MH22	MH22	0.06	6	4.00	2.87	46.61	49.48
CB24	CB24	0.10	15	22.31	0.00	0.00	0.00
CB25	CB25	0.02	6	2.36	0.27	0.00	0.27
MH21	MH21	0.24	33	81.05	11.79	96.68	108.47
MH1D	CB10	0.11	45	8.77	6.81	0.00	6.81
CBMH2	CBMH2	0.08	20	11.83	6.21	0.00	6.21
CBMH1C	CB7	0.08	30	7.30	6.97	0.00	6.97
CBMH1B	CB6	0.07	20	9.01	13.66	0.00	13.66
CBMH1A	CB5	0.06	15	8.87	3.41	0.00	3.41
MH1B	CB8	0.17	47	22.66	24.90	1.60	26.5
MH10A	CB4	0.03	6	5.42	10.62	0.00	10.62
MH10B	CBMH1	0.08	20	11.83	0.00	0.00	0
MH1A	СВ9	0.15	43	19.23	10.83	0.00	10.83
CBMH20	CBMH20	0.10	15	32.84	131.62	0.00	131.62
TOTAL		1.88	<u>377</u>	392.39	<u>314.85</u>	<u>165.64</u>	480.49

<sup>\*</sup> Existing (italic) and future (bold) drainage areas are grey hatched.

### 4.6.2 Roof Inlet Controls

The proposed buildings will have roof inlet controls that help to control the amount of stormwater being released into the system. The restricted flow rate for the proposed building is shown below.

Table 4-2 Post-Development Roof Storage Summary Table

Roof	Tributary	100-Year Storm				
Area	Area	Restricted Flow (L/s)	Required Storage (m³)	Storage Provided (m³)		
Building A	0.30	27.0	89.56	90.00		
Building B	0.19	20.0	52.35	57.00		
<b>Building C</b>	0.05	8.0	10.68	13.50		
<b>Building D</b>	0.05	8.0	10.68	11.25		
TOTAL	<u>0.62</u>	<u>63.0</u>	<u>163.27</u>	<u>171.75</u>		

<sup>\*</sup> Existing (italic) and future (bold) drainage areas are grey hatched.

#### 4.6.3 Overall Release Rate

As noted above, the site uses new inlet control devices to restrict the 100 year storm event to the criteria approved by the City of Ottawa. Restricted stormwater will be contained onsite by utilizing surface ponding, in structure/pipe and rooftop storage. In the 100 year event, there will be no off-site overflow.

The sum of restrictions on the site, rooftops and uncontrolled flows is 467.92 l/s (377 l/s + 63.00 l/s + 3.10 L/s +24.82 l/s), which is less than the allowable release of 468.42 l/s noted in section 4.6.

# 4.7 Underground Storage

Due to the site's constraints and the stormwater management plan, underground storage was deemed the best option to contain the 100-year storm event on site. The table below summarizes underground storage, and additional information about the underground storage structures is found in **Appendix D.** 

Table 4-3 Underground Storage Summary Table

Storage Name	Structure Type	Storage Provided (m³)
MH22	Clear Stone Gallery	43.01
MH21	Stormtech SC-310 or approved equivalent Plus the storage pipe and structures	88.64

The overall site plan was approved in 2022, and 100+20% stressed test analysis was not provided. Building B follows the overall site plan design standards, and 0.3m free board are provided throughout the site. The site grading and ponding has been designed to control water generated during the 1:100-year event, with no overflow leaving the site.

As noted in Section 4.4, the 1350 mm diameter storm sewer in Dun Skipper Drive ultimately outlets to the Findlay Creek Village SWMF. This facility provides 80% TSS removal, as such no additional on-site stormwater quality control is required within the subject lands.

#### 4.8 Interim conditions

During interim conditions, flows from future development lands at the site's southeast corner will be directed into the dry pond, including the areas from phases 1 & 2 that drain towards the future lands. The total area is calculated to be 0.57 ha, with an average C of 0.56. Refer to Interim Storm Drainage Area Plan C-501 for details. The roof area of the proposed Building B will be restricted to a flow rate of 20 L/s. Roof area storage is summarized in Table 4-4.

Table 4-4 Post-Development Roof Storage Summary Table

Roof	Tributary	100-Year Storm				
Area	Area	Restricted Flow (L/s)	Storage Provided (m³)			
Building A	0.30	27.0	89.56	90.00		
Building B	0.19	20.0	52.35	57.00		
TOTAL	0.49	<u>47.0</u>	<u>141.91</u>	<u>147.00</u>		

<sup>\*</sup> Building A is the existing Home Hardware building.

The permanent ICD will be installed for CBMH20, with a release rate of 15 L/s. Table 4-5 below provides detailed calculations for the storage required during interim conditions for a 100-year event. Table 4.6 summarizes the onsite storage requirements during 1:100-year events.

Table 4-5 100-Year Storage Calculation for Interim Conditions

Drainage Area	CBMH20		Interim Cond	litions			
Area (Ha)	0.57						
C =	0.56	Restricted Flow Q <sub>r</sub> (L/s)	=	15.00			
	100-Year Ponding						
T <sub>c</sub>	i	Peak Flow	Qr	$Q_p$ - $Q_r$	Volume		
Variable	<b>i</b> 100yr	$Q_p = 2.78 x Ci_{100 yr} A$	Q <sub>r</sub>	<b>Q</b> p <b>-Q</b> r	100yr		
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)		
49	64.91	57.60	15.00	42.60	125.23		
50	63.95	56.75	15.00	41.75	125.25		
51	63.03	55.93	15.00	40.93	125.26		
52	62.14	55.14	15.00	40.14	125.24		
53	61.28	54.37	15.00	39.37	125.21		
	Storage (m³)						
	Overflow	Required	Surface	Sub-surface	Balance		
	29.75	155.01	173.14	0.00	0.00		

Table 4-6 Post-Development Storage Summary Table for Interim Conditions

Drainage Area	ICD Structure Location	Tributary Area (Ha)	Restricted Flow (L/s)	Storage Required (m³)	Storage Provided (m³)		m³)
	Location	(Па)	100-year	100-year	Surface	Underground	Total
МН9/МН9В	MH8	0.14	10	44.84	20.64	10.07	30.71
MH8	CB1	0.17	16	43.02	50.59	5.58	56.17
MH5B	CB16	0.01	6	1.56	0.31	0.00	0.31
MH5A	CB17	0.09	9	25.47	0.84	5.10	5.94
CB20	CB20	0.12	15	30.02	12.51	0.00	12.51
MH22	MH22	0.06	6	4.00	2.87	46.61	49.48
CB24	CB24	0.10	15	22.31	0.00	0.00	0.00
CB25	CB25	0.02	6	2.36	0.27	0.00	0.27
MH21	MH21	0.24	33	81.05	11.79	96.68	108.47
CBMH2	CBMH2	0.08	20	11.83	6.21	0.00	6.21
CBMH1C	CB7	0.08	30	7.30	6.97	0.00	6.97
CBMH1B	CB6	0.07	20	9.01	13.66	0.00	13.66
CBMH1A	CB5	0.06	15	8.87	3.41	0.00	3.41
MH10A	CB4	0.03	6	5.42	10.62	0.00	10.62
MH10B	CBMH1	0.08	20	11.83	0.00	0.00	0
CBMH20	CBMH20	0.53	15	128.26	173.14	0.00	173.14
TOTAL		1.88	<u>242</u>	<u>437.15</u>	<u>313.83</u>	<u>164.04</u>	<u>477.87</u>

<sup>\*</sup> Existing drainage areas are grey hatched.

During interim conditions, the total restrictions on the site, rooftops and uncontrolled flows is 316.92 l/s (242 l/s + 47.00 l/s + 3.10 L/s +24.82 l/s), which is less than the allowable release of 468.42 l/s noted in section 4.6. The interim site grading and ponding have been designed to control water generated during the 1:100-year event, with no overflow leaving the site. Interim Grading Plan C-201, Interim Storm Drainage Area Plan C-501 and Interim Ponding Plan C-601 are included in **Appendix D**.

# 5 Grading and Roads

## 5.1 Site Grading

The existing grades within portions of the proposed development lands vary significantly due to the existing topography of the site. The grading plan will require the balancing of various requirements including but not limited to geotechnical constraints, minimum/maximum slopes, overland routing of stormwater, all to ensure the site is graded in accordance with municipal and accessibility standards.

Refer to the grading plan provided in **Appendix E**.

In order to meet the stringent stormwater management criteria, every effort was made to reduce uncontrolled discharge from the site. In landscape areas where typical 2-7% grading cannot be met, 3:1 maximum terracing has been utilized to tie the proposed grading into existing.

#### 5.2 Road Network

No public roads are proposed through the site. A minimum 9.0m wide drive aisle has been provided, as shown on the Site Plan in **Appendix A.** An internal Fire route has been shown where fire truck access is required, as determined by the site architect.

There are a total of 387 parking stalls provided, including 160 parking stalls for Building A & D, 194 for Building B and 33 for Building C. A total of 7 barrier-free parking stalls are provided for the proposed Building B.

Pedestrian access facilities are provided in the unsecured area of the site nearest to Bank Street and Dun Skipper Drive, which provide access to the building.

A bicycle parking facility has been proposed adjacent to each building entrance where feasible.

Earthbin (or similar approved type) garbage facilities have been provided throughout.

Noise attenuation features and indoor noise clause provisions will not be required for commercial use lands for road noise generated by the adjacent roads.

#### 6 Source Controls

#### 6.1 General

Since an end of pipe treatment facility is already provided for the development lands, stormwater site management for the subject lands will focus on site level or source control management of runoff. Such controls or mitigative measures are proposed for this development not only for final development but also during construction and build out. Some of these measures are:

- Flat site grading where possible
- Vegetation planting
- Groundwater recharge in landscaped areas

# 6.2 Lot Grading

Where possible, all of the proposed blocks within the development will make use of gentle surface slopes on hard surfaces such as asphalt and concrete. In accordance with local municipal standards, all grading will be between 0.5 and 5.0 percent for hard surfaces and 2.0 and 7.0 percent for all landscaped areas. Significant grade changes will be accomplished through the use of terracing (3:1 max slope), ramps and/or retaining walls. All street and parking lot catch basins shall be equipped with 3.0m subdrains on opposite sides of a curbside catch basin running parallel to the curb, and with 3.0m subdrains extending out from all 4 sides of parking lot catch basins.

## 6.3 Vegetation

As with most site plans, the developer will be required to complete a vegetation and planting program. Vegetation throughout the development including planting along roadsides and within the individual blocks provides opportunities to re-create lost vegetation.

## 6.4 Groundwater Recharge

Groundwater recharge targets have not been identified for this site. Perforated sub-drain systems will be implemented at capture locations in all vegetated areas. This will promote increased infiltration during low flow events before water is collected by the storm sewer system.

# 7 Conveyance Controls

#### 7.1 Generals

Besides source controls, the development also proposes to use several conveyance control measures to improve runoff quality. These will include:

- Vegetated swales
- Catch basin sumps and manhole sumps

# 7.2 Catch basins and Maintenance Hole Sumps

All catch basins within the development, either rear yard or street, will be constructed with minimum 600 mm deep sumps. These sumps trap pollutants, sand, grit and debris which can be mechanically removed prior to being flushed into the minor pipe system. Both rear yard and street catch basins will be to OPSD 705.02. All storm sewer maintenance holes serving local sewers less than 900 mm diameter shall be constructed with a 300 mm sump as per City standards.

## 8 Sediment and Erosion Control Plan

#### 8.1 General

During construction, existing stream and conveyance systems can be exposed to significant sediment loadings. Although construction is only a temporary situation, it is proposed to possibly introduce a number of mitigative construction techniques to reduce unnecessary construction sediment loadings. These may include:

- Until the local storm sewer is constructed, groundwater in construction trenches shall be pumped into a filter mechanism prior to release to the environment
- Vegetated swale sediment capture filter socks will remain on open surface structures such as maintenance holes and catch basins until these structures are commissioned and put into use
- Silt fence on the site perimeter will be installed

## 8.2 Trench Dewatering

Any trench dewatering using pumps will be discharged into a filter trap made up of geotextile filters and straw bales similar in design to the OPSD 219.240 Dewatering Trap. These will be constructed in a bowl shape with the fabric forming the bottom and the straw bales forming the sides. Any pumped groundwater will be filtered prior to release to the existing surface runoff. The contractor will inspect and maintain the filters as needed, including sediment removal and disposal and material replacement as needed. It should be noted that that the contractor will be responsible for the design and management of the trap(s).

## 8.3 Seepage Barriers

In order to further reduce sediment loading to the stormwater management facility, seepage barriers will be installed on any surface water courses at appropriate locations that may become evident during construction. These barriers will be Light Duty Straw Bale Barriers per OPSD 219.100 and Heavy-Duty Silt Fence Barriers per OPSD 219.130; locations are shown on the Sediment and Erosion Control Plan included in **Appendix E**. They are typically made of layers of straw bales or geotextile fabric staked in place. All seepage barriers will be inspected and maintained as needed.

## 8.4 Surface Structure Filters

All catch basins, and to a lesser degree, manholes, convey surface water to sewers. Until streets are asphalted and curbed, all catch basins and manholes will be constructed with sediment capture inserts or equivalent located between the structure frame and cover. These will stay in place and be maintained during construction and build until it is appropriate to remove same.

# 9 Conclusion

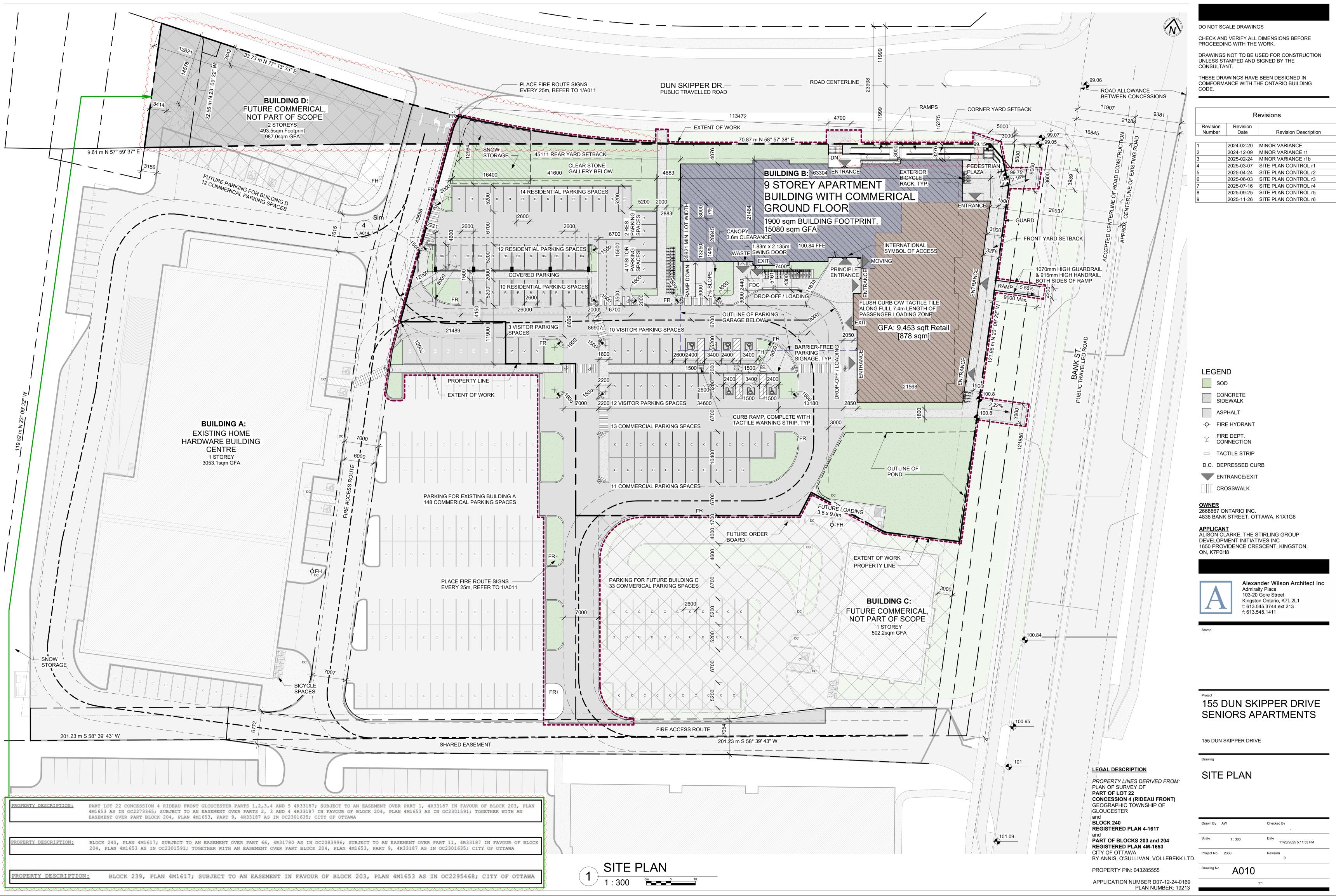
This report and the accompanying working drawings clearly indicate that the proposed development meets the requirements of the stakeholder regulators, including the City of Ottawa, provincial MECP and SNC. The proposed development is in general conformance with the recommendations of both the 2016 Updated Serviceability Report and the Pathways Phase 1 design.

There is a reliable water supply available adjacent to the proposed development; a wastewater outlet is available adjacent to the site; local storm sewers have been installed adjacent to the site and an expansion to the existing Findlay Creek Village Stormwater Facility has been constructed to collect and treat runoff from the subject site.

Based on the information provided within this report, the plans prepared for the subject development can be serviced to meet City of Ottawa requirements.

# **Appendix A**

- Site Plan
- Site Servicing Plan 148290-C-001
- AOV Legal Plan
- Site Servicing Plan 119351-C-001
- Pre-Consultation City Comments
- Study and Plan Identification List



Location of C Explore o

Two Storeys 3x9 Corner

Show rest of

Dimension di

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Separate

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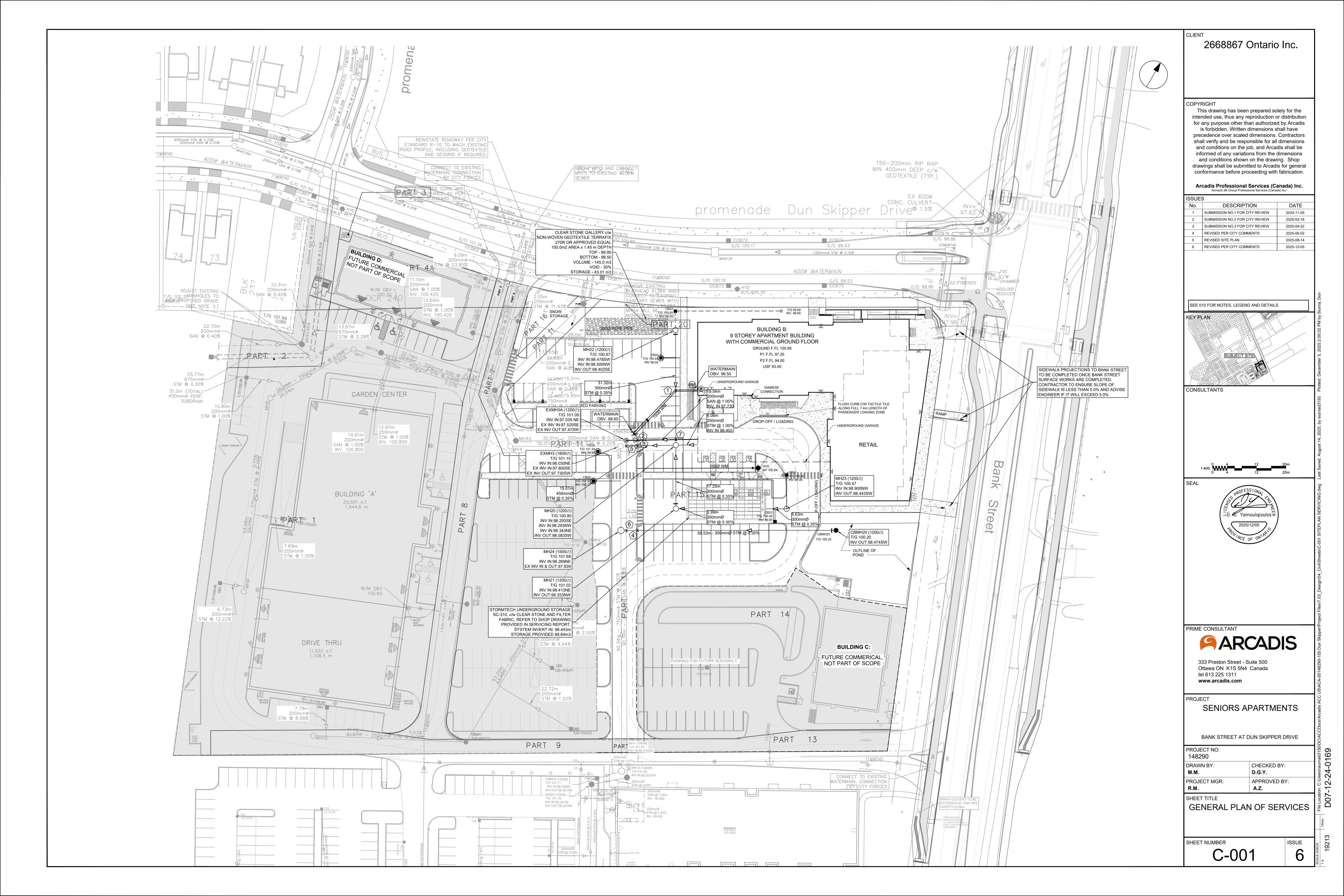
Add load

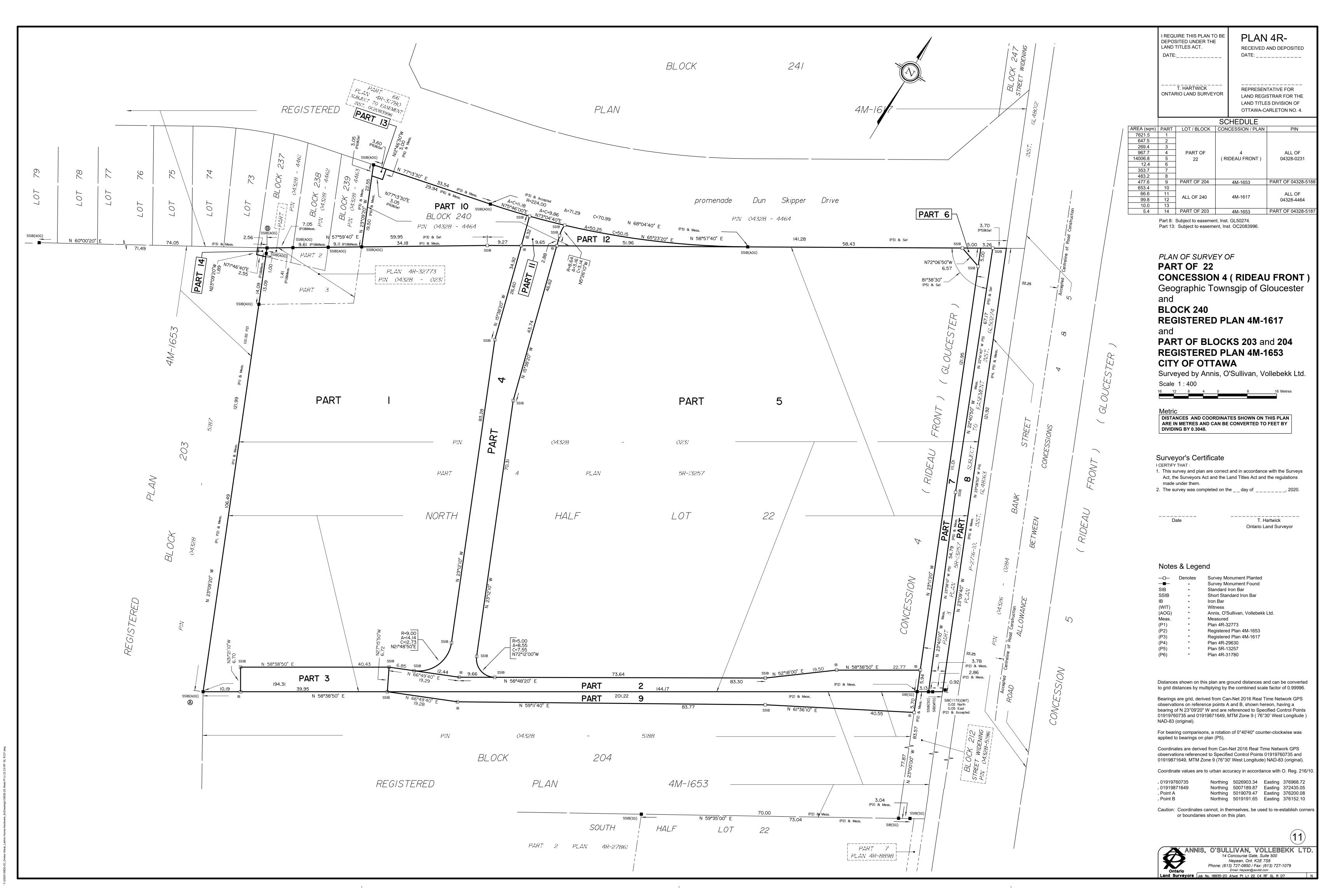
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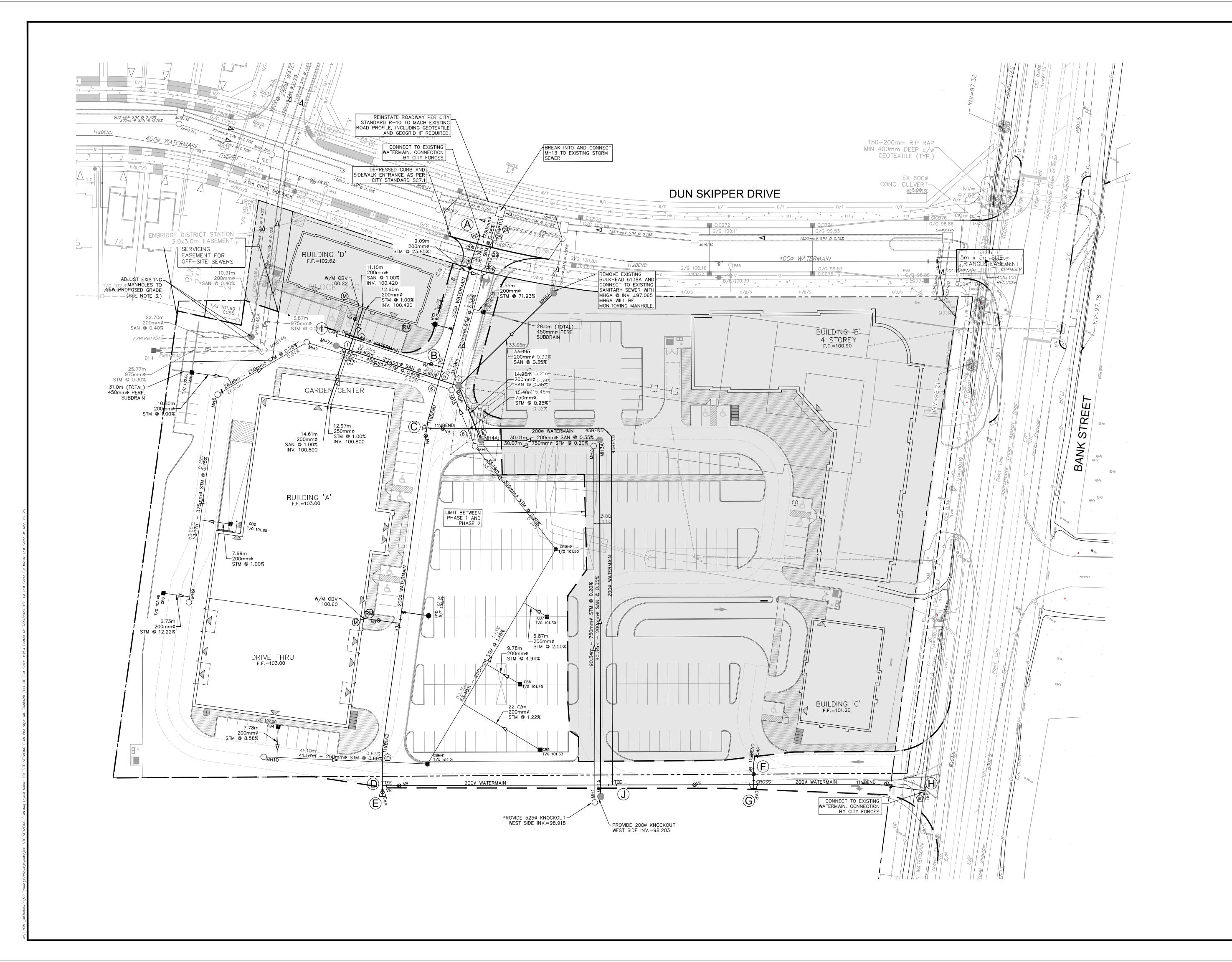
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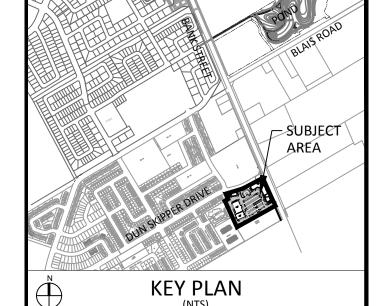
Dog wash

Provide E









NOTES:

1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND

2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.

3.0 EXISTING SANITARY MANHOLE - MH6146A AS-BUILT F/C = 102.019 TO BE ADJUSTED TO ±102.160

EXISTING STORM MANHOLE - MH61646 AS-BUILT F/C = 102.018

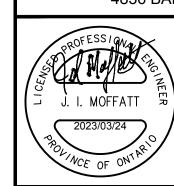
TO BE ADJUSTED TO ±102.24.

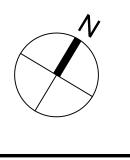
13			
12			
11			
10	RELOCATED SEWERS AND WM IN PHASE 2	JIM	2023:03:24
9	RECORD DRAWINGS (PHASE 1)	JIM	2022:08:19
8	ADD PHASING	JIM	2020:06:23
7	REVISED AS PER CITY COMMENTS	JIM	2020:04:20
6	REVISED AS PER CITY COMMENTS	JIM	2020:04:02
5	ISSUED FOR TENDER	JIM	2020:03:18
4	REVISED AS PER CITY COMMENTS	JIM	2020:03:13
3	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15
No.	REVISIONS	Ву	Date

IBI GROUP 400 – 333 Preston Street Ottawa ON K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com

Project Title

**BANK STREET** DEVELOPMENT 4836 BANK STREET





SITE SERVICING PLAN

1:400

Design SEL	Date FEB. 2019
Drawn DPS	Checked JIM
Project No.	Drawing No.
119351	001



File No.: PC2023-0272

Alison Clarke The Stirling Group

Via email: alison@tsgdi.ca

Subject: Pre-Consultation: Meeting Feedback – Phase 1

**Proposed Complex Site Plan Application** 

**155 Dun Skipper Drive** (formerly 4836 Bank Street)

Please find below information regarding next steps as well as consolidated comments from the above-noted pre-consultation meeting held on October 26, 2023.

#### **Pre-Consultation Preliminary Assessment**

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One (1) indicates that considerable major revisions are required while five (5) suggests that the proposal appears to meet the City's key land use policies and guidelines. This assessment is purely advisory and does not consider technical aspects of the proposal or in any way guarantee application approval.

#### **Next Steps**

- 1. A review of the proposal and materials submitted for the above-noted pre-consultation has been undertaken. Please proceed to complete a Phase 2 Pre-consultation Application Form and submit it together with the necessary studies and/or plans to <a href="mailto:planningcirculations@ottawa.ca">planningcirculations@ottawa.ca</a>.
- 2. In your subsequent pre-consultation submission, please ensure that all comments or issues detailed herein are addressed. A detailed cover letter stating how each issue has been addressed must be included with the submission materials. Please coordinate the numbering of your responses within the cover letter with the comment number(s) herein.
- 3. Please note, if your development proposal changes significantly in scope, design, or density before the Phase 3 pre-consultation, you may be required to complete or repeat the Phase 2 pre-consultation process.

#### **Supporting Information and Material Requirements**

- 1. The attached **Study and Plan Identification List** outlines the information and material that has been identified, during this phase of pre-consultation, as either <u>required</u> (R) or <u>advised</u> (A) as part of a future complete application submission.
  - a. The required plans and studies must meet the City's Terms of Reference (ToR) and/or Guidelines, as available on <a href="Ottawa.ca">Ottawa.ca</a>. These ToR and Guidelines outline the specific requirements that must be met for each plan or study to be deemed adequate.

#### **Consultation with Technical Agencies**

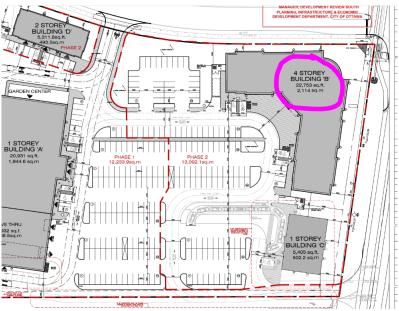


1. You are encouraged to consult with technical agencies early in the development process and throughout the development of your project concept. A list of technical agencies and their contact information is enclosed (Appendix A).

#### Overview Discussion

- 1. Previous Site Plan Approval for the site (D07-12-19-0092) from 2019 for the entire site of 4836 Bank Street. Building A (Home Hardware) has been constructed and is in operation.
- 2. The proposal is for Building B which was previously shown as a 4-storey hotel, and is now being shown as an apartment building, geared to seniors (8-storeys, 145 units, surface and u/g parking)
- 3. Applicant has indicated that they will require a MV for an increase in height (GM [2615]





Previously approved 4-storey hotel proposal.





Oct 25, 2023 - current proposal for 8-storey apartment building



Updated Rendering, Oct 25, 2023



#### Planning (Katie O'Callaghan, Tracey Scaramozzino)

#### Policies and provisions:

- 1. In the Official Plan, the subject property is in the Suburban Transect, which has a planned pattern to enhance mobility options, street connections and evolve towards the 15-minute neighbourhood. Within the Suburban Transect, diverse housing forms are encouraged to meet evolving demographics.
- The subject property is also located within the Mainstreet Corridor land use designation.
   Mainstreet Corridors can accommodate higher density development, a greater degree of mixed-use and residential uses that integrate with a dense, mixed-use urban environment.
   The maximum height along Mainstreet Corridors, within the Suburban Transect, is 9 storeys.
- 3. There is no CDP for this site; however, the Leitrim CDP, 2005, pertains to the lands to the north of Dun Skipper. The proposed development is in keeping with, and complimentary, to the policies laid out under the Leitrim CDP.
- 4. The subject property is zoned as General Mixed-Use (GM), with exception (2615) that permits a hotel use on the property. Residential uses, including mid-rise buildings with a maximum height of 18m (@ 6-storeys), are permitted in the GM zone.
- 5. To seek relief from maximum permitted height, the Applicant will need a minor variance application. The Committee of Adjustment is a City of Ottawa quasi-judicial tribunal which reviews *Planning Act* applications that are independent from development review. Please see the City's <u>website</u> for more information.
- 6. Bicycle parking is required. Please indicate bicycle parking on the site plan.
- 7. Please see information on Section 37 requirements / Community Benefits Charge
  - a. The former Section 37 regime has been replaced with a "Community Benefits Charge", By-law No. 2022-307, of 4% of the land value. This charge will be required for ALL buildings that are 5 or more storeys and 10 or more units and will be required at the time of building permit unless the development is subject to an existing registered Section 37 agreement. Questions regarding this change can be directed to Ranbir.Singh@ottawa.ca.
- 8. Landscape requirements
  - b. Use local, native species where possible
  - c. Provide as much greenery, trees, soft surfaces as possible to mitigate urban heat island and help with SWM
- 9. Update zoning table as required based on changes made.
- 10. It is recommended that a courtesy heads-up be provided to the local ward Councillor Steve Desroches Riverside South Findlay Creek (<u>steve.desroches@ottawa.ca</u>).



### **Urban Design (Randolph Wang)**

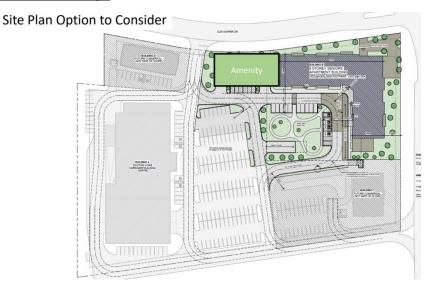
### 11. Submission Requirements

- 1. Urban Design Brief is required for a ZBLA. Please see attached customized Terms of Reference to guide the preparation. Here are a few highlights:
  - a. The Urban Design Brief should be structured by generally following the headings highlighted under Section 3 Contents of these Terms of Reference.
  - b. Please explore alternative site plan and massing options and include diagrams and images to show and document options explored.
- Please refer to relevant Terms of Reference available on the City's website (<u>Planning application submission information and materials | City of Ottawa</u>) to prepare additional drawings and studies required. Please note that both shadow and wind studies are required.

### Comments on the Design Concept

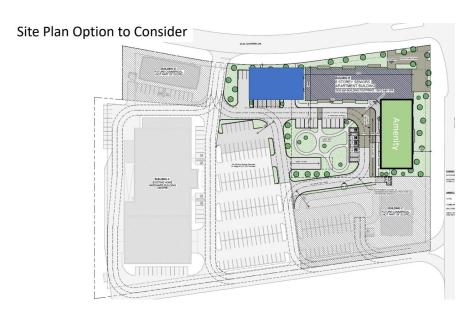
- Urban design supports the proposed ground floor programs, particularly the communal and amenity uses along Bank Street and their potential to animate the Mainstreet Corridor.
- 2. The site plan requires further study. The amenity space is situated in the middle of the parking lot, detached from the building, surrounded by driveways, and broken up by a ramp. It is not the most desirable place to be in.
- 3. With respect to built form and building design, urban design appreciates the attention to the street corner through building form design.
  - a. The massing articulation (the stepping) at the corner is interesting. However, it seems contradictory to the overall "classical" approach to built form design.
  - b. Urban design cautions the coplanar effects.
  - c. The canopies on the top appear to be heavy.

### Suggestions for Design









### Explore site plan options, for example:

- 1. Without changing the built form design, consider locating the amenity area to the west of the proposed building, along Dun Skipper. Elements such as decorative fencing around the amenity area can be suitable for the street.
- 2. Design a simple bar building along Dun Skipper and locate the amenity area on Bank Street. Depending on the size and shape of the amenity space, this may allow for future intensification along Bank Street.
- 2. Simplify vehicular circulations so that they function well and won't interfere with pedestrian circulations.
- 3. Incorporate the parking ramp into the building rather than being a standalone structure. If the ramp has to be located outside of the building, it should be convenient for way finding, and properly landscaped.
- 4. With respect to built form and building design, consider the following:



- Simplify the massing at the corner to create a stronger vertical presence. Given the overall built form approach being pursued, stepping may be most suitable at the two ends of the building.
- 2. Create a stronger base. A 2-storey base with stone cladding may be appropriate.
- 3. Create a lighter top. Step back the top two floors. Remove and/or reduce the size of the balcony canopies.
- 4. Avoid coplanar on facades. Wherever there is change of materials, include a building step back and/or introduce a strong datum line that separates the two materials.

### **Engineering (Tyler Cassidy)**

### Comments:

- 12. The Stormwater Management Criteria, for the subject site, is to be based on the following existing reports:
  - i. Design Brief, Pathways at Findlay Creek, 4800 Bank Street, Phase 1, prepared by IBI, revised August 2017.
  - ii. Design Brief, Bank Street Development, 4836 Bank Street, prepared by IBI Group, revised April 2020.
  - a. Stormwater management criteria has been determined for this site through the two (2) studies listed above. The site's overall release rate (Phase 1 + future phases) shall be respected. There shall be a sufficient allocation of capacity remaining for future phases to be developed.
  - b. Emergency overflow for events greater than the 1:100 year storm shall be directed to the Bank Street right-of-way.
  - c. All flows exceeding the allowable release rate for design storms up to and including the 1:100 year event are to be detained on-site.
  - d. Quality controls (80% TSS removal) are being provided by the existing downstream Findlay Creek Stormwater Management Facility.
  - e. A calculated time of concentration (Cannot be less than 10 minutes).
- 13. Deep Services (Storm, Sanitary & Water Supply)
  - a. Deep services are available on site as part of the Phase 1 site plan works. See the existing report(s) for proposed connection locations. New connections to the municipal right-of-way will not be accepted.
  - b. It is the responsibility of the applicant/consultant to confirm sufficient capacity in the sanitary sewer system for any flows that exceed the allocation allotted in the subdivision level and phase one site plan control servicing reports.
  - c. Sewer connections to be made above the springline of the sewermain as per:



- i. Std Dwg S11.1 for flexible main sewers connections made using approved tee or wye fittings.
- ii. Std Dwg S11 (For rigid main sewers) lateral must be less that 50% the diameter of the sewermain,
- iii. Std Dwg S11.2 (for rigid main sewers using bell end insert method) for larger diameter laterals where manufactured inserts are not available; lateral must be less that 50% the diameter of the sewermain.
- iv. Connections to manholes permitted when the connection is to rigid main sewers where the lateral exceeds 50% the diameter of the sewermain. Connect obvert to obvert with the outlet pipe unless pipes are a similar size.
- v. No submerged outlet connections.

a. Location of service

14. Water Boundary condition requests must include the location of the service (map or plan with connection location(s) indicated) and the expected loads required by the proposed development, including calculations. Please provide the following information:

b.	Type of development and the amount of fire flow required (as per FUS).
C.	Average daily demand: l/s.
d.	Maximum daily demand:l/s.
e.	Maximum hourly daily demand: l/s.

- 15. It is the applicant/consultant's responsibility to confirm if the existing MECP Environmental Compliance Approval needs to be amended to accommodate the proposed development. If required, please contact the Ministry of the Environment, Conservation and Parks, Ottawa District Office to arrange a pre-submission consultation:
  - a. Charlie Primeau at (613) 521-3450, ext. 251 or Charlie.Primeau@ontario.ca
- 16. The Geotechnical Investigation Report for this development shall be scoped specially for the proposal. The report can make use of existing geotechnical data obtained during the phase 1 investigation, however if the data is more than 1 year old, a professional will be required to certify the data is still reflective of existing site conditions and applicable to this phase of development.

Feel free to contact Tyler Cassidy, P.Eng., Infrastructure Project Manager, for follow-up questions.

questions.		
Noise (Neeti Paudel)		
Comments:		



- 17. Noise Impact Studies required:
  - i. Road (site is within 100m of an arterial road- fronting Bank Street)

Feel free to contact Neeti Paudel, Transportation Project Manager, for follow-up guestions.

### **Transportation (Neeti Paudel)**

### Comments:

- 18. TIA is not required.
- 19. On site plan:
  - i. Show all details of the roads abutting the site up to and including the opposite curb; include such items as pavement markings, accesses and/or sidewalks.
  - ii. Turning templates will be required for all accesses showing the largest vehicle to access the site; required for internal movements (loading space) and at all access (entering and exiting and going in both directions).
  - iii. Show all curb radii measurements; ensure that all curb radii are reduced as much as possible
  - iv. Show lane/aisle widths
  - v. Note the maximum access width is 9m.
- 20. As the site proposed is residential, AODA legislation applies for all areas accessible to the public (i.e. outdoor pathways, parking, etc.).
  - Clearly define accessible parking stalls and ensure they meet AODA standards (include an access aisle next to the parking stall and a pedestrian curb ramp at the end of the access aisle, as required).
  - Please consider using the City's Accessibility Design Standards, which provide a summary of AODA requirements. <a href="https://ottawa.ca/en/city-hall/creating-equal-inclusive-and-diverse-city/accessibility-services/accessibility-design-standards-features#accessibility-design-standards">https://ottawa.ca/en/city-hall/creating-equal-inclusive-and-diverse-city/accessibility-services/accessibility-design-standards</a>
- 21. The design for <u>Bank Street Widening</u> and Construction from south of Leitrim Road to south of Blais is complete. Construction time is to be confirmed.
- 22. Right-of-way protection.
  - a. Overlay the Bank Street design (attached) on the site plan to ensure sufficient ROW is protected.
  - Any requests for exceptions to ROW protection requirements <u>must</u> be discussed with Transportation Planning and concurrence provided by Transportation Planning management.

Feel free to contact Neeti Paudel, Transportation Project Manager, for follow-up questions.

### Planning Forestry – Hayley Murray



- 23. If there are City owned trees of any size and/or privately owned trees 10 cm in diameter or greater on the subject property, a Tree Conservation Report would be required. The required information could be combined with the Landscape Plan if relevant.
- 24. The Landscape Plan terms of reference must be adhered to: https://documents.ottawa.ca/sites/documents/files/landscape\_tor\_en.pdf

### 25. TCR requirements

- The TCR must list all trees on site, as well as off-site trees if the CRZ extends into the developed area, by species, diameter and health condition
- Please identify trees by ownership private onsite, private on adjoining site, city owned, boundary (trees on a property line)
- If trees are to be removed, the TCR must clearly show where they are, and document the reason they cannot be retained
- All retained trees must be shown, and all retained trees within the area impacted by the development process must be protected as per City guidelines available at <u>Tree</u> <u>Protection Specification</u> or by searching Ottawa.ca
- The location of tree protection fencing must be shown on the plan
- The City encourages the retention of healthy trees; if possible, please seek opportunities for retention of trees that will contribute to the design/function of the site.
- For more information on the process or help with tree retention options, contact Hayley Murray <a href="mailto:hayley.murray@ottawa.ca">hayley.murray@ottawa.ca</a> or on <a href="mailto:City of Ottawa">City of Ottawa</a>

### 26. LP tree planting requirements

### Minimum Setbacks

- Maintain 1.5m from sidewalk or MUP/cycle track or water service laterals.
- Maintain 2.5m from curb
- Coniferous species require a minimum 4.5m setback from curb, sidewalk or MUP/cycle track/pathway.
- Maintain 7.5m between large growing trees, and 4m between small growing trees.
   Park or open space planting should consider 10m spacing, except where otherwise approved in naturalization / afforestation areas. Adhere to Ottawa Hydro's planting guidelines (species and setbacks) when planting around overhead primary conductors.

### Tree specifications

- Minimum stock size: 50mm tree caliper for deciduous, 200cm height for coniferous.
- Maximize the use of large deciduous species wherever possible to maximize future canopy coverage
- Tree planting on city property shall be in accordance with the City of Ottawa's Tree Planting Specification; and include watering and warranty as described in the specification (can be provided by Forestry Services).
- Plant native trees whenever possible
- No root barriers, dead-man anchor systems, or planters are permitted.



 No tree stakes unless necessary (and only 1 on the prevailing winds side of the tree)

### Hard surface planting

- Curb style planter is highly recommended
- No grates are to be used and if guards are required, City of Ottawa standard (which can be provided) shall be used.
- Trees are to be planted at grade

### Soil Volume

Please document on the LP that adequate soil volumes can be met:

Tree Type/Size	Single Tree Soil Volume (m3)	Multiple Tree Soil Volume (m3/tree)
Ornamental	15	9
Columnar	15	9
Small	20	12
Medium	25	15
Large	30	18
Conifer	25	15

- \*\* Please note that these soil volumes are not applicable in cases with Sensitive Marine Clay \*\*
- Please follow the City's 2017 Tree Planting in Sensitive Marine Clay guidelines for trees in the Right of Way

### **Tree Canopy**

- The landscape plan shall show how the proposed tree planting will replace and increase canopy cover on the site over time, to support the City's 40% urban forest canopy cover target.
- At a site level, efforts shall be made to provide as much canopy cover as possible, through tree planting and tree retention, with an aim of 40% canopy cover at 40 years, as appropriate. Indicate on the plan the projected future canopy cover at 40 years for the site.

Feel free to contact Hayley Murray, Planning Forester, for follow-up questions.

### **Environment and Trees (Matthew Hayley)**

Comments:



- 27. Significant environmental features The nearest natural feature is east of Bank Street and over 30 m from the proposed development and accordingly an Environmental Impact Study (EIS) is not triggered.
- 28. Species at risk Site is cleared and there is no natural habitat present.
- 29. Environmental impact Study No EIS is triggered.
- 30. Bird-Safe Design Guidelines Please review and incorporate bird safe design elements. Some of the risk factors include glass and related design traps such as corner glass, balcony glass and fly-through conditions, ventilation grates and open pipes, landscaping, light pollution. More guidance and solutions are available in the guidelines which can be found here:
  - https://documents.ottawa.ca/sites/documents/files/birdsafedesign\_guidelines\_en.pdf
- 31. Urban Heat Island Please add features that reduce the urban heat island effect (see OP 10.3.3) produced by the parking lot and a building footprint. For example, this impact can be reduced by adding large canopy trees, green roofs or vegetation walls, or constructing the parking lot or building differently.

Feel free to contact Matthew Hayley or Mark Elliot, Environmental Planner, for follow-up questions.

### Parkland (Burl Walker):

### Comments:

- 32. Cash-in-lieu of parkland will be required as a condition of site plan approval. The parkland dedication requirement will be determined in accordance with the provisions of Parkland Dedication By-law No. 2022-280 and the *Planning Act*. The Owner will also be required to pay for the cost of a land value appraisal.
- 33. Parkland Dedication By-law No. 2022-280 is in force. However, multiple appeals to the By-law are currently before the Ontario Land Tribunal. The final parkland dedication requirement for the proposed site plan application will be determined in accordance with any By-law amendments made by the OLT or an order made by the OLT.
- 34. The cash-in-lieu of parkland dedication requirement for a mid-rise apartment building is 1 ha per 1,000 net residential units up to a maximum of 15% of the gross land area. For a mixed-use development where land is developed for a mix of land uses that are located on discrete parts of a site, the parkland dedication requirement is the cumulative sum for each use, as calculated using the applicable rate and based upon the portion of the site allocated to each use, including, but not limited to, required and provided parking spaces, amenity space, landscape buffers, and drive aisles. In addition, subsection 42 (3.3) of the *Planning Act* indicates that in the case of land proposed for development or redevelopment that is 5 ha or less in area, a Parkland Dedication By-law shall not require a conveyance that is greater than 10% of the value of the land.



35. For the Phase 2 pre-consultation submission, please provide the area of the site that is allocated to Building B including the parking area, amenity space, landscaping, etc. The area allocation may be based on the limits of construction for the Building B site development or a parcel line from a lease agreement, if applicable. Staff will defer providing an estimate of the land area for the cash-in-lieu of parkland dedication requirement until the parcel area for Building B has been provided.

Feel free to contact Burl Walker, Parks Planner, for follow-up questions.

### **Conservation Authority (South Nation, James Holland)**

SNC's review considers the impacts of the development on natural hazards, including flooding and erosion upstream and downstream of the property. The review identifies areas and features regulated under the *Conservation Authorities Act* and the permit requirements of SNC's Regulation Policies. These policies can be obtained from SNC's website at <a href="Regulations">Regulations</a> <a href="Regulations">Reg

#### Comments:

### 36. Natural Hazards

- There are no mapped natural hazards on the property.
- Increased stormwater must not negatively impact flooding and erosion following development. If the stormwater outlets to approved municipal infrastructure, SNC does not complete a technical review and relies on the City's engineering review to confirm capacity of the infrastructure. If flows outlet to Findlay Creek, SNC will complete a technical review of the quantity control component of the design.

### 37. Conservation Authority Regulation

Please note that any interference with a watercourse may require a permit under O.Reg.
 170/06 and restrictions may apply. A watercourse includes any feature with a defined bed and bank that conveys water permanently or intermittently during a year.

### Other

- 38. The High Performance Development Standard (HPDS) is a collection of voluntary and required standards that raise the performance of new building projects to achieve sustainable and resilient design. The HPDS was passed by Council on April 13, 2022.
  - a. At this time, the HPDS is not in effect and Council has referred the 2023 HPDS Update Report back to staff with direction to bring forward an updated report to Committee with recommendations for revised phasing timelines, resource requirements and associated amendments to the Site Plan Control By-law by no later than Q1 2024.
  - b. Please refer to the HPDS information attached and ottawa.ca/HPDS for more information.



Should there be any questions, please do not hesitate to contact myself or the contact identified for the above areas / disciplines.

Yours Truly, Katie O'Callaghan Planner I

CC.

Tracey Scaramozzino, Senior Planner
Tyler Cassidy, Infrastructure Approvals
Neeti Paudel, Transportation
Hayley Murray, Forester
Matthew Hayley, Environmental Planner
Burl Walker, Park Planner
James Holland, South Nation Conversation Authority
Randolph Wang, Senior Urban Designer

Omkar, Atwal, Owner, <a href="mailto:omkar.atwal@homehardware.ca">omkar.atwal@homehardware.ca</a>



## Appendix A. List of Technical Agencies

## **List of Technical Agencies to Consult**

$\boxtimes$	Zayo	Utility.Circulations@Zayo.com
$\boxtimes$	Bell Canada	circulations@wsp.com
$\boxtimes$	Telus Communications	telusutilitymarkups@Telecon.ca /
	Telus Communications	jovica.stojanovski@telus.com
$\boxtimes$	Rogers Communications	OPE.Ottawa@rci.rogers.com
$\boxtimes$	Enbridge Gas Distribution	municipalplanning@enbridge.com
$\boxtimes$	O.C. District School Board	planningcirculations@ocdsb.ca
$\boxtimes$	O.C. Catholic School Board	planningcirculations@ocsb.ca
$\boxtimes$	Conseil des écoles publiques	planification@cepeo.on.ca
$\boxtimes$	Conseil des écoles catholiques du Centre-Est	planification@ecolecatholique.ca
$\boxtimes$	Hydro Ottawa (Local Distribution)	ExternalCirculations@HydroOttawa.com
	Hydro One Networks (Transmission)	landuseplanning@hydroone.com
	Ontario Power Generation	Executivevp.lawanddevelopment@opg.com
	Trans Canada Pipeline c/o Lehman & Associates	dpresley@mhbcplan.com
	Trans Northern Pipeline Inc.	wwatt@tnpi.com
	Railways	Choose an item
	National Capital Commission	Ted.Horton@ncc-ccn.ca
	Parks Canada	susan.millar@pc.gc.ca
	Airport Authority	Choose an item
	Ministry of Transportation	corridoreast@ontario.ca
	Infrastructure Ontario	NoticeReview@infrastructureontario.ca
	Propane Operator	Mailing Addresses Only
	NAV Canada	landuse@navcanada.ca
$\boxtimes$	Conservation Authority	SNCA – jholland@nation.on.ca



### APPLICANT'S STUDY AND PLAN IDENTIFICATION LIST

### Proposed Site Plan Control Application – 155 Dun Skipper Road – PC2024-0127

Legend: **R** = Required, the study or plan is required with application submission

**A** = Advised, the study or plan is advised to evaluate the application or satisfy a condition of approval/draft approval

1 - OPA, 2 - ZBA, 3 - Plan of Subdivision, 4 - Plan of Condominium, 5 - SPC

Core studies required for certain applications all the time (Remaining studies are site specific)

For information and guidance on preparing required studies and plans refer <u>here</u>:

			EN	GINEER	RING							
R	Α	Study/ Plan Name	Description		Wh	en Requi	red		Applicable Study Components			
K	^	Study/ Flail Name	Description	1	2	3	4	5	& Other Comments			
		1. Environmental Site	Ensures development only takes place on sites where the	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	Record of Site Condition			
		Assessment (Phase 1 & Phase 2)	environmental conditions are suitable for the proposed use	Study Tr All cases	igger Deta s	ails:			Yes □ No □			
			Geotechnical design	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$				
		2. Geotechnical Study	requirements for the subsurface conditions	Study Tr All cases	igger Deta	ails:						
		3. Grading and	Grading relationships between connecting (or abutting)			$\boxtimes$		$\boxtimes$				
		Drainage Plan	properties and surface runoff control	Study Tr All cases	igger Deta	ails:						
			A scientific study or evaluation			$\boxtimes$	$\boxtimes$	$\boxtimes$	Reasonable Use Study			
		4. Hydrogeological and Terrain Analysis	that includes a description of the ground and surface hydrology, geology, terrain, affected landform and its susceptibility	When de	Study Trigger Details: When developing on private services or warban development is in close proximity to existing private serviced development				Yes □ No □  Groundwater Impact Study  Yes □ No □			
			Detential imposts of mains are	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	Vibration Study			
			Potential impacts of noise on a development		igger Deta		- Vibration Study Yes □ No □					

				$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$						
	6. Rail Proximity Study	Development on land adjacent to all Protected Transportation Corridors and facilities shown on Schedule C2 of the Official Plan, to follow rail safety and risk mitigation best practices	Study Trigger Details: Within the Development Zone of Influence existing and future rapid transit stations and corridors, as shown on Annex 2 of the OP on land adjacent to all Protected Transportation Corridors and facilities show on Schedule C2 of the Official Plan					Rail Safety Report Yes □ No □  O-Train Network Proximity Study Yes □ No □					
				$\boxtimes$	$\boxtimes$	$\boxtimes$	×	Fluvial Geomorphological Report Yes □ No □					
								Assessment of Adequacy of Public Services Yes □ No □					
		Provides servicing details based on proposed scale of	proposed scale of										
	7. Site Servicing Study	development with an engineering overview taking into consideration surrounding developments and connections.	elopment with an engineering rview taking into consideration ounding developments and Study Trigger Details:  All cases					erview taking into consideration rounding developments and Study Trigger Details:  All cases					Erosion and Sediment Control Plan / Brief Yes □ No □
								Hydraulic Water Main Analysis Yes □ No □					
								Stormwater Management Report and Detailed Design Brief Yes □ No □					
		Assessment of slope stability and		$\boxtimes$	$\boxtimes$		$\boxtimes$						
	8. Slope Stability Study	measures to provide safe set- back.	Study Trigger Details: Where the potential for Hazard Lands exists on a site.					Retrogressive Landslide Analysis Yes □ No □					
				$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$						
	9. Transportation Impact Assessment	Identify on and off-site measures to align a development with City transportation objectives.	If the dev	igger Deta velopment or if the d Trigger; c rigger.	t generate evelopme	nt is İocat	ed in a	Roadway Modification Functional Design Yes □ No □					

				$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$
	10. Water Budget Assessment	Identify impact of land use changes on the hydrologic cycle and post-development mitigation targets.	May be applicati and / or sensitive required assessn	rigger Deta required for lons for site proximity to a areas. Do to integra ments into a ment plans	or site planes with protection hydrogeraft plans te water be supporting	ivate servi eologically of subdiv oudget g stormwa	ision are
	11. Wellhead Protection Study	Delineate a Wellhead Protection Area (WHPA) and characterize vulnerability for new communal residential drinking water well systems, in accordance with Technical Rules under Clean Water Act.	Required drinking municipa (small w Respons or increa municipa	rigger Deta d for all ne water well al wells, ne rater works sibility Agre ased water al well or e	ew commu I systems; ew private s) that req eement (N r takings fi existing pri	including communauire a Mur MRA), exp rom an ex vate comi	new al wells nicipal ansions isting munal

R	Α	Study/Plan Name	Description		Wh	en Requi	red	_	Applicable Study Components
		Study/Flail Name	Description	1	2	3	4	5	& Other Comments
		12. Agrology and Soil Capability Study	Confirm or recommend alterations to mapping of agricultural lands in the City.	For the edidentification through is demonstrated	ation of a r a comprel nstrated th	ails: of a settle new settle hensive re nat the lan for an Agri	ment area view; or v d does no	a where it ot meet	
				$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	
		13. Archaeological Assessment	Discover any archaeological resources on site, evaluate cultural heritage value and conservation strategies	When the archaeo archaeo Archaeo Study in outside of any archaeo	Study Trigger Details: When the land has either: a known archaeological site; or the potential to have archaeological sites; or where the City's Archaeological Resource Potential Mapping Study indicates archaeological potential, outside of the historic core; or upon discovery of any archaeological resource during construction in the City's historic core area.				
				$\boxtimes$	$\boxtimes$			$\boxtimes$	
$\boxtimes$		14. Building Elevations	Visual of proposed development to understand facing of building including direction of sunlight, height, doors, and windows.	Site Plar more res buildings the units High-per threshold Official F necessa policies,	sidential us with less are within formance d in the rule property to determine the side of	dential buil nits; or for than 25 r the Urba Developr ral area. ning By-la rmine com	residential esidential in area or nent Stan w: if staff ppliance w	al l units, if the dard deem it vith OP	

				$\boxtimes$	$\boxtimes$		$\boxtimes$	
	15. Heritage Impact Assessment	Determine impacts of proposed development on cultural heritage resources.	Where of the Onta adjacen 30 metro for any of Canal U	ario Herita t to, acros es of a pro developme	ent or an a ge Act is p s the stree otected he ent adjace Vorld Heri	proposed et from or ritage pro ent to the I	on, within perty; or Rideau	Conservation Plan Yes □ No □
				$\boxtimes$	$\boxtimes$		$\boxtimes$	
	16. Heritage Act Acknowledgement Report	A submission requirement to demonstrate that the <i>Ontario Heritage Act</i> requirements have been satisfied, to ensure that multiple applications are considered currently.	Where the Heritage submit a (designate Heritage to demo	Register Heritage Heritage Register Hish or ren Hed prope	ails: t property and the a Permit Apage proper or provide	pplicant noplication ty listed of le notice of liding (nor liding	Heritage Permit Application Yes □ No □  Notice of Intent to Demolish Yes □ No □	
		Mineral aggregate extraction activities; and to protect	$\boxtimes$	$\boxtimes$	$\boxtimes$		$\boxtimes$	
	17. Impact Assessment Study – Mineral Aggregate	known high quality mineral aggregate resources from development and activities that would preclude or hinder their existence (ability to be extracted) or expansion.	New De within the metres of	e Bedrocl	t within 50 c Overlay ithin the S	, or within	300	
		To identify or confirm known mineral deposits or petroleum		$\boxtimes$	$\boxtimes$			
	18. Impact Assessment Study – Mining Hazards	resources and significant areas of mineral potential.  To protect mineral and petroleum resources from development and activities which would preclude or hinder the establishment of new operations or access to the resources.			<u>ails</u> : s in proxir	nity to mir	ning	

		To identify or confirm known	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	
	19. Impact Assessment Study – Waste Disposal Sites / Former Landfill Sites	proximity of existing or former waste disposal sites.  To ensure issues of public health, public safety and environmental impact are addressed.	For the or Disposa an opera develop	rigger Deta establishm I Site or fo ating Solid ment withi g or non-c	nent of an or a footpr Waste D n three ki	sion of te; or of an		
		A plan to demonstrate how		rigger Deta		⊠ and □	⊠ ⊠	
$\boxtimes$	20. Landscape Plan	Site Plan, Plan of Subdivision, and Plan of Condominium: always required, except where it is demonstrated that the landscape component of a project is not relevant to the review of the application.  A high-level conceptual Landscape Plan may be required to support Zoning By-law and Official Plan Amendment applications.						
						· 		
	21. Mature Neighbourhood Streetscape Character Analysis	In the Mature Neighbourhoods a Streetscape Character Analysis is required to determine the applicable zoning requirements.	Study Tr Zoning E areas co zoning o develop	Study Trigger Details: Zoning By-law amendment application in areas covered by the Mature Neighbourhoods zoning overlay for applications of residential development of four storeys or less located in a R1, R2, R3, or R4 zone.				
		Provincial land use planning	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	
	22. Minimum Distance Separation	tool that determines setback distances between livestock barns, manure storages or anaerobic digesters and surrounding land uses, with the objective of minimizing land use conflicts and nuisance complaints related to odour.	Study Trigger Details: Applications in the Rural Area, outside of a village.					

		A tool to assess the			$\boxtimes$	$\boxtimes$		
	23. Parking Plan	sufficiency of on-street parking in plans of subdivision.	Study Tr For new public st		ails: I plans of	subdivisio	n with	
		A Plan of Survey depicts legal boundaries and is a	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	
$\boxtimes$	24. Plan of Survey	specialized map of a parcel of land and it delineates boundary locations, building locations, physical features and other items of spatial importance.  Study Trigger Details: Required for all Planning A importance.				<i>t</i> application	ons.	
				$\boxtimes$	$\boxtimes$			
	25. Plan of Subdivision	Proposed subdivision layout to be used for application approval  Study Trigger Details: Always required with the submission of plan of subdivision application.				of plan		
		арргоча	Amendn	uired with nent applic nse to ena	cation, wh	ZBLA is		
		Proposed condominium				$\boxtimes$		
	26. Plan of Condominium *If Needed	layout to be used for application approval				of condon	ninium	
		Provides the planning	$\boxtimes$	$\boxtimes$	$\boxtimes$			
	27. Planning Rationale	justification in support of the Planning Act application and to assist staff and the public in the review of the proposal.	Planning Act application and passist staff and the public Summer or plan of subdivision Summary  Study Ingger Details:  For all Official Plan amendment, Zoning By-		For all Official Plan amendment, Zoning Bylaw amendment, or plan of subdivision			
		A checklist that shows a			$\boxtimes$		$\boxtimes$	
	28. Preliminary Construction Management Plan	development proposal's anticipated impacts to all modes of transportation and all elements in the right of way during construction.		igger Deta ite Plan ai ons.				

