

# A12 Chelmsford to A120 widening scheme

## TR010060

## 9.11 A12 JUNCTION 19 SURFACE WATER DRAINAGE DESIGN

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## A12 Chelmsford to A120 widening scheme

Development Consent Order 202[]

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## 1 Introduction

- 1.1.1 The A12 between Junction 19 and Junction 25 in Essex is to be upgraded and is referred to as the "proposed scheme" hereafter. An application for Development Consent Order (DCO) will be made as this is a Nationally Significant Infrastructure Project (NSIP). The DCO submission is programmed for Summer 2022. The project is currently at the preliminary design stage.
- 1.1.2 This report outlines the drainage design development process involved in arriving at the current highway drainage design solutions for the proposed scheme in the vicinity of Junction 19. This report has been developed to address the concerns of the affected landowners regarding the landtake requirements for the proposed highway drainage which were raised during the consultation process. The report is aimed at the affected Junction 19 landowners and their supporting technical representatives. Therefore, it is assumed that with the support of the technical representatives the Junction 19 highway drainage design information presented in this report can be read and understood by all the aforementioned parties. This report describes the following (in the order of discussion within the report):
  - Section 2 Describes the highway improvement works in the vicinity of Junction 19 as part of the proposed scheme. The highway improvement works primarily involve online highway widening works;
  - Section 3 Describes the existing highway drainage in the vicinity of Junction 19 in general terms to provide background on how the existing highway drainage outfall locations and existing catchment areas have informed the proposed highway drainage design;
  - Section 4 Presents the proposed highway drainage design rational and design criteria including the climate change guidance followed, the drainage design standards and guidance followed, the allowable discharge rate calculation methodology, the attenuation storge sizing criteria and the proposed outfall discharge hierarchy which informs the proposed outfall locations.
  - Section 5 Describes the design development of the proposed highway drainage solutions for the proposed scheme in the vicinity of Junction 19. These proposed highway drainage solutions encompass six proposed highway drainage catchments, namely the proposed S1-OU1, S1-OU7A, S1-OU10, S1-OU10A, S1-OU11 and S1-OU12 catchments.
  - Section 6 Describes the attenuation storage (i.e. attenuation ponds and underground geocellular attenuation storage systems) design principles and constraints that inform the resulting attenuation storage areal footprints / landtake requirements. This includes criteria such as attenuation pond side slopes, design depth constraints, the presence of site constraints (e.g. nearby floodplains, steep terrain, etc.) and so forth.
  - Section 7 Describes the design development process involved in determining the selected attenuation storage locations and the design



constraints that resulted in the alternative attenuation storage locations being discounted.

## 2 Proposed Highway Improvement Works in the Vicinity of Junction 19

- 2.1.1 At the time of writing this report, the existing Junction 19 is being improved as part of the Beaulieu Park development. The changes are being made by the Developer of the Beaulieu Park development, and the construction is due to be completed by early 2023. As construction of the highway improvements required for the Beaulieu Park are due to be completed before construction of the proposed scheme begins, these improvements have been taken into account in the proposed scheme design proposals. The proposed A12 scheme would deliver additional highway improvements to Junction 19, including:
  - Additional lanes on Boreham Bridge (i.e. symmetrical widening);
  - Additional lanes on Generals Farm Roundabout;
  - Additional lanes on Generals Lane Roundabout and adjoining access roads;
  - Realigned A131 (Radial Distributor Road RDR);
  - Online widening of the A12 mainline southbound carriageway to the north and south of Junction 19;
  - Online widening of the A12 mainline northbound carriageway to the north of Junction 19;
  - Online widening of the adjoining Main Road (B1137) heading east towards Boreham;
  - Online widening of the Junction 19 southbound on-slip road;
  - Online widening of the Junction 19 southbound off-slip road;
  - Online widening of the A138 side road located along the northern side of Junction 19;
  - Addition of paved area to Payne's Lane WCH (Walking, Cycling and Horse Riding) route; and
  - Addition of the Junction 19 northbound on-slip road (i.e. adjoining General's Lane Roundabout).
- 2.1.2 The proposed A12 scheme highway improvement works in the vicinity of Junction 19 are illustrated and labelled in Plate 2.1 below.



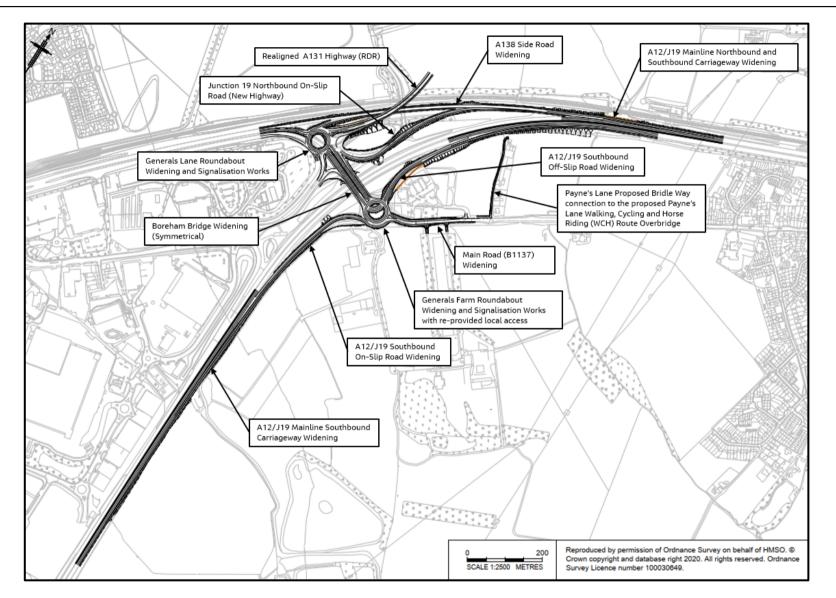


Plate 2.1 Proposed Highway Improvement Works in the Vicinity of Junction 19



## 3 Existing Highway Drainage

- 3.1.1 The existing highway drainage information for the A12 in the vicinity of Junction 19 has been obtained primarily from drainage surveys (i.e. drainage connectivity and condition assessment surveys (CCTV surveys)) that were undertaken prior to the preliminary design stage. Other sources of information related to existing highway drainage included the National Highways' Drainage Data Management System (i.e. HADDMS), available drainage construction drawings/As-Built drainage records and limited topographical survey information for existing outfalls and watercourse alignments in the vicinity of existing outfalls. These combined sets of information were used to determine the existing highway drainage features, drainage catchments, outfall arrangements and existing culvert crossings within the footprint of the proposed scheme extent.
- 3.1.2 Using the existing drainage information sources described above the existing highway drainage catchment extents and associated outfalls have been identified in the vicinity of Junction 19. Based on the assessment of the aforementioned drainage information sources the primary drainage elements identified within the proposed scheme extent at Junction 19 includes the following surface water drainage edge collection features:
  - Concrete surface water channels with catchpit gratings at regular intervals;
  - Kerb inlet gullies and traditional kerb / gully drainage arrangements;
  - Combined kerb drainage alignments; and
  - Filter drains.
- 3.1.3 The existing highway drainage systems within the proposed scheme extent in the vicinity of Junction 19 are generally found to have outfalls discharging to nearby watercourses (either Ordinary Watercourses or Main Rivers) depending on their proximity to the highway or existing highway drainage systems.
- 3.1.4 As described in Section 2 the highway drainage currently being constructed by the Developer of the Beaulieu Park development on Junction 19 will be retained as part of the existing highway drainage for the proposed scheme. The highway drainage being constructed by the Developer includes two underground attenuation storage systems located within the Generals Lane Roundabout and Generals Farm Roundabout respectively. These underground geocellular attenuation storage systems will be retained as part of the proposed scheme highway drainage.
- 3.1.5 The Junction 19 existing highway drainage catchment extents, the associated outfalls and receiving watercourses are illustrated in Plate 3.1 below



