Appendix G
Conceptual Stormwater Disposal Design Report

Prepared by Cuttriss Consultants Ltd

Cuttriss
Surveyors. Engineers. Planners.

Conceptual Stormwater Disposal Design Report for Resource Consent Application

Lot 12 DP 90944, 160 Mazengarb Road, Paraparaumu

Ref: 23333

29 July 2024

Prepared for: Sussex Trust
160 Mazengarb Road, Paraparaumu

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Surveyors. Engineers. Planners.

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Ref: Hough / 23333 29 July 2024

CONCEPTUAL STORMWATER DISPOSAL DESIGN FOR PROPOSED RESIDENTIAL DEVELOPMENT AT LOT 12 DP 90944, 160 MAZENGARB ROAD, PARAPARAUMU

Following the engagement of our services for investigating and reporting on stormwater disposal for resource consent application at the above site, we have excavated one test pit, and a soakage test was carried out within the pit. The test has been undertaken to investigate the soakage characteristics of the underlying material. We detail our findings and conceptual design approach for stormwater disposal below.

1. PREAMBLE

This report has been prepared to provide a conceptual stormwater disposal design for the proposed development on this site including impervious areas associated with the dwelling roofs, driveways, paving, roading, and footpaths within the development.

The site is zoned general residential and is surrounded by residential properties. The site has one existing dwelling located towards the rear of the property. There are also multiple other outbuildings such as a shed, garage and barn. Towards the front of the property is an area that has been utilised as a paddock for grazing horses.

The proposed development proposes 41 standalone residential lots with the development site area encompassing 7,168m². The development proposal is shown on the plans included within Appendix A.

The report has been prepared to provide stormwater disposal options and to confirm hydraulic neutrality in accordance with the infrastructure policy on managing the effects on network utilities as detailed in Part 2 of the *Kapiti Coast District Council Operative District Plan – rule INF-MENU-P17 Hydraulic Neutrality - Stormwater*.

Our conceptual design intent for managing stormwater of the proposed development is as follows:

- The development proposes a centralised stormwater disposal system. A crate modular type system will allow soakage and accommodate storage for development runoff up to a 1% AEP event.

- Residential Development – runoff from the individual residential lot areas will be captured by direct connections to stormwater mains and street catchpits (via kerb adaptors) and will be conveyed via the piped stormwater network. An allowance has been made for pervious and impervious areas to be captured and conveyed to the centralised stormwater disposal system.

Note: Roof water runoff from lots 20 – 39 will connect to a shared stormwater line those feeds into the proposed onsite 20,000 litre water re-use tank. Overflow from this tank will enter the centralised stormwater disposal area via an overflow pipe. Location and levels of the overflow pipe will require careful consideration at detailed design stage.

- Residential Road Reserve – runoff captured by street catchpits will be directed by a piped network allowing for a 1% AEP. An allowance has been made for pervious and impervious areas to be captured and conveyed to the centralised stormwater disposal system.

Secondary overflow will be provided from the soakage modules via a connection to an existing stormwater pipe along the southern boundary. The Mannings formula was used to calculate the flow capacity of the existing 150mm connector pipe, with known levels taken from KCDC GIS. The 150mm pipe was confirmed as being able to convey the flow difference between the 1% AEP event and the 0.5% AEP event.

The basis of the design is NZBC E1 from the approved document prepared by the Ministry of Building, Innovation and Employment (MBIE). NZBC E1 details the rainfall intensity used in the design as being an event having a 1 hour duration and a 10% probability of occurring annually (1 in 10-year event). However, a 1% AEP event (1 in 100 year event) has been considered in this design in accordance with KCDC requirements.

A 10% AEP and 1% AEP 24hr duration nested storm event was used to calculate the runoff volume generated from each catchment using HEC-HMS. HEC-HMS has been used to model the required attenuation volume for a 1% AEP event. Storm intensities were derived from HIRDS V4.

2. DOCUMENTS

The following documents are referred to within this report:

- Development proposal (Appendix A)
- General and Site Testing Photos (Appendix B)
- Design Drawings (Appendix C)
- Calculations (Appendix D)
- Designgroup Stapleton Elliot - Architect (Appendix E)
- Torlesse Ltd – Geotechnical Engineer (Appendix F)
- KCDC Land Development Minimum Requirements 2022 (KCDC LDMR)
- New Zealand Building Code E1: Surface Water (NZBC E1)
- KCDC Operative District Plan 2021
- WWL Reference Guide for Design Storm Hydrology April 2019

Rainfall data for determining the anticipated stormwater rainfall intensity has been sourced from the NIWA High Intensity Rainfall Design System V4 (HIRDS V4) RCP6 to 2100 has been

factored in accordance with the WWL Reference Guide for Design Storm Hydrology April 2019 documentation.

3. LOCATION

The site is located off Mazengarb Road and is reasonably well defined by way of existing fence along all boundaries. Other residual dwellings are located on the adjoining boundaries. The site is located within proximity to Paraparaumu College (approximately 90m), Mazengarb Park (approximately 280m) and the Kapiti Expressway (approximately 1.1km).

The location of the subject site is fully detailed within the resource consent application documentation.

4. TOPOGRAPHY

The topography of the site consists gently undulating landforms that range from approximately RL 7.1 to RL 4.1.

The southeast and southwest (rear) boundaries of the property have timber retaining walls with fencing on top as the ground level is lower than the surrounding properties at these points. The northwest and northeast (front) boundaries are fenced with no retaining walls.

The topography is shown with existing contours within the scheme plans (23333 SCH sheet 1of 19).

The site conditions and general topography will be suitable for on-site stormwater disposal, with consideration being required at detailed design stage with respect to stormwater sump lead pipe grades (from road carriageway areas) and pipe cover leading to the soakage areas.

Soil conditions generally comprise of underlying sands. These conditions have been confirmed by way of excavated test pit during the testing process to confirm disposal options for stormwater generated from the development.

5. TESTING PROCEDURE

One test pit was excavated on site as part of the investigation carried out with the soakage test location shown on the appended plan. The test pit was excavated by Piling and Drilling Ltd on 8 July 2024. The locations of the test pits are included within Appendix B.

Test pit A measured 1.6 metres (wide) x 1.2 metres (long) at the top of the excavated pit, with the depth of excavation being 0.6 metres.

The water table was not encountered, during the excavation.

A vehicle with a mounted tank with 1,000 litres of water was used to discharge water to test pit A. Water was discharged to the excavated test pit by way of hose connected to a pump,

connected to the water tank. Soakage was also occurring while the test pit was filling up simultaneously.

At test location A after 38 minutes of water being discharged at a controlled low flow rate the pit was filled to 0.35 metres deep. The appended photos show the testing procedure.

The following information was recorded during the testing process

- Length of time to fill the test pit.
- The water level in the test pit while the water was being discharged into the test pit and the level once filling had stopped.

6. FACTOR OF SAFETY

Although not a requirement of the compliance document for the New Zealand Building Code (E1 Surface Water) it is recommended that the design soakage rates have an appropriate factor of safety applied to the raw soakage rates recorded.

A factor of safety of 4 is required by KCDC as being an acceptable factor of safety for soakpit designs in the Kapiti Coast district (refer KCDC Subdivision and Development Principals and Requirements 2012 document).

7. RESULTS

The results of the testing are summarised below and appended to this report in a table and graphical format. We note on 2 July there was 30.8mm of rainfall and 3 July 3.8mm of rainfall but after this there was no more rainfall preceding the testing on the site[1].

For test pit A -

- 1,000 litres of water was emptied into the test pit. The fill took 38 minutes at this time both soaking and filling were occurring.
- The water level in the test pit was recorded at 0.3 metres below existing ground level after 38 minutes of water being discharged into the test pit - i.e. 0.35 metres of water in test pit
- The average rate of fall of water in the test pit between the period 10:31hrs – 11:10hrs the raw soakage rate of 540mm/hr

The results are summarised in Table 1 below and appended to this report in a table format.

[1] Source – GWRC rainfall data (Waikanae River at Water Treatment Plant) for period 1st July to 8th July 2024

Table 1 Soakage test results

Test no.	Predominant soil	Location	Raw soakage (mm/hr)	Design soakage[2] (mm/hr)
A	sand	as shown on plans	540	135

The soakage rate indicates that typical low impact urban designs (e.g. soakpits or soak trenches) are suitable for this site.

8. GROUND WATER

Ground water was not encountered during site testing however the depth of the excavated pit for testing was only 0.6m.

At the time of testing Torlesse Ltd were onsite undertaking geotechnical investigation involving scala penetrometer, CPT and test pit excavations. Reference is made to their report dated 24 July 2024 (Appendix F) which details investigation records. Three test locations are referenced:

- Test pit 03 (TP03) was undertaken relative to the proposed location of the stormwater disposal system – at approximately 2.5m below ground level (RL5.0m) *moist to wet* ground conditions are noted.

- Test pit 05 (TP05) was undertaken at the lowest point of the site – at approximately 1.3m below ground level (RL4.4m) *moist* ground conditions are noted.

- Test pit 06 (TP06) was undertaken relative to the proposed location of the stormwater disposal system – at approximately 3.0m below ground level (RL4.5m) *wet* ground conditions are noted.

Torlesse conclude in their report that an estimate of the groundwater level is around RL2.0m, being 2.5m to 4.0m below ground level.

9. CONCEPTUAL DESIGN

The conceptual design intent is outlined in the Preamble, this being separate consideration of the following sub-catchments.

- dwelling roofs
- driveways
- paving

[2] Design soakage has a factor of safety of 4 applied for this particular site for the design for the Q100 event.

- roading
- footpaths

The highpoints of the development will be at the boundaries with the finished surface levels falling internally. All roading and runoff from other areas will also fall towards a centralised disposal area.

The proposed stormwater disposal system location is under the communal area next to the carparking. The proposed location is shown on the scheme plans Appendix C.

The following coefficients have been used in determining the likely runoff from this development – this has been referenced from NZBC E1 Table 1.

- Asphalt and concrete paved surfaces – 0.85
- Fully roofed and/or sealed developments – 0.90
- Lawn and berm area – 0.25

The assumed catchment delineation is outlined in Table 2 below:

Table 2 Catchment delineation

Catchment Surface	Catchment Area (m^2)	Runoff Coefficient
Roof	2448	0.9
Paving	1646	0.85
Footpath	311	0.85
Road	1114	0.85
Carpark	809	0.85
Refuse	25	0.85
Impermeable around building	511	0.85
Lawn	306	0.25

9.1 Nested Storm Event – Pre and post development run-offs

A 10% AEP and 1% AEP 24hr duration nested storm event was used to calculate the runoff volume generated from each catchment. Storm intensities were derived from HIRDS V4.

HEC-HMS has been used to model the required attenuation volume, based on the proposed design soakage rate for a 10% and 1% AEP event.