			$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$		
	29. Public Consultation Strategy	Proposal to reach and collect public input as part of development application.	Official F Amendn required Condom Site Plar lead in c	rigger Deta Plan Amer nent and S ninium: Va n: At the d consultatio al Support	ndment, Zo Subdivision cant Land iscretion on with the	only of the City Business	's file and		
				$\boxtimes$					
$\boxtimes$	30. Shadow Analysis	A visual model of how the proposed development will cast its shadow.	When the massing comment of the massing comment of the massing comment of the massing comment of the massing of	e the Greement is over less, but and/or may to a shadanalysis not be area. When the ment is not sensitive ament) the is over 5 sensitives.	ncrease in for a resince use.  Inbelt: proper 5 store opment pot is proposessing and dow sensing and be received by the content of the content in close area (e.g. trigger for	dential,  cosed ys in heig roposal is sing an in d is in clo tive area, quested.  coposed ys in heig imity to a posed proximity industrial a shadov	ht (≤15 5 crease se a ht (≤9 shadow to a		
		A Site Plan is a visual		$\boxtimes$	$\boxtimes$	$\boxtimes$	$\boxtimes$	Site Plan Yes □ No □	
$\boxtimes$	31. Site Plan	drawing that illustrates the proposed development of a site in two dimensions.	osed development of a Site Plan: All						
			Other ap	plications	: where a	layout of	the		

			densities provides sites provides sites pro with mul more bu and/or a sites wit (such as vehicula sites whadjacent	ealm, build s or massi changes posing mu tiple lando ildings, on new publi h propose active tra r circulatio ere the de t propertie	ng of the plant to the plant ultiple land owners; site park ic or privated changes ansportation or accessivelopments may be	proposal need confidenced confidence con	ext; es vo or n, ectivity (s, sit); I on by or	Facility Fit Plan Yes □ No □
	32. Urban Design Brief	Illustrate how a development proposal represents high-quality and context sensitive design that implements policies of the Official Plan, relevant secondary plans, and Council approved plans and guidelines.	For all C law ame applicati For SPC resident resident resident Urban a Develop area who	igger Deta official Plan endment, a ons. capplication ial building ial units, o ial building ial units, if rea or the ment Star ere OP Po dential and	ons: propo gs with 25 r for propo gs with les the units: High-perfo dard thres			
	33. Urban Design Review Panel Report	Demonstrates that a development proposal has attended an Urban Design Review Panel formal review meeting, received, and responded to the associated recommendations, if applicable	Required subject t	rigger Deta d for all pla to UDRP r	anning act eview, in a	accordano		
	34. Wind Analysis	A visual model and a written evaluation of how a proposed development will impact pedestrian-level wind conditions.	Applicat and/or m building(	rigger Deta ions seeki nassing wh (s), 10 stor that is mo	ng an incr nich is eith reys or mo			

		The purpose of the Zoning	$\boxtimes$			$\boxtimes$	
$\boxtimes$	35. Zoning Confirmation Report	Confirmation Report (ZCR) is to identify all zoning compliance issues, if any, at the outset of a planning application.	 igger Deta				

			ENVI	RONME	NTAL				
В	_	Study / Blan Name	Description		Wh	en Requi	Applicable Study Components		
R	Α	Study / Plan Name	Description	1	1 2 3			5	& Other Comments
			Includes a community energy analysis, alongside						
		36. Community Energy Plan	mitigation measures, and other associated information. The community energy analysis refers to the overall assessment process to identify on and off-site measures to align the design of the development with City climate objectives.	NOT I	MPLEMEI	NTED & N	IOT REQI	JIRED	
			The Energy Modeling Report is a Site Plan Control						
		37. Energy Modelling Report	application submission requirement to show how climate change mitigation, and energy objectives will be met through exterior building design elements.	NOT I	MPLEMEI	NTED & N	IOT REQI	JIRED	
			Assessment of environmental impacts of a	$\boxtimes$	$\boxtimes$	$\boxtimes$		$\boxtimes$	Assessment of Landform Features
		38. Environmental Impact Study	project and documents the existing natural features, identifies the potential environmental impacts,	Is require	igger Deta ed when d n is propos	levelopme	Yes □ No □  Integrated Environmental Review Yes □ No □		

		recommends ways to avoid and reduce the negative impacts, and proposes ways to enhance natural features and functions.	designate the City's hazardo  The EIS Environing provides features EIS is re	d distance ted lands, s Natural I us forest ty  Decision mental Imp s a checklis and adjace equired to s ions under	natural hed Heritage Stypes for word (Appoact Study st of the neas support de	eritage fea System, or vildland fir endix 2 of Guidelina atural her within where	e. f the es) itage nich an	Protocol for Wildlife Protection during Construction Yes □ No □  Significant Woodlands Guidelines for Identification, Evaluation, and Impact Assessment Yes □ No □
	39. Environmental Management Plan	A comprehensive environmental planning document that identifies, evaluates, and mitigates the potential impacts of proposed development on the natural environment and its ecological functions at local planning stage.	Official I (area-sp where: t condition based; t planned subdivis impact c subdivis applicab	rigger Deta Plan amen pecific polic here is sig ns upon withere are p infrastruct ion that we on the infra ion within ble Class E I has expir	dments for secondificant chair the or roposed could have a structure the EMP structume			
	40. High-performance Development Standard	A collection of voluntary and required standards that raise performance of new building projects to achieve sustainable and resilient design	NOT I	MPLEME	□ NTED & N			
	41. Tree Conservation Report	Demonstrates how tree cover will be retained and protected on the site, including mature trees, stands of trees, and hedgerows.	Where to diamete is a tree Root Zo	rigger Deta here is a tr r or greate on an adja ne (CRZ) of ment site.	ree of 10 or or on the sacent site			

## **Appendix B**

- Watermain Boundary Conditions
- Water Demand Calculations
- FUS Calculations
- Water Model Results

## Boundary Conditions 155 Dun Skipper Drive

### **Provided Information**

Scenario	Demai	nd			
Scenario	L/min	L/s			
Average Daily Demand	58	0.97			
Maximum Daily Demand	138	2.30			
Peak Hour	299	4.98			
Fire Flow Demand #1	11,000	183.33			

## **Location**



### Results

### **Existing Condition (Pre- SUC Pressure Zone Reconfiguration)**

Connection 1 - Dun Skipper Road

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)				
Maximum HGL	154.6	78.3				
Peak Hour	143.9	63.1				
Max Day plus Fire Flow 1	125.1	36.3				

Ground Elevation = 99.5 m

### Connection 1 – Bank Street

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	154.6	79.1
Peak Hour	143.9	63.9
Max Day plus Fire Flow 1	124.6	36.4

Ground Elevation = 99.0 m

### **Future Condition (Post- SUC Pressure Zone Reconfiguration)**

### Connection 1 – Dun Skipper Road

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)
Maximum HGL	147.3	67.9
Peak Hour	144.6	64.1
Max Day plus Fire Flow 1	140.2	57.8

Ground Elevation = 99.5 m

### Connection 1 - Bank Street

Demand Scenario	Head (m)	Pressure <sup>1</sup> (psi)				
Maximum HGL	147.3	68.7				
Peak Hour	144.3	64.5				
Max Day plus Fire Flow 1	139.2	57.2				

Ground Elevation = 99.0 m

### **Notes**

1. Any connection to a watermain 400 mm or larger should be approved by DWS as per the Water Design Guidelines Section 2.4 Review by Drinking Water Services.

### **Disclaimer**

The boundary condition information is based on current operation of the city water distribution system. The computer model simulation is based on the best information available at the time. The operation of the water distribution system can change on a regular basis, resulting in a variation in boundary conditions. The physical properties of watermains deteriorate over time, as such must be assumed in the absence of actual field test data. The variation in physical watermain properties can therefore alter the results of the computer model simulation. Fire Flow analysis is a reflection of available flow in the watermain; there may be additional restrictions that occur between the watermain and the hydrant that the model cannot take into account.



**IBI GROUP** 333 PRESTON STREET OTTAWA, ON K1S 5N4

### WATERMAIN DEMAND CALCULATION SHEET

PROJECT: 4836 Bank Street

Leitrim Development Area - City of Ottawa LOCATION:

**DEVELOPER:** Leitrim Home Hardware FILE: 119351.5.7.3

22-Apr-25

1 OF 1

DESIGN: LME

PAGE:

DATE PRINTED:

	RESIDENTIAL				NON-RESIDENTIAL			AVERAGE DAILY				XIMUM DA		MAX	FIRE		
NODE		UNITS		HOTEL	INDTRL	INST.	RETAIL	L	DEMAND	(I/s)	D	EMAND (I	/s)				DEMAND
	1-BED	2-BED	3-BED	BEDS	(ha.)	(ha.)	(m <sup>2</sup> )	Res.	Non-res.	Total	Res.	Non-res.	Total	Res.	Non-res.	Total	(l/min)
T-120																	
(Building A and D)							3,490	0.00	0.10	0.10	0.00	0.15	0.15	0.00	0.27	0.27	
T-150																	
(Building B Revised)	87	36	18				878	0.82	0.025	0.85	2.05	0.04	2.09	4.51	0.07	4.58	10,000
T-160																	
(Building C)							502	0.00	0.01	0.01	0.00	0.02	0.02	0.00	0.04	0.04	
Fire Nodes																	
TH-110, TH-030																	11,000
TH-020, TH-040																	10,000
TOTAL										0.96			2.26			4.89	

	ASSUMP	TIONS		
RESIDENTIAL DENSITIES	AVG. DAILY DEMA	AND	MAX. HOURLY DEMAND	
1 Bedroom Units	1.4 p / p / u - Hotel (Table 4.2) - Retail (Shopping 0	225 I / cap / day Centre) 2,500 I / 1000m² / day	<ul><li>Hotel (Table 4.2)</li><li>Retail (Shopping Centre)</li></ul>	608 I / cap / day 6,750 I / 1000m² / day
2 Bedroom Units	<u>2.1</u> p/p/u	·		·
3 Bedroom Units	3.1 p/p/u MAX. DAILY DEMA - Hotel (Table 4.2) - Retail (Shopping 0	338 I / cap / day	FIRE FLOW - Hotel - Retail	10,000 I / min 11,000 I / min

500-333 Preston Street Ottawa, Ontario K1S 5N4 Canada

**IBI GROUP** 

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#### WATERMAIN DEMAND CALCULATION SHEET

155 Dun Skipper Dr, Seniors Departments | 2668867 Ontario Inc. 148290-6.0 | Rev #2 | 2025-04-22 Prepared By: WZ | Checked By: RM

		RESID	ENTIAL		NON	I-RESIDENTIAL	(ICI)	AVERAG	AVERAGE DAILY DEMAND (I/s)			JM DAILY DEM	AND (I/s)	MAXIMUI			
NODE	1 bedroom	2 bedroom	3 bedroom														FIRE
				POPULATION	INDUST.	COMM.	INSTIT.	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	RESIDENTIAL	ICI	TOTAL	DEMAND
	UNITS	UNITS	UNITS		(ha)	(ha)	(ha)										(I/min)
Building B	87	36	18	253.20		0.0878		0.821	0.025	0.85	2.05	0.04	2.09	4.51	0.07	4.58	10,000
<u>TOTAL</u>	87	36	18	253.20		0.09				0.85			2.09			4.58	

	ASSUMPTIONS								
POPULATION DENSITY		WATER DEMAND RATES		PEAKING FACTORS		FIRE DEMANDS			
1 Bedroom Units	1.4 persons/unit	Residential	280 I/cap/day	Maximum Daily		Single Family 10,000 l/min (166.7 l/s)			
				Residential	2.5 x avg. day				
2 Bedroom Units	2.1 persons/unit			Commercial	1.5 x avg. day	Semi Detached &			
		Commercial Shopping Center	2,500 L/(1000m2)/day	Maximum Hourly		Townhouse 10,000 I/min (166.7 I/s)			
3 Bedroom Units	3.1 persons/unit			Residential	2.2 x max. day				
				Commercial	1.8 x max. day	Medium Density 15,000 I/min (250 I/s)			



### **ARCADIS IBI GROUP**

500-333 Preston Street Ottawa, Ontario K1S 5N4 Canada ibigroup.com

### **FIRE UNDERWRITERS SURVEY**

155 Dun Skipper Dr, Seniors Departments | 2668867 Ontario Inc. 148290-6.0 | Rev #1 | 2024-11-26 Prepared By: WZ | Checked By: RM

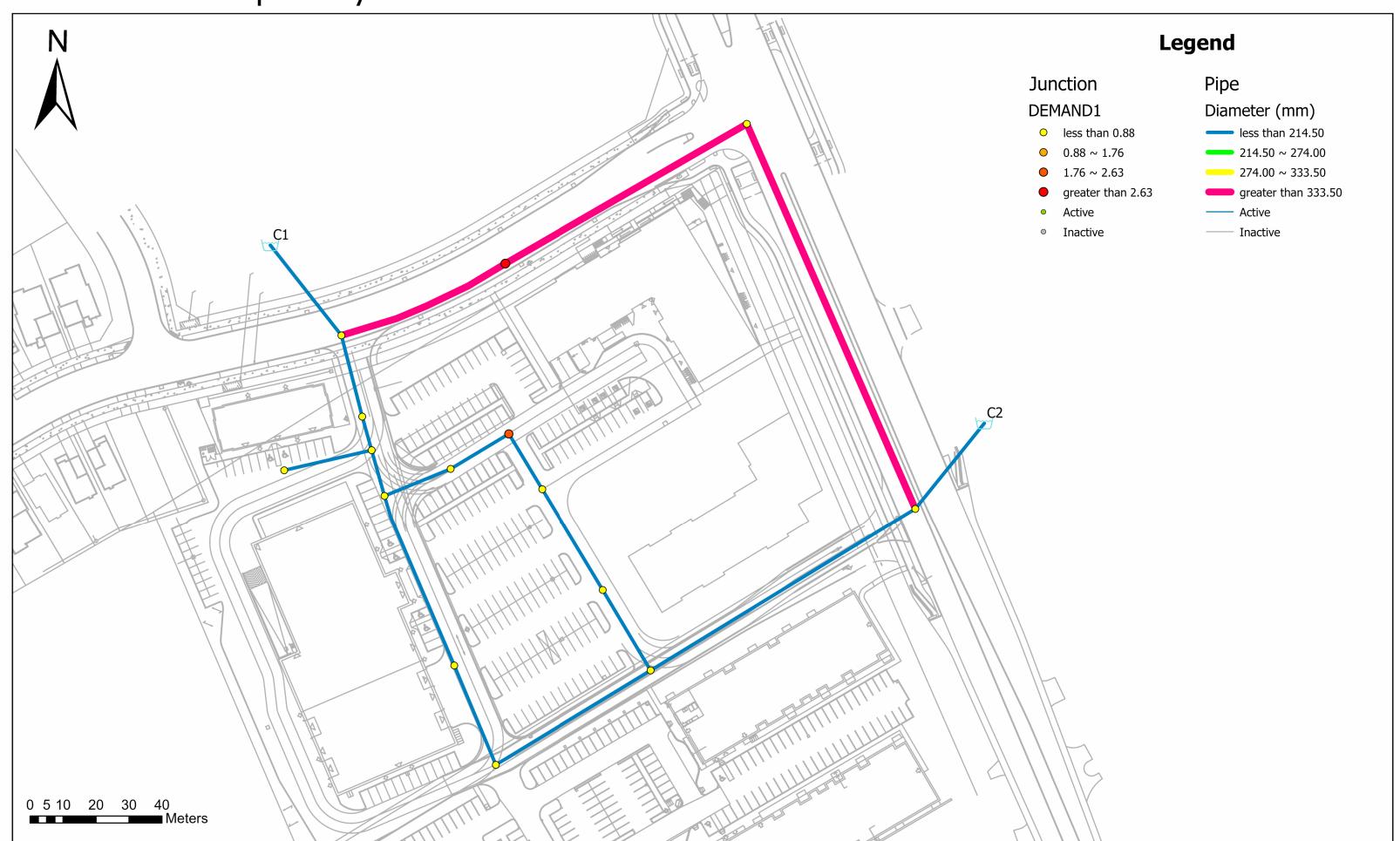
STEP	Contents	Description Adjustment Factor					ult
	Building A	1st Floor Area	1900	Height 2.8m	1	1900	m2
	(9-storey)	2nd Floor Area	1900	Height 2.8m	1	1900	m2
	(* 3333 <b>3</b> )	3rd Floor Area	1680	Height 2.8m	0.5	840	m2
		4th Floor Area	1680	Height 2.8m	0.5	840	m2
		5th Floor Area	1680	Height 2.8m	0.5	840	m2
1		6th Floor Area	1665	Height 2.8m	0.5	833	m2
		7th Floor Area	1665	Height 2.8m	0.5	833	m2
		8th Floor Area	1665	Height 2.8m	0.5	833	m2
		9th Floor Area	1672	Height 2.8m	0.5	836	m2
	Total Effective Floor Area	(Storage space exceeding 3m in height, floor a	area X 3)			6726.8	m2
		Type V Wood Frame	1.5	Tune II			
2	Type of Construction	Type III Ordinary Construction	1.0	Type II Noncombustible	0.8		
2	Type of Construction	Type II Noncombustible Construction	8.0	Construction	0.6		
		Type I Fire Resistive Construction	0.6	Construction			
3	Required Fire Flow	RFF = 220C√A, rounded to nearest 1000 L/min	n			14000	L/min
		Noncombustible Contents	-25%				
		Limited Conbustible Contents	-15%	Combustible -			
	Occupancy and Contents	Combustible Contents	0%	Residential/Comm	0%	0	L/min
4		Free Burning Contents	15% 25%	ercial			
		Rapid Burning Contents					
	Fire Flow					14000	L/min
		Automatic Sprinkler Conforming to NFPA 13	-30%	Yes	-30%	-4200	L/min
	Automatic Sprinkler Protection	Standard Water Supply for both the system	-10%	Yes	-10%	-1400	I /min
5	ratematic opinities i retection	and Fire Department Hose Lines		163	-1070	-1400	L/111111
		Fully Supervised System	0%	No			
	Total Sprinkler Adjustment					-5600	L/min
	Exposure Adjustment	Based on <b>Table 6</b> Exposure Adjustement Char	rges for Sul	bject Building			
		Separation (m)	>30	With unprotected			
	North	Length X Height Factor (m.storeys)	0	opening	0%	0	L/min
		Construction Type	Type II	spsg			
		Separation (m)	21.9	\\/:th			
	South	Length X Height Factor (m.storeys)	108	With unprotected opening	10%	1400	L/min
•		Construction Type	Type II	opening			
6		Separation (m)	>30	1400			
	East	Length X Height Factor (m.storeys)	0	With unprotected	0%	0	L/min
		Construction Type	Type II	opening			
		Separation (m)	>30	1			
	West	Length X Height Factor (m.storeys)	0	With unprotected	0%	0	L/min
		Construction Type	Type II	opening	0,0		
	Total Exposure Adjustment		. , , , , , , ,	-		1400	L/min
						9800	L/min
7	Total Required Fire Flow	Rounded to Nearest 1000 L/min				10000	L/min

**167** L/s

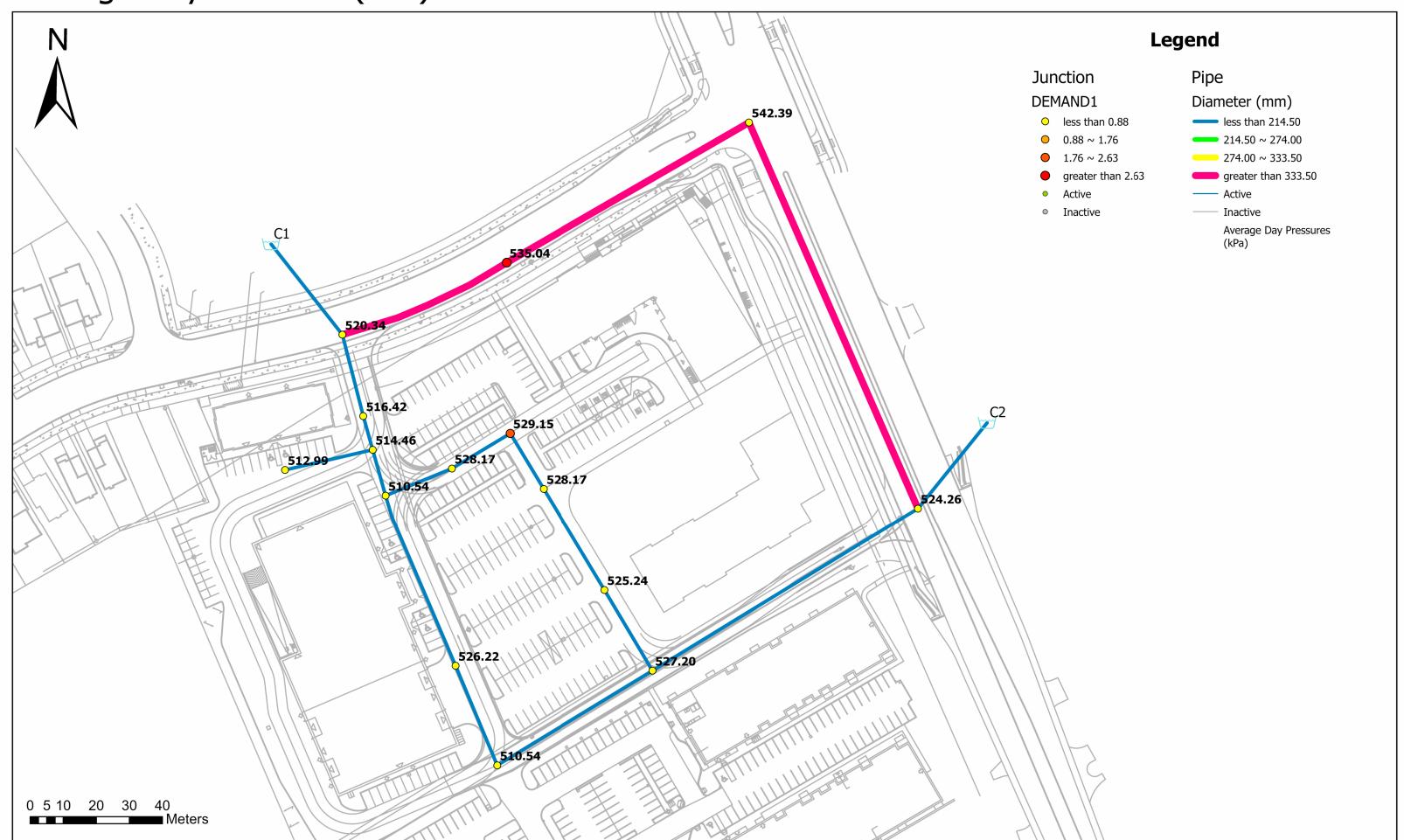
Notes  $\overline{\mbox{1. Fire flow calculation are based on Fire Underwriters Survey version 2020.}$ 

<sup>2.</sup> If any vertical opening in the building are unprotected (e.g. interconnected floor spaces, elevators etc.), consider the two largest adjoining floor area plus 50% of all floors immediately above them up to a maximum of eight.

# Junctions and Pipes Layouts



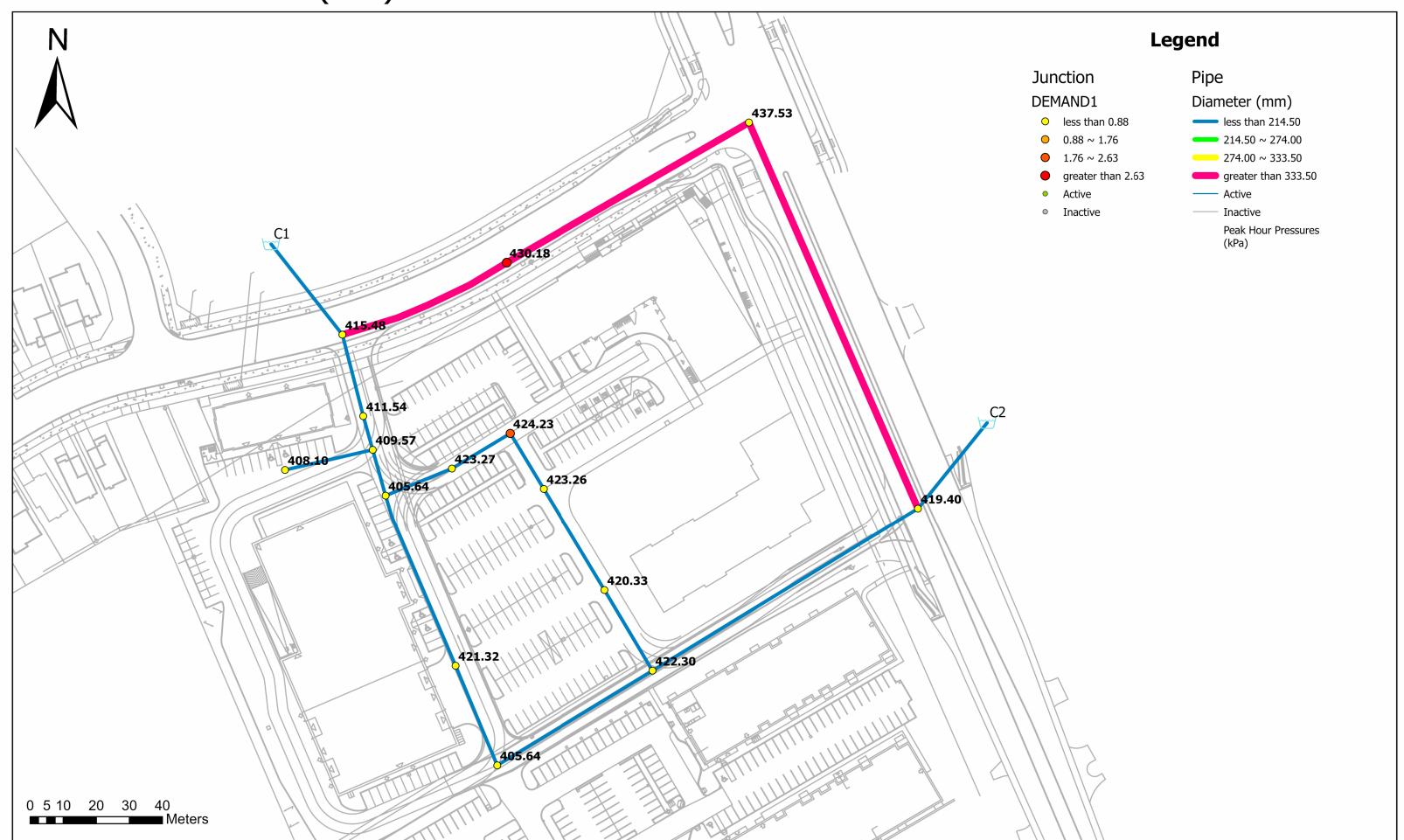
# Average Day Pressure (kPa)



	ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)	Water Age (hrs)
1	B-200	0.68	99.25	154.60	542.39	3.45
2	S15-300	2.34	100.00	154.60	535.04	2.85
3	T-100	0.00	101.50	154.60	520.34	0.00
4	T-110	0.00	102.10	154.60	514.46	0.59
5	T-120	0.10	102.25	154.60	512.99	2.02
6	T-130	0.00	102.50	154.60	510.54	2.86
7	T-140	0.00	102.50	154.60	510.54	13.76
8	T-150	0.85	100.60	154.60	529.15	3.86
9	T-160	0.01	101.00	154.60	525.24	2.85
10	T-170	0.00	100.80	154.60	527.20	2.13
11	T-180	0.00	101.10	154.60	524.26	0.01
12	TH-010	0.00	101.90	154.60	516.42	0.42
13	TH-020	0.00	100.70	154.60	528.17	3.22
14	TH-030	0.00	100.90	154.60	526.22	20.65
15	TH-040	0.00	100.70	154.60	528.17	3.78

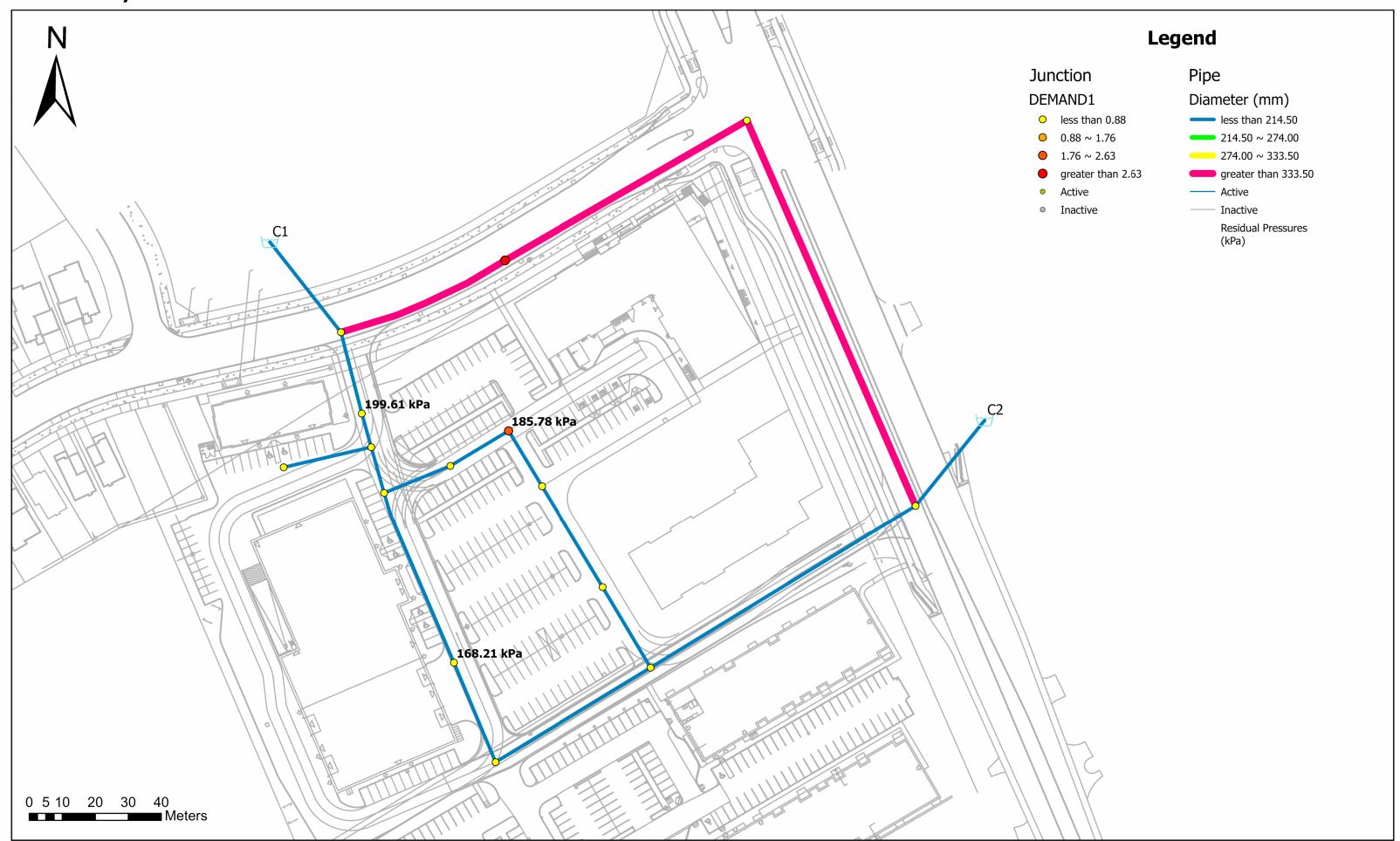
Date: Tuesday, April 22, 2025, Time: 16:07:28, Page 1

# Peak Hour Pressure (kPa)



	ID	Demand (L/s)	Elevation (m)	Head (m)	Pressure (kPa)	Water Age (hrs)
1	B-200	1.02	99.25	143.90	437.53	1.41
2	S15-300	6.31	100.00	143.90	430.18	1.20
3	T-100	0.00	101.50	143.90	415.48	0.00
4	T-110	0.00	102.10	143.90	409.57	0.12
5	T-120	0.27	102.25	143.90	408.10	0.64
6	T-130	0.00	102.50	143.90	405.65	0.66
7	T-140	0.00	102.50	143.90	405.65	4.50
8	T-150	4.58	100.60	143.89	424.23	0.81
9	T-160	0.04	101.00	143.89	420.33	0.56
10	T-170	0.00	100.80	143.90	422.30	0.42
11	T-180	0.00	101.10	143.90	419.40	0.00
12	TH-010	0.00	101.90	143.90	411.54	0.08
13	TH-020	0.00	100.70	143.89	423.27	0.73
14	TH-030	0.00	100.90	143.90	421.32	6.91
15	TH-040	0.00	100.70	143.89	423.26	0.73

# Max day + Fire Flow



	ID	Static Demand (L/s)	Static Pressure (kPa)	Static Head (m)	Fire-Flow Demand (L/s)	Residual Pressure (kPa)	Hydrant Available Flow (L/s)	Hydrant Pressure at Available Flow (kPa)
1	T-150	2.09	237.93	124.88	166.67	185.80	224.35	150.0
2	TH-010	0.00	226.12	124.98	183.33	199.62	330.25	150.0
3	TH-030	0.00	235.02	124.88	183.33	168.23	209.24	150.0

Date: Tuesday, April 22, 2025, Time: 16:20:09, Page 1

	ID	From Node	To Node	Length (m)	Diameter (mm)	Roughness	Flow (L/s)	Velocity (m/s)	Headloss (m)	Water Age (hrs)
1	2107	S15-300	B-200	84.75	393.00	120.00	83.06	0.68	0.12	0.02
2	791	B-200	T-180	127.53	393.00	120.00	82.38	0.68	0.18	0.06
3	P13	T-100	TH-010	25.45	204.00	110.00	18.24	0.56	0.06	0.00
4	P15	TH-010	T-110	10.56	204.00	110.00	18.24	0.56	0.03	0.01
5	P17	T-110	T-120	27.22	155.00	100.00	0.15	0.01	0.00	0.02
6	P19	T-130	T-110	14.44	204.00	110.00	-18.09	0.55	0.03	0.02
7	P21	T-130	TH-020	21.69	204.00	110.00	10.01	0.31	0.02	0.03
8	P23	T-130	TH-030	55.80	204.00	110.00	8.08	0.25	0.03	0.03
9	P25	TH-030	T-140	32.64	204.00	110.00	8.08	0.25	0.02	0.09
10	P27	T-150	TH-020	20.64	204.00	110.00	-10.01	0.31	0.02	0.04
11	P29	TH-040	T-150	19.63	204.00	110.00	-7.92	0.24	0.01	0.06
12	P31	TH-040	T-160	35.83	204.00	110.00	7.92	0.24	0.02	0.09
13	P33	T-160	T-170	28.39	204.00	110.00	7.90	0.24	0.01	0.13
14	P35	T-140	T-170	55.09	204.00	110.00	8.08	0.25	0.03	0.12
15	P39	T-170	T-180	94.13	204.00	110.00	15.98	0.49	0.18	0.17
16	P41	T-100	S15-300	54.54	393.00	120.00	86.57	0.71	0.08	0.00
17	P43	C2	T-180	1.00	204.00	110.00	-98.36	3.01	0.06	0.13
18	P45	C1	T-100	1.00	204.00	110.00	104.81	3.21	0.06	0.00

Date: Tuesday, April 22, 2025, Time: 16:27:19, Page 1

# **Appendix C**

- Sanitary Sewer Design Sheet
- Sanitary Drainage Area Plan 148290-C-400
- Sanitary Sewer Design Sheet 119351
- Sanitary Drainage Area Plan 119351-C-400

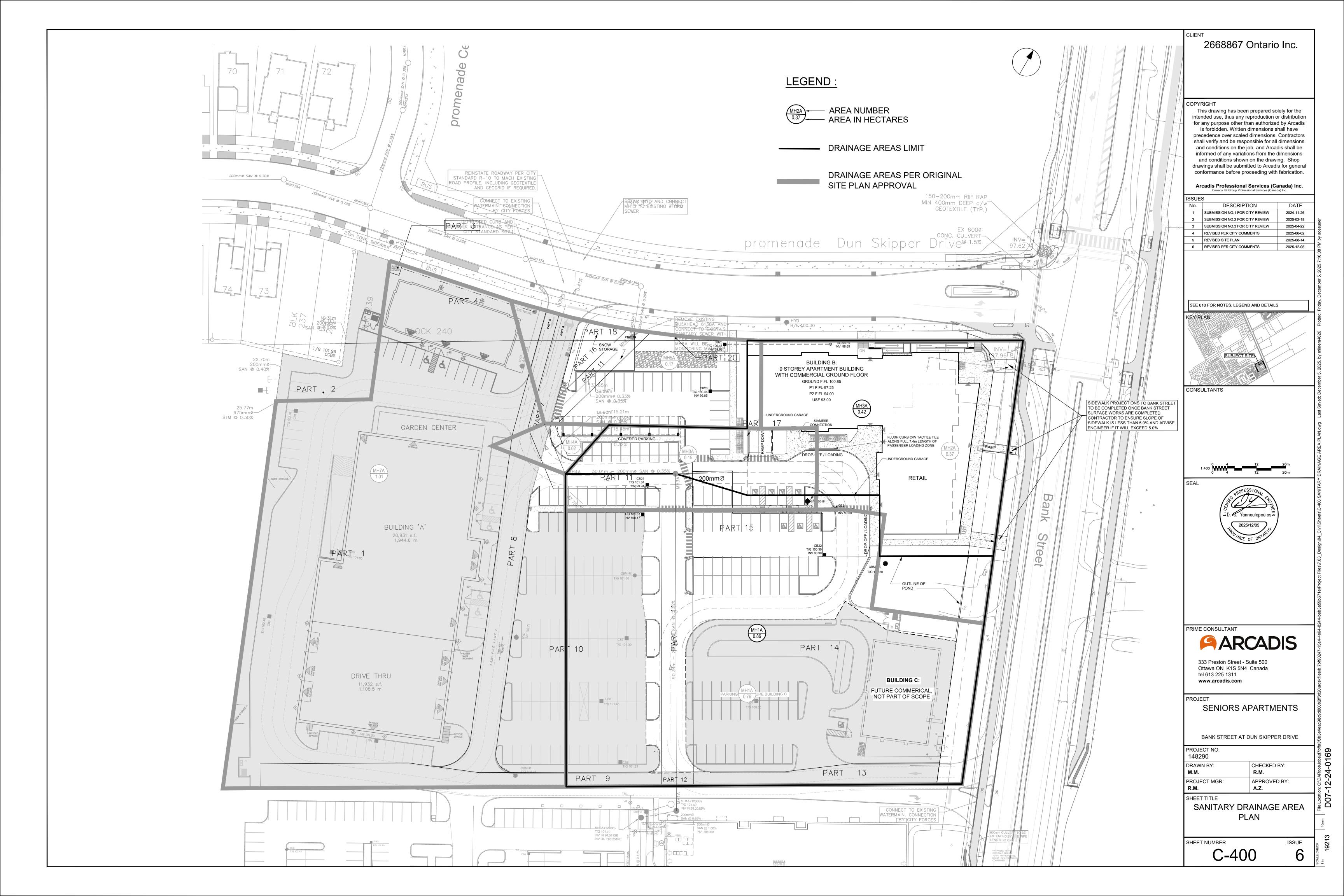
IBI GROUP

400-333 Preston Street
Ottawa, Ontario K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

#### SANITARY SEWER DESIGN SHEET

155 Dun Skipper Drive City of Ottawa 2668867 Ontario Inc.

								RESIDE	ENTIAL								ICI A	REAS				INFILTE	RATION ALL	OWANCE	T		TOTAL			PROPOS	SED SEWER	DESIGN		
	LOCATION	l		AREA		UNIT	TYPES		AREA	POPU	LATION	RES					A (Ha)			ICI	PEAK	ARE	A (Ha)	FLOW	FIXED F	LOW (L/s)	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY		LABLE
STREET	AREA ID	FROM	TO	w/ Units	SF	1-BED	2-BED	3-BFD	w/o Units	IND	CUM	PEAK	FLOW		UTIONAL	COMM	ERCIAL	INDU:	STRIAL	PEAK	FLOW	IND	CUM	(L/s)	IND	CUM	(L/s)			(mm)		(full)	CAP	ACITY
SIREEI	AREA ID	MH	MH	(Ha)	SF	1-BED	2-BED	3-BED	(Ha)	IND	CUM	FACTOR	(L/s)	IND	CUM	IND	CUM	IND	CUM	FACTOR	(L/s)	IND	CUM	(L/S)	IND	CUM	(L/S)	(L/s)	(m)	(mm)	(%)	(m/s)	L/s	(%)
EXISTING PHASE 1			MH7A-MH5A							0.0	0.0	3.80	0.00			0.05				1.50	0.02	0.05	0.05	0.02	0.00	0.00	0.04	34.22	11.10	200	1.00	1.055		99.88%
		BLDG A								0.0	0.0	3.80	0.00			0.30	0.30			1.50	0.15	0.30	0.30	0.10	0.00	0.00	0.24	34.22	14.61	200	1.00	1.055	33.97	99.28%
		MH7A	MH5A							0.0	0.0	3.80	0.00			1.01	1.01			1.50	0.49	1.01	1.01	0.33	0.00	0.00	0.82	28.05	32.74	200	0.67	0.865	27.22	97.06%
		_				_	_	_		<del>                                     </del>	_			<del>                                       </del>	_					_											$\vdash$	+		
Future		BLDG C	MH1A-MH3A							0.0	0.0	3.80	0.00			0.05	0.05			1.50	0.02	0.05	0.05	0.02	0.00	0.00	0.04	34.22	50.00	200	1.00	1.055	34.18	99.88%
Phase 2		BLDG B	MH3A		1	87	36	18	-	253.2	253.2	3.49	2.86	<del>                                       </del>	-	0.19	0.19			1.50	0.02	0.19	0.19	0.02	0.00	0.00	3.02	34.22	19.54	200	1.00	1.055	31.20	91.18%
External		MH1A	MH3A	1.54		180	30	10		252.0	505.2	3.38	5.53	_		0.86	0.86			1.50	0.42	0.86	0.86	0.29	0.00	0.00	6.23	19.66	92.55	200	0.33	0.606	13.42	68.28%
		MH3A	MH4A							0.0			5.53	1		0.42	1.29			1.50		0.42	1.29	0.43	0.00	0.00	6.58	21.37	30.45	200	0.39	0.659	14.79	69.20%
		MH4A	MH5A							0.0	505.2		5.53			0.02	1.31			1.50	0.64	0.02	1.31	0.43	0.00	0.00	6.60	21.49	15.21	200	0.39	0.663	14.89	69.30%
		MH5A	MH6A							0.0	505.2	3.38	5.53			0.17	2.49			1.50	1.21	0.17	2.49	0.82	0.00	0.00	7.56	19.56	33.65	200	0.33	0.603	12.00	61.35%
		-												ļ																	⊢—	<b></b> '		
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Design Parameters:				Notes:								Designed:		WZ			No.							Revision								Date		
		101.4		1. Mannings				0.013				1					1	ļ						nission No. 1						ļ		2024-11-26		
Residential		ICI Areas		2. Demand				) L/day 3 L/s/Ha	200	L/day				211			2							nission No. 2								2025-02-18		
SF 3.4 p/p/u 1-BED 1.4 p/p/u	INST 28.0	0 L/Ha/day		<ol> <li>Infiltration</li> <li>Residenti</li> </ol>			0.33	L/s/Ha				Checked:		RM			3	-					Subm	nission No. 3						-		2025-04-22		
2-BED 1.4 p/p/u 2-BED 2.1 p/p/u		0 L/Ha/day				ractor: ormula = 1+	/4.4//A±/D/4	000)40 5)\0				1																						
3-BED 3.1 p/p/Ha		0 L/Ha/day	MOE Chart			0.8 Correct		000) 0.5))0				Dwg. Refe	ronco:	148590-4	20			-												<b>!</b>				
Other 60 p/p/Ha		00 L/Ha/day	moe Chart	5. Commerci				asad on tota	al area			Dwg. Reie	nence:	140380-4	50		F	ile Referen	ce.						Date:							Sheet No:		
Outco GO pypiria	170	o Linarday				20%, otherw		4504 OII 101	ar urou,			1						48590-6.04							2024-11-2	ĥ						1 of 1		
				1.5 11 91	ouvor (IIdii Z	O TO, JUICI W	1.0											PU.0*Ucuur	.04						A-02-4-11-21									



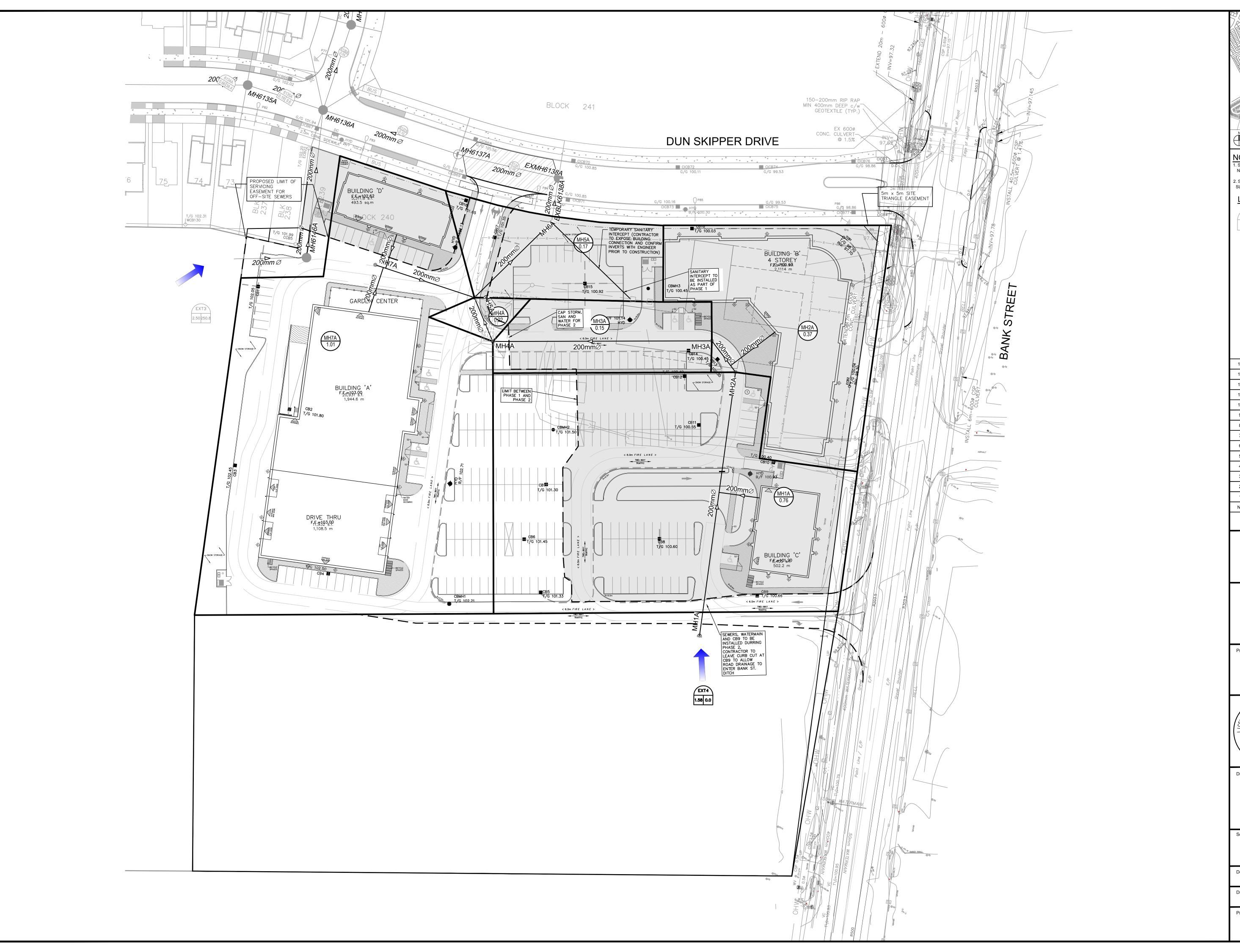


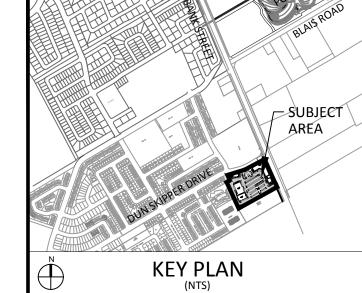
# [B]

IBI GROUP 400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com

4836 Bank Street CITY OF OTTAWA Home Hardware

		_		1				RESIDE	NTIAL							ICI AF	REAS		INFILT	RATION ALL	OWANCE			TOTAL			PROPO	SED SEWER	DESIGN		
	LOCATIO	N		AREA		UNIT	TYPES		AREA	POPU	LATION	RES	PEAK		AREA	A (Ha)	ICI	PEAK		A (Ha)	FLOW	FIXED F	LOW (L/s)	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAI	LABLE
STREET	AREA ID	FROM MH	TO MH	w/ Units (Ha)	SF	SD	TH	APT	w/o Units (Ha)	IND	CUM	PEAK FACTOR	FLOW (L/s)	INSTITUTIONAL IND CUM		ERCIÁL CUM	INDUSTRIAL PEAK IND CUM FACTOR	FLOW	IND	сим	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)		ACITY (%)
		BLDG D	MH7A-MH5A							0.0	0.0	3.80	0.00		0.05	0.05	1.50	0.02	0.05	0.05	0.02	0.00	0.00	0.04	34.22	11.10	200	1.00	1.055	34.18	99.88%
		BLDG A	MH7A-MH5A							0.0	0.0	3.80	0.00		0.30	0.30	1.50	0.15	0.30	0.30	0.10	0.00	0.00	0.24	34.22	14.61	200	1.00	1.055	33.97	99.28%
		MH7A	MH5A							0.0	0.0	3.80	0.00		1.01	1.01	1.50	0.49	1.01	1.01	0.33	0.00	0.00	0.82	27.59	32.62	200	0.65	0.851	26.76	97.01%
																															+
		BLDG C	MH1A-MH2A							0.0	0.0	3.80	0.00		0.06	0.06	1.50	0.03	0.06	0.06	0.02	0.00	0.00	0.05	34.22	12.70	200	1.00	1.055	34.17	99.86%
Idone Commercial		MH1A	MH2A							0.0	0.0	3.80	0.00		2.35	2.35	1.50	1.14	2.35	2.35	0.78	0.00	0.00	1.92	20.24	83.16	200	0.35	0.624	18.32	90.53%
		BLDG B	MH2A-MH3A							0.0	0.0	3.80	0.00		0.22	0.22	1.50	0.11	0.22	0.22	0.07	0.00	0.00	0.18	34.22	17.46	200	1.00	1.055	34.04	99.48%
		MH2A	MH3A							0.0	0.0	3.80	0.00		0.37	2.72	1.50	1.32	0.37	2.72	0.90	0.00	0.00	2.22	20.24	12.25	200	0.35	0.624	18.02	89.03%
		MH3A	MH4A							0.0	0.0	3.80	0.00		0.15	2.87	1.50	1.40	0.15	2.87	0.95	0.00	0.00	2.34	20.24	68.50	200	0.35	0.624	17.90	88.43%
		MH4A	MH5A							0.0	0.0	3.80	0.00		0.02	2.89	1.50	1.40	0.02	2.89	0.95	0.00	0.00	2.36	20.24	14.90	200	0.35	0.624	17.88	88.35%
		MH5A	MH6A							0.0	0.0	3.80	0.00		0.17	4.07	1.50	1.98	0.17	4.07	1.34	0.00	0.00	3.32	20.24	33.69	200	0.35	0.624	16.92	83.59%
		IVIDDA	IVITIOA							0.0	0.0	3.00	0.00		0.17	4.07	1.50	1.90	0.17	4.07	1.34	0.00	0.00	3.32	20.24	33.09	200	0.35	0.024	10.92	63.59%
																									ļ						
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Design Parameters:				Notes:								Designed:		SEL		No.					Revision								Date		
Residential		ICI Areas		Mannings     Demand	coefficient			0.013 L/day	200	L/day						1.	Report Nar	ne (Master S	ervicing Stud	y, Adequacy	of Public Serv	rices, Servicir	ng Brief, ect) -	Submission	No. 1				2019-03-30		
SF 3.4 p/p/u		ICI Areas		Demand     Infiltration				L/day L/s/Ha	200	L/day		Checked:		.IIM																	
TH/SD 2.7 p/p/u	INST 28,0	00 L/Ha/day		Residenti			0.33	Libilia				oneckeu:		JIIVI													1				
APT 1.8 p/p/u		00 L/Ha/day				ormula = 1+(	14/(4+(P/10	000)^0.5))0.	8																		1				
Other 60 p/p/Ha		00 L/Ha/day	MOE Chart			0.8 Correction			-			Dwa. Refe	rence:	119351-501																	
2 20 p/p///d		00 L/Ha/day				utional Peak		sed on tota	l area,							Fil	e Reference:					Date:							Sheet No:		
						20%, otherwi										1	19351.5.7.1					2019-03-3	0						1 of 1		





NOTES:

1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND

2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.

LEGEND:

6115A EXISTING AREA NUMBER 0.81 43.2 EXISTING POPULATION EXISTING AREA

IN HECTARES **FUTURE** FLOW DIRECTION

EXISTING AREA NUMBER EXISTING AREA IN HECTARES

MH2A AREA NUMBER 0.37 AREA IN HECTARES

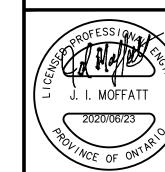
14			
13			
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9			
8			
7			
6			
5	ADD PHASING	JIM	2020:06:23
4	REVISED AS PER CITY COMMENTS	JIM	2020:04:20
3	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15
No.	REVISIONS	Ву	Date

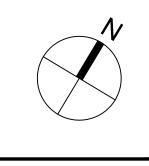
IBI GROUP

400 – 333 Preston Street
Ottawa ON K1S 5N4 Canada
tel 613 225 1311 fax 613 225 9868
ibigroup.com

Project Title

**BANK STREET** DEVELOPMENT 4836 BANK STREET





SANITARY DRAINAGE AREA PLAN

1:500

		$\mathcal{C}\mathcal{A}$
Design SEL	Date FEB. 2019	600-
Drawn DPS	Checked JIM	-19
Project No.	Drawing No.	12
119351	400	07

# **Appendix D**

- Storm Sewer Design Sheet
- Storm Water Management Sheet
- Storm Drainage Area Plan 148290-C-500
- Interim Storm Drainage Area Plan 148290-C-501
- Ponding Plan 148290-C-600
- Interim Ponding Plan 148290-C-601
- Stormtech Underground Chamber Specifications
- Orifice Sizing Calculations
- As-built Design Sheets 119351 & 137175 Pathways Block 204
- Storm Water Management Sheet 119351
- Storm Drainage Area Plan 119351-C-500
- Ponding Plan 119351-C-600

#### STORM SEWER DESIGN SHEET

IBI

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Ottawa, Ontario K1S 5N4 Canada
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ibigroup.com

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155 Dun Skipper Drive City of Ottawa 2668867 Ontario Inc.

	LOCA	TION				AF	REA (Ha)										F	RATIONAL	DESIGN FI	.OW									SEWER DA	TA			
				C= C=	C=		: C=		C= C=	C=	IND	CUM	INI FT	TIME	TOTAL	i (2)	i (5)	i (10)			Syr PFΔK	10vr PFA	100yr PEAK	FIXED	DESIGN	CAPACITY	LENGTH	PIPF	SIZE (mm)		VELOCITY	/ Δ./ΔΙΙ	CAP (2yr)
STREET	AREA ID	FROM	то			0.50 0.5			0.75 0.90	0 1.00	2.78AC 2	2.78AC	(min)	IN PIPE		(mm/hr)				) FLOW (L/	s) FLOW (L/s	FLOW (L/s	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)		(m)		W H		(m/s)		(%)
EXISTING PHASE 1	MH9	CB3	МН9-МН8						0.12		0.25	0.25	10.00	0.11	10.11	76.81	104.19	122.14	178.56	19.22	26.07	30.56	44.68		19.22	34.22	6.73	200		1.00	1.055	15.00	43.84%
EXISTING PHASE 1	MH9B	CB2	MH9-MH8						0.02	2	0.25		10.00		10.11	76.81	104.19	122.14			5.21	6.11	8.94		3.84	34.22	7.69	200		1.00	1.055	30.37	
	55	MH9	MH8						0.02		0.00		10.12		10.76	76.34	103.56	121.39			31.09	36.45	53.28		22.92	158.48		375		0.75	1.390	135.56	
	MH8	CB1	MH8-MH7						0.17		0.35	0.35	10.00	0.17	10.17	76.81	104.19	122.14	178.56	27.22	36.93	43.29	63.29		27.22	34.22	10.80	200		1.00	1.055	6.99	20.44%
		MH8	MH7								0.00		10.76	0.45	11.21	74.01	100.35	117.61		48.45	65.70	77.00	112.55		48.45	48.63	26.20	250		0.61	0.960	0.18	0.36%
	MH7	BLDG D	MH7-MH5						0.05		0.13		10.00	0.20	10.20	76.81	104.19	122.14			13.03	15.28	22.34		9.61	34.22	12.60	200		1.00	1.055	24.61	71.92%
	MH7A	BLDG A	MH7-MH5						0.30	)	0.75		10.00	0.18	10.18	76.81	104.19	122.14			78.21	91.68	134.03		57.65	62.04	12.97	250		1.00	1.224	4.39	7.07%
		MH7	MH5								0.00	1.53	11.21	0.47	11.68	72.44	98.19	115.07	168.17	110.86	150.27	176.11	257.37		110.86	225.20	38.55	450		0.57	1.372	114.34	50.77%
	MH10A	CB4	MH10-CBMH1						0.03	2	0.08	0.08	10.00	0.12	10.12	76.81	104.19	122.14	178.56	5.76	7.82	9.17	13.40		5.76	34.22	7.78	200		1.00	1.055	28.45	83.15%
	MH10B	MH10	CBMH1						0.08		0.20				10.83					21.01	28.50	33.41	48.84		21.01	49.16				0.63	0.970		57.27%
			52																														
	CBMH1A	CB5	CBMH1-CBMH2						0.06		0.15				10.36	76.81	104.19				15.64	18.34	26.81		11.53	34.22		200		1.00	1.055	22.69	
	CBMH1B	CB6	CBMH1-CBMH2						0.07		0.18							122.14		13.45	18.25	21.39	31.27		13.45	34.22		200		1.00	1.055	20.76	
	CBMH1C	CB7	CBMH1-CBMH2						0.08	3	0.20		10.00				104.19				20.86	24.45	35.74		15.37	34.22		200		1.00	1.055	18.84	55.07%
		CBMH1	СВМН2								0.00	0.80	10.83	0.81	11.64	73.74	99.98	117.18	171.28	59.04	80.05	93.82	137.13		59.04	65.96	63.25	250		1.13	1.302	6.92	10.49%
	СВМН2	СВМН2	MH4						0.08	3	0.20	1.00	11.64	0.70	12.34	71.02	96.24	112.78	164.81	71.08	96.32	112.87	164.94		71.08	58.89	33.75	300		0.34	0.807	-12.19	-20.70%
										-				1														<u> </u>					
PHASE 2	MH22	CB23	MH22	0.06							0.04	0.04	10.00	0.08	10.08	76.81	104.19	122.14	178.56	3.20	4.34	5.09	7.45		3.20	34.22	5.20	200		1.00	1.055	31.01	90.64%
	CB20	CB20	MH22-MH20						0.12	2	0.30	0.30	10.00	0.06	10.06	76.81	104.19	122.14	178.56	23.06	31.28	36.67	53.61		23.06	34.22	3.93	200		1.00	1.055	11.16	32.61%
		MH22	MH20										10.08		10.72		103.76				35.48	41.59	60.80		26.16	59.68 62.04	31.32	300		0.35	0.818	33.53	56.18%
	ROOF B	BLDG B	MH20						0.19	9	0.48	0.48	10.00	0.08	10.08	76.81	104.19	122.14	178.56	36.51	49.53	58.06	84.88		36.51	62.04	6.06	250		1.00	1.224	25.53	41.15%
	MH21-1	CB21	MH23						0.12		0.30		10.00	0.14	10.14	76.81	104.19	122.14			31.28	36.67	53.61		23.06	34.22	9.04	200		1.00	1.055	11.16	32.61%
	MH21-2	CB22	MH23-MH21						0.12	2	0.30		10.00	0.05	10.05	76.81	104.19	122.14			31.28	36.67	53.61		23.06	34.22	3.16	200		1.00	1.055	11.16	32.61%
		MH23	U/G Chamber								0.00		10.14			76.26	103.44	121.26			62.12	72.81	106.44		45.79	59.68	5.63	300		0.35	0.818	13.89	23.27%
		U/G Chamber MH21	MH21 MH20								0.00		10.26 10.26		10.32 10.61		102.85 102.85	120.56 120.56			61.76 61.76	72.40 72.40	105.83 105.83		45.53 45.53	59.68 59.68	2.99 17.25	300 300		0.35 0.35	0.818	14.15 14.15	23.71%
		MH20	MH3								0.00				10.01		102.63	117.83				167.06	244.19		105.12	175.96	15.01	450		0.35	1.072	70.84	40.26%
	CB24	CB24	MH3-MH4						0.40		0.05	0.05					104.19	400.44			00.07	20.50	44.68		10.00		4.00	200			4.055		43.84%
									0.10	U	0.25				10.02			122.14			26.07	30.56			19.22	34.22	1.08	200		1.00	1.055	15.00	
	CBMH20	CBMH20	MH1-MH3	0.10	0						0.08	80.0	10.00	1.19	11.19	76.81	104.19	122.14	178.56	6.41	8.69	10.19	14.89		6.41	59.68	58.53	300		0.35	0.818	53.28	89.27%
	ROOF C, MH1B	BLDG C	MH1-MH3						0.16	6	0.40	0.40	10.00	0.68	10.68	76.81	104.19	122.14	178.56	30.75	41.71	48.90	71.48		30.75	62.04	50.00	250		1.00	1.224	31.29	50.44%
	CB25	CB25	MH1-MH3						0.02	2	0.05	0.05	10.00	0.11	10.11	76.81	104.19	122.14			5.21	6.11	8.94		3.84	34.22	7.07	200		1.00	1.055	30.37	88.77%
EXISTING	External 2.78AC=3.03	MH1	MH3					1.35	0.32	2	3.84		11.19		12.53	72.51	98.29	115.19			430.22	504.19	736.87		317.39	506.25	89.13	750		0.19	1.110	188.86	
	MH1A, MH1B	MH3	MH4								0.00	6.05	12.53	0.39	12.92	68.28	92.49	108.36	158.32	412.79	559.10	655.05	957.05		412.79	592.21	30.43	750		0.26	1.299	179.42	30.30%
		MH4	MH5								0.00	7.05	12.92	0.18	13.10	67.15	90.94	106.53	155.64	473.15	640.73	750.62	1,096.60		473.15	660.70	15.45	750		0.32	1.449	187.55	28.39%
		CB17	MH5-MH12						0.09	9	0.23	0.23	10.00	0.04	10.04	76.81	104.19	122.14		17.29	23.46	27.50	40.21		17.29	34.22	2.55	200		1.00	1.055	16.92	49.45%
		CB16	MH5-MH12	0.01	1						0.01		10.00	0.14	10.14		104.19				0.87	1.02	1.49		0.64	34.22	9.09	200		1.00	1.055	33.58	98.13%
		MH5	MH12								0.00		13.10		13.44		90.25	105.72		587.19		931.41	1,360.66		587.19	705.11		750		0.37	1.546	117.92	
		MH12	EX 1350 SEWER								0.00	8.81	13.44	0.16	13.59	65.73	88.98	104.23	152.25	579.03	783.89	918.24	1,341.34		579.03	747.54	15.69	750		0.41	1.639	168.51	22.54%
										TOTAL	8.81	TRUE																		1	1		
																														1	1		
Definitions:		1	1	Notes:		<u> </u>					<u> </u>		Designed	  :	WZ	1	1		No.						Revision	<u> </u>					Date	<u> </u>	
Q = 2.78CiA, where:				1. Mannings	coefficier	nt (n) = 0.0	13												1					Submission							2024-11-2		
Q = Peak Flow in Litr													<u> </u>						2					Submission							2025-02-1		
A = Area in Hectares	(Ha) in millimeters per hour (r	mm/hr\											Checked:		RM				3					Submission	n No. 3						2025-04-2	2	
i = Rainfail intensity fi = 732.951 / (TC+		mm/nr) 2 YEAR																	1														
[i = 998.071 / (TC+		5 YEAR										ŀ	Dwg. Refe	erence:	148590-5	00			1														
[i = 1174.184 / (TC	C+6.014)^0.816]	10 YEAR											•								Reference:					Date:					Sheet No:		
[i = 1735.688 / (TC	C+6.014)^0.820]	100 YEAR																		1485	90-6.04.04				2	2024-11-26					1 of 1		