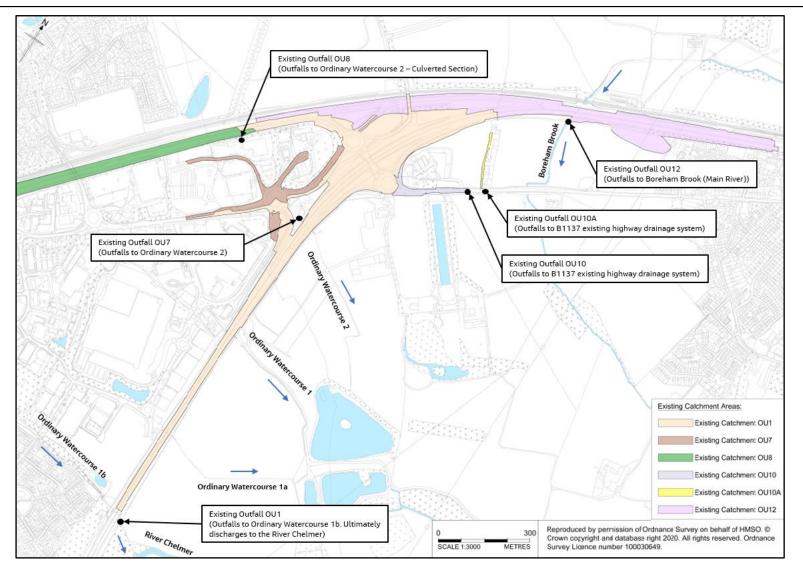


Plate 3.1 Existing Highway Drainage Catchments and Outfall Locations in the Vicinity of Junction 19



## 4 Proposed Highway Drainage Design Rational and Design Criteria

## 4.1 Highway Drainage Design Rational

- 4.1.1 The highway drainage design for the proposed scheme has primarily been developed in accordance with the Design Manual for Roads and Bridges (DMRB), *CG 501 Design of Highway Drainage Systems*. The proposed scheme highway drainage design has also been supplemented with the following industry standard guidance:
  - The SuDS Manual C753 (CIRIA, 2015);
  - Rainfall Runoff Management for Developments (Report No: SC030219) from the Environment Agency (2013);
  - Sewerage Sector Guidance Appendix C Version 2.1 (Water UK, 2021);
  - The Manual of Contract Documents for Highway Works (MCHW) (National Highways, 2021); and
  - Essex County Council SuDS Design Guide (Essex County Council, 2020);
- 4.1.2 For the proposed scheme highway drainage, where practicable, the existing highway drainage and outfalls are to be retained. Otherwise, the proposed highway drainage will be provided as described below.
- 4.1.3 For surface water collection on open highway unimpeded by junction it is proposed to use concrete lined surface water channels and / linear slot drainage at the road edges and concrete lined surface water channels and / or slot drainage along the central reserve. For surface water collection in the vicinity of kerbed sections of the highway at intersections with local roads, highway drainage through underpasses, road sections through urban areas, etc. it is proposed to use combined kerb drainage and/or trapped gullies. With regard to slip roads, where there is no kerbline proposed then a form of linear drainage will be required to drain the proposed highway which could be either linear slot drainage, filter drains, surface water channels or over-the-edge drainage. In the instances where the verge is spatially constrained a linear slot drainage system may be required to collect surface water runoff.
- 4.1.4 The collected surface water runoff will be conveyed by either carrier drains or combined filter drains in most locations. Combined filter drains are used where the proposed highway is located in cutting in order to collect the surface water runoff from the proposed highway, intercept groundwater seepage from within the highway cutting slopes in addition to conveying the collected surface water and groundwater flows downstream to a nearby watercourse.

## 4.2 Outfalls Discharge Hierarchy

4.2.1 Outfalls are required at the downstream end of each highway drainage system on the proposed scheme in order to discharge the collected surface water runoff into a nearby receiving watercourses. For the proposed scheme highway drainage in the vicinity of Junction 19, where practicable, the existing outfalls are





to be retained. In situations where a proposed new outfall location is required due to proposed highway geometry or site specific constraints the following outfall discharge hierarchy (in order of preference) is followed:

- Groundwater (subject to the outcome of further ground investigation to confirm ground infiltration rates, groundwater levels, potential contaminated land presence, etc.);
- Nearby watercourses;
- Existing highway drainage system, where available, in the absence of a nearby watercourse; and
- Existing foul sewer or combined sewer, where available, in the absence of the above discharge options.

## 4.3 Sustainable Drainage Systems (SuDS)

- 4.3.1 Surface water drainage systems developed in line with the principals of sustainable development are collectively referred to as Sustainable Drainage Systems (SuDS). The objective of SuDS techniques is to minimise the impacts from a proposed development on the quantity and quality of the surface water runoff and to maximise the amenity and biodiversity opportunities. The Lead Local Flood Authority (LLFA), Essex County Council, require that SuDS are included within a proposed highway drainage design in accordance with the Essex County Council SuDS Design Guide (Essex County Council, 2020).
- 4.3.2 The SuDS Manual C753 (CIRIA, 2015) has been consulted to establish the most suitable SuDS techniques for the proposed scheme. The SuDS techniques that have been used for the proposed scheme highway drainage in the vicinity of Junction 19 include attenuation ponds, underground geocellular attenuation storage systems and filter drains and are discussed in more detail in the site specific proposed highway drainage catchment descriptions in Section 5.
- 4.3.3 It should be noted that the available preliminary Ground Investigation (GI) information indicates that infiltration techniques are unlikely to be feasible due to the local geological ground conditions that prevail in the vicinity of Junction 19. Therefore, a highway drainage design has been developed with an assumption of "no infiltration" at the preliminary highway drainage design. As further GI information becomes available as the project progresses the feasibility of infiltration will be re-visited on a site-by-site basis.

## 4.4 Climate Change Allowance

4.4.1 During the lifetime of the proposed scheme, surface water runoff rates and volumes from the proposed carriageway paved surfaces may increase as a result of the expected increase in rainfall intensity due to climate change. The effects of climate change will have to be mitigated to minimise the risk of surface water drainage flooding in the future. Climate change has been accounted for in the proposed highway drainage design by increasing the peak rainfall intensity by a climate change allowance of 20% for the 2080's (i.e. central estimate for the 2080's, 2070 to 2115, time interval). This is in accordance with current Environment Agency (EA) climate change guidance (Environment Agency, 2021)



as of the October 2021 update and the requirement for a 20% climate change climate change allowance as stated in DMRB *CG 501 Design of Highway Drainage Systems* (National Highways, 2020a).

4.4.2 In addition to a climate change allowance of 20% for all design storm events a 40% climate change allowance has been simulated as a sensitivity test for the consequences of exceedance. This also in accordance with DMRB *CG 501 Design of Highway Drainage Systems* (National Highways, 2020a).

## 4.5 Piped Drainage

- 4.5.1 In accordance with the requirements set out in DMRB CG 501 *Design of Highway Drainage Systems* (National Highways, 2020a), surface water carrier drains and filter drains within the proposed highway drainage systems are designed to accommodate a 1 in 1 year return period storm event in-bore without surcharge over the crown of the pipe. A design check is carried out to ensure that a 1 in 5 year return period storm event would not cause chamber surcharge levels to exceed the level of the chamber covers. In both cases a climate change allowance is applied to the piped drainage design as described in Section 4.4.
- 4.5.2 The proposed highway drainage system as a whole must be assessed for the consequences of exceedance flows associated with the 1 in 100 year return period storm event plus climate change allowance. Any surface water drainage flooding associated with the aforementioned design event is to be contained within the proposed scheme permanent acquisition of land boundary at depths and velocities that would not represent a safety risk for road users.