The runoff that flows into the stormwater disposal system is calculated by applying the design hydrograph in 5-minute time steps alongside the flow leaving the system due to site soakage and the resulting cumulative storage required.

The design soakage input to the HEC model (0.015m^3/s) is based on a soakage area of 400m^2 being provided with a soakage rate of 135mm/hr.

The results from the HEC model are summarised below:

- In a 10% AEP event, allowing for soakage over a 24-hour event of 0.015m³/s. A storage requirement volume of **193m³** is required.
- In a 1% AEP event, allowing for soakage over a 24-hour event of 0.015m³/s. A storage requirement volume of **375m³** is required.

Further calculations and HEC-HMS model run outputs are available in Appendix D.

9.2 Stormwater Disposal System (Primary)

The proposed stormwater disposal system has been designed to cater for a 1% AEP event while providing soakage out the base of the crate system, storage is also considered to cate for flows greater than the design soakage rate.

A conceptual stormwater disposal design considering the Cirtex RainSmart interlocking module system is summarised below.

Conceptual Soakage System Dimensions:

Cirtex Soakage module

Length – 26m (36 units long @ 0.715m)

Width – 18m (40 units wide @ 0.4m)

Height – 0.86m (2 units @ 0.44m)

The above dimensions allow for storage volume of **378m³** based on a Cirtex void ratio of 0.95.

Careful consideration will need to be given at detailed design stage in relation to kerb levels, sump locations and levels, and associated sump leads heading to storage cells.

An inspection must be carried out on the base of the excavation at the time of construction, to confirm underlying sand material, for both options above.

9.3 Secondary Overflow (Secondary)

This report assesses how overland flow paths will be provided within the development to meet local LDMR requirements. The post development levels have been designed in such a way that the development is less ‘intrusive’ on the neighbouring properties e.g. not building up the site and having new dwellings overlooking properties. This has meant the site falls into a centralised stormwater disposal area and secondary overflow out to Mazengarb Road is not achievable.

Further considerations are required to determine other options available for secondary overflow from site in the event the proposed primary stormwater disposal system fails or is inundated with an event greater than a 1% AEP.

In an event that exceeds a 1% AEP event consideration has been given to connecting to the existing KCDC stormwater pipe along the southern boundary of the development, which is located on neighbouring properties 6, 12, 14 and 16 Niu Sila Way. The 300mm uPVC stormwater line (KCDC asset ID KSWP011663) has 3 existing 150mm connector pipes through an existing retaining wall for the development site.

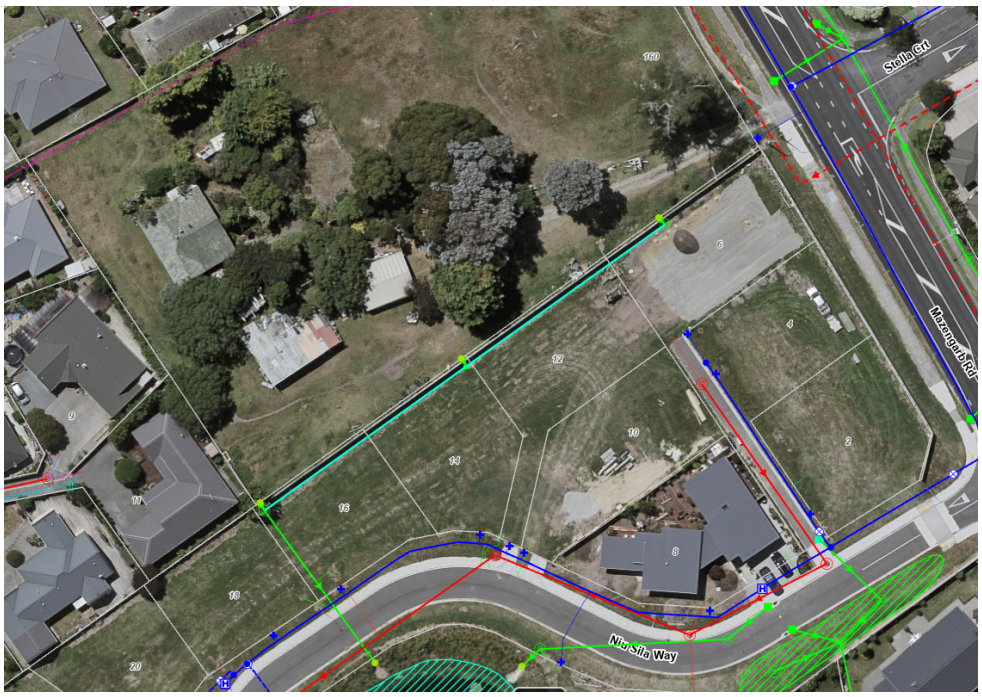

Figure 1 – KCDC GIS data base existing services – Stormwater line along southern boundary

A stormwater pipe will be installed from the proposed stormwater disposal system to the southern most existing 150mm connector pipe (KCDC ID: KWSN016274). The flow capacity of the existing pipe has been undertaken using the Manning's formula which determined the pipe could convey **0.049m³/s,** having a velocity of **2.76m/s** based on a known grade of 1 in 150**.**

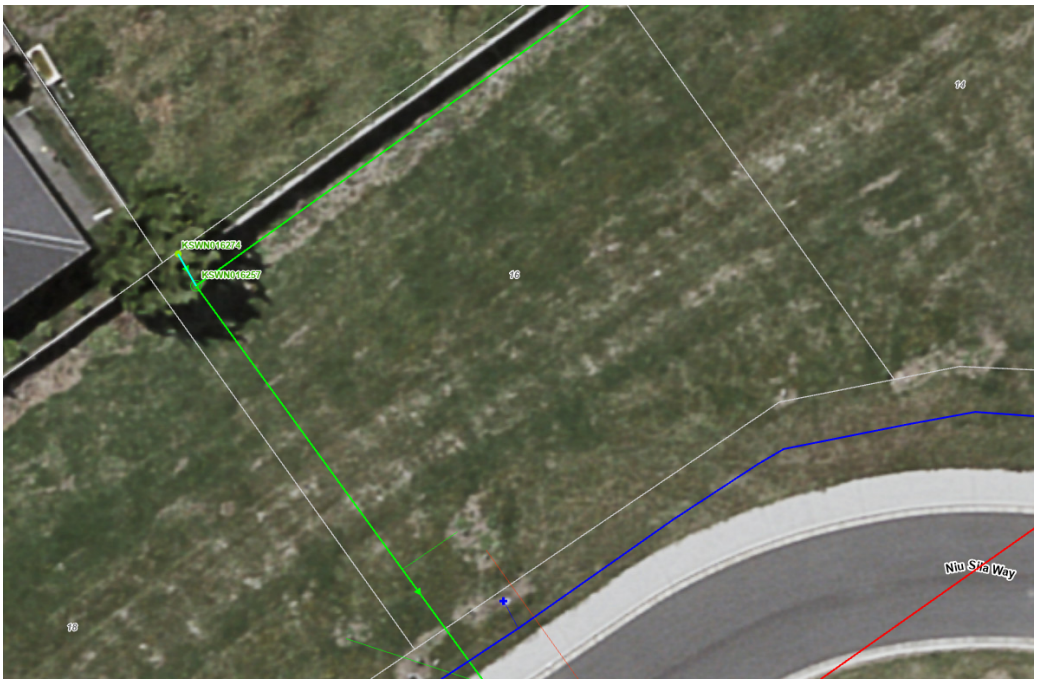

Figure 2 – KCDC GIS data base existing services – Connector Pipe (KSWWN016274)

As noted in the previous section 9.1 HEC-HMS has been used to model the required attenuation volume, based on the proposed design soakage rate for a 10% and 1% AEP event. The same HEC input file has been used to assess the attenuation volume difference between a 1% AEP event and a 0.5% AEP event. Further calculations and HEC-HMS model run outputs are available in Appendix D.

The calculation of the post-development attenuation volume difference for a 1% AEP and 0.5% AEP event can be considered as **96m³** having a peak discharge of **0.025m³/s** (1% AEP peak inflow less the 0.5% AEP peak inflow).

In summary the 150mm connector pipe could convey the difference of the 1% AEP event and 0.5% AEP in the event the site is subjected to a rain event greater than a 1% AEP event.

10. MAINTENANCE

As with any on site stormwater disposal system ongoing maintenance of the installed disposal system is the key to its effectiveness. Typically, our recommendations for the monitoring and maintenance of on-site stormwater disposal soakpits, which should be considered in the design, construction, and post-development phases, are as follows:

- *The soakage system needs to be checked weekly by the contractor during any subsequent construction works (after the soakage system is constructed), or after intense sediment deposit in the catchment area. On completion of all construction works the likelihood of sediment build-up will be reduced.*
- *Filter cloth should be applied over sumps to reduce the amount of sediment that could*

enter the soakage system during construction. Note: this must be removed following completion of construction.

- *The soakage chambers need to be checked by the asset owner every 3 months to monitor the amount of sediment build-up. If checks confirm sediment build-up is present then the system must be cleaned.*
- *The soakage chambers shall also be checked after intense rainfall events, and cleaned if sediment is discovered.*
- *Road sumps discharging to the soakage chamber need to be cleaned out by an appropriate sucker truck every 3 months. Sumps should also have appropriate filtering mechanisms installed.*
- *A detailed record should be kept by the asset owner detailing the dates of inspections undertaken, dates when sumps have been cleaned out and when sediment has been removed from the soakage systems.*
- *Refer to the manufacturer's requirements and maintenance procedures of the selected supplier.*

An operation and maintenance manual should be made available to the asset owner once the disposal systems have been constructed to enable them to plan routine maintenance for their asset. It is anticipated that an operation and maintenance manual will be required by a condition of consent.

11. FLOOD HAZARD ASSESSMENT – PONDING

The development site is subject to KCDC flood hazard overlay – Ponding. Information was sought from KCDC on the latest flood hazard detail as the current information available online (KCDC GIS) is outdated. Information was provided by KCDC to Cuttriss on the 02 May 2024 which identified isolated ponding across the site.