#### STORM SEWER DESIGN SHEET

IBI

IBI GROUP 400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com

155 Dun Skipper Drive City of Ottawa 2668867 Ontario Inc.

	LOCA	TION			AREA	A (Ha)								R	RATIONAL I	DESIGN FL	OW									SEWER DAT	TA			
STREET	AREA ID	FROM	то	C= C= C=	C= C=	C= C=			ND CUM			TOTA		i (5)	i (10)	i (100)	2yr PEAK			100yr PEAK FIXED					PIPE SIZE (r	mm)	SLOPE	VELOCITY		CAP (2yr)
SIREEI	AREA ID	FROW	10	0.25 0.30 0.40	0.50 0.56	0.65 0.81	0.75 0	0.90 1.00 2.7	8AC 2.78A	C (mir	) IN PIPI	E (min)	(mm/hr	(mm/hr)	(mm/hr)	(mm/hr)	FLOW (L/s	FLOW (L/s)	FLOW (L/s)	FLOW (L/s) FLOW (L/s	FLOW (L/s)	(L/s)	(m)	DIA	W	Н	(%)	(m/s)	(L/s)	(%)
EXISTING PHASE 1	MH9	СВЗ	МН9-МН8				0.12	0	.25 0.25	10.0	0 0.11	10.11	76.81	104.19	122.14	178.56	19.22	26.07	30.56	44.68	19.22	34.22	6.73	200		_	1.00	1.055	15.00	43.84%
	мн9в	CB2	МН9-МН8						.05 0.05						122.14			5.21	6.11	8.94	3.84	34.22	7.69	200			1.00	1.055	30.37	
		МН9	MH8					0.	.00 0.30	10.1	2 0.64	10.76	76.34	103.56	121.39	177.46	22.92	31.09	36.45	53.28	22.92	158.48	53.17	375			0.75	1.390	135.56	85.54%
	MH8	CB1	MH8-MH7				0.17		.35 0.35						122.14		27.22	36.93	43.29	63.29	27.22	34.22		200			1.00	1.055	6.99	20.44%
		MH8	MH7						.00 0.65						117.61			65.70	77.00	112.55	48.45	48.63	26.20	250			0.61	0.960	0.18	0.36%
	MH7	BLDG D	MH7-MH5						.13 0.13						122.14			13.03	15.28	22.34	9.61	34.22	12.60	200			1.00	1.055	24.61	71.92%
	MH7A	BLDG A	MH7-MH5				0		.75 0.75							178.56		78.21	91.68	134.03	57.65	62.04				4	1.00	1.224	4.39	7.07%
		MH7	MH5					0.	.00 1.53	11.2	1 0.47	11.68	72.44	98.19	115.07	168.17	110.86	150.27	176.11	257.37	110.86	225.20	38.55	450		4	0.57	1.372	114.34	50.77%
	MH10A	CB4	MH10-CBMH1				0	0.03	.08 0.08	10.0	0 0.12	10.12	76.81	104.19	122.14	178.56	5.76	7.82	9.17	13.40	5.76	34.22	7.78	200		_	1.00	1.055	28.45	83.15%
	MH10B	MH10	CBMH1						.20 0.28						121.38			28.50	33.41	48.84	21.01	49.16	41.40	250			0.63	0.970	28.16	
			J-11111																											
	CBMH1A	CB5	CBMH1-CBMH2						.15 0.15						122.14	178.56	11.53	15.64	18.34	26.81	11.53	34.22		200			1.00	1.055	22.69	
	CBMH1B	CB6	CBMH1-CBMH2						.18 0.18						122.14			18.25	21.39	31.27	13.45	34.22		200			1.00	1.055		60.69%
	CBMH1C	CB7	СВМН1-СВМН2				0		.20 0.20						122.14			20.86	24.45	35.74	15.37	34.22	9.59	200			1.00	1.055		55.07%
		CBMH1	СВМН2					0.	.00 0.80	10.8	3 0.81	11.64	73.74	99.98	117.18	171.28	59.04	80.05	93.82	137.13	59.04	65.96	63.25	250		4	1.13	1.302	6.92	10.49%
									00 100	44.0		10.0	74.00	00.04	440.70	101.01	74.00	00.00	110.07	10101	74.00	50.00	00.75			4	0.04	0.007	10.10	00.700
	CBMH2	СВМН2	MH4				0	0.08	.20 1.00	11.6	4 0.70	12.34	71.02	96.24	112.78	164.81	71.08	96.32	112.87	164.94	71.08	58.89	33.75	300		4	0.34	0.807	-12.19	-20.70%
																										+				
PHASE 2	MH22	CB23	MH22	0.06				0	.04 0.04	10.0	0.08	10.08	76.81	104.19	122.14	178.56	3.20	4.34	5.09	7.45	3.20	34.22	5.20	200		+	1.00	1.055	31.01	90.64%
-																										-				
	CB20	CB20	MH22-MH20				0	0.12 0	.30 0.30	10.0	0.06	10.06	76.81	104.19	122.14	178.56	23.06	31.28	36.67	53.61	23.06	34.22	3.93	200			1.00	1.055	11.16	32.61%
		MH22	MH20						.00 0.34						121.63		26.16	35.48	41.59	60.80	26.16	59.68	31.32	300			0.35	0.818	33.53	56.18%
	ROOF B	BLDG B	MH20				0	0.19 0	.48 0.48	10.0	0.08	10.08	76.81	104.19	122.14	178.56	36.51	49.53	58.06	84.88	36.51	62.04	6.06	250			1.00	1.224	25.53	41.15%
	MH21-1	CB21	MH23					0.12 0	.30 0.30	10.0	0 0.14	10.14	76.81	104.19	122.14	178.56	23.06	31.28	36.67	53.61	23.06	34.22	9.04	200		+	1.00	1.055	11.16	32.61%
	MH21-2	CB21	MH23-MH21						.30 0.30						122.14			31.28	36.67	53.61	23.06	34.22	3.16	200		+	1.00	1.055	11.16	32.61%
	IVII IZ I-Z	MH23	U/G Chamber						.00 0.60						121.26			62.12	72.81	106.44	45.79	59.68	5.63	300		+	0.35	0.818	13.89	23.27%
		U/G Chamber	MH21						.00 0.60						120.56			61.76	72.40	105.83	45.53	59.68	2.99	300		+	0.35	0.818	14.15	23.71%
		MH21	MH20						.00 0.60						120.56			61.76	72.40	105.83	45.53	59.68	17.25	300		+	0.35	0.818	14.15	23.71%
		MH20	MH3						.00 1.42						117.83			142.54	167.06	244.19	105.12	175.96	15.01	450		-	0.35	1.072	70.84	40.26%
	CB24	CB24	MH3-MH4				0	0.10 0	.25 0.25	10.0	0 0.02	10.02	76.81	104.19	122.14	178.56	19.22	26.07	30.56	44.68	19.22	34.22	1.08	200			1.00	1.055	15.00	43.84%
	CBMH20	CBMH20	MH1-MH3		0.57			0	.89 0.89	10.0	0 1.19	11.19	76.81	104.19	122.14	178.56	68.15	92.46	108.39	158.45 15.00	15.00	59.68	58.53	300		+	0.35	0.818	44.68	74.87%
	CBIVITIZO	CBIVITIZO	IVITT-IVITS		0.57			- 0	.03 0.03	10.0	0 1.13	11.16	70.01	104.13	122.14	170.50	00.13	32.40	100.55	130.43 13.00	13.00	33.00	30.33	300		+	0.55	0.010	44.00	14.017
	CB25	CB25	MH1-MH3				0	0.02 0	.05 0.05	10.0	0 0.11	10.11	76.81	104.19	122.14	178.56	3.84	5.21	6.11	8.94	3.84	34.22	7.07	200		+	1.00	1.055	30.37	88.77%
EXISTING	External 2.78AC=3.03	MH1	МН3			1.35		3.	.04 3.98	11.1	9 1.34	12.53	72.51	98.29	115.19	168.34	288.60	391.20	458.47	670.04	288.60	506.25	89.13	750			0.19	1.110	217.65	42.99%
	MH1A, MH1B	МН3	MH4					0.	.00 5.65	12.5	3 0.39	12.92	68.28	92.49	108.36	158.32	385.68	522.39	612.03	894.20	385.68	592.21	30.43	750			0.26	1.299	206.52	34.87%
		MH4	MH5					0.	.00 6.65	12.9	2 0.18	13.10	67.15	90.94	106.53	155.64	446.50	604.63	708.33	1,034.81	446.50	660.70	15.45	750			0.32	1.449	214.21	32.42%
									00 000	46.5	0 000	40.5	70.51	101.15	100 ( )	470.55	47.00	00.40	07.50	10.01	47.00	04.00	0.55				4.00	4.055	10.00	10.1==
		CB17	MH5-MH12	0.04			0		.23 0.23							178.56		23.46	27.50	40.21	17.29	34.22		200			1.00	1.055		49.45%
		CB16 MH5	MH5-MH12 MH12	0.01					.01 0.01 .00 8.41						122.14 105.72			0.87 759.25	1.02 889.44	1.49 1,299.35	0.64 560.73	34.22 705.11	9.09 31.20	200 750			1.00 0.37	1.055 1.546	33.58	98.13%
		MH5 MH12	MH12 EX 1350 SEWER						.00 8.41							154.45			889.44 876.87	1,299.35	552.94	705.11					0.37	1.546		26.03%
		IVIIITZ	LA 1330 3EWER					0.	0.41	13.4	0.10	10.08	00.73	00.90	104.23	102.20	332.34	770.00	070.07	1,230.03	332.34	171.04	10.03	750		+	0.71	1.003	134.00	20.03/
		1						TOTAL 8	.41 TRUE	:																+				
			_																											
																								,						
		1		N-4						D		\A/=									Davida '	<u> </u>								
Definition				Notes: 1. Mannings coefficient	(n) = 0.040					Desigr	eu:	WZ				No.				Ob !	Revision ion No. 1					+		Date 2024-11-2	6	
Definitions:	··			i. wainings coemclent	(11) - 0.013											2					ion No. 1					+		2024-11-2		
Q = 2.78CiA, where																3				Submiss										
Q = 2.78CiA, where: Q = Peak Flow in Lit	itres per Second (L/s)									Chack	au.	RM.									ion No 3							2025-04-2	'	
Q = 2.78CiA, where: Q = Peak Flow in Lit A = Area in Hectare:	itres per Second (L/s) es (Ha)	mm/hr)								Check	ea:	RM								Subiniss	ion No. 3					+		2025-04-2	2	
Q = 2.78CiA, where: Q = Peak Flow in Lit A = Area in Hectare:	itres per Second (L/s) es (Ha) y in millimeters per hour (i	mm/hr) 2 YEAR								Check	ea:	RM								Submiss	ion No. 3							2025-04-2	2	
Q = 2.78CiA, where: Q = Peak Flow in Lit A = Area in Hectare: i = Rainfall intensity	itres per Second (L/s) es (Ha) y in millimeters per hour (i C+6.199)^0.810]										eference:	148590-	500							Submiss	ion No. 3					<del> </del>		2025-04-2	2	
Q = 2.78CiA, where Q = Peak Flow in Lit A = Area in Hectare: i = Rainfall intensity [i = 732.951 / (TC	itres per Second (L/s) es (Ha) y in millimeters per hour (i C+6.199)^0.810] C+6.053)^0.814]	2 YEAR											500				File Ro	eference:		Submiss	ion No. 3	Date:						2025-04-2		



PROJECT: 155 Dun Skipper DATE: 2025-04-22 FILE: 148590-6.04.04 REV #: 3 DESIGNED BY: WZ CHECKED BY: RM

#### STORMWATER MANAGEMENT

#### Formulas and Descriptions

 $i_{2\mu}$  = 1:2 year Intensity = 732.951 /  $(T_c+6.199)^{0.810}$   $i_{5\mu}$  = 1:5 year Intensity = 98.071 /  $(T_c+6.053)^{0.814}$   $i_{100\mu}$  = 1:100 year Intensity = 1735.688 /  $(T_c+6.014)^{0.820}$   $T_c$  = Time of Concentration (min) C = Average Runoff Coefficient A = Area (Ha) Q = Flow = 2.78CIA (L/s)

#### Maximum Allowable Release Rate

#### Restricted Flowrate

Taken from City of Ottawa approved Design Brief "Pathways at Findlay Creek" (D07-16-13-0023) drainage area EXT 4

 EXT 4 Release Rate
 760.00 L/s

 Area EXT 4 TOTAL =
 4.04 Ha

 Area Subject Lands
 2.49

 Perscentage Share of release rate
 62%

Q<sub>TOTAL</sub> = 468.42 L/s

Uncontrolled Release (Q<sub>uncontrolled</sub> = 2.78°C°i<sub>100yr</sub> \*A<sub>uncontrolled</sub>) For Drainage Area <u>MH6136</u>

C = 0.625  $T_c = 10 \text{ min}$   $I_{100pr} = 178.56 \text{ mm/hr}$   $A_{uncontrolled} = 0.01 \text{ Ha}$ 

Q uncontrolled = 0.01 Ha

Q uncontrolled = 3.10 L/s

Maximum Allowable Release Rate ( $Q_{max allowable} = Q_{restricted} - Q_{uncontrolled}$ )

Q <sub>max allowable</sub> = 440.49 L/s

Uncontrolled Release (Q<sub>uncontrolled</sub> = 2.78\*C\*i 100yr\*A uncontrolled) For Drainage Area <u>UNRES</u>

C = 1.00  $T_c = 10 \text{ min}$   $i_{100yr} = 178.56 \text{ mm/hr}$   $i_{100yr} = 0.05 \text{ Ha}$ 

Q uncontrolled = 24.82 L/s

#### MODIFIED RATIONAL METHOD (100-Year & 5-Year Ponding & 2-Year Ponding)

Mary	MODIFIED RATIO	ONAL METHO	D (100-1001 00-		g a z-rear ronan	19)												
The part	Drainage Area		Drainage Area	Plan - MH9/	МН9В				I									
Control   Cont			Restricted Flow O	(1 /s)=	10.00				Restricted Flow O. /	I /s)=	10.00	•	Area (Ha)		Restricted Flow O. (	I /s)=	10.00	
The column   Section   S	, =	0.50			10.00		7	0.70			10.00		C =	0.70	1		10.00	
This is a part		1	Peak Flow		0-0	Volume		i.			0-0	Volume		i.	Peak Flow		00	Volume
This content is a part of the content is a p					1						-							
This content																		
This is a part   This						44.83												
Part																10.00		
Part	36	80.96	30.72	10.00	20.72			72.53	22.02	10.00	12.02	13.70	15	61.77	18.75	10.00	8.75	7.88
Part				Ctamana (	3,					(3)								
This continue		Overflow	Required		Sub-surface	Balance		Overflow			Sub-surface	Balance	:	Overflow			Sub-surface	Balance
Column   C		0.00	44.84	20.64	10.07	14.13		0.00		20.64	10.07	0.00		0.00		20.64	10.07	0.00
Column   C	Length (m)	Dia (m)	Area (m²)	Volume (m <sup>3</sup> )			Structure		Denth	Area (m²)	Volume (m <sup>3</sup> )							
Training Arms	54.91	0.375	0.110	6.06			CB3 (600mm x 600mm)		1.80	0.36	0.65							
Part																		
Part	7.05	0.200	0.031		-		CBMITTO (1200IIIII Tourid)		2.00	1.13	3.56							
Part					overflows to: CB1						overflows to:	CB1					overflows to:	CB1
Part	Drainage Area	CB1	Drainage Area	Plan - MH8			Drainage Area	CB1	Ī				Drainage Area	CB1	ī			
190-year    Area (Ha)	0.17	7				Area (Ha)	0.17						0.165					
Transport   Tran	C =	0.94			16.00		C =	0.75			16.00		C =	0.75			16.00	
Variable   Vision	т	T			Ι Ι	Volume	7					Volume	T					Volume
Control   Cont		i <sub>100yr</sub>		Q,	Q <sub>p</sub> -Q,			i <sub>5yr</sub>		Q,	$Q_p - Q_r$			i <sub>2yr</sub>		Q,	$Q_p$ - $Q_r$	
1	(min)		(L/s)			(m ³)	(min)		(L/s)			(m <sup>3</sup> )			(L/s)			(m³)
1													7					
Part		106.68	45.87	16.00	29.87	43.02	10	104.19	35.85	16.00	19.85	11.91		76.81	26.42	16.00	10.42	6.25
Continue   Storage   Image   Continue   Storage   Image   Continue   Contin																		
Control   Cont	21	96.00	42.43	10.00	20.43	42.01	13	90.03	31.10	16.00	13.10	11.04	13	00.93	23.03	16.00	7.03	5.40
14.13							_		St	orage (m <sup>3</sup> )								
Structure   Part   Pa									Required 11.91						Required 6.25			
3.00   0.450   0.159   4.35   4.35   CB3 (000mm x 600mm)   1.80   0.36   0.65   CBT   CB					0.00	0.00		0.00				0.00		0.00	0.20	00.00	0.00	0.00
Case																		
Carriage Ares   CB16   Carriage Ares   CB16	51.00	0.400	0.100				OBO (OOOIIIII X OOOIIIII)		1.00	0.50	0.65							
Part					overflows to: CB1	7					overflowe to:	CD17						CB17
Part					01011101101010101	•					Overnows to.	CBII					overflows to:	00.,
100-Year Ponding   1   1   1   1   1   1   1   1   1	Drainage Area	CB16	Drainage Area	Plan - MH5E			Drainage Area	CB16	Ī		Overnows to.	CBIT	Drainage Area	CB16	1		overflows to:	5517
Transproper   Peak Flow   Christophe   Chr	Drainage Area Area (Ha)	0.010			3	•	Area (Ha)	0.010	Î	1.63-				0.010				55.7
Variable   Institute   Insti	Drainage Area Area (Ha) C =	0.010	Restricted Flow Q <sub>r</sub>	(L/s)=	3		Area (Ha)	0.010	Restricted Flow Q <sub>r</sub> (					0.010	Restricted Flow Q <sub>r</sub> (			
-6	Area (Ha) C =	0.010	Restricted Flow Q <sub>r</sub>	(L/s)= Ponding	6.00		Area (Ha) C =	0.010	Restricted Flow Q <sub>r</sub> (	g	6.00		Area (Ha) C =	0.010 0.30	Restricted Flow Q <sub>r</sub> (  2-Year Pondi	ng	6.00	
4	Area (Ha) C =	0.010	Restricted Flow Q <sub>r</sub> 100-Year I  Peak Flow	(L/s)= Ponding	6.00	Volume	Area (Ha) C =	0.010	Restricted Flow Q <sub>r</sub> ( 5-Year Pondin Peak Flow	g	6.00	Volume 5yr	Area (Ha) C =	0.010 0.30	Restricted Flow Q <sub>r</sub> (i  2-Year Pondi  Peak Flow	ng	6.00	Volume
1.0   1.0	Area (Ha) C = T <sub>c</sub> Variable (min)	0.010 0.38 i <sub>100yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> 100-Year I  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)	(L/s)= Ponding Q, (L/s)	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 100yr (m³)	Area (Ha) C =  7	0.010 0.30 i <sub>5yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> ( 5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)	Q, (L/s)	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 5yr (m³)	C = T <sub>c</sub> Variable	0.010 0.30 i <sub>2yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> (In the second of the s	Q, (L/s)	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 2yr (m³)
1	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -6	0.010 0.38 i <sub>100yr</sub> (mm/hour) 57497.20	Restricted Flow Q <sub>r</sub> 100-Year  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>100yr</sub> A (L/s)  599.41	(L/s)= Ponding Q, (L/s) 16.00	G.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41	Volume 100yr (m³) -210.03	Area (Ha) C =  T <sub>c</sub> Variable  (min)  7	0.010 0.30 i <sub>5yr</sub> (mm/hour) 123.30	Restricted Flow Q <sub>r</sub> (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A  (L/s)  1.03	Q , (L/s) 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97	Volume 5yr (m³) -2.09	Area (Ha) C =  T c  Variable  (min)  7	0.010 0.30 i <sub>2yr</sub> (mm/hour) 90.66	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  0.76	Q, (L/s) 6.00	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24	Volume 2yr (m³) -2.20
Storage (m')   Stor	Area (Ha) C =  T <sub>c</sub> Variable (min)  -6 -4 -3	0.010 0.30 i <sub>100yr</sub> (mm/hour) 57497.20 977.56 702.38	Peak Flow Q <sub>p</sub> = 2.78xCi 100pr A (L/s) 599.41 10.19 7.32	(L/s)=  Ponding  Q,  (L/s)  16.00  16.00  16.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68	Volume 100yr (m³) -210.03 1.39 1.56	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10	0.010 0.30 i <sub>5yr</sub> (mm/hour) 123.30 109.79 104.19	Restricted Flow $Q_t$ ( 5-Year Pondin  Peak Flow $Q_p = 2.78 \times Ci_{Syr} A$ (L/s)  1.03  0.92  0.87	Q , (L/s) 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13	Volume 5yr (m³) -2.09 -2.75	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10	0.010 0.30 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81	Restricted Flow Q <sub>r</sub> (i 2-Year Pondi Peak Flow $Q_p = 2.78 \times Ci_{2yr} A$ (L/s) 0.76 0.67 0.64	Q, (L/s) 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36	Volume 2yr (m³) -2.20 -2.88 -3.22
Part	Area (Ha) C =  T <sub>c</sub> Variable (min)  -6  -4  -3  -2	0.010 0.30 i <sub>100yr</sub> (mm/hour) 57497.20 977.56 702.38 555.31	Restricted Flow Q <sub>t</sub>   100-Year   Peak Flow Q <sub>p</sub> = 2.78xCl 100pr A (U.S)   599.41   10.19   7.32   5.79	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21	Volume 100yr (m³) -210.03 1.39 1.56 1.23	Area (Ha) C =	0.010 0.30 i <sub>5yr</sub> (mm/hour) 123.30 109.79 104.19 99.19	Restricted Flow $Q_t$ ( 5-Year Pondin  Peak Flow $Q_p = 2.78xCi_{syr}A$ (L/s)  1.03  0.92  0.87  0.83	Q, (L/s) 6.00 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17	Volume 5yr (m³) -2.09 -2.75 -3.08	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11	0.010 0.30 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	Restricted Flow Q <sub>r</sub> (in the content of the conten	Q, (L/s) 6.00 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56
1.56   0.31   0.00   1.25   0.00   3.08   0.31   0.00	Area (Ha) C =  T <sub>c</sub> Variable (min)  -6  -4  -3  -2	0.010 0.30 i <sub>100yr</sub> (mm/hour) 57497.20 977.56 702.38 555.31	Restricted Flow Q <sub>t</sub>   100-Year   Peak Flow Q <sub>p</sub> = 2.78xCl 100pr A (U.S)   599.41   10.19   7.32   5.79	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 16.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84	Volume 100yr (m³) -210.03 1.39 1.56 1.23	Area (Ha) C =	0.010 0.30 i <sub>5yr</sub> (mm/hour) 123.30 109.79 104.19 99.19	Restricted Flow Q <sub>c</sub> (  5-Year Pondin  Peak Flow  Q <sub>p</sub> = 2.78xCl <sub>Syr</sub> A  (L/s)  1.03  0.92  0.87  0.83  0.76	Q, (L/s) 6.00 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17	Volume 5yr (m³) -2.09 -2.75 -3.08	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11	0.010 0.30 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	Restricted Flow Q, ( 2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2yr</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56	Q, (L/s) 6.00 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56
Carinage Area   CB17   Drainage Area   CB17   Area (Ha)   0.050   Carinage Area   CB17   Carinage Area   CB17   Area (Ha)   0.050   Carinage Area   CB17	Area (Ha) C =  T <sub>c</sub> Variable (min)  -6  -4  -3  -2	0.010 0.38 i <sub>100yr</sub> (mm/hour) 57497.20 977.56 702.38 555.31 398.62	Restricted Flow $Q_c$ 100-Year    Peak Flow $Q_p = 2.78 \times CI_{100pr} A$ (L/s)  599.41  10.19  7.32  5.79  4.16	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00	Area (Ha) C =	0.010 0.30 i <sub>Syr</sub> (mm/hour) 123.30 109.79 104.19 99.19 90.63	Restricted Flow Q <sub>t</sub> (  5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>sy</sub> A (L/s)  1.03 0.92 0.87 0.83 0.76	Q , (L/s) 6.00 6.00 6.00 6.00 6.00 crage (m <sup>3</sup> )	6.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11	0.010 0.30 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, ( 2-Year Pondi Peak Flow Qp=2.78xCl zyr A (L/s) 0.76 0.67 0.64 0.61 0.56	Q, (L/s) 6.00 6.00 6.00 6.00 6.00	6.00 Q <sub>p</sub> -Q, (L/s) -5.24 -5.33 -5.36 -5.39 -5.44	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24
Area (Ha)   0.990	Area (Ha) C =  T <sub>c</sub> Variable (min)  -6  -4  -3  -2	0.010 0.30  i100yr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow	Restricted Flow Q <sub>r</sub>   100-Year   Peak Flow Q <sub>p</sub> = 2.78xCl 100 <sub>p</sub> A   599.41   10.19   7.32   5.79   4.16   Required	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3  Sub-surface 0.00	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00	Area (Ha) C =	0.010 0.30 I syr (mm/hour) 123.30 109.79 104.19 99.19 90.63	Restricted Flow Q, ( 5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>5yr</sub> A (1.03) 0.92 0.87 0.83 0.76  Str.  Required	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 5.00 Surface	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11	0.010 0.30 I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, (  2-Year Pondi  Peak Flow Qp=2.78xC12yrA (LS2) 0.76 0.67 0.64 0.61 0.56  Str. Required	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00
Area (Ha)   0.990	Area (Ha) C =  T <sub>c</sub> Variable (min)  -6  -4  -3  -2	0.010 0.30  i100yr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow	Restricted Flow Q <sub>r</sub>   100-Year   Peak Flow Q <sub>p</sub> = 2.78xCl 100 <sub>p</sub> A   599.41   10.19   7.32   5.79   4.16   Required	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3  Sub-surface 0.00	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00	Area (Ha) C =	0.010 0.30 I syr (mm/hour) 123.30 109.79 104.19 99.19 90.63	Restricted Flow Q, ( 5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>5yr</sub> A (1.03) 0.92 0.87 0.83 0.76  Str.  Required	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 5.00 Surface	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11	0.010 0.30 I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, (  2-Year Pondi  Peak Flow Qp=2.78xC12yrA (LS2) 0.76 0.67 0.64 0.61 0.56  Str. Required	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Area (Ha) C =  T <sub>c</sub> Variable (min) -6 -4 -3 -2 0	0.010 0.30  i 1000r (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00	Restricted Flow Q <sub>r</sub> 100-Year   Poak Flow Q <sub>F</sub> = 2.78xCl <sub>100p</sub> A (Us) 599.41 10.19 7.32 5.79 4.16  Required 1.56	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 583.41 -5.81 -5.81 -10.21 -11.84  3)  Sub-surface 0.00 overflows to: CB1	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00	Area (Ha) C =    Te   Variable   (min)   7   9   10   11   13	0.016 0.30  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00	Restricted Flow Q, ( 5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>5yr</sub> A (1.03) 0.92 0.87 0.83 0.76  Str.  Required	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 5.00 Surface	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00	Area (Ha) C =  Tc Variable (min) 7 9 10 11 13	0.010 0.30  i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (( 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56  Str. Required 0.00	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Area (Ha) C =  T c  Variable (min) -6 -4 -3 -2 0  Drainage Area Area (Ha)	0.010 0.34  i 1000yr (mm/hour) 57497.20 977.56 7702.38 555.31 398.62  Overflow 0.00	Sestricted Flow Q <sub>r</sub>   100-Year   Peak Flow Q <sub>r</sub> = 2.78xCl 100 <sub>r</sub> A   10.19   599.41   10.19   7.32   5.79   4.16   Required   1.56	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 16.00 Storage (m Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 583.41 -5.81 -8.68 -10.21 -11.84  3  Sub-surface 0.00 overflows to: CB1	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11  13	0.016 0.30  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00	Restricted Flow Q <sub>1</sub> (S-Year Pondin  Peak Flow Q <sub>P</sub> = 2.78xCl <sub>SP</sub> A (L/S) 1.03 0.92 0.87 0.83 0.76  Str  Required -3.08	Q , (L/s) 6.00 6.00 6.00 6.00 Corage (m³) Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:	Volume 5yr (m³) (-2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13	0.010 0.30  i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (  2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2y</sub> , A (0.67 0.67 0.64 0.61 0.56  Str Required 0.00	Q r (L/s) 6.00 6.00 6.00 6.00 G.00 G.00 Orage (m³)	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: 6	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Area (Ha) C =  T c Variable (min)  -6 -4 -3 -2 0  Drainage Area	0.010 0.34  i 1000yr (mm/hour) 57497.20 977.56 7702.38 555.31 398.62  Overflow 0.00	Restricted Flow Q,  100-Year I  Poak Flow Q <sub>F</sub> = 2.78xCl 100pr A  (Us)  599.41  10.19  7.32  5.79  4.16  Required 1.56  Drainage Area  Restricted Flow Q,	(Us)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31 Plan - MH5A	6.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 583.41 -5.81 -8.68 -10.21 -11.84  3  Sub-surface 0.00 overflows to: CB1	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11  13	0.016 0.30  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78×Ci <sub>5p</sub> A (L/s) 1.03 0.92 0.87 0.83 0.76  St  Required -3.08  Restricted Flow Q, (	Q , (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 crage (m³) Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:	Volume 5yr (m³) (-2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13	0.010 0.30  i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (( 2-Year Pondi Peak Flow Qp=2.78xCl <sub>27</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56  Str Required 0.00	Q, (L/s) 6.00 6.00 6.00 6.00 5.00 G.00 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: 6	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00
(min)   (mm/hour)   (L/s)   (L/s)   (L/s)   (L/s)   (m³)   (min)   (mm/hour)   (L/s)   (L/s)   (L/s)   (L/s)   (m³)   (min)   (mm/hour)   (L/s)   (L/s)   (L/s)   (M³)   (min)   (mm/hour)   (L/s)   (L/s)   (M³)   (min)   (mm/hour)   (L/s)   (L/s)   (L/s)   (M³)   (min)   (mm/hour)   (L/s)   (L/s)   (L/s)   (M³)   (Mm/hour)   (L/s)   (L/s)   (L/s)   (M³)   (Mm/hour)   (L/s)   (L/s)   (L/s)   (M³)   (Mm/hour)   (L/s)   (M³)   (Mm/hour)   (L/s)   (M³)   (Mm/hour)   (L/s)   (M³)   (Mm/hour)   (L/s)   (Mm/hour)   (Mm/hour)   (Mm/hour)   (L/s)   (Mm/hour)   (Mm/	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 0 0  Drainage Area Area (Ha) C =	0.010 0.34  i 1000yr (mm/hour) 57497.20 977.56 7702.38 555.31 398.62  Overflow 0.00	Restricted Flow Q <sub>r</sub>   100-Year   Peak Flow Q <sub>p</sub>   Peak Flow Q <sub>p</sub>   2.78xCl 100pr A (L/s)   5.99.41   10.19   7.32   5.79   4.16   Required   1.56     Drainage Area   Drainage Area   Drestricted Flow Q <sub>r</sub>   100-Year   100-Year	(Us)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31 Plan - MH5A	6.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3)  Sub-surface 0.00 overflows to: CB1	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00 Balance 1.25	Area (Ha) C =	0.016 0.30  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q, =2.78xCi <sub>sy</sub> A (L/s) 1.03 0.92 0.87 0.83 0.76  St.  Required -3.08  Restricted Flow Q, 5-Year Pondin	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 0.31 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>Us</i> ) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13	0.010 0.30  i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (  2-Year Pondi  Peak Flow Qp = 2.78xCi yr A (L/s) 0.76 0.67 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, (  2-Year Pondi	Q, (L/s) 6.00 6.00 6.00 6.00 5.00 G.00 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17
24   106.68   26.69   9.00   17.69   25.47   12   94.70   21.32   9.00   12.32   8.87   9   80.87   18.21   9.00   9.21   4.97   25   103.85   25.98   9.00   16.98   25.47   13   90.63   20.41   9.00   11.41   8.90   28   101.18   25.32   9.00   16.32   25.45   14   86.93   19.58   9.00   10.58   8.88   11   73.17   16.48   9.00   7.48   4.93   28   28   28   28   28   28   28   28	Area (Ha) C =  T <sub>c</sub> Variable (min) -6 -4 -3 -2 0  Drainage Area Area (Ha) C =	0.010 0.38  I 1000r (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  CB17 0.090	Restricted Flow Q,   100-Year     Peak Flow Q,   2.78xCl 100p A     599.41   10.19   7.32   5.79   4.16	(Us)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31 Plan - MH5A	6.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3)  Sub-surface 0.00 overflows to: CB1	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  Balance 1.25 7	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =	0.010 1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00 0.90 0.90	Restricted Flow Q₁ (  5-Year Pondin  Peak Flow  Q₂=2.78xCi₂y₂ A  (L/s)  1.03  0.92  0.87  0.83  0.76  St  Required  -3.08  Restricted Flow Q₁  Peak Flow  Restricted Flow Q₁  Peak Flow	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 0.31 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>Us</i> ) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub>	0.010 0.30  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB17 0.090 0.90	Restricted Flow Q, (  2-Year Pondi  Peak Flow Qp = 2.78xCl 2y, A (0.67 0.64 0.61 0.56  Str. Required 0.00  Restricted Flow Q, (1.64 2-Year Pondi Peak Flow	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 5.00 6.00 0.00 crage (m³) Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17
25	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 0 0  Drainage Area Area (Ha) C =  T c Variable	0.010 0.31  i 100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  CB17 0.099 1.00	Restricted Flow $Q_r$   100-Year   Peak Flow $Q_p = 2.78 \times Cl_{100pr} A$   (L/s)   599.41   10.19   7.32   5.79   4.16   Required   1.56     Drainage Area   0   Restricted Flow $Q_r$   100-Year   Peak Flow $Q_p = 2.78 \times Cl_{100pr} A$   (L/s)	(Us) = Ponding	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -5.81 -10.21 -11.84  3) Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 100yr (m²) -210.03 1.39 1.56 1.23 0.00  Balance 1.25 7	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable  Variable	0.010 0.30  1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  CB17 0.090 1 syr i syr (mm/hour)	Restricted Flow $Q_1$ (1.03 $Q_p$ = 2.78xCi $_{SP}$ A $Q_p$ = 2.78xCi $_{SP}$ A $(L/s)$ 0.87 0.83 0.76 St. Required -3.08	Q , (L/s) 6.00 6.00 6.00 6.00 Surface 0.31	$Q_{\rho}$ - $Q_{r}$ ( $L$ /s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m²)	Area (Ha)  C =  T <sub>c</sub> Variable (min)  7  9  10  11  13  Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable	0.010 0.30  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB17 0.090 0.90	Restricted Flow Q, ( 2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, (( 2-Year Pondi Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s)	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 0.00 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17
26   101.18   25.32   9.00   16.32   25.45   14   86.93   19.58   9.00   10.58   8.88   11   73.17   16.48   9.00   7.48   4.93   4.45   16   80.46   18.12   9.00   9.12   8.75   13   66.93   15.07   9.00   6.07   4.74   4.98   4.93   4.94   4.9	Area (Ha) C =	0.010 0.3i  l100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  CB17 0.099 1.00  l100pr (mm/hour) 112.88	Restricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (Us)   599.41   10.19   7.32   5.79   4.16     Required   1.56     Drainage Area   1   10.19	(Us)= Ponding Q, (Us) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31 Plan - MH5A (Us)= Ponding Q, (Us)= 9.00	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84 -11.84  3  Sub-surface 0.00 overflows to: CB1	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  Balance 1.25 7	Area (Ha) C =    Te   Variable   (min)   7   9   10   11   13   13       Drainage Area   Area (Ha)   C =	0.010 1	Restricted Flow Q <sub>1</sub> (  S-Year Pondin   Peak Flow   Q <sub>p</sub> = 2.78×Cl <sub>5p</sub> A (L/s)   1.03   0.92   0.87   0.83   0.76   Stranger   Required   -3.08   S-Year Pondin   Peak Flow   Q <sub>p</sub> = 2.78×Cl <sub>5p</sub> A (L/s)   23.46   23.46   23.46   23.46   25.46	g	$Q_p$ - $Q_r$ ( $L$ /s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to: $Q_p$ - $Q_r$ ( $L$ /s) 14.46	Volume  5yr (m³) (-2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68	Area (Ha) C =  Tc Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =  Tc Variable (min) 7 7 7	0.010 0.30  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB17 0.090 0.90  i 2 <sub>2yr</sub> (mm/hour) 90.66	Restricted Flow Q, (( 2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, (( 2-Year Pondi Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 20.42	Qr (L/s) 6.00 6.00 6.00 6.00 6.00 6.00 G.00 G.00	G.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Area (Ha) C =	0.010 0.38  I 1000yr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  1.00  I 1000yr (mm/hour) 112.88 106.68 103.85	Sestricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (LUs)   599.41   10.19   7.32   5.79   4.16	(Us)= Ponding Q, (Us) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31 Plan - MH52 (Us)= Ponding Q, (Us) 9.00 9.00	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3) Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 19.24 17.69 16.98	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  Balance 1.25 7	Area (Ha) C =    Veriable (min)   7   9   10   11   13	0.010 1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00 0.90  1 syr (mm/hour) 104.19 94.70 99.63	Restricted Flow Q, (  5-Year Pondlin  Peak Flow Q_p=2.78xCl_sp_A (L/s)  1.03  0.92  0.87  0.83  0.76  Sternion Required -3.08  Restricted Flow Q, ( 5-Year Pondlin Peak Flow Q_p=2.78xCl_sp_A (L/s) (2.3.46  21.32  20.41	g	$Q_p$ - $Q_r$ ((L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:  9.00 $Q_p$ - $Q_r$ ((L/s) 14.46 12.32 11.41	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68	Area (Ha) C =  Tc Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =  Tc Variable (min) 7 9 10 11 13	0.010 0.30  l 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  0.90  l 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81	Restricted Flow Q, (( 2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 0.76 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, (( 2-Year Pondi Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 18.21 17.29	Q, (L/s) 6.00 6.00 6.00 6.00 6.00 Surface 0.31  L/s)=  ng Q, (L/s) 9.00 9.00	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 -4.97 -4.98
Comparison   Com	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 -0 0  Drainage Area Area (Ha) C =  T c Variable (min) 22 24 25 26	0.010 0.38  I 100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  CB17 0.099 1.00  I 100pr (mm/hour) 112.88 106.68 103.85 101.18	Restricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (L/s)   5.99.41   10.19   7.32   5.79   4.16     Required   1.56     Drainage Area	(L/s) = Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31  Plan - MH5A (L/s) = Ponding Q, (L/s) 9.00 9.00 9.00	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3) Sub-surface 0.000 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 19.24 17.69 16.98 16.32	Volume 100yr (m²) -210.03 1.39 1.36 1.23 0.00  Balance 1.25 7	Area (Ha) C =   T c Variable (min) 7 9 10 11 11 13 13 13 15 C =   Drainage Area Area (Ha) C =   Variable (min) 10 10 10 10 10 10 11 11 11 11 11 11 11	0.010 0.30  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  CB17 0.090 0.90  i syr (mm/hour) 104.19 94.70 90.63 86.93	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Sp</sub> A (L/s) 1.03 0.92 0.87 0.83 0.76  Str.  Required -3.08  Restricted Flow Q, 5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Sp</sub> A (L/s) 2.3.46 2.1.32 2.0.41 19.58	Q , (L/s) = Q , 0.00 = 0.0	G.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.46 12.32 11.41 10.58	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68 8.87 8.90 8.88	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  12 <sub>2y</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB17 0.090 0.90  12 <sub>2y</sub> (mm/hour) 90.66 80.87 76.81 73.17	Restricted Flow Q, ( 2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, ( 2-Year Pondi Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48	Q, (L/s)=  ng  Q, (L/s)=  Q, (L/s)=  ng  Q, (L/s)=  ng  Q, (L/s)=  9.00  9.00  9.00	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to:  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 8.29 7.48	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 -4.98 -4.93
2.24 27.71 0.84 5.10 21.77 0.00 8.90 0.84 5.10 2.96 0.00 4.98 0.84 5.10 0.00  Length (m) Dia (m) Area (m²) Volume (m³) Structure Depth Area (m²) Volume (m³) 28.00 0.450 0.159 4.45 CB3 (600mm x 600mm) 1.80 0.36 0.65 0.65	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 0  Drainage Area Area (Ha) C =  T c Variable (min) 22 24 25 26	0.010 0.38  I 100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  CB17 0.099 1.00  I 100pr (mm/hour) 112.88 106.68 103.85 101.18	Restricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (L/s)   5.99.41   10.19   7.32   5.79   4.16     Required   1.56     Drainage Area	(L/s) = Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31  Plan - MH5A (L/s) = Ponding Q, (L/s) 9.00 9.00 9.00	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3) Sub-surface 0.000 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 19.24 17.69 16.98 16.32	Volume 100yr (m²) -210.03 1.39 1.36 1.23 0.00  Balance 1.25 7	Area (Ha) C =   T c Variable (min) 7 9 10 11 11 13 13 13 15 C =   Drainage Area Area (Ha) C =   Variable (min) 10 10 10 10 10 10 11 11 11 11 11 11 11	0.010 0.30  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  CB17 0.090 0.90  i syr (mm/hour) 104.19 94.70 90.63 86.93	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Sp</sub> A (L/s) 1.03 0.92 0.87 0.83 0.76  Str.  Required -3.08  Restricted Flow Q, 5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Sp</sub> A (L/s) 2.3.46 2.1.32 2.0.41 19.58	Q , (L/s) = Q , 0.00 = 0.0	G.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.46 12.32 11.41 10.58	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68 8.87 8.90 8.88	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  12 <sub>2y</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB17 0.090 0.90  12 <sub>2y</sub> (mm/hour) 90.66 80.87 76.81 73.17	Restricted Flow Q, ( 2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 0.76 0.67 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, ( 2-Year Pondi Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48	Q, (L/s)=  ng  Q, (L/s)=  Q, (L/s)=  ng  Q, (L/s)=  ng  Q, (L/s)=  9.00  9.00  9.00	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to:  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 8.29 7.48	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 -4.98 -4.93
Length (m) Dia (m) Area (m²) Volume (m³) Structure Depth Area (m²) Volume (m³) 28.00 0.450 0.159 4.45 CB3 (600mm x 600mm) 1.80 0.36 0.65 4.45 0.65	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 -0 0  Drainage Area Area (Ha) C =  T c Variable (min) 22 24 25 26	0.010 0.31  i 100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  CB17 0.099 1.00  i 100pr (mm/hour) 112.88 106.68 106.68 103.85 101.18	Restricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (L/s)   5.79   4.16     Peak Flow Q,   1.56     Peak Flow Q,   1.56     Peak Flow Q,   1.56     Peak Flow Q,   1.56     Peak Flow Q,   2.78xCl 100pr A (L/s)   28.24   26.69   25.98   25.92   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     2.824   24.09     25.98   25.32     24.09     24	(L/s) = Ponding	9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  583.41  -5.81  -10.21  -11.84  3)  Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  19.24  17.69 16.98 16.98 16.98 16.92 15.09	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  Balance 1.25 7	Area (Ha) C =   T c Variable (min) 7 9 10 11 11 13 13 13 15 C =   Drainage Area Area (Ha) C =   Variable (min) 10 10 10 10 10 10 11 11 11 11 11 11 11	0.010 0.30  1	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q,=2.78xCi <sub>pr</sub> A (L/s) 1.03 0.92 0.87 0.83 0.76  St  Required -3.08  Restricted Flow Q, 5-Year Pondin Peak Flow Q,=2.78xCi <sub>pr</sub> A (L/s) 23.46 21.32 20.41 19.58 18.12	g	$Q_p$ - $Q_r$ ( $L$ /s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to: $Q_p$ - $Q_r$ ( $L$ /s) 14.46 12.32 11.41 10.58 9.12	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m²) 8.68 8.87 8.90 8.88 8.75	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB17 0.090 1 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, ( 2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 0.76 0.64 0.61 0.56  Str.  Required 0.00  Restricted Flow Q, (( 2-Year Pondi Peak Flow Qp=2.78xCi <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48 15.07	Q, (L/s)=  ng  Q, (L/s)=  ng  Q, (L/s)=  ng  Q, (L/s)=  9,00  9,00  9,00  0orage (m³)	G.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (L/s)  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 8.29 7.48 6.07	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 4.97 4.98 4.93 4.74
28.00 0.450 0.159 4.45 CB3 (600mm x 600mm) 1.80 0.36 0.65 4.45 0.65	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 0  Drainage Area Area (Ha) C =  T c Variable (min) 22 24 25 26	0.010 0.38  I 1000yr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  I 1000yr (mm/hour) 1.00  I 100,68 106.68 103.85 101.18 96.27	Restricted Flow Q,  100-Year I  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>100p</sub> A  (L/s)  599.41  10.19  7.32  5.79  4.16  Required 1.56  Drainage Area  Restricted Flow Q, 100-Year I  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>100p</sub> A  (L/s)  28.24  26.69  25.32  24.09	(Us) = Ponding	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -8.68 -10.21 -11.84  3  Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 19.24 17.69 16.98 16.32 15.09  Sub-surface	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  8alance 1.25 7	Area (Ha) C =   T c Variable (min) 7 9 10 11 11 13 13 13 15 C =   Drainage Area Area (Ha) C =   Variable (min) 10 10 10 10 10 10 11 11 11 11 11 11 11	0.010 0.30  1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  CB17 0.090 0.90  1 syr (mm/hour) 104.19 94.70 99.63 86.93 80.46	Restricted Flow Q, (  5-Year Pondlin  Peak Flow Q, =2.78xCi <sub>5r</sub> A (L/s)  1.03  0.92  0.87  0.83  0.76  Str  Required -3.08  Restricted Flow Q, (  5-Year Pondlin  Peak Flow Q, =2.78xCi <sub>5r</sub> A (L/s) 23.46 21.32 20.41  19.58  18.12	g Q, (L/s)= g Q, (L/s) 9.00 9.00 9.00 9.00 9.00 9.00 9.00 9.0	$\begin{array}{c} 6.00 \\ \hline Q_{p}\text{-}Q_{r} \\ (L/s) \\ -4.97 \\ -5.08 \\ -5.13 \\ -5.17 \\ -5.24 \\ \hline \\ \text{Sub-surface} \\ 0.00 \\ \text{overflows to:} \\ \hline \\ 9.00 \\ \hline Q_{p}\text{-}Q_{r} \\ (L/s) \\ 14.46 \\ 12.32 \\ 11.41 \\ 10.58 \\ 9.12 \\ \hline \\ \text{Sub-surface} \\ \hline \end{array}$	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68 8.87 8.90 8.88 8.75	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  1 2 <sub>yr</sub> (mm/hour) 90.66 80.87 7.0.990  I 2 <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 0.67 0.64 0.61 0.56  Str Required 0.00  Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48 15.07  Str Required	Rg Q, (L/s) 6.00 6.00 6.00 6.00 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 9.21 9.21 8.29 7.48 6.07	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 4.93 4.74  Balance
4.45	Area (Ha) C =	0.010 0.3i  l100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00 1.00  l100pr (mm/hour) 112.88 103.85 101.18 96.27  Overflow 2.24	Required	(Us) =   Ponding   Q	3 6.00 Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 583.41 -5.81 -5.81 -10.21 -11.84 -3)  Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 19.24 17.69 16.98 16.98 16.98 16.98 15.09 -3)  Sub-surface 5.10	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  8alance 1.25 7	Area (Ha) C =    Te   Variable   (min)   7   9   10   11   13   13   14   16   16   16   16   16   16   16	0.010 0.30  1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  CB17 0.090 0.90  1 syr (mm/hour) 104.19 94.70 99.63 86.93 80.46	Restricted Flow Q, (  5-Year Pondlin  Peak Flow Q, =2.78xCl <sub>5y</sub> A (L/s)  1.03  0.92  0.87  0.83  0.76  Str.  Required -3.08  8-Year Pondlin  Peak Flow Q, =2.78xCl <sub>5y</sub> A (L/s) 23.46 21.32 20.41 19.58 18.12  Required 8.90	g Q, (L/s) 6.00 6.00 6.00 6.00 6.00 Surface 0.31  L/s)= g Q, (L/s) 9.00 9.00 9.00 9.00 9.00 page (m³) Surface 0.84	$\begin{array}{c} \textbf{6.00} \\ \textbf{Q}_{p}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{-4.97} \\ \textbf{-5.08} \\ \textbf{-5.13} \\ \textbf{-5.17} \\ \textbf{-5.24} \\ \\ \textbf{Sub-surface} \\ \textbf{0.00} \\ \textbf{overflows to:} \\ \\ \textbf{9.00} \\ \textbf{Q}_{p}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{14.46} \\ \textbf{12.32} \\ \textbf{11.41} \\ \textbf{10.58} \\ \textbf{9.12} \\ \\ \textbf{Sub-surface} \\ \textbf{5.10} \\ \\ \\ \textbf{Sub-surface} \\ \textbf{5.10} \\ \\ \\ \\ \textbf{5.10} \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\ \\$	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68 8.87 8.90 8.88 8.75	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  1 2 <sub>yr</sub> (mm/hour) 90.66 80.87 7.0.990  I 2 <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 0.67 0.64 0.61 0.56  Str Required 0.00  Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48 15.07  Str Required	Rg Q, (L/s) 6.00 6.00 6.00 6.00 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 9.21 9.21 8.29 7.48 6.07	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 4.93 4.74  Balance
	Area (Ha) C =  T c Variable (min) -6 -4 -3 -2 -0 0  Drainage Area Area (Ha) C =  T c Variable (min) -2 -2 -2 -3 -2 -2 -3 -2 -2 -3 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2 -2	0.010 0.3i  i100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  i100pr (mm/hour) 112.88 106.68 103.85 101.18 96.27  Overflow 2.24 Dia (m)	Restricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (L/s)   599.41   10.19   7.32   5.79   4.16	(L/s)= Ponding Q, (L/s) 16.00 16.00 16.00 16.00 Storage (m Surface 0.31  Plan - MH5A (L/s)= Ponding Q, (L/s) 9.00 9.00 9.00 Storage (m Surface 0.84 Volume (m³)	3 6.00 Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 583.41 -5.81 -5.81 -10.21 -11.84 -3)  Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 19.24 17.69 16.98 16.98 16.98 16.98 15.09 -3)  Sub-surface 5.10	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  8alance 1.25 7	Area (Ha) C =   T c Variable (min) 7 9 10 11 11 13 13 13 15 15 15 15 15 15 15 15 15 15 15 15 15	0.010 0.30  1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  CB17 0.090 0.90  1 syr (mm/hour) 104.19 94.70 99.63 86.93 80.46	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q p = 2.78xCi <sub>Syr</sub> A (L/s)  1.03  0.92  0.87  0.83  0.76  Str.  Required -3.08  8-24 Pondin Peak Flow Q p = 2.78xCi <sub>Syr</sub> A (L/s) 23.46 21.32 20.41 19.58 18.12  Str.  Required 8.90  Depth	g Q, (L/s)=6.00 6.00 6.00 6.00 6.00 Surface 0.31  L/s)= g Q, (L/s)= g Q, (L/s)= surface 0.31  Arage (m²) Surface 0.31  Arage (m²) Surface 0.84  Arage (m²)	9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.46 12.32 11.41 10.58 9.12  Sub-surface 5.10  Volume (m³)	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68 8.87 8.90 8.88 8.75	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  1 2 <sub>yr</sub> (mm/hour) 90.66 80.87 7.0.990  I 2 <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 0.67 0.64 0.61 0.56  Str Required 0.00  Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48 15.07  Str Required	Rg Q, (L/s) 6.00 6.00 6.00 6.00 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 9.21 9.21 8.29 7.48 6.07	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 4.93 4.74  Balance
	Area (Ha)  C =   T <sub>c</sub> Variable (min)  -6  -4  -3  -2  0   Drainage Area  Area (Ha)  C =   T <sub>c</sub> Variable (min)  22  24  25  26  28  Length (m)	0.010 0.3i  i100pr (mm/hour) 57497.20 977.56 702.38 555.31 398.62  Overflow 0.00  i100pr (mm/hour) 112.88 106.68 103.85 101.18 96.27  Overflow 2.24 Dia (m)	Restricted Flow Q,   100-Year   Peak Flow Q,   2.78xCl 100pr A (L/s)   599.41   10.19   7.32   5.79   4.16	(Us) =   Ponding   Q	3 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 583.41 -5.81 -5.81 -8.68 -10.21 -11.84  3)  Sub-surface 0.00 overflows to: CB1  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 19.24 17.69 16.98 16.32 15.09  3)  Sub-surface 5.10	Volume 100yr (m³) -210.03 1.39 1.56 1.23 0.00  Balance 1.25 7	Area (Ha) C =   T c	0.010 0.30  1 syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  CB17 0.090 0.90  1 syr (mm/hour) 104.19 94.70 99.63 86.93 80.46	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q p = 2.78xCi <sub>Syr</sub> A (L/s)  1.03  0.92  0.87  0.83  0.76  Str.  Required -3.08  8-24 Pondin Peak Flow Q p = 2.78xCi <sub>Syr</sub> A (L/s) 23.46 21.32 20.41 19.58 18.12  Str.  Required 8.90  Depth	g Q, (L/s)=6.00 6.00 6.00 6.00 6.00 Surface 0.31  L/s)= g Q, (L/s)= g Q, (L/s)= surface 0.31  Arage (m²) Surface 0.31  Arage (m²) Surface 0.84  Arage (m²)	9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -4.97 -5.08 -5.13 -5.17 -5.24  Sub-surface 0.00 overflows to:  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.46 12.32 11.41 10.58 9.12  Sub-surface 5.10  Volume (m³) 0.65 0.65	Volume 5yr (m³) -2.09 -2.75 -3.08 -3.41 -4.09  Balance 0.00 CB17  Volume 5yr (m³) 8.68 8.57 8.90 8.88 8.75	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 11 11 11 11 11 11 11 11 11 11 11	0.010 0.30  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  1 2 <sub>yr</sub> (mm/hour) 90.66 80.87 7.0.990  I 2 <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 0.67 0.64 0.61 0.56  Str Required 0.00  Restricted Flow Q, ((2-Year Pondi) Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 20.42 18.21 17.29 16.48 15.07  Str Required	Rg Q, (L/s) 6.00 6.00 6.00 6.00 Surface 0.31	6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -5.24 -5.33 -5.36 -5.39 -5.44  Sub-surface 0.00 overflows to: (  9.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 11.42 9.21 9.21 9.21 8.29 7.48 6.07	Volume 2yr (m³) -2.20 -2.88 -3.22 -3.56 -4.24  Balance 0.00 CB17  Volume 2yr (m³) 4.79 4.93 4.74  Balance