## 4.6 Allowable Discharge Rates

- 4.6.1 The proposed scheme in the vicinity of Junction 19 will result in an increase in paved area due to the proposed online widening works and proposed offline highway additions. Without mitigation, this has the potential to increase the surface water runoff rates realised locally. Therefore, mitigation is required to be incorporated within the proposed highway drainage systems such that local flood risk is not increased. The allowable discharge rates at proposed highway drainage outfalls are determined using the following approaches depending on the proposed highway options:
  - Offline Highway Route Alignment Proposed offline highway options will largely be developed on greenfield sites. Therefore, it will be required that the allowable discharge rates from the proposed highway drainage systems be restricted to the existing site condition greenfield runoff rates for events up to and including the 1 in 100 year return period storm event plus climate change allowance (stated in Section 4.4).
  - Online Highway Route Alignment Proposed online highway options will involve the widening of the existing A12 highway alignment. Therefore, the allowable discharge rates are to be restricted to existing site condition surface water runoff rates for a range of design events determined for the existing highway drainage catchments. The existing surface water runoff rates are estimated for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period storm events by developing hydraulic models of the existing highway drainage



systems. No allowance for climate change has been applied in determining the allowable discharge rates given that current climatic conditions inform the discharge rates for the proposed highway drainage systems.

- 4.6.2 Currently the minimum practicable allowable discharge rate used to inform the proposed highway drainage design is 5l/s based on a minimum flow control diameter of 100mm for both vortex flow control and orifice plate flow control devices to reduce the risk of blockage. This is the minimum acceptable flow control diameter according to Sewerage Sector Guidance (V2.1) (Water UK, 2021), the replacement guidance for Sewers for Adoption which states:
- 4.6.3 "Where debris can enter the control (e.g. where the upstream system is open or where the inlets are gullies), static controls should have a minimum opening size of 100 mm."
- 4.6.4 This is also the minimum acceptable flow control diameter according to Environment Agency Guidance Rainfall Runoff Management for Developments (SC030219) (On the UK Government GOV.UK website <a href="https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/rainfall-run-off-management-for-urban-developments">https://www.gov.uk/flood-and-coastal-erosion-risk-management-research-reports/rainfall-run-off-management-for-urban-developments</a>) which states:
- 4.6.5 "Minimum limit of discharge rate: A practicable minimum limit on the discharge rate from a flow attenuation device is often a compromise between attenuating to a satisfactorily low flow rate while keeping the risk of blockage to an acceptable level. This limit is set at 5 litres per second, using an appropriate vortex or other flow control device."

### 4.7 Attenuation Storage

4.7.1 To mitigate the expected increased surface water runoff rates and associated potential increase in surface water flood risk to and from the proposed scheme, attenuation storage systems are provided within the proposed highway drainage design. The attenuation storage systems will be sized for design events up to and including the 1 in 100 year return period storm event with a climate change allowance applied to the chosen design storm to account for the anticipated increase in rainfall intensity due to climate change. Attenuation storage is to be provided in the form of attenuation ponds, underground geocellular attenuation storage systems and oversized pipes depending on the site constraints. As described in Section 4.4 of this report, in addition to a climate change allowance of 20% for all design storm events a 40% climate change allowance has been tested as a sensitivity test for the consequences of exceedance for the 1 in 100 year return period storm event plus 40% climate change allowance. Attenuation ponds are the preferred means of attenuation storage where there is sufficient space available given that they are grassed SuDS features at the ground surface as opposed to being buried underground (i.e. more accessible for periodic maintenance compared to underground geocellular attenuation storage systems and oversized pipes). This is in line with the drainage design guidance in the SuDS Manual (CIRIA C753, 2015) and the requirements set out within the ECC SuDS Design Guide (Essex County Council, 2020) that both promote the maximising of landscape, biodiversity and amenity opportunities.



### 4.8 Exceedance Flow Assessment

- 4.8.1 The performance of the proposed highway drainage systems are assessed against extreme rainfall events to ensure that the level of flood risk is acceptable for road users and that there is no potential surface water drainage flooding impacts to third party land outside the proposed scheme permanent acquisition of land boundary. This process is referred to as an exceedance flow assessment.
- 4.8.2 To meet the level of service described in Sections 4.4, Section 4.5 and Section 4.7 the proposed highway drainage systems have been assessed for the following design events in the exceedance flow assessment:
  - The 1 in 100 year return period storm event (plus 20% climate change allowance) for storm durations ranging from 15 minutes to 24 hours to establish the critical storm duration.
  - The 1 in 100 year return period storm event (plus 40% climate change allowance) for storm durations ranging from 15 minutes to 24 hours as a sensitivity test for the consequences of exceedance.

## 4.9 Water Quality

- 4.9.1 In order to protect the receiving waterbodies from a potential increased pollution risk as a result of the proposed scheme, water quality treatment measures are provided within the proposed highway drainage systems for some drainage catchments in line with the principles of SuDS, where practicable.
- 4.9.2 Water quality assessments have been undertaken for the proposed scheme in accordance with the National Highways (previously Highways England) Water Risk Assessment Tool (HEWRAT) and the standards outlined in DMRB, with specific reference to DMRB *LA 113: Road Drainage and the Water Environment (RDWE) Revision 1* (National Highways, 2020b), to assess the potential risk to the water quality of receiving waterbodies and provide recommendations for mitigation measures as appropriate.
- 4.9.3 In addition to the water quantity and biodiversity benefits, the inherent nature of some of the proposed SuDS features used on the proposed scheme in the vicinity of Junction 19, namely attenuation ponds and combined filter drains, will provide treatment of surface water runoff prior to discharge to the receiving watercourse. The SuDS features incorporated within the proposed scheme highway drainage systems can provide the following surface water treatment benefits:
  - Attenuation Ponds Sediment forebays are to be provided at the inlet of all proposed attenuation ponds which will provide effective pre-treatment (i.e. removal of coarse sediments) and ensure ease of maintenance during the removal of any such collected coarse sediments.
  - **Combined Filter Drains** Combined filter drains should provide some treatment by filtering out fine sediments, metals, hydrocarbons and other pollutants as the surface water runoff percolates down through the trench fill material overlying the perforated filter drain.
- 4.9.4 Elsewhere, where space constraints prevent the use of attenuation ponds, underground geocellular attenuation storage systems have been employed.



These systems do not have the same water quality benefits as described above for attenuation ponds.