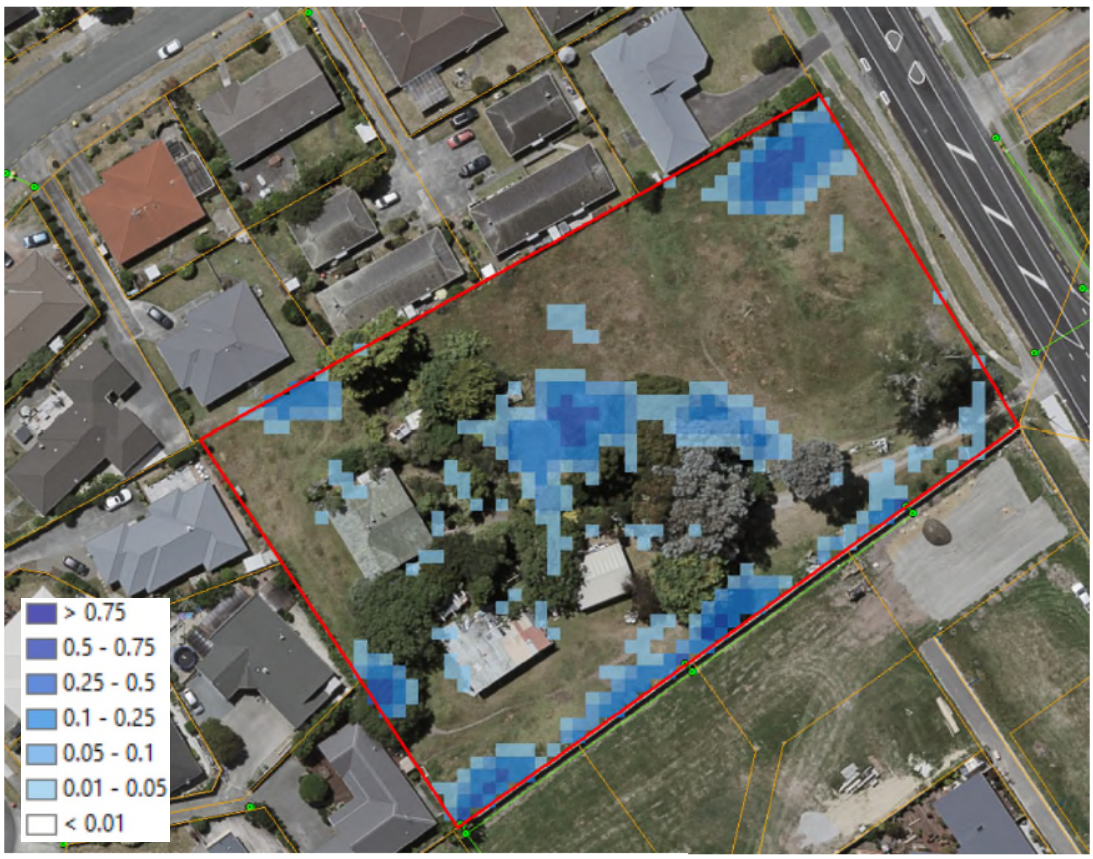

Figure 3 – KCDC Flood hazard – Ponding (02 May 2024)

Following a review of the flood information provided it can be concluded that the ponding occurring onsite is due to the site itself and not any external factors, with ponding shown in the low-lying areas of the site between 0.010 – 0.400m.

The proposed development levels will mitigate the risk of ponding based on the current identified hazard, which recommended that any building level (RBL) be 0.3 – 0.5m above top water levels to underside of floor or joist.

All stormwater created from the development of the site will be contained onsite as detailed in section 9? of this report.

12. CONCLUSION

This report has been prepared to demonstrate design options available for stormwater disposal from the proposed development. The results confirm that typical low impact urban designs (e.g. soakpits, soak trenches, or depression areas) would be suitable for this site. This is based on the observations of the materials present in the test pit excavated, and the volume of water disposed of into the excavated pit the site.

The primary stormwater disposal system incorporates a piped network capturing the 1% AEP event, which then discharges to a centralised stormwater disposal area designed to store up to a 1% AEP event while allowing soakage out the base.

Secondary overflow has been considered by proposing a connection to the existing 150mm connector pipe in the southern end of the site. Calculations were undertaken using the Manning's formula to confirm the flow capacity of the pipe which is able to take the difference between the 1% AEP event and 0.5% AEP event.

Careful consideration will need to be made to the finished road and right of way levels and sump locations at the detailed design stage to allow runoff into the piped network.

An inspection must be carried out on the base of the excavation at the time of construction, to confirm underlying sand material, for both options above.

This report also considers the effects of the ponding flood hazard layer identified by KCDC on site. The proposed development levels will mitigate the risk of ponding based on the current identified hazard will all stormwater created from the development maintained onsite.

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APPENDIX A

Development Proposal

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APPENDIX B

Photos of general site and soakage testing undertaken

Above: 8 July 2024 – Underlying sand material in test pit

Above: 8 July 2024 – Test pit during testing

Above: 8 July 2024 – Looking southeast with test pit shown

Above: 8 July 2024 – Looking south with test pit shown

Above: 8 July 2024 – Looking southwest with test pit shown

Above: 8 July 2024 – Looking southwest with test pit shown

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APPENDIX C

Design Drawings

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APPENDIX D

Calculations

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CLIENT Sussex Trust
JOB NO. 23333
DATE 8/07/2024
SHEET 1 OF 1 SHEETS

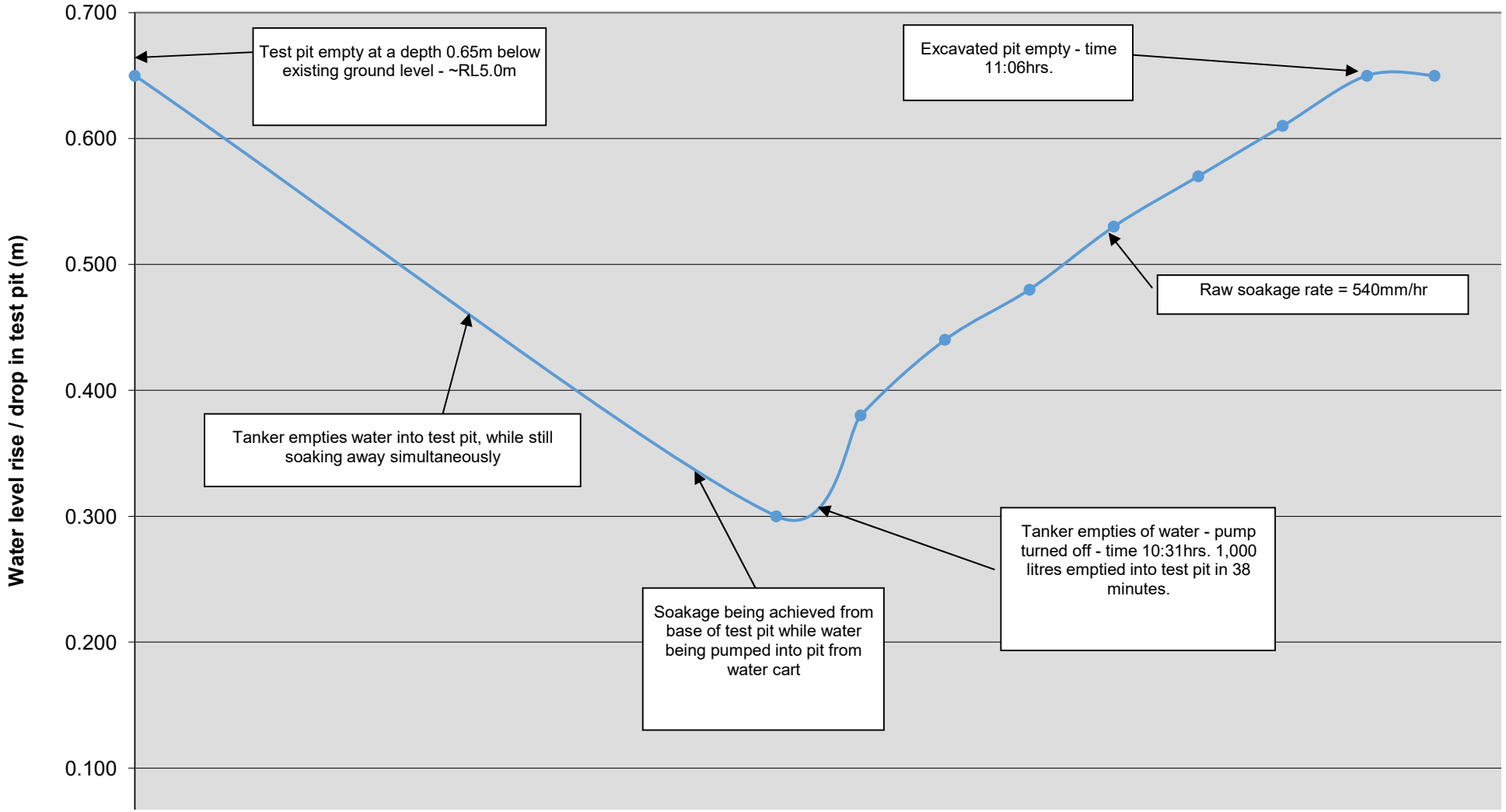
LEGAL DESCRIPTION Lot 12 DP 90944
SITE ADDRESS 160 Mazengarb Road, Paraparaumu
FIELDWORK JTR, CJB

LOCATION A
DEPTH OF EXCAVATED TEST PIT 0.65

BASE AREA OF PIT 1.6m (wide) x 1.2m (long)

Time	Time Difference	Cumulative Time	Water Level in Test Pit (below GL)	Cumulative Fall in Test Pit	Time	Time Difference	Cumulative Time	Water Level in Test Pit (below GL)	Cumulative Fall in Test Pit
(hh:mm:ss)	(min)	(hrs)	(m)	(m)	(hh:mm:ss)	(min)	(hrs)	(m)	(m)
9:53:00	0	0.00	0.650	Tanker starts @ 9:53hrs					
10:31:00	38	0.63	0.300	Tanker empties @ 10:31hrs					
10:36:00	5	0.72	0.380						
10:41:00	5	0.80	0.440						
10:46:00	5	0.88	0.480						
10:51:00	5	0.97	0.530						
10:56:00	5	1.05	0.570						
11:01:00	5	1.13	0.610						
11:06:00	5	1.22	0.650						
11:10:00	4	1.28	0.650	All drained					

Plot of water level (m) vs time (hrs) - Location A - 08 July 2024
(~5.0m = existing ground level)



Job No: 23333 Address: 160 Mazengarb Road, Paraparaumu Client: Sussex Trust

Job number:	23333
Project name:	160 Mazengarb Road, Paraparaumu
Client:	Sussex Trust Ltd
Completed by:	JTR

HIRDS V4 Intensity-Duration-Frequency Results
Sitename: Custom Location
Coordinate system: WGS84
Longitude: 175.0045
Latitude: -40.8906

DDF Mode Parameters:	c	d	e	f	g	h	i
Values:	-0.00538	0.44931	-0.00604	-0.00321	0.243096	-0.00915	2.787368
Example:	Duration (h	ARI (yrs)	x	y	Rainfall Rate (mm/hr)		
	24	100	3.178054	4.600149	5.580525		