D	0000	1				D : 4	0.000	ī				D : 4	2000	1			
Drainage Area	CB20					Drainage Area	CB20					Drainage Area	CB20				
Area (Ha)	0.120	Restricted Flow Q <sub>r</sub> (	(0)-	15.00	Ì	Area (Ha)	0.120	Restricted Flow Q, (	I /a\=	15.00		Area (Ha)	0.120	Restricted Flow Q <sub>r</sub> (I	/e\=	15.00	
C =	1.00	100-Year F		15.00		T C =	0.90	5-Year Ponding	,	15.00		T C =	0.90	2-Year Pondi	,	15.00	
<i>T<sub>c</sub></i>	I	Peak Flow	onding		Volume	T <sub>c</sub>	I	Peak Flow	Ī		Volume	T <sub>c</sub>		Peak Flow			Volume
Variable	i <sub>100yr</sub>	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q,	$Q_p - Q_r$	100yr	Variable	i <sub>5yr</sub>	Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q,	$Q_p$ - $Q_r$	5yr	Variable	i <sub>2yr</sub>	Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	$Q_p$ - $Q_r$	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )
17	132.63	44.24	15.00	29.24	29.83	7	123.30	37.02	15.00	22.02	9.25	7	90.66	27.22	15.00	12.22	5.13
19	123.87	41.32	15.00	26.32	30.01	9	109.79	32.96	15.00	17.96	9.70	9	80.87	24.28	15.00	9.28	5.01
20 21	119.95 116.30	40.02 38.80	15.00 15.00	25.02 23.80	30.02 29.98	10 11	104.19 99.19	31.28 29.78	15.00 15.00	16.28 14.78	9.77 9.76	10 11	76.81 73.17	23.06 21.97	15.00 15.00	8.06 6.97	<b>4.84</b> 4.60
23	109.68	36.59	15.00	21.59	29.79	13	90.63	27.21	15.00	12.21	9.52	13	66.93	20.09	15.00	5.09	3.97
			_					•							•		•
			Storage (m <sup>3</sup>			_			orage (m <sup>3</sup> )			_			rage (m <sup>3</sup> )		
	Overflow 0.00	Required 30.02	Surface 12.51	Sub-surface 0.00	Balance 17.51		Overflow 0.00	Required 9.77	Surface 12.51	Sub-surface 0.00	Balance 0.00		Overflow 0.00	Required 4.84	Surface 12.51	Sub-surface 0.00	Balance 0.00
	0.00	00.02	12.01				0.00	0.77	12.01				0.00	1.01	12.01		
				overflows to:	MH22					overflows to: M	1H22					overflows to: N	1H22
	*****	1					*****	ı				D	*****	1			
Drainage Area Area (Ha)	MH22		(I /e)=	6.00		Drainage Area	MH22 0.060					Drainage Area Area (Ha)	MH22 0.060				
C =	0.060			3.00	50% reduction for sub- surface storage	Area (Ha)	0.060	Restricted Flow Q, (	I /e\-	0.00		Area (Ha)		Restricted Flow Q, (I	/e\=	3.00	
C =	0.3			3.00	surface storage	T C =	0.25	- 11	,	3.00		T C =	0.25			3.00	
7	T	100-Year F			Volume	<del>-</del>	l	5-Year Ponding	Ĭ		Volume	T <sub>c</sub>		2-Year Pondi			Volume
T <sub>c</sub> Variable	i <sub>100yr</sub>	Q n=2.78xCi 100yr A	Q,	$Q_p - Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q,	$Q_p$ - $Q_r$	Volume 5yr	Ι <sub>c</sub> Variable	i <sub>2yr</sub>	Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	$Q_p$ - $Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
13	155.11	8.08	3.00	5.08	3.97	7	123.30	5.14	3.00	2.14	0.90	7	90.66	3.78	3.00	0.78	0.33
14	148.72	7.75	3.00	4.75	3.99	9	109.79	4.58	3.00	1.58	0.85	9	80.87	3.37	3.00	0.37	0.20
15	142.89	7.45	3.00	4.45	4.00	10	104.19	4.34	3.00	1.34	0.81	10	76.81	3.20	3.00	0.20	0.12
16 18	137.55 128.08	7.17 6.68	3.00 3.00	4.17 3.68	4.00 3.97	11	99.19 90.63	4.14 3.78	3.00	1.14 0.78	0.75 0.61	11	73.17 66.93	3.05 2.79	3.00	0.05 -0.21	0.03 -0.16
10	120.00	0.00	5.00	0.00	0.01	1	30.00	5.70	0.00	0.70	0.01		00.55	2.13	0.00	-0.21	-0.10
			Storage (m3	)		_			orage (m <sup>3</sup> )			_			rage (m <sup>3</sup> )		
	Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance
	39.28	43.28	2.87	46.61	0.00		2.96	3.77	2.87	46.61	0.00		0.00	0.12	2.87	46.61	0.00
Length (m)	Dia (m)	Area (m²)	Volume (m3)			Structure		Depth	Area (m²)	Volume (m3)							
33.40	0.250	0.049	1.64			CB23 (600mm x 600mm	1)	0.89	0.36	0.32							
23.23	0.300	0.071	1.64			Clear Stone Gallery											
		TOTAL				Clear Storie Gallery		1.45	100	43.01							
		TOTAL	3.28			Clear Storie Gallery		1.45	TOTAL	43.01 43.33							
		TOTAL		overflows to:	Dun Skipper Drive	Clear Storie Gallery		1.45			oun Skipper Driv	e				overflows to: D	Oun Skipper Drive
		_		overflows to:	Dun Skipper Drive			1.45		43.33	oun Skipper Driv			1		overflows to: D	Oun Skipper Drive
Drainage Area	CB24	_		overflows to:	Dun Skipper Drive	Drainage Area	CB24	1.45		43.33	oun Skipper Driv	Drainage Area	CB24	]		overflows to: D	Dun Skipper Drive
Drainage Area Area (Ha) C =	0.100		3.28		Dun Skipper Drive		0.100		TOTAL	43.33 overflows to: D	oun Skipper Driv		0.100		./s)=		Dun Skipper Drive
	0.100	Restricted Flow Q <sub>r</sub> (	3.28 L/s)=	overflows to:	Dun Skipper Drive	Drainage Area	0.100	Restricted Flow Q <sub>r</sub> (	TOTAL	43.33	oun Skipper Driv	Drainage Area Area (Ha)		Restricted Flow Q <sub>r</sub> (I	. ,	overflows to: D	oun Skipper Drive
Area (Ha) C =	0.100		3.28 	15.00	Dun Skipper Drive	Drainage Area Area (Ha) C =	0.100 0.90		TOTAL  L/s)=	43.33 overflows to: D	Oun Skipper Driv	Drainage Area Area (Ha) C =	0.100 0.90		ng	15.00	Oun Skipper Drive
	0.100 1.00	Restricted Flow Q <sub>r</sub> (i	3.28 L/s)=	15.00 Q <sub>p</sub> -Q <sub>r</sub>	Volume 100yr	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable	0.100	Restricted Flow Q <sub>r</sub> (	TOTAL	43.33 overflows to: D	Volume 5yr	Drainage Area Area (Ha)	0.100 0.90 <i>i</i> <sub>2yr</sub>	Restricted Flow Q <sub>r</sub> (I	. ,		Volume 2yr
Area (Ha) C =  T <sub>c</sub> Variable  (min)	0.100 1.00 i <sub>100yr</sub> (mm/hour)	Restricted Flow Q, (  100-Year F  Peak Flow Q p=2.78xCi 100pr A (L/s)	3.28  L/s)=  Conding  Q, (L/s)	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 100yr (m³)	Drainage Area Area (Ha) C =  T, Variable (min)	0.100 0.90 i <sub>Syr</sub> (mm/hour)	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78 \times Cl_{Syr} A$ (L/s)	TOTAL  L/s)=  g  Q, (L/s)	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 5yr (m³)	Drainage Area Area (Ha) C =  T c Variable (min)	0.100 0.90 i <sub>2yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s)	Q, (L/s)	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 2yr (m³)
Area (Ha) C =  T <sub>c</sub> Variable (min) 13	0.100 1.00 i <sub>100y</sub> , (mm/hour) 155.11	Restricted Flow Q <sub>r</sub> (   100-Year F   Peak Flow   Q <sub>p</sub> = 2.78xG1 100pr A   (L/s)   43.12	3.28  //s)=  ronding  Q, (L/s)  15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12	Volume 100yr (m³) 21.93	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7	0.100 0.90 i <sub>Syr</sub> (mm/hour) 123.30	Restricted Flow Q <sub>r</sub> ( 5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Syr</sub> A (L/s) 30.85	TOTAL  L/s)=  9  Q, (L/s) 15.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85	Volume 5yr (m³) 6.66	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7	0.100 0.90 i <sub>2yr</sub> (mm/hour) 90.66	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s)  22.68	Q, (L/s) 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68	Volume 2yr (m³) 3.23
Area (Ha) C =  T c  Variable (min)  13  15	0.100 1.00 i <sub>100y</sub> , (mm/hour) 155.11 142.89	Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xC1 toopr A (L/s) 43.12 39.72	3.28  J(s)= Ponding Q, (L/s) 15.00 15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72	Volume 100yr (m³) 21.93 22.25	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7	0.100 0.90 i <sub>5yr</sub> (mm/hour) 123.30 109.79	Restricted Flow Q, ( 5-Year Pondin Peak Flow $Q_p = 2.78xCi_{Sy}A$ (L/s) 30.85 27.47	TOTAL  L/s)=  g  Q, (L/s)  15.00  15.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47	Volume 5yr (m³) 6.66 6.73	Drainage Area Area (Ha) C =  r <sub>c</sub> Variable (min) 7 9	0.100 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s)  22.68 20.23	Q, (L/s) 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23	Volume 2yr (m³) 3.23 2.83
Area (Ha) C =  T <sub>c</sub> Variable (min) 13	0.100 1.00 i <sub>100y</sub> , (mm/hour) 155.11	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCi 100 <sub>pr</sub> A (L/s) 43.12 39.72 38.24 36.87	3.28  //s)=  ronding  Q, (L/s)  15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12	Volume 100yr (m³) 21.93	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7	0.100 0.90 i <sub>Syr</sub> (mm/hour) 123.30	Restricted Flow Q <sub>r</sub> ( 5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Syr</sub> A (L/s) 30.85	TOTAL  L/s)=  9  Q, (L/s) 15.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85	Volume 5yr (m³) 6.66	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 7	0.100 0.90 i <sub>2yr</sub> (mm/hour) 90.66	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s)  22.68	Q, (L/s) 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68	Volume 2yr (m³) 3.23
Area (Ha) C =  T <sub>c</sub> Variable (min)  13  15  16	0.100 1.00 <i>i</i> <sub>100y</sub> r ( <i>mm/hour</i> ) 155.11 142.89 137.55	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi $_{100pr}$ A (L/s)  43.12 39.72 38.24	3.28  J/s)= Ponding Q, (L/s) 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24	Volume 100yr (m²) 21.93 22.25 22.31	Drainage Area	0.100 0.90 i syr (mm/hour) 123.30 109.79 104.19	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>Sy</sub> A  (L/s)  30.85 27.47 26.07	TOTAL  L/s)= <b>g Q</b> ,  (L/s)  15.00  15.00  15.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07	Volume 5yr (m³) 6.66 6.73 6.64	Drainage Area	0.100 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81	Restricted Flow $Q_r$ (I 2-Year Pondii Peak Flow $Q_p = 2.78 \times Ci_{2yr} A$ (L/s) 22.68 20.23 19.22	Q, (L/s) 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22	Volume 2yr (m³) 3.23 2.83 2.53
Area (Ha) C =  T <sub>c</sub> Variable  (min)  13  15  16  17	0.100 1.00 <i>i</i> <sub>100y</sub> , <i>(mm/hour)</i> 155.11 142.89 137.55 132.63	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCi 100 <sub>pr</sub> A (L/s) 43.12 39.72 38.24 36.87	3.28  J(s)= Onding Q, (L/s) 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44	Volume 100yr (m³) 21.93 22.25 22.31	Drainage Area     Area (Ha)   C =     T_c   Variable   (min)     7   9     10   11	0.100 0.90 i <sub>5yr</sub> (mm/hour) 123.30 109.79 104.19 99.19	Restricted Flow Q. (5-Year Pondin- Peak Flow Q. p=2.78×Cl.sp. A (L/s) 30.85 27.47 26.07 24.82 22.68	TOTAL  L/s)= <b>g Q</b> ,  ( <i>L</i> /s)  15.00  15.00  15.00  15.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82	Volume 5yr (m³) 6.66 6.73 6.64 6.48	Drainage Area	0.100 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl 2yr A (L/s) 22.68 20.23 19.22 18.31 16.75	Q, (L/s) 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31	Volume 2yr (m²) 3.23 2.83 2.53 2.18
Area (Ha) C =  T <sub>c</sub> Variable  (min)  13  15  16  17	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F   Peak Flow Q,   2.78xCi 100y A   43.12   39.72   38.24   36.87   34.44	3.28  J/s)= Onding  Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m <sup>3</sup>	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44	Volume 100yr (m³) 21.93 22.25 22.31	Drainage Area     Area (Ha)   C =     T_c   Variable   (min)     7   9     10   11	0.100 0.90 i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xC <sub>3pr</sub> A (L/s)  30.85 27.47 26.07 24.82 22.66  Std	TOTAL  L/s)= <b>g Q</b> ,  (L/s)  15.00  15.00  15.00  15.00  15.00  corage (m³)	43.33 overflows to: D  15.00  Q <sub>ρ</sub> ·Q, (L/s) 15.85 12.47 11.07 9.82 7.68	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99	Drainage Area	0.100 0.90 i 2yr (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36
Area (Ha) C =  T <sub>c</sub> Variable  (min)  13  15  16  17	0.100 1.00 <i>i</i> <sub>100y</sub> , <i>(mm/hour)</i> 155.11 142.89 137.55 132.63	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCi 100 <sub>pr</sub> A (L/s) 43.12 39.72 38.24 36.87	3.28  J(s)= Onding Q, (L/s) 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16	Drainage Area     Area (Ha)   C =     T_c   Variable   (min)     7   9     10   11	0.100 0.90 i <sub>5yr</sub> (mm/hour) 123.30 109.79 104.19 99.19	Restricted Flow Q. (5-Year Pondin- Peak Flow Q. p=2.78×Cl.sp. A (L/s) 30.85 27.47 26.07 24.82 22.68	TOTAL  L/s)= <b>g Q</b> ,  ( <i>L</i> /s)  15.00  15.00  15.00  15.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82	Volume 5yr (m³) 6.66 6.73 6.64 6.48	Drainage Area	0.100 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl 2yr A (L/s) 22.68 20.23 19.22 18.31 16.75	Q, (L/s) 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31	Volume 2yr (m²) 3.23 2.83 2.53 2.18
Area (Ha) C =  T <sub>c</sub> Variable  (min)  13  15  16  17	0.100 1.00 1100pr (mm/hour) 155.11 142.89 137.55 132.63 123.87	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A (L/s)  43.12  39.72  38.24  36.87  34.44  Required	3.28  J(s)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m <sup>3</sup> Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s)) 28.12 24.72 23.24 21.87 19.44 ) Sub-surface 0	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31	Drainage Area     Area (Ha)   C =     T_c   Variable   (min)     7   9     10   11	0.100 0.90  I <sub>Syr</sub> (mn/hour) 123.30 103.79 104.19 99.19 90.63	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>sp</sub> , A  (L/s) 30.85 27.47 26.07 24.82 22.68  Str.  Required	TOTAL  L/s)=  g  Q <sub>r</sub> (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99	Drainage Area	0.100 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp = 2.78xCl 2yr A (20.23 19.22 18.31 16.75  Str Required	Q, (L/s) 15.00 15.00 15.00 15.00 crage (m³) Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36
Area (Ha) C =  T <sub>c</sub> Variable  (min)  13  15  16  17	0.100 1.00 1100pr (mm/hour) 155.11 142.89 137.55 132.63 123.87	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A (L/s)  43.12  39.72  38.24  36.87  34.44  Required	3.28  J(s)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m <sup>3</sup> Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 ) Sub-surface	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31	Drainage Area     Area (Ha)   C =     T_c   Variable   (min)     7   9     10   11	0.100 0.90  I <sub>Syr</sub> (mn/hour) 123.30 103.79 104.19 99.19 90.63	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>sp</sub> , A  (L/s) 30.85 27.47 26.07 24.82 22.68  Str.  Required	TOTAL  L/s)=  g  Q <sub>r</sub> (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99	Drainage Area	0.100 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp = 2.78xCl 2yr A (20.23 19.22 18.31 16.75  Str Required	Q, (L/s) 15.00 15.00 15.00 15.00 crage (m³) Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36
Area (Ha) C =  T c Variable (min) 13 15 16 17 19	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>100p</sub> , A  (L/s)  43.12 39.72 38.24 36.87 34.44  Required 22.31	3.28  J(s)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m <sup>3</sup> Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s)) 28.12 24.72 23.24 21.87 19.44 ) Sub-surface 0	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31	Drainage Area	0.100 0.90  i <sub>Syr</sub> (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q = 2.78xCi <sub>3p</sub> A (L/s) 30.85 22.47 26.07 24.82 22.68  Sto  Required 6.64	TOTAL  L/s)=  g  Q <sub>r</sub> (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99	Drainage Area	0.100 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp = 2.78xCl 2yr A (20.23 19.22 18.31 16.75  Str Required	Q, (L/s) 15.00 15.00 15.00 15.00 crage (m³) Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36
Area (Ha) C =  T <sub>c</sub> Variable  (min)  13  15  16  17	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (100-Year F Peak Flow Q, 2.78xCi 100pr A 43.12 39.72 38.24 36.87 34.44 Required 22.31	3.28  J/s)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 ))  Sub-surface 0 overflows to:	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31	Drainage Area     Area (Ha)   C =     T_c   Variable   (min)     7   9     10   11	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 30.85 27.47 26.07 24.82 22.68  Str.  Required 6.64	TOTAL  L/s)= <b>g</b> Q,  (L/s) 15.00 15.00 15.00 15.00 5.00 15.00 5.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99	Drainage Area	0.100 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75 Str Required 2.53	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00 overflows to: N	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Qp=2.78xCi 100pr A (L/s)  43.12  39.72  38.24  36.87  34.44  Required 22.31	3.28  J/s)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> ((L/s)) 28.12 24.72 23.24 21.87 19.44 ) Sub-surface 0	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q = 2.78xCi <sub>3p</sub> A (L/s) 30.85 22.47 26.07 24.82 22.68  Sto  Required 6.64	TOTAL  L/s)= <b>g</b> Q,  (L/s) 15.00 15.00 15.00 15.00 5.00 15.00 5.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99	Drainage Area Area (Ha) C =  T c Variable (min) 7 9 10 11 13	0.100 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp = 2.78xCl 2yr A (20.23 19.22 18.31 16.75  Str Required	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A (L/s)  43.12  39.72  38.24  36.87  34.44  Required 22.31  Restricted Flow Q, (  100-Year F	3.28  Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m <sup>3</sup> Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 ))  Sub-surface 0 overflows to:	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00	Restricted Flow Q. (  5-Year Pondin  Peak Flow Q p = 2.78xCls p A (L/s) 30.85 27.47 26.07 24.82 22.68  Required 6.64  825  Restricted Flow Q. (  5-Year Pondin	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface 0.00  L/s)=	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64	Drainage Area Area (Ha) C =  T c Variable (min) 7 9 10 11 13	0.100 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A (2.268 20.23 19.22 18.31 16.75  Ste Required 2.53  Restricted Flow Q, (I  2-Year Pondi	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00 overflows to: N	Volume 2yr (m²) 3.23 2.83 2.18 1.36 Balance 2.53
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =	0.10( 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  0.00  0.00  0.00	Restricted Flow Q, (  100-Year F   Peak Flow Q,   2.78xCi 100pr A   43.12   39.72   38.24   36.87   34.44     Required   22.31	3.28  Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m <sup>3</sup> Surface 0.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0 overflows to:	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31 MH21	Drainage Area	0.100 0.90  i <sub>Syr</sub> (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  C 0.020 0.90	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>3p</sub> , A (L/s) 30.85 27.47 26.07 24.82 22.68  Ste  Required 6.64  825 Restricted Flow Q, (  5-Year Pondin Peak Flow	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface 0.00  L/s)=	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64	Drainage Area	0.100 0.90  I z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75  Str  Required 2.53  Restricted Flow Q, (I  2-Year Pondi Peak Flow	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Surface 0.00	15.00  Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36 Balance 2.53
Area (Ha) C =  T c Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T c Variable	0.10( 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  0.00  1.00  1.00	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCl 100pr A  (L/s)  43.12 39.72 38.24 36.87 34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCl 100pr A	3.28  Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00  Js)= ronding Q,	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0  overflows to:	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16 Balance 22.31 MH21	Drainage Area	0.100 0.90  i syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  i syr 0.90	Restricted Flow Q <sub>s</sub> (  5-Year Pondin  Peak Flow Q <sub>p</sub> =2-78xCl <sub>3p</sub> A (L/s)  30.85 27.47 28.07 24.82 22.68  Std  Required 6.64  825  Restricted Flow Q <sub>s</sub> ( 5-Year Pondin Q <sub>p</sub> =2-78xCl <sub>3p</sub> A	TOTAL  L/s)=  g Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface 0.00  L/s)= g Q,	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 15.85 12.47 11.07 9.82 7.68 Sub-surface 0.00 overflows to: M	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64 HH21	Drainage Area	0.100 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>P</sub> = 2.78xCl <sub>2y</sub> -A (L/s) 22.68 20.23 19.22 18.31 16.75  Ste  Required 2.53  Restricted Flow Q, (I  2-Year Pondi Peak Flow Q <sub>P</sub> = 2.78xCl <sub>2y</sub> -A	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Surface 0.00	15.00  Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N	Volume 2yr (m²) 3.23 2.83 2.18 1.36 Balance 2.53 MH21
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	0.100 1.00 1.00 1.00 1.00 1.00 1.55.11 142.89 137.55 132.63 123.87  Overflow 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100p</sub> , A  (L/s)  43.12  39.72  38.24  36.87  34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100p</sub> , A  (L/s)	3.28  J/s)=  onding  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00  J/s)=  onding  Q, (L/s)	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0 overflows to: 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume   100yr   (m²)   21.93   22.25   22.31   22.31   22.16   Balance   22.31   MH21	Drainage Area	0.100 0.90  i syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  0.020 0.90  i syr (mm/hour)	Restricted Flow Q. (  5-Year Pondin  Peak Flow Q = 2.78xCl sp A (L/s)  30.85 27.47 26.07 24.82 22.68  Ste  Required 6.64  825  Restricted Flow Q. 5-Year Pondin  Peak Flow Q = 2.78xCl sp A (L/s)	TOTAL  L/s)=  g  Q, (L/s)  15.00 15.00 15.00 15.00 15.00 0.00  Surface 0.00  L/s)=  g  Q, (L/s)	43.33 overflows to: D  15.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M	Volume	Drainage Area	0.100 0.90  I 2 <sub>2y</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90  I 2 <sub>yy</sub> (mm/hour)	Restricted Flow Q, (I 2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75  Ste Required 2.53  Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 0.00 15.00 0.00  Vs)=  Q, (L/s)	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36  Balance 2.53  HH21
Area (Ha) C =  Tc Variable (min) 13 15 16 17 17 19  Drainage Area Area (Ha) C =  Tc Variable (min) 8	0.10( 1.00  I <sub>100pr</sub> (mm/hour) 155.11 142.89 137.55 132.63 123.87  Overflow 0.00  CB25 0.02( 1.00  I <sub>100pr</sub> (mm/hour) 199.20	Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xCi 100pr A  43.12 39.72 38.24 38.87 34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xCi 100pr A (L/s)  11.08	3.28  J(s)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m² Surface 0.00  J(s)= ronding Q, (L/s) 6.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0 overflows to: 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 5.08	Volume 100yr (m²) 21.93 22.25 22.31 22.31 22.16 Balance 22.31 MH21	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  C 0.020 0.90  I syr (mm/hour) 116.11	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 30.85 27.47 26.07 24.82 22.68  Stt.  Required 6.64   825  Restricted Flow Q, (() 5-Year Pondin Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 5.81	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 Surface 0.00  Drage (m³) Surface 0.00  Q, (L/s)=  g  Q, (L/s)= 6.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -0.19	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64  HH21	Drainage Area	0.100 0.90  I 2yr (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90  I 2yr (mm/hour) 85.46	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp-2-78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75  Ste Required 2.53  Restricted Flow Q, (I  2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 4.28	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 0 15.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75 1.75 Sub-surface 0.00 overflows to: N 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.72	Volume 2yr (m²) 3.23 2.83 2.18 1.36 Balance 2.53 HH21
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	0.100 1.00 1.00 1.00 1.00 1.00 1.55.11 142.89 137.55 132.63 123.87  Overflow 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xCi 100pr A  43.12 39.72 38.24 38.87 34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xCi 100pr A (L/s) 11.08 10.47 9.93	3.28  J/s)=  onding  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00  J/s)=  onding  Q, (L/s)	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0 overflows to: 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 5.08 4.47 3.93	Volume   100yr   (m²)   21.93   22.25   22.31   22.31   22.16   Balance   22.31   MH21	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  C 0.020 0.90  I syr (mm/hour) 116.11 109.79 104.19	Restricted Flow Q. (  5-Year Pondin  Peak Flow Q = 2.78xCl sp A (L/s)  30.85 27.47 26.07 24.82 22.68  Ste  Required 6.64  825  Restricted Flow Q. 5-Year Pondin  Peak Flow Q = 2.78xCl sp A (L/s)	TOTAL  L/s)=  g  Q, (L/s)  15.00 15.00 15.00 15.00 15.00 0.00  Surface 0.00  L/s)=  g  Q, (L/s)	43.33 overflows to: D  15.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M	Volume	Drainage Area	0.100 0.90  I 2yr (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90  I 2yr (mm/hour) 85.46 80.87 76.81	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75 Str Required 2.53  Restricted Flow Qp 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 4.28 4.05 3.84	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 0.00 15.00 0.00  Vs)=  Q, (L/s)	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36  Balance 2.53  HH21
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 8 9 10 11	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.55.11 142.89 137.55 132.63 123.87  Overflow 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCl 100pr A  (L/s)  43.12  39.72  38.24  36.87  34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCl 100pr A  (L/s)  11.08  10.47  9.93  9.45	3.28    Solution   Sol	$\begin{array}{c} & 15.00 \\ \hline Q_{p}\text{-}Q_{r} \\ & (L/s) \\ \hline 28.12 \\ 24.72 \\ 23.24 \\ 21.87 \\ 19.44 \\ )) \\ \textbf{Sub-surface} \\ 0 \\ \text{overflows to:} \\ \\ \hline 6.00 \\ \hline Q_{p}\text{-}Q_{r} \\ & (L/s) \\ \hline 5.08 \\ 4.47 \\ \hline 3.93 \\ 3.45 \\ \end{array}$	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16  Balance 22.31 MH21  Volume 100yr (m³) 2.44 2.41 2.36 2.27	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  I syr (mm/hour) 116.11 116.11 119.79 104.19 90.19	Restricted Flow Q. (  5-Year Pondin  Peak Flow Q p = 2.78xCl sp A (L/s) 30.85 27.47 26.07 24.82 22.68  Required 6.64  825  Restricted Flow Q. (  5-Year Pondin  Peak Flow Q p = 2.78xCl sp A (L/s) 5.81 5.49 5.21 4.96	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 9 Condain (m²) Surface 0.00  L/s)=  g  Q, (L/s) 6.00 6.00 6.00	43.33 overflows to: D  15.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M  6.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) -0.19 -0.91 -0.79 -1.04	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64 4H21  Volume 5yr (m³) -0.09 -0.27 -0.68	Drainage Area   Area (Ha)   C =	0.100 0.90  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90  I 2 <sub>2yr</sub> (mm/hour) 85.46 80.87 76.81 73.17	Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75  Ste Required 2.53  Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 4.28 4.05 3.84 3.66	Q, (L/s) 15.00 15.	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.72 -1.95 -2.16 -2.34	Volume 2yr (m²) 3.23 2.83 2.53 2.18 1.36 Salance 2.53 MH21
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 8 9 10	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.55.11 1.42.89 1.32.63 1.32.63 1.23.87  Overflow 0.00  CB25 0.020 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xCi 100pr A  43.12 39.72 38.24 38.87 34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q p = 2.78xCi 100pr A (L/s) 11.08 10.47 9.93	3.28  J/s)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00  Q, (L/s) 6.00 6.00 6.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0 overflows to: 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 5.08 4.47 3.93	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16  Balance 22.31  MH21  Volume 100yr (m³) 2.44 2.41 2.36	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  C 0.020 0.90  I syr (mm/hour) 116.11 109.79 104.19	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 30.85 27.47 26.07 24.82 22.68  Ste  Required 6.64  825  Restricted Flow Q, (  5-Year Pondin Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 5.81 5.49 5.21	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00  Orage (m³) Surface 0.00  Q, (L/s)=  g  Q, (L/s) 6.00 6.00 6.00	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00  overflows to: M  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -0.19 -0.51	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64  MH21	Drainage Area   Area (Ha)   C =	0.100 0.90  I 2yr (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90  I 2yr (mm/hour) 85.46 80.87 76.81	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75 Str Required 2.53  Restricted Flow Qp 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 4.28 4.05 3.84	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 0 15.00 0 15.00 0 15.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15.00  Q <sub>p</sub> -Q <sub>r</sub> , (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N  6.00  Q <sub>p</sub> -Q <sub>r</sub> , (L/s) -1.72 -1.95 -2.16	Volume 2yr (m²) 3.23 2.83 2.83 2.18 1.36 1.36  Balance 2.53  MH21  Volume 2yr -0.83 -1.05 -1.29
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 8 9 10 11	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.55.11 142.89 137.55 132.63 123.87  Overflow 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCl 100pr A  (L/s)  43.12  39.72  38.24  36.87  34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCl 100pr A  (L/s)  11.08  10.47  9.93  9.45	3.28  Js)= ronding Q, (L's) 15.00 15.00 15.00 15.00 Storage (m³ Surface 0.00  Js)= ronding Q, (L's) 6.00 6.00 6.00 6.00 6.00 6.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0  overflows to:  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 5.08 4.47 3.93 3.45 2.62	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16  Balance 22.31 MH21  Volume 100yr (m³) 2.44 2.41 2.36 2.27	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  I syr (mm/hour) 116.11 116.11 119.79 104.19 90.19	Restricted Flow Q <sub>s</sub> (2.78xCl <sub>3y</sub> A (L/s) 30.85 22.68 22.68 Stt. Required 6.64 Step Post Flow Q <sub>s</sub> (L/s) 5.84 5.84 5.84 6.84 6.84 Flow Q <sub>s</sub> 2.85 6.84 6.84 Flow Q <sub>s</sub> 2.85 6.84 6.84 6.84 6.84 6.84 6.84 6.84 6.84	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 6.00 6.00 6.00 6.00 6.00	43.33 overflows to: D  15.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M  6.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) -0.19 -0.91 -0.79 -1.04	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64 4H21  Volume 5yr (m³) -0.09 -0.27 -0.68	Drainage Area   Area (Ha)   C =	0.100 0.90  I 2 <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB25 0.020 0.90  I 2 <sub>2yr</sub> (mm/hour) 85.46 80.87 76.81 73.17	Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>P</sub> = 2.78xCl <sub>2y</sub> -A (2.268 20.23 19.22 18.31 16.75 Ste Required 2.53  Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>P</sub> = 2.78xCl <sub>2y</sub> -A (L/s) 4.28 4.05 3.84 3.66 3.50	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 0 15.00 0 15.00 0 15.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75  Sub-surface 0.00  overflows to: N  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.72 -1.95 -2.16 -2.34	Volume 2yr (m²) 3.23 2.83 2.18 1.36 Salance 2.53 MH21
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 8 9 10 11	0.100 1.00 1.00 1.00 1.00 1.00 1.00 1.55.11 142.89 137.55 132.63 123.87  Overflow 0.00  CB25 0.020 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A  (L/s)  43.12  39.72  38.24  38.87  34.44  Required 22.31  Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A  (L/s)  11.08  10.47  9.93  9.45  8.62	3.28  J(s)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m² Surface 0.00  J(s)= conding Q, (L/s) 6.00 6.00 6.00 6.00 6.00 6.00 Storage (m² Surface	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0 overflows to: 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 5.08 4.47 3.93 3.45 2.62 )  Sub-surface	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16  Balance 22.31  MH21  Volume 100yr (m²) 2.44 2.41 2.36 2.27 2.05	Drainage Area	0.100 0.90  I syr (mm/hour) 123.30 109.79 104.19 99.19 90.63  Overflow 0.00  I syr (mm/hour) 110.11 109.79 116.11 109.79 104.19 99.19 94.70  Overflow	Restricted Flow Q, (  5-Year Pondin  Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 30.85 27.47 26.07 24.82 22.66  Stt.  Required 6.64  825  Restricted Flow Q, ((L/s) 5-Year Pondin Peak Flow Q, =2.78xCl <sub>3p</sub> , A (L/s) 5.81 5.49 5.21 4.96 4.74  Stt.  Required	TOTAL  L/s)=  g Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface 0.00  Q, (L/s)=  g Q, (L/s) 6.00 6.00 6.00 6.00 6.00 6.00 6.00 6.0	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -0.19 -0.51 -0.79 -1.04 -1.26	Volume 5yr (m³) 6.66 6.73 6.64 6.48 5.99  Balance 6.64  H-121  Volume 5yr (m³) -0.09 -0.27 -0.68 -0.91	Drainage Area   Area (Ha)   C =	0.100 0.90  I 2pr (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  I 2pr (mm/hour) 85.46 80.87 76.81 73.17 69.89	Restricted Flow Q, (I 2-Year Pondi  Peak Flow Q = 2.78xCl <sub>2y</sub> A (L/s) 22.68 20.23 19.22 18.31 16.75  Str  Required 2.53  Restricted Flow Q, (I 2-Year Pondi Peak Flow Q = 2.78xCl <sub>2y</sub> A (L/s) 4.28 4.05 3.84 3.66 3.50  Str  Required	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 00 15.00 00 00 00 00 00 00 00 00 00 00 00 00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 7.68 5.23 4.22 3.31 1.75 1.75 Sub-surface 0.00  overflows to: N  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 1.172 1.95 2.16 2.34 -2.50  Sub-surface	Volume 2yr (m²) 3.23 2.83 2.18 1.36  Balance 2.53  HH21  Volume 2yr (m²) -0.83 -1.05 -1.29 -1.54 -1.80
Area (Ha) C =  T <sub>c</sub> Variable (min) 13 15 16 17 19  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 8 9 10 11	0.100 1.00 1.00 1.00 1.00 1.00 1.55.11 142.89 137.55 132.63 123.87  Overflow 0.00 1.00 1.00 1.00 1.00 1.00 1.00 1.0	Restricted Flow Q, (100-Year F Peak Flow Q <sub>p</sub> = 2.78xCi 100pr A 43.12 39.72 38.24 36.87 34.44  Required 22.31  Restricted Flow Q, (100-Year F Peak Flow Q <sub>p</sub> = 2.78xCi 100pr A 11.08 11.08 10.47 9.93 9.45 8.62	3.28  J/s)=  onding  Q, (L/s)  15.00  15.00  15.00  15.00  Surface 0.00  Q, (L/s)=  onding  Q, (L/s) 6.00 6.00 6.00 6.00 6.00 6.00 6.00 6.0	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 28.12 24.72 23.24 21.87 19.44 )  Sub-surface 0  overflows to:  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 5.08 4.47 3.93 3.45 2.62	Volume 100yr (m³) 21.93 22.25 22.31 22.31 22.16  Balance 22.31 MH21  Volume 100yr (m³) 2.44 2.41 2.36 2.27 2.05	Drainage Area	0.100 0.90  i syr (mm/hour) 123.30 109.79 104.19 90.63  Overflow 0.00  i syr (mm/hour) 116.11 109.79 104.19 99.19 99.19	Restricted Flow Q, (5-Year Pondin- Peak Flow Q <sub>p</sub> = 2.78xCl <sub>sp</sub> A (L/s) 30.85 27.47 26.07 24.82 22.68  Ste Required 6.64  825  Restricted Flow Q, (5-76xCl <sub>sp</sub> A (L/s) (L/s) 5-Year Pondin- Peak Flow Q <sub>p</sub> = 2.78xCl <sub>sp</sub> A (L/s) 5.81 5.49 5.21 4.96 4.74	TOTAL  L/s)=  g  Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 0.00  Surface 0.00  Q, (L/s)=  Q, (L/s)=  Q, (L/s)= 6.00 6.00 6.00 6.00 6.00 6.00 corage (m³)	43.33 overflows to: D  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.85 12.47 11.07 9.82 7.68  Sub-surface 0.00 overflows to: M  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -0.19 -0.19 -0.79 -1.26	Volume	Drainage Area   Area (Ha)   C =	0.100 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  i z <sub>yr</sub> (mm/hour) 85.46 80.87 76.81 73.17 69.89	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/x) 22.68 20.23 19.22 18.31 16.75  Ste Required 2.53  Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A 4.28 4.05 3.84 3.66 3.50	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 0 15.00 0 15.00 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	$\begin{array}{c} \textbf{15.00} \\ \textbf{Q}_{p}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{7.68} \\ \textbf{5.23} \\ \textbf{4.22} \\ \textbf{3.31} \\ \textbf{1.75} \\ \\ \textbf{Sub-surface} \\ \textbf{0.00} \\ \\ \textbf{overflows to: N} \\ \textbf{0.00} \\ \\ \textbf{Q}_{p}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{1.172} \\ \textbf{1.195} \\ \textbf{-2.16} \\ \textbf{-2.34} \\ \textbf{-2.50} \\ \end{array}$	Volume   2yr   (m²)   3.23   2.53   2.18   1.36

overflows to: MH21

overflows to: MH21

overflows to: MH21

Duning and Aug	MUOA	•				Duningur Aug	MUM	T				D	MUDA	Ī			
Drainage Area Area (Ha)	MH21	Restricted Flow ICD	Actual (L/s)=	33.00	50% reduction for sub-	Drainage Area Area (Ha)	MH21 0.240	ł				Drainage Area Area (Ha)	MH21 0.240				
C =		Restricted Flow Q <sub>r fo</sub>		16.50	surface storage	C =		Restricted Flow Q <sub>r</sub>	L/s)=	16.50		C =	0.90	Restricted Flow Q <sub>r</sub> (	L/s)=	16.50	
	1	100-Year F	onding					5-Year Pondin						2-Year Pondi	ng		
Tc	i <sub>100yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	Tc	i <sub>Syr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	I <sub>2yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume
Variable	-	$Q_p = 2.78 \times Ci_{100 \text{yr}} A$		(L/s)	100yr (m³)	Variable (min)	-	$Q_p = 2.78xCi_{5yr}A$		, , , , , , , , , , , , , , , , , , ,	5yr (m³)	Variable	-	$Q_p = 2.78xCi_{2yr}A$	(L/s)	(L/s)	2yr (m³)
(min) 33	(mm/hour) 86.03	(L/s) 57.40	(L/s) 16.50	40.90	80.99	16	(mm/hour) 80.46	(L/s) 48.31	(L/s) 16.50	(L/s) 31.81	30.54	(min) 11	(mm/hour) 73.17	(L/s) 43.94	16.50	27.44	18.11
34	84.27	56.22	16.50	39.72	81.03	18	74.97	45.02	16.50	28.52	30.80	13	66.93	40.19	16.50	23.69	18.48
35 36	82.58 80.96	55.10 54.02	16.50 16.50	38.60 37.52	<b>81.05</b> 81.04	19 20	72.53 70.25	43.55 42.18	16.50 16.50	27.05 25.68	<b>30.84</b> 30.82	14 15	64.23 61.77	38.57 37.09	16.50 16.50	22.07 20.59	<b>18.54</b> 18.53
38	77.93	52.00	16.50	35.50	80.93	22	66.15	39.72	16.50	23.22	30.65	17	57.42	34.48	16.50	17.98	18.34
			Storogo (m	3,				C+	rage (m <sup>3</sup> )					64	orogo (m <sup>3</sup> )		
•	Overflow	Required	Storage (m Surface	Sub-surface	Balance	= =	Overflow	Required	Surface	Sub-surface	Balance	-	Overflow	Required	Surface	Sub-surface	Balance
	24.40	105.45	11.79	96.68	0.00		0.00	30.84	11.79	96.68	0.00		0.00	18.54	11.79	96.68	0.00
Length (m)	Dia (m)	Area (m²)	Volume (m³)			Structure		Depth	Area (m²)	Volume (m³)							
8.30	0.200	0.031	0.26			CB21 (600mm x 600mm)		1.40	0.36	0.50							
3.10 8.62	0.200 0.300	0.031	0.10 0.61			CB22 (600mm x 600mm)		1.40 3.40	0.36 1.13	0.50							
8.62	0.300	0.071 TOTAL	0.61	=		MH21 (1200mm) MH23 (1200mm)		1.97	1.13	3.84 2.23							
						Underground Chamber				88.64							
									TOTAL	95.72							
				overflows to:	CBMH20					overflows to: C	BMH20					overflows to: 0	BMH20
Dunius un Au	ODATIO	To	D/ OD:			D	СВМН2	T				D	СВМН2	1			
Drainage Area Area (Ha)	CBIVIH2 0.080	Drainage Area	Pian - CBINI	42		Drainage Area Area (Ha)	0.080	ł				Drainage Area Area (Ha)	0.080				
C =		Restricted Flow Q <sub>r</sub> (	L/s)=	20.00		C =		Restricted Flow Q <sub>r</sub>	L/s)=	20.00		C =		Restricted Flow Q <sub>r</sub> (	L/s)=	20.00	
		100-Year F	onding					5-Year Pondin	g					2-Year Pondi	ng		
T <sub>c</sub>	i <sub>100yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	i <sub>Syr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	i <sub>2yr</sub>	Peak Flow	Q,	$Q_p$ - $Q_r$	Volume
Variable		Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A		,	100yr (m³)	Variable		$Q_p = 2.78xCi_{5yr}A$		· ·	5yr (m³)	Variable		$Q_p = 2.78xCi_{2yr}A$			2yr (m³)
(min) 7	(mm/hour) 211.67	(L/s) 47.07	(L/s) 20.00	(L/s) 27.07	11.37	(min)	(mm/hour) 203.51	(L/s) 40.73	(L/s) 20.00	(L/s) 20.73	1.24	(min) 7	(mm/hour) 90.66	(L/s) 18.15	(L/s) 20.00	(L/s) -1.85	-0.78
9	188.25	41.87	20.00	21.87	11.81	3	166.09	33.24	20.00	13.24	2.38	9	80.87	16.19	20.00	-3.81	-2.06
10 11	178.56 169.91	39.71 37.79	20.00 20.00	19.71 17.79	11.83 11.74	4	152.51 141.18	30.53 28.26	20.00	10.53 8.26	2.53 2.48	10 11	76.81 73.17	15.37 14.65	20.00 20.00	-4.63 -5.35	<b>-2.78</b> -3.53
13	155.11	34.50	20.00	14.50	11.31	7	123.30	24.68	20.00	4.68	1.97	13	66.93	13.40	20.00	-6.60	-5.15
,			04	3,										-			
	Overflow	Required	Storage (m	Sub-surface	Balance		Overflow	Required	orage (m³) Surface	Sub-surface	Balance		Overflow	Required	orage (m <sup>3</sup> ) Surface	Sub-surface	Balance
	0.00	11.83	6.21	0.00	5.62		0.00	2.53	6.21	0.00	0.00		0.00	0.00	6.21	0.00	0.00
				overflows to:	CB10												
		=				-		-						•			
Drainage Area		Drainage Area	Plan - MH1E	)		Drainage Area	CB10 0.110					Drainage Area	<b>CB10</b> 0.110				
Area (Ha) C =	0.110	Restricted Flow Q <sub>r</sub> (	L/s)=	45.00		Area (Ha) C =	0.110	Restricted Flow Q <sub>r</sub>	L/s)=	45.00		Area (Ha) C =		Restricted Flow Q <sub>r</sub> (	L/s)=	45.00	
-		100-Year F	-			T		5-Year Pondin						2-Year Pondi			
Tc	1	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	1-	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	1.	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume
Variable	i <sub>100yr</sub>	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A		'	100yr	Variable	I <sub>Syr</sub>	Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A		,	5yr	Variable	l <sub>2yr</sub>	Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A			2yr
(min) 3	(mm/hour) 286.05	(L/s) 87.47	(L/s) 45.00	(L/s) 42.47	(m³) 7.65	(min) 0	(mm/hour) 230.48	(L/s) 63.43	(L/s) 45.00	(L/s) 18.43	(m³) 0.00	(min)	(mm/hour) 90.66	(L/s) 24.95	(L/s) 45.00	(L/s) -20.05	(m³) -8.42
4	262.41	80.24	45.00	35.24	8.46	2	182.69	50.28	45.00	5.28	0.63	9	80.87	22.26	45.00	-22.74	-12.28
5	242.70 226.01	74.22 69.11	45.00 45.00	29.22 24.11	<b>8.77</b> 8.68	3 4	166.09 152.51	45.71 41.97	45.00 45.00	0.71 -3.03	<b>0.13</b> -0.73	10 11	76.81 73.17	21.14 20.14	45.00 45.00	-23.86 -24.86	<b>-14.32</b> -16.41
8	199.20	60.92	45.00	15.92	7.64	6	131.57	36.21	45.00	-8.79	-3.16	13	66.93	18.42	45.00	-26.58	-20.73
•			01	3,								•					
	Overflow	Required	Storage (m Surface	Sub-surface	Balance		Overflow	Required	orage (m³) Surface	Sub-surface	Balance		Overflow	Required	orage (m³) Surface	Sub-surface	Balance
	5.62	14.38	6.81	0.00	7.57		0.00	0.13	6.81	0.00	0.00		0.00	0.00	6.81	0.00	0.00
				overflows to:	CDMU20					overflows to: C	DMU20					overflows to: 0	PMU20
					ODIVII IZU			_		overnows to: C	DIVII IZU					overnows to: C	NOW IEU
Drainage Area		Drainage Area	Plan - CBMI	H1C		Drainage Area	CB7	Į.				Drainage Area	CB7				
Area (Ha)	0.080	Restricted Flow Q <sub>r</sub> (	I /e\=	30.00		Area (Ha)	0.080	Restricted Flow Q <sub>r</sub>	/e\=	30.00		Area (Ha)	0.080	Restricted Flow Q, (	I /e)=	30.00	
C =	1.00	100-Year F		30.00		C =	0.90	5-Year Pondin		30.00		C=	0.90	2-Year Pondi	,	30.00	
T <sub>c</sub>		Peak Flow			Volume	T <sub>c</sub>		Peak Flow			Volume	T <sub>c</sub>	. 1	Peak Flow			Volume
Variable	i <sub>100yr</sub>	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q,	$Q_p - Q_r$	100yr	Variable	i <sub>Syr</sub>	$Q_p = 2.78 \times Ci_{5yr} A$	Q,	Q <sub>p</sub> -Q <sub>r</sub>	5yr	Variable	i <sub>2yr</sub>	$Q_p = 2.78 \times Ci_{2yr} A$	Q,	$Q_p$ - $Q_r$	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
3 5	286.05 242.70	63.62 53.98	30.00	33.62 23.98	6.05 7.19	-1 1	266.98	53.44 40.73	30.00 30.00	23.44 10.73	-1.41 0.64	7	90.66 80.87	18.15 16.19	30.00	-11.85 -13.81	-4.98 -7.46
6	226.01	50.26	30.00	20.26	7.30	2	182.69	36.57	30.00	6.57	0.79	10	76.81	15.37	30.00	-14.63	-8.78
7 9	211.67 188.25	47.07 41.87	30.00 30.00	17.07 11.87	7.17 6.41	3 5	166.09 141.18	33.24 28.26	30.00 30.00	3.24	0.58 -0.52	11 13	73.17 66.93	14.65 13.40	30.00	-15.35 -16.60	-10.13 -12.95
9	188.25	41.8/	30.00	11.87	0.41	2	141.18	28.20	30.00	-1.74	-U.5Z	13	00.93	13.40	30.00	-10.00	-12.95
			Storage (m			_			orage (m <sup>3</sup> )					St	orage (m³)		
•	Overflow 0.00	Required 7.30	Surface 6.97	Sub-surface 0.00	Balance 0.33	_	Overflow 6.64	Required 7.43	Surface 6.97	Sub-surface 0.00	Balance 0.46	•	Overflow 0.00	Required 0.00	Surface 6.97	Sub-surface 0.00	Balance 0.00
			0.97	0.00	0.33		0.04	1.40		0.00	U.+O		0.00				

overflows to: CB8

overflows to: CB8

overflows to: CB8

Drainage Area	СВ6	Drainage Area	Plan - CBMI	H1B		Drainage Area	CB6					Drainage Area	CB6	1			
Area (Ha)	0.070	0				Area (Ha)	0.070	Destricted Floor	1.7->-			Area (Ha)	0.070	Destricted Floor O. (	1-1-		
C =	1.00	Restricted Flow Q <sub>r</sub> (		20.00		C =	0.90	Restricted Flow Q		20.00		C =	0.90		,	20.00	
T <sub>c</sub>		100-Year F	1		Volume	T <sub>c</sub>		5-Year Pondin		T T	Volume	T <sub>c</sub>		2-Year Pondi Peak Flow			Volume
Variable	i <sub>100yr</sub>	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q,	$Q_p - Q_r$	100yr	Variable	i <sub>5yr</sub>	$Q_p = 2.78 \times Ci_{5yr} A$	Q,	$Q_p$ - $Q_r$	5yr	Variable	i <sub>2yr</sub>	Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	$Q_p - Q_r$	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
5 7	242.70 211.67	47.23 41.19	20.00	27.23 21.19	8.17 8.90	0 2	230.48 182.69	40.37 32.00	20.00	20.37 12.00	0.00	7 9	90.66 80.87	15.88 14.16	20.00	-4.12 -5.84	-1.73 -3.15
8	199.20	38.76	20.00	18.76	9.01	3	166.09	29.09	20.00	9.09	1.64	10	76.81	13.45	20.00	-6.55	-3.93
9	188.25 169.91	36.63 33.06	20.00	16.63 13.06	8.98 8.62	4	152.51 131.57	26.71 23.04	20.00	6.71 3.04	1.61 1.10	11 13	73.17 66.93	12.81 11.72	20.00	-7.19 -8.28	-4.74 -6.46
	169.91	33.00	20.00	13.06	0.02		131.57	23.04	20.00	3.04	1.10	13	00.93	11.72	20.00	-0.20	-0.46
			Storage (m						orage (m3)						orage (m³)		
	Overflow 0.00	Required 9.01	Surface 13.66	Sub-surface 0.00	Balance 0.00		Overflow 0.00	Required 1.64	Surface 13.66	Sub-surface 0.00	Balance 0.00		Overflow 0.00	Required 0.00	Surface 13.66	Sub-surface 0.00	Balance 0.00
	0.00	3.01	10.00	0.00	0.00		0.00	1.04	10.00	0.00	0.00		0.00	0.00	10.00	0.00	0.00
				overflows to:	CB8					overflows to: 0	B8					overflows to: C	CB8
Drainage Area	CB5	Drainage Area	Plan - CBMI	H1A		Drainage Area	CB5	Ī				Drainage Area	CB5	1			
Area (Ha)	0.060	0				Area (Ha)	0.060					Area (Ha)	0.060				
C =	1.00	Restricted Flow Q <sub>r</sub> (		15.00		C =	0.90	Restricted Flow Q <sub>r</sub>		15.00		C =	0.90		,	15.00	
_		100-Year F	onding					5-Year Pondin	g			_		2-Year Pondi	ng		
T <sub>c</sub> Variable	i <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q,	$Q_p$ - $Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q,	$Q_p$ - $Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	$Q_p$ - $Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
7	211.67	35.31	15.00	20.31	8.53	1	203.51	30.55	15.00	15.55	0.93	7	90.66	13.61	15.00	-1.39	-0.58
9	188.25 178.56	31.40 29.78	15.00 15.00	16.40 14.78	8.86 8.87	3 4	166.09 152.51	24.93 22.89	15.00 15.00	9.93 7.89	1.79 <b>1.89</b>	9	80.87 76.81	12.14 11.53	15.00 15.00	-2.86 -3.47	-1.54 -2.08
11	169.91	28.34	15.00	13.34	8.80	5	141.18	21.19	15.00	6.19	1.86	11	73.17	10.98	15.00	-4.02	-2.65
13	155.11	25.87	15.00	10.87	8.48	7	123.30	18.51	15.00	3.51	1.47	13	66.93	10.05	15.00	-4.95	-3.86
			Storage (m	1 <sup>3</sup> )				St	orage (m³)					Sto	orage (m³)		
	Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance
	0.00	8.87	3.41	0.00	5.46		0.00	1.89	3.41	0.00	0.00		0.00	0.00	3.41	0.00	0.00
				overflows to:	CB8					overflows to: 0	B8					overflows to: C	CB8
Drainage Area	CBO	_															
	CDO	Drainage Area	Plan - MH1E	В		Drainage Area	CB8					Drainage Area	CB8	1			
Area (Ha)	0.170					Drainage Area Area (Ha)	<b>CB8</b> 0.170					Drainage Area Area (Ha)	<b>CB8</b> 0.170				
	0.170	Restricted Flow Q <sub>r</sub> (	L/s)=	<b>4</b> 7.00						47.00				Restricted Flow Q <sub>r</sub> (		47.00	
Area (Ha) C =	0.170	Restricted Flow Q <sub>r</sub> (	L/s)= Ponding	47.00	Volumo	Area (Ha) C =	0.170	5-Year Pondin	g		Valuma	Area (Ha) C =	0.170	2-Year Pondi	ng		Volumo
	0.170	Restricted Flow Q <sub>r</sub> (  100-Year F  Peak Flow	L/s)=		Volume 100yr		0.170	5-Year Pondin		47.00  Q <sub>p</sub> -Q <sub>r</sub>	Volume 5yr		0.170	2-Year Pondi		47.00 Q <sub>p</sub> -Q <sub>r</sub>	Volume 2yr
Area (Ha) C =  T <sub>c</sub> Variable  (min)	0.170 1.00 i <sub>100yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> (   100-Year F   Peak Flow   Q <sub>p</sub> = 2.78xCi 100yr A   (L/s)	L/s)= Ponding Q, (L/s)	47.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	100yr (m³)	Area (Ha) C =  T <sub>c</sub> Variable (min)	0.170 0.90 i <sub>5yr</sub> (mm/hour)	5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)	Q , (L/s)	Q <sub>p</sub> -Q <sub>r</sub> (L/s)	5yr (m³)	Area (Ha) C =  T <sub>c</sub> Variable  (min)	0.170 0.90 i <sub>2yr</sub> (mm/hour)	2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)	Q, (L/s)	Q <sub>p</sub> -Q <sub>r</sub> (L/s)	2yr (m³)
Area (Ha) C =  T <sub>c</sub> Variable (min) 6	0.170 1.00 i <sub>100yr</sub> (mm/hour) 226.01	Nestricted Flow Q <sub>r</sub> (  100-Year F   Peak Flow   Q <sub>p</sub> = 2.78xCi   100yr A   (L/s)   106.81	L/s)= Ponding Q, (L/s) 47.00	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81	100yr (m³) 21.53	Area (Ha) C =  T <sub>c</sub> Variable  (min) 1	0.170 0.90 i <sub>5yr</sub> (mm/hour) 203.51	5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 86.56	Q, (L/s) 47.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56	5yr (m³) 2.37	Area (Ha) C =  T <sub>c</sub> Variable (min) 7	0.170 0.90 i <sub>2yr</sub> (mm/hour) 90.66	2-Year Pondi  Peak Flow  Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A  (L/s)  38.56	Q, (L/s) 47.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44	2yr (m³) -3.54
Area (Ha) C =	0.170 1.00 <i>i</i> <sub>100yr</sub> ( <i>mm/hour</i> ) 226.01 199.20 188.25	D Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>100yr</sub> A (L/s) 106.81 94.14 88.97	L/s)= Ponding Q, (L/s) 47.00 47.00 47.00	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97	100yr (m³) 21.53 22.63 22.66	Area (Ha) C =  T <sub>c</sub> Variable (min)	0.170 0.90 <i>i</i> <sub>syr</sub> ( <i>mm/hour</i> ) 203.51 166.09 152.51	5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 86.56 70.64 64.87	Q, (L/s) 47.00 47.00 47.00	Q <sub>P</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87	5yr (m³) 2.37 4.26 4.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10	0.170 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81	2-Year Pondi  Peak Flow Qp=2.78xCi2yr A (L/s) 38.56 34.40 32.67	Q, (L/s) 47.00 47.00 47.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33	2yr (m³) -3.54 -6.80 -8.60
Area (Ha) C =  T <sub>c</sub> Variable  (min) 6 8 9 10	0.170 1.00 i <sub>100y</sub> r (mm/hour) 226.01 199.20 188.25 178.56	D Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCi 100pr A (L/s)  106.81 94.14 88.97 84.39	L/s)= Ponding Q <sub>r</sub> (L/s) 47.00 47.00 47.00 47.00	47.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39	100yr (m³) 21.53 22.63 22.66 22.43	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1  3	0.170 0.90 <i>i</i> <sub>Syr</sub> ( <i>mm/hour</i> ) 203.51 166.09 152.51 141.18	5-Year Pondin  Peak Flow  Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A  (L/s)  86.56  70.64  64.87  60.05	Q, (L/s) 47.00 47.00 47.00 47.00	Q <sub>P</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05	5yr (m³) 2.37 4.26 4.29 3.91	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	2-Year Pondi  Peak Flow Q p = 2.78xCi 2yr A (L/s) 38.56 34.40 32.67 31.12	Q, (L/s) 47.00 47.00 47.00 47.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88	2yr (m³) -3.54 -6.80 -8.60 -10.48
Area (Ha) C =  T <sub>c</sub> Variable (min) 6 8 9	0.170 1.00 <i>i</i> <sub>100yr</sub> ( <i>mm/hour</i> ) 226.01 199.20 188.25	D Restricted Flow Q, (  100-Year F  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>100yr</sub> A (L/s) 106.81 94.14 88.97	L/s)= Ponding Q, (L/s) 47.00 47.00 47.00	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97	100yr (m³) 21.53 22.63 22.66	Area (Ha) C =  7 c	0.170 0.90 <i>i</i> <sub>syr</sub> ( <i>mm/hour</i> ) 203.51 166.09 152.51	5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 86.56 70.64 64.87	Q, (L/s) 47.00 47.00 47.00	Q <sub>P</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87	5yr (m³) 2.37 4.26 4.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10	0.170 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81	2-Year Pondi  Peak Flow Qp=2.78xCi2yr A (L/s) 38.56 34.40 32.67	Q, (L/s) 47.00 47.00 47.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33	2yr (m³) -3.54 -6.80 -8.60
Area (Ha) C =  T <sub>c</sub> Variable  (min) 6 8 9 10	0.17( 1.00yr (mm/hour) 226.01 199.20 188.25 178.56 162.13	Restricted Flow Q <sub>t</sub> (   100-Year F	L/s)=  Ponding  Qr (L/s)  47.00  47.00  47.00  47.00  Storage (m	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62	100yr (m³) 21.53 22.63 22.66 22.43 21.33	Area (Ha) C =  7 c	0.170 0.90 i syr (mm/hour) 203.51 166.09 152.51 141.18 123.30	5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCl <sub>5yr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45	Q <sub>r</sub> (L/s) 47.00 47.00 47.00 47.00 47.00 orage (m <sup>3</sup> )	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 orage (m³)	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  T <sub>c</sub> Variable  (min) 6 8 9 10	0.170 1.00  I100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13	Destricted Flow Q, (	U/s)=  Onding  Q, (L/s)  47.00  47.00  47.00  47.00  47.00	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62	100yr (m³) 21.53 22.63 22.66 22.43 21.33	Area (Ha) C =  7 c	0.170 0.90 <i>i</i> <sub>Syr</sub> ( <i>mm/hour</i> ) 203.51 166.09 152.51 141.18	5-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>syr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  St Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 Orage (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45	5yr (m³) 2.37 4.26 4.29 3.91	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str. Required	Q <sub>r</sub> (L/s) 47.00 47.00 47.00 47.00 47.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  T.c Variable (min) 6 8 9 10 12	0.17( 1.00  1100yr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79	Destricted Flow Q, (  100-Year Flow Q,   100-Year Flow Q,   Peak Flow Q,   2.78xCl 100pr A   106.81   94.14   88.97   84.39   76.62   Required 28.45	U(s)=  Ponding  Q,  (U(s))  47.00  47.00  47.00  47.00  47.00  Storage (m)  Surface  24.90	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60	100yr (m³) 21.53 22.63 22.66 22.43 21.33	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow	5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>syr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  St  Required 4.29	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 5urface 24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 23.64 13.05 5.45  Sub-surface 1.60	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 i <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 50 age (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12	0.17( 1.00  i 100yr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m)	Restricted Flow Q, (  100-Year F   Peak Flow Q   Peak Flow Q   Peak Flow Q   Peak Flow   106.81   94.14   88.97   84.39   76.62	L(s)=	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60	100yr (m³) 21.53 22.63 22.66 22.43 21.33	Area (Ha) C =  7 c  Variable  (min) 1 3 4 5 7  Structure	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow		Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5 Surface 24.90 Area (m <sup>2</sup> )	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60 Volume (m³)	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str. Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 50 age (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  T.c Variable (min) 6 8 9 10 12	0.17( 1.00  1100yr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79	Destricted Flow Q, (  100-Year Flow Q,   100-Year Flow Q,   Peak Flow Q,   2.78xCl 100pr A   106.81   94.14   88.97   84.39   76.62   Required 28.45	U(s)=  Ponding  Q,  (U(s))  47.00  47.00  47.00  47.00  47.00  Storage (m)  Surface  24.90	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60	100yr (m³) 21.53 22.63 22.66 22.43 21.33	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow	5-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>syr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  Required 4.29	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 5urface 24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 23.64 13.05 5.45  Sub-surface 1.60	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str. Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 50 age (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12	0.17( 1.00  i 100yr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m)	Restricted Flow Q, (  100-Year F   Peak Flow Q   Peak Flow Q   Peak Flow Q   Peak Flow   106.81   94.14   88.97   84.39   76.62	L(s)=	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60	100yr (m³) 21:53 22:63 22:66 22:43 21:33 Balance 1.95	Area (Ha) C =  7 c  Variable  (min) 1 3 4 5 7  Structure	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow		Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5 Surface 24.90 Area (m <sup>2</sup> )	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60  Volume (m³) 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable  (min) 7 9 10 11	0.170 0.90 I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str. Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 50 age (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12	0.170 1.00  1100yr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450	Destricted Flow Q, (  100-Year F   Peak Flow Q,	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 5torage (m Surface 24.90 Volume (m³) 0.95	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  overflows to: 1	100yr (m³) 21:53 22:63 22:66 22:43 21:33 Balance 1.95	Area (Ha) C =  7 c  Variable  (min) 1 3 4 5 7  Structure	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00		Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5 Surface 24.90 Area (m <sup>2</sup> )	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60  Volume (m³) 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str. Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 50 age (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  T.c Variable (min) 6 8 9 10 12  Length (m) 6.00	0.17( 1.00  1.00  1.00  (mm/hour)  226.01  199.20  188.25  178.56  162.13  Overflow  5.79  Dia (m)  0.450	Restricted Flow Q, (  100-Year F   Peak Flow Q   Peak Flow Q   Peak Flow Q   Peak Flow   106.81   94.14   88.97   84.39   76.62	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 5torage (m Surface 24.90 Volume (m³) 0.95	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  overflows to: 1	100yr (m³) 21:53 22:63 22:66 22:43 21:33 Balance 1.95	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 4 5 7  Structure CB8 (600mm x 600mm)	0.170 0.90 I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30 Overflow 0.00		Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5 Surface 24.90 Area (m <sup>2</sup> )	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60  Volume (m³) 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13	0.170 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Qp=2.78xCi <sub>2yr</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str. Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 50 age (m <sup>3</sup> ) Surface	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  T <sub>c</sub> Variable (min) 6 8 9 10 12  Length (m) 6.00	0.17( 1.0(  1.00pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450	Destricted Flow Q, (  100-Year F   Peak Flow Q,     Peak Flow Q,	Us)= Onding Q, (Us) 47.00 47.00 47.00 47.00 47.00 5torage (m Surface 24.90 Volume (m³) 0.95 0.95	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62 3  Sub-surface 1.60  overflows to: 100	100yr (m³) 21:53 22:63 22:66 22:43 21:33 Balance 1.95	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7  Structure CB8 (600mm x 600mm)	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	5-Year Pondin Peak Flow Q = 2.78 KC i <sub>Syr</sub> A (L/s) 66.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 24.00 47.00 Arace 24.90 Area (m²) 0.36	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60 Volume (m³) 0.65 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Q <sub>P</sub> =2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5 urface 24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  T.c Variable (min) 6 8 9 10 12  Length (m) 6.00	0.17( 1.0(  1.00pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450	Destricted Flow Q, (   100-Year F	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 9.05 Storage (m Surface 24.90 0.95 0.95 Plan - MH10 Us)=	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  overflows to: 1	100yr (m³) 21:53 22:63 22:66 22:43 21:33 Balance 1.95	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 4 5 7  Structure CB8 (600mm x 600mm)	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	5-Year Pondin Peak Flow Q = 2.78 KCl s <sub>pr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 Orage (m³) Surface 24.90 Area (m²) 0.36	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60  Volume (m³) 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>sy</sub> , A (L/ss) 38.56 34.40 32.67 31.12 28.47  Str. Required 0.00	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5urface 24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =	0.170 1.00  1100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4  0.030 1.00	Restricted Flow Q, (	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 47.00 90 47.00	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  overflows to: 1	100yr (m²) 21.53 22.63 22.66 22.43 21.33  Balance 1.95	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7   Structure  CB8 (600mm x 600mm)  Drainage Area  Area (Ha)  C =  T <sub>c</sub>	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90	5-Year Pondin Peak Flow Q p= 2.78 KC is <sub>pr</sub> A (L/s) 66.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow Q 5-Year Pondin Peak Flow	g	Q <sub>p</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60 Volume (m³) 0.65 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>v</sub> ((2-Year Pondi) Peak Flow	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 5 Surface 24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6:00  Drainage Area Area (Ha) C =  Tc Variable	0.170 1.00  1100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4  0.030 1.00	Destricted Flow Q, (   100-Year F	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 47.00 90 Volume (m³) 0.95 0.95 Plan - MH10 Us)= Ponding Q,	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  overflows to: 1	100yr (m²) 21.53 22.63 22.66 22.43 21.33  Balance 1.95	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7   Structure  CB8 (600mm x 600mm)   Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90	5-Year Pondin  Peak Flow Q = 2.78xCi syr A  (L/s)  86.56 70.64 64.87 60.05 52.45  St  Required 4.29  Depth 1.80  Restricted Flow Q, 5-Year Pondin Peak Flow Q = 2.78xCi syr A	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 Aron (m <sup>2</sup> ) Orage (m <sup>3</sup> ) Surface 24.90 O.36	Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60 Volume (m³) 0.65 0.65	5yr (m²) 2.37 4.26 4.29 3.91 2.29 Balance 0.00	Area (Ha) C =  Tc Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  Tc Variable	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>v</sub> ( 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 500 47.00 47.00 47.00 47.00 47.00  00  00  00  00  00  00  00  00  00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60	2yr (m²) -3.54 -6.80 -8.60 -10.48 -14.46 Balance 0.00
Area (Ha) C =  T.c Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  T.c Variable (min)	0.170 1.00  i 100yr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4 0.030 1.00	Drainage Area (100-Year Feak Flow Q, (100-Year Feak Flow Q, 600-Year Feak Flow Q, 600-	Us)= Ponding Qr (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 Volume (m³) 0.95 0.95 Volume (m³) 0.95 Us)= Ponding Qr (L/s)	47.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  33  Sub-surface 1.60  overflows to: 1	100yr (m²) 21.53 22.63 22.66 22.43 21.33  Balance 1.95	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 4 5 7  Structure CB8 (600mm x 600mm)  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90	5-Year Pondin Peak Flow $Q_p = 2.78 \times G_{sys}$ 66.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow $Q_s = 2.78 \times G_{sys}$ 5-Year Pondin Peak Flow $Q_p = 2.78 \times G_{sys}$ (L(s)	g	Q <sub>ρ</sub> -Q <sub>τ</sub> (L/s) 39.56 23.64 17.87 13.05 5.45 Sub-surface 1.60 Volume (m³) 0.65 0.65	5yr (m³) 2.37 4.26 4.29 3.91 2.29  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min) 7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	0.170 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB4 0.030 0.90	2-Year Pondi  Peak Flow Q <sub>p</sub> =2-78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  St:  Required 0.00  Restricted Flow Q <sub>i</sub> (2-Year Pondi Peak Flow Q <sub>p</sub> =2-78xCl <sub>2y</sub> A (L/s)	(L/s)  Q, (L/s)  47.00  47.00  47.00  47.00  47.00  47.00  47.00  24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60  6.00	2yr (m²) -3.54 -6.80 -10.48 -14.46 Balance 0.00
Area (Ha) C =  T <sub>c</sub> Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable	0.170 1.00  1100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4  0.030 1.00	Destricted Flow Q, (   100-Year F	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 47.00 90 Volume (m³) 0.95 0.95 Plan - MH10 Us)= Ponding Q,	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  overflows to: 1	100yr (m²) 21.53 22.63 22.66 22.43 21.33  Balance 1.95	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7   Structure  CB8 (600mm x 600mm)   Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90	5-Year Pondin  Peak Flow Q = 2.78xCi syr A  (L/s)  86.56 70.64 64.87 60.05 52.45  St  Required 4.29  Depth 1.80  Restricted Flow Q, 5-Year Pondin Peak Flow Q = 2.78xCi syr A	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 Aron (m <sup>2</sup> ) Orage (m <sup>3</sup> ) Surface 24.90 O.36	Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60 Volume (m³) 0.65 0.65	5yr (m²) 2.37 4.26 4.29 3.91 2.29 Balance 0.00	Area (Ha) C =  Tc Variable (min) 7 9 10 11 11 13  Drainage Area Area (Ha) C =  Tc Variable	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00	2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>v</sub> ( 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 500 47.00 47.00 47.00 47.00 47.00  00  00  00  00  00  00  00  00  00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60	2yr (m²) -3.54 -6.80 -8.60 -10.48 -14.46 Balance 0.00
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  Tc Variable (min) 9 11 12	0.170 1.00 1100pr (mm/hour) 226.01 199.20 188.25 162.13  Overflow 5.79 Dia (m) 0.450  CB4 0.030 1.00  I100pr (mm/hour) 188.25 169.91 162.13	Restricted Flow Q, (   100-Year F	Us)= Ponding Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00  Storage (m Surface 24.90 Volume (m³) 0.95 0.95  Plan - MH10 Us)= Ponding Q, (L/s) 6.00 6.00	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 47.14 41.97 37.39 29.62  3  Sub-surface 1.60  overflows to: 1  Q <sub>P</sub> -Q, (L/s) 9.70 8.17 7.52	100yr (m³) 21.53 22.63 22.66 22.43 21.33  Balance 1.95  MH1A	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7  Structure  CB8 (600mm x 600mm)   Drainage Area  Area (Ha)  C =  Variable  (min)  3  4  5  7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90  I syr (mm/hour) 166.09 144.18 131.57	5-Year Pondin Peak Flow Q p= 2.78 KCl syr A (L/s) 66.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow Q. 5-Year Pondin Peak Flow Q p= 2.78 KCl syr A (L/s) 12.47 10.60 9.88	g	Q <sub>p</sub> -Q <sub>r</sub> (L/s)  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60  Volume (m³) 0.65 0.65  6.00	5yr (m³) 2.37 4.26 4.29 3.91 2.29 Balance 0.00	Area (Ha)   C =	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81	2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>v</sub> (L/s) 2-Year Pondi Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 6.81 6.07 5.76	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 5urface 24.90  Q, (L/s) 6.00 6.00	Q <sub>p</sub> -Q <sub>r</sub>   (L/s)   -5.44   -12.50   -14.33   -18.53   -18.53     Sub-surface   1.60     6.00     Q <sub>p</sub> -Q <sub>r</sub>   (L/s)   (.81	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46 Balance 0.00
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  Tc Variable (min) 9 11	0.170 1.00 1100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4  0.030 1.00  i 100pr (mm/hour) 188.25 169.91	Drainage Area (L/s)	Us)= Ponding Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 90 47.00 47.00  Storage (m Surface 24.90 Volume (m³) 0.95  Plan - MH10 Us)= Ponding Q, (L/s) 6.00 6.00	47.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62  Sub-surface 1.60  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 9.70 8.17	100yr (m³) 21.53 22.63 22.66 22.43 21.33  Balance 1.95	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7  Structure CB8 (600mm x 600mm)   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 3 5	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90  i syr (mm/hour) 166.09 141.18	5-Year Pondin Peak Flow Q = 2.78×Cl s <sub>pr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow Q, 5-Year Pondin Peak Flow Q = 2.78×Cl s <sub>pr</sub> A (L/s) 12.47 10.60	g	Q <sub>p</sub> -Q <sub>r</sub> ( L/s)     (L/s)     (L/s)	5yr (m²) 2.37 4.26 4.29 3.91 2.29 Balance 0.00	Area (Ha)   C =	0.170 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB4 0.030 0.90  i z <sub>yr</sub> (mm/hour) 90.66 80.87		Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 47.00 27.00 47.00 47.00 47.00 47.00 47.00  Qrage (m³) Surface 24.90	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 0.81	2yr (m³) -3.54 -6.80 -8.60 -10.48 -14.46 Balance 0.00
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  Tc Variable (min) 9 11 12 13	0.170 1.00 1100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4  0.030 1.00  i 100pr (mm/hour) 188.25 169.91 162.13	Drainage Area (L/s)	Us)= Ponding Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00  Storage (m Surface 24.90 Volume (m³) 0.95 0.95  Plan - MH10 Us)= Ponding Q, (L/s)= 6.00 6.00 6.00 6.00	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 41.97 37.39 29.62  Sub-surface 1.60  Q <sub>P</sub> -Q, (L/s)  Q <sub>P</sub> -Q, (L/s)  6.00	100yr (m³) 21.53 22.63 22.66 22.43 21.33  Balance 1.95  MH1A	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7  Structure CB8 (600mm x 600mm)  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 3 6 7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90  i syr (mm/hour) 166.09 141.18 131.57 123.30	5-Year Pondin Peak Flow Q = 2.78 XCl s <sub>pr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow Q <sub>t</sub> 5-Year Pondin Peak Flow Q = 2.78 XCl s <sub>pr</sub> A (L/s) 10.60 9.88 9.26 8.24	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 Area (m²) 0.36  L/s)=  Q, (L/s) (L/s)=  Q, (L/s) 6.00 6.00 6.00	Q <sub>p</sub> -Q <sub>r</sub> ( L/s)     Q <sub>p</sub> -Q <sub></sub>	5yr (m³) 2.37 4.26 4.29 3.91 2.29 Balance 0.00 Volume 5yr (m³) 1.16 1.38 1.40	Area (Ha)   C =	0.170 0.90  I z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB4 0.030 0.90  I z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>sy</sub> , A (L/s) 38.56 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>s</sub> ((L/s) Peak Flow Q <sub>p</sub> = 2.78xCi <sub>sy</sub> , A (L/s) 6.81 6.07 5.76 5.49 5.02	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 500 47.00 47.00 47.00 47.00 47.00 47.00 6.00 6.00 6.00 6.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 0.81 0.07 -0.24 -0.51	2yr (m³) -3.54 -6.80 -10.48 -14.46 Balance 0.00
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  Tc Variable (min) 9 11 12 13	0.170 1.00 1100pr (mm/hour) 226.01 199.20 188.25 162.13  Overflow 5.79 Dia (m) 0.450  CB4 0.030 1.00  1100pr (mm/hour) 188.25 169.31 101 1102.13 155.11 142.89	Destricted Flow Q, (  100-Year F   Peak Flow Q,   106.81   106.81   106.81   106.81   106.81   106.81   106.81   106.82   106.81   106.81   106.82   106.81   106.82   106.8	Us)= Ponding Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 90 47.00 47.00  Storage (m Surface 24.90 Volume (m³) 0.95  Plan - MH10 (L/s)= Ponding Q, (L/s) 6.00 6.00 6.00	47.00  Q <sub>P</sub> -Q, (L/s) 59.81 41.97 37.39 29.62  Sub-surface 1.60  Q <sub>P</sub> -Q, (L/s)  Q <sub>P</sub> -Q, (L/s) 6.00	100yr (m³) 21.53 22.66 22.43 21.33  Balance 1.95  MH1A  Volume 100yr (m³) 5.24 5.39 5.42 5.41 5.33	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7  Structure CB8 (600mm x 600mm)  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 3 6 7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90  I syr (mm/hour) 166.09 141.18 131.57 123.30	5-Year Pondin Peak Flow Q = 2.78 XCl s <sub>pr</sub> A (L/s) 86.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow Q <sub>t</sub> 5-Year Pondin Peak Flow Q = 2.78 XCl s <sub>pr</sub> A (L/s) 10.60 9.88 9.26 8.24	g	Q <sub>p</sub> -Q <sub>r</sub> ( L/s)     Q <sub>p</sub> -Q <sub></sub>	Syr (m²)   2.37   4.26   4.29   3.91   2.29	Area (Ha)   C =	0.170 0.90  12 <sub>2y</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  12yr (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>t</sub> (2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> A (6.81 6.07 5.76 5.49 5.02	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 47.00 5urface 24.90  Q, (L/s) 6.00 6.00 6.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.60 -14.33 -15.88 -18.53  Sub-surface 1.60  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 0.81 0.07 -0.24 -0.51	2yr (m³) -3.54 -6.80 -10.48 -14.46 Balance 0.00 Volume 2yr (m³) 0.34 -0.14 -0.76
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  Tc Variable (min) 9 11 12 13	0.170 1.00 1100pr (mm/hour) 226.01 199.20 188.25 178.56 162.13  Overflow 5.79 Dia (m) 0.450  CB4  0.030 1.00  i 100pr (mm/hour) 188.25 169.91 162.13	Drainage Area (L/s)	Us)= Ponding Qr (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 Volume (m³) 0.95 0.95 Volume (m³) 0.95 Qr (L/s)= Ponding Qr (L/s)= 6.00 6.00 6.00 6.00	47.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.81 47.14 41.97 37.39 29.62 33  Sub-surface 1.60  ονerflows to: 1  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.70 8.17 7.52 6.94 5.592	100yr (m³) 21.53 22.63 22.66 22.43 21.33  Balance 1.95  MH1A	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7  Structure CB8 (600mm x 600mm)  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 3 6 7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90  i syr (mm/hour) 166.09 141.18 131.57 123.30	5-Year Pondin Peak Flow Q = 2.78 KCl syr A (L/s) 86.56 70.64 64.87 60.05 52.45  St Required 4.29 Depth 1.80  Restricted Flow Q, 5-Year Pondin Peak Flow Q = 2.78 KCl syr A (L/s) 12.47 10.60 9.88 9.26 8.24	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 47.00 Area (m²) 0.36  L/s)=  Q, (L/s) 6.00 6.00 6.00 6.00 6.00	Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 39.56 23.64 17.87 13.05 5.45  Sub-surface 1.60  Volume (m³) 0.65 0.65  6.00  Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 6.47 4.60 3.88 3.26 2.24	5yr (m³) 2.37 4.26 4.29 3.91 2.29 Balance 0.00 Volume 5yr (m³) 1.16 1.38 1.40	Area (Ha)   C =	0.170 0.90  I z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  CB4 0.030 0.90  I z <sub>yr</sub> (mm/hour) 90.66 80.87 76.81 73.17	2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>sy</sub> , A (L/s) 38.56 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>s</sub> ((L/s) Peak Flow Q <sub>p</sub> = 2.78xCi <sub>sy</sub> , A (L/s) 6.81 6.07 5.76 5.49 5.02	(L/s)  Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 47.00 47.00 47.00  Qr (L/s) 6.00 6.00 6.00 6.00 6.00 6.00	Q <sub>p</sub> -Q <sub>r</sub> (L/s) -8.44 -12.50 -14.33 -15.88 -18.53  Sub-surface 1.60  6.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 0.81 0.07 -0.24 -0.51	2yr (m³) -3.54 -6.80 -10.48 -14.46 Balance 0.00
Area (Ha) C =  Tc Variable (min) 6 8 9 10 12  Length (m) 6.00  Drainage Area Area (Ha) C =  Tc Variable (min) 9 11 12 13	0.170 1.00 1100pr (mm/hour) 226.01 199.20 188.25 162.13  Overflow 5.79 Dia (m) 0.450  CB4 0.030 1.00  1100pr (mm/hour) 188.25 169.91 162.13  Overflow Overflow Overflow	Drainage Area	Us)= Ponding Q, (Us) 47.00 47.00 47.00 47.00 47.00 47.00 47.00  Storage (m Surface 24.90  Volume (m S) 0.95  O.95  Plan - MH10 L(s)= Conding Q, (Us) 6.00 6.00 6.00 6.00 6.00 Storage (m Surface	47.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 59.81 41.97 37.39 29.62  Sub-surface 1.60  6.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 9.70 8.17 7.52 6.94 6.94 5.92 Sub-surface	100yr (m²) 21.53 22.66 22.43 21.33  Balance 1.95  MH1A  Volume 100yr (m³) 5.24 5.39 5.42 5.41 5.33  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 3 4 5 7  Structure CB8 (600mm x 600mm)  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 3 6 7	0.170 0.90  I syr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB4 0.030 0.90  I syr (mm/hour) 166.09 141.18 123.30  Overflow 0.00	5-Year Pondin  Peak Flow Q = 2.78 KCl syr A (L/s)  66.56 70.64 64.87 60.05 52.45  St  Required 4.29  Depth 1.80  Restricted Flow Q, 5-Year Pondin Peak Flow Q = 2.78 KCl syr A (L/s) 12.47 10.60 9.88 9.26 8.24  St  Required	Q, (L/s)=  Q, (L/s)=  Q, (L/s)=  Q, (L/s)=  Q, (L/s)=  G,	Q <sub>p</sub> -Q <sub>r</sub>   (L/s)   39.56   23.64   17.87   13.05   5.45	Syr (m²)   (2.37   4.26   4.29   3.91   2.29	Area (Ha)   C =	0.170 0.90  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93  Overflow 0.00  I <sub>2yr</sub> (mm/hour) 90.66 80.87 76.81 73.17 66.93	2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 38.56 34.40 32.67 31.12 28.47  Str.  Required 0.00  Restricted Flow Q <sub>r</sub> (L/s) 2-Year Pondi Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> A (L/s) 5.76 5.49 5.02  Str.  Required	Q, (L/s) 47.00 47.00 47.00 47.00 47.00 47.00 47.00 5urface 24.90  Q, (L/s)=  mg Q, (L/s) 6.00 6.00 6.00 6.00 6.00 6.00 6.00 6.0	Q <sub>p</sub> -Q <sub>r</sub>	2yr (m²) -3.54 -6.80 -10.48 -14.46 Balance 0.00 Volume 2yr (m²) 0.34 -0.34 -0.76