## 5 Proposed Highway Drainage Solutions Development

## 5.1 **Proposed Drainage Design Development Approach**

- 5.1.1 The proposed scheme highway drainage design solutions in the vicinity of Junction 19 have been developed in line with the proposed drainage design rational and drainage design criteria described in Section 4. The impacts from the proposed highway improvement works in the vicinity of Junction 19 have been identified (i.e. increase in paved area) including their interface with the existing highway drainage system. The existing drainage catchments and outfall arrangements have been retained where practicable. New outfalls have been introduced where the proposed highway drainage design solutions (i.e. informed by the proposed highway geometry) were found to have site specific constraints and as a result the existing outfalls/drainage catchment arrangements could not be retained. It should be noted that the highway drainage currently being constructed by the Developer on Junction 19 as part of the Beaulieu Park development has been taken into account in the development of proposed scheme highway drainage solutions.
- 5.1.2 As described in Section 2, the proposed scheme in the vicinity of Junction 19 will result in an increase in paved area due to the proposed online widening works and proposed offline highway additions. This will potentially increase the surface water runoff rates which would therefore need to be restricted to mitigate the potential increase in flood risk. To mitigate the expected increased surface water runoff rates and the associated potential increase in surface water flood risk to and from the proposed scheme, attenuation storage is introduced at appropriate locations within the proposed highway drainage systems. Where required an appropriate flow control device is proposed immediately downstream of the proposed attenuation storage that will restrict the discharge rates to achieve the required allowable discharge rates. Flow controls typically proposed include vortex flow control devices, orifice plates, reduced diameter outlet pipes or a vortex flow control device / orifice plate combination. In the vicinity of Junction 19 attenuation storage is primarily achieved in the form of above ground attenuation ponds and underground geocellular attenuation storage systems depending on the site specific constraints. Oversized pipes have been used to offer online attenuation storage for proposed scheme locations that are subject to spatial constraints.
- 5.1.3 The attenuation storage locations have been sized for design events up to and including the 1 in 100 year return period storm event with a climate change allowance applied to the chosen design storm to account for the anticipated increase in rainfall intensity due to climate change. The volume of the attenuation storage required throughout the proposed scheme is optimised by running simulations in the MicroDrainage software package for the 1 in 100 year return period storm event plus climate change allowance (and various storm durations from 15 minutes up to and including 24 hours) to establish the critical storm

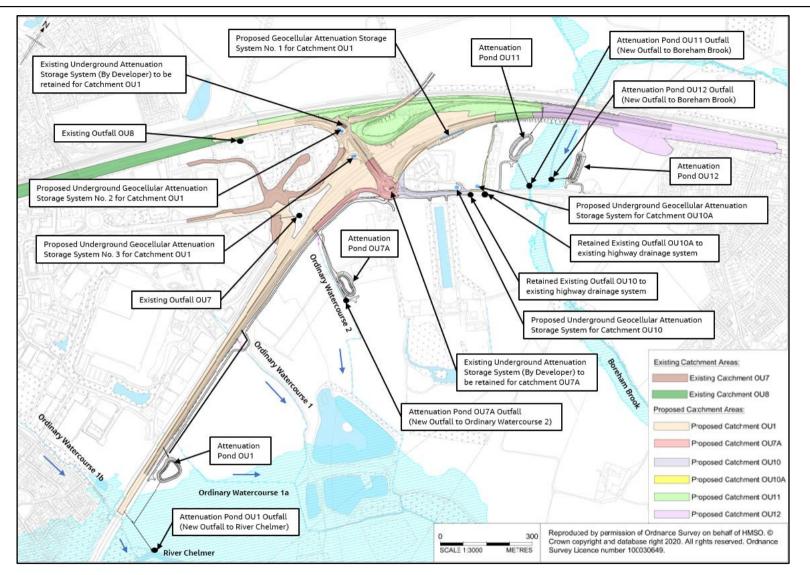




event(s). The proposed scheme discharge rates (i.e. allowable discharge rates) are restricted to the existing site condition surface water runoff rates where the existing drainage outfall arrangements have been retained and are estimated as described in Section 4.6. As described in Section 4.6 a minimum practicable allowable discharge rate of 5 l/s is used to inform the proposed highway drainage design. As described in Section 4.8, in addition to a climate change allowance of 20% for all design storm events a 40% climate change allowance has been simulated as a sensitivity test for the consequences of exceedance.

- 5.1.4 It should also be noted that where the existing highway drainage network is affected by the online highway widening works and / or the highway upgrade/modifications, such highway interventions have been largely kept within the proposed highway improvement works footprint (i.e. where the construction of new paved areas are required) so as to minimise the impact from the proposed scheme. The proposed highway drainage solutions have also been developed to minimise the potential impact to existing underground services which could require potential service diversions and thereby impact the adjacent land.
- 5.1.5 The proposed highway drainage catchment extents, the associated outfalls and receiving watercourses are illustrated in Plate 5.1 below. In Plate 5.1 the modelled fluvial floodplain extents shown for the Boreham Brook are for the 1 in 100 year return period storm event plus 65% climate change allowance as per Environment Agency (EA) guidance (Environment Agency, 2021) as of the October 2021 update. The Boreham Brook has been modelled in the vicinity of the A12 mainline due to the proposed highway widening works in the vicinity. The fluvial flood extents shown for the River Chelmer are based on EA flood zones 2 and 3. The River Chelmer flood extents have not been specifically modelled for the proposed A12 scheme as the proposed highway works do not extend to the River Chelmer as shown in Plate 5.1. The proposed highway drainage system layouts are presented in Appendix A – Junction 19 Proposed Drainage System Layouts. The proposed case hydraulic modelling results for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year storm return period design events including the climate change allowance requirements described in Section 4.4 are presented in Appendix B – Junction 19 Proposed Drainage System Hydraulic Modelling Results.
- 5.1.6 The design development process for the proposed highway drainage catchments shown in Plate 5.1, including the potential alternative locations assessed for the attenuation storage locations, are described further in the subsequent sub-sections, namely Section 5.2 to Section 5.4. It should be noted that the existing highway drainage catchments S1-OU7 and S1-OU8 are not affected by the proposed highway improvement works in the vicinity of Junction 19 and are therefore not assessed further in the development of the proposed highway drainage design solutions.





#### Plate 5.1 Proposed Scheme Highway Drainage Catchments / Outfall Locations / Attenuation Storage Locations in the Vicinity of Junction 19



## 5.2 Proposed Catchment S1-OU1 and OU7A

- 5.2.1 As described in Section 2, the proposed S1-OU1 catchment is comprised of a portion of the A12 mainline, the Junction 19 southbound off-slip road, the Junction 19 northbound off-slip road, sections of the existing Boreham Interchange Roundabout and the adjoining A130 located to the south-east, the southbound lane of the A130 between the existing Boreham Interchange Roundabout and Generals Lane Roundabout, Generals Lane Roundabout, the A138 adjoining Generals Lane Roundabout and the proposed A131 (Radial Distributor Road - RDR). The A12 mainline southbound carriageway, the Junction 19 southbound off-slip road, Generals Lane Roundabout and the adjoining A130 are all subject to online widening works. The proposed S1-OU7A catchment is comprised of Boreham Bridge, Generals Farm Roundabout and the Junction 19 southbound on-slip road from the Generals Farm Roundabout to its tie-in with the A12 mainline further south. The aforementioned proposed highways are all subject to online widening works. The proposed S1-OU7A drainage catchment was part of the existing S1-OU1 drainage catchment. However, it is now separated out due to potential spatial constraints in providing attenuation storage for the S1-OU7A catchment and other site-specific constraints. The aforementioned site specific constraints associated with the proposed S1-OU7A catchment are described in further detail in Sections 5.2.3 to 5.2.8.
- 5.2.2 The existing and proposed site condition paved areas and any permeable catchment areas draining into the proposed highway drainage systems for the proposed S1-OU1 and S1-OU7A catchments are presented in Table 5.1 below.

Proposed Catchment	Existing Paved Area*	New Paved Area	Total Proposed Paved Area*	Total Proposed Permeable Area**	Catchment Specific Comments
	(ha)	(ha)	(ha)	(ha)	
S1-OU1	7.356 (6.726)	0.984	7.710	5.403	The existing paved area (7.356ha) is associated with the existing S1-OU1 catchment that has been divided up between the proposed S1-OU1 catchment and the proposed S1-OU7A catchment (i.e. 6.726ha will be retained within the proposed S1-OU1 catchment boundary while 0.63ha will be drained to the proposed S1-OU7A catchment)

#### Table 5.1 Paved Area Summary for the Proposed S1-OU1 and S1-OU7A Catchments

#### A12 Chelmsford to A120 widening scheme



#### A12 JUNCTION 19 SURFACE WATER DRAINAGE DESIGN

Proposed Catchment	Existing Paved Area* (ha)	New Paved Area (ha)	Total Proposed Paved Area* (ha)	Total Proposed Permeable Area** (ha)	Catchment Specific Comments
S1-OU7A	0 (0.630)	0.210	0.840	0.565	The existing paved area is associated with the existing S1-OU1 catchment portion contained within the proposed S1-OU7A catchment boundary (see the catchment specific comments for the proposed S1-OU1 catchment)

\* The total proposed paved area is the sum of the existing paved area (adjusted existing paved area presented in brackets, where applicable) to be retained and the additional new paved area which will form the proposed highway drainage catchment areas in the vicinity of the proposed Junction 19.