Rainfall depths (mm) :: Historical Data

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	7.25	9.88	11.9	16.2	22.1	35	45.5	57.4	70.1	77.2	82	85.4
2	0.5	7.95	10.8	13	17.7	24.1	38.1	49.4	62.4	76	83.7	88.8	92.4
5	0.2	10.4	14.1	16.8	22.9	31	48.6	62.9	79	95.9	105	112	116
10	0.1	12.2	16.5	19.8	26.8	36.1	56.5	72.8	91.2	110	121	128	133
20	0.05	14.2	19.1	22.8	30.8	41.5	64.5	83	104	125	137	145	150
30	0.033	15.4	20.7	24.6	33.3	44.7	69.4	89.1	111	134	147	155	161
40	0.025	16.2	21.8	26	35.1	47	72.9	93.5	117	140	153	162	168
50	0.02	16.9	22.7	27.1	36.5	48.9	75.7	97	121	145	159	167	174
60	0.017	17.5	23.5	27.9	37.6	50.4	77.9	99.8	124	149	163	172	178
80	0.013	18.4	24.7	29.3	39.5	52.8	81.5	104	130	156	170	179	186
100	0.01	19.1	25.6	30.4	40.9	54.7	84.4	108	134	161	175	185	191
250	0.004	22.1	29.6	35.1	47	62.6	96	122	151	181	197	207	215

Rainfall depths (mm) :: RCP6.0 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	8.65	11.8	14.2	19.4	26.1	40.3	51.4	64	76.7	83.7	88.3	91.7
2	0.5	9.53	13	15.6	21.3	28.7	44.1	56.3	69.7	83.5	91.2	96.1	99.6
5	0.2	12.5	17	20.4	27.7	37.2	57	72.3	89.1	106	116	122	126
10	0.1	14.8	20.1	24	32.5	43.6	66.4	84.1	103	123	134	141	145
20	0.05	17.2	23.2	27.7	37.5	50.1	76.2	96.1	118	140	152	159	165
30	0.033	18.7	25.2	30	40.6	54.1	82.1	103	126	150	163	171	176
40	0.025	19.8	26.6	31.7	42.7	56.9	86.3	109	133	157	170	179	184
50	0.02	20.6	27.7	33	44.5	59.2	89.6	113	137	163	176	185	191
60	0.017	21.3	28.6	34.1	45.9	61.1	92.4	116	141	167	181	190	196
80	0.013	22.5	30.1	35.8	48.2	64.1	96.7	121	148	175	189	198	204
100	0.01	23.4	31.3	37.2	50	66.4	100	126	153	180	195	204	210
200	0.006	25.87	34.50	41.00	54.93	72.80	109.33	136.67	166.33	195.33	211.00	220.67	227.33
250	0.004	27.1	36.1	42.9	57.4	76	114	142	173	203	219	229	236

Interpolated

Rainfall depths (mm) :: RCP8.5 for the period 2081-2100

ARI	AEP	10m	20m	30m	1h	2h	6h	12h	24h	48h	72h	96h	120h
1.58	0.633	9.47	12.9	15.5	21.2	28.5	43.4	54.8	67.8	80.6	87.4	91.9	95.3
2	0.5	10.4	14.2	17.1	23.3	31.3	47.7	60.3	73.9	87.9	95.5	100	104
5	0.2	13.8	18.7	22.4	30.5	40.8	61.8	77.8	94.9	112	122	128	132
10	0.1	16.4	22.1	26.4	35.8	47.9	72.2	90.7	110	130	141	148	153
20	0.05	19	25.7	30.6	41.4	55.2	83	104	126	148	160	168	173
30	0.033	20.7	27.8	33.2	44.8	59.6	89.5	112	135	159	172	180	185
40	0.025	21.8	29.4	35	47.2	62.7	94.2	117	142	167	180	188	194
50	0.02	22.8	30.6	36.5	49.2	65.3	97.7	122	147	173	187	195	200
60	0.017	23.6	31.6	37.7	50.7	67.3	101	126	151	178	192	200	206
80	0.013	24.9	33.3	39.6	53.3	70.7	106	131	158	186	200	209	215
100	0.01	25.8	34.6	41.1	55.3	73.2	109	136	164	192	206	216	221
200	0.006	28.53	38.13	45.30	60.77	80.27	119.67	148.00	178.00	208.00	223.33	233.33	239.00
250	0.004	29.9	39.9	47.4	63.5	83.8	125	154	185	216	232	242	248

Interpolated

Historical + 20 % climate change

	10m	20m	30m	1h	2h	6h	12h	24h
10 yr	14.64	19.8	23.76	32.16	43.32	67.8	87.36	109.44
100 yr	22.92	30.72	36.48	49.08	65.64	101.28	129.6	160.8

Comparision with RCP Pathways

RCP6.0 - 10yr	14.8	20.1	24	32.5	43.6	66.4	84.1	103
RCP6.0 100yr	23.4	31.3	37.2	50	66.4	100	126	153
RCP6.0 100yr	25.86667	34.5	41	54.93333	72.8	109.3333	136.6667	166.3333
RCP8.5 10 yr	16.4	22.1	26.4	35.8	47.9	72.2	90.7	110
RCP8.5 100 yr	25.8	34.6	41.1	55.3	73.2	109	136	164
RCP8.5 100 yr	28.53333	38.13333	45.3	60.76667	80.26667	119.6667	148	178

	Pre Development				Post Development				
	Total	Impermeable	% impermeable	Curve Number	Total	Unattenuated	Attenuated	% Imp	Curve Number
Roof	375	Yes	100%		2448	0	2448	100%	
Road	0	No	0%		1114	0	1114	100%	
Carpark	0	No	0%		809	0	809	100%	
Footpath	0	No	0%		311	0	311	100%	
Paving	0	No	0%		1646	0	1646	100%	
Refuse	0	No	0%		25	0	25	100%	
Turf	0	No	0%		511	0	511	100%	
Lawn	6795	No	0%		306	0	306	0%	
Total	**7170**		5%	49	**7170**	**0**	**7170**	96%	49

Schedule 4 Appendix B: Curve Number Delineation Tables

(Sourced from USACE, 2000)

Table 2-2a – Runoff curve numbers for urban areas[4,5] (SCS, 1986)

Cover Description		Curve numbers for hydrologic soil group			
Cover type and hydrologic condition	Average percent impervious area[2]	A	B	C	D
Fully developed urban areas (vegetation established)					
Open space (lawns, parks, gold courses, cemeteries etc)[6]					
Poor condition (Grass cover <50%)		68	79	86	89
Fair condition (grass cover 50% to 75%)		49	69	79	84
Good condition (grass cover >75%)		39	61	74	80
Impervious areas:					
Paved parking lots, roofs, driveways, etc. (excluding right-of-way)		98	98	98	98
Streets and roads:					
Paved curbs and storm sewers (excluding right-of-way)		98	98	98	98
Paved open ditches (including right-of-way		83	89	92	93
Gravel (including right-of-way)		76	85	89	91
Dirt (including right-of-way		72	82	87	89
Western desert urban areas:					
Natural desert landscaping (pervious areas only)[7]		63	77	85	88
Artificial desert landscaping (impervious weed barrier, desert shrub with 1- to 2-inch sand or gravel mulch and basin borders)		96	96	96	96
Urban districts:					
Commercial and business	85	89	92	94	95
Industrial	72	81	88	91	93
Residential districts by average lot size:					
1/8 acre or less (town houses)	65	77	85	90	92
1/4 acre	38	61	75	83	87
1/3 acre	30	57	72	81	86
1/2 acre	25	54	70	80	85
1 acre	20	51	68	79	84
2 acres	12	46	65	77	82
Developing urban areas					

Calculation Sheet

Project/Job:	160 Mazengarb Road, Paraparaumu	Date:	25-Jul-24		
Subject/Task:	**HEC HMS Parameters**	Job No:	23333	By:	JTR
Client/Ref:	Sussex Trust Ltd	Sheet No:	1	of	5

Storm Durations	10 min	20 min	30 min	60 min	120 min	360 min	720 min
10% AEP	14.8	20.1	24	32.5	43.6	66.4	84.1
1% AEP	23.4	31.3	37.2	50	66.4	100	126

HIRDS v4 RCP6 to 2100 Driveway/Right of way 1

HEC HMS Parameters

Catchment	Pre Dev	Post Dev		
	Site	Attenuated	Unattenuated	Total
Area (km2)	0.00717	0.007170	0.000000	0.007170
Curve Number (weighted)	49	49	49	49
Area Imp (km2)	0.0003750	0.0068640	0.0000000	0.0068640
Area Per (km2)	0.0067950	0.0003060	0.0000000	0.0003060
% impervious	5.2	95.7	0.0	95.7
St (mm)	264.4			
0.1St*Ar	0.2			
Ia Impervious (0*Ai)	0.0000	0.0000	0.0000	
Ia Pervious (5 x Ap)	0.0340	0.0015	0.0000	
Weighted Ia	4.7	0.2	0.0	
ToC (mins)	60	10	10	
Lag (mins)	36	6	6	

$$S_t = \left(\frac{1000}{CN} - 10\right) 25.4$$

[Equation 3]

Table 2-1 Initial abstraction values

Landuse	Initial Abstraction
Undeveloped (i.e. rural, pasture, forestry)	0.1 S_t
Developed pervious	5 mm
Developed impervious	0 mm

$$Weighted\ I_a = \frac{0.1S_{tr}A_r + 0_iA_i + 5_pA_P}{Total\ area}$$

[Equation 4]

Where I_a is in mm;

Ar = Area of the rural portion of the catchment
Ai = Impervois portion of the developed catchment
Ap = Pervious portion of the developed catchment

Soakage System Parameters

Proposed development Soakage System

Product:	Cirtex Crate System		Number	
Length (L) =	25.74	m	36	(Cirtex Crate Length = 0.715m)
Width (W) =	18.00	m	45	(Cirtex Crate Width = 0.400m)
Height (H) =	0.86	m	2	(Cirtex system = Double crate)
Internal volume =	398.46	m3		
Max total storage =	378.53	m3		(Cirtex void ration = 0.95)

Storage vs Depth Function

Depth	Elevation		Cummulative Storage (m3)	Storage (1000m3)
0.0000		3.5000	0	0.000000
0.0000		3.9300	191.258496	0.191258
0.0000		4.3600	378.53244	0.378532

Calculation Sheet

Project/Job:	160 Mazengarb Road, Paraparaumu	Date:	25-Jul-24		
Subject/Task:	**HEC HMS Parameters**	Job No:	23333	By:	JTR
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10% AEP

Global Summary Results for Run "Run 10% AEP with CC Pre"

Project: Cuttriss Example Simulation Run: Run 10% AEP with CC Pre

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 1 - Pre Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 24Jul2024, 13:16:56 Control Specifications: Control 1

Show Elements: All Elements Volume Units: MM 1000 M3 Sorting: Hydrologic

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (1000 M3)
Pre Devp Site	0.0071700	0.02279	01Jan2000, 14:39	0.21468
Outlet	0.0071700	0.02279	01Jan2000, 14:39	0.21468

Global Summary Results for Run "Run 10% AEP with CC Post"