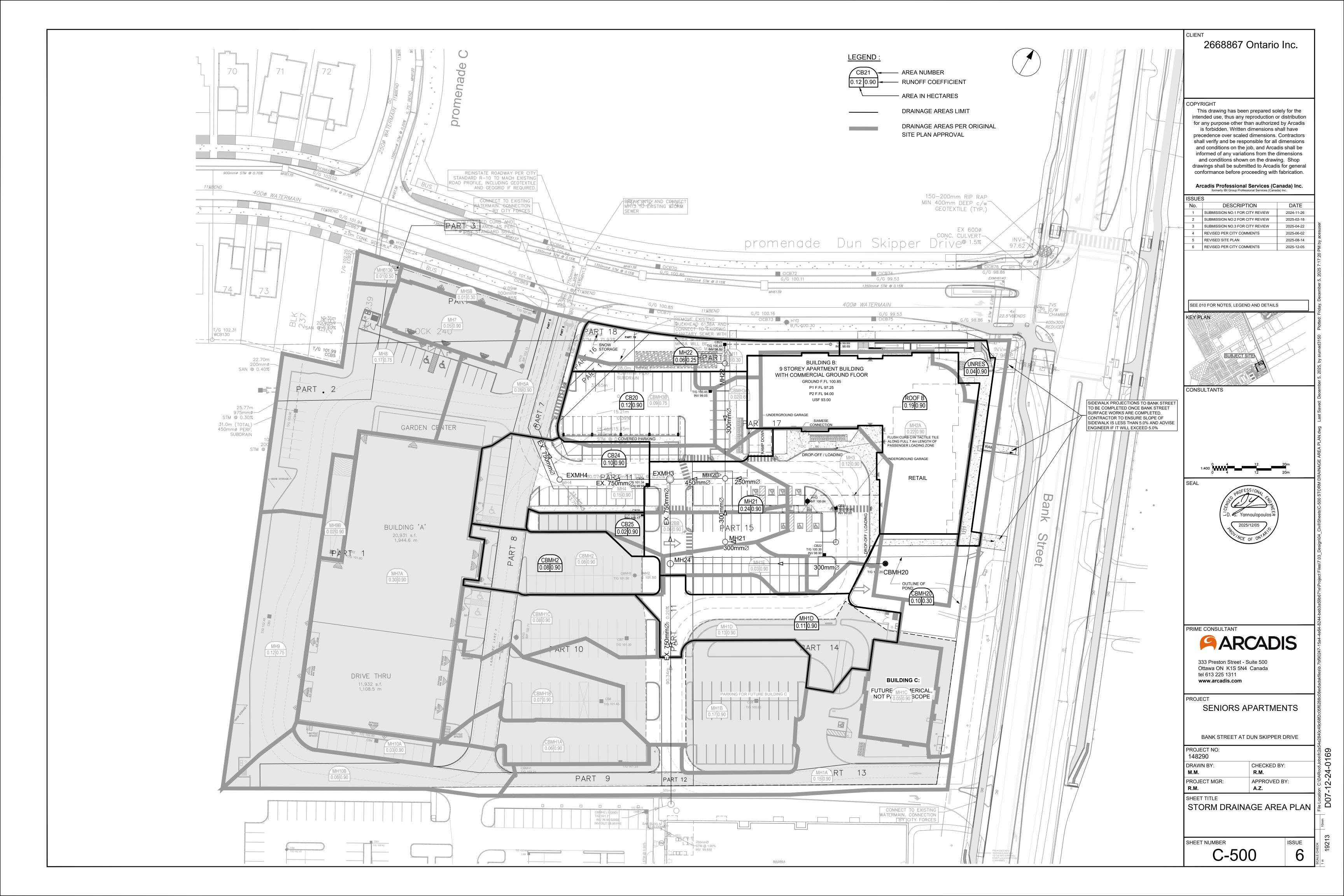
Drainage Area	CRMH1	Drainage Area I	MH10R			Drainage Area	СВМН1	Ī				Drainage Area	СВМН1	1			
Area (Ha)	0.080	Diamage Area II	WITHUB			Area (Ha)	0.080					Area (Ha)	0.080	i			
C =	1.00	Restricted Flow Q <sub>r</sub> (L		20.00		C =	0.90	Restricted Flow Q <sub>r</sub> (		20.00		C =	0.90	Restricted Flow Q <sub>r</sub> (I		20.00	
		100-Year P	onding					5-Year Ponding	g	•				2-Year Pondi	ng		
T c	i <sub>100yr</sub>	Peak Flow	Q,	Q,-Q,	Volume	T <sub>c</sub>	i <sub>Syr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	I <sub>2yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume
Variable (min)	(mm/hour)	$Q_p = 2.78xCi_{100yr}A$ (L/s)	(L/s)	(L/s)	100yr (m³)	Variable (min)	(mm/hour)	$Q_p = 2.78xCi_{5yr}A$ (L/s)	(L/s)	(L/s)	5yr (m³)	Variable (min)	(mm/hour)	Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)	(L/s)	(L/s)	2yr (m³)
7	211.67	47.07	20.00	27.07	11.37	1	203.51	40.73	20.00	20.73	1.24	7	90.66	18.15	20.00	-1.85	-0.78
9	188.25	41.87	20.00	21.87	11.81	3	166.09	33.24	20.00	13.24	2.38	9	80.87	16.19	20.00	-3.81	-2.06
10	178.56 169.91	39.71 37.79	20.00	19.71 17.79	11.83 11.74	4 5	152.51 141.18	30.53 28.26	20.00	10.53	2.53	10 11	76.81 73.17	15.37 14.65	20.00	-4.63 F. 3F	-2.78
13	155.11	34.50	20.00	17.79	11.74	7	123.30	28.26	20.00	8.26 4.68	2.48 1.97	13	66.93	13.40	20.00	-5.35 -6.60	-3.53 -5.15
ļ							1					l					
			Storage (m			_			orage (m <sup>3</sup> )			_			orage (m <sup>3</sup> )		
	Overflow 0.00	Required 11.83	Surface 0.00	Sub-surface 0.00	Balance 11.83		Overflow 0.00	Required 2.53	Surface 0.00	Sub-surface 0.00	Balance 2.53		Overflow 0.00	Required 0.00	Surface 0.00	Sub-surface 0.00	Balance 0.00
	0.00	11.00	0.00	0.00	11.00		0.00	2.55	0.00	0.00	2.55		0.00	0.00	0.00	0.00	0.00
				overflows to: N	MH1A					overflows to: M	IH1A					overflows to: N	IH1A
Drainage Area	MH1A					Drainage Area	MH1A	Ī				Drainage Area	MH1A	1			
Area (Ha)	0.150	ī				Area (Ha)	0.160					Area (Ha)	0.150				
C =	1.00	Restricted Flow Q <sub>r</sub> (L	_/s)=	43.00		C =	0.90	Restricted Flow Q <sub>r</sub> (	L/s)=	43.00		C =	0.90	Restricted Flow Q <sub>r</sub> (I	_/s)=	43.00	
		100-Year P	onding					5-Year Ponding	g					2-Year Pondi	ng		
T <sub>c</sub>	i <sub>100yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume	T <sub>c</sub>	i <sub>Syr</sub>	Peak Flow	Q,	Q,-Q,	Volume	T <sub>c</sub>	i <sub>2yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>t</sub>	Volume
Variable	-	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A		'	100yr	Variable		Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	· ·	,	5yr	Variable		$Q_p = 2.78xCi_{2yr}A$		,	2yr
(min) 5	(mm/hour) 242.70	(L/s) 101.21	(L/s) 43.00	(L/s) 58.21	(m³) 17.46	(min) 2	(mm/hour) 182.69	(L/s) 73.13	(L/s) 43.00	(L/s) 30.13	(m³) 3.62	(min) 7	(mm/hour) 90.66	(L/s) 34.03	(L/s) 43.00	(L/s) -8.97	(m³) -3.77
7	211.67	88.27	43.00	45.27	19.01	4	152.51	61.05	43.00	18.05	4.33	9	80.87	30.35	43.00	-12.65	-6.83
8	199.20	83.07	43.00	40.07	19.23	5	141.18	56.52	43.00	13.52	4.05	10	76.81	28.82	43.00	-14.18	-8.51
9	188.25 169.91	78.50 70.85	43.00 43.00	35.50 27.85	19.17 18.38	6 8	131.57 116.11	52.67 46.48	43.00 43.00	9.67 3.48	3.48 1.67	11	73.17 66.93	27.46 25.12	43.00 43.00	-15.54 -17.88	-10.26 -13.95
	109.91	70.03	45.00	21.03	10.30		110.11	40.40	43.00	3.40	1.07	13	00.93	20.12	45.00	-17.00	-13.53
			Storage (m			_			orage (m <sup>3</sup> )			_			orage (m³)		
	Overflow 13.78	Required 33.01	Surface 10.83	Sub-surface 0.00	Balance 22.18		Overflow 2.53	Required 6.58	Surface 10.83	Sub-surface 0.00	Balance 0.00		Overflow 0.00	Required 0.00	Surface 10.83	Sub-surface 0.00	Balance 0.00
	15.70	33.01	10.00	0.00	22.10		2.00	0.50	10.00	0.00	0.00		0.00	0.00	10.00	0.00	0.00
				overflows to: 0	CBMH20					overflows to: C	BMH20					overflows to: C	ВМН20
Drainage Area	СВМН20	Previously CB1	8. Drainage			Drainage Area	СВМН20	Ī		overflows to: C	BMH20	Drainage Area	СВМН20	1		overflows to: C	BMH20
<b>Drainage Area</b> Area (Ha)	0.100	Previously CB1				<b>Drainage Area</b> Area (Ha)	<b>CBMH20</b> 0.160			overflows to: C	BMH20	<b>Drainage Area</b> Area (Ha)	<b>CBMH20</b> 0.100			overflows to: C	BMH20
	0.100	Restricted Flow Q <sub>r</sub> (L	L/s)=							overflows to: C	ВМН20			Restricted Flow Q <sub>r</sub> (I		overflows to: C	BMH20
Area (Ha) C =	0.100	Restricted Flow Q <sub>r</sub> (L	L/s)=	Area Plan - Mi	411	Area (Ha) C =	0.160	5-Year Pondin				Area (Ha) C =	0.100	Restricted Flow Q <sub>r</sub> (I			
Area (Ha) C =	0.100	Restricted Flow Q <sub>r</sub> (L 100-Year P Peak Flow	L/s)=	Area Plan - Mi	Volume	Area (Ha) C =	0.160	5-Year Pondin			Volume	Area (Ha) C =	0.100	Restricted Flow Q <sub>r</sub> (I  2-Year Pondii  Peak Flow			Volume
Area (Ha) C =  T <sub>c</sub> Variable	0.100 0.38	Restricted Flow Q <sub>r</sub> (L 100-Year P Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	conding Q,	15.00 Q <sub>p</sub> -Q <sub>r</sub>	Volume 100yr	Area (Ha) C =  T <sub>c</sub> Variable	0.160 0.30 <i>i</i> <sub>Syr</sub>	5-Year Ponding Peak Flow Qp = 2.78xCi 5yr A	g Q,	15.00 Q <sub>p</sub> -Q <sub>r</sub>	Volume 5yr	Area (Ha) C =  T <sub>c</sub> Variable	0.100 0.30 <i>i</i> <sub>2yr</sub>	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	ng Q,	15.00 Q <sub>p</sub> -Q <sub>r</sub>	Volume 2yr
Area (Ha) C =	0.100	Restricted Flow Q <sub>r</sub> (L 100-Year P Peak Flow	/s)= Ponding	Area Plan - Mi	Volume	Area (Ha) C =	0.160 0.30	5-Year Pondin	g	15.00	Volume	Area (Ha) C =	0.100	Restricted Flow Q <sub>r</sub> (I  2-Year Pondii  Peak Flow	ng	15.00	Volume
Area (Ha) C =  T <sub>c</sub> Variable  (min)  3  4	0.100 0.38 i <sub>100yr</sub> (mm/hour) 286.05 262.41	Restricted Flow Q <sub>r</sub> (L 100-Year P Peak Flow Q <sub>p</sub> = 2.78xCi <sub>100pr</sub> A (L/s) 29.82 27.36	Conding  Q,  (L/s)  15.00  15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 14.82 12.36	Volume 100yr (m³) 2.67 2.97	Area (Ha) C =  T c  Variable  (min)  1  2	0.160 0.30 i syr (mm/hour) 203.51 182.69	5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 27.16 24.38	Q, (L/s) 15.00 15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38	Volume 5yr (m³) 0.73 1.13	Area (Ha) C =  T c  Variable (min) 0 1	0.100 0.30 i <sub>2yr</sub> (mm/hour) 167.22 148.14	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A  (L/s)  13.95  12.36	Q, (L/s) 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64	Volume 2yr (m³) 0.00 -0.16
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38 I <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70	Restricted Flow $Q_{\epsilon}$ (L 100-Year P Peak Flow $Q_{p} = 2.78xCi_{100yr}A$ (L/s) 29.82 27.36 25.30	/s)= Ponding Q, (L/s) 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 14.82 12.36 10.30	Volume 100yr (m³) 2.67 2.97 3.09	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 i syr (mm/hour) 203.51 182.69 166.09	5-Year Ponding Peak Flow Qp = 2.78xCi <sub>5yr</sub> A (L/s) 27.16 24.38 22.16	Q, (L/s) 15.00 15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16	Volume 5yr (m³) 0.73 1.13	Area (Ha) C =  T <sub>c</sub> Variable (min) 0 1 2	0.100 0.30 i 2yr (mm/hour) 167.22 148.14 133.33	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A  (L/s)  13.95  12.36  11.12	Q, (L/s) 15.00 15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88	Volume 2yr (m³) 0.00 -0.16 -0.47
Area (Ha) C =  T <sub>c</sub> Variable  (min)  3  4	0.100 0.38 i <sub>100yr</sub> (mm/hour) 286.05 262.41	Restricted Flow Q <sub>r</sub> (L 100-Year P Peak Flow Q <sub>p</sub> = 2.78xCi <sub>100pr</sub> A (L/s) 29.82 27.36	Conding  Q,  (L/s)  15.00  15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 14.82 12.36	Volume 100yr (m³) 2.67 2.97	Area (Ha) C =  T c  Variable  (min)  1  2	0.160 0.30 i syr (mm/hour) 203.51 182.69	5-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 27.16 24.38	Q, (L/s) 15.00 15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38	Volume 5yr (m³) 0.73 1.13	Area (Ha) C =  T c  Variable (min) 0 1	0.100 0.30 i <sub>2yr</sub> (mm/hour) 167.22 148.14	Restricted Flow Q <sub>r</sub> (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A  (L/s)  13.95  12.36	Q, (L/s) 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64	Volume 2yr (m³) 0.00 -0.16
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38 i <sub>100y</sub> r (mm/hour) 286.05 262.41 242.70 226.01	Restricted Flow $Q_r$ (L 100-Year P Peak Flow $Q_p = 2.78xCi_{100pr}A$ (L/s) 29.82 27.36 25.30 23.56	C/s)=  Conding  Qr (L/s)  15.00  15.00  15.00  15.00  15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07	Volume 100yr (m³) 2.67 2.97 3.09 3.08	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 i <sub>Syr</sub> (mm/hour) 203.51 182.69 166.09 152.51	5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>5yr</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84	Q, (L/s) 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35	Volume 5yr (m³) 0.73 1.13 1.29 1.28	Area (Ha) C =  T <sub>c</sub> Variable  (min) 0 1 2 3	0.100 0.30 i <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2yr</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32	Q <sub>r</sub> (L/s) 15.00 15.00 15.00 15.00 15.00	15.00 Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38 i <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70 226.01 211.67	Restricted Flow Q <sub>r</sub> (Lt)  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100p</sub> A (Lts) 29.82 27.36 25.30 23.56 22.07	Q, (L/s) 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 <i>i <sub>Syr</sub></i> <i>(mm/hour)</i> 203.51 182.69 166.09 152.51 141.18	5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>Syr</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84	Q, (L/s) 15.00 15.00 15.00 15.00	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15	Area (Ha) C =  T <sub>c</sub> Variable  (min) 0 1 2 3	0.100 0.30 i <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78×Cl <sub>2p</sub> A (L/s)  13.95  12.36  11.12  10.13  9.32	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 crage (m <sup>3</sup> )	15.00 Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38 i <sub>100y</sub> r (mm/hour) 286.05 262.41 242.70 226.01	Restricted Flow $Q_r$ (L 100-Year P Peak Flow $Q_p = 2.78xCi_{100pr}A$ (L/s) 29.82 27.36 25.30 23.56	Conding Qr (L/s) 15.00 15.00 15.00 15.00 Storage (m	2 Area Plan - MI 15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07	Volume 100yr (m³) 2.67 2.97 3.09 3.08	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 i <sub>Syr</sub> (mm/hour) 203.51 182.69 166.09 152.51	5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>5yr</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 prage (m³)	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/S) 12.16 9.38 7.16 5.35 3.84	Volume 5yr (m³) 0.73 1.13 1.29 1.28	Area (Ha) C =  T <sub>c</sub> Variable  (min) 0 1 2 3	0.100 0.30 i <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2yr</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 crage (m <sup>3</sup> )	15.00 Q <sub>p</sub> -Q <sub>r</sub> (L/S) -1.05 -2.64 -3.88 -4.87 -5.68	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38  I <sub>100yr</sub> (mn/hour) 286.05 262.41 242.70 226.01 211.67  Overflow	Restricted Flow Q <sub>s</sub> (L 100-Year P Peak Flow Q <sub>p</sub> = L/8XCl <sub>100pr</sub> A (L/82) 29.82 27.36 25.30 23.56 22.07	C/s)=  Onding  Q, (L/s)  15.00  15.00  15.00  15.00  Storage (m	15.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 i syr (mm/hour) 203.51 182.69 166.09 152.51 141.18	5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>Syr</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84 Stormer Stormer Stor	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15	Area (Ha) C =  T <sub>c</sub> Variable  (min) 0 1 2 3	0.100 0.30  I 2yr (mn/hour) 167.22 148.14 133.33 121.46 111.72  Overflow	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCl <sub>2yr</sub> A (13.95 12.36 11.12 10.13 9.32  Str Required	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38  I <sub>100yr</sub> (mn/hour) 286.05 262.41 242.70 226.01 211.67  Overflow	Restricted Flow Q <sub>s</sub> (L 100-Year P Peak Flow Q <sub>p</sub> = L/8XCl <sub>100pr</sub> A (L/82) 29.82 27.36 25.30 23.56 22.07	C/s)=  Onding  Q, (L/s)  15.00  15.00  15.00  15.00  Storage (m	15.00  Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 14.82 12.36 10.30 8.56 7.07	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 i syr (mm/hour) 203.51 182.69 166.09 152.51 141.18	5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>Syr</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84 Stormer Stormer Stor	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15	Area (Ha) C =  T <sub>c</sub> Variable  (min) 0 1 2 3	0.100 0.30  I 2yr (mn/hour) 167.22 148.14 133.33 121.46 111.72  Overflow	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCl <sub>2yr</sub> A (13.95 12.36 11.12 10.13 9.32  Str Required	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5	0.100 0.38  I 100pr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75	Restricted Flow Q <sub>s</sub> (L 100-Year P Peak Flow Q <sub>p</sub> = L/8XCl <sub>100pr</sub> A (L/82) 29.82 27.36 25.30 23.56 22.07	Conding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m Surface 131.62	2 Area Plan - Mi 15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97	Area (Ha) C =  T c     Variable     (min)     1     2     3	0.160 0.30 i syr (mm/hour) 203.51 182.69 166.09 152.51 141.18	5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>Syr</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84 Stormer Stormer Stor	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15	Area (Ha) C =  T <sub>c</sub> Variable  (min) 0 1 2 3	0.100 0.30  I 2yr (mn/hour) 167.22 148.14 133.33 121.46 111.72  Overflow	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A (13.95  11.395  11.12  10.13  9.32  Ste  Required 0.00	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Surface (m <sup>3</sup> )	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7  Drainage Area Area (Ha)	0.100 0.38  I100yr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75	Restricted Flow Q <sub>c</sub> (L 100-Year P Peak Flow Q <sub>p</sub> =2.78xCi <sub>100p</sub> , A (L/s) 29.82 27.36 25.30 23.56 22.07 Required 32.84	Variable   Variable	2 Area Plan - MI  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97	Area (Ha)  C =  T <sub>c</sub> Variable (min)  1 2 3 4 5  Drainage Area Area (Ha)	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00	5-Year Pondin- Peak Flow Q = 2.78xCl <sub>sp</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84  Stc  Required 1.29	Q , (L/s) 15.00 15.00 15.00 15.00 15.00 Surface 131.62	15.00  Q <sub>p</sub> -Q <sub>r</sub> , (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15	Area (Ha) C =  T, Variable (min) 0 1 2 3 4  Drainage Area Area (Ha)	0.100 0.30  I 2 <sub>2y</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A (L/s) 13.95 12.36 11.12 10.13 9.32  Str  Required 0.00	Q r (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Surface 131.62	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.67 -5.68 Sub-surface 0.00	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7 7	0.100 0.38  I100yr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCl <sub>100pr</sub> A (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L/s)	Js)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHTA L(s)=	2 Area Plan - Mi 15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 2 3 4 5  Drainage Area	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00	5-Year Pondin- Peak Flow Q = 2.78 κCl s <sub>p</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84  State Required 1.29	Q , (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Drage (m³) Surface 131.62	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15	Area (Ha) C =	0.100 0.30  I 2pr (mm/hour) 167.22 148.14 143.33 121.46 111.72  Overflow 0.00	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A (L/s) 13.95 12.36 11.12 10.13 9.32 Ste  Required 0.00  Restricted Flow Q, (I	Q r (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 20 20 20 20 20 20 20 20 20 20 20 20 2	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7   Drainage Area Area (Ha) C =	0.100 0.38  I100yr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75	Restricted Flow Q <sub>1</sub> (L  100-Year P  Peak Flow Q <sub>10</sub> = (L/8) C1 1000 A  29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>1</sub> (L  100-Year P	Js)= Conding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHTA Js)= Conding	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m²) 2.67 2.97 3.09 3.08 2.97  Balance 0.00	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  2  3  4  5    Drainage Area  Area (Ha)  C =	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00	5-Year Pondin Peak Flow Q p=2788Cl sp, A (L/s) 27.16 24.38 22.16 20.35 18.84 Stc Required 1.29  Restricted Flow Q. (15-Year Pondin	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.02 Surface 131.62	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of	Volume	Area (Ha) C =	0.100 0.30  I 2 <sub>2y</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00	Restricted Flow Q, (i  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A (1.395 12.36 11.12 10.13 9.32  Ste Required 0.00  Restricted Flow Q, (i  2-Year Pondi	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.04 -3.88 -4.87 -5.68  Sub-surface 0.00	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7  Drainage Area Area (Ha) C =	0.100 0.38  I100yr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75	Restricted Flow Q <sub>c</sub> (L 100-Year P Peak Flow Q <sub>p</sub> =2.78xCi <sub>100p</sub> , A (L/s) 29.82 27.36 22.530 23.56 22.07 Required 32.84 Drainage Area F Restricted Flow Q <sub>c</sub> (L 100-Year P	Js)= Ponding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHTA L(s)=	2 Area Plan - MI  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97 Balance 0.00  Volume	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 2 3 4 5  Drainage Area Area (Ha) C =	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00	5-Year Pondin- Peak Flow Q = 2.78xCl <sub>sp</sub> A (L/s) 27.16 22.16 22.35 22.16 20.35 18.84  Stc Required 1.29  Restricted Flow Q ( 5-Year Pondin- Peak Flow	Q , (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Drage (m³) Surface 131.62	15.00  Q <sub>p</sub> -Q <sub>r</sub> , (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of	Volume	Area (Ha) C =  T <sub>c</sub> Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =	0.100 0.30  I 2 <sub>2y</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32  Str  Required 0.00  Restricted Flow Q, (I  2-Year Pondi Peak Flow	Q r (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 20 20 20 20 20 20 20 20 20 20 20 20 2	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.67 -5.68 Sub-surface 0.00	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.38 -1.38 -1.00
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7    Drainage Area Area (Ha) C =  T <sub>c</sub> Variable	0.100 0.38  I 100pr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCl 100pr A  (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCl 100pr A	Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHTA Js)= ronding Q,	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97  Balance 0.00  Volume 100yr	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  2  3  4  5   Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  RA  0.300 0.300 0.300	5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 27.16 24.38 22.16 20.35 18.84  Stt Required 1.29  Restricted Flow Q <sub>1</sub> ( 5-Year Pondin Q = 2.78xCl sp A	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00	$\begin{array}{c} \textbf{15.00} \\ \textbf{Q}_{\rho}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{12.16} \\ \textbf{9.38} \\ \textbf{7.16} \\ \textbf{5.35} \\ \textbf{3.84} \\ \\ \textbf{Sub-surface} \\ \textbf{0.00} \\ \textbf{overflows to: of} \\ \textbf{27.00} \\ \\ \textbf{Q}_{\rho}\textbf{-Q}_{r} \\ \end{array}$	Volume	Area (Ha) C =  T, Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  T, Variable	0.100 0.30  i z <sub>yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA 0.300 0.300	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A (L/s)  13.95  11.36  11.12  10.13  9.32  Ste  Required 0.00  Restricted Flow Q, (I  2-Year Pondi Peak Flow Q <sub>p</sub> = 2.78xCl <sub>2y</sub> , A	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Surface 131.62	15.00  Q <sub>P</sub> -Q <sub>r</sub> (L/s) -1.05 -2.04 -3.88 -4.87 -5.68  Sub-surface 0.00	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 25	0.100 0.38  I100yr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75  RA 0.300 1.000  I100yr (mm/hour) 103.85	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A  (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A	Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHT/A Js)= ronding Q, (L/s) 27.00	2 Area Plan - MI  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97 3.09 3.08 2.97  Volume 100yr (m²) 99.41	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  2  3  4  5    Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  1  1  1  1  1  1  1  1  1  1  1  1	0.160 0.30  i syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  i syr (mm/hour) 90.63	5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 27.16 22.16 22.16 20.35 18.84  Ste Required 1.29  Restricted Flow Q, ( 5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 68.03	Q , (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 200 200 200 200 200 200 200 200 200	$Q_{\rho}$ - $Q_{r}$ (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of	Volume 5yr (m²) 0.73 1.13 1.29 1.28 1.15  Balance 0.00  (fisite	Area (Ha) C =  T, Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  T, Variable (min) 8	0.100 0.30  i z <sub>yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA 0.300 0.90  i z <sub>yr</sub> (mm/hour) 85.46	Restricted Flow Q, (I 2-Year Pondi  Peak Flow Q p = 2.78xCl <sub>2y</sub> , A (L/s) 13.95 12.36 11.12 10.13 9.32  Str  Required 0.00  Restricted Flow Q, (I 2-Year Pondi Peak Flow Q p = 2.78xCl <sub>2y</sub> , A (L/s) 64.14	Q, (L/s)  Q, (L/s)  15.00  15.00  15.00  15.00  15.00  15.00  15.00  15.00  27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.67 -5.68  Sub-surface 0.00  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.14	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00  Volume 2yr (m³) 17.83
Area (Ha) C =  Tc Variable (min) 3 4 5 6 7   Drainage Area Area (Ha) C =  Tc Variable (min) 25 26	0.100 0.38  I <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70 226.01 211.87  Overflow 29.75  RA  0.300 1.00  I <sub>100yr</sub> (mm/hour) 103.85 101.18	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>100pr</sub> A (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>1100pr</sub> A (L/s) 86.61 84.38	Js)= Onding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHTA Js)= Conding Q, (L/s) 27.00 27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m²) 2.67 2.97 3.09 3.08 2.97  Balance 0.00  Offsite  Volume 100yr (m²) 88.41 99.52	Area (Ha)   C =	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  RA 0.300 0.300 0.300 i syr (mm/hour) 90.63 86.93	5-Year Pondin Peak Flow Q p = 278 CC ly p (L/s) 27.16 24.38 22.16 20.35 18.84  Ste Required 1.29  Restricted Flow Q, (5-Year Pondin Peak Flow Q p = 278 CC ly p (L/s) 68.03 65.25	g Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Parage (m³) Surface 131.62 U/s)= g Q, (L/s) 27.00 27.00 27.00 27.00 27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 41.03 38.25	Volume  5yr (m²) 0.73 1.13 1.29 1.28 1.15  Balance 0.00  Ifsite  Volume 5yr (m³) 32.00 32.13	Area (Ha) C =  T <sub>c</sub> Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 1 1 2 3 4	0.100 0.30  l <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA  0.300 0.300 0.300 i <sub>2yr</sub> (mm/hour) 85.46 76.81	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32 Ste Required 0.00  Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 64.14 57.65	Q, ((L/s)) 15:00 15:00 15:00 15:00 15:00 15:00 15:00 15:00 16:00 17:00 27:00 27:00 27:00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68  Sub-surface 0.00  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.14 30.65	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00  Volume 2yr (m³) 17.83 18.39
Area (Ha) C =  T <sub>c</sub> Variable (min) 3 4 5 6 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 2 5 6 7    C =  T <sub>c</sub> Variable (min) C =  T <sub>c</sub> Variable (min) 2 5 2 6 2 7	0.100 0.38  i100pr (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75  RA 0.300 1.000  i100pr (mm/hour) 103.85 101.18 98.66	Restricted Flow Q <sub>c</sub> (L 100-Year P Peak Flow Q <sub>p</sub> =2.78xCi <sub>100pr</sub> A (L/s) 29.82 27.36 22.530 23.56 22.07 Required 32.84 Drainage Area F Restricted Flow Q <sub>c</sub> (L 100-Year Q <sub>p</sub> =2.78xCi <sub>100pr</sub> A (L/s) 86.61 84.38 82.28	Js)= Conding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Conding Q, (L/s) 27.00	Parea Plan - MI  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 55.61 57.38 55.28	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97 Balance 0.00  Volume 100yr (m³) (m³) 88.41 88.52 88.56	Area (Ha) C =  T <sub>c</sub> Variable (min) 1 2 3 4 5  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	0.160 0.30  I syr (mm/hour) 203.51 182.99 166.09 152.51 141.18  Overflow 0.00  I syr (mm/hour) 90.63 86.93 83.56	5-Year Pondin- Peak Flow Q p = 2.78xCl s <sub>p</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84  Str  Required 1.29  Restricted Flow Q c 5-Year Pondin Peak Flow Q p = 2.78xCl s <sub>p</sub> A (L/s) 68.03 65.25 62.72	Q , (L/s) = Q , (L/s) 27.00 27	$\begin{array}{c} \textbf{15.00} \\ \textbf{Q}_{p}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{12.16} \\ \textbf{9.38} \\ \textbf{7.16} \\ \textbf{5.35} \\ \textbf{3.84} \\ \textbf{3.84} \\ \textbf{Sub-surface} \\ \textbf{0.00} \\ \textbf{overflows to: of} \\ \textbf{27.00} \\ \\ \textbf{Q}_{p}\textbf{-Q}_{r} \\ \textbf{(L/s)} \\ \textbf{41.03} \\ \textbf{38.25} \\ \textbf{35.72} \\ \end{array}$	Volume 5yr (m³) 0.73 1.13 1.29 1.28 1.15  Balance 0.00  Ifsite  Volume 5yr (m³) 32.00 32.13	Area (Ha) C =  T <sub>c</sub> Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 8 10 11	0.100 0.30    i z <sub>yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72    Overflow 0.00   0.90    i z <sub>yr</sub> (mm/hour) 85.46 76.81 73.17	Restricted Flow Q, (I  2-Year Pondi  Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32  Str  Required 0.00  Restricted Flow Q, (I  2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 64.14 57.65 54.92	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00  Orage (m²) Surface 131.62	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.67 -5.68  Sub-surface 0.00  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.14 30.65 27.92	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36 -1.36  Balance 0.00  Volume 2yr (m³) 17.83 18.39 18.43
Area (Ha) C =  Tc Variable (min) 3 4 5 6 7   Drainage Area Area (Ha) C =  Tc Variable (min) 25 26	0.100 0.38  I <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70 226.01 211.87  Overflow 29.75  RA  0.300 1.00  I <sub>100yr</sub> (mm/hour) 103.85 101.18	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>100pr</sub> A (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>1100pr</sub> A (L/s) 86.61 84.38	Js)= Onding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHTA Js)= Conding Q, (L/s) 27.00 27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c	Volume 100yr (m²) 2.67 2.97 3.09 3.08 2.97  Balance 0.00  Offsite  Volume 100yr (m²) 88.41 99.52	Area (Ha)   C =	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  RA 0.300 0.300 0.300 i syr (mm/hour) 90.63 86.93	5-Year Pondin Peak Flow Q p = 278 CC ly p (L/s) 27.16 24.38 22.16 20.35 18.84  Ste Required 1.29  Restricted Flow Q, (5-Year Pondin Peak Flow Q p = 278 CC ly p (L/s) 68.03 65.25	g Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 Parage (m³) Surface 131.62 U/s)= g Q, (L/s) 27.00 27.00 27.00 27.00 27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 41.03 38.25	Volume  5yr (m²) 0.73 1.13 1.29 1.28 1.15  Balance 0.00  Ifsite  Volume 5yr (m³) 32.00 32.13	Area (Ha) C =  T <sub>c</sub> Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 1 1 2 3 4	0.100 0.30  l <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA  0.300 0.300 0.300 i <sub>2yr</sub> (mm/hour) 85.46 76.81	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32 Ste Required 0.00  Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 64.14 57.65	Q, ((L/s)) 15:00 15:00 15:00 15:00 15:00 15:00 15:00 15:00 16:00 17:00 27:00 27:00 27:00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68  Sub-surface 0.00  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.14 30.65	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00  Volume 2yr (m³) 17.83 18.39
Area (Ha) C =	0.100 0.38  I <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75  RA  0.300 1.000  I <sub>100yr</sub> (mm/hour) 103.85 101.18 98.66 96.27	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>1</sub> (1 <sub>00p</sub> A  (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>1</sub> (1 <sub>00p</sub> A  (L/s) 86.61 84.38 82.28 80.29	Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHT/A Js)= ronding Q, (L/s) 27.00 27.00 27.00 27.00 27.00	2 Area Plan - Mi 15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.61 57.38 55.28 55.28 55.29 51.41	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97  Balance 0.00  offsite  Volume 100yr (m³) 89.41 89.52 89.56	Area (Ha)   C =	0.160 0.30  i syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  i syr (mm/hour) 90.63 60.93 83.56 80.46	5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 27.16 22.16 22.16 20.35 18.84  Stt Required 1.29  Restricted Flow Q <sub>1</sub> ( 5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 68.03 65.25 62.72 60.39 58.25	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 20 20 20 21 21 22 23 24 25 27 27 20 27 20 27 20 27 20 20 20 20 20 20 20 20 20 20	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 41.03 38.25 35.72 33.39	Volume  Syr (m²) 0.73 1.13 1.29 1.28 1.15  Balance 0.00  Ifsite  Volume  Syr (m²) 32.00 32.13 32.15 32.06	Area (Ha) C =  Tc Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  Tc Variable (min) 1 1 1 1 1 1 1 1 1 1 1	0.100 0.30  l <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA  0.300 0.90  l <sub>2yr</sub> (mm/hour) 85.46 76.81 73.17 69.89	Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> , A (L/S) 13.95 12.36 11.12 10.13 9.32 Stc Required 0.00  Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> , A (L/S) 64.14 57.65 54.92 52.46 48.21	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 27.00 27.00 27.00 27.00 27.00 27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68  Sub-surface 0.00  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.14 30.65 27.92 25.46	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00  Volume 2yr (m³) 17.83 18.39 18.43
Area (Ha) C =	0.100 0.38  I <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75  RA  0.300 1.00  I <sub>100yr</sub> (mm/hour) 103.85 101.18 98.66 96.27 94.01	Restricted Flow Q <sub>c</sub> (Lt)  100-Year P  Peak Flow Q <sub>p</sub> =2.78xCi 100pr A (Lts) 29.82 27.36 22.53 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (Lts) Q <sub>p</sub> =2.78xCi 100pr A (Lts) 86.61 84.38 82.28 80.29 78.41	Js)= Onding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62  Plan - MHTA Js)= Oonding Q, (L/s) 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00	2 Area Plan - MI  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 10.30 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.61 59.61 57.38 55.28 53.29 51.41	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97 0.00  Balance 0.00  offsite  Volume 100yr (m³) 93.41 98.52 89.56 98.53 89.45	Area (Ha)   C =	0.160 0.30  I syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  RA 0.300 0.90  I syr (mm/hour) 90.63 86.93 85.56 80.46 77.61	5-Year Pondin Peak Flow Q p = 2.78xCl s <sub>p</sub> A (L/s) 27.16 24.38 22.16 20.35 18.84  Ste Required 1.29  Restricted Flow Q <sub>s</sub> (5-Year Pondin Peak Flow Q p = 2.78xCl s <sub>p</sub> A (L/s) 68.03 65.25 62.72 60.39 58.25	g Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 27.00 2	15.00  Q <sub>p</sub> -Q <sub>r</sub> , (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of  27.00  Q <sub>p</sub> -Q <sub>r</sub> , (L/s) 41.03 38.25 35.72 33.39 31.25	Volume	Area (Ha) C =  Tc Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  Tc Variable (min) 1 1 1 1 1 1 1 1 1 1 1	0.100 0.30  i z <sub>yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA 0.300 0.90  i z <sub>yr</sub> (mm/hour) 85.46 76.81 73.17 69.89 64.23	Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (L/s) 13.95 12.36 11.12 10.13 9.32  Ste Required 0.00  Restricted Flow Q, (I 2-Year Pondi Peak Flow Qp=2.78xCl <sub>2y</sub> A (44.14 57.65 54.92 52.46 48.21	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00	15.00  Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68  Sub-surface 0.00  27.00  Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 37.14 37.14 37.14 25.46 21.21	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00  Volume 2yr (m³) 17.83 18.39 18.43 118.39
Area (Ha) C =	0.100 0.38  I <sub>100yr</sub> (mm/hour) 286.05 262.41 242.70 226.01 211.67  Overflow 29.75  RA  0.300 1.000  I <sub>100yr</sub> (mm/hour) 103.85 101.18 98.66 96.27	Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>1</sub> (1 <sub>00p</sub> A  (L/s) 29.82 27.36 25.30 23.56 22.07  Required 32.84  Drainage Area F  Restricted Flow Q <sub>c</sub> (L  100-Year P  Peak Flow Q <sub>p</sub> =2.78xC <sub>1</sub> (1 <sub>00p</sub> A  (L/s) 86.61 84.38 82.28 80.29	Js)= ronding Q, (L/s) 15.00 15.00 15.00 15.00 15.00 Storage (m Surface 131.62 Plan - MHT/A Js)= ronding Q, (L/s) 27.00 27.00 27.00 27.00 27.00	2 Area Plan - Mi 15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.82 12.36 10.30 8.56 7.07  Sub-surface 0.00 overflows to: c  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 59.61 57.38 55.28 55.28 55.29 51.41	Volume 100yr (m³) 2.67 2.97 3.09 3.08 2.97  Balance 0.00  offsite  Volume 100yr (m³) 89.41 89.52 89.56	Area (Ha)   C =	0.160 0.30  i syr (mm/hour) 203.51 182.69 166.09 152.51 141.18  Overflow 0.00  i syr (mm/hour) 90.63 60.93 83.56 80.46	5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 27.16 22.16 22.16 20.35 18.84  Stt Required 1.29  Restricted Flow Q <sub>1</sub> ( 5-Year Pondin Peak Flow Q = 2.78xCl sp A (L/s) 68.03 65.25 62.72 60.39 58.25	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 20 20 20 21 21 22 23 24 25 27 27 20 27 20 27 20 27 20 20 20 20 20 20 20 20 20 20	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 12.16 9.38 7.16 5.35 3.84  Sub-surface 0.00 overflows to: of  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 41.03 38.25 35.72 33.39	Volume  Syr (m²) 0.73 1.13 1.29 1.28 1.15  Balance 0.00  Ifsite  Volume  Syr (m²) 32.00 32.13 32.15 32.06	Area (Ha) C =  Tc Variable (min) 0 1 2 3 4  Drainage Area Area (Ha) C =  Tc Variable (min) 1 1 1 1 1 1 1 1 1 1 1	0.100 0.30  l <sub>2yr</sub> (mm/hour) 167.22 148.14 133.33 121.46 111.72  Overflow 0.00  RA  0.300 0.90  l <sub>2yr</sub> (mm/hour) 85.46 76.81 73.17 69.89	Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> , A (L/S) 13.95 12.36 11.12 10.13 9.32 Stc Required 0.00  Restricted Flow Q, (I 2-Year Pondi Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> , A (L/S) 64.14 57.65 54.92 52.46 48.21	Q, (L/s) 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 15.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00 27.00	15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) -1.05 -2.64 -3.88 -4.87 -5.68  Sub-surface 0.00  27.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.14 30.65 27.92 25.46	Volume 2yr (m³) 0.00 -0.16 -0.47 -0.88 -1.36  Balance 0.00  Volume 2yr (m³) 17.83 18.39 18.43