\*\* Permeable catchment areas include grassed verges, grassed roundabout centre islands, cut slopes, embankment slopes, etc. that drain into the proposed highway drainage systems.

### Proposed Catchment S1-OU7A Necessity

#### Whole Proposed S1-OU1 Catchment

- 5.2.3 An initial assessment of the proposed S1-OU1 catchment (referred as the "whole proposed S1-OU1 catchment", prior to requiring the catchment split into the proposed S1-OU1 and proposed S1-OU7A catchments) was undertaken with a view to retain the existing S1-OU1 catchment and outfall arrangement. The hydraulic model for the whole proposed S1-OU1 catchment was tested with all of the additional paved area from the online widening works introduced as part of proposed scheme and with the works currently being undertaken at Junction 19 by the developer of the Beaulieu Park development (i.e. including the underground attenuation storage systems at Generals Lane Roundabout and Generals Farm Roundabout as these drainage works would be retained as part of the proposed scheme). The hydraulic performance of the whole proposed case S1-OU1 catchment was assessed against the drainage design criteria described in Section 4 and the proposed drainage design assessment approach discussed in Section 5.1. It is noted that the existing northbound carriageway and central reserve of the A12 mainline throughout the whole proposed S1-OU1 catchment are outside the proposed highway works extents. Therefore, the associated existing highway drainage systems would be unaffected and are proposed to be retained.
- 5.2.4 The proposed highway drainage interventions for Junction 19 and the associated slip roads (i.e. in the form of the upgrade and replacement of the existing highway drainage and associated attenuation storage requirements) were kept local to mitigate/restrict the increased surface water flows to the A12 mainline existing highway drainage system as a result of the proposed widening works and climate change allowance. Providing such local interventions and limiting the surface water flow rates locally prior to connecting back into the existing A12 mainline



highway drainage prevented the exacerbation of the surface water flood risk within the wider catchment and reduced a significant amount of existing highway drainage replacement works. The local highway drainage interventions provided within the proposed S1-OU1 and S1-OU7A catchments are shown in Plate 5.2 and summarised in the following bullet points below.

- Junction 19 Southbound Off-Slip Road The existing Junction 19 southbound off-slip road, proposed to be widened and extended along the A12 mainline southbound carriageway, currently drains into the existing A12 highway drainage system. The mainline existing drainage connection/discharge from the Junction 19 southbound off-slip road catchment has been retained. The increased surface water flows as a result of the highway widening works and climate change allowance have been attenuated in the form of an underground geocellular attenuation storage system (shown as proposed geocellular attenuation storage system no. 1 in Plate 5.2). The attenuated flows have been restricted with the use of an orifice flow control device prior to discharging back into the existing highway drainage system serving the A12 mainline.
- Generals Lane Roundabout The existing underground attenuation storage system located within Generals Lane Roundabout is to be retained to provide mitigation for the increased paved area associated with the proposed highway improvement works and climate change impact in the vicinity of the Generals Lane Roundabout. In addition to retaining the aforementioned existing underground attenuation storage system, an additional proposed underground geocellular attenuation storage system (i.e. shown as proposed geocellular attenuation storage system no. 2 in Plate 5.2) is proposed within the southern portion of the roundabout to mitigate the increased surface water flows from the southern portion of the roundabout and the adjoining A138 to the west. The introduction of further underground geocellular attenuation storage (shown as proposed geocellular attenuation storage system no. 3 in Plate 5.2) is required downstream of the two previously described underground attenuation storage systems to provide additional attenuation to the surface water flows from the roundabout sub-catchment prior to discharging to the existing highway drainage located along the A130 to the south of Generals Lane Roundabout.
- A12 Mainline The proposed S1-OU1 catchment attenuation pond is provided to mitigate for the increased paved area due to the proposed widening of the A12 mainline southbound carriageway located to the south of Junction 19 and to account for the climate change allowance. This enables the proposed S1-OU1 catchment to be discharged to the River Chelmer at discharge rates not exceeding those of the existing case S1-OU1 catchment.