Project: Cuttriss Example Simulation Run: Run 10% AEP with CC Post

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 2 - Post Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 24Jul2024, 13:16:53 Control Specifications: Control 1

Show Elements: All Elements Volume Units: MM 1000 M3 Sorting: Hydrologic

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (1000 M3)
Post Devp Site	0.0071700	0.15152	01Jan2000, 14:07	0.71730
Soakage System	0.0071700	0.01500	01Jan2000, 13:07	0.52386

Summary Results for Reservoir "Soakage System"

Project: Cuttriss Example Simulation Run: Run 10% AEP with CC Post
Reservoir: Soakage System

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 2 - Post Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 24Jul2024, 13:16:53 Control Specifications: Control 1

Volume Units: MM 1000 M3

Computed Results

Peak Inflow: 0.15152 (M3/S) Date/Time of Peak Inflow: 01Jan2000, 14:07
Peak Discharge: 0.01500 (M3/S) Date/Time of Peak Discharge: 01Jan2000, 13:07
Inflow Volume: 0.71730 (1000 M3) Peak Storage: 0.19345 (1000 M3)
Discharge Volume: 0.52386 (1000 M3) Peak Elevation: 3.94817 (M)

Calculation Sheet

Project/Job:	160 Mazengarb Road, Paraparaumu	Date:	25-Jul-24		
Subject/Task:	**HEC HMS Parameters**	Job No:	23333	By:	JTR
Client/Ref:	Sussex Trust Ltd	Sheet No:	3	of	6

1% AEP

Global Summary Results for Run "Run 1% AEP with CC Pre"

Project: Cuttriss Example Simulation Run: Run 1% AEP with CC Pre

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 1 - Pre Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 24Jul2024, 13:08:17 Control Specifications: Control 1

Show Elements: All Elements Volume Units: MM 1000 M3 Sorting: Hydrologic

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (1000 M3)
Pre Devp Site	0.0071700	0.04569	01Jan2000, 14:39	0.41137
Outlet	0.0071700	0.04569	01Jan2000, 14:39	0.41137

Global Summary Results for Run "Run 1% AEP with CC Post"

Project: Cuttriss Example Simulation Run: Run 1% AEP with CC Post

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 2 - Post Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 24Jul2024, 13:08:10 Control Specifications: Control 1

Show Elements: All Elements Volume Units: MM 1000 M3 Sorting: Hydrologic

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (1000 M3)
Post Devp Site	0.0071700	0.23977	01Jan2000, 14:07	1.06890
Soakage System	0.0071700	0.01500	01Jan2000, 11:12	0.69333

Summary Results for Reservoir "Soakage System"

Project: Cuttriss Example Simulation Run: Run 1% AEP with CC Post
Reservoir: Soakage System

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 2 - Post Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 24Jul2024, 13:08:10 Control Specifications: Control 1

Volume Units: MM 1000 M3

Computed Results

Peak Inflow: 0.23977 (M3/S) Date/Time of Peak Inflow: 01Jan2000, 14:07
Peak Discharge: 0.01500 (M3/S) Date/Time of Peak Discharge: 01Jan2000, 11:12
Inflow Volume: 1.06890 (1000 M3) Peak Storage: 0.37557 (1000 M3)
Discharge Volume: 0.69333 (1000 M3) Peak Elevation: 4.35997 (M)

Calculation Sheet

Project/Job:	160 Mazengarb Road, Paraparaumu	Date:	25-Jul-24		
Subject/Task:	**HEC HMS Parameters**	Job No:	23333	By:	JTR
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0.5% AEP

Global Summary Results for Run "Run 0.5% AEP with CC Pre"

Project: Cuttriss Example Simulation Run: Run 0.5% AEP with CC Pre

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 1 - Pre Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 25Jul2024, 10:07:04 Control Specifications: Control 1

Show Elements: All Elements Volume Units: MM 1000 M3 Sorting: Hydrologic

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (1000 M3)
Pre Devp Site	0.0071700	0.05286	01Jan2000, 14:39	0.47122
Outlet	0.0071700	0.05286	01Jan2000, 14:39	0.47122

Global Summary Results for Run "Run 0.5% AEP with CC Post"

Project: Cuttriss Example Simulation Run: Run 0.5% AEP with CC Post

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 2 - Post Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 25Jul2024, 10:07:00 Control Specifications: Control 1

Show Elements: All Elements Volume Units: MM 1000 M3 Sorting: Hydrologic

Hydrologic Element	Drainage Area (KM2)	Peak Discharge (M3/S)	Time of Peak	Volume (1000 M3)
Post Devp Site	0.0071700	0.26514	01Jan2000, 14:07	1.16497
Soakage System	0.0071700	0.01500	01Jan2000, 11:10	0.72381

Summary Results for Reservoir "Soakage System"

Project: Cuttriss Example Simulation Run: Run 0.5% AEP with CC Post
Reservoir: Soakage System

Start of Run: 01Jan2000, 00:00 Basin Model: Basin 2 - Post Devp
End of Run: 02Jan2000, 00:00 Meteorologic Model: Hydrology 01
Compute Time: 25Jul2024, 10:07:00 Control Specifications: Control 1

Volume Units: MM 1000 M3

Computed Results

Peak Inflow: 0.26514 (M3/S) Date/Time of Peak Inflow: 01Jan2000, 14:07
Peak Discharge: 0.01500 (M3/S) Date/Time of Peak Discharge: 01Jan2000, 11:10
Inflow Volume: 1.16497 (1000 M3) Peak Storage: 0.44119 (1000 M3)
Discharge Volume: 0.72381 (1000 M3) Peak Elevation: 4.35504 (M)

Calculation Sheet

Project/Job:	160 Mazengarb Road, Paraparaumu	Date:	25-Jul-24		
Subject/Task:	**HEC HMS Parameters**	Job No:	23333	By:	JTR
Client/Ref:	Sussex Trust Ltd	Sheet No:	5	of	6

Storm Durations	10 min	20 min	30 min	60 min	120 min	360 min	720 min	1440 min	
10% AEP	14.8	20.1	24	32.5	43.6	66.4	84.1	103	HIRDS v4 RCP6 to 2100
1% AEP	23.4	31.3	37.2	50	66.4	100	126	153	HIRDS v4 RCP6 to 2101

Catchment Area	m2	% Impermeable	Effective Area
Pre Development	7170	0.05	375
Post Development	7170	0.96	6864

Nested Profile

Start Time	End Time		10% AEP Rainfall Depth	Pre Dev Volume 10%	Post Dev Volume 10%	1% AEP Rainfall Depth	Pre Dev Volume 1%	Post Dev Volume 10%
0:00	0:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:05	0:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:10	0:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:15	0:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:20	0:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:25	0:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:30	0:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:35	0:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:40	0:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:45	0:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:50	0:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
0:55	1:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:00	1:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:05	1:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:10	1:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:15	1:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:20	1:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:25	1:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:30	1:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:35	1:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:40	1:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:45	1:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:50	1:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
1:55	2:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:00	2:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:05	2:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:10	2:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:15	2:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:20	2:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:25	2:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:30	2:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:35	2:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:40	2:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:45	2:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:50	2:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
2:55	3:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:00	3:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:05	3:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:10	3:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:15	3:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:20	3:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:25	3:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:30	3:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:35	3:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:40	3:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:45	3:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:50	3:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
3:55	4:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:00	4:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:05	4:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:10	4:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:15	4:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:20	4:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:25	4:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:30	4:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:35	4:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:40	4:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:45	4:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:50	4:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
4:55	5:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:00	5:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:05	5:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:10	5:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:15	5:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:20	5:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:25	5:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:30	5:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:35	5:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:40	5:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:45	5:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:50	5:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
5:55	6:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
6:00	6:05	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:05	6:10	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:10	6:15	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:15	6:20	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:20	6:25	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:25	6:30	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:30	6:35	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:35	6:40	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:40	6:45	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:45	6:50	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:50	6:55	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
6:55	7:00	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50

7:00	7:05	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:05	7:10	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:10	7:15	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:15	7:20	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:20	7:25	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:25	7:30	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:30	7:35	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:35	7:40	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:40	7:45	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:45	7:50	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:50	7:55	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
7:55	8:00	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:00	8:05	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:05	8:10	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:10	8:15	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:15	8:20	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:20	8:25	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:25	8:30	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:30	8:35	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:35	8:40	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:40	8:45	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:45	8:50	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:50	8:55	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
8:55	9:00	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:00	9:05	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:05	9:10	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:10	9:15	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:15	9:20	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:20	9:25	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:25	9:30	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:30	9:35	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:35	9:40	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:40	9:45	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:45	9:50	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:50	9:55	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
9:55	10:00	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:00	10:05	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:05	10:10	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:10	10:15	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:15	10:20	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:20	10:25	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:25	10:30	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:30	10:35	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:35	10:40	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:40	10:45	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:45	10:50	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:50	10:55	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
10:55	11:00	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.36	0.14	2.50
11:00	11:05	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:05	11:10	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:10	11:15	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:15	11:20	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:20	11:25	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:25	11:30	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:30	11:35	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:35	11:40	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:40	11:45	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:45	11:50	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:50	11:55	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
11:55	12:00	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:00	12:05	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:05	12:10	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:10	12:15	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:15	12:20	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:20	12:25	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:25	12:30	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:30	12:35	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:35	12:40	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:40	12:45	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:45	12:50	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:50	12:55	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
12:55	13:00	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
13:00	13:05	0.083 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
13:05	13:10	0.083 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
13:10	13:15	0.083 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
13:15	13:20	0.083 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
13:20	13:25	0.083 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
13:25	13:30	0.083 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
13:30	13:35	0.167 of 60 minute minus 30 minute	1.4195	0.53	9.74	2.1376	0.80	14.67
13:35	13:40	0.167 of 60 minute minus 30 minute	1.4195	0.53	9.74	2.1376	0.80	14.67
13:40	13:45	0.167 of 60 minute minus 30 minute	1.4195	0.53	9.74	2.1376	0.80	14.67
13:45	13:50	0.5 of 30 min minus 20 min	1.95	0.73	13.38	2.95	1.11	20.25
13:50	13:55	0.5 of 20 minute minus 10 min	2.65	0.99	18.19	3.95	1.48	27.11
13:55	14:00	0.5 of 10 minute intensity	7.4	2.78	50.79	11.7	4.39	80.31
14:00	14:05	0.5 of 10 minute intensity	7.4	2.78	50.79	11.7	4.39	80.31
14:05	14:10	0.5 of 20 minute minus 10 min	2.65	0.99	18.19	3.95	1.48	27.11
14:10	14:15	0.5 of 30 min minus 20 min	1.95	0.73	13.38	2.95	1.11	20.25
14:15	14:20	0.167 of 60 minute minus 30 minute	1.4195	0.53	9.74	2.1376	0.80	14.67
14:20	14:25	0.167 of 60 minute minus 30 minute	1.4195	0.53	9.74	2.1376	0.80	14.67
14:25	14:30	0.167 of 60 minute minus 30 minute	1.4195	0.53	9.74	2.1376	0.80	14.67
14:30	14:35	0.83 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
14:35	14:40	0.83 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
14:40	14:45	0.83 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
14:45	14:50	0.83 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
14:50	14:55	0.83 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
14:55	15:00	0.83 of 2 hour minus 1 hour	0.9213	0.35	6.32	1.3612	0.51	9.34
15:00	15:05	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:05	15:10	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:10	15:15	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:15	15:20	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:20	15:25	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:25	15:30	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:30	15:35	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:35	15:40	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:40	15:45	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84