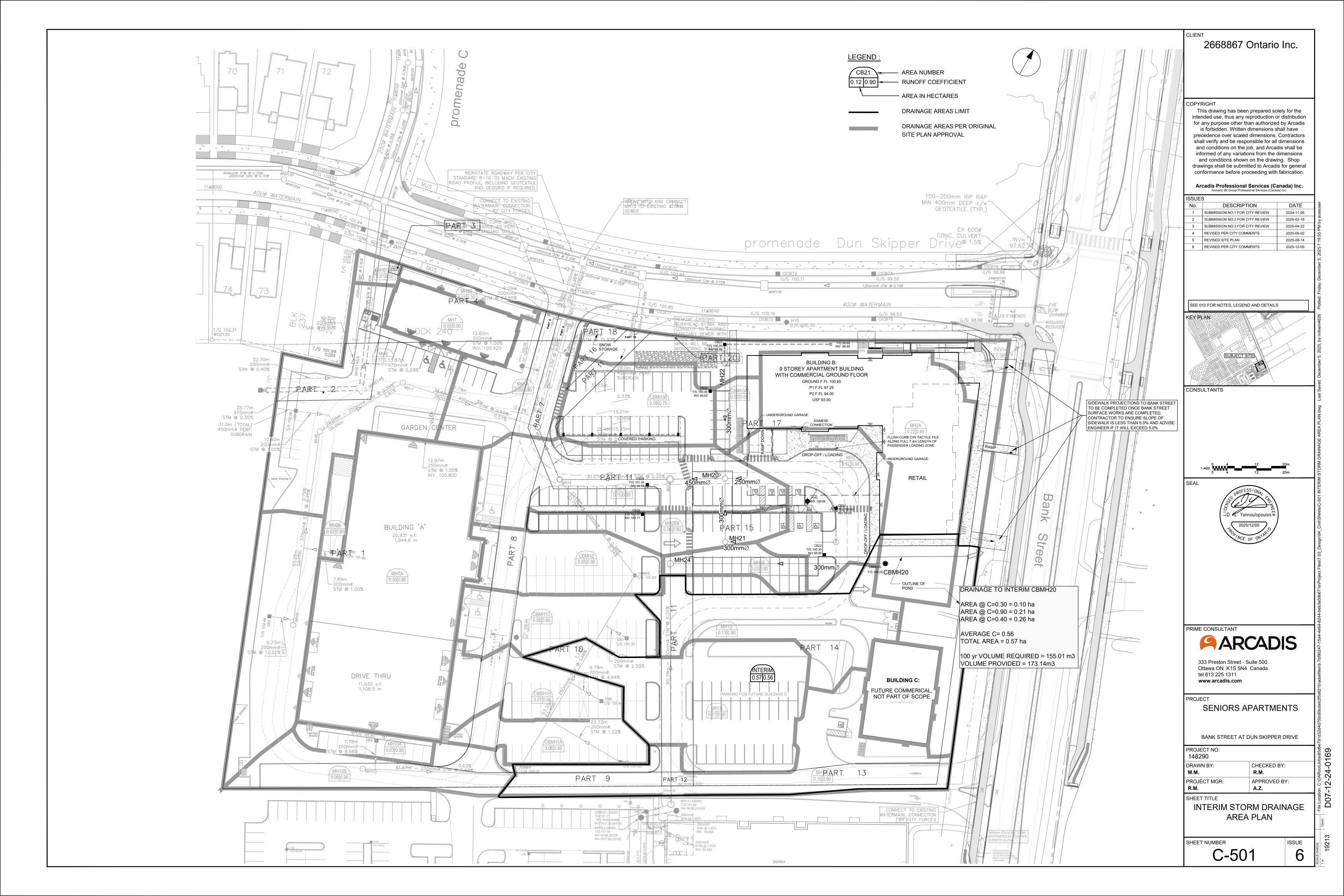
Drainage Area	DR	Drainage Area P	lan MUS	•		Drainage Area	RB					Drainage Area	RB	1			
Area (Ha)	0.190		aii - Wi1127	•		Area (Ha)	0.190					Area (Ha)	0.190				
C =	1.00	Restricted Flow Q <sub>r</sub> (L/	s)=	20.00		C =	0.90	Restricted Flow Q <sub>r</sub> (	L/s)=	20.00		C =		Restricted Flow Q <sub>r</sub> (L	./s)=	20.00	
		100-Year Po	nding					5-Year Pondin	g					2-Year Pondii	ng		
T c	i <sub>100yr</sub>	Peak Flow	Q,	Q,-Q,	Volume	T <sub>c</sub>	i <sub>Syr</sub>	Peak Flow	Q,	$Q_p - Q_r$	Volume	T <sub>c</sub>	i <sub>2yr</sub>	Peak Flow	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume
Variable (min)	(mm/hour)	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)	(L/s)	(L/s)	100yr (m³)	Variable (min)	(mm/hour)	$Q_p = 2.78xCi_{5yr}A$ (L/s)	(L/s)	(L/s)	5yr (m³)	Variable (min)	(mm/hour)	$Q_p = 2.78xCi_{2yr}A$ (L/s)	(L/s)	(L/s)	2yr (m³)
20	119.95	63.36	20.00	43.36	52.03	11	99.19	47.15	20.00	27.15	17.92	6	96.64	45.94	20.00	25.94	9.34
22	112.88	59.62	20.00	39.62	52.30	13	90.63	43.08	20.00	23.08	18.01	8	85.46	40.62	20.00	20.62	9.90
23 24	109.68 106.68	57.93 56.35	20.00 20.00	37.93 36.35	<b>52.35</b> 52.34	14 15	86.93 83.56	41.33 39.72	20.00 20.00	21.33 19.72	<b>17.91</b> 17.75	9 10	80.87 76.81	38.45 36.51	20.00	18.45 16.51	<b>9.96</b> 9.91
26	101.18	53.44	20.00	33.44	52.34	17	77.61	36.89	20.00	16.89	17.73	12	69.89	33.23	20.00	13.23	9.52
1				3		• •	•								2		
	Overflow	Required	Storage (m Surface	Sub-surface	Balance	_	Overflow	Ste Required	Surface	Sub-surface	Balance		Overflow	Sto Required	rage (m³) Surface	Sub-surface	Balance
	0.00	52.35	57.00	0.00	0.00		0.00	17.91	57.00	0.00	0.00		0.00	9.96	57.00	0.00	0.00
Drainage Area	RC	Drainage Area P	lan - MH7			Drainage Area	RC	Ī				Drainage Area	RC	1			
Area (Ha)	0.050	0				Area (Ha)	0.050					Area (Ha)	0.050	1			
C =	1.00	Restricted Flow Q <sub>r</sub> (L/		8.00		C =	0.90			8.00		C =	0.90	Restricted Flow Q <sub>r</sub> (L		8.00	
т		100-Year Po		<u> </u>	Volume	<del>-</del>		5-Year Pondin	·		Volume	7		2-Year Pondii	<u> </u>	1	Volume
T <sub>c</sub> Variable	i <sub>100yr</sub>	Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q,	$Q_p$ - $Q_r$	volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Q <sub>p</sub> =2.78xCi <sub>5vr</sub> A	Q,	$Q_p$ - $Q_r$	volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	$Q_p$ - $Q_r$	volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
12	162.13	22.54	8.00	14.54	10.47	5	141.18	17.66	8.00	9.66	2.90	2	133.33	16.68	8.00	8.68	1.04
14 15	148.72 142.89	20.67 19.86	8.00 8.00	12.67 11.86	10.64 10.68	7 8	123.30 116.11	15.43 14.53	8.00 8.00	7.43 6.53	3.12 3.13	<u>4</u> 5	111.72 103.57	13.98 12.96	8.00 8.00	5.98 4.96	1.43 1.49
16	137.55	19.12	8.00	11.12	10.67	9	109.79	13.74	8.00	5.74	3.10	6	96.64	12.09	8.00	4.09	1.47
18	128.08	17.80	8.00	9.80	10.59	11					0.04	8	85.46	40.00	8.00	2.69	1.29
			0.00	0.00	10.00		99.19	12.41	8.00	4.41	2.91	0	85.46	10.69	0.00	2.09	1.25
				_	10.00	<u> </u>	99.19			4.41	2.91	0	85.46			2.09	1.29
	Overflow 0.00	Required 10.68	Storage (m Surface 13.50	_	Balance 0.00	_	99.19 Overflow 0.00		Surface 13.50	Sub-surface 0.00	Balance 0.00	0	Overflow 0.00		orage (m³) Surface 13.50	Sub-surface 0.00	Balance 0.00
Drainage Area	0.00	Required 10.68	Storage (m Surface 13.50	Sub-surface	Balance	Drainage Area	Overflow 0.00	Storman Storma	orage (m³) Surface	Sub-surface	Balance	Drainage Area	Overflow 0.00	Sto Required 1.49	orage (m³) Surface	Sub-surface	Balance
Drainage Area Area (Ha)	0.00 RD 0.050	Required 10.68 Drainage Area P	Storage (m Surface 13.50	Sub-surface 1.00	Balance	_	Overflow 0.00 <i>RD</i> 0.050	Sto Required 3.13	orage (m³) Surface 13.50	Sub-surface 0.00	Balance	Drainage Area Area (Ha)	Overflow 0.00 <i>RD</i> 0.050	Required 1.49	orage (m <sup>3</sup> ) Surface 13.50	Sub-surface 0.00	Balance
	0.00 RD 0.050	Required 10.68  Drainage Area Po	Storage (m Surface 13.50 Han - MH10	Sub-surface	Balance	Drainage Area	Overflow 0.00 <i>RD</i> 0.050	Required 3.13	Surface 13.50	Sub-surface	Balance	Drainage Area	Overflow 0.00 <i>RD</i> 0.050	Required 1.49 Restricted Flow Q <sub>r</sub> (L	Surface 13.50	Sub-surface	Balance
Area (Ha) C =	0.00 RD 0.050 1.00	Required 10.68 Drainage Area P	Storage (m Surface 13.50 lan - MH10 s)=	Sub-surface 1.00	Balance	Drainage Area Area (Ha) C =	Overflow 0.00 RD 0.050 0.90	Sto Required 3.13	Surface 13.50	Sub-surface 0.00	Balance	Drainage Area Area (Ha) C =	Overflow 0.00 <i>RD</i> 0.050 0.90	Required 1.49	orage (m³) Surface 13.50	<b>Sub-surface</b> 0.00 8.00	Balance
	0.00 RD 0.050	Required 10.68  Drainage Area Pl	Storage (m Surface 13.50 Han - MH10	Sub-surface 1.00	Balance 0.00 Volume 100yr	Drainage Area	Overflow 0.00 <i>RD</i> 0.050	Required 3.13 Restricted Flow Q, (	Surface 13.50	Sub-surface 0.00	Balance 0.00	Drainage Area Area (Ha)	Overflow 0.00 <i>RD</i> 0.050	Required 1.49  Restricted Flow Q <sub>r</sub> (L	Surface 13.50	Sub-surface 0.00	Balance 0.00
Area (Ha) C =  T <sub>c</sub> Variable (min)	0.00  RD 0.05( 1.0(  i <sub>100yr</sub> (mm/hour)	Required 10.68  Drainage Area P.  Restricted Flow Q, (L/ 100-Year Po Peak Flow Q <sub>p</sub> =2.78xCi <sub>100p</sub> A (L/s)	Storage (m Surface 13.50 lan - MH10 s)= onding Q, (L/s)	3) Sub-surface 1.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Balance 0.00 Volume 100yr (m²)	Drainage Area Area (Ha) C =  T c Variable (min)	Overflow 0.00  RD 0.050 0.90  i syr (mm/hour)	Sterior Required 3.13  Restricted Flow Q, ( 5-Year Pondin Peak Flow Q, $_{\rho}$ =2.78xCi, $_{sy}$ A (L/s)	Drage (m³) Surface 13.50  L/s)=  g  Q, (L/s)	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Balance 0.00	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	Overflow 0.00 RD 0.050 0.90	Required 1.49  Restricted Flow Q, (L  2-Year Pondii  Peak Flow Q <sub>p</sub> =2.78×Ci <sub>2p</sub> A (L/S)	orage (m³) Surface 13.50  J/s)=  Q, (L/s)	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Balance 0.00 Volume 2yr (m³)
Area (Ha) C =  T <sub>c</sub> Variable  (min)  12	0.00  RD 0.05( 1.00  i <sub>100yr</sub> (mm/hour) 162.13	Required 10.68  Drainage Area P. 10  Restricted Flow Q, (L/ 100-Year Pc Peak Flow $Q_{\rho} = 2.78 \times Cl_{100\rho} A$ (L/s) 22.54	Storage (m Surface 13.50 lan - MH10 s)= onding Q, (L/s) 8.00	Sub-surface 1.00 8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.54	Volume 100yr (m³) 10.47	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5	Overflow 0.00 RD 0.050 0.90 i spr (mm/hour) 141.18	Required 3.13  Restricted Flow Q, ( 5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCi <sub>syr</sub> A (L/s) 17.66	Drage (m³) Surface 13.50  L/s)=  g  Q, (L/s) 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66	Balance   0.00	Drainage Area Area (Ha) C = Tc Variable (min) 2	Overflow 0.00 RD 0.050 0.90 i <sub>2yr</sub> (mm/hour) 133.33	Required 1.49  Restricted Flow Q <sub>r</sub> (L 2-Year Pondii Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 16.68	Drage (m³) Surface 13.50  /s)=  1g Q, (L/s) 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68	Balance   0.00
Area (Ha) C =  T c  Variable (min) 12 14 15	0.00  RD 0.05( 1.00  i100yr (mm/hour) 162.13 148.72 142.89	Required 10.68 Drainage Area P. 0 10 Restricted Flow Q, (L/ 100-Year Pc Peak Flow Q <sub>ρ</sub> =2.78xCi 100 <sub>P</sub> A (L/s) 22.54 20.67 19.86	Storage (m Surface 13.50 lan - MH10 s)= onding Q, (L/s) 8.00 8.00 8.00	Sub-surface 1.00  8.00  Rop-Q, (L/s) 14.54 12.67 11.86	Volume 100yr (m²) 10.47 10.68	Drainage Area Area (Ha) C =  T c Variable (min) 5 7 8	Overflow   0.00   RD   0.050   0.90     141.18   123.30   116.11   116.11	Required 3.13  Restricted Flow $Q_{\rm r}$ [7.5]  Restricted Flow $Q_{\rm r}$ [7.6]  Peak Flow $Q_{\rm p} = 2.78 \times G_{\rm syr} A$ [4.5)  17.66  15.43  14.53	Drage (m³) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53	Volume 5yr (m³) 2.90 3.12 3.13	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 2 4 5	Overflow 0.00 RD 0.050 0.90 i <sub>2pr</sub> (mm/hour) 133.33 111.72 103.57	Sto   Required   1.49	Prage (m³) Surface 13.50  J/s)= 19 Qr (L/s) 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96	Volume 2yr (m³) 1.04 1.43 1.49
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16	0.00  RD  0.05( 1.00  i100yr (mm/hour) 162.13 148.72 142.89 137.55	Required 10.68  Drainage Area Pi 100-Year Po Peak Flow Q = 2.78xCi 100y A (L/s) 22.54 19.86 19.12	Storage (m Surface 13.50 dan - MH1C s)= onding Q, (L/s) 8.00 8.00 8.00 8.00	Sub-surface 1.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> ( <i>L</i> /s) 11.86 11.12	Volume 100yr (m³) 10.64 10.68	Drainage Area   Area (Ha)   C =	Overflow 0.00 RD 0.050 0.90 i spr (mm/hour) 141.18 123.30 116.11 109.79	Restricted Flow $Q_t$ Step Pondin  Restricted Flow $Q_t$ 5-Year Pondin  Peak Flow $Q_p = 2.78xCi_{syr}A$ (L/s)  17.06  15.43  14.53  13.74	Drage (m <sup>3</sup> ) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74	Volume 5yr (m³) 2.90 3.12 3.13 3.10	Drainage Area   Area (Ha)   C =	Overflow 0.00 RD 0.050 0.90 i <sub>2yr</sub> (mn/hour) 133.33 111.72 103.57 96.64	Required 1.49  Restricted Flow Q, (L  2-Year Pondin  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2r</sub> A  (L/s) 16.68 13.98 12.96 12.09	orage (m <sup>3</sup> ) Surface 13.50  /s)=  Orage (m <sup>3</sup> ) (s)=   Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09	Volume 2yr (m³) 1.04 1.43 1.49	
Area (Ha) C =  T c Variable (min) 12 14 15	0.00  RD 0.05( 1.00  i100yr (mm/hour) 162.13 148.72 142.89	Required 10.68 Drainage Area P. 0 10 Restricted Flow Q, (L/ 100-Year Pc Peak Flow Q <sub>ρ</sub> =2.78xCi 100 <sub>P</sub> A (L/s) 22.54 20.67 19.86	Storage (m Surface 13.50  an - MH1C  s)= onding Q, (L/s) 8.00 8.00 8.00 8.00 8.00	3) Sub-surface 1.00  8.00  (L/s) 14.54 12.67 11.86 11.12 9.80	Volume 100yr (m²) 10.47 10.68	Drainage Area Area (Ha) C =  T c Variable (min) 5 7 8	Overflow   0.00   RD   0.050   0.90     141.18   123.30   116.11   116.11	Restricted Flow $Q_t$ (1.8)  Restricted Flow $Q_t$ (2.8)  S-Year Pondin $Q_p = 2.78 \times G_{gp} A$ 17.66  15.43  14.53  13.74  12.41	Drage (m³) Surface 13.50  L/s)=  g  Q, (L/s) 8.00 8.00 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53	Volume 5yr (m³) 2.90 3.12 3.13	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 2 4 5	Overflow 0.00 RD 0.050 0.90 i <sub>2pr</sub> (mm/hour) 133.33 111.72 103.57	Storman Storma	Prage (m <sup>3</sup> ) Surface 13.50  /s)=  Q, (L/s) 8.00 8.00 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96	Volume 2yr (m³) 1.04 1.43 1.49
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16	0.00  RD 0.056 1.00  I100pr (mm/hour) 162.13 148.72 142.89 128.08	Required 10.68  Drainage Area Pl 10.68  Drainage Area Pl 10.70  Restricted Flow Q, (L/  100-Year Pc Peak Flow Q p=2.78xCi 100px A (L/s) 22.54 20.67 19.86 19.12 17.80	Storage (m Surface 13.50 (an - MH10 s)= onding Q, (L/s) 8.00 8.00 8.00 8.00 8.00	3) Sub-surface 1.00  8.00  (L/s) 14.54 12.67 11.86 11.12 9.80	Volume 100yr (m³) 10.47 10.64 10.68 10.67	Drainage Area   Area (Ha)   C =	Overflow 0.00 RD 0.050 0.90 I <sub>Syr</sub> (mm/hour) 141.18 123.30 116.11 109.79 99.19	Restricted Flow Q <sub>1</sub> S-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCi <sub>spr</sub> A (L/s) 17.66 15.43 14.53 13.74 12.41	Drage (m <sup>3</sup> ) Surface 13.50  L/s)= <b>g</b> Q, (L/s) 8.00 8.00 8.00 8.00 0 rage (m <sup>3</sup> )	Sub-surface 0.00 8.00 Q <sub>P</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41	Volume 5yr (m³) 2.90 3.12 3.13 3.10 2.91	Drainage Area   Area (Ha)   C =	Overflow 0.00 0.050 0.90 i <sub>2yr</sub> (mm/hour) 133.33 111.72 103.57 96.64 85.46	Store	Drage (m <sup>3</sup> ) Surface 13.50  J/s)=  13.50  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.0	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.99 2.69	Volume 2yr (m³) 1.04 1.43 1.49 1.29
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16	0.00  RD  0.05( 1.00  i100yr (mm/hour) 162.13 148.72 142.89 137.55	Required 10.68  Drainage Area Pi 100-Year Po Peak Flow Q = 2.78xCi 100y A (L/s) 22.54 19.86 19.12	Storage (m Surface 13.50  an - MH1C  s)= onding Q, (L/s) 8.00 8.00 8.00 8.00 8.00	3) Sub-surface 1.00  8.00  (L/s) 14.54 12.67 11.86 11.12 9.80	Volume 100yr (m³) 10.64 10.68	Drainage Area   Area (Ha)   C =	Overflow 0.00 RD 0.050 0.90 i spr (mm/hour) 141.18 123.30 116.11 109.79	Restricted Flow $Q_t$ (1.8)  Restricted Flow $Q_t$ (2.8)  S-Year Pondin $Q_p = 2.78 \times G_{gp} A$ 17.66  15.43  14.53  13.74  12.41	Drage (m³) Surface 13.50  L/s)=  g  Q, (L/s) 8.00 8.00 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74	Volume 5yr (m³) 2.90 3.12 3.13 3.10	Drainage Area   Area (Ha)   C =	Overflow 0.00 RD 0.050 0.90 i <sub>2yr</sub> (mn/hour) 133.33 111.72 103.57 96.64	Storman Storma	Prage (m <sup>3</sup> ) Surface 13.50  /s)=  Q, (L/s) 8.00 8.00 8.00 8.00 8.00	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09	Volume 2yr (m³) 1.04 1.43 1.49 1.47
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16 18	0.00  RD 0.05( 1.00  1.00  1.00  (mm/hour) 162.13 148.72 142.89 137.55 128.08  Overflow 0.00  EXTERNAL	Required 10.68  Drainage Area P. 100-Year Pc  Peak Flow Q p=2.78xG1 100p-A (L/s) 22.54 20.67 19.86 19.12 17.80  Required 10.68	Storage (m   Surface   13.50	3) Sub-surface 1.00  8.00  Rep. Qp. Qr. (L/s) 14.54 12.67 11.18 11.18 11.19 9.80  Sub-surface	Volume 100yr (m²) 10.47 10.64 10.68 10.67	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 7 8 9 11	Overflow   0.00   RD   0.050   0.050   0.90   0.90   0.90   141.18   123.30   116.11   109.79   99.19     Overflow   0.00     EXTERNAL	Restricted Flow Q <sub>1</sub> ( 3.13  Restricted Flow Q <sub>1</sub> ( 5.Year Pondin ( Peak Flow Q <sub>p</sub> =2.78xCl <sub>pp</sub> A ( (L/s) (17.66 ( 15.43 ( 13.74 ( 12.41 ( 15.43 ( 15.43 ( 15.43 ( 15.43 ( 15.43 ( 15.43 ( 15.44	Drage (m³) Surface 13.50  Q, (L/s)=  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface Surface	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41	Volume 5yr (m²) 2.90 3.12 3.13 3.10 2.91	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5 6 8	Overflow 0.00  RD 0.050 0.90  i 2pr (mm/hour) 133.33 111.72 103.57 98.64 85.46  Overflow 0.00  EXTERNAL	Sto   Required   1.49	orage (m³) Surface 13.50  2/s)=  13.50  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface Surface Surface Surface Surface Surface Surface Surface Surface	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69	Volume 2yr (m³) 1.04 1.43 1.47 1.29
Area (Ha) C =  T. Variable (min) 12 14 15 16 18  Drainage Area Area (Ha)	0.00  RD 0.056  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.	Required 10.68    Drainage Area P, 0   0   0   0   0   0   0   0   0   0	Storage (m Surface 13.50 lan - MH10 s)= onding Q, (L/s) 8.00 8.00 8.00 8.00 Storage (m Surface 11.25	\$ Sub-surface 1.00  8.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.54 12.67 11.86 11.12 9.80  Sub-surface 1.00	Volume 100yr (m²) 10.47 10.64 10.68 10.67	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 8 9 111	Overflow   0.00     0.050     0.90     1   597     (mm/hour)   141.18   123.30   116.11   109.79     99.19     Overflow   0.00     EXTERNAL   1.550	Restricted Flow Q, (  S-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCl <sub>Sp</sub> A (L/s) 17.66 15.43 14.53 13.74 12.41 Ste Required 3.13	Drage (m³) Surface 13.50  Grage (m³) Surface 13.50  Grage (m³) Surface 11.25	Sub-surface 0.00 8.00 Q <sub>P</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41 Sub-surface 0.00	Volume 5yr (m²) 2.90 3.12 3.13 3.10 2.91	Drainage Area Area (Ha) C = Tc Variable (min) 2 4 5 6 8	Overflow 0.00  RD 0.050 0.90  l <sub>2yr</sub> (mm/hour) 133.33 111.72 103.57 96.64 85.46  Overflow 0.00  EXTERNAL 1.550	Required 1.49  Restricted Flow Q <sub>i</sub> (L 2-Year Pondie Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> , A (L/s) 16.68 13.98 12.96 12.09 10.69 Sto Required 1.49	Prage (m <sup>3</sup> ) Surface 13.50  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.99 2.69 Sub-surface 0.00	Volume 2yr (m³) 1.04 1.43 1.47 1.29
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16 18	0.00  RD 0.056  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.	Required 10.68    Drainage Area P.	Storage (m Surface 13.50 (an - MH10 (an - MH10 (b. 00 (L/s) (8.00	3) Sub-surface 1.00  8.00  Rep. Qp. Qr. (L/s) 14.54 12.67 11.18 11.18 11.19 9.80  Sub-surface	Volume 100yr (m²) 10.47 10.64 10.68 10.67	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 7 8 9 11	Overflow   0.00     0.050     0.90     1   597     (mm/hour)   141.18   123.30   116.11   109.79     99.19     Overflow   0.00     EXTERNAL   1.550	Restricted Flow Q, (  Restricted Flow Q, (  5-Year Pondin Peak Flow Q, (L/s) 17.66 15.43 14.53 13.74 12.41   Required 3.13   Restricted Flow Q, (Restricted Flow Q, (R	Drage (m³) Surface 13.50  Grage (m³) Surface 13.50  Grage (m³) Surface 11.25	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41	Volume 5yr (m²) 2.90 3.12 3.13 3.10 2.91	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5 6 8	Overflow 0.00  RD 0.050 0.90  l <sub>2yr</sub> (mm/hour) 133.33 111.72 103.57 96.64 85.46  Overflow 0.00  EXTERNAL 1.550	Sto   Required   1.49	Prage (m <sup>3</sup> ) Surface 13.50  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25	Sub-surface 0.00 8.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69	Volume 2yr (m³) 1.04 1.43 1.47 1.29
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16 18  Drainage Area Area (Ha) C =	0.00  RD 0.056 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  EXTERNAL 1.55 1.00	Required 10.68    Drainage Area P, 0   0   0   0   0   0   0   0   0   0	Storage (m Surface 13.50 (an - MH10 s)= onding Q, (L/S) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.0	3) Sub-surface 1.00  8.00  8.00  Rep-Qr (L/s) 14.54 12.67 11.18 11.18 11.19 9.80  Sub-surface 1.00	Volume 100yr (m²) 10.47 10.64 10.68 10.67	Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 8 9 111	Overflow   0.00	Restricted Flow Q, (  S-Year Pondin Peak Flow Q <sub>p</sub> = 2.78xCl <sub>Sp</sub> A (L/s) 17.66 15.43 14.53 13.74 12.41 Ste Required 3.13	Drage (m³) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41  Sub-surface 0.00	Volume 5yr (m²) 2.90 3.12 3.13 3.10 2.91	Drainage Area	Overflow 0.00  RD 0.050 0.90  12yr (mm/hour) 133.33 111.72 103.57 96.64 85.46  Overflow 0.00  EXTERNAL 1.550 0.80	Required 1.49  Restricted Flow Q <sub>i</sub> (L 2-Year Pondie Peak Flow Q <sub>p</sub> =2.78xCl <sub>2y</sub> , A (L/s) 16.68 13.98 12.96 12.09 10.69 Sto Required 1.49	Prage (m²) Surface 13.50  J/s)=  19 Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 11.25	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69  Sub-surface 0.00	Volume 2yr (m³) 1.04 1.43 1.47 1.29
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16 18  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable	0.00  RD 0.05( 1.00  1 roopr (mm/hour) 162.13 148.72 142.89 137.55 128.08  Overflow 0.00  EXTERNAL 1.55( 1.00	Required   10.68	Storage (m Surface 13.50 (an - MH10 s)= onding Q, (L/S) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.0	3) Sub-surface 1.00  8.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 14.54 12.67 11.86 11.18 11.12 9.80  Sub-surface 1.00  291.58	Volume 100yr (m²) 10.47 10.68 10.67 10.59  Balance 0.00	Drainage Area	Overflow   0.00     0.05	Restricted Flow Q <sub>1</sub> S-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>5p</sub> A  (L/s) 17.66 15.43 14.53 13.74 12.41  Required 3.13  Restricted Flow Q <sub>1</sub> 5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>5p</sub> A	Drage (m³) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25  L/s)= g Q,	Sub-surface $0.00$ 8.00 $Q_{\rho}$ - $Q_{r}$ (L/s) 9.66 7.43 6.53 5.74 4.41  Sub-surface $0.00$	Volume   Syr   (m²)   2.90   3.12   3.13   3.10   2.91     Balance   0.00     Volume   Syr   S	Drainage Area	Overflow 0.00  RD 0.050 0.90  12yr (mn/hour) 133.33 111.72 103.57 96.64 85.46  Overflow 0.00  EXTERNAL 1.550 0.80	Sto   Required   1.49	Prage (m²) Surface 13.50  J/s)=  19 Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.0	Sub-surface 0.00  8.00  Q <sub>ρ</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69  Sub-surface 0.00	Balance   0.00
Area (Ha) C =  T. Variable (min) 12 14 15 16 18  Drainage Area Area (Ha) C =  T. Variable (min) 12 14 15 16 18	0.00  RD 0.05( 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  EXTERNAL  1.00	Required   10.68     Drainage Area P.     Destricted Flow Q <sub>r</sub> (L/ 100-Year Pc Peak Flow Q <sub>p</sub> = 2.78xCl 100p, A (L/s)     22.54     20.67     19.86     19.12     17.80     Required     10.68     0	Storage (m Surface 13.50 lan - MH10 s)= onding Q, (L/s) Storage (m Surface 11.25 s)= onding Q, (L/s)	3) Sub-surface 1.00  8.00  (L/s) 11.86 11.12 9.80  3) Sub-surface 1.00  291.58	Volume 100yr (m³) 10.47 10.64 10.68 10.67 10.59  Balance 0.00  Volume 100yr (m³)	Drainage Area	Overflow   0.00   RD   0.050   0.050   0.90   1.5yr   (mm/hour)   141.18   123.30   116.11   109.79   99.19     Overflow   0.00   EXTERNAL   1.550   0.80   1.5yr   (mm/hour)   1.5yr	Restricted Flow $Q_r$ (1/s)  Restricted Flow $Q_r$ (2/s)  Peak Flow $Q_p$ =2.78xCi $_{gp}A$ (1/s)  15.43  14.53  13.74  12.41  St.  Required 3.13  Restricted Flow $Q_r$ (2/s)  5-Year Pondin  Peak Flow $Q_r$ (1/s)	Drage (m³) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 Surface 11.25  L/s)= g Q, (L/s)=	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/S) 9.66 7.43 6.53 5.74 4.41  Sub-surface 0.00  291.58	Volume 5yr (m³) 2.90 3.12 3.13 3.10 2.91  Balance 0.00  Volume 5yr (m³)	Drainage Area Area (Ha) C = T <sub>c</sub> Variable (min) 2 4 5 6 8  Drainage Area Area (Ha) C = T <sub>c</sub> Variable (min)	Overflow   0.00   RD   0.050   0.050   0.90   133.33   111.72   103.57   96.64   85.46     Overflow   0.00   EXTERNAL   1.550   0.80   1.57   (mm/hour)   1.57   (m	Sto   Required   1.49	Prage (m <sup>2</sup> ) Surface 13.50  As part    Qr, (L/s)  Room    Room    Surface 13.50  As part    Surface 13.50  As part    Surface 11.25  Qr, (L/s)	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/S)  8.88 8.88 8.88 4.96 4.99 2.69  Sub-surface 0.00	Balance   0.00
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16 18  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 10	0.00  RD 0.056 1.00  1 roopr (mm/hour) 162.13 148.72 142.89 137.55 128.09  Overflow 0.00  EXTERNAL 1.556 1.00  i roopr (mm/hour) 178.56	Required 10.68  Drainage Area P. 100 Year PC 100 Year	Storage (m Surface 13.50 lan - MH10 lan - MH10 Q, (L/s) 8.00	3) Sub-surface 1.00  8.00  8.00  Rep-Qr (L/s) 14.54 12.67 11.12 9.80  3) Sub-surface 1.00  291.58  Qp-Qr (L/s) 477.83	Volume 100yr (m²) 10.64 10.68 10.67 10.59  Balance 0.00	Drainage Area	Overflow   0.00     0.00     0.00     0.00     0.00     0.90     0.90     15yr   141.18   123.30   1199.79   99.19     0.00     EXTERNAL   1.550   0.80     15yr   (m/m/our)   182.69   182.69     182.69     182.69     182.69     182.69     183.60     1	Restricted Flow Q, (  S-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>5p</sub> A (L/s) 17.66 15.43 14.53 13.74 12.41  Str. Required 3.13  Restricted Flow Q, ( 5-Year Pondin Peak Flow Q <sub>p</sub> =2.78xCl <sub>5p</sub> A (L/s)	Drage (m³) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25  L/s)= g Q, (L/s)= 291.58	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41  Sub-surface 0.00  291.58	Volume   Syr (m³)   2.90   3.12   3.13   3.10   2.91     Balance   0.00     Volume   Syr (m³)   40.58   40.58	Drainage Area	Overflow 0.00  RD 0.050 0.90  12yr (mm/hour) 133.33 111.72 103.57 96.64 85.46  Overflow 0.00  EXTERNAL 1.550 0.80  12yr (mm/hour) 167.22	Sto   Required   1.49	Prage (m²) Surface 13.50  Surface 13.50  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25  J(s)=  1g Q, (L/s) 291.58	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69  Sub-surface 0.00  291.58	Volume 2yr (m³) 1.04 1.43 1.47 1.29  Balance 0.00
Area (Ha) C =  T <sub>c</sub> Variable (min) 12 14 15 16 18  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) 11 12 13 15 16 18	0.00  RD 0.05i 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  EXTERNAL  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00	Required 10.68    Drainage Area P.	Storage (m Surface 13.50 lan - MH10 lan - MH10 Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Storage (m Surface 11.25	3) Sub-surface 1.00  8.00  8.00  8.00  8.00  8.00  14.54 12.67 11.86 11.12 9.80  3) Sub-surface 1.00  291.58  Q <sub>P</sub> -Q <sub>r</sub> (L/s) 477.83 407.05 376.78	Volume 100yr (m²) 10.47 10.68 10.67 10.59  Balance 0.00  Volume 100yr (m²) 286.70 293.88	Drainage Area	Overflow   0.00   0.00   0.00   0.00   0.00   0.90   0.90   0.90   0.90   0.90   0.90   0.90   0.0	Restricted Flow Q, (  S-Year Pondin Peak Flow Q, ( L/s) 17.66 15.43 14.53 13.74 12.41 12.41 St. Required 3.13   Restricted Flow Q, (  S-Year Pondin Peak Flow Q, ( L/s) (  C-S-Year Pondin Peak Flow Q, ( L/s) ( C-S-Year Pondin S-S-Year Pondin Peak Flow Q, ( L/s) ( C-S-Year Pondin S-S-Year Pondin Peak Flow Q, ( L/s) ( C-S-Year Pondin S-S-Year Pondin Peak Flow Q, ( L/s) ( C-S-Year Pondin S-S-Year Pondin Peak Flow Q, ( L/s) ( C-S-Year Pondin S-S-Year Pondin S-Year Po	Drage (m³) Surface 13.50  L/s)=  g Q, (L/s) 8.00 8.00 8.00 8.00 8.00 Surface 11.25  L/s)=  g Q, (L/s)= 291.58 291.58 291.58	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 9.66 7.43 6.53 5.74 4.41  Sub-surface 0.00  291.58  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 338.18 234.15 195.09	Volume 5yr (m³) 2.90 3.12 3.13 3.10 2.91  Balance 0.00	Drainage Area	Overflow 0.00  RD 0.050 0.90  l <sub>2yr</sub> (mm/hour) 133.33 111.72 103.57 96.64 85.46  Overflow 0.00  EXTERNAL 1.550 0.80  l <sub>2yr</sub> (mm/hour) 167.22 133.33 121.46	Required 1.49  Restricted Flow Q, (L 2-Year Pondii Peak Flow Q p = 2.78xCl <sub>2yr</sub> A (L/s) 16.68 13.98 12.96 12.09 10.69  Stc Required 1.49  Restricted Flow Q, (L 2-Year Pondii Peak Flow Q p = 2.78xCl <sub>2yr</sub> A (L/s) (L/s) 459.62 418.71	Prage (m <sup>2</sup> ) Surface 13.50  Surface 13.50  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 Surface 11.25  Jess and Company (L/s) Surface 291.58 291.58 291.58 291.58	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69  Sub-surface 0.00  291.58  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 294.87 168.04 127.13	Volume   2yr   (m³)   1.04   1.43   1.47   1.29
Area (Ha) C =  T, Variable (min) 12 14 15 16 18  Drainage Area Area (Ha) C =  T, Variable (min) 10 12	0.00  RD 0.056 1.00  1.00  1.00  1.00  1.00  1.00  1.00  1.00  0.00  EXTERNAL  1.556 1.00  1.00	Required 10.68  Drainage Area P. 100-Year PC  Peak Flow Q p=2.78xC1 τορ, A (L/s) 19.86 19.12 17.80  Required 10.68  Required 10.68  100 Restricted Flow Q, (L/s) Q p=2.78xC1 τορ, A (L/s) Restricted Flow Q, (L/s)	Storage (m Surface 13.50 (an - MH10 s)= ondling Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 8.0	3) Sub-surface 1.00  8.00  (L/s) 14.54 12.67 11.86 11.12 9.80  3) Sub-surface 1.00  291.58	Volume 100yr (m³) 10.67 10.59  Balance 0.00  Volume 100yr (m²) 286.70 293.08	Drainage Area   Area (Ha)   C =	Overflow   0.00   RD   0.050   0.050   0.500   0.90   141.18   123.30   116.11   109.79   99.19     Overflow   0.00   EXTERNAL   1.550   0.80   1 syr (mm/hour)   182.69   182.69   152.51   1	Restricted Flow $Q_r$ (1/s)  Restricted Flow $Q_r$ = 7 8xCl $g_p A$ (1/s)  Restricted Flow $Q_p = 2.78 \times Cl g_p A$ (1/s)  15.43  14.53  13.74  12.41  St. Required  3.13  Restricted Flow $Q_r$ (2.78×Cl $g_p A$ (1/s) $Q_p = 2.78 \times Cl g_p A$ (1/s)  629.76  525.73	Drage (m³) Surface 13.50  L/s)=  g  Q, (L/s)=  g  Q, (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 8.00 Surface 11.25  L/s)=  g  Q, (L/s)= 291.58 291.58	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/S) 9.66 7.43 6.53 5.74 4.41  Sub-surface 0.00  291.58  Q <sub>p</sub> -Q <sub>r</sub> (L/S) 338.18 234.15	Volume   Syr (m³)   2.90   3.12   3.13   3.10   2.91     Balance   0.00     Volume   Syr (m³)   40.58   56.19	Drainage Area	Overflow   0.00   RD   0.050   0.90   12pr   (mm/hour)   133.33   111.72   103.57   96.64   85.46   Overflow   0.00   EXTERNAL   1.550   0.80   12pr   (mm/hour)   167.22   133.33   133.33   133.33   133.33   133.33   130.000   1	Sto   Required   1.49	Orage (m²) Surface 13.50  J/s)=  19  Qr (L/s) 8.00 8.00 8.00 8.00 8.00 8.00 Surface 11.25  Qr (L/s) 291.58 291.58	Sub-surface 0.00  8.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 8.68 5.98 4.96 4.09 2.69  Sub-surface 0.00  291.58	Volume   2yr (m³)   1.04   1.47   1.29     Salance   0.00     Volume   2yr (m³)   0.00   20.16

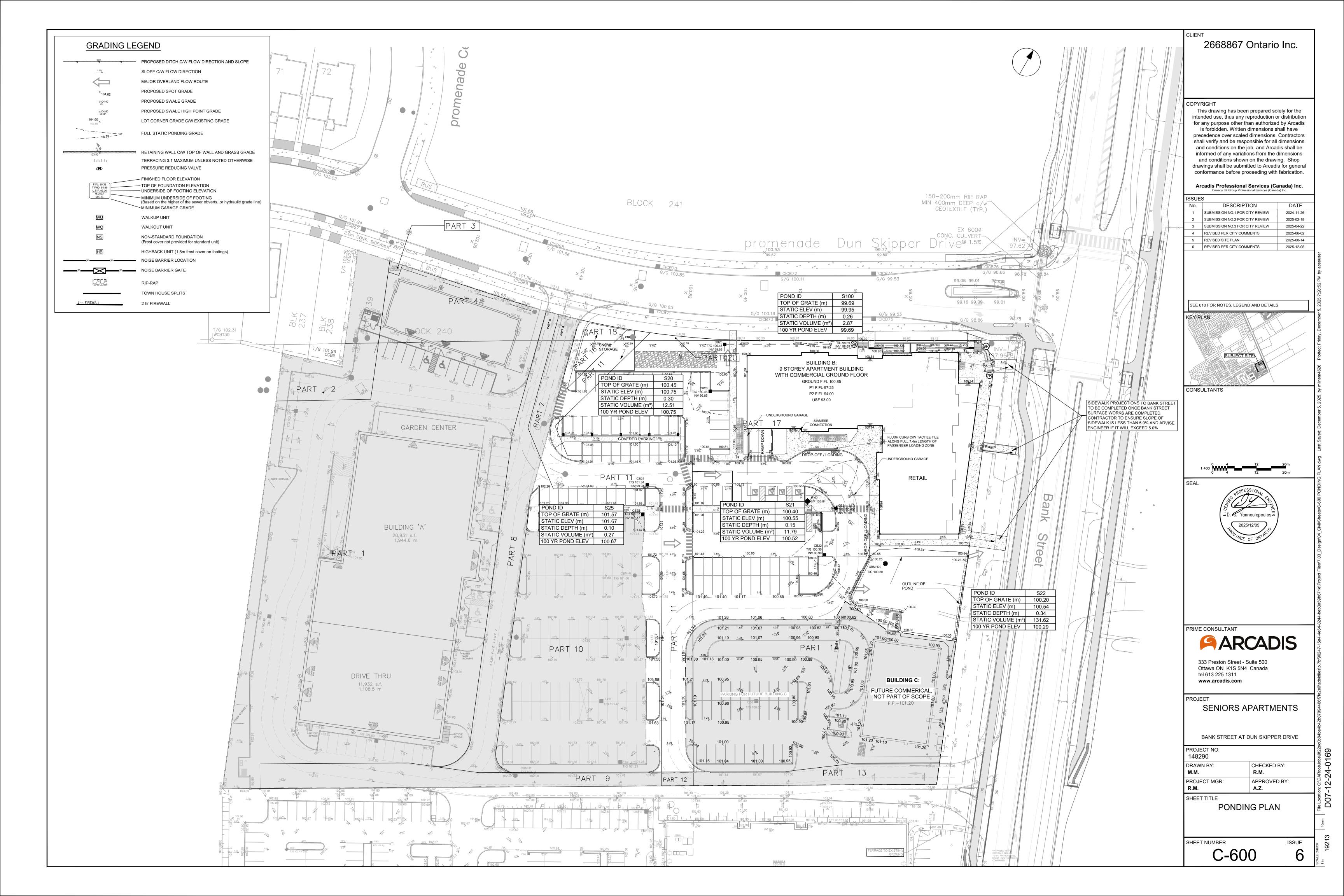
Area (Ha)	1.550	0				Area (Ha)	1.550	<u> </u>				Area (Ha)	1.550	1		
C =	1.00	Restricted Flow Q <sub>r</sub> (L	_/s)=	291.58		C =	0.80	Restricted Flow Q <sub>r</sub> (	(L/s)=	291.58		C =	0.80	Restricted Flow Q <sub>r</sub> (	L/s)=	291.58
		100-Year P	onding					5-Year Pondin	g					2-Year Pondi	ng	
T <sub>c</sub> Variable	i <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q,	Q <sub>p</sub> -Q <sub>r</sub>	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	Q <sub>p</sub> -Q <sub>r</sub>
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)
10	178.56	769.41	291.58	477.83	286.70	2	182.69	629.76	291.58	338.18	40.58	0	167.22	576.45	291.58	284.87
12	162.13	698.63	291.58	407.05	293.08	4	152.51	525.73	291.58	234.15	56.19	2	133.33	459.62	291.58	168.04
13	155.11	668.36	291.58	376.78	293.89	5	141.18	486.67	291.58	195.09	58.53	3	121.46	418.71	291.58	127.13
14	148.72	640.85	291.58	349.27	293.38	6	131.57	453.54	291.58	161.96	58.31	4	111.72	385.13	291.58	93.55
16	137.55	592.70	291.58	301.12	289.08	8	116.11	400.26	291.58	108.68	52.17	6	96.64	333.13	291.58	41.55
			Storage (m	<sup>3</sup> )				Ste	orage (m <sup>3</sup> )					Ste	orage (m³)	
	Overflow 0.00	Required 293.89	Surface 270.00	Sub-surface 0.00	Balance 23.89		Overflow 0.00	Required 58.53	Surface 270.00	Sub-surface 0.00	Balance 0.00		Overflow 0.00	Required 22.88	Surface 270.00	Sub-surface 0.00

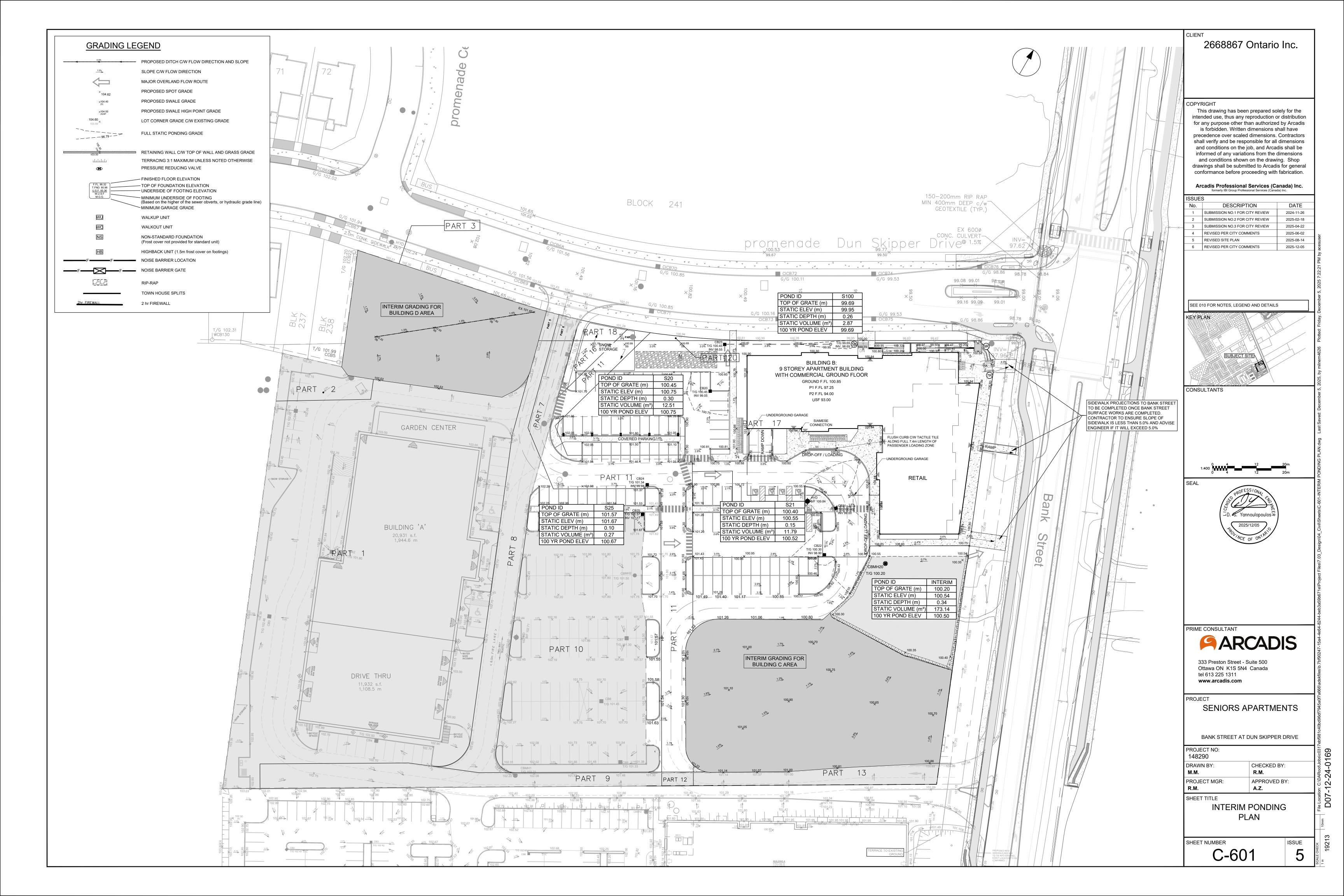
	Area	Flow
Buildings		63.00
Site		377.00
Uncontrolled	0.06	27.92
External		291.58
	0.060	759.50
Allowable		760.00
		TRUE

Balance 0.00











### **User Inputs**

### Results

**Chamber Model:** SC-310

Outlet Control Structure: Yes

**Project Name:** 148290 Dun Skipper

**Engineer:** Amy Zhuang

Project Location: Ontario

Measurement Type: Metric

**Required Storage Volume:** 88.00 cubic meters.

Stone Porosity: 30%

Stone Foundation Depth: 200 mm.
Stone Above Chambers: 600 mm.

**Design Constraint Dimensions:** (9.01 m. x 22.01 m.)

### System Volume and Bed Size

**Installed Storage Volume:** 88.64 cubic meters.

**Storage Volume Per Chamber:** 0.42 cubic meters.

Number Of Chambers Required: 72
Number Of End Caps Required: 16

Chamber Rows: 8

**Maximum Length:** 21.51 m.

**Approx. Bed Size Required:** 186.96 square me-

ters.

8.77 m.

Average Cover Over Chambers: N/A.

### **System Components**

Amount Of Stone Required: 196 cubic meters

Volume Of Excavation (Not Including 226 cubic meters Fill):

Total Non-woven Geotextile Required:537 square meters

Woven Geotextile Required (excluding27 square meters

Isolator Row):

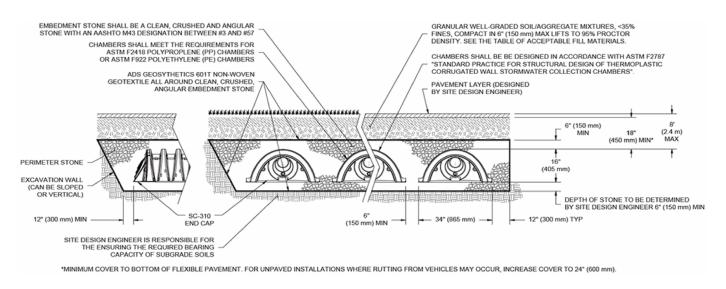
**Maximum Width:** 

Woven Geotextile Required (Isolator 30 square meters

Row):

**Total Woven Geotextile Required:** 56 square meters

**Impervious Liner Required:** 0 square meters





**ORIFICE SIZING** 

155 Dun Skipper Drive 148290-6.0 | Rev #2 | 2025-02-18 Prepared By: WZ | Checked By: RM

**IBI GROUP** 

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Orifice coeffic	ients
Cv =	0.60

							The	oretical		Recommended
	Invert	Diameter	Centre ICD	Max. Pond Elevation	Hydraulic Slope	Target Flow	Orifice	Actual Flow	Orifice	Actual Flow
	(m)	(mm)	(m)	(m)	(m)	(l/s)	(m)	(I/s)	(m)	(l/s)
CB20	99.050	200	99.150	100.750	1.600	15.00	0.067	15.00	0.067	15.00
CB24	99.940	200	100.040	101.340	1.300	15.00	0.070	15.00	0.070	15.00
CB25	100.170	200	100.270	101.670	1.400	6.00	0.044	6.00	0.044	6.00
CBMH20	98.474	300	98.624	100.500	1.876	15.00	0.064	15.00	0.064	15.00
MH21	98.373	300	98.523	100.550	2.027	33.00	0.093	33.00	0.093	33.00
MH22	98.422	300	98.572	100.750	2.178	6.00	0.039	6.00	0.039	6.00
	•	·				90.00				89.99

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SANITARY SEWER DESIGN SHEET

İBI

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As-built Sanitary Sewers 4836 Bank Street CITY OF OTTAWA Home Hardware

	LOCATIO	N .						RESID										REAS					RATION ALL		EIVED E	LOW (L/s)	TOTAL			PROPO	SED SEWER			
	LUCATIO			AREA		UNIT	TYPES		AREA	POPU	ILATION	RES	PEAK			ARE				ICI	PEAK	ARE	A (Ha)	FLOW	FIXEDF	LOW (L/s)	FLOW	CAPACITY	LENGTH	DIA	SLOPE	VELOCITY	AVAI	LABLE
STREET	AREA ID	FROM	TO MH	w/ Units (Ha)	SF	SD	TH	APT	w/o Units (Ha)	IND	CUM	PEAK FACTOR	FLOW (L/s)	INSTITU		COMM	CUM	INDUS		PEAK FACTOR	FLOW (L/s)	IND	CUM	(L/s)	IND	CUM	(L/s)	(L/s)	(m)	(mm)	(%)	(full) (m/s)	L/s	ACITY (%)
	_	MO	mn .	(na)	_	_	_	_	(na)	_	_	FACTOR	(L)5)	IND	COM	IND	COM	IND	COM	PACTOR	(L/S)	_		_				_	1			(1115)	LIS	174
	_	BLDG D	MH7A-MH5A				_		1	0.0	0.0	3.80	0.00			0.05	0.05			1.50	0.02	0.05	0.05	0.02	0.00	0.00	0.04	34.22	11.10	200	1.00	1.055	34.18	99.88%
		BLDG A	MH7A-MH5A							0.0	0.0					0.30	0.30			1.50	0.15	0.30	0.30	0.10	0.00		0.24	34.22	14.61	200	1.00	1.055	33.97	99.28%
		MH7A	MH5A							0.0	0.0	3.80	0.00			1.01	1.01			1.50	0.49		1.01	0.33	0.00	0.00	0.82	28.05	32.74	200	0.67	0.865	27.22	97.06%
Idone Commercial		MH1A	MH3A				_	_		0.0	0.0	3.80	0.00			2.41				1.50	1.17	2.41		0.80	0.00		1.97	19.66	92.55	200	0.33	0.606	17.69	89.99%
		MH3A MH4A	MH4A MH5A				_	_		0.0	0.0	3.80	0.00			0.74					1.53		3.15		0.00		2.57	21.37 21.49	30.45 15.21	200 200	0.39	0.659	18.80	87.97% 87.96%
		MH4A	MH5A				_			0.0	0.0	3.80	0.00			0.02	3.17			1.50	1.54	0.02	3.17	1.05	0.00	0.00	2.59	21.49	15.21	200	0.39	0.663	18.90	87.96%
		MH5A	MH6A							0.0	0.0	3.80	0.00			0.17	4.35			1.50	2.11	0.17	4.35	1,44	0.00	0.00	3.55	19.56	33.65	200	0.33	0.603	16.01	81.85%
		miliare	minus				_			0.0	0.0	5.00	0.00			0.17	4.00			1.50	A.11	0.17	4.00	1.44	0.00	0.00	0.00	13.50	55.05	200	0.00	0.000	10.01	01.00%
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Design Parameters:				Notes:								Designed		SEL			No.							Revision								Date		
				1. Mannings				0.013									1.							mission No. 1								2019-03-30		
Residential		ICI Areas		2. Demand (per capita): 280 L/day 200 L/day												2.							on No. 2 - Asb								2022-02-22			
SF 3.4 p/p/u				3. Infitration allowance: 0.33 L/s/Ha Checked:								JIM			3.					Subn	ission No. 3 -	Idone Commi	ercial Asbuilts							2025-04-17				
TH/SD 2.7 p/p/u		8,000 L/Ha/day 4. Residential Peaking Factor: 8,000 L/Ha/day Harmon Formula = 1+(14/(4+(P)1000)^0,5))0.8														_																		
APT 1.8 p/p/u		000 L/Ha/day		I				000)^0.5))0.	В																									
Other 60 p/p/Ha		000 L/Ha/day	MOE Chart	I		0.8 Correct						Dwg. Refe	rence:	119351-50	И																			
	170	000 L/Ha/day		5. Commerci					irea,			l					E	Ile Reference	e:						Date:							Sheet No:		
	1.5 if greater than 20%, otherwise 1.0															119307.5.7.							2025-04-1	1						1 0 1				

				ver Design and.					
U/S	D/S	Design	As-built	Design	As-built	U/S	As-built	D/S	As-built
MH	MH	Slope	Slope	Length	Length	Invert	U/S Inv	Invert	D/S Invert
1		l						l .	
1		l						l .	
BLDG D	MH7A-MH5A	1.00		11.10		100.420		98.828	
BLDG A MH7A	MH7A-MH5A MH5A	1.00	0.67	14.61 32.62	32,740	100.800 98.852	98.850	98.835 98.640	98.630
MH/A	MHSA	0.65	0.67	32.62	32.740	98.852	58.850	98.640	58.630
1		l						l .	
MH1A	MH3A	0.35	0.33	90.34	92,550	97.847	97.830	97,535	97.520
MH3A	MH4A	0.35	0.39	30.01	30.450	97.475	97,470	97.370	97.350
MH4A	MHSA	0.35	0.39	14.90	15.210	97.340	97.340	97.288	97,280
MHSA	MH6A	0.35	0.33	33.69	33.650	97.228	97.230	97.110	97.120
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IBI GROUP 400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com STORM SEWER DESIGN SHEET

4836 Bank Street City of Ottawa Home Hardware

IBI GROUP 400-333 Preston Street Ottawa, Ontario K1S SN4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com IBI

4836 Bank Street City of Ottawa Home Hardware

As-built Storm Sewers

As-built D/S Invert

	LOCATION	ON						AREA (H											F	RATIONAL D											S	SEWER DAT				
STREET	AREA ID	FROM	то						C=					CUM			TOTAL		i (5)	i (10)	i (100)	2yr PEAK	5yr PEAK	10yr PEAK	100yr PEAH	FIXED	DESIGN		LENGTH		PE SIZE (m			VELOCITY		CAP (2yr)
******				0.20	0.30	0.40 0	0.50	0.55 0.	65 0.70	0.75	0.90	1.00	2.78AC	2.78AC	(min)	IN PIPE	(min)	(mm/hr)	(mm/hr)	(mm/hr)	(mm/hr)	FLOW (L/s	FLOW (L/s)	FLOW (L/s)	FLOW (L/s	FLOW (L/s	FLOW (L/s)	(L/s)	(m)	DIA	W	Н	(%)	(m/s)	(L/s)	(%)
		CB3	MH9-MH8			_	-		_	0.12			0.05	0.25	10.00	0.11	40.44	76.81	104.19	122.14	178.56	40.00	26.07	30.56	44.68		19.22	34.22	6.73	200			1.00	1.055	45.00	43.84%
		CB2	MH9-MH8			-	-	_	_	0.12	0.02	+		0.25	10.00	0.11		76.81	104.19	122.14		3.84	5.21	6 11	8.94		3.84	34.22	7.69	200			1.00	1.055		88.77%
		MH9	MH8								0.02			0.30	10.00			76.34	103.56			22.92		36.45	53.28		22.92		53.17	375			0.75	1.390		85.54%
		CB1	MH8-MH7				_			0.17				0.35	10.00	0.17	10.17		104.19	122.14		27.22	36.93	43.29	63.29		27.22	34.22	10.80	200			1.00	1.055		20.44%
		MH8	MH7							0.17				0.65				74.01			171.91		65.70	77.00	112.55		48.45		26.20	250			0.61	0.960		0.36%
		BLDG D	MH7-MH5								0.05			0.13	10.00	0.20	10.20		104.19	122.14	178.56	9.61	13.03	15.28	22.34		9.61	34.22	12.60	200			1.00	1.055		71.92%
		BLDG A	MH7-MH5								0.30		0.75	0.75	10.00		10.18		104.19	122.14	178.56	57.65	78.21	91.68	134.03		57.65	62.04	12.97	250			1.00	1.224		7.07%
		MH7	MH5										0.00	1.53	11.21	0.47	11.68	72.44	98.19	115.07	168.17	110.86	150.27	176.11	257.37		110.86	225.20	38.55	450			0.57	1.372	114.34	50.77%
		CB4	MH10-CBMH1								0.03			0.08	10.00			76.81	104.19				7.82	9.17	13.40		5.76	34.22	7.78	200			1.00			83.15%
		MH10	CBMH1										0.00	0.08	10.12	0.71	10.83	76.34	103.55	121.38	177.44	5.73	7.77	9.11	13.32		5.73	49.16	41.40	250			0.63	0.970	43.43	88.35%
				-	_	-	-	_	_	+		_	0.45	0.45	40.00	0.00	40.00	70.04	101.10	100.11	470.50	44.50	45.04	10.01	00.04		44.50	04.00	00.70				4.00	4.055	00.00	00.000/
		CB5 CB6	CBMH1-CBMH2 CBMH1-CBMH2			_	-			+	0.06			0.15				76.81 76.81	104.19					18.34 21.39	26.81 31.27		11.53 13.45	34.22 34.22		200			1.00	1.055		66.30%
		CB6	CBMH1-CBMH2 CBMH1-CBMH2			-	-	_		+	0.07			0.18	10.00	0.15	10.15		104.19	122.14		15.45		24.45	35.74		15.37	34.22	9.78	200			1.00	1.055		55.07%
		CBMH1	CBMH2								0.08			0.80		0.13	11.64		99.98		171.28			93.82	137.13		59.04	65.96	63.25	250			1.13	1.302		10.49%
		CDIVITT	OBWITE			_	_		_	_	0.00	_	0.20	0.00	10.00	0.01	11.04	75.74	33.30	117.10	17 1.20	33.04	00.03	33.02	137.13		33.04	03.30	00.20	230			1.10	1.502	0.02	10.4370
		CBMH2	MH4										0.00	0.80	11.64	0.70	12 34	71.02	96.24	112 78	164 81	56.86	77.06	90.30	131.95		56.86	58 89	33.75	300			0.34	0.807	2.03	3.44%
																-																				
Idone Commercial		MH1	MH3							1.58													592.92				437.15		97.97	750						13.65%
		MH3	MH4		0.16		_	0.	.02	0.09	0.15		0.73	6.50	11.75	0.39	12.14	70.68	95.77	112.23	163.99	459.68	622.89	729.90	1,066.59		459.68	592.21	30.43	750			0.26	1.299	132.53	22.38%
		MH4	MHS			_							0.00	7.30	12.14	0.18	12.32	69.46	94.10	110.25	404.40	507.04	687.32	005.00	1.176.72		507.34	000.70	15.45	750			0.32	1.449	450.00	23.21%
		IVIH4	MH5			_	_		_	_			0.00	7.30	12.14	0.16	12.32	09.46	94.10	110.25	101.10	507.34	007.32	805.33	1,170.72		507.34	660.70	15.45	750			0.32	1.449	153.30	23.2176
		CB17	MH5-MH12			_	_			+	0.09	1	0.23	0.23	10.00	0.04	10.04	76.81	104.19	122 14	178 56	17 20	23.46	27.50	40.21		17.29	34.22	2.55	200			1.00	1.055	16.02	49.45%
		CB17	MH5-MH12		0.01					_	0.03	1		0.23	10.00	0.14	10.14		104.19	122.14		0.64	0.87	1.02	1.49		0.64	34.22	9.09	200			1.00	1.055		98.13%
		MH5	MH12		0.01									9.07	12.32	0.34	12.66		93.35	109.38			846.57	991.89	1,449.26		624.96	705.11		750			0.37	1.546		11.37%
		MH12	EX 1350 SEWER										0.00	9.07		0.16	12.82	67.92	91.99	107.77	157.45	615.91	834.16	977.28	1,427.82		615.91	747.54		750			0.41	1.639	131.62	17.61%
Definitions:				Notes:											Designed	:	JEB				No.						Revision							Date		
Q = 2.78CiA, where:				1. Mani	nings coeff	icient (n)	) = (	0.013													1.						sion No. 1							2019-03-30		
Q = Peak Flow in Litres p																					2.						City Comments							2020-04-20		
A = Area in Hectares (Ha		,													Checked:		JIM				3.						lo. 3 - Asbuilts							2022-02-22		
i = Rainfall intensity in m fi = 732.951 / (TC+6.1		YEAR																			3.				Submissio	n No. 4 - Ido	ne Commercia	il Asbuilts						2025-04-17	/	
[i = 732.951/(TC+6.1		YEAR													Dwg. Refe	ronooi	119351-5	00			-	_														
[i = 998.0717 (TC+6.0		0 YEAR													Dwg. Kele	il elice.	118331-3	00				Eilo B	Reference:					Date:						Sheet No:		
fi = 1735.688 / (TC+6.		00 YEAR		I											l								351.5.7.1					2025-04-17						1 of 1		

22 MH9-MH8 1.00 7, 69 10.350 10.350 10.145 H9 MH8 0.75 0.75 5491 53.280 100.067 100.180 99.555 99.780 31 MH8-MH7 1.00 10.80 10.80 99.550 99.780 10.0 MH7-MH5 1.00 12.50 10.000 99.730 99.562 99.570 DG D MH7-MH5 1.00 12.57 100.000 99.300 99.303 H7 MH5 0.60 0.57 38.63 38.50 99.162 99.370 98.930 99.149 34 MH10-CBMH1 1.00 7.78 101.200 100.009 100.532 35 CBMH1-CBMH2 1.00 22.77 99.930 99.956 36 CBMH1-CBMH2 1.00 9.78 100.059 99.900 99.53 37 CBMH1-CBMH2 1.00 9.78 100.059 99.900 99.28 38 100.050 99.900 99.28 38 100.050 99.580 39 CBMH1-CBMH2 1.00 9.78 100.050 99.59 39 0.00 99.28 39 MH1 CBMH2 1.15 1.13 63.40 63.25 99.795 99.730 99.066 99.015 3MH2 MH4 0.35 0.34 33.14 33.75 99.016 99.015 98.900 98.900  H1 MH3 0.20 0.19 90.34 97.77 97.942 97.970 97.764 97.800 HH MH3 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595 117 MH5-MH12 1.00 2.55 0.32 15.46 15.45 97.849 97.645 97.810 97.595 118 MH2 MH2 1.00 9.99 100.500 99.301 99.501 99.	33	MH9-MH8	1.00	- 1	6.73		101.050		100.228	
31 MH8-MH7 1.00 1.080 10.080 99.730 99.784 99.780  188 MH7 0.75 0.61 25.16 26.00 99.750 99.730 99.562 99.570  DCD MH7-MH5 1.00 12.97 100.420 99.330 99.562 99.570  DCD MH7-MH5 1.00 12.97 100.420 99.330 99.331  H7 MH5 0.60 0.57 38.63 38.550 99.162 99.370 98.930 99.149  34 MH10-CBMH1 1.00 7.78 101.200 100.390 100.320 100.320  35 CBMH1-CBMH2 1.00 22.72 99.930 99.653 99.653 99.665 99.565 99.566 99.015  36 CBMH1-CBMH2 1.00 9.78 100.650 99.568 99.568 99.569 99.568 99.569 99	32	MH9-MH8	1.00	- 1	7.69		100.350		100.145	
H8 MH7 0.75 0.61 25.16 26.00 99.750 99.730 99.562 99.570 DCD DM MH7-MH5 1.00 12.97 100.800 99.356 99.330 99.562 DCS A MH7-MH5 1.00 12.97 100.800 99.336 99.336 100.800 DCS A MH7-MH5 1.00 12.97 100.800 99.336 100.800 99.336 100.800 H7 MH5 0.60 0.67 38.63 38.550 99.162 99.370 98.930 99.149 H8 MH10-CBMH1 1.00 7.78 101.200 100.499 100.440 100.552 100.800 H10 CBMH1 0.60 0.63 41.57 41.400 100.499 100.440 100.550 100.800 H10 CBMH1-CBMH2 1.00 9.78 100.050 99.568 100.050 99.568 100.0500 99.050 100.440 100.550 100.480 100.0500 99.568 100.0500 99.5	H9	MH8	0.75	0.75	54.91	53.280	100.067	100.180	99.655	99.780
DG D MH7-MH5 1.00 12.60 100.420 99.356 99.303 H7 MH5 1.00 12.97 100.800 99.360 99.363 100.420 100.800 99.370 98.930 99.149  34 MH10-CBMH1 1.00 7.78 101.200 100.800 99.370 98.930 99.149  35 CEMH1-CBMH2 1.00 0.63 41.57 41.400 100.409 100.550 100.250 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.250 100.800 99.563 100.050 99.053 100.050 99.563 100.050 99.563 100.050 99.563 100.050 99.053 100.050 99.563 100.0	31	MH8-MH7	1.00		10.80		100.650		99.784	
DG A MH7-MH5 1.00 12.97 100.800 99.303 99.149  MH10 MH10 CBMH1 1.00 7.78 101.200 100.499 100.440 100.552 100.550 100.550 100.550 100.550 100.552 100.550 100.552 100.550 100.552 100.550 100.552 100.5	H8	MH7	0.75	0.61	25.16	26.040	99.750	99.730	99.562	99.570
H7 MH5 0.60 0.57 38.63 38.550 99.162 99.370 98.930 99.149  34 MH10-CBMH1 1.00 7.78 101.200 100.532  H11 0.60 0.63 41.57 41.400 100.99 100.440 100.250 100.180  35 CBMH1-CBMH2 1.00 9.78 100.050 99.568 99.568 99.568  36 CBMH1-CBMH2 1.00 9.59 99.90 99.90 99.568 99.568  MH1 CBMH2 1.15 1.13 63.40 63.25 99.795 99.730 99.066 99.015  3MH2 MH4 0.35 0.34 33.14 33.75 99.016 99.015 98.900 98.900  H11 MH3 0.20 0.19 90.34 97.97 97.942 97.970 97.764 97.800  H11 MH3 0.20 0.26 30.07 30.43 97.704 97.730 97.645 97.650  H44 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  317 MH5-MH12 1.00 2.55 99.950 99.950 98.011  318 MH5-MH12 1.00 9.99 100.250 98.011  319 99.950 99.950 98.011  3117 MH5-MH12 1.00 9.99 100.250 99.8081  3118 MH5-MH12 1.00 9.99 100.250 98.011  3119 99.950 99.8081  312 97.584 97.590 97.475	DG D	MH7-MH5	1.00		12.60		100.420		99.356	
H1 MH10-CBMH1 1.00 7.78 101.200 100.532 100.580 100.592 100.440 100.532 100.580 100.593 100.499 100.440 100.250 100.580 100.593 100.499 100.440 100.250 100.580 100.593 100.499 100.440 100.250 100.580 100.593 100.690 100.490 100.440 100.250 100.580 100.593 100.690 100.490 100.440 100.250 100.580 100.59	DG A	MH7-MH5	1.00	- 1	12.97		100.800		99.303	
H10 CBMH1 0.66 0.63 41.57 41.400 100.499 100.440 100.250 100.180  55 CBMH1-CBMH2 1.00 9.78 100.050 99.558  56 CBMH1-CBMH2 1.00 9.78 100.050 99.568  57 CBMH1-CBMH2 1.00 9.59 99.900 99.228  MH4 CBMH2 1.15 1.13 63.40 63.25 99.795 99.730 99.066 99.015  MH4 0.35 0.34 33.14 33.75 99.016 99.015 98.900 98.900  H1 MH3 0.20 0.19 90.34 97.77 97.942 97.970 97.764 97.800  H3 MH4 0.20 0.26 30.07 30.43 97.70 97.764 97.730 97.645 97.650  H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  MH5-MH12 1.00 2.55 99.950 98.081  MH5-MH12 1.00 2.55 99.950 98.081  MH5-MH12 1.00 9.09 100.250 98.081  MH5-MH12 1.00 3.31 31.13 31.2 97.584 97.590 97.475	H7	MH5	0.60	0.57	38.63	38.550	99.162	99.370	98.930	99.149
H10 CBMH1 0.66 0.63 41.57 41.400 100.499 100.440 100.250 100.180  55 CBMH1-CBMH2 1.00 9.78 100.050 99.558  56 CBMH1-CBMH2 1.00 9.78 100.050 99.568  57 CBMH1-CBMH2 1.00 9.59 99.900 99.228  MH4 CBMH2 1.15 1.13 63.40 63.25 99.795 99.730 99.066 99.015  MH4 0.35 0.34 33.14 33.75 99.016 99.015 98.900 98.900  H1 MH3 0.20 0.19 90.34 97.77 97.942 97.970 97.764 97.800  H3 MH4 0.20 0.26 30.07 30.43 97.70 97.764 97.730 97.645 97.650  H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  MH5-MH12 1.00 2.55 99.950 98.081  MH5-MH12 1.00 2.55 99.950 98.081  MH5-MH12 1.00 9.09 100.250 98.081  MH5-MH12 1.00 3.31 31.13 31.2 97.584 97.590 97.475										
35	34	MH10-CBMH1	1.00	- 1	7.78		101.200		100.532	
86     CBMH1-CBMH2     1.00     9.78     100.050     99.568       37     CBMH1-CBMH2     1.00     9.99     99.900     99.28       3MH1     CBMH2     1.15     1.13     63.40     63.25     99.795     99.730     99.066     99.015       3MH2     MH4     0.35     0.34     33.14     33.75     99.016     99.015     98.900     98.900       HI     MH3     0.20     0.19     90.34     97.97     97.97     97.970     97.764     97.800       H4     MH5     0.25     0.32     15.46     15.45     97.849     97.645     97.810     97.595       317     MH5-MH12     1.00     2.55     99.950     98.081       15     MH5-MH12     1.00     9.09     100.250     98.081       H5     MH12     0.35     0.37     31.13     31.2     97.584     97.590     97.475     97.475	H10	CBMH1	0.60	0.63	41.57	41.400	100.499	100.440	100.250	100.180
86     CBMH1-CBMH2     1.00     9.78     100.050     99.568       37     CBMH1-CBMH2     1.00     9.99     99.900     99.28       3MH1     CBMH2     1.15     1.13     63.40     63.25     99.795     99.730     99.066     99.015       3MH2     MH4     0.35     0.34     33.14     33.75     99.016     99.015     98.900     98.900       HI     MH3     0.20     0.19     90.34     97.97     97.97     97.970     97.764     97.800       H4     MH5     0.25     0.32     15.46     15.45     97.849     97.645     97.810     97.595       317     MH5-MH12     1.00     2.55     99.950     98.081       15     MH5-MH12     1.00     9.09     100.250     98.081       H5     MH12     0.35     0.37     31.13     31.2     97.584     97.590     97.475     97.475										
37 CBMH1-CBMH2 1.00 9.59 99.900 99.228 MH4 CBMH2 1.15 1.13 63.40 63.25 99.795 99.730 99.666 99.015 MH4 0.35 0.34 33.14 33.75 99.016 99.015 98.900 98.900  H1 MH3 0.20 0.19 90.34 97.77 97.942 97.970 97.764 97.780  H3 MH4 0.20 0.26 30.07 30.43 97.770 97.794 97.790 97.764 97.780  H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  H4 MH5 0.25 0.32 15.46 15.45 99.849 97.645 97.810 97.595  H6 MH5-MH12 1.00 2.55 99.950 98.081  H6 MH5-MH12 1.00 9.09 100.250 98.081  H7 MH5-MH12 1.00 3.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	35	CBMH1-CBMH2	1.00	- 1	22.72		99.930		99.653	
BMH1         CBMH2         1.15         1.13         63.40         63.25         99.795         99.730         99.066         99.015           3BMH2         MH4         0.35         0.34         33.14         33.75         99.016         99.015         98.900         98.900           HI         MH3         0.20         0.19         90.34         97.97         97.972         97.970         97.764         97.800           H4         MH5         0.25         0.32         15.46         15.45         97.849         97.645         97.810         97.595           317         MH5-MH12         1.00         2.55         99.950         98.081         98.081           H5         MH12         0.35         0.37         31.13         31.2         97.584         97.590         97.475         97.475	36	CBMH1-CBMH2	1.00	- 1	9.78		100.050		99.568	
3MH2 MH4 0.35 0.34 33.14 33.75 99.016 99.015 98.900 98.900  H1 MH3 0.20 0.19 90.34 97.97 97.942 97.970 97.764 97.800  H3 MH4 0.20 0.26 30.07 30.43 97.704 97.730 97.645 97.650  H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  317 MH5-MH12 1.00 2.55 99.950 98.112  116 MH5-MH12 1.00 9.09 100.250 98.081  H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	37	CBMH1-CBMH2	1.00	- 1	9.59		99.900		99.228	
H1 MH3 0.20 0.19 90.34 97.97 97.942 97.970 97.764 97.800 97.645 97.650 9	BMH1			1.13	63.40	63.25		99.730	99.066	99.015
H1 MH3 0.20 0.19 90.34 97.97 97.942 97.970 97.764 97.800 97.645 97.650 9										
H3 MH4 0.20 0.26 30.07 30.43 97.704 97.730 97.645 97.650 H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  317 MH5-MH12 1.00 2.55 99.950 98.112 166 MH5-MH12 1.00 9.09 100.250 98.081 H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	BMH2	MH4	0.35	0.34	33.14	33.75	99.016	99.015	98.900	98.900
H3 MH4 0.20 0.26 30.07 30.43 97.704 97.730 97.645 97.650 H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  317 MH5-MH12 1.00 2.55 99.950 98.112 166 MH5-MH12 1.00 9.09 100.250 98.081 H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475										
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H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  317 MH5-MH12 1.00 2.55 99.950 98.112 316 MH5-MH12 1.00 9.09 100.250 98.081 317 MH5 MH2 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	H1	MH3	0.20	0.19	90.34	97.97	97.942	97.970	97.764	97.800
H4 MH5 0.25 0.32 15.46 15.45 97.849 97.645 97.810 97.595  317 MH5-MH12 1.00 2.55 99.950 98.112 316 MH5-MH12 1.00 9.09 100.250 98.081  H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	H3	MH4	0.20	0.26	30.07	30.43	97.704	97.730	97.645	97.650
817 MH5-MH12 1.00 2.55 99.950 98.112 816 MH5-MH12 1.00 9.09 100.250 98.081 817 MH5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475										
316 MH5-MH12 1.00 9.09 100.250 98.081 H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	H4	MH5	0.25	0.32	15.46	15.45	97.849	97.645	97.810	97.595
316 MH5-MH12 1.00 9.09 100.250 98.081 H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475										
H5 MH12 0.35 0.37 31.13 31.2 97.584 97.590 97.475 97.475	317	MH5-MH12	1.00	- 1	2.55		99.950		98.112	
	316	MH5-MH12	1.00	- 1	9.09		100.250		98.081	
H12 EX 1350 SEWER 0.35 0.41 15.71 15.69 97.455 97.455 97.400 97.390	H5	MH12	0.35	0.37	31.13	31.2	97.584	97.590	97.475	97.475
	H12	EX 1350 SEWER	0.35	0.41	15.71	15.69	97.455	97.455	97.400	97.390
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IBI

STREET

IBI GROUP

LOCATION

AREA ID

SANITARY SEWER DESIGN SHEET 400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868

TOTAL FLOW (L/s)

4840 Bank Street CITY OF OTTAWA Block 204 Pathways South Apartments 

IBI

IBI GROUP 400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com

As-built Sanitary Sewers 4840 Bank Street CITY OF OTTAWA Block 204 Pathways South Apartments

						Sew	er Design and A	As-built Data			
TY	AVAI	LABLE	U/S	D/S	Design	As-built	Design	As-built	U/S	As-built	D/S
	CAP	ACITY	MH	MH	Slope	Slope	Length	Length	Invert	U/S Inv	Invert
ı	L/s	(%)									
										l	
	23.65	89.80%	MH 7A	MH 6A	0.60	0.59	32.05	32.068	98.930	98.920	98.739
	23.68	89.23%	MH 6A	MH 3A	0.60	0.60	13.12	13.296	98.680	98.680	98.601
	20.29	83.08%	MH 3A	MH 2A	0.54	0.51	35.42	35.342	98.534	98.530	98.341
	24.29	85.46%	MH 2A	MH 1A	0.49	0.69	9.77	10.175	98.251	98.260	98.203
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1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 Uday   200 Uday																								
1. Mannings coefficient (n) =   0.013     0.013     0.014   0.013   0.015																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								
1. Mannings coefficient (n) = 0.013   1. Mannings coefficient (n) = 0.013   2. Demand (per capital)   2. Demand (per cap	<del>                                     </del>																l		<del>                                     </del>					<del></del>
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								
1. Mannings coefficient (n) =   0.013   2022-06-03     Residential   ICI Areas   ICI Areas   ICI Areas   2. Demand (per capital):   280 U/day   200																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2								<b></b>																1
1. Mannings coefficient (n) =   0.013   2022-06-03     Residential   ICI Areas   ICI Areas   ICI Areas   2. Demand (per capital):   280 U/day   200																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2								<b></b>																1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 Uday   200 Uday																								1
1. Mannings coefficient (n) =   0.013     0.013     0.014   0.013   0.015																								1
1. Mannings coefficient (n) =   0.013     0.013     0.014   0.013   0.015					1						1			1		1		1				1		1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 Uday   200 Uday																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 Uday   200 Uday							1				<del>                                     </del>		+	1		+			1	+		 1		
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1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2			· · · · · · · · · · · · · · · · · · ·							1				1		1				1		1	1	1
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1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 Uday   200 Uday							_												1					
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								1
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2																								
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 U/day   200 U/day   2					l				_			<b>I</b>					<b>!</b>		<del>                                     </del>	+				<del> </del>
1. Mannings coefficient (n) =   0.013     1. Mannings coefficient (n) =   0.013     2. Demand (per capital):   280 Uday   200 Uday					l		1				1	<u> </u>	1						L		L	1		
Residential         ICI Areas         2. Demand (per capita):         280 L/day         200 L/day         2         2         S b         D         D         D         D         D         D         D         D         D<	Design Parameters:									Designed:		SEL		No.										
Residential         ICI Areas         2. Demand (per capita):         280 Uday         200 Uday         2. Decked:         JIM         3.         Submission No. 2 For City Approval         2022-08-22         3. Infiltration allowance:         3.3 Usarbasin         Checked:         JIM         3.         Revised services         2023-09-16         2023-09-16           NF10S 2.7 plp/u         INST 28,000 UHaiday         4. Residential Peaking Factor:         4.         Asbuilt Record         2023-09-22				<ol> <li>Mannings</li> </ol>	coefficient (n) =		0.013							1.			Submission N	lo. 1 For City A	Approval				2022-06-03	
SF 3.4 ptplu         3.1 hfiltration allowance:         0.33 L/s/Ha         Checked:         JIM         3.         Revised Services         2023-01-16           TH/SD 2.7 ptplu         INST 28,000 L/Ha/day         4. Residential Peaking Factor:         4.         Asbuilt Record         2024-02-27	Residential	ICI Areas		2 Demand (	per capita):	280	) I /day	200 I /day						2			Submission N	lo 2 For City A	Approval				2022-08-22	
TH/SD 2.7 p/p/u INST 28,000 L/Ha/day 4. Residential Peaking Factor: 4. Asbuilt Record 2024-02-27		101711000				0.33	2 L/a/Ha	200 Erddy		Chackadi		IIM					Boxi	and Convince	фр.ота				2022 00 22	
HINSD   27   pp  pr   INST   2,5000   Phat'orally   4, RESIDENTAL PERMITS   FACTOR   4.   ASSUME TRECOTO   4	3F 3.4 p/p/u	NOT 00 000 1 11 / 1				0.50	D L/S/FIA			CHECKEU.		JIIVI												
APT 1.8 p/p/u COM 28,000 L/Ha/day Harmon Formula = 1+(14/(4+(P/1000)^0.5))0.8	TH/SD 2.7 p/p/u INS													4.			Asi	built Record					2024-02-27	
	APT 1.8 p/p/u CO	COM 28,000 L/Ha/day			Harmon Formula = 1+(	I4/(4+(P/10	00)^0.5))0.8							J										
Other 60 p/p/Ha IND 35,000 L/Ha/day MOE Chart where K = 0.8 Correction Factor Dwg. Reference: 137175-400	Other 60 p/p/Ha INI	IND 35,000 L/Ha/day	MOE Chart		where K = 0.8 Correction	n Factor				Dwg. Refe	rence:	137175-400												
17000 L/Ha/day 5. Commercial and Institutional Peak Factors based on total area, File Reference: Date: Sheet No:							ed on total ar	99		-				F	la Pafaranca:				Dato:				Shoot No:	
V. Continuous aria manusumaria con a succio descutori cutar arica, Fill Notalistica.  A 23/25 0 0 0 1 0 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2		17000 Emarday		J. COMMINICION	at and modulational reak	- 4.0	ou on total al	oa,															4 -f 4	
1.5 if greater than 20%, otherwise 1.0 137175.6-0.6-04.04. Sanitary 2024-02-27 1 of 1				1.5 If gre	ater tnan 20%, otherwis	9 1.0								13/1/5.	b-U.b-U4.U4.Sanitary				2024-02-27				1 of 1	