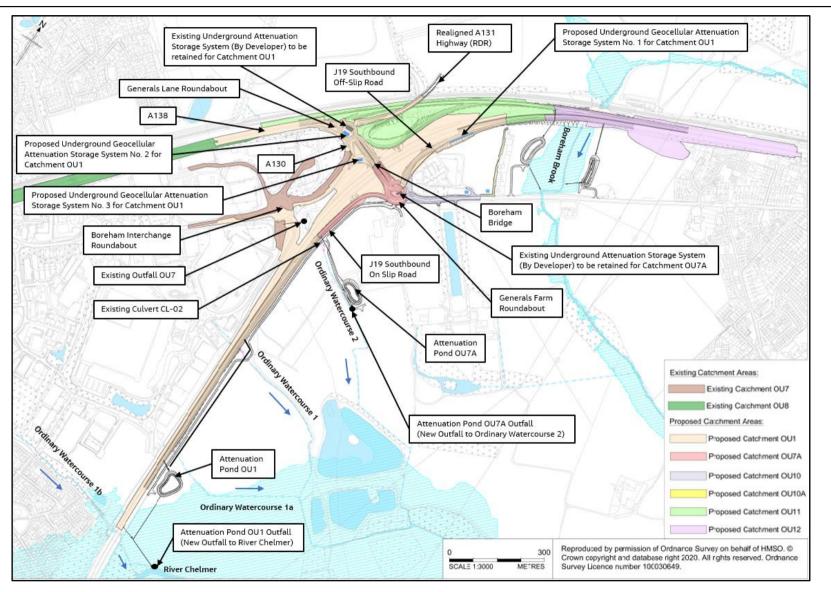


Plate 5.2 Drainage Interventions for the Proposed S1-OU1 and S1-OU7A Catchments



## Proposed S1-OU7A Catchment Separated Out from the Whole Proposed S1-OU1 Catchment

- **5.2.5** The above-described highway drainage design approach of using local highway drainage interventions was assessed for the proposed S1-OU7A catchment while it was considered as part of the whole proposed S1-OU1 prior to the eventual proposed catchment separation. However, this approach was found to be unfeasible and therefore a new outfall arrangement for the proposed S1-OU7A catchment was required for the following reasons / constraints:
  - Junction 19 Southbound-On Slip Road Highway Widening Works The existing highway drainage serving Generals Farm Roundabout and the Junction 19 southbound on-slip road could not be retained and would need to be replaced due to the online highway widening works. The existing highway drainage serving the south-eastern slip road required upgrading due to the proposed increased paved areas on Boreham Bridge, the Generals Farm Roundabout and along the proposed Junction 19 southbound on-slip road. These upgrade works to the existing highway drainage system along the Junction 19 southbound on-slip road was hydraulically tested with a connection back into the A12 mainline highway drainage system as per the existing case (i.e. existing slip road highway drainage connects into an existing chamber located in the A12 mainline central reserve). Due to the increased surface water flows discharging to the A12 mainline highway drainage system in the proposed case compared to the existing case, this would result in an increased flood risk from the A12 mainline highway drainage system. This increased flood risk would be unacceptable as it does not comply with the surface water drainage design criteria described in Section 4 and would also potentially put road users at increased risk.
  - Unfeasible Junction 19 Southbound On-Slip Road Highway Drainage Connection into the A12 Mainline Highway Drainage – An alternative solution to extend the proposed highway drainage from the Junction 19 southbound on-slip road and connect it into the proposed highway drainage serving the A12 mainline southbound carriageway was found to be unfeasible. This was due to a potential limited vertical clearance issue (i.e. potential clash) with an existing culvert crossing (i.e. existing Culvert CL-02 shown in Plate 5.2). Potential clashes with existing underground utilities were also identified that would have a significant impact on the utilities and require complex utility diversions and associated increased landtake requirements adjacent to the A12 mainline for new utility corridors.
  - Inadequate Online Attenuation Storage Capacity within the Junction 19 Southbound On-Slip Road Highway Drainage - The upgrades to the Junction 19 southbound on-slip road highway drainage would not provide adequate online attenuation storage to mitigate for the increased paved area associated with the highway widening works. The additional surface water flows arising from the increased paved area and the applied climate change allowance could not be sufficiently attenuated through the use of online storage in oversized pipework and the existing underground attenuation storage system built by the developers as part of the Beaulieu Park development. The discharge of unattenuated increased surface water flows



from the proposed Junction 19 southbound on-slip road to the existing A12 mainline highway drainage would exceed the capacity of the existing highway drainage system, resulting in larger exceedance flows and increased surface water drainage flood risk. This increased flood risk would be unacceptable as it does not comply with the drainage design criteria described in Section 4 and would also potentially put road users at increased risk. Also, it should be noted that if online attenuation storage in oversized pipework was provided for a portion of the increased surface water flows, the depth of the proposed highway drainage system would need to increase to accommodate the larger diameter pipework. The increase in the depth of the proposed highway drainage to the A12 mainline highway drainage system as per the existing case (i.e. existing slip road highway drainage connects into an existing chamber located in the A12 mainline central reserve) thereby making the proposal of using oversized pipes unfeasible.

- 5.2.6 Due to the above-described site specific constraints, Boreham Bridge, Generals Farm Roundabout and the Junction 19 southbound on-slip road have been separated out from the original whole proposed S1-OU1 catchment to create a new catchment (i.e. proposed S1-OU7A catchment) with an outfall to Ordinary Watercourse 2 (See Plate 5.2). As the proposed S1-OU7A catchment is a new catchment with a new outfall location, a minimum practicable allowable discharge rate of 5 l/s has been utilised (as defined in Section 4.6) to mitigate flood risk to the receiving watercourse and to size the attenuation pond for the proposed S1-OU7A catchment. The outfall discharge rate will be controlled by a vortex flow control device with the flow backing up into the proposed highway drainage system and into the proposed attenuation pond. The design options taken into account to inform the proposed attenuation pond potential locations are discussed in Section 7.3.
- 5.2.7 The new proposed S1-OU1 catchment (minus the above-described proposed S1-OU7A catchment) will largely retain the existing catchment arrangement, however, it will require a new outfall to the River Chelmer to provide a positive outfall downstream of the proposed attenuation pond. The existing case brownfield allowable discharge rates associated with the existing S1-OU1 catchment have been determined through the hydraulic modelling of the relevant existing highway drainage systems to inform the proposed highway drainage design requirements (including the attenuation storage volumes). It is proposed to attenuate the surface water runoff from the proposed S1-OU1 catchment through the provision of an attenuation pond as shown in Plate 5.2. Refer to Appendix C which presents the proposed discharge rates, the attenuation storage volumes and the flow control device types / diameters to be employed for the proposed S1-OU1 and S1-OU7A catchment highway drainage systems.
- 5.2.8 The proposed drainage system layout plans are presented in Appendix A Junction 19 Proposed Drainage System Layouts. The proposed case hydraulic modelling results for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events plus climate change allowance are presented in Appendix B Junction 19 Proposed Drainage System Hydraulic Modelling Results.



## 5.3 Proposed Catchment S1-OU10 and S1-OU10A

5.3.1 The proposed S1-OU10 catchment is associated with the existing B1137 (Main Road) near Boreham which spurs off Junction 19 and heads east. As described in Section 2 the B1137 local road here is subject to widening works from Junction 19 to its eventual tie-in to the existing B1137 carriageway approximately 230m east from Junction 19. The proposed S1-OU10A catchment is associated with the proposed Payne's Lane access road that is to be removed and replaced to provide a new bridleway access to a proposed WCH overbridge near the A12 mainline carriageway (i.e. north of the B1137) as shown in Plate 5.1. The existing and proposed site condition paved areas and any permeable catchment areas draining into the proposed highway drainage systems for the proposed S1-OU10 and S1-OU10A catchments are presented in Table 5.2 below.

## Table 5.2 Paved Area Summary for the Proposed S1-OU10 and S1-OU10ACatchments

Proposed Catchment	Existing Paved Area*	New Paved Area	Total Proposed Paved Area*	Total Proposed Permeabl e Area**	Catchment Specific Comments
	(ha)	(ha)	(ha)	(ha)	
S1-OU10	0.531	0.127	0.658	0.102	Proposed online widening works on the B1137 local road. The existing paved area is associated with the existing B1137 local road footprint contained within the proposed S1-OU10 catchment boundary
S1-OU10A	0.011	0.099	0.110	0.014	Proposed online highway improvement works to Payne's Lane. The existing paved area is associated with the existing Payne's Lane footprint contained within the proposed S1-OU10A catchment boundary

\*The total proposed paved area is the sum of the existing paved area (adjusted existing paved area presented in brackets, where applicable) to be retained and the additional new paved area which will form the proposed highway drainage catchment areas in the vicinity of the proposed Junction 19.

\*\*Permeable catchment areas include grassed verges, grassed roundabout centre islands, cut slopes, embankment slopes, etc. that drain into the proposed highway drainage systems.

5.3.2 The proposed S1-OU10 and S1-OU10A catchments will discharge to chambers located on the existing highway drainage system serving the B1137 (Main Road) as shown in Plate 5.1 previously. The existing case brownfield allowable discharge rates to be used for the proposed S1-OU10 and S1-OU10A catchments have been determined through the hydraulic modelling of the relevant existing highway drainage systems to inform the proposed highway drainage design requirements including the attenuation storage volumes.



- 5.3.3 It is proposed to attenuate the surface water runoff from the proposed S1-OU10 and S1-OU10A catchments with the provision of offline underground geocellular attenuation storage systems as shown in Plate 5.2. Offline underground geocellular attenuation storage systems are required due to spatial constraints within the proposed scheme permanent acquisition of land boundary and land take restrictions to the east and south of the proposed B1137 highway widening works. These spatial constraints and landtake restrictions are described in further detail in Section 7.4 and Section 7.5. The discharge rates at the outfalls for both the proposed S1-OU10 and S1-OU10A catchments will be controlled by an orifice plate flow control device with the flow backing up into the proposed highway drainage system and into the aforementioned offline underground geocellular attenuation storage systems located immediately north of the proposed highway widening works. Refer to Appendix C which presents the proposed discharge rates, the attenuation storage volumes and the flow control device types / diameters to be employed for the proposed S1-OU10 and S1-OU10A catchment highway drainage systems.
- 5.3.4 The proposed drainage system layout plans are presented in Appendix A Junction 19 Proposed Drainage System Layouts. The proposed case hydraulic modelling results for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events plus climate change allowance are presented in Appendix B – Junction 19 Proposed Drainage System Hydraulic Modelling Results.