15:45	15:50	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:50	15:55	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
15:55	16:00	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:00	16:05	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:05	16:10	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:10	16:15	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:15	16:20	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:20	16:25	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:25	16:30	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:30	16:35	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:35	16:40	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:40	16:45	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:45	16:50	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:50	16:55	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
16:55	17:00	0.021 of 6 hour minus 2 hour	0.4788	0.18	3.29	0.7056	0.26	4.84
17:00	17:05	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:05	17:10	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:10	17:15	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:15	17:20	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:20	17:25	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:25	17:30	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:30	17:35	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:35	17:40	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:40	17:45	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:45	17:50	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:50	17:55	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
17:55	18:00	0.014 of 12 hr minus 6 hour	0.2478	0.09	1.70	0.364	0.14	2.50
18:00	18:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:05	18:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:10	18:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:15	18:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:20	18:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:25	18:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:30	18:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:35	18:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:40	18:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:45	18:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:50	18:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
18:55	19:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:00	19:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:05	19:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:10	19:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:15	19:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:20	19:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:25	19:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:30	19:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:35	19:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:40	19:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:45	19:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:50	19:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
19:55	20:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:00	20:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:05	20:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:10	20:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:15	20:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:20	20:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:25	20:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:30	20:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:35	20:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:40	20:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:45	20:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:50	20:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
20:55	21:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:00	21:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:05	21:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:10	21:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:15	21:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:20	21:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:25	21:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:30	21:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:35	21:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:40	21:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:45	21:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:50	21:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
21:55	22:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:00	22:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:05	22:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:10	22:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:15	22:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:20	22:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:25	22:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:30	22:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:35	22:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:40	22:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:45	22:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:50	22:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
22:55	23:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:00	23:05	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:05	23:10	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:10	23:15	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:15	23:20	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:20	23:25	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:25	23:30	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:30	23:35	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:35	23:40	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:40	23:45	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:45	23:50	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:50	23:55	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30
23:55	0:00	0.007 of 24 hr minus 12 hour	0.1323	0.05	0.91	0.19	0.07	1.30

Nested Storm :	38.79	710.07	m3	57.62	1054.67	m3
	10% AEP	671.27	m3	1% AEP	997.05	m3

Calculation Sheet

Project/Job:	160 Mazengarb Road, Paraparaumu	Date:	25-Jul-24		
Subject/Task:	**HEC HMS Parameters**	Job No:	23333	By:	JTR
Client/Ref:	Sussex Trust Ltd	Sheet No:	6	of	6

Storm Durations	10 min	20 min	30 min	60 min	120 min	360 min	720 min	1440 min	
1% AEP	23.4	31.3	37.2	50	66.4	100	126	153	HIRDS v4 RCP6 to 2100
0.5% AEP	25.86667	34.5	41	54.9333333	72.8	109.3333333	136.6666667	166.3333333	HIRDS v4 RCP6 to 2101

Catchment Area	m2	% Impermeable	Effective Area
Pre Development	7170	0.05	375
Post Development	7170	0.96	6864

Nested Profile			1% AEP Rainfall Depth	Pre Dev Volume 1%	Post Dev Volume 1%	0.5% AEP Rainfall Depth	Pre Dev Volume 0.5%	Post Dev Volume 0.5%
Start Time	End Time							
0:00	0:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:05	0:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:10	0:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:15	0:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:20	0:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:25	0:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:30	0:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:35	0:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:40	0:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:45	0:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:50	0:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
0:55	1:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:00	1:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:05	1:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:10	1:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:15	1:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:20	1:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:25	1:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:30	1:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:35	1:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:40	1:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:45	1:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:50	1:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
1:55	2:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:00	2:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:05	2:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:10	2:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:15	2:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:20	2:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:25	2:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:30	2:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:35	2:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:40	2:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:45	2:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:50	2:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
2:55	3:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:00	3:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:05	3:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:10	3:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:15	3:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:20	3:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:25	3:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:30	3:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:35	3:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:40	3:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:45	3:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:50	3:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
3:55	4:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:00	4:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:05	4:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:10	4:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:15	4:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:20	4:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:25	4:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:30	4:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:35	4:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:40	4:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:45	4:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:50	4:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
4:55	5:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:00	5:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:05	5:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:10	5:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:15	5:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:20	5:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:25	5:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:30	5:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:35	5:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:40	5:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:45	5:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:50	5:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
5:55	6:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
6:00	6:05	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:05	6:10	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:10	6:15	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:15	6:20	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:20	6:25	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:25	6:30	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:30	6:35	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:35	6:40	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:40	6:45	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:45	6:50	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:50	6:55	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
6:55	7:00	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63

7:00	7:05	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:05	7:10	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:10	7:15	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:15	7:20	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:20	7:25	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:25	7:30	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:30	7:35	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:35	7:40	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:40	7:45	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:45	7:50	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:50	7:55	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
7:55	8:00	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:00	8:05	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:05	8:10	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:10	8:15	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:15	8:20	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:20	8:25	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:25	8:30	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:30	8:35	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:35	8:40	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:40	8:45	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:45	8:50	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:50	8:55	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
8:55	9:00	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:00	9:05	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:05	9:10	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:10	9:15	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:15	9:20	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:20	9:25	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:25	9:30	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:30	9:35	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:35	9:40	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:40	9:45	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:45	9:50	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:50	9:55	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
9:55	10:00	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:00	10:05	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:05	10:10	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:10	10:15	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:15	10:20	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:20	10:25	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:25	10:30	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:30	10:35	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:35	10:40	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:40	10:45	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:45	10:50	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:50	10:55	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
10:55	11:00	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.38	0.14	2.63
11:00	11:05	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:05	11:10	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:10	11:15	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:15	11:20	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:20	11:25	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:25	11:30	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:30	11:35	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:35	11:40	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:40	11:45	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:45	11:50	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:50	11:55	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
11:55	12:00	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:00	12:05	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:05	12:10	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:10	12:15	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:15	12:20	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:20	12:25	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:25	12:30	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:30	12:35	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:35	12:40	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:40	12:45	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:45	12:50	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:50	12:55	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
12:55	13:00	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
13:00	13:05	0.083 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
13:05	13:10	0.083 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
13:10	13:15	0.083 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
13:15	13:20	0.083 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
13:20	13:25	0.083 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
13:25	13:30	0.083 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
13:30	13:35	0.167 of 60 minute minus 30 minute	2.1376	0.80	14.67	2.326866667	0.87	15.97
13:35	13:40	0.167 of 60 minute minus 30 minute	2.1376	0.80	14.67	2.326866667	0.87	15.97
13:40	13:45	0.167 of 60 minute minus 30 minute	2.1376	0.80	14.67	2.326866667	0.87	15.97
13:45	13:50	0.5 of 30 min minus 20 min	2.95	1.11	20.25	3.25	1.22	22.31
13:50	13:55	0.5 of 20 minute minus 10 min	3.95	1.48	27.11	4.316666667	1.62	29.63
13:55	14:00	0.5 of 10 minute intensity	11.7	4.39	80.31	12.93333333	4.85	88.77
14:00	14:05	0.5 of 10 minute intensity	11.7	4.39	80.31	12.93333333	4.85	88.77
14:05	14:10	0.5 of 20 minute minus 10 min	3.95	1.48	27.11	4.316666667	1.62	29.63
14:10	14:15	0.5 of 30 min minus 20 min	2.95	1.11	20.25	3.25	1.22	22.31
14:15	14:20	0.167 of 60 minute minus 30 minute	2.1376	0.80	14.67	2.326866667	0.87	15.97
14:20	14:25	0.167 of 60 minute minus 30 minute	2.1376	0.80	14.67	2.326866667	0.87	15.97
14:25	14:30	0.167 of 60 minute minus 30 minute	2.1376	0.80	14.67	2.326866667	0.87	15.97
14:30	14:35	0.83 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
14:35	14:40	0.83 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
14:40	14:45	0.83 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
14:45	14:50	0.83 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
14:50	14:55	0.83 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
14:55	15:00	0.83 of 2 hour minus 1 hour	1.3612	0.51	9.34	1.482933333	0.56	10.18
15:00	15:05	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:05	15:10	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:10	15:15	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:15	15:20	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:20	15:25	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:25	15:30	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:30	15:35	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:35	15:40	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:40	15:45	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27

15:45	15:50	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:50	15:55	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
15:55	16:00	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:00	16:05	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:05	16:10	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:10	16:15	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:15	16:20	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:20	16:25	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:25	16:30	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:30	16:35	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:35	16:40	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:40	16:45	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:45	16:50	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:50	16:55	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
16:55	17:00	0.021 of 6 hour minus 2 hour	0.7056	0.26	4.84	0.7672	0.29	5.27
17:00	17:05	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:05	17:10	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:10	17:15	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:15	17:20	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:20	17:25	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:25	17:30	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:30	17:35	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:35	17:40	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:40	17:45	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:45	17:50	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:50	17:55	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
17:55	18:00	0.014 of 12 hr minus 6 hour	0.364	0.14	2.50	0.382666667	0.14	2.63
18:00	18:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:05	18:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:10	18:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:15	18:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:20	18:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:25	18:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:30	18:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:35	18:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:40	18:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:45	18:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:50	18:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
18:55	19:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:00	19:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:05	19:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:10	19:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:15	19:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:20	19:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:25	19:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:30	19:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:35	19:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:40	19:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:45	19:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:50	19:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
19:55	20:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:00	20:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:05	20:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:10	20:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:15	20:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:20	20:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:25	20:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:30	20:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:35	20:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:40	20:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:45	20:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:50	20:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
20:55	21:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:00	21:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:05	21:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:10	21:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:15	21:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:20	21:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:25	21:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:30	21:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:35	21:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:40	21:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:45	21:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:50	21:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
21:55	22:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:00	22:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:05	22:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:10	22:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:15	22:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:20	22:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:25	22:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:30	22:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:35	22:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:40	22:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:45	22:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:50	22:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
22:55	23:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:00	23:05	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:05	23:10	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:10	23:15	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:15	23:20	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:20	23:25	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:25	23:30	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:30	23:35	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:35	23:40	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:40	23:45	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:45	23:50	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:50	23:55	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
23:55	0:00	0.007 of 24 hr minus 12 hour	0.189	0.07	1.30	0.21	0.08	1.43
			Nested Storm :	57.62	1054.67 m3		62.64	1146.55 m3
				1% AEP	997.05 m3		0.5% AEP	1083.91 m3

Cuttriss
Surveyors. Engineers. Planners.