IBI

STREET

IBI GROUP

LOCATION

AREA ID

CB1 to CB6

Bldg B, Bldg C, RYCB1

 Definitions:
 Q = 2.78C/A, where:

 Q = 2.78C/A, where:
 Q = Peak Flow in Litres per Second (L/s)

 A = Area in Hectares (Ha)
 I = Rainfall intensity in millimeters per hour (mm/hr)

 [i = 732.951 / (TC+6.199)\*0.810]
 2 YEAR

 [i = 998.071 / (TC+6.053)\*0.814]
 5 YEAR

 [i = 1174.184 / TC+6.0149/\*0.816]
 10 YEAR

 [i = 1735.688 / (TC+6.014)\*0.820]
 100 YEAR

400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 1.34 1.51

то

MH6

MH3

MH3

FROM

MH7

MH6

STORM SEWER DESIGN SHEET

4840 Bank Street City of Ottawa Block 204 Pathways South Apartments IBI

400-333 Preston Street Ottawa, Ontario K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com

4840 Bank Street City of Ottawa Block 204 Pathways South Apartments

				Sewe	er Design and As	-built Data			
U/S MH	D/S MH	Design Slope	As-built Slope	Design Length	As-built Length	U/S Invert	As-built U/S Inv	D/S Invert	As-built D/S Invert
мн5	МН6	0.60	0.61	81.56	81.501	99.960	99.970	99.470	99.470
МН7	MH6	0.60	0.58	29.05	29.127	99.685	99.710	99.510	99.540
мн6	MH3	0.60	0.42	16.11	16.555	99.450	99.430	99.353	99.360
МН4	MH3	0.60	0.63	45.00	44.672	99.740	99.760	99.472	99.480
MH3 CBMH2	CBMH2 MH1	0.50 0.47	0.47 0.38	38.68 7.05	38.202 7.878	99.221 98.951	99.230 98.980	99.028 98.918	99.050 98.950

																													5	OOK 2011 dill	wayo count	, martinonio		
				AREA	A (Ha)										R	ATIONAL D	ESIGN FLO	w									S	EWER DAT	Ά					
C=	C=	C=	C=	C=	C=	C=	C=	C=	C= IN	D CUM	INLET	TIME	TOTAL	i (2)	i (5)	i (10)	i (100)	2vr PEAK	5vr PEAK	10yr PEAK	100vr PEAK	FIXED	DESIGN	CAPACITY	LENGTH	PI	PE SIZE (m	m)	SLOPE	VELOCITY	AVAIL C	AP (2vr)	U/S	
0.20	0.67	0.70	0.80	0.82	0.87	0.88	0.89	0.90		AC 2.78AC		IN PIPE	(min)	(mm/hr)			(mm/hr)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	FLOW (L/s)	(L/s)	(m)	DIA	w `	´ H	(%)	(m/s)	(L/s)	(%)	MH	
																														,	· '			
	0.11	0.08	0.15	0.07	0.09				1.0	7 1.07	10.00	1.08	11.08	76.81	104.19	122.14	178.56	82.29	111.63	130.86	191.31		82.29	143.27	81.50	375			0.61	1.257	60.98	42.56%	MH5	MH6
																				<u></u>														
0.05								0.30	0.7	78 0.78	10.00	0.46	10.46	76.81	104.19	122.14	178.56	59.79	81.10	95.08	138.99		59.79	77.07	29.13	300			0.58	1.056	17.29	22.43%	MH7	MH6
																				<u> </u>														
									0.0	00 1.85	11.08	0.23	11.32	72.89	98.81	115.80	169.25	134.83	182.78	214.21	313.07		134.83	193.41	16.56	450			0.42	1.178	58.58	30.29%	MH6	MH3
	_		0.04	0.44		-			0.1	34 0.34	10.00	0.68	10.68	76.81	104.19	122.14	178.56	26.09	35.40	41.49	60.66		26.09	79.87	44.67	300			0.63	1.095	53.78	67.33%		
			0.04	0.11	-	1	1		0.0	0.34	10.00	0.00	10.00	70.01	104.19	122.14	176.00	20.09	35.40	41.49	00.00		20.09	19.01	44.07	300			0.03	1.095	53.76	07.33%	MH4	MH3
							0.03		0.0	7 2.26	11.32	0.51	11.83	72.10	97.72	114.52	167.37	163.21	221.22	259.25	378.88		163.21	204.17	38.20	450			0.47	1.244	40.95	20.06%	мнз	CBMH2
						0.16	0.03	0.15		77 3.03	11.83	0.11	11.93	70.44	95.44	111.83		213.45		338.91	495.24		213.45	276.86	7.88	525			0.38	1.239	63.41	22.90%	CBMH2	MH1
						0.20		0.20					11100																					
																														1	i			
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Notes:					1	_	1	l l			Designed:		SEL				No.						Revision							Date	-			
1. Manni	nas coe	efficient	(n) =	0.013	1						Dooignou.		OLL				1.				Submis		or City Comm	ents						2022-06-03				
			(,														2.						or City Comm							2022-08-22				
											Checked:		JIM				3.					Revised :	Services							2023-01-16				
																	4.					Asbuilt I	Record							2024-02-27				
											Dwg. Refe	erence:	137175-500	)																				
																			ference:					Date:						Sheet No:				
																		137175.6-0.	6.04.04.Storn	n			2	024-02-27						1 of 1				





PROJECT: 4836 Bank St DATE: 2019-10-08 FILE: 119351.5.7 REV #: DESIGNED BY: JEB CHECKED BY: JM

# STORMWATER MANAGEMENT

# Formulas and Descriptions

 $i_{2yr}$  = 1:2 year Intensity = 732.951 /  $(T_c+6.199)^{0.810}$   $i_{5yr}$  = 1:5 year Intensity = 998.071 /  $(T_c+6.053)^{0.814}$  $i_{100yr}$  = 1:100 year Intensity = 1735.688 /  $(T_c+6.014)^{0.820}$ 

 $T_c$  = Time of Concentration (min)

C = Average Runoff Coefficient A = Area (Ha)

Q = Flow = 2.78CiA (L/s)

## **Maximum Allowable Release Rate**

## Restricted Flowrate

Taken from City of Ottawa approved Design Brief "Pathways at Findlay Creek" (D07-16-13-0023) drainage area EXT 4

3.10 L/s

EXT 4 Release Rate760.00 L/sArea EXT 4  $_{TOTAL}$  =4.04 HaArea Subject Lands2.49Perscentage Share of release rate62%

 $Q_{TOTAL} = 468.42 \text{ L/s}$ 

# Uncontrolled Release (Q uncontrolled = 2.78\*C\*i 100yr \*A uncontrolled)

Q uncontrolled =

C = 0.625  $T_c = 10 \text{ min}$   $i_{100yr} = 178.56 \text{ mm/hr}$   $A_{uncontrolled} = 0.01 \text{ Ha}$ 

Maximum Allowable Release Rate ( $Q_{max \ allowable} = Q_{restricted} - Q_{uncontrolled}$ )

Q<sub>max allowable</sub> = 465.31 L/s

# MODIFIED RATIONAL METHOD (100-Year & 5-Year Ponding)

Drainage Area	МН9/МН9В						
Area (Ha)	0.14						
C =	0.98	Restricted Flow Q <sub>r</sub> (L	Restricted Flow Q <sub>r</sub> (L/s)=				
		100-Year Pon	ding				
T <sub>c</sub> Variable	i <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$\mathbf{Q}_r$	$Q_p - Q_r$	Volume 100yr		
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	( <b>m</b> ³)		
30	91.87	34.86	10.00	24.86	44.75		
32	87.89	33.35	10.00	23.35	44.83		
33	86.03	32.65	10.00	22.65	44.84		
34	84.27	31.98	10.00	21.98	44.83		
00	00.00	00.70	40.00	00.70	44.70		

			_							
C =	0.78	Restricted Flow Q <sub>r</sub> (l	_/s)=							
	5-Year Ponding									
$T_c$	i <sub>5yr</sub>	Peak Flow Q,		$Q_p - Q_r$	Volume					
Variable	Variable - 5yr		~ /	""	5yr					
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)					
13	90.63	27.51	10.00	17.51	13.66					
15	83.56	25.37	10.00	15.37	13.83					
16	80.46	24.43	10.00	14.43	13.85					
17	77 61	23.56	10.00	13 56	13.83					

22.02

10.00

MH9/MH9B

72.53

Drainage Area

	/ 11 Oca (1 1ca)	0.110				
	C =	0.78	Restricted Flow Q <sub>r</sub> (L	_/s)=	10.00	
е	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q <sub>r</sub>	$Q_p - Q_r$	Volume 2yr
	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	( <b>m</b> ³)
	10	76.81	23.32	10.00	13.32	7.99
	11	73.17	22.21	10.00	12.21	8.06
	12	69.89	21.22	10.00	11.22	8.08
	13	66.93	20.32	10.00	10.32	8.05
	15	61.77	18.75	10.00	8.75	7.88

Drainage Area MH9/MH9B

	Storage (m <sup>3</sup> )					Storage (m³)				Storage (m <sup>3</sup> )						
	Overflow	Required	Surface	Sub-surface	Balance	_	Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Surface	Sub-surface	Balance
	0.00	44.84	20.64	10.07	14.13		0.00	13.85	20.64	10.07	0.00	0.00	8.08	20.64	10.07	0.00
Length (m)	Dia (m)	Area (m²)	Volume (m <sup>3</sup> )			Structure		Depth	Area (m <sup>2</sup> )	Volume (m <sup>3</sup> )						
54.91	0.375	0.110	6.06			CB3 (600mm x 600mm)		1.80	0.36	0.65						
6.73	0.200	0.031	0.21			CB2 (600mm x 600mm)		1.80	0.36	0.65						
7.69	0.200	0.031	0.24			CBMH10 (1200mm round)		2.00	1.13	2.26						
			6.51	-						3.56						

overflows to: CB1 overflows to: CB1

12.02 13.70

J:\119351\_4836BankSt\5.7 Calculations\5.7.1 Sewers & Grading\2nd Submission\CCS\_swm\_2019-10-08

Drainage Area	CB1	1				Drainage Area	CB1	1				Drainage Area	CB1	1			
Area (Ha)	0.17					Area (Ha)	0.17	,				Area (Ha)	0.165				
C =	0.88	Restricted Flow Q <sub>r</sub> (L	/s)=	16.00		C =	0.70	Restricted Flow $Q_r$ (	L/s)=	16.00		C =	0.70	Restricted Flow $Q_r$ (I	_/s)=	16.00	
		100-Year Pon	ding	= = = = = = = = = = = = = = = = = = = =				5-Year Ponding						2-Year Pondi	ng	-	
T <sub>c</sub>	i	Peak Flow	Q,	$Q_p - Q_r$	Volume	T <sub>c</sub>	i	Peak Flow	Q <sub>r</sub>	$Q_p - Q_r$	Volume	T <sub>c</sub>	i	Peak Flow	Q,	$Q_p - Q_r$	Volume
Variable	I <sub>100yr</sub>	$Q_p = 2.78xCi_{100yr}A$	$\mathbf{Q}_r$	$Q_p - Q_r$	100yr	Variable	I <sub>5yr</sub>	$Q_p = 2.78xCi_{5yr}A$	Q <sub>r</sub>	$Q_p - Q_r$	5yr	Variable	I <sub>2yr</sub>	$Q_p = 2.78xCi_{2yr}A$	Q,	Q <sub>p</sub> -Q <sub>r</sub>	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
19	123.87	49.72	16.00	33.72	38.44	7	123.30	39.59	16.00	23.59	9.91	4	111.72	35.87	16.00	19.87	4.77
21	116.30	46.68	16.00	30.68	38.65	9	109.79	35.25	16.00	19.25	10.40	6	96.64	31.03	16.00	15.03	5.41
22 23	112.88 109.68	45.31 44.02	16.00 16.00	29.31 28.02	<b>38.68</b> 38.67	10	104.19 99.19	33.46 31.85	16.00 16.00	17.46 15.85	<b>10.47</b> 10.46	8	90.66 85.46	29.11 27.44	16.00 16.00	13.11 11.44	<b>5.51</b> 5.49
25	103.85	41.68	16.00	25.68	38.52	13	90.63	29.10	16.00	13.10	10.22	10	76.81	24.66	16.00	8.66	5.20
25	100.00	11.00	10.00	20.00	00.02		00.00	20110	10.00	10110	. 0.22	.0	7 0.0 1	200	10.00	0.00	0.20
		S	torage (m <sup>3</sup> )			_		Sto	rage (m <sup>3</sup> )					St	orage (m <sup>3</sup> )		
	Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance
	14.13	52.82	50.59	5.58	0.00		0.00	10.47	50.59	5.58	0.00		0.00	5.51	50.59	5.58	0.00
Length (m)	Dia (m)	Area (m²)	Volume (m <sup>3</sup> )			Structure		Depth	Area (m²)	Volume (m <sup>3</sup> )							
31.00	0.450	0.159	4.93			CB3 (600mm x 600mm)		1.80	0.36	0.65							
01.00	0.100	0.100	4.93			ODO (OOOMINI X OOOMINI)		1.00	0.00	0.65							
				overflows to: 0	CB17					overflows to:	CB17					overflows to:	CB17
5 ' 4	05/0	1				D 1 1	0540	1				D / 4	0540	•			
Drainage Area	CB16					Drainage Area	CB16					Drainage Area	CB16				
Area (Ha)	0.010	Restricted Flow Q <sub>r</sub> (L	/c)-	0.00		Area (Ha)	0.010	Restricted Flow Q <sub>r</sub> (	I /c)_	0.00		Area (Ha)	0.010	Restricted Flow Q <sub>r</sub> (I	/c)_	0.00	
C =	0.38			6.00		C =	0.30			6.00		C =	0.30	·	-	6.00	
T	T T	100-Year Pon	aing	Т	Values	7		5-Year Ponding		1	1/a/rrma	<i>T</i>	T	2-Year Pondi	ng		Nature e
T <sub>c</sub>	i <sub>100yr</sub>	Peak Flow	$Q_r$	$Q_p - Q_r$	Volume	T <sub>c</sub> Variable	<b>i</b> <sub>5yr</sub>		$Q_r$	$Q_p - Q_r$	Volume	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow	$\mathbf{Q}_r$	$Q_p - Q_r$	Volume
Variable		$Q_p = 2.78xCi_{100yr}A$	(1 (0)	(L/s)	100yr (m³)		(mm/hour)	$Q_p = 2.78xCi_{5yr}A$	(L/s)	(L/s)	5yr (m³)	variable (min)	(mm/hour)	$Q_p = 2.78xCi_{2yr}A$	(L/s)	(L/s)	2yr (m³)
(min) -6	(mm/hour) 57497.20	<i>(L/s)</i> 599.41	(L/s) 16.00	583.41	-210.03	(min) -6	10904.38	(L/s) 90.94	6.00	84.94	-30.58	-7	#NUM!	<i>(L/s)</i> #NUM!	6.00	#NUM!	#NUM!
-4	977.56	10.19	16.00	-5.81	1.39	-4	555.75	4.63	6.00	-1.37	0.33	-7 -5	632.75	#NOW! 5.28	6.00	-0.72	0.22
-3	702.38	7.32	16.00	-8.68	1.56	-3	402.34	3.36	6.00	-2.64	0.48	-4	387.14	3.23	6.00	-2.77	0.67
-2	555.31	5.79	16.00	-10.21	1.23	-2	319.47	2.66	6.00	-3.34	0.40	-3	285.77	2.38	6.00	-3.62	0.65
0	398.62	4.16	16.00	-11.84	0.00	0	230.48	1.92	6.00	-4.08	0.00	-1	192.83	1.61	6.00	-4.39	0.26
			. 3					•	, 3,					0.	, 3,		
	Overflow	Required	torage (m³) Surface	Sub-surface	Balance		Overflow	Sto Required	rage (m³) Surface	Sub-surface	Balance		Overflow	Required	orage (m³) Surface	Sub-surface	Balance
	0.00	1.56	0.31	0.00	1.25		0.00	0.48	0.31	0.00	0.17		Overflow 0.00	0.67	0.31	0.00	0.36
	0.00		0.01	0.00	0		0.00	0.10	0.0.	0.00	0		0.00	0.0.	0.0	0.00	0.00
-	_	•		overflows to: (	CB17	-	_	•		overflows to:	CB17		_	-		overflows to:	CB17
Drainage Area	CB17					Drainage Area	CB17					Drainage Area	CB17				
Area (Ha)	0.090		, ,			Area (Ha)	0.090				1	Area (Ha)	0.090				
C =	1.00	Restricted Flow Q <sub>r</sub> (L	-	9.00		C =	0.90	Restricted Flow Q <sub>r</sub> (		9.00		C =	0.90	Restricted Flow Q <sub>r</sub> (I		9.00	
	T	100-Year Pon	ding					5-Year Ponding		· · · · · · · · · · · · · · · · · · ·			T	2-Year Pondi	ng	1	
<i>T<sub>c</sub></i>	i <sub>100yr</sub>	Peak Flow	$Q_r$	$Q_p - Q_r$	Volume	T <sub>c</sub>	i <sub>5yr</sub>	Peak Flow	$Q_r$	$Q_p - Q_r$	Volume	<i>T<sub>c</sub></i>	i <sub>2yr</sub>	Peak Flow	Q,	$Q_p - Q_r$	Volume
Variable		$Q_p = 2.78xCi_{100yr}A$			100yr	Variable		$Q_p = 2.78xCi_{5yr}A$			<i>5yr</i>	Variable		$Q_p = 2.78xCi_{2yr}A$			2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
22 24	112.88 106.68	28.24 26.69	9.00 9.00	19.24 17.69	25.40 25.47	10	104.19 94.70	23.46 21.32	9.00 9.00	14.46 12.32	8.68 8.87	9	90.66 80.87	20.42 18.21	9.00 9.00	11.42 9.21	4.79 4.97
25	103.85	25.98	9.00	16.98	25.47 25.47	13	90.63	20.41	9.00	11.41	8.90	10	76.81	17.29	9.00	8.29	4.98
26	101.18	25.32	9.00	16.32	25.45	14	86.93	19.58	9.00	10.58	8.88	11	73.17	16.48	9.00	7.48	4.93
28	96.27	24.09	9.00	15.09	25.35	16	80.46	18.12	9.00	9.12	8.75	13	66.93	15.07	9.00	6.07	4.74
			. ^														
			torage (m <sup>3</sup> )	0.1	Dalama	- -	0		rage (m³)	0.1	D.I.				orage (m <sup>3</sup> )	0.1	
	Overflow 1.25	Required 26.73	Surface 0.84	Sub-surface 5.10	<b>Balance</b> 20.79		Overflow 0.17	Required 9.06	Surface 0.84	Sub-surface 5.10	Balance 3.13		Overflow 0.00	Required 4.98	Surface 0.84	Sub-surface 5.10	Balance 0.00
	1.20	20.73	0.04	5.10	20.13		0.17	3.00	0.04	5.10	J. 13		0.00	4.30	0.04	5.10	0.00
Length (m)	Dia (m)	Area (m²)	Volume (m <sup>3</sup> )			Structure		Depth	Area (m²)	Volume (m <sup>3</sup> )							
28.00	0.450	0.159	4.45			CB3 (600mm x 600mm)		1.80	0.36	0.65							
			4.45							0.65							

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overflows to: CB15

overflows to: CB15

overflows to: CB15

Drainage Area	CB15	1				Drainage Area	CB15					Drainage Area	CB15	1			
Area (Ha)	0.090					Area (Ha)	0.090					Area (Ha)	0.090				
C =	0.94	Restricted Flow $Q_r$ (L	_/s)=	6.00		C =	0.75	Restricted Flow Q <sub>r</sub> (	L/s)=	6.00		C =	0.75	Restricted Flow Q <sub>r</sub> (I	_/s)=	6.00	
		100-Year Pon	ding					5-Year Ponding						2-Year Pondi	ng		
T <sub>c</sub>	į	Peak Flow	Q,	$Q_p - Q_r$	Volume	T <sub>c</sub>	i	Peak Flow	Q,	$Q_p - Q_r$	Volume	T <sub>c</sub>		Peak Flow	Q,	$Q_p - Q_r$	Volume
Variable	1 100yr	$Q_p = 2.78xCi_{100yr} A$	$\mathbf{Q}_r$	Q <sub>p</sub> -Q <sub>r</sub>	100yr	Variable	I <sub>5yr</sub>	$Q_p = 2.78xCi_{5yr}A$	Q <sub>r</sub>	Q <sub>p</sub> -Q <sub>r</sub>	5yr	Variable	I <sub>2yr</sub>	$Q_p = 2.78xCi_{2yr}A$	Q,	Q <sub>p</sub> -Q <sub>r</sub>	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
33	86.03	20.18	6.00	14.18	28.08	13	90.63	17.01	6.00	11.01	8.59	9	80.87	15.18	6.00	9.18	4.95
35	82.58	19.37	6.00	13.37	28.08	15	83.56	15.68	6.00	9.68	8.71	11	73.17	13.73	6.00	7.73	5.10
36	80.96	18.99	6.00	12.99	28.06	16	80.46	15.10	6.00	9.10	8.73	12	69.89	13.12	6.00	7.12	5.12
37 39	79.42 76.51	18.63 17.95	6.00 6.00	12.63 11.95	28.03 27.96	17 19	77.61 72.53	14.56 13.61	6.00 6.00	8.56 7.61	8.73 8.67	13 15	66.93 61.77	12.56 11.59	6.00 6.00	6.56 5.59	5.12 5.03
- 33	70.51	17.55	0.00	11.55	21.50	10	72.00	10.01	0.00	7.01	0.07	13	01.77	11.55	0.00	0.00	3.00
		S	torage (m <sup>3</sup> )					Sto	rage (m³)					Sto	orage (m <sup>3</sup> )		
	Overflow	Required	Surface	Sub-surface	Balance	<b>-</b>	Overflow	Required	Surface	Sub-surface	Balance	•	Overflow	Required	Surface	Sub-surface	Balance
	20.79	48.85	66.27	5.10	0.00		3.13	11.86	66.27	5.10	0.00		0.00	5.12	66.27	5.10	0.00
l a a mila (ma)	D:- ()	A == = (==2)	\/ala (ma <sup>3</sup> )			Otania		Danth	A === (==2)	\/ala (ma <sup>3</sup> )							
Length (m) 28.00	Dia (m) 0.450	Area (m²) 0.159	Volume (m <sup>3</sup> ) 4.45			Structure CB3 (600mm x 600mm)		Depth 1.80	Area (m <sup>2</sup> ) 0.36	Volume (m³) 0.65							
20.00	0.430	0.139	4.45 4.45			CB3 (000mm x 000mm)		1.00	0.30	0.65							
										0.00							
				overflows to:	out					overflows to:	out					overflows to:	out
Drainage Area	СВМНЗ	1				Drainage Area	СВМНЗ	1				Drainage Area	СВМНЗ				
Area (Ha)	0.020					Area (Ha)	0.020					Area (Ha)	0.020				
C =		Restricted Flow Q <sub>r</sub> (L	_/s)=	6.00		C =		Restricted Flow Q <sub>r</sub> (	L/s)=	6.00		C =		Restricted Flow Q <sub>r</sub> (I	_/s)=	6.00	
		100-Year Pon						5-Year Ponding						2-Year Pondi			
T <sub>c</sub>		Peak Flow		Ι	Volume	T <sub>c</sub>	_	Peak Flow			Volume	<i>T<sub>c</sub></i>		Peak Flow			Volume
Variable	i <sub>100yr</sub>	$Q_p = 2.78xCi_{100yr}A$	$Q_r$	$Q_p - Q_r$	100yr	Variable	i <sub>5yr</sub>	$Q_p = 2.78 \times Ci_{5yr} A$	$Q_r$	$Q_p - Q_r$	5yr	Variable	i <sub>2yr</sub>	$Q_p = 2.78xCi_{2yr}A$	$Q_r$	$Q_p - Q_r$	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	$(m^3)$	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	$(m^3)$	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
3	286.05	12.92	6.00	6.92	1.25	0	230.48	11.53	6.00	5.53	0.00	-2	229.26	11.47	6.00	5.47	-0.66
5	242.70	10.96	6.00	4.96	1.49	2	182.69	9.14	6.00	3.14	0.38	0	167.22	8.37	6.00	2.37	0.00
6	226.01	10.21	6.00	4.21	1.52	3	166.09	8.31	6.00	2.31	0.42	1	148.14	7.41	6.00	1.41	0.08
7	211.67	9.56	6.00	3.56	1.50	4	152.51	7.63	6.00	1.63	0.39	2	133.33	6.67	6.00	0.67	0.08
9	188.25	8.50	6.00	2.50	1.35	6	131.57	6.58	6.00	0.58	0.21	4	111.72	5.59	6.00	-0.41	-0.10
		S	torage (m³)			_		Sto	rage (m³)					Sto	orage (m <sup>3</sup> )		
	Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance
	0.00	1.52	4.17	0	0.00		0.00	0.42	4.17	0.00	0.00		0.00	0.08	4.17	0.00	0.00
				overflows to:	CB12/13/14					overflows to:	CB12/13/14					overflows to:	CB12/13/14
		•						-									
Drainage Area	CB11					Drainage Area	CB11					Drainage Area	CB11				
Area (Ha)	0.030		/a)		1	Area (Ha)	0.030		\ /a\	17.00		Area (Ha)	0.030		/o)	17.00	
C =	1.00	Restricted Flow Q <sub>r</sub> (L		15.00		C =	0.90	Restricted Flow Q <sub>r</sub> (		15.00		C =	0.90	Restricted Flow Q <sub>r</sub> (I		15.00	
		100-Year Pon	ding	T				5-Year Ponding					1	2-Year Pondi	ng	•	
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q <sub>r</sub>	$Q_p - Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow $Q_p = 2.78xCi_{2yr}A$	$\mathbf{Q}_r$	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
1	351.38	29.31	15.00	14.31	0.86	-2	319.47	23.98	15.00	8.98	-1.08	-4	387.14	29.06	15.00	14.06	-3.37
3	286.05	23.86	15.00	8.86	1.59	0	230.48	17.30	15.00	2.30	0.00	-2	229.26	17.21	15.00	2.21	-0.26
4	262.41	21.88	15.00	6.88	1.65	1	203.51	15.28	15.00	0.28	0.02	-1	192.83	14.47	15.00	-0.53	0.03
5	242.70	20.24	15.00	5.24	1.57	2	182.69	13.71	15.00	-1.29	-0.15	0	167.22	12.55	15.00	-2.45	0.00
7	211.67	17.65	15.00	2.65	1.11	4	152.51	11.45	15.00	-3.55	-0.85	2	133.33	10.01	15.00	-4.99	-0.60
Storage (m <sup>3</sup> )						Sto	rage (m³)					Sto	orage (m <sup>3</sup> )				
	Overflow	Required	Surface	Sub-surface	Balance	-	Overflow	Required	Surface	Sub-surface	Balance	•	Overflow	Required	Surface	Sub-surface	Balance
	5.62	7 27	U 03	Λ	6 34		0.00	0.02	ი	0.00	0.00		0.00	0.03	ი	0.00	0.00

0.00

0.02

0.93

5.62

7.27

0.93

6.34

overflows to: CB12/CB13/CB14 overflows to: CB12/CB13/CB14

0.00

0.00

0.00

0.03

0.93

0.00

0.00

Drainage Area	CB12/C	B13/CB14	!					
Area (Ha)	0.330				_			
C =	1.00	Restricted Flow $Q_r$ (L	Restricted Flow $Q_r$ (L/s)= 73.00					
		100-Year Pon	ding					
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	Q <sub>r</sub>	Q <sub>p</sub> -Q <sub>r</sub>	Volume 100yr			
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)			
9	188.25	172.70	73.00	99.70	53.84			
10	178.56	163.81	73.00	90.81	54.49			
11	169.91	155.87	73.00	82.87	54.70			
12	162.13	148.74	73.00	75.74	54.53			
14	148.72	136.44	73.00	63.44	53.29			

Drainage Area	CB12/C	B13/CB14							
Area (Ha)	0.330								
C =	0.90	Restricted Flow Q <sub>r</sub> (L	_/s)=	73.00					
5-Year Ponding									
T <sub>c</sub>	i	Peak Flow	$Q_r$	0 -0	Volume				
Variable	i <sub>5yr</sub>	$Q_p = 2.78xCi_{5yr}A$	Q r	$Q_p - Q_r$	5yr				
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)				
2	182.69	150.84	73.00	77.84	9.34				
4	152.51	125.92	73.00	52.92	12.70				
5	141.18	116.57	73.00	43.57	13.07				
6	131.57	108.63	73.00	35.63	12.83				
8	116.11	95.87	73.00	22.87	10.98				

Drainage Area	2/CB13/CB14							
Area (Ha)	0.330							
C =	0.90	Restricted Flow Q <sub>r</sub> (I	_/s)=	73.00				
2-Year Ponding								
T <sub>c</sub>	i	Peak Flow	Q,	0 -0	Volume			
Variable	i <sub>2yr</sub>	$Q_p = 2.78xCi_{2yr}A$	Q <sub>r</sub>	$Q_p - Q_r$	2yr			
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)			
0	167.22	138.07	73.00	65.07	0.00			
2	133.33	110.09	73.00	37.09	4.45			
3	121.46	100.29	73.00	27.29	4.91			
4	111.72	92.25	73.00	19.25	4.62			
6	96.64	79.79	73.00	6.79	2.44			

			Storage (m <sup>3</sup> )			
	Overflow	Required	Surface	Sub-surface	Balance	_
	6.34	61.03	54.36	5.07	1.60	
_ength (m)	Dia (m)	Area (m²)	Volume (m <sup>3</sup> )			Structure
11.07	0.375	0.110	1.22			CB12 (600mm x 600mm)
12.00	0.450	0.159	1.91			CB13 (600mm x 600mm)
						CB14 (600mm x 600mm)
			3.13			,

		St	orage (m <sup>3</sup> )			Storage (m <sup>3</sup> )					
_	Overflow	Required	Surface	Sub-surface	Balance	Overflow	Required	Surface	Sub-surface	Balance	
	0.00	13.07	54.36	5.07	0.00	0.00	4.91	54.36	5.07	0.00	
cture		Depth	Area (m²)	Volume (m <sup>3</sup> )							
2 (600mm x 600mm)		1.80	0.36	0.65							
3 (600mm x 600mm)		1.80	0.36	0.65							
4 (600mm x 600mm)		1.80	0.36	0.65							
				1.94							

overflows to: CB10

overflows to: CB10	
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overflows to	: CB10

overflows to: CB18

Drainage Area	CB10				
Area (Ha)	0.130				_
C =	1.00	Restricted Flow $Q_r$ (L	/s)=	45.00	
		100-Year Pon	ding		
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	Q <sub>p</sub> -Q <sub>r</sub>	Volume 100yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	( <b>m</b> ³)
5	242.70	87.71	45.00	42.71	12.81
6	226.01	81.68	45.00	36.68	13.20
7	211.67	76.50	45.00	31.50	13.23
8	199.20	71.99	45.00	26.99	12.96
10	178.56	64.53	45.00	19.53	11.72

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Drainage Area	CB10	1			
Area (Ha)	0.130				
C =	0.90	Restricted Flow Q <sub>r</sub> (L	_/s)=	45.00	
		5-Year Ponding			
T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q <sub>r</sub>	$Q_p - Q_r$	Volume 5yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
-1	266.98	86.84	45.00	41.84	-2.51
1	203.51	66.19	45.00	21.19	1.27
2	182.69	59.42	45.00	14.42	1.73
3	166.09	54.02	45.00	9.02	1.62
5	141.18	45.92	45.00	0.92	0.28

Drainage Area	CB10				
Area (Ha)	0.130				
C =	0.90	Restricted Flow Q <sub>r</sub> (L	/s)=	45.00	
		2-Year Pondir	ng		
T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q <sub>r</sub>	$Q_p$ - $Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
-2	229.26	74.57	45.00	29.57	-3.55
0	167.22	54.39	45.00	9.39	0.00
1	148.14	48.19	45.00	3.19	0.19
2	133.33	43.37	45.00	-1.63	-0.20
4	111.72	36.34	45.00	-8.66	-2.08

		Storage (m <sup>3</sup> )		
Overflow	Required	Surface	Sub-surface	Balance
5.62	18.85	6.81	0.00	12.04

	Storage (m <sup>3</sup> )									
Overflow	Required	Surface	Sub-surface	Balance						
0.00	1.73	6.81	0.00	0.00						

	S	torage (m <sup>3</sup> )		
Overflow	Required	Surface	Sub-surface	Balance
Balance	#VALUE!	6.81	0.00	#VALUE!

overflows to: CB18

Part																			
Second Column   Second Colum	Drainago Aroa	CRMU2	ī				Drainago Aroa	CRMU2	1				Drainago Aroa	CDMU2	<b>a</b>				
The content of the																			
To apply				/s)=	20.00					L/s)=	20.00					_/s)=	20.00		
The content of the			100-Year Pond	ding		·		•	5-Year Ponding						2-Year Pondi	ng			
Process   Proc	T <sub>c</sub>					Volume	T <sub>c</sub>		Peak Flow		0.0	Volume	T <sub>c</sub>		Peak Flow		0.0	Volume	
T		1 100yr	$Q_p = 2.78xCi_{100yr}A$	$\mathbf{Q}_r$	$Q_p - Q_r$	100yr		I <sub>5yr</sub>	$Q_p = 2.78xCi_{5yr}A$	Q <sub>r</sub>	$Q_p - Q_r$			I <sub>2yr</sub>	$Q_p = 2.78xCi_{2yr}A$	$\mathbf{Q}_r$	$Q_p - Q_r$	2yr	
1	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	( <b>m</b> ³)	
Contract   Triple   Service   Serv	7						1			1			-1						
The content   The content										1			1						
The contract   The		<b>.</b>					- · · · · · · · · · · · · · · · · · · ·												
Confidence   Con							7												
Careford   Required							-			•									
Column   C							_					_							
Parings Area   CB7   Carried Face   1   10   Carried Face   2   2   Carried Face   2			<u>-</u>																
Part   Color		0.00	11.83	6.21	0.00	5.02		0.00	2.53	6.21	0.00	0.00		0.00	0.80	6.21	0.00	0.00	
Part   19					overflows to	: CB11													
Part   19	-		=						-						=				
The content of the	Drainage Area												Drainage Area						
100-feet Ponding				, ,		7	Area (Ha)			. , ,			Area (Ha)						
T	C =	1.00	•		30.00	<u> </u>	C =	0.90			30.00		C =	0.90	·	•	30.00		
Variable   Vistor   Q_2378Cl_Qs_A   Vistor				ding	1	T					1					ng			
Variable   Variable		i <sub>100vr</sub>	1	$Q_r$	$Q_p - Q_r$			i <sub>5vr</sub>		Q,	$Q_p - Q_r$			i <sub>2vr</sub>		$\mathbf{Q}_r$	$Q_p - Q_r$		
1				(1 /2)	r					(1.6)	•			·		(1 /2)	· .		
Part   Part	· · · · · ·			. ,		, ,		. ,		<u> </u>			` /	, ,			` ′		
Part							1												
Second   S	6						2			1			0						
Storage (m')   Overflow   Required   Sub-surface   Sub-s													1						
Continue   Continue	9	188.25	41.87	30.00	11.87	6.41	5	141.18	28.26	30.00	-1.74	-0.52	3	121.46	24.31	30.00	-5.69	-1.02	
Continue   Continue			St	torage (m <sup>3</sup> )					Sto	rage (m <sup>3</sup> )					Sto	orage (m <sup>3</sup> )			
1/2   1/2		Overflow				Balance	_	Overflow			Sub-surface	Balance	•	Overflow				Balance	
Prairinge Area   C86   Area 5(15)   C -   1.00   Prestrictor Flox G, (Lis) =   20.00   Prestrictor Flox G,						5.94					0.00						0.00		
Parising Area   C86																			
Area   His    0.07						000						000						200	
Area   His    0.07					overflows to	: CB8					overflows to:	CB8					overflows to: 0	CB8	
C	Drainage Area	CB6	1		overflows to	: CB8	Drainage Area	P3/I 3	1		overflows to:	CB8	Drainage Area	CB6	1		overflows to: (	CB8	
T	<b>Drainage Area</b> Area (Ha)				overflows to	: CB8					overflows to:	CB8					overflows to: (	CB8	
T	Area (Ha)	0.070	)	/s)=		_	Area (Ha)	0.160		L/s)=		CB8	Area (Ha)	0.070	O	/s)=		CB8	
Variable   1/10	Area (Ha)	0.070	Restricted Flow Q <sub>r</sub> (L	•		_	Area (Ha)	0.160	Restricted Flow $Q_r$ (			CB8	Area (Ha)	0.070	Restricted Flow Q <sub>r</sub> (L	•		CB8	
Strange (m)   Storage (m)	Area (Ha) C =	0.070	Restricted Flow Q <sub>r</sub> (L	ding	20.00		Area (Ha) C =	0.160	Restricted Flow Q <sub>r</sub> (  5-Year Ponding	I	20.00		Area (Ha) C =	0.070 0.45	Restricted Flow Q <sub>r</sub> (L	ng	20.00		
Total Control	Area (Ha) C =	0.070	Restricted Flow Q <sub>r</sub> (L 100-Year Pond Peak Flow	ding	20.00	Volume 100yr	Area (Ha) C =	0.160	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow	I	20.00	Volume 5yr	Area (Ha) C =	0.070 0.45	Restricted Flow Q <sub>r</sub> (L 2-Year Pondi Peak Flow	ng	20.00	Volume 2yr	
Start   Star	Area (Ha) C =  T <sub>c</sub> Variable	0.070 1.00 i <sub>100yr</sub>	Restricted Flow $Q_r$ (L)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)	Q <sub>r</sub>	20.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 100yr (m³)	Area (Ha) C =  T <sub>c</sub> Variable	0.160 0.45 i <sub>5yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)	Q , (L/s)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 5yr (m³)	Area (Ha) C =  T <sub>c</sub> Variable	0.070 0.45 i <sub>2yr</sub> (mm/hour)	Restricted Flow Q <sub>r</sub> (L <b>2-Year Pondi</b> <b>Peak Flow</b> Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)	Q, (L/s)	20.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 2yr (m³)	
9	Area (Ha) C =  T <sub>c</sub> Variable  (min) 5	i <sub>100yr</sub> (mm/hour) 242.70	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)  47.23	Q <sub>r</sub> (L/s) 20.00	20.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23	Volume 100yr (m³) 8.17	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1	0.160 0.45 i <sub>5yr</sub> (mm/hour) 203.51	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)  40.73	Q, (L/s) 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  20.73	Volume 5yr (m³) 1.24	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4	0.070 0.45 i <sub>2yr</sub> (mm/hour) 387.14	Restricted Flow Q <sub>r</sub> (L/s)  Restricted Flow Q <sub>r</sub> (L/s)  Restricted Flow Q <sub>r</sub> (L/s)	Q, (L/s) 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  13.90	Volume 2yr (m³) -3.34	
11	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7	i 100yr (mm/hour) 242.70 211.67	Restricted Flow $Q_r$ (L)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.23  41.19	Q <sub>r</sub> (L/s) 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23  21.19	Volume 100yr (m³) 8.17 8.90	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1	0.160 0.45 i <sub>5yr</sub> (mm/hour) 203.51 166.09	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s) $40.73$ $33.24$	Q <sub>r</sub> (L/s) 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24	Volume 5yr (m³) 1.24 2.38	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2	0.070 0.45 i <sub>2yr</sub> (mm/hour) 387.14 229.26	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 33.90 20.08	Q <sub>r</sub> (L/s) 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  13.90  0.08	Volume 2yr (m³) -3.34 -0.01	
Overflow   Required   Overflow   Required   Overflow   Required   Overflow   Required   Overflow   Required   Overflow	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8	i 100yr (mm/hour) 242.70 211.67 199.20	Peak Flow Q <sub>p</sub> (L/s)  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.23  41.19  38.76	Q <sub>r</sub> (L/s) 20.00 20.00 20.00	20.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76	Volume 100yr (m³) 8.17 8.90 9.01	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45 i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s) $40.73$ $33.24$ $30.53$	Q, (L/s) 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53	Volume 5yr (m³) 1.24 2.38 2.53	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1	0.070 0.45 i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83	Peak Flow Q <sub>p</sub> (L/s)  3.90  2.78xCi 2yr A (L/s)  33.90  20.08  16.89	Q, (L/s) 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11	Volume 2yr (m³) -3.34 -0.01 0.19	
Overflow   Required   Overflow   Required   Overflow   Required   Overflow   Required   Overflow   Required   Overflow	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9	i <sub>100yr</sub> (mm/hour) 242.70 211.67 199.20 188.25	Peak Flow Q <sub>p</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi 100yr A (L/s)  47.23 41.19 38.76 36.63	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00	20.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63	Volume 100yr (m³) 8.17 8.90 9.01 8.98	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45 i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26	Volume 5yr (m³) 1.24 2.38 2.53 2.48	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1  0	0.070 0.45 i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22	Peak Flow Q <sub>p</sub> (L/s)  3.90  2.78xCi 2yr A (L/s)  33.90  20.08  16.89  14.64	Q, (L/s) 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36	Volume 2yr (m³) -3.34 -0.01 0.19 0.00	
Drainage Area   CBS   Area (Ha)   0.060   0.00	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9	i <sub>100yr</sub> (mm/hour) 242.70 211.67 199.20 188.25	Peak Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.23  41.19  38.76  36.63  33.06	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00	20.00 Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63	Volume 100yr (m³) 8.17 8.90 9.01 8.98	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45 i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow  Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A  (L/s)  40.73  33.24  30.53  28.26  24.68	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26	Volume 5yr (m³) 1.24 2.38 2.53 2.48	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1  0	0.070 0.45 i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22	Peak Flow Q <sub>r</sub> (L/s)  33.90 20.08 16.89 14.64 11.68	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36	Volume 2yr (m³) -3.34 -0.01 0.19 0.00	
Drainage Area   CB5   Area (Ha)   0.060   C =   0.000   Restricted Flow Q, (L/s) =   15.00   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000   T c   0.000   Restricted Flow Q, (L/s) =   15.000	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9	0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91	Restricted Flow Q <sub>r</sub> (Lot 100-Year Pond Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s) 47.23 41.19 38.76 36.63 33.06	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23  21.19  18.76  16.63  13.06	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45 i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Sto	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1  0	0.070 0.45 i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33	Restricted Flow Q <sub>r</sub> (Los)  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 prage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  13.90  0.08  -3.11  -5.36  -8.32	Volume  2yr (m³)  -3.34  -0.01  0.19  0.00  -1.00	
Drainage Area   CB5   Area (Ha)   0.060     C =   0.00   Restricted Flow Q, (L/S) =   15.00   C =   0.90   Restricted Flow Q, (L/S)   (L/S)	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91	Restricted Flow Q <sub>r</sub> (L/s)  Peak Flow Q <sub>p</sub> =2.78xCi 100yr A (L/s)  47.23 41.19 38.76 36.63 33.06  St  Required	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00 Storage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23  21.19  18.76  16.63  13.06  Sub-surface	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1  0	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90 20.08 16.89 14.64 11.68  Sto	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 corage (m <sup>3</sup> ) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface	Volume 2yr (m³) -3.34 -0.01 0.19 0.00 -1.00	
Area (Ha)   0.060   C =   1.00   Restricted Flow Q <sub>1</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>2</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>3</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us)   (	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91	Restricted Flow Q <sub>r</sub> (L/s)  Peak Flow Q <sub>p</sub> =2.78xCi 100yr A (L/s)  47.23 41.19 38.76 36.63 33.06  St  Required	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00 Storage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23  21.19  18.76  16.63  13.06  Sub-surface	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1  0	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90 20.08 16.89 14.64 11.68  Sto	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 corage (m <sup>3</sup> ) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface	Volume 2yr (m³) -3.34 -0.01 0.19 0.00 -1.00	
Area (Ha)   0.060   C =   1.00   Restricted Flow Q <sub>1</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>2</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>3</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us) =   15.00   Restricted Flow Q <sub>4</sub> (Us) =   15.00   C =   0.90   Restricted Flow Q <sub>4</sub> (Us)   (	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91	Restricted Flow Q <sub>r</sub> (L/s)  Peak Flow Q <sub>p</sub> =2.78xCi 100yr A (L/s)  47.23 41.19 38.76 36.63 33.06  St  Required	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00 Storage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3 4	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -4  -2  -1  0	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90 20.08 16.89 14.64 11.68  Sto	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 corage (m <sup>3</sup> ) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00	
	Area (Ha) C =  T <sub>c</sub> Variable  (min)  5  7  8  9  11	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00	Restricted Flow Q <sub>r</sub> (Long) Restricted Flow Q <sub>r</sub> (Long)  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.23 41.19 38.76 36.63 33.06  St  Required 9.01	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00 Storage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0 2	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Storic Required 0.19	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 corage (m <sup>3</sup> ) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11	0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi 100yr A (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required 9.01	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00 Storage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min) -4 -2 -1 0 2	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Store  Required 0.19	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 corage (m <sup>3</sup> ) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00	
$ \begin{array}{ c c c c c c c c c c c c c c c c c c c$	Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 8 9 11	0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00	Restricted Flow Q <sub>r</sub> (Long to Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s) 47.23 41.19 38.76 36.63 33.06 St  Required 9.01	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00 20.00 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area  Area (Ha)	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90  20.08  16.89  14.64  11.68  Store  Required 0.19	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 <b>orage</b> (m³) <b>Surface</b> 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00	
Variable (min) $I_{100yr}$ (mm/hour) $Q_p = 2.78xCi_{100yr}A$ (L/s) $I_{100yr}$ (mm/hour) $I_{20yr}$ (min) $I_{20yr}$ (mm/hour) $I_{20$	Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 8 9 11	0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00	Restricted Flow Q <sub>r</sub> (Lot   100-Year Pone   Peak Flow   Q <sub>p</sub> = 2.78xCi   100yr A   (Lot   1)   (Lot	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Storage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area  Area (Ha)	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90  20.08  16.89  14.64  11.68  Store  Required 0.19  Restricted Flow Q <sub>r</sub> (L	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 Drage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00	
(min)         (mm/hour)         (L/s)         (L/s)         (L/s)         (min)         (min)         (min)         (L/s)         (L/s)         (L/s)         (min)         (min)         (min)         (min)         (L/s)         (L/s)         (L/s)         (min)	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =	0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L)	Q	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area  Area (Ha) C =	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Sto  Required 0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 Drage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0	Volume 2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00	
7         211.67         35.31         15.00         20.31         8.53         1         203.51         30.55         15.00         15.55         0.93         -1         192.83         28.95         15.00         13.95         -0.84           9         188.25         31.40         15.00         16.40         8.86         3         166.09         24.93         15.00         9.93         1.79         1         148.14         22.24         15.00         7.24         0.43           10         178.56         29.78         15.00         14.78         8.87         4         152.51         22.89         15.00         7.89         1.89         2         133.33         20.02         15.00         5.02         0.60           11         169.91         28.34         15.00         13.34         8.80         5         141.18         21.19         15.00         6.19         1.86         3         121.46         18.23         15.00         3.23         0.58           13         155.11         25.87         15.00         10.87         8.48         7         123.30         18.51         15.00         3.51         1.47         5         103.57         15.55         15.00 </td <td>Area (Ha) C =  T<sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =</td> <td>0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  CB5</td> <td>  Restricted Flow Q<sub>r</sub> (L.)   100-Year Pone   Peak Flow   Q<sub>p</sub> = 2.78xCi   100yr A   (L/s)   47.23   41.19   38.76   36.63   33.06     St   Required   9.01                                      </td> <td>  Q</td> <td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to</td> <td>Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8</td> <td>Area (Ha)  C =  T<sub>c</sub>  Variable  (min)  1 3 4 5 7</td> <td>0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB5 0.060 0.90</td> <td>Restricted Flow Q<sub>r</sub> (  5-Year Ponding  Peak Flow Q<sub>p</sub> = 2.78xCi<sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53  Restricted Flow Q<sub>r</sub> (  5-Year Ponding Peak Flow</td> <td>Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface 13.66</td> <td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:</td> <td>Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8</td> <td>Area (Ha) C =  T<sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area Area (Ha) C =  T<sub>c</sub></td> <td>0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  CB5 0.060 0.90</td> <td>Restricted Flow Q<sub>r</sub> (L  2-Year Pondi  Peak Flow Q<sub>p</sub>=2.78xCi<sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Store  Required 0.19  Restricted Flow Q<sub>r</sub> (L  2-Year Pondi  Peak Flow</td> <td>Q, (L/s) 20.00 20.00 20.00 20.00 Surface 13.66</td> <td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0</td> <td>Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8</td>	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =	0.070 1.00  i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  CB5	Restricted Flow Q <sub>r</sub> (L.)   100-Year Pone   Peak Flow   Q <sub>p</sub> = 2.78xCi   100yr A   (L/s)   47.23   41.19   38.76   36.63   33.06     St   Required   9.01	Q	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB5 0.060 0.90	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding Peak Flow	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area Area (Ha) C =  T <sub>c</sub>	0.070 0.45  i 2yr (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  CB5 0.060 0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Store  Required 0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow	Q, (L/s) 20.00 20.00 20.00 20.00 Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8	
9 188.25 31.40 15.00 16.40 8.86 3 166.09 24.93 15.00 9.93 1.79 1 148.14 22.24 15.00 7.24 0.43 10 178.56 29.78 15.00 14.78 8.87 4 152.51 22.89 15.00 7.89 1.89 2 133.33 20.02 15.00 5.02 0.60 11 169.91 28.34 15.00 13.34 8.80 5 141.18 21.19 15.00 6.19 1.86 3 121.46 18.23 15.00 3.23 0.58 13 155.11 25.87 15.00 10.87 8.48 7 123.30 18.51 15.00 3.51 1.47 5 103.57 15.55 15.00 0.55 0.16	Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 8 9 11  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable	i 100yr  (mm/hour)  242.70  211.67  199.20  188.25  169.91  Overflow  0.00  CB5  0.060  1.00	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  Peak Flow $Q_p = 2.78xCi_{100yr} A$	Q	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB5 0.060 0.90	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s) $40.73$ $33.24$ $30.53$ $28.26$ $24.68$ Sto  Required $2.53$ Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8	Area (Ha) C =  T <sub>c</sub> Variable (min) -4 -2 -1 0 2  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  CB5 0.060 0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow  Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90  20.08  16.89  14.64  11.68  Store  Required  0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow  Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q, (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00  overflows to: 0	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8	
11         169.91         28.34         15.00         13.34         8.80         5         141.18         21.19         15.00         6.19         1.86         3         121.46         18.23         15.00         3.23         0.58           13         155.11         25.87         15.00         10.87         8.48         7         123.30         18.51         15.00         3.51         1.47         5         103.57         15.55         15.00         0.55         0.16           Storage (m³)         Storage (m³) <th colspan<="" td=""><td>Area (Ha) C =  T<sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =  T<sub>c</sub> Variable (min)</td><td>i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour)</td><td>Restricted Flow <math>Q_r</math> (L/s)  100-Year Pone  Peak Flow  <math>Q_p = 2.78xCi_{100yr} A</math>  (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow <math>Q_r</math> (L/s)  Restricted Flow <math>Q_r</math> (L/s)  Peak Flow  <math>Q_p = 2.78xCi_{100yr} A</math>  (L/s)</td><td>  Q r   (L/s)   20.00   20.00   20.00   20.00   20.00   20.00   20.00   20.66     Surface   13.66                                    </td><td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to</td><td>Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8</td><td>Area (Ha)  C =  T<sub>c</sub>  Variable  (min)  1  3  4  5  7</td><td>i<sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i<sub>5yr</sub> (mm/hour)</td><td>Restricted Flow <math>Q_r</math> (  5-Year Ponding  Peak Flow  <math>Q_p = 2.78xCi_{5yr}A</math>  (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required  2.53  Restricted Flow <math>Q_r</math> (  5-Year Ponding  Peak Flow  <math>Q_p = 2.78xCi_{5yr}A</math>  (L/s)</td><td>Q<sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  rage (m³) Surface 13.66</td><td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:  15.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s)</td><td>Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8</td><td>Area (Ha) C =  T<sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area Area (Ha) C =  T<sub>c</sub> Variable (min)</td><td>i<sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i<sub>2yr</sub> (mm/hour)</td><td>Restricted Flow <math>Q_r</math> (Los)  Restricted Flow <math>Q_r</math> (Los)  Restricted Flow <math>Q_p = 2.78xCi_{2yr}A</math>  (Los)  33.90  20.08  16.89  14.64  11.68  Store  Required  0.19  Restricted Flow <math>Q_r</math> (Los)  Restricted Flow <math>Q_r</math> (Los)  Peak Flow  <math>Q_p = 2.78xCi_{2yr}A</math>  (Los)</td><td>Q, (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 13.66   /s)= ng Q, (L/s)</td><td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0</td><td>Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8</td></th>	<td>Area (Ha) C =  T<sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =  T<sub>c</sub> Variable (min)</td> <td>i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour)</td> <td>Restricted Flow <math>Q_r</math> (L/s)  100-Year Pone  Peak Flow  <math>Q_p = 2.78xCi_{100yr} A</math>  (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow <math>Q_r</math> (L/s)  Restricted Flow <math>Q_r</math> (L/s)  Peak Flow  <math>Q_p = 2.78xCi_{100yr} A</math>  (L/s)</td> <td>  Q r   (L/s)   20.00   20.00   20.00   20.00   20.00   20.00   20.00   20.66     Surface   13.66                                    </td> <td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to</td> <td>Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8</td> <td>Area (Ha)  C =  T<sub>c</sub>  Variable  (min)  1  3  4  5  7</td> <td>i<sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i<sub>5yr</sub> (mm/hour)</td> <td>Restricted Flow <math>Q_r</math> (  5-Year Ponding  Peak Flow  <math>Q_p = 2.78xCi_{5yr}A</math>  (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required  2.53  Restricted Flow <math>Q_r</math> (  5-Year Ponding  Peak Flow  <math>Q_p = 2.78xCi_{5yr}A</math>  (L/s)</td> <td>Q<sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  rage (m³) Surface 13.66</td> <td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:  15.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s)</td> <td>Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8</td> <td>Area (Ha) C =  T<sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area Area (Ha) C =  T<sub>c</sub> Variable (min)</td> <td>i<sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i<sub>2yr</sub> (mm/hour)</td> <td>Restricted Flow <math>Q_r</math> (Los)  Restricted Flow <math>Q_r</math> (Los)  Restricted Flow <math>Q_p = 2.78xCi_{2yr}A</math>  (Los)  33.90  20.08  16.89  14.64  11.68  Store  Required  0.19  Restricted Flow <math>Q_r</math> (Los)  Restricted Flow <math>Q_r</math> (Los)  Peak Flow  <math>Q_p = 2.78xCi_{2yr}A</math>  (Los)</td> <td>Q, (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 13.66   /s)= ng Q, (L/s)</td> <td>20.00  Q<sub>p</sub>-Q<sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0</td> <td>Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8</td>	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour)	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  Restricted Flow $Q_r$ (L/s)  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)	Q r   (L/s)   20.00   20.00   20.00   20.00   20.00   20.00   20.00   20.66     Surface   13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1  3  4  5  7	i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour)	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  rage (m³) Surface 13.66	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour)	Restricted Flow $Q_r$ (Los)  Restricted Flow $Q_r$ (Los)  Restricted Flow $Q_p = 2.78xCi_{2yr}A$ (Los)  33.90  20.08  16.89  14.64  11.68  Store  Required  0.19  Restricted Flow $Q_r$ (Los)  Restricted Flow $Q_r$ (Los)  Peak Flow $Q_p = 2.78xCi_{2yr}A$ (Los)	Q, (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 13.66   /s)= ng Q, (L/s)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8
13   155.11   25.87   15.00   10.87   8.48   7   123.30   18.51   15.00   3.51   1.47   5   103.57   15.55   15.00   0.55   0.16	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour) 211.67 188.25	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  35.31  31.40	Q   (L/s)   20.00   20.00   20.00   20.00   20.00   20.00   20.00   20.00   20.66   20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.31 16.40	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7   Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1	0.160 0.45  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour) 203.51 166.09	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  30.55  24.93	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  rage (m³) Surface 13.66  L/s)= Q <sub>r</sub> (L/s) 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.55 9.93	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8  Volume 5yr (m³) 0.93 1.79	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour) 192.83 148.14	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow  Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90  20.08  16.89  14.64  11.68  Store  Required  0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow  Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  28.95  22.24	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 13.66   /s)= ng Q <sub>r</sub> (L/s) 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.95 7.24	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00  CB8  Volume 2yr (m³) -0.84 0.43	
Storage (m³)  Overflow Required Surface Sub-surface Balance  Storage (m³)  Overflow Required Surface Sub-surface Sub-sub-sub-sub-sub-sub-sub-sub-sub-sub-s	Area (Ha) C =  T <sub>c</sub> Variable (min) 5 7 8 9 11  C =  T <sub>c</sub> Variable (min) 7 9 10	0.070   1.00	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  0 Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  35.31  31.40  29.78	Q r   (L/s)   20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00  overflows to  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.31 16.40 14.78	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8  Volume 100yr (m³) 8.53 8.86 8.87	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4	i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  30.55  24.93  22.89	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  L/s)= Q <sub>r</sub> (L/s) 15.00 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.55 9.93 7.89	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8  Volume 5yr (m³) 0.93 1.79 1.89	Area (Ha) C =  T <sub>c</sub> Variable (min) -4 -2 -1 0 2  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) -1 1 2	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour) 192.83 148.14 133.33	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow  Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  33.90  20.08  16.89  14.64  11.68  Store  Required  0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A  (L/s)  28.95  22.24  20.02	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  Drage (m³) Surface 13.66   Js)=  Q <sub>r</sub> (L/s) 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00  overflows to: 0  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.95 7.24 5.02	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00  CB8  Volume 2yr (m³) -0.84 0.43 0.60	
Overflow Required Surface Sub-surface Balance Overflow Required Surface Sub-surface Balance Overflow Required Surface Sub-surface Balance	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  C =  T <sub>c</sub> Variable (min)  7 9 10 11	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour) 211.67 188.25 178.56 169.91	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  0 Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  35.31  31.40  29.78  28.34	CL/s   20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00  overflows to  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  20.31 16.40 14.78 13.34	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8  Volume 100yr (m³) 8.53 8.86 8.87 8.80	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7    Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 5	i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  30.55  24.93  22.89  21.19	Q	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.55 9.93 7.89 6.19	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8  Volume 5yr (m³) 0.93 1.79 1.89 1.86	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2   Drainage Area  Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour) 192.83 148.14 133.33 121.46	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Sto  Required 0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 28.95 22.24 20.02 18.23	Q, (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 13.66   Js)=  Q, (L/s) 15.00 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00  overflows to: (  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.95 7.24 5.02 3.23	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8  Volume 2yr (m³) -0.84 0.43 0.60 0.58	
Overflow Required Surface Sub-surface Balance Overflow Required Surface Sub-surface Balance Overflow Required Surface Sub-surface Balance	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  C =  T <sub>c</sub> Variable (min)  7 9 10 11	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour) 211.67 188.25 178.56 169.91	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  0 Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  35.31  31.40  29.78  28.34	CL/s   20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00  overflows to  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  20.31 16.40 14.78 13.34	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8  Volume 100yr (m³) 8.53 8.86 8.87 8.80	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7    Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 5	i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  30.55  24.93  22.89  21.19	Q	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.55 9.93 7.89 6.19	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8  Volume 5yr (m³) 0.93 1.79 1.89 1.86	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2   Drainage Area  Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour) 192.83 148.14 133.33 121.46	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Sto  Required 0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 28.95 22.24 20.02 18.23	Q, (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 13.66   Js)=  Q, (L/s) 15.00 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00  overflows to: (  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.95 7.24 5.02 3.23	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8  Volume 2yr (m³) -0.84 0.43 0.60 0.58	
0.00 8.87 3.41 0.00 5.46 0.00 1.89 3.41 0.00 0.00 #VALUE! #VALUE! 3.41 0.00 #VALUE!	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  C =  T <sub>c</sub> Variable (min)  7 9 10 11	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour) 211.67 188.25 178.56 169.91	Restricted Flow $Q_r$ (L/s)  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s) $Peak Flow$ $Q_p = 2.78xCi_{100yr}A$ (L/s)  35.31  31.40  29.78  28.34  25.87	Q r   (L/s)   20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.31 16.40 14.78 13.34 10.87	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8  Volume 100yr (m³) 8.53 8.86 8.87 8.80	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7    Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 5	i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)  40.73  33.24  30.53  28.26  24.68  Sto  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)  30.55  24.93  22.89  21.19  18.51	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 30.00 20.00  rage (m³) Surface 13.66  L/s)= Q <sub>r</sub> (L/s) 15.00 15.00 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.55 9.93 7.89 6.19	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8  Volume 5yr (m³) 0.93 1.79 1.89 1.86	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2   Drainage Area  Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour) 192.83 148.14 133.33 121.46	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Store  Required 0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 28.95 22.24 20.02 18.23 15.55	Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  20.00  Surface 13.66   Js)=  Q <sub>r</sub> (L/s) 15.00 15.00 15.00 15.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00 overflows to: 0  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.95 7.24 5.02 3.23 0.55	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00 CB8  Volume 2yr (m³) -0.84 0.43 0.60 0.58	
	Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7 8 9 11  C =  T <sub>c</sub> Variable (min)  7 9 10 11	i 100yr (mm/hour) 242.70 211.67 199.20 188.25 169.91  Overflow 0.00  i 100yr (mm/hour) 211.67 188.25 178.56 169.91 155.11  Overflow	Restricted Flow $Q_r$ (L/s)  Peak Flow $Q_p = 2.78xCi_{100yr} A$ (L/s)  47.23  41.19  38.76  36.63  33.06  St  Required  9.01  Restricted Flow $Q_r$ (L/s)  Restricted Flow $Q_r$ (L/s) $Q_p = 2.78xCi_{100yr} A$ (L/s)  35.31  31.40  29.78  28.34  25.87	CL/s   20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 27.23 21.19 18.76 16.63 13.06  Sub-surface 0.00 overflows to  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.31 16.40 14.78 13.34 10.87  Sub-surface	Volume 100yr (m³) 8.17 8.90 9.01 8.98 8.62  Balance 0.00 : CB8  Volume 100yr (m³) 8.53 8.86 8.87 8.80 8.48  Balance	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7    Drainage Area  Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 5	i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.90  Overflow 0.90  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 30.55 24.93 22.89 21.19 18.51  Sto  Required	Q <sub>r</sub>	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 15.55 9.93 7.89 6.19 3.51	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 0.00 CB8  Volume 5yr (m³) 0.93 1.79 1.89 1.86 1.47	Area (Ha) C =  T <sub>c</sub> Variable (min)  -4  -2  -1  0  2   Drainage Area  Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3	i <sub>2yr</sub> (mm/hour) 387.14 229.26 192.83 167.22 133.33  Overflow 0.00  i <sub>2yr</sub> (mm/hour) 192.83 148.14 133.33 121.46 103.57  Overflow	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  33.90 20.08 16.89 14.64 11.68  Sto  Required 0.19  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 28.95 22.24 20.02 18.23 15.55  Sto	Q, (L/s) 20.00 20.00 20.00 20.00 20.00  20.00  Drage (m³) Surface 13.66    (L/s)  15.00 15.00 15.00 15.00 15.00  Drage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.90 0.08 -3.11 -5.36 -8.32  Sub-surface 0.00  overflows to: 0  15.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 13.95 7.24 5.02 3.23 0.55	Volume  2yr (m³) -3.34 -0.01 0.19 0.00 -1.00  Balance 0.00  CB8  Volume 2yr (m³) -0.84 0.43 0.60 0.58 0.16  Balance	