## 5.4 Proposed Catchment S1-OU11 and S1-OU12

- 5.4.1 The proposed S1-OU11 catchment is comprised of a portion of the A12 mainline, the proposed Junction 19 northbound on-slip road, a portion of the A138 side road adjoining the A12 mainline and a small portion of the proposed realigned A131 highway (RDR) as described in Section 2 previously. The A12 mainline carriageway and the A138 side road are subject to highway widening works. The proposed Junction 19 northbound on-slip road and the proposed realigned A131 highway (RDR) introduce additional offline new paved areas. The proposed S1-OU12 catchment extends for an approximate 460m length of the A12 mainline from the northern end of Junction 19 to the end of the proposed highway works at a location in the vicinity of the western boundary of Boreham. Highway widening works are required for this localised portion of the A12 mainline to accommodate the adjoining proposed Junction 19 southbound off-slip road.
- 5.4.2 The existing and proposed site condition paved areas and any permeable catchment areas draining into the proposed highway drainage systems for the proposed S1-OU11 and S1-OU12 catchments are presented in Table 5.3 below.



#### Table 5.3 Paved Area Summary for the Proposed S1-OU11 and S1-OU12 Catchments

Proposed Catchment	Existing Paved Area*	New Paved Area	Total Proposed Paved Area*	Total Proposed Permeable Area**	Catchment Specific Comments
	(ha)	(ha)	(ha)	(ha)	
S1-OU11	0 (0.942)	0.670	1.612	4.17	The existing paved area is associated with the existing S1-OU12 catchment contained within the proposed S1-OU11 catchment boundary (see catchment specific comments for the proposed S1-OU12 catchment)
S1-OU12	3.409 (2.467)	0.068	2.535	2.386	The existing paved area (3.409ha) is associated with the existing S1-OU12 catchment that has been divided up between the proposed S1-OU11 catchment and the proposed S1-OU12 catchment (i.e. 2.467ha will be retained within the proposed S1-OU12 catchment boundary while 0.942ha will be drained by the proposed S1-OU11 catchment)

\* The total proposed paved area is the sum of the existing paved area (adjusted existing paved area presented in brackets, where applicable) to be retained and the additional new paved area which will form the proposed highway drainage catchment areas in the vicinity of the proposed Junction 19.

\*\* Permeable catchment areas include grassed verges, grassed roundabout centre islands, cut slopes, embankment slopes, etc. that drain into the proposed highway drainage systems.

### **Proposed Catchment S1-OU11 Necessity**

#### Whole Proposed S1-OU12 Catchment

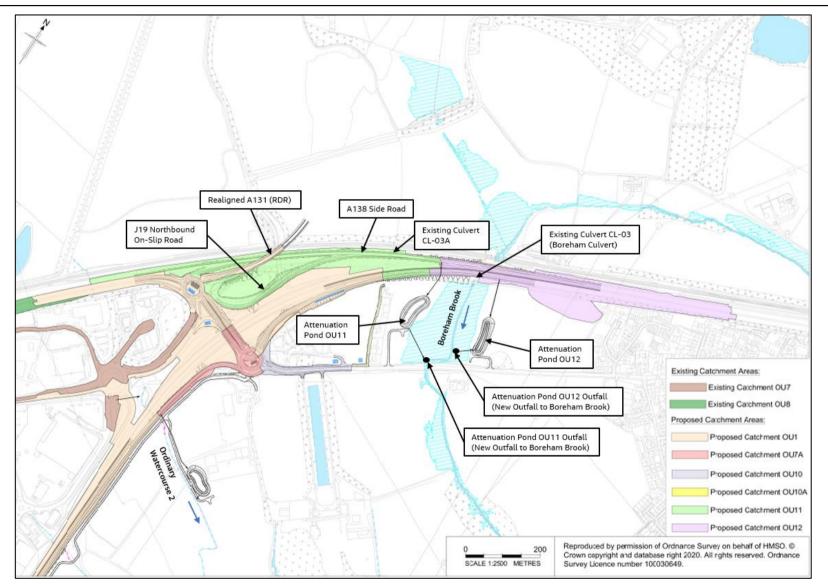
5.4.3 An initial assessment of the proposed S1-OU12 catchment (referred as the "whole proposed S1-OU12 catchment"), prior to requiring the catchment split into the proposed S1-OU11 and proposed S1-OU12 catchments, was undertaken with a view to retain the existing S1-OU12 catchment and outfall arrangement. The hydraulic model for the whole proposed S1-OU12 catchment was simulated with all the new additional paved areas from the online highway widening works and the new additional offline paved areas introduced by the proposed A12 scheme in the vicinity of Junction 19. The hydraulic model performance of the whole proposed case S1-OU12 catchment was assessed against the highway drainage design criteria described in Section 4 and the proposed drainage design assessment approach discussed in Section 5.1. It is noted that the A12 mainline northbound and southbound carriageways to the east of the whole proposed S1-OU12 catchment are located outside the proposed highway works extents.



Therefore, the associated existing highway drainage systems serving the aforementioned northbound and southbound carriageway outside the proposed scheme extents would be unaffected and is proposed to be retained.

5.4.4 The proposed highway drainage interventions for Junction 19 and the associated adjoining slip roads (i.e. in the form of the upgrade and / or replacement of existing highway drainage and new highway drainage for new proposed offline highway sections) were to mitigate and restrict the increased surface water flows discharging to the A12 mainline existing highway drainage system due to the proposed highway widening works, the additional new paved area for proposed offline highway sections and to accommodate the increased flows resulting from climate change. The provision of the proposed attenuation ponds to limit the discharge rates to the nearby Boreham Brook would mitigate the increased flood risk from the increased paved area associated with the above-described proposed highway works and climate change. The highway drainage interventions provided within the proposed S1-OU11 and S1-OU12 catchments are shown in Plate 5.3 and summarised in the subsequent bullet points below.





#### Plate 5.3 Drainage Interventions for the Proposed S1-OU11 and S1-OU12 Catchments



## Proposed S1-OU11 Catchment Separated Out from the Whole Proposed S1-OU12 Catchment

- **5.4.5** The highway drainage design approach of providing a single attenuation pond as the means of surface water flow attenuation was assessed for the proposed S1-OU11 catchment while it was originally considered as part of the above-described whole proposed S1-OU12 catchment prior to the eventual proposed catchment separation. However, the approach of providing a single attenuation pond was found to be unfeasible and therefore a new outfall arrangement was required for the following reasons / constraints:
  - Unfeasible to Provide Single Large Attenuation Pond to Attenuate the Combined Proposed S1-OU11 and S1-OU12 Catchments - The provision of a single large attenuation pond to provide attenuation storage for the combined proposed S1-OU11 and S1-OU12 catchments was found to be unfeasible as the large attenuation pond footprint required to accommodate the significant attenuation storage volume would encroach into the nearby fluvial flood zones associated with the Boreham Brook (the blue hatched areas shown on Plate 5.3). Also, locating a single large attenuation pond further outside the Boreham Brook fluvial flood zones was found to be unfeasible as it would position the attenuation pond in steeper terrain which would create a deeper attenuation pond which would have increased health and safety risks during the construction and operational phases. For example, during the construction stage the increased excavation depth for the proposed attenuation pond would result in larger cutting slopes thereby presenting an increased risk of slope instability. During the operational stage the increased attenuation pond depth could result in an increased risk of drowning during maintenance operations.

In addition, there is potentially a shallow groundwater table in the vicinity. The excavation of a larger and deeper attenuation pond could potentially intercept the shallow groundwater table which could result in groundwater intrusion to the proposed attenuation pond or require the proposed attenuation pond to be lined with an impermeable liner.