APPENDIX E

Designgroup Stapleton Elliot

DESIGNGROUP
STAPLETON ELLIOTT

designgroupstapletonelliott.co.nz

THAMES PACIFIC

160 MAZENGARB ROAD, PARAPARAUMU
RESOURCE CONSENT

ARCHITECTURAL DRAWINGS

24 JULY 2024

designgroup
stapleton elliott

SITE INFORMATION

Address: 160 Mazengarb Road, Paraparaumu

Legal Description: LOT 12 DP 90944

District Plan Zone: General Residential Zone

Site Area: 7168.6m2

RC02 REV.B

CONTEXT PLAN

THAMES PACIFIC

160 Mazengarb Road, Paraparaumu,
WELLINGTON, 5032

RESOURCE CONSENT

Contractors shall verify all dimensions on site before commencing work. Do not scale from the drawings. If in doubt ask. Copyright of this drawing is vested in Designgroup Stapleton Elliott.

PROJECT No. **PROJECT NUMBER**

PLOT DATE. **24/07/2024 10:49:50 AM**

NO.	DESCRIPTION	DATE
B	RC Drawings 02	2024/07/24
A	RC Drawings	2024/07/22
8	Draft RC drawings 02	2024/07/18
4	Draft RC drawings	2024/07/04

Site Information

Rainfall Intensity: 60 mm/h

Climate Zone: 3

Corrosion Zone: Zone C

Legal Description: Lot 12 DP 90944

Wind Zone: High

NZBC E2 Compliance: Compliance with NZBC E2 is by means of NZBC E2 AS1. Refer Risk Matrix provided.

N

0 5 10 20 30 50 mm

A3 Print Scale 1 : 1
A1 Print Scale 1 : 0.5

Wellington +64 4 920 0032 wn@dgse.co.nz
Palmerston North +64 6 357 4534 pn@dgse.co.nz
Tauranga +64 7 925 6238 tr@dgse.co.nz
Napier +64 6 835 6173 np@dgse.co.nz
Auckland +64 9 976 8288 ak@dgse.co.nz

designgroup
stapleton elliott

MASTERPLAN

SITE INFORMATION

Address: 160 Mazengarb Road, Paraparaumu

Legal Description: LOT 12 DP 90944

District Plan Zone: General Residential Zone

Site Area: 7168.6m2

UNITS

Unit A (1Bed) or Unit B1 (2Bed) or Unit D (1Bed Acc) or Unit F (1Bed)	17
Unit C (3Bed)	5
Unit E1 (1Bed) or E2 (2Bed)	13
Unit B2 (2Bed)	6
TOTAL	**41**

CARPARKS

UNIT ADJACENT CARPARK	29
SITE CARPARK (ALLOCATED)	12
ACCESSIBLE / GUEST	2
TOTAL	**43**

RC04 REV.B

MASTERPLAN

THAMES PACIFIC

160 Mazengarb Road, Paraparaumu,
WELLINGTON, 5032

RESOURCE CONSENT

Contractors shall verify all dimensions on site before commencing work. Do not scale from the drawings. If in doubt ask. Copyright of this drawing is vested in Designgroup Stapleton Elliott.

PROJECT No. **PROJECT NUMBER**

PLOT DATE. **24/07/2024 10:49:59 AM**

NO.	DESCRIPTION	DATE
B	RC Drawings 02	2024/07/24
A	RC Drawings	2024/07/22
8	Draft RC drawings 02	2024/07/18
6	Unit C Placement	2024/07/17
5	HIRTB Sections	2024/07/15
4	Draft RC drawings	2024/07/04
2	Traffic Review	2024/06/25
1	HIRTB Sections	2024/06/24

Site Information

Rainfall Intensity: 60 mm/h

Climate Zone: 3

Corrosion Zone: Zone C

Legal Description: Lot 12 DP 90944

Wind Zone: High

NZBC E2 Compliance: Compliance with NZBC E2 is by means of NZBC E2 AS1. Refer Risk Matrix provided.

0 5 10 20 30 50 mm

A3 Print Scale 1 : 1
A1 Print Scale 1 : 0.5

Wellington	+64 4 920 0032	wn@dgse.co.nz
Palmerston North	+64 6 357 4534	pn@dgse.co.nz
Tauranga	+64 7 925 6238	tr@dgse.co.nz
Napier	+64 6 835 6173	np@dgse.co.nz
Auckland	+64 9 976 8288	ak@dgse.co.nz

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Surveyors. Engineers. Planners.

APPENDIX F

Torlesse Ltd

Client:
Sussex Trust

Project Name:
Geotechnical Assessment Report

Site Location:
160 Mazengarb Road, Paraparaumu

Sketch Title:
Test Location Plan

Project/Report No:
T0399/02

Sketch ID:
1 of 2

Author:	Initials:
L Heaton	LH
Checked By:	**Initials:**
N Clendon	NC

Rev.	Date	Description	Initials
A	17/07/24	Final	LH

Notes:

0 10 20 m

Scale 1:500 at A3

Data Courtesy:
LINZ, OPENMAPS

made with QGIS

Torlesse™

ACE MEMBER

ENGINEERING NEW ZEALAND OFFICIAL MEMBER

Client:
Sussex Trust

Project Name:
Geotechnical Assessment Report

Site Location:
160 Mazengarb Road, Paraparaumu

Sketch Title:
Proposed Development Plan

Project/Report No:
T0399/02

Sketch ID:
2 of 2

Author:	Initials:
L Heaton	LH
Checked By:	**Initials:**
N Clendon	NC

Rev.	Date	Description	Initials
A	17/07/24	Final	LH

Notes:

0 10 20 m

Scale 1:500 at A3

Data Courtesy:
LINZ, OPENMAPS

made with QGIS

Torlesse™

ACE MEMBER

ENGINEERING NEW ZEALAND OFFICIAL MEMBER

APPENDIX C: INVESTIGATION RECORDS

Test Pit & DCP Log No: TP01

Client: **Sussex Trust**
Job No.: **T0399**
Job Name: **160 Mazengarb Road, Paraparaumu**

Torlesse™
GEOTECHNICAL ENGINEERS

Logged by:	**LH**	Co-ordinates	**WGS 84**	Contractor:	**CPT Elite**	Elevation:	**6.5 m**
Entered by:	**LH**	Plunge (Degrees):	**90**	Start Date:	**2024-07-08**	Northing:	**-40.89057**
Reviewed by:	**NC**	Trend (Degrees):	**0**	End Date:	**2024-07-08**	Easting:	**175.00469**

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Depth Scale	Lithologic Description	Symbol	Samples	Vane Shear Test (Su)	Pocket Penetrometer	Manual DCP (0 5 10 15 20)	Comments / Additional Notes
	Ground Surface						
0	**TOPSOIL**						
	Fine to coarse SAND Light brown, loose, moist.						
1	**Fine to medium SAND** With trace silt. Dark brown, loose to medium dense, moist. Silt is non-plastic.						
	Fine SAND Light brown, medium dense, moist.						
	Fine to medium SAND Grey, medium dense, moist.						
2	From 2.2m bgl - Medium dense to dense.						
	From 2.5m bgl - Dense.						
3	Test Hole Terminated at 3 m - Target depth.						
4							
5							

Test Location Information:

Equipment: **Excavator**
Size (m): **0.8 x 2.7m**
Water Level (m):
Water Level (Elv):

Logging completed in general accordance with NZGS 2005 Guidelines

Test Location Notes:

Coordinates obtained from mobile phone GPS.
Elevation estimated from Cuttriss Consultants Topographic Survey.
Groundwater was not encountered.

RSLog / Torlesse Test Pit & DCP Log / torlesse / Lauryn / July 14, 2024 08:18 PM

TP01 Pit

TP01 Stockpile

Test Pit & DCP Log No: TP02

Client: **Sussex Trust**
Job No.: **T0399**
Job Name: **160 Mazengarb Road, Paraparaumu**

Torlesse™
GEOTECHNICAL ENGINEERS

Logged by:	**LH**	Co-ordinates	**WGS 84**	Contractor:	**CPT Elite**	Elevation:	**6 m**
Entered by:	**LH**	Plunge (Degrees):	**90**	Start Date:	**2024-07-08**	Northing:	**-40.89052**
Reviewed by:	**NC**	Trend (Degrees):	**0**	End Date:	**2024-07-08**	Easting:	**175.00427**

Page No: **1 of 1**

Depth Scale	Lithologic Description	Symbol	Samples	Vane Shear Test (Su)	Pocket Penetrometer	Manual DCP (0 5 10 15 20)	Comments / Additional Notes
	Ground Surface						
0	**TOPSOIL**						
	Fine to medium SAND With trace gravel. Dark brown, loose, dry to moist. Gravels are fine to medium, sub-round. (FILL?).						
1	**Fine to medium SAND** With trace rootlets. Brown, loose, dry to moist.						
	Fine SAND Light brown, medium dense, dry to moist.						
	Fine to coarse SAND Grey brown, medium dense to dense, moist.						
2	From 2.1m bgl - Dense.						
3	Test Hole Terminated at 3.1 m - Target depth.						
4							
5							

Test Location Information:

Equipment: **Excavator**
Size (m): **0.8 x 2.7m**
Water Level (m):
Water Level (Elv):

Logging completed in general accordance with NZGS 2005 Guidelines

Test Location Notes:

Coordinates obtained from mobile phone GPS.
Elevation estimated from Cuttriss Consultants Topographic Survey.
Groundwater was not encountered.

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TP02 Pit

TP02 Stockpile

Test Pit & DCP Log No: TP03

Client: **Sussex Trust**
Job No.: **T0399**
Job Name: **160 Mazengarb Road, Paraparaumu**

Torlesse™
GEOTECHNICAL ENGINEERS

Logged by:	**LH**	Co-ordinates	**WGS 84**	Contractor:	**CPT Elite**	Elevation:	**5 m**
Entered by:	**LH**	Plunge (Degrees):	**90**	Start Date:	**2024-07-08**	Northing:	**-40.89075**
Reviewed by:	**NC**	Trend (Degrees):	**0**	End Date:	**2024-07-08**	Easting:	**175.00415**

Page No: **1 of 1**

Ground Surface

TOPSOIL

Fine SAND
With minor tree roots. Brown, loose to medium dense, dry.

Fine to coarse SAND
With trace rootlets. Light brown, medium dense, dry to moist.