J:\119351\_4836BankSt\5.7 Calculations\5.7.1 Sewers & Grading\2nd Submission\CCS\_swm\_2019-10-08

overflows to: CB8

overflows to: CB8

overflows to: CB8

Drainage Area	CB8	1				Drainage Area	CB8	1				Drainage Area	CB8				
Area (Ha)	0.170				_	Area (Ha)	0.170					Area (Ha)	0.170	)			
C =	1.00	Restricted Flow Q <sub>r</sub> (L	•	47.00		C =	0.90	Restricted Flow Q <sub>r</sub> (		47.00		C =	0.90	Restricted Flow Q <sub>r</sub> (L		47.00	
-	ı	100-Year Pond	ding	<del></del>		_	1	5-Year Ponding			14.4	_	Г	2-Year Pondi	ng	1 1	
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow $Q_p = 2.78xCi_{2yr} A$	$Q_r$	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
6	226.01	106.81	47.00	59.81	21.53	1	203.51	86.56	47.00	39.56	2.37	-1	192.83	82.02	47.00	35.02	-2.10
<u>8</u> 9	199.20 188.25	94.14 88.97	47.00 47.00	47.14 41.97	22.63 <b>22.66</b>	3 4	166.09 152.51	70.64 64.87	47.00 47.00	23.64 17.87	4.26 <b>4.29</b>	1 2	148.14 133.33	63.01 56.71	47.00 47.00	16.01 9.71	0.96 <b>1.17</b>
10	178.56	84.39	47.00	37.39	22.43	5	141.18	60.05	47.00	13.05	3.91	3	121.46	51.66	47.00	4.66	0.84
12	162.13	76.62	47.00	29.62	21.33	7	123.30	52.45	47.00	5.45	2.29	5	103.57	44.05	47.00	-2.95	-0.88
		St	torage (m³)					Sto	rage (m³)					Sto	orage (m <sup>3</sup> )		
•	Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance
	11.40	34.07	24.90	1.60	7.57		0.00	4.29	24.90	1.60	0.00		0.00	1.17	24.90	1.60	0.00
Length (m)	Dia (m)	Area (m²)	Volume (m <sup>3</sup> )			Structure		Depth	Area (m <sup>2</sup> )	Volume (m <sup>3</sup> )							
6.00	0.450	0.159	0.95	<u>_</u>		CB8 (600mm x 600mm)		1.80	0.36	0.65							
			0.95							0.65							
					000												
				overflows to:	CB9												
Drainage Area	CB4	]				Drainage Area	CB4	] /				Drainage Area	CB4				
Area (Ha)	0.030		(-)		1	Area (Ha)	0.030	Device in the	1 /- \			Area (Ha)	0.030		/- \		
C =	1.00	Restricted Flow Q <sub>r</sub> (L	•	6.00		C =	0.90	Restricted Flow Q <sub>r</sub> (		6.00		C =	0.90	Restricted Flow Q <sub>r</sub> (L		6.00	
7		100-Year Pond	ding		Volumo	7		5-Year Ponding			Volumo	T		2-Year Pondi	ng		Volumo
ι <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 100vr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q <sub>r</sub>	$Q_p - Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	$(m^3)$	(min)	(mm/høur)	(L/s)	(L/s)	(L/s)	$(m^3)$	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
9	188.25	15.70	6.00	9.70	5.24	3	166.09	12.47	6.00	6.47	1.16	1	148.14	11.12	6.00	5.12	0.31
11 12	169.91 162.13	14.17 13.52	6.00 6.00	8.17 7.52	5.39 <b>5.42</b>	<u>5</u>	141.18 131.57	10.60 9.88	6.00 6.00	4.60 3.88	1.38 <b>1.40</b>	3	121.46 111.72	9.12 8.39	6.00	3.12 2.39	0.56 <b>0.57</b>
13	155.11	12.94	6.00	6.94	5.41	7	123.30	9.26	6.00	3.26	1.37	5	103.57	7.77	6.00	1.77	0.53
15	142.89	11.92	6.00	5.92	5.33	9	109.79	8.24	6.00	2.24	1.21	7	90.66	6.81	6.00	0.81	0.34
		St	torage (m³)					Sto	rage (m³)					Sto	orage (m <sup>3</sup> )		
•	Overflow	Required	Surface	Sub-surface	Balance	•	Overflow	Required	Surface	Sub-surface	Balance	•	Overflow	Required	Surface	Sub-surface	Balance
	7.57	12.98	10.62	0.00	2.36		0.00	1.40	10.62	0.00	0.00		0.00	0.57	10.62	0.00	0.00
	7.57	12.98	10.62	0.00 overflows to:			0.00	1.40	10.62	0.00 overflows to:			0.00	0.57	10.62	0.00 overflows to:	
		12.98 <b>1</b>	10.62					1.40	10.62					_	10.62		
Drainage Area	СВМН1	12.98	10.62			Drainage Area	СВМН1	1.40	10.62			Drainage Area	СВМН1	]	10.62		
<b>Drainage Area</b> Area (Ha) C =	<b>CBMH1</b>	12.98  Restricted Flow $Q_r$ (L.				Drainage Area Area (Ha) C =	<b>CBMH1</b> 0.080	1.40  Restricted Flow Q <sub>r</sub> (				<b>Drainage Area</b> Area (Ha) C =	<b>CBMH1</b> 0.080	]			
Area (Ha)	<b>CBMH1</b>	]	/s)=	overflows to:		Area (Ha)	<b>CBMH1</b> 0.080		L/s)=	overflows to:		Area (Ha)	<b>CBMH1</b> 0.080	5	/s)=	overflows to:	
Area (Ha) C =	<b>CBMH1</b> 0.080 1.00	Restricted Flow Q <sub>r</sub> (L <b>100-Year Pone</b> <i>Peak Flow</i>	/s)= ding	overflows to:	CBMH1	Area (Ha) C =	<b>CBMH1</b> 0.080 0.90	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow	L/s)= 	overflows to:	CBMH1	Area (Ha) C =	<b>CBMH1</b> 0.080 0.90	Restricted Flow Q <sub>r</sub> (L 2-Year Pondi Peak Flow	√s)= ng	overflows to:	
Area (Ha) C =  T <sub>c</sub> Variable	CBMH1 0.080 1.00	Restricted Flow Q <sub>r</sub> (Long)  100-Year Pond  Peak Flow Q <sub>p</sub> =2.78xCi 100yr A	/s)= ding Q,	20.00 $Q_{p}\text{-}Q_{r}$	Volume 100yr	Area (Ha) C =  T <sub>c</sub> Variable	CBMH1 0.080 0.90  i 5yr	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	L/s)=     Q <sub>r</sub>	overflows to: $20.00$ $Q_p - Q_r$	CBMH1  Volume 5yr	Area (Ha) C =  T <sub>c</sub> Variable	CBMH1 0.080 0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	√s)= ng Q,	overflows to: $20.00$ $Q_p - Q_r$	CBMH1  Volume 2yr
Area (Ha) C =	CBMH1 0.080 1.00  i 100yr (mm/hour)	Restricted Flow Q <sub>r</sub> (L)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)	/s)= ding Q, (L/s)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)	Volume 100yr (m³)	Area (Ha) C =	CBMH1 0.080 0.90  i 5yr (mm/hour)	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)	L/s)= Q, (L/s)	overflows to: $20.00$ $Q_{p}-Q_{r}$ $(L/s)$	CBMH1  Volume  5yr (m³)	Area (Ha) C =  T <sub>c</sub> Variable (min)	CBMH1 0.080 0.90  i 2yr (mm/hour)	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)	/s)= ng Q, (L/s)	overflows to: $20.00$ $Q_{p}-Q_{r}$ $(L/s)$	Volume  2yr (m³)
Area (Ha) C =  T <sub>c</sub> Variable  (min)  7	<i>CBMH1</i> 0.080 1.00 <i>i</i> <sub>100yr</sub> ( <i>mm/hour</i> ) 211.67 188.25	Restricted Flow Q <sub>r</sub> (Location 100-Year Pone Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87	Volume 100yr (m³) 11.37 11.81	Area (Ha) C =  T <sub>c</sub> Variable	CBMH1 0.080 0.90  i <sub>5yr</sub> (mm/hour) 203.51 166.09	Restricted Flow $Q_r$ ( 5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr} A$ (L/s) $40.73$ $33.24$	L/s)=  Q <sub>r</sub> (L/s)  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24	Volume 5yr (m³) 1.24 2.38	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	<i>CBMH1</i> 0.080 0.90 <i>i</i> <sub>2yr</sub> ( <i>mm/hour</i> ) 192.83 148.14	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  38.60 29.65	√s)=  Q <sub>r</sub> (L/s)  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65	Volume 2yr (m³) -1.12 0.58
Area (Ha) C =  T <sub>c</sub> Variable  (min)  7  9 10	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.07 41.87 39.71	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71	Volume 100yr (m³) 11.37 11.81 11.83	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1	CBMH1  0.080  0.90  i <sub>5yr</sub> (mm/hour)  203.51  166.09  152.51	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s) $40.73$ $33.24$ $30.53$	L/s)=  Q <sub>r</sub> (L/s)  20.00  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53	Volume 5yr (m³) 1.24 2.38 2.53	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080  0.90  i <sub>2yr</sub> (mm/hour)  192.83  148.14  133.33	Peak Flow Q <sub>r</sub> (L/s)  38.60 29.65 26.69	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69	Volume 2yr (m³) -1.12 0.58 0.80
Area (Ha) C =  T <sub>c</sub> Variable  (min)  7	<i>CBMH1</i> 0.080 1.00 <i>i</i> <sub>100yr</sub> (mm/hour) 211.67 188.25	Restricted Flow Q <sub>r</sub> (Location 100-Year Pone Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87	Volume 100yr (m³) 11.37 11.81	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	CBMH1 0.080 0.90  i <sub>5yr</sub> (mm/hour) 203.51 166.09	Restricted Flow $Q_r$ ( 5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr} A$ (L/s) $40.73$ $33.24$	L/s)=  Q <sub>r</sub> (L/s)  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24	Volume 5yr (m³) 1.24 2.38	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	<i>CBMH1</i> 0.080 0.90 <i>i</i> <sub>2yr</sub> ( <i>mm/hour</i> ) 192.83 148.14	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  38.60 29.65	√s)=  Q <sub>r</sub> (L/s)  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65	Volume  2yr (m³)  -1.12  0.58
Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91	Restricted Flow Q <sub>r</sub> (L.  100-Year Ponce  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.07 41.87 39.71 37.79 34.50	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79	Volume 100yr (m³) 11.37 11.81 11.83 11.74	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	<i>CBMH1</i> 0.080 0.90 <i>i</i> <sub>5yr</sub> ( <i>mm/hour</i> ) 203.51 166.09 152.51 141.18	Restricted Flow Q <sub>r</sub> ( <b>5-Year Ponding</b> Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68	L/s)=  Q <sub>r</sub> (L/s)  20.00  20.00  20.00  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26	Volume 5yr (m³) 1.24 2.38 2.53 2.48	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080  0.90  i 2yr  (mm/hour)  192.83  148.14  133.33  121.46	Peak Flow Q <sub>r</sub> (L/s)  38.60 29.65 26.69 24.31 20.73	/s)=  Q <sub>r</sub> (L/s)  20.00  20.00  20.00  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73	Volume 2yr (m³) -1.12 0.58 0.80 0.78
Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St	/s)= ding Q, (L/s) 20.00 20.00 20.00 20.00 20.00 corage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	CBMH1  0.080  0.90  i 5yr  (mm/hour)  203.51  166.09  152.51  141.18  123.30	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Sto	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 rage (m <sup>3</sup> )	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080  0.90  i 2yr  (mm/hour)  192.83  148.14  133.33  121.46  103.57	Peak Flow Q <sub>r</sub> (L Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73	Vs)=  Q,  (L/s)  20.00  20.00  20.00  20.00  prage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73	Volume  2yr (m³) -1.12 0.58 0.80 0.78 0.22
Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91	Restricted Flow Q <sub>r</sub> (L.  100-Year Ponce  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.07 41.87 39.71 37.79 34.50	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79	Volume 100yr (m³) 11.37 11.81 11.83 11.74	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	<i>CBMH1</i> 0.080 0.90 <i>i</i> <sub>5yr</sub> ( <i>mm/hour</i> ) 203.51 166.09 152.51 141.18	Restricted Flow Q <sub>r</sub> ( <b>5-Year Ponding</b> Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68	L/s)=  Q <sub>r</sub> (L/s)  20.00  20.00  20.00  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26	Volume 5yr (m³) 1.24 2.38 2.53 2.48	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080  0.90  i 2yr  (mm/hour)  192.83  148.14  133.33  121.46	Peak Flow Q <sub>r</sub> (L/s)  38.60 29.65 26.69 24.31 20.73	/s)=  Q <sub>r</sub> (L/s)  20.00  20.00  20.00  20.00  20.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73	Volume 2yr (m³) -1.12 0.58 0.80 0.78
Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11	<i>CBMH1</i> 0.080 1.00 <i>i</i> 100yr (mm/hour) 211.67 188.25 178.56 169.91 155.11  Overflow	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St	(L/s)   20.00   20.0	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface  0.00	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	CBMH1  0.080  0.90  i <sub>5yr</sub> (mm/hour)  203.51  166.09  152.51  141.18  123.30  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Stor	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 surface  Comparison of the compariso	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080 0.90  i 2yr (mm/hour) 192.83 148.14 133.33 121.46 103.57  Overflow	Peak Flow Q <sub>r</sub> (L Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 brage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80
Area (Ha)  C =  T <sub>c</sub> Variable  (min)  7  9  10  11	<i>CBMH1</i> 0.080 1.00 <i>i</i> 100yr (mm/hour) 211.67 188.25 178.56 169.91 155.11  Overflow	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St	(L/s)   20.00   20.0	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	CBMH1  0.080  0.90  i <sub>5yr</sub> (mm/hour)  203.51  166.09  152.51  141.18  123.30  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Stor	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 surface  Comparison of the compariso	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080 0.90  i 2yr (mm/hour) 192.83 148.14 133.33 121.46 103.57  Overflow	Peak Flow Q <sub>r</sub> (L Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 brage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13	<i>CBMH1</i> 0.080 1.00 <i>i</i> 100yr (mm/hour) 211.67 188.25 178.56 169.91 155.11  Overflow	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St	(L/s)   20.00   20.0	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface  0.00	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3	CBMH1  0.080  0.90  i <sub>5yr</sub> (mm/hour)  203.51  166.09  152.51  141.18  123.30  Overflow	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Store  Required 2.53	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 surface  Comparison of the compariso	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53	Area (Ha) C =  T <sub>c</sub> Variable  (min)  -1  1	CBMH1  0.080 0.90  i 2yr (mm/hour) 192.83 148.14 133.33 121.46 103.57  Overflow	Restricted Flow Q <sub>r</sub> (L  2-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Stormal Required 0.80	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 brage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80
Area (Ha)  C =  T <sub>c</sub> Variable (min)  7  9  10  11  13	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St  Required 14.19	ding Q, (L/s) 20.00 20.00 20.00 20.00 20.00 20.00 Sorage (m³) Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface  0.00  overflows to:	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9	Area (Ha)  C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Store  Required 2.53	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53	Area (Ha) C =  T <sub>c</sub> Variable (min) -1 1 2 3 5	CBMH1   0.080   0.90	Peak Flow Q <sub>r</sub> (L Peak Flow Q <sub>p</sub> = 2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Stored Required 0.80	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 50rage (m³) Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80 CB9
Area (Ha) C =  T <sub>c</sub> Variable (min)  7  9  10  11  13	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L/s)	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface  0.00	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9	Area (Ha)  C =	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53	Area (Ha) C =  T <sub>c</sub> Variable (min) -1 1 2 3 5	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Stormalist Required 0.80  Restricted Flow Q <sub>r</sub> (L	/s)=  Q,  (L/s)  20.00  20.00  20.00  20.00  20.00  Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80 CB9
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L. 100-Year Pone	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Store  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5	CBMH1   0.080   0.90	Peak Flow Q <sub>r</sub> (L  2-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Stormal Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Ponding	/s)=  Q,  (L/s)  20.00  20.00  20.00  20.00  20.00  Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80 CB9
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub>	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L/s)	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface  0.00  overflows to:	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Sto  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding Peak Flow	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Stormal Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi Peak Flow	/s)=  Q,  (L/s)  20.00  20.00  20.00  20.00  20.00  Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80 CB9
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  CB9  0.150  1.00	Restricted Flow Q <sub>r</sub> (L.  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L.  100-Year Pone	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9	Area (Ha) C =  T <sub>c</sub> Variable  (min)  1 3 4 5 7	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160 0.45	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Store  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5	i 2yr (mm/hour) 192.83 148.14 133.33 121.46 103.57  Overflow 0.00  CB9 0.150 0.45	Peak Flow Q <sub>r</sub> (L  2-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Stormal Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Ponding	/s)= ng Q, (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80 CB9
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  i 100yr  (mm/hour)  242.70	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.07  41.87  39.71  37.79  34.50  St  Required  14.19  Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  101.21	/s)= ding  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ding  Q <sub>r</sub> (L/s) 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9  Volume 100yr (m³) 17.46	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min) -3	CBMH1  0.080 0.90  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9  0.160 0.45  i <sub>5yr</sub> (mm/hour) 402.34	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Stormal Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  80.53	L/s)=    Q <sub>r</sub>	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3	CBMH1   0.080   0.90	Restricted Flow $Q_r$ (L  2-Year Ponding  Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)  38.60  29.65  26.69  24.31  20.73  Stormorphism  Required  0.80  Restricted Flow $Q_r$ (L  2-Year Ponding  Peak Flow $Q_p = 2.78xCi_{2yr}A$ (L/s)  53.62	/s)= ng Qr (L/s) 20.00 20.00 20.00 20.00 20.00  prage (m³) Surface 0.00  /s)= ng Qr (L/s) 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 10.62	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7	CBMH1  0.080 1.00  i 100yr (mm/hour) 211.67 188.25 178.56 169.91 155.11  Overflow 2.36  i 100yr (mm/hour) 242.70 211.67	Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.07  41.87  39.71  37.79  34.50  St  Required  14.19  Restricted Flow $Q_r$ (L/s)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  101.21  88.27	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ding Q <sub>r</sub> (L/s) 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21  45.27	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9  Volume 100yr (m³) 17.46 19.01	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	CBMH1  0.080 0.90  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9  0.160 0.45  i <sub>5yr</sub> (mm/hour) 402.34 266.98	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Store  Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  80.53  53.44	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  Surface 0.00  (L/s)=  Q <sub>r</sub> (L/s) 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00 overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53 10.44	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Sto  Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 53.62 36.18	/s)= ng Q, (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00  /s)= ng Q, (L/s) 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 10.62 -6.82	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91 0.41
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  i 100yr  (mm/hour)  242.70  211.67  199.20  188.25	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)  47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 101.21 88.27 83.07 78.50	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ding Q <sub>r</sub> (L/s) 43.00 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21  45.27  40.07  35.50	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9  Volume 100yr (m³) 17.46 19.01 19.23 19.17	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3 -1 0 1	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160 0.45  i 5yr (mm/hour) 402.34 266.98 230.48 203.51	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Store  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 80.53 53.44 46.13 40.73	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  Surface 0.00  (L/s) 43.00 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53 10.44 3.13 -2.27	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9  Volume 5yr (m³) -6.76 -0.63 0.00 -0.14	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3  -1  0  1	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Sto  Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 53.62 36.18 31.38 27.80	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  prage (m³) Surface 0.00  /s)= ng Q <sub>r</sub> (L/s) 43.00 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 10.62 -6.82 -11.62 -15.20	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91 0.41 0.00 -0.91
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  i 100yr  (mm/hour)  242.70  211.67  199.20	Restricted Flow $Q_r$ (L.)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  47.07  41.87  39.71  37.79  34.50  St  Required  14.19  Restricted Flow $Q_r$ (L.)  100-Year Pone  Peak Flow $Q_p = 2.78xCi_{100yr}A$ (L/s)  101.21  88.27  83.07	/s)= ding Q, (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ding Q, (L/s) 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21  45.27  40.07	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9  Volume 100yr (m³) 17.46 19.01 19.23	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3 -1	CBMH1  0.080 0.90  i <sub>5yr</sub> (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9  0.160 0.45  i <sub>5yr</sub> (mm/hour) 402.34 266.98 230.48	Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  40.73  33.24  30.53  28.26  24.68  Stole  Required  2.53  Restricted Flow $Q_r$ (  5-Year Ponding  Peak Flow $Q_p = 2.78xCi_{5yr}A$ (L/s)  80.53  53.44  46.13	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  Surface 0.00  (L/s) 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53 10.44 3.13	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3  -1	CBMH1  0.080 0.90  i 2yr (mm/hour) 192.83 148.14 133.33 121.46 103.57  Overflow 0.00  CB9 0.150 0.45  i 2yr (mm/hour) 285.77 192.83 167.22	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Sto  Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 53.62 36.18 31.38	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ng Q <sub>r</sub> (L/s) 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 10.62 -6.82 -11.62	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91 0.41 0.00
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  i 100yr  (mm/hour)  242.70  211.67  199.20  188.25	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s)  47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone Peak Flow Q <sub>p</sub> = 2.78xCi 100yr A (L/s) 101.21 88.27 83.07 78.50 70.85	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ding Q <sub>r</sub> (L/s) 43.00 43.00 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21  45.27  40.07  35.50	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9  Volume 100yr (m³) 17.46 19.01 19.23 19.17	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3 -1 0 1	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160 0.45  i 5yr (mm/hour) 402.34 266.98 230.48 203.51	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Stol  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 80.53 53.44 46.13 40.73 33.24	L/s)=    Q <sub>r</sub>	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53 10.44 3.13 -2.27	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9  Volume 5yr (m³) -6.76 -0.63 0.00 -0.14	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3  -1  0  1	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s)  38.60 29.65 26.69 24.31 20.73  Sto  Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 53.62 36.18 31.38 27.80 22.79	/s)= ng Qr (L/s) 20.00 20.00 20.00 20.00 20.00 Surface 0.00  /s)= ng Qr (L/s) 43.00 43.00 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00 overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 10.62 -6.82 -11.62 -15.20 -20.21	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91 0.41 0.00 -0.91
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  i 100yr  (mm/hour)  242.70  211.67  199.20  188.25  169.91  Overflow	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)  47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 101.21 88.27 83.07 78.50 70.85  St  Required	(L/s)   20.00   20.0	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21  45.27  40.07  35.50  27.85	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19 CB9  Volume 100yr (m³) 17.46 19.01 19.23 19.17 18.38	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3 -1 0 1	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s)  40.73 33.24 30.53 28.26 24.68  Store  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding Peak Flow Q <sub>p</sub> = 2.78xCi <sub>5yr</sub> A (L/s) 80.53 53.44 46.13 40.73 33.24  Store  Required	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  Surface 0.00  43.00 43.00 43.00 43.00 43.00 43.00 43.00  rage (m³) Surface	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53 10.44 3.13 -2.27 -9.76	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9  Volume 5yr (m³) -6.76 -0.63 0.00 -0.14 -1.76	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3  -1  0  1	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Sto  Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondin  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 53.62 36.18 31.38 27.80 22.79  Sto	/s)= ng Qr (L/s) 20.00 20.00 20.00 20.00 20.00  prage (m³) Surface 0.00  43.00 43.00 43.00 43.00 43.00  brage (m³) Surface	$Q_p$ - $Q_r$ (L/s)  18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00  overflows to: $Q_p$ - $Q_r$ (L/s) 10.62 -6.82 -11.62 -15.20 -20.21	Volume 2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91 0.41 0.00 -0.91 -3.64  Balance
Area (Ha) C =  T <sub>c</sub> Variable (min)  7 9 10 11 13  Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  5 7	CBMH1  0.080  1.00  i 100yr  (mm/hour)  211.67  188.25  178.56  169.91  155.11  Overflow  2.36  i 100yr  (mm/hour)  242.70  211.67  199.20  188.25  169.91	Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone  Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s)  47.07 41.87 39.71 37.79 34.50  St  Required 14.19  Restricted Flow Q <sub>r</sub> (L/s)  100-Year Pone Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A (L/s) 101.21 88.27 83.07 78.50 70.85	/s)= ding Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00 20.00  corage (m³) Surface 0.00  /s)= ding Q <sub>r</sub> (L/s) 43.00 43.00 43.00 43.00 43.00 corage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  27.07  21.87  19.71  17.79  14.50  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s)  58.21  45.27  40.07  35.50  27.85	Volume 100yr (m³) 11.37 11.81 11.83 11.74 11.31  Balance 14.19  CB9  Volume 100yr (m³) 17.46 19.01 19.23 19.17 18.38	Area (Ha) C =  T <sub>c</sub> Variable (min)  1 3 4 5 7   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3 -1 0 1	CBMH1  0.080 0.90  i 5yr (mm/hour) 203.51 166.09 152.51 141.18 123.30  Overflow 0.00  CB9 0.160 0.45  i 5yr (mm/hour) 402.34 266.98 230.48 203.51 166.09	Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 40.73 33.24 30.53 28.26 24.68  Store  Required 2.53  Restricted Flow Q <sub>r</sub> (  5-Year Ponding  Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A (L/s) 80.53 53.44 46.13 40.73 33.24  Store  Stor	L/s)=  Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  rage (m³) Surface 0.00  43.00 43.00 43.00 43.00 43.00 43.00 43.00 43.00	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 20.73 13.24 10.53 8.26 4.68  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 37.53 10.44 3.13 -2.27 -9.76	Volume 5yr (m³) 1.24 2.38 2.53 2.48 1.97  Balance 2.53  CB9  Volume 5yr (m³) -6.76 -0.63 0.00 -0.14 -1.76	Area (Ha) C =  T <sub>c</sub> Variable (min)  -1  1  2  3  5   Drainage Area Area (Ha) C =  T <sub>c</sub> Variable (min)  -3  -1  0  1	CBMH1   0.080   0.90	Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 38.60 29.65 26.69 24.31 20.73  Sto  Required 0.80  Restricted Flow Q <sub>r</sub> (L  2-Year Pondi  Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A (L/s) 53.62 36.18 31.38 27.80 22.79	/s)= ng Q <sub>r</sub> (L/s) 20.00 20.00 20.00 20.00 20.00  prage (m³) Surface 0.00  /s)= ng Q <sub>r</sub> (L/s) 43.00 43.00 43.00 43.00 43.00 corage (m³)	20.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 18.60 9.65 6.69 4.31 0.73  Sub-surface 0.00  overflows to:  43.00  Q <sub>p</sub> -Q <sub>r</sub> (L/s) 10.62 -6.82 -11.62 -15.20 -20.21	Volume  2yr (m³) -1.12 0.58 0.80 0.78 0.22  Balance 0.80  CB9  Volume 2yr (m³) -1.91 0.41 0.00 -0.91 -3.64

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overflows to: CB18

overflows to: CB18

overflows to: CB18

Drainage Area	CB18	B				Drainage Area	CB18					Drainage Area	CB18				
Area (Ha)	0.160	0				Area (Ha)	0.160	)				Area (Ha)	0.160				
C =	0.25	Restricted Flow Q <sub>r</sub> (L	/s)=	15.00		C =	0.20	Restricted Flow Q <sub>r</sub> (l	_/s)=	15.00		C =	0.20	Restricted Flow Q <sub>r</sub> (L	_/s)=	15.00	
		100-Year Pon	ding	<u>-</u>				5-Year Ponding		<u>-</u>				2-Year Pondi	ng		
T <sub>c</sub> Variable	i <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p$ - $Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	$Q_r$	Q <sub>p</sub> -Q <sub>r</sub>	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
3	286.05	31.81	15.00	16.81	3.03	-2	319.47	28.42	15.00	13.42	-1.61	-3	285.77	25.42	15.00	10.42	-1.88
5	242.70	26.99	15.00	11.99	3.60	0	230.48	20.50	15.00	5.50	0.00	-1	192.83	17.15	15.00	2.15	-0.13
6	226.01	25.13	15.00	10.13	3.65	1	203.51	18.10	15.00	3.10	0.19	0	167.22	14.88	15.00	-0.12	0.00
7	211.67	23.54	15.00	8.54	3.59	2	182.69	16.25	15.00	1.25	0.15	1	148.14	13.18	15.00	-1.82	-0.11
9	188.25	20.93	15.00	5.93	3.20	4	152.51	13.57	15.00	-1.43	-0.34	3	121.46	10.81	15.00	-4.19	-0.76
		Si	t <b>orage</b> (m³)			_		Stor	rage (m <sup>3</sup> )					Sto	orage (m <sup>3</sup> )		
	Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance		Overflow	Required	Surface	Sub-surface	Balance
	42.19	45.84	13.76	46.33	0.00		0.00	0.19	13.76	46.33	0.00		0.00	0.00	13.76	46.33	0.00
Subsurface storage 450mm	calculation  subdrain @ 96m	15.30	$m^3$														

_		D ('' (   E  O (  / )	
Area (Ha)	0.300		
Drainage Area	RA		
			overflows to: offsit
Stoage	e within clear stone	31.03 m <sup>3</sup>	
25mm (	clear stone per S29		io
Vo	lume of clear stone	81.66 m <sup>3</sup>	
Vo	lume of S29 trench	96.96 m <sup>3</sup>	
depth of S29 trenc	h (below spill elev.)	1.01 m	
١	width of S29 trench	1.00 m	
Bottom of storage	medium ave. grade	98.00 m	
_			

Overflow

0.00

				overflows to:	offsite
Drainage Area	RA				
Area (Ha)	0.300				-
C =	0.90	Restricted Flow Q <sub>r</sub> (	L/s)=	27.00	
		5-Year Ponding			
au		Poak Flow			W

0.00

Drainage Area	RA				
Area (Ha)	0.300				
C =	0.90	Restricted Flow Q <sub>r</sub> (L	_/s)=	27.00	
		2-Year Pondi	ng		
T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>2yr</sub> A	Q,	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
8	85.46	64.14	27.00	37.14	17.83
10	76.81	57.65	27.00	30.65	18.39
11	73.17	54.92	27.00	27.92	18.43
12	69.89	52.46	27.00	25.46	18.33
14	64.23	48.21	27.00	21.21	17.82

$C = 1.00$ Restricted Flow $Q_r (L/s) = 2$				27.00		
		100-Year Pond	ing			
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p$ - $Q_r$	Volume 100yr	
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	
25	103.85	86.61	27.00	59.61	89.41	
26	101.18	84.38	27.00	57.38	89.52	
27	98.66	82.28	27.00	55.28	89.56	
28	96.27	80.29	27.00	53.29	89.53	
29	94.01	78.41	27.00	51.41	89.45	

89.56

90.00

Balance

0.00

	1			, ,	
T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	$Q_r$	Q <sub>p</sub> -Q <sub>r</sub>	Volume 5yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
13	90.63	68.03	27.00	41.03	32.00
14	86.93	65.25	27.00	38.25	32.13
15	83.56	62.72	27.00	35.72	32.15
16	80.46	60.39	27.00	33.39	32.06
17	77.61	58.25	27.00	31.25	31.88
		Stor	rage (m³)		
	Overflow	Required	Surface	Sub-surface	Balance

32.15

_	Storage (m <sup>3</sup> )									
•	Overflow	Required	Surface	Sub-surface	Balance					
	0.00	18.43	90.00	0.00	0.00					

overflows to: offsite

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Drainage Area	RB	1				Drainage Area	RB	1				Drainage Area	RB	1			
Area (Ha)	0.220				•	Area (Ha)	0.220					Area (Ha)	0.220				
C =	1.00	Restricted Flow Q <sub>r</sub> (		20.00		C =	0.90	Restricted Flow Q <sub>r</sub> (	-	20.00		C =	0.90	Restricted Flow Q <sub>r</sub> (I		20.00	
<b>T</b>		100-Year Por	nding		Volume	T		5-Year Ponding		1	Valuma	7		2-Year Pondi	ng	1	Volume
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow   Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 100yr	l l Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow $Q_p = 2.78 \times Ci_{2vr} A$	$Q_r$	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
24	106.68	65.24	20.00	45.24	65.15	11	99.19	54.60	20.00	34.60	22.84	8	85.46	47.04	20.00	27.04	12.98
26	101.18	61.88	20.00	41.88	65.34	13	90.63	49.89	20.00	29.89	23.31	10	76.81	42.28	20.00	22.28	13.37
27 28	98.66 96.27	60.34 58.88	20.00	40.34 38.88	<b>65.35</b> 65.32	14 15	86.93 83.56	47.85 45.99	20.00 20.00	27.85 25.99	<b>23.40</b> 23.39	11 12	73.17 69.89	40.27 38.47	20.00	20.27 18.47	<b>13.38</b> 13.30
30	91.87	56.19	20.00	36.19	65.14	17	77.61	42.72	20.00	22.72	23.17	14	64.23	35.36	20.00	15.36	12.90
		S	Storage (m³)					Sto	rage (m³)					Sto	orage (m³)		
	Overflow	Required	Surface	Sub-surface	Balance	-	Overflow	Required	Surface	Sub-surface	Balance	<del>-</del>	Overflow	Required	Surface	Sub-surface	Balance
	0.00	65.35	66.00	0.00	0.00		0.00	23.40	66.00	0.00	0.00		0.00	13.38	66.00	0.00	0.00
Drainage Area	RC	1				Drainage Area	RC	1				Drainage Area	RC	1			
Area (Ha)	0.050					Area (Ha)	0.050					Area (Ha)	0.050				
C =		Restricted Flow Q <sub>r</sub> (	L/s)=	8.00		C =		Restricted Flow $Q_r$ (	L/s)=	8.00		C =		Restricted Flow Q <sub>r</sub> (I	_/s)=	8.00	
		100-Year Por	nding					5-Year Ponding		-				2-Year Pondi	ng	-	
T <sub>c</sub> Variable	i <sub>100yr</sub>	Peak Flow   Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$\mathbf{Q}_r$	$Q_p - Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q <sub>r</sub>	$\mathbf{Q}_{p}$ - $\mathbf{Q}_{r}$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow $Q_p = 2.78xCi_{2yr}A$	$Q_r$	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	$(m^3)$	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	$(m^3)$	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
12	162.13	22.54	8.00	14.54	10.47	5	141.18	17.66	8.00	9.66	2.90	2	133.33	16.68	8.00	8.68	1.04
14 15	148.72 142.89	20.67 19.86	8.00 8.00	12.67 11.86	10.64 <b>10.68</b>	7 8	123.30 116.11	15.43 14.53	8.00 8.00	7.43 6.53	3.12 <b>3.13</b>	5	111.72 103.57	13.98 12.96	8.00 8.00	5.98 4.96	1.43 <b>1.49</b>
16	137.55	19.12	8.00	11.12	10.67	9	109.79	13.74	8.00	5.74	3.10	6	96.64	12.09	8.00	4.09	1.49
18	128.08	17.80	8.00	9.80	10.59	11	99.19	12.41	8.00	4.41	2.91	8	85.46	10.69	8.00	2.69	1.29
		S	Storage (m <sup>3</sup> )					Sto	rage (m³)					Sto	orage (m³)		
	Overflow	Required	Surface	Sub-surface	Balance	<del>-</del>	Overflow	Required	Surface	Sub-surface	Balance	-	Overflow	Required	Surface	Sub-surface	Balance
	0.00	10.68	13.50	1.00	0.00		0.00	3.13	13.50	0.00	0.00		0.00	1.49	13.50	0.00	0.00
Drainage Area	RD					Drainage Area	RD					Drainage Area	RD				
Area (Ha)	0.050	Restricted Flow Q <sub>r</sub> (	l /c)_	8.00	1	Area (Ha)	0.050	Restricted Flow Q <sub>r</sub> (	I /e\-	8.00		Area (Ha) C =	0.050	Restricted Flow Q <sub>r</sub> (I	/c)-	8.00	
C =	1.00	100-Year Por	-	8.00		C =	0.90	5-Year Ponding		8.00		1	0.90	2-Year Pondi	-	8.00	
T <sub>c</sub>	Ι .	Peak Flow	T		Volume	T <sub>c</sub>	Ι .	Peak Flow			Volume	T <sub>c</sub>		Peak Flow			Volume
Variable	<b>i</b> <sub>100yr</sub>	$Q_p = 2.78 \times Ci_{100 \text{yr}} A$	Q <sub>r</sub>	$Q_p - Q_r$	100yr	Variable	I <sub>5yr</sub>	$Q_p = 2.78xCi_{5yr}A$	Q <sub>r</sub>	$Q_p - Q_r$	5yr	Variable	I <sub>2yr</sub>	$Q_p = 2.78xCi_{2yr}A$	Q,	$Q_p - Q_r$	2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
12 14	162.13 148.72	22.54 20.67	8.00 8.00	14.54 12.67	10.47 10.64	5	141.18 123.30	17.66 15.43	8.00 8.00	9.66 7.43	2.90 3.12	2	133.33 111.72	16.68 13.98	8.00 8.00	8.68 5.98	1.04 1.43
15	142.89	19.86	8.00	11.86	10.68	8	116.11	14.53	8.00	6.53	3.12	5	103.57	12.96	8.00	4.96	1.49
16	137.55	19.12	8.00	11.12	10.67	9	109.79	13.74	8.00	5.74	3.10	6	96.64	12.09	8.00	4.09	1.47
18	128.08	17.80	8.00	9.80	10.59	11	99.19	12.41	8.00	4.41	2.91	8	85.46	10.69	8.00	2.69	1.29
	Overflow	Required S	Storage (m³) Surface	Sub-surface	Balance	_	Overflow	Sto Required	rage (m³) Surface	Sub-surface	Balance	-	Overflow	Sto Required	orage (m³) Surface	Sub-surface	Balance
	0.00	10.68	11.25	1.00	0.00		0.00	3.13	11.25	0.00	0.00		0.00	1.49	11.25	0.00	0.00
Drainage Area	EXTERNAL	1				Drainage Area	EXTERNAL	1				Drainage Area	EXTERNAL	1			
Area (Ha)	1.550				_	Area (Ha)	1.550					Area (Ha)	1.550				
C =	1.00	Restricted Flow Q <sub>r</sub> (	<u> </u>	291.58		C =	0.80	Restricted Flow Q <sub>r</sub> (	-	291.58		C =	0.80	Restricted Flow Q <sub>r</sub> (I		291.58	
_	T	100-Year Por	nding	T		_	T	5-Year Ponding		, , , , , , , , , , , , , , , , , , ,		_	T	2-Year Pondi	ng	1	
T <sub>c</sub> Variable	<b>i</b> <sub>100yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>100yr</sub> A	$Q_r$	$Q_p - Q_r$	Volume 100yr	T <sub>c</sub> Variable	i <sub>5yr</sub>	Peak Flow Q <sub>p</sub> =2.78xCi <sub>5yr</sub> A	Q,	$Q_p - Q_r$	Volume 5yr	T <sub>c</sub> Variable	i <sub>2yr</sub>	Peak Flow $Q_p = 2.78xCi_{2yr}A$	$Q_r$	$Q_p - Q_r$	Volume 2yr
(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m <sup>3</sup> )	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)	(min)	(mm/hour)	(L/s)	(L/s)	(L/s)	(m³)
9	188.25	811.19	291.58	519.61	280.59	2	182.69	629.76	291.58	338.18	40.58	0	167.22	576.45	291.58	284.87	0.00
11	169.91 162.13	732.13 698.63	291.58 291.58	440.55 407.05	290.76 <b>293.08</b>	4 5	152.51 141.18	525.73 486.67	291.58 291.58	234.15 195.09	56.19 <b>58.53</b>	3	133.33 121.46	459.62 418.71	291.58 291.58	168.04 127.13	20.16 <b>22.88</b>
13	155.11	668.36	291.58	376.78	293.89	6	131.57	453.54	291.58	161.96	58.31	4	111.72	385.13	291.58	93.55	22.45
15	142.89	615.73	291.58	324.15	291.74	8	116.11	400.26	291.58	108.68	52.17	6	96.64	333.13	291.58	41.55	14.96
		S	Storage (m <sup>3</sup> )					Sto	rage (m³)					Sto	orage (m³)		
	Overflow	Required		Sub-surface	Balance	<del>-</del>	Overflow			Sub-surface	Ralanco	_	Overflow	Required		Sub-surface	Balance

J:\119351\_4836BankSt\5.7 Calculations\5.7.1 Sewers & Grading\2nd Submission\CCS\_swm\_2019-10-08

Required

58.53

Surface Sub-surface Balance

0.00

0.00

270.00

Overflow

0.00

Required

22.88

Surface Sub-surface

0.00

270.00

Balance

0.00

Overflow

0.00

Overflow

0.00

Required

293.08

Surface

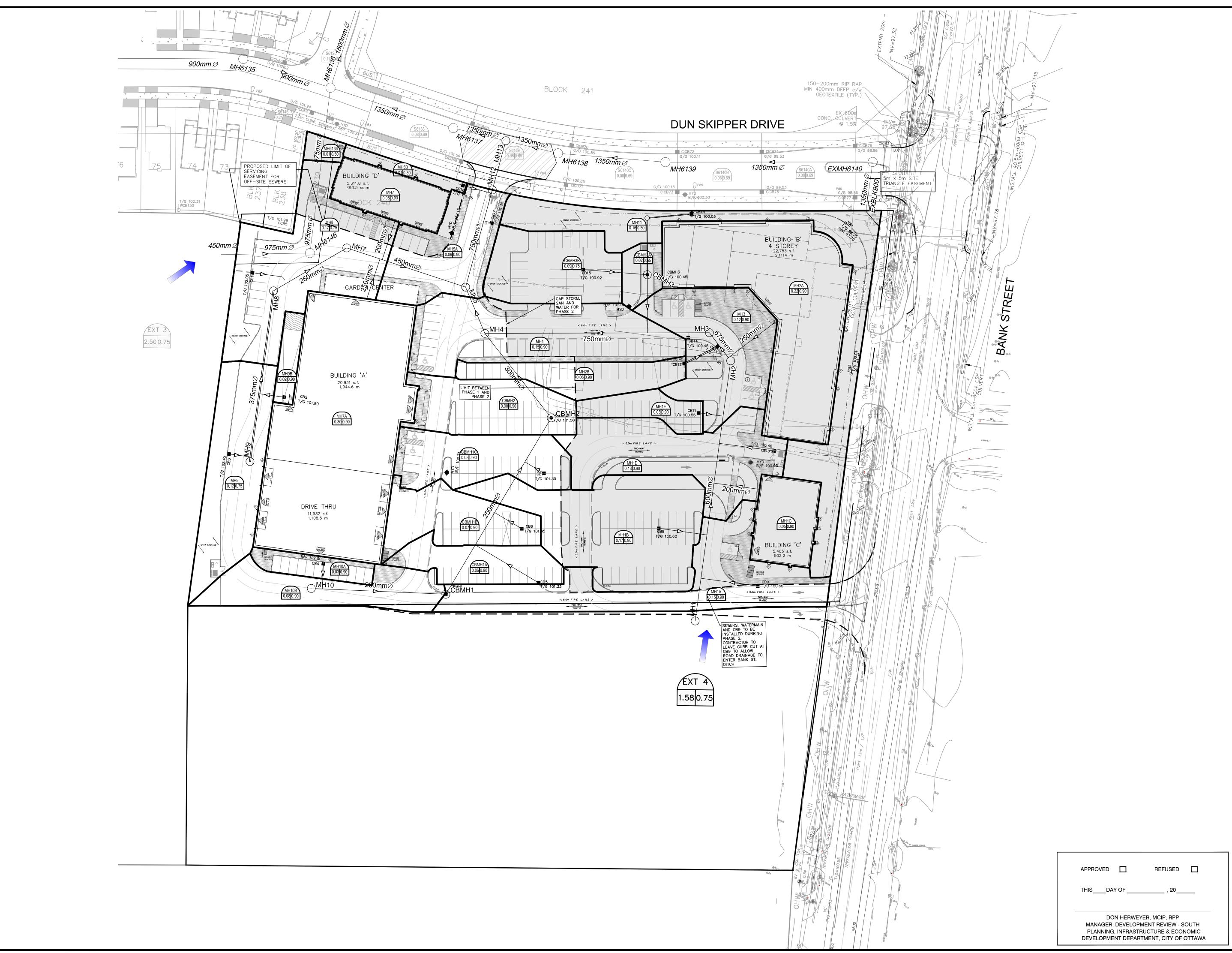
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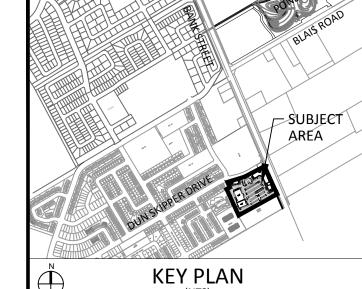
Sub-surface

0.00

Balance

23.08





NOTES:

1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND

2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.

LEGEND:

DRAINAGE AREA LIMITS

AREA ID

0.01 0.30 RUNOFF COEFFICIENT

RUNOFF COEFFICIEN

AREA IN HECTARES

EXISTING AREA ID

0.01|0.30

EXISTING RUNOFF COEFFICIENT

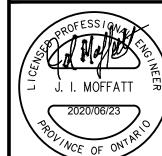
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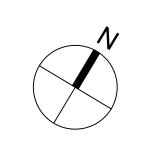
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	ADD PHASING	JIM	2020:06:23
1	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
	ISSUED FOR SPA	JIM	2019:04:15
0.	REVISIONS	Ву	Date

IBI GROUP 400 – 333 Preston Street Ottawa ON K1S 5N4 Canada tel 613 225 1311 fax 613 225 9868 ibigroup.com

Project Title

BANK STREET DEVELOPMENT 4836 BANK STREET



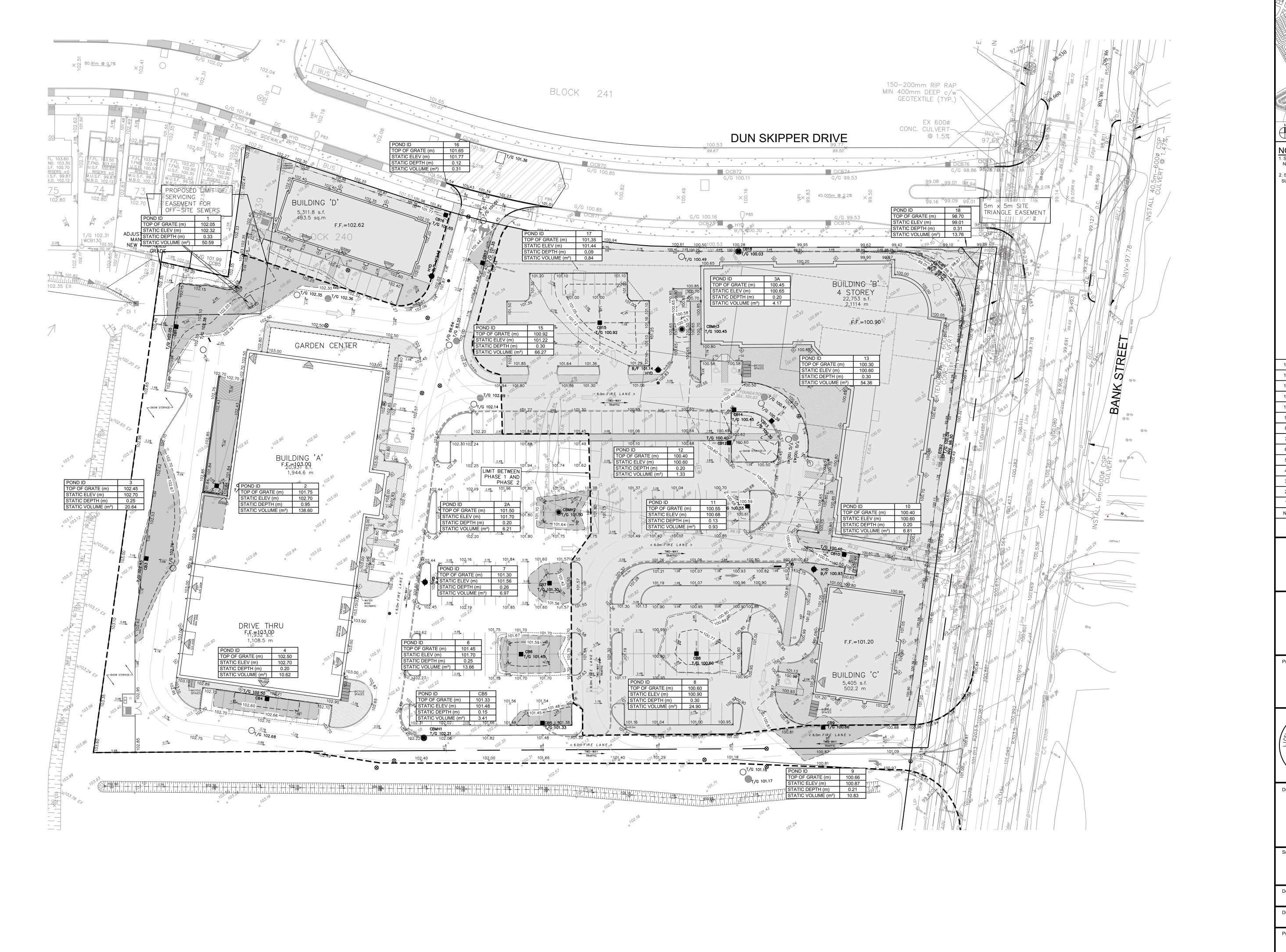


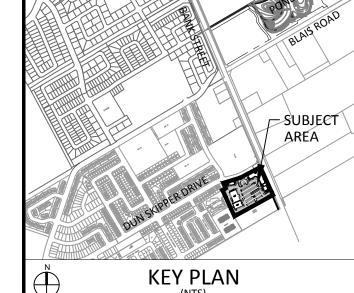
Drawing Titl

STORM DRAINAGE AREA PLAN

Scale 1 : 500

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	Design SEL	Date FEB. 2019
	Drawn DPS	Checked JIM
	Project No.	Drawing No.
	119351	500





. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND NOTES.

2. SITE BENCHMARK TO BE OBTAINED FROM LEGAL SURVEYOR H.A. KEN SHIPMAN SURVEYING LTD.

LEGEND:

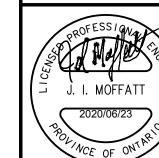
100 YEAR PONDING VOLUME 5 YEAR PONDING ELEVATION SPILL OVER ELEVATION MAJOR OVERLAND FLOW ROUTE

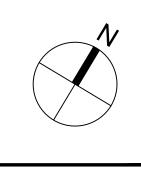
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13			
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8			
7			
6			
5			
4	ADD PHASING	JIM	2020:06:23
3	REVISED AS PER CITY COMMENTS	JIM	2020:04:20
2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15
No.	REVISIONS	Ву	Date

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Project Title

**BANK STREET DEVELOPMENT** 4836 BANK STREET





Drawing Title

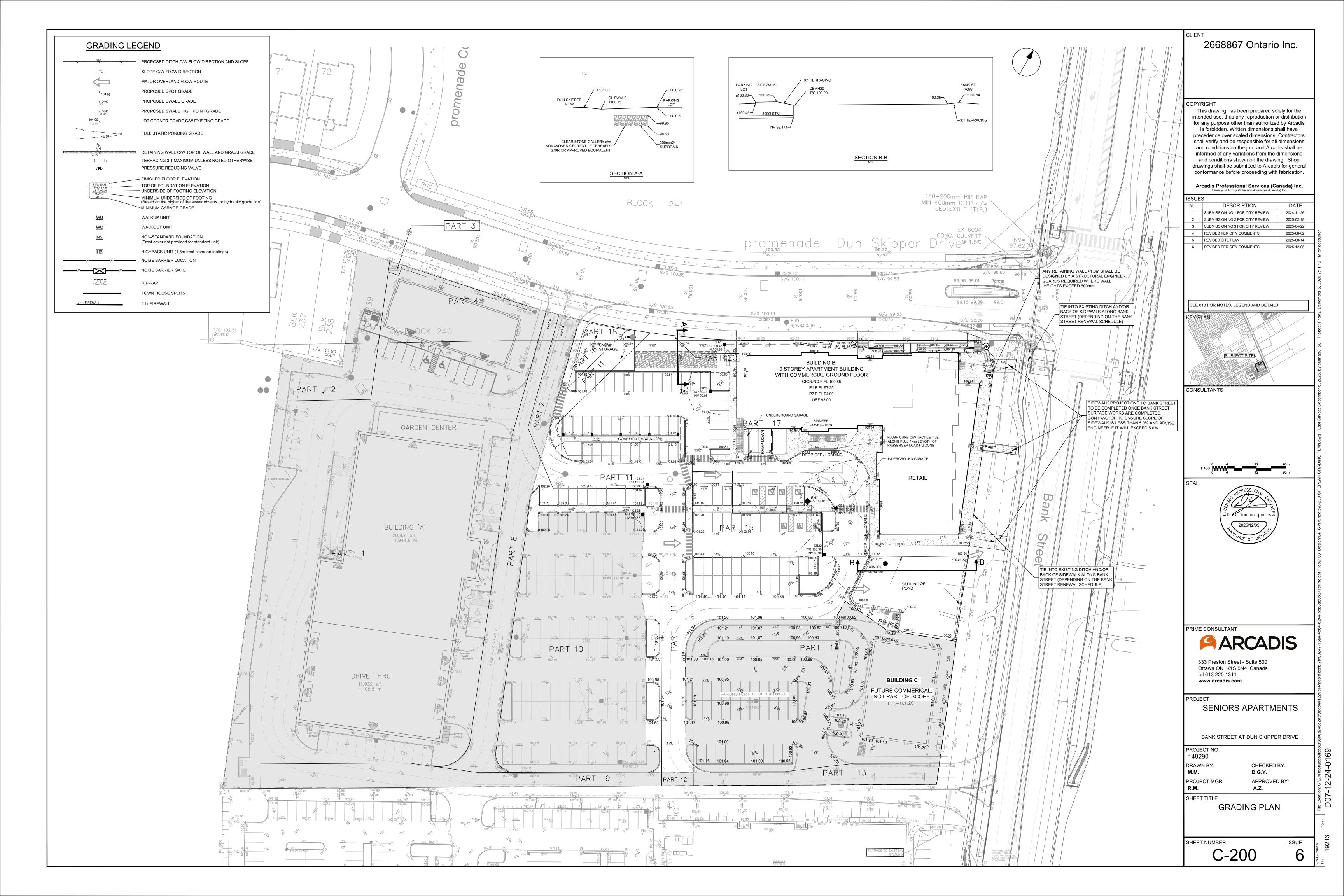
PONDING PLAN

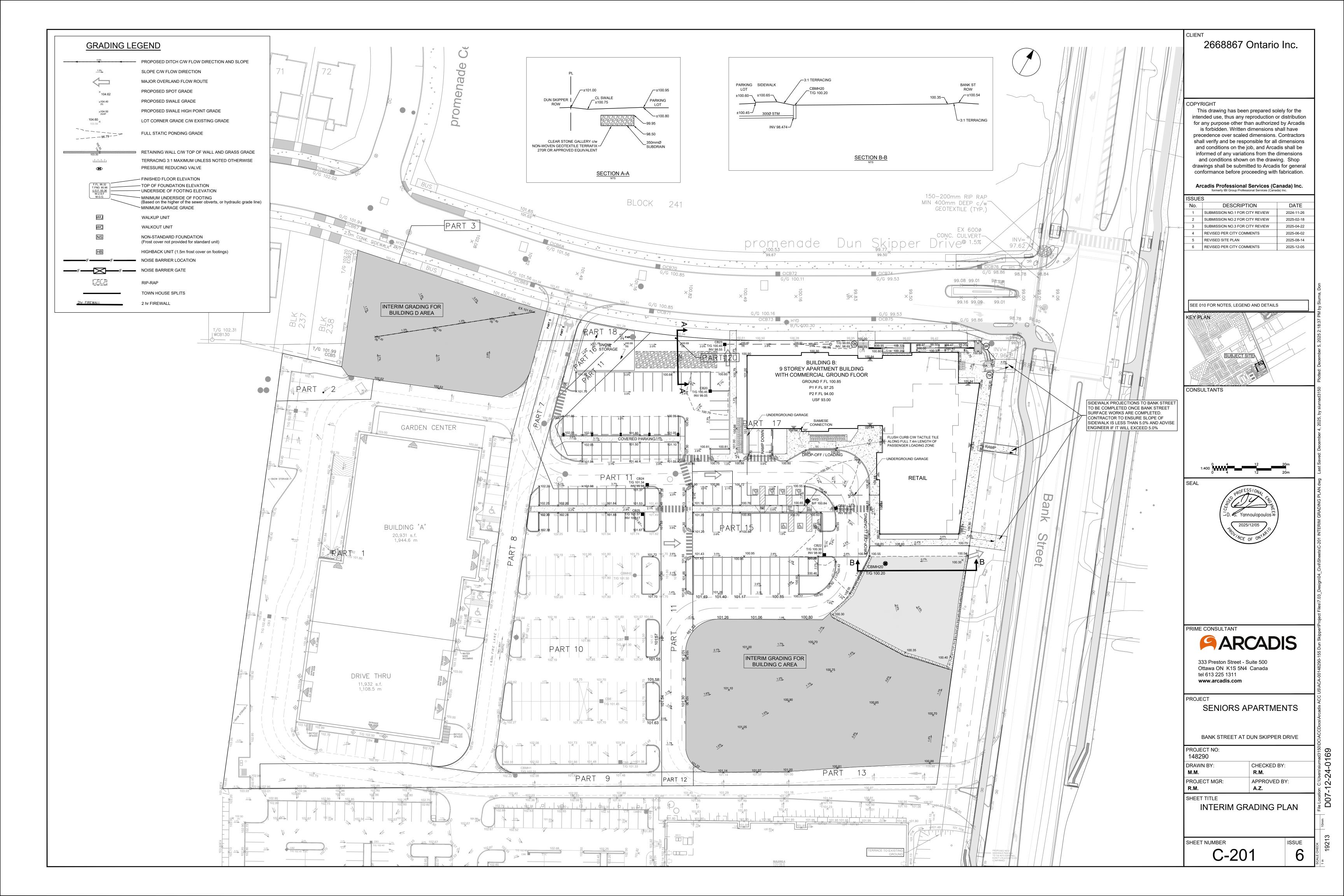
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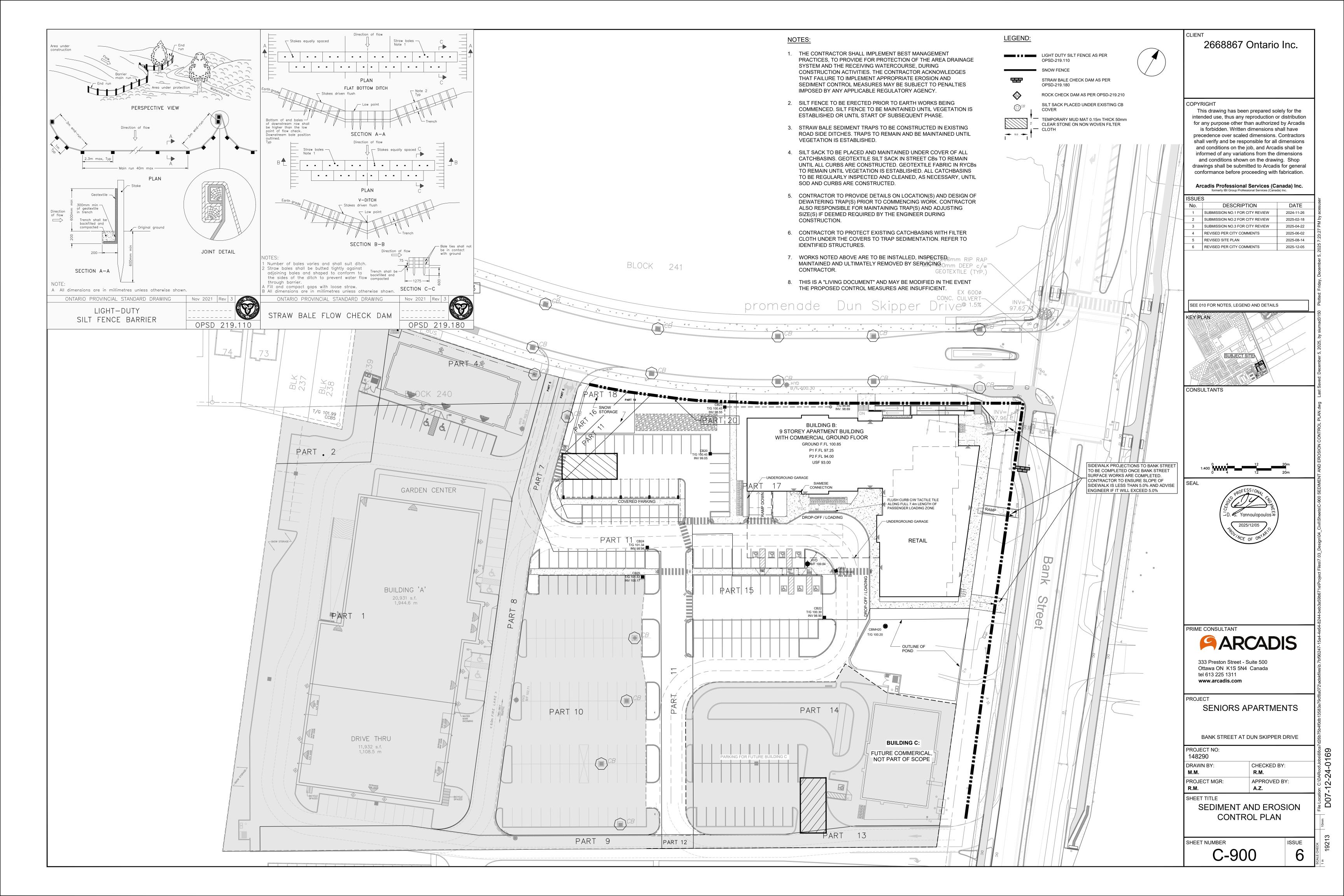
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Design SEL	Date FEB. 2019	600
Drawn DPS	Checked JIM	2-19-
Project No.	Drawing No.	<b> </b> ?
119351	600	07

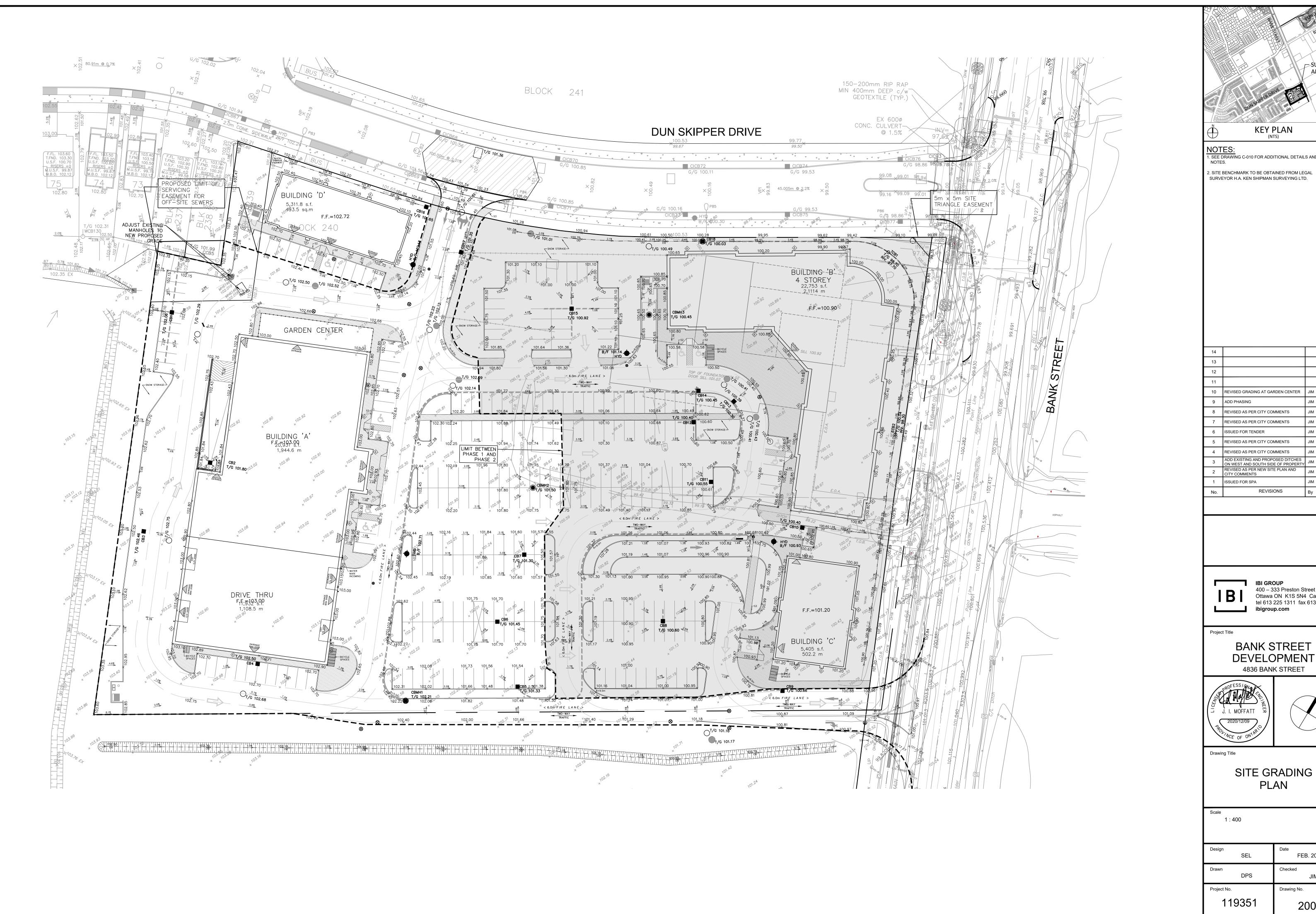
# **Appendix E**

- Grading Plan 148290-C-200
- Interim Grading Plan 148290-C-201
- Erosion and Sediment Control Plan 148290-C-900
- Grading Plan 119351-C-200









KEY PLAN

NOTES:

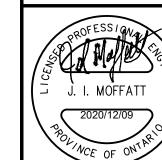
1. SEE DRAWING C-010 FOR ADDITIONAL DETAILS AND

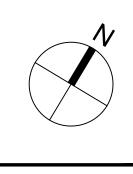
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13			
12			
11			
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6	ISSUED FOR TENDER	JIM	2020:03:13
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4	REVISED AS PER CITY COMMENTS	JIM	2019:12:09
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2	REVISED AS PER NEW SITE PLAN AND CITY COMMENTS	JIM	2019:10:11
1	ISSUED FOR SPA	JIM	2019:04:15
No.	REVISIONS	Ву	Date
			•

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Project Title

**BANK STREET DEVELOPMENT** 4836 BANK STREET





Drawing Title

SITE GRADING PLAN

1:400

Design	SEL	Date FEB. 2019	600
Drawn	DPS	Checked JIM	-19-
Project No.		Drawing No.	12
11	9351	200	707

Arcadis Professional Services (Canada) Inc. 333 Preston Street, Suite 500 Ottawa, Ontario K1S 5N4 Canada

Phone: 613 241 3300 www.arcadis.com