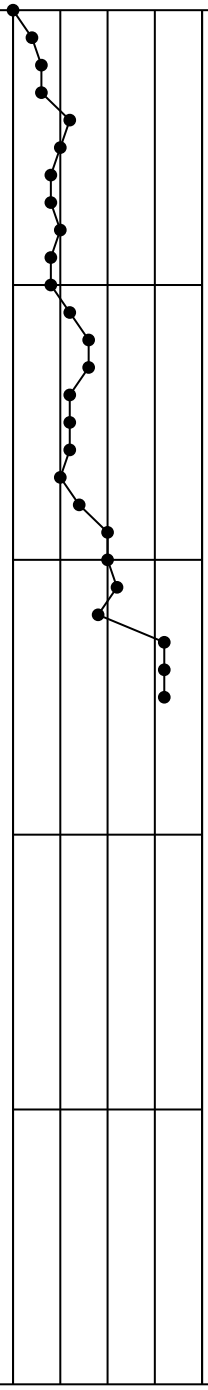
From 1.2m bgl - Medium dense to dense.

From 1.8m bgl - Dense.

From 2.0m bgl - Moist.

Fine to coarse SAND
Grey, dense, moist to wet.

Test Hole Terminated at 3.2 m - Target depth and pit wall collapse.



Test Location Information:

Equipment: **Excavator**
Size (m): **0.8 x 2.7m**
Water Level (m):
Water Level (Elv):

Logging completed in general accordance with NZGS 2005 Guidelines

Test Location Notes:

Coordinates obtained from mobile phone GPS.
Elevation estimated from Cuttriss Consultants Topographic Survey.
Groundwater was not encountered.

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TP03 Pit

TP03 Stockpile

Test Pit & DCP Log No: TP04

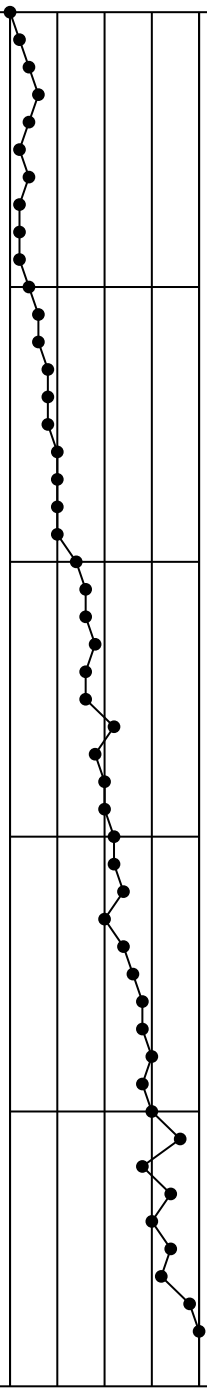
Client: **Sussex Trust**
Job No.: **T0399**
Job Name: **160 Mazengarb Road, Paraparaumu**

Torlesse™
GEOTECHNICAL ENGINEERS

Logged by:	**LH**	Co-ordinates	**WGS 84**	Contractor:	**CPT Elite**	Elevation:	**6.5 m**
Entered by:	**LH**	Plunge (Degrees):	**90**	Start Date:	**2024-07-08**	Northing:	**-40.89083**
Reviewed by:	**NC**	Trend (Degrees):	**0**	End Date:	**2024-07-08**	Easting:	**175.00359**

Page No: **1 of 1**

Depth Scale	Lithologic Description	Symbol	Samples	Vane Shear Test (Su)	Pocket Penetrometer	Manual DCP (0 5 10 15 20)	Comments / Additional Notes
	Ground Surface						
0	**TOPSOIL**						
	Fine to medium SAND Light brown, loose to medium dense, moist.						
	Fine to coarse SAND Light brown, loose, moist.						
1	From 1.1m bgl - Medium dense.						
2	From 2.0m bgl - Dense.						
3	Test Hole Terminated at 3 m - Target depth.						
4							
5							



Test Location Information:

Equipment: **Excavator**
Size (m): **0.8 x 2.7m**
Water Level (m):
Water Level (Elv):

Logging completed in general accordance with NZGS 2005 Guidelines

Test Location Notes:

Coordinates obtained from mobile phone GPS.
Elevation estimated from Cuttriss Consultants Topographic Survey.
Groundwater was not encountered.

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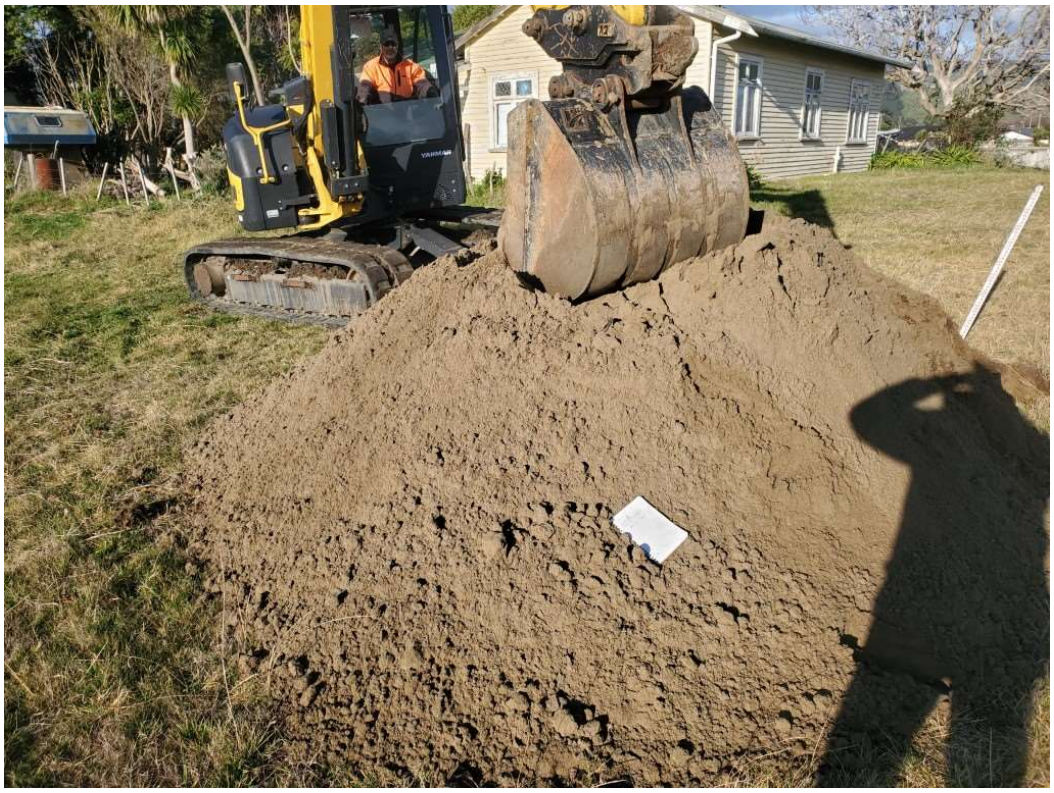
TP04 Pit



TP04 Stockpile

Test Pit & DCP Log No: TP05

Client: **Sussex Trust**
Job No.: **T0399**
Job Name: **160 Mazengarb Road, Paraparaumu**

Torlesse™
GEOTECHNICAL ENGINEERS

Logged by:	**LH**	Co-ordinates	**WGS 84**	Contractor:	**CPT Elite**	Elevation:	**4.5 m**
Entered by:	**LH**	Plunge (Degrees):	**90**	Start Date:	**2024-07-08**	Northing:	**-40.89123**
Reviewed by:	**NC**	Trend (Degrees):	**0**	End Date:	**2024-07-08**	Easting:	**175.00398**

Page No: **1 of 1**

Ground Surface

TOPSOIL

Fine to coarse SAND
Light brown, loose, moist.

Sandy SILT
With trace gravel and rootlets. Dark brown, stiff, moist. Non-plastic. Sand is fine to medium. Gravels are fine, sub-angular.

Fine to medium SAND
Dark brown, medium dense, moist.

Silty fine SAND
Grey, moist. Silt has low plasticity.

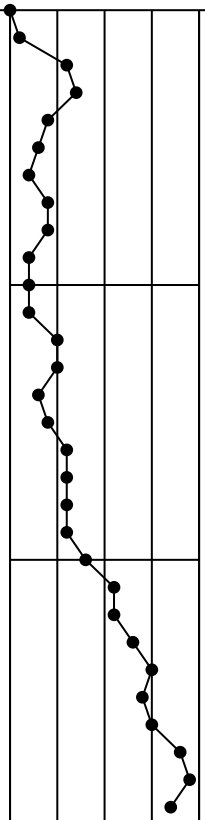
Fine to coarse SAND
Grey, medium dense, moist.

From 1.8m bgl - Strong organic smell.

From 2.5m bgl - Saturated.
Organics in base of pit (bark).

Test Hole Terminated at 2.6 m - Refusal on organic material (possible log).

08 Jul 2024



Test Location Information:

Equipment: **Excavator**
Size (m): **0.8 x 2.7m**
Water Level (m): **2.6 m**
Water Level (Elv): **1.9 m**

Logging completed in general accordance with NZGS 2005 Guidelines

Test Location Notes:

Coordinates obtained from mobile phone GPS.
Elevation estimated from Cuttriss Consultants Topographic Survey.

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TP05 Pit

TP05 Stockpile

Test Pit & DCP Log No: TP06

Client: **Sussex Trust**
Job No.: **T0399**
Job Name: **160 Mazengarb Road, Paraparaumu**

Torlesse™
GEOTECHNICAL ENGINEERS

Logged by: **LH** | Co-ordinates **WGS 84** | Contractor: **CPT Elite** | Elevation: **5 m** | Page No: **1 of 1**
Entered by: **LH** | Plunge (Degrees): **90** | Start Date: **2024-07-08** | Northing: **-40.89094**
Reviewed by: **NC** | Trend (Degrees): **0** | End Date: **2024-07-08** | Easting: **175.0044**

Depth Scale	Lithologic Description	Symbol	Samples	Vane Shear Test (Su)	Pocket Penetrometer	Manual DCP (0 5 10 15 20)	Comments / Additional Notes
	Ground Surface						
0	**Fine SAND** With trace tree roots. Grey brown, loose to medium dense, dry.						
	Fine SAND Light brown, medium dense to dense, dry.						
1	From 1.1m bgl - Dense.						
	Fine to coarse SAND Grey, dense, moist.						
2							
3	From 3.0m bgl - Wet.						
	Test Hole Terminated at 3.1 m - Target depth and pit wall collapse.						
4							
5							

Test Location Information:

Equipment: **Excavator**
Size (m): **0.8 x 2.7m**
Water Level (m):
Water Level (Elv):

Logging completed in general accordance with NZGS 2005 Guidelines

Test Location Notes:

Coordinates obtained from mobile phone GPS.
Elevation estimated from Cuttriss Consultants Topographic Survey.
Groundwater was not encountered, however some seepage was observed in the base of the pit.

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TP06 Pit

TP06 Stockpile