• Unfeasible to Connect and Discharge the Proposed S1-OU11 Catchment Highway Drainage into the Proposed S1-OU12 Highway Drainage - The existing highway geometry has a low point in the vicinity of the Boreham Brook. Therefore, to achieve a single large attenuation pond for the combined S1-OU11 and S1-OU12 catchments, would result in significant ground cover depths above the proposed S1-OU11 highway drainage pipework. This would be the case as it would require the proposed S1-OU11 highway drainage pipework to be replaced/upgraded and to run against the grade in order to connect into the proposed S1-OU12 catchment highway drainage. The deeper proposed highway drainage system would also have limited vertical clearance to the existing Boreham Brook culvert (Culvert CL-03) and could present an increased risk to the structural integrity of the existing Boreham Brook Culvert. Also, it should be noted that an increase in the depth of the proposed highway drainage system would also result in a potential clash with an existing culvert (Culvert CL-03A) thereby making this proposal unfeasible.



- Inadequate Online Attenuation Storage Capacity within the Proposed S1-OU11 Catchment Highway Drainage System The upgrades to the existing highway drainage serving the A12 mainline and adjoining slip roads / side roads would not provide adequate online attenuation storage to mitigate for the increased paved area associated with the highway widening works. The additional surface water flows arising from the increased paved area and the applied climate change allowance could not be sufficiently attenuated through the use of online storage in oversized pipework. This would result in increased surface water flows discharging to the A12 mainline highway drainage compared to the existing case and therefore increased surface water flood risk. This increased surface water flood risk would be unacceptable as it does not comply with the drainage design criteria described in Section 4 and would also potentially put road users at increased risk.
- 5.4.6 Due to the above-described site specific constraints, the proposed A131 highway (RDR), the A138 side road, the Junction 19 northbound on-slip road and a portion of the A12 mainline located to the east of Junction 19 have been separated out from the whole proposed S1-OU12 catchment to create a new catchment (i.e. proposed S1-OU11 catchment) with an outfall to Boreham Brook (See Plate 5.3). As this is primarily an existing catchment, existing case brownfield allowable discharge rates have been utilised to limit the discharge rate accordingly in the proposed case, to size the attenuation storage for the proposed S1-OU11 catchment and thereby mitigate flood risk. The proposed S1-OU11 catchment will require a new outfall to Boreham Brook to provide a positive outfall downstream of the proposed attenuation pond. The proposed S1-OU11 catchment outfall discharge rate will be controlled by a vortex flow control device with the flow backing up into the proposed highway drainage system and into the proposed attenuation pond. The design options taken into account to inform the proposed attenuation pond potential locations are discussed in Section 7.6.
- 5.4.7 The new proposed S1-OU12 catchment (minus the above-described proposed S1-OU11 catchment) will largely retain the existing catchment arrangement, however, it will require the attenuation of the increased surface water flows as a result of the climate change allowance requirements (See Section 4.4). The existing case allowable discharge rates associated with the existing S1-OU12 catchment have been determined through the hydraulic modelling of the relevant existing highway drainage systems to inform the proposed highway drainage design requirements (including the attenuation storage volumes). It is proposed to attenuate the surface water runoff from the proposed S1-OU12 catchment through the provision of an attenuation storage pond as shown in Plate 5.3. A new outfall to Boreham Brook will be required to provide a positive outfall downstream of the proposed attenuation pond. It should be noted that the allowable discharge rates for the proposed S1-OU11 and S1-OU12 catchments have been adjusted to manage the mitigation requirements for attenuation storage due to the site specific constraints described above. The proposed adjusted allowable discharge rates have been limited to proposed catchments with the same receptors (i.e. Boreham Brook in the case of the proposed S1-OU11 and S1-OU12 catchments) ensuring that there is no overall increase in the discharge rates to the watercourse above the existing condition and therefore no adverse flood risk impact. Despite the requirement for the new S1-OU12





catchment outfall to drain the proposed highway, the existing S1-OU12 catchment outfall (i.e. shown in Plate 3.1 previously) will be retained to maintain the positive discharge of the existing earthworks slope drainage serving the A12 mainline. Refer to Appendix C which presents the proposed discharge rates, the attenuation storage volumes and the flow control device types / diameters to be employed for the proposed S1-OU11 and S1-OU12 catchment highway drainage systems.

5.4.8 The proposed drainage system layout plans are presented in Appendix A – Junction 19 Proposed Drainage System Layouts. The proposed case hydraulic modelling results for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events plus climate change allowance are presented in Appendix B – Junction 19 Proposed Drainage System Hydraulic Modelling Results.



## 6 Attenuation Storage Design Principles and Associated Landtake

## 6.1 Attenuation Ponds

- 6.1.1 The landtake requirements and areal footprints for the attenuation pond locations presented in Section 5 have been informed by the following best practice drainage design criteria in accordance with DMRB and the CIRIA SuDS Manual C753 (CIRIA, 2015):
  - In general, the attenuation pond maximum top water level design depth of 0.90m and additional 0.30m freeboard is informed by the 1 in 100 year return period storm event plus 20% climate change allowance. As described in Section 4.4, climate change allowance is applied to account for the potential increase in rainfall intensity over the design life of the proposed scheme and therefore minimise the risk of overtopping and flooding. However, there may be a need to depart from this depth criterion due to site specific constraints such as the topography, minimising the excavation depth and earthworks balancing between cut and fill;
  - The total design depth of the proposed attenuation ponds (i.e. generally, 0.9m design water depth plus 0.3m freeboard) has been assumed to be provided above the proposed attenuation pond outlet pipe invert level where practicable;
  - An additional water depth of 0.3m has been allowed for in the base of the attenuation ponds (i.e. below the attenuation pond outlet pipe invert level) to create a "wetland" feature to achieve further water quality treatment and biodiversity benefits. The additional water depth below the attenuation pond outlet pipe invert also provides some further mitigation for potential increased flood volumes due to climate change. During dry weather periods before heavy rainfall events the aforementioned additional water depth will likely have partially evaporated thereby providing some additional attenuation storage volume;
  - The attenuation pond earthworks side slopes are 1 in 4 where there are no spatial constraints. In spatially constrained locations earthworks side slopes of 1 in 3 are used. A crest width of 4m is provided around the proposed attenuation ponds for maintenance access;
  - Proposed attenuation ponds will have sediment forebays provided at the inlet to allow the gravity separation of suspended sediments contained within the incoming surface water flows;
  - Attenuation ponds are situated outside the 1 in 100 year return period (including an allowance for climate change) modelled fluvial floodplain for Boreham Brook and the EA flood zones 2 and 3 fluvial flood extents for the River Chelmer;
  - The attenuation ponds are to be surrounded by fencing to prevent unauthorised access and ensure the safety of the general public; and



 To provide a safe means of access and egress to the attenuation ponds for general maintenance located off the proposed highway alignment, access tracks are provided.

## 6.2 Underground Geocellular Attenuation Storage Systems

- 6.2.1 The landtake requirements and areal footprints for the underground geocellular attenuation storage systems presented in Section 5 have been informed by the following best practice drainage design criteria in accordance with DMRB and the CIRIA SuDS Manual C753 (CIRIA, 2015):
  - The Stormbloc geocellular attenuation storage product by Hydro International was assumed at the preliminary design stage to inform the proposed highway drainage design. The standard geocellular units have dimensions of 0.66m (H) x 0.80m (L) x 0.80m (W). The shallow geocellular units have dimensions of 0.36m (H) x 0.80m (L) x 0.80m (W). The geocellular units have a void ratio of 0.95.
  - In general, the underground geocellular attenuation storage system size is informed by the 1 in 100 year return period storm event plus 20% climate change allowance. As described in Section 4.4, climate change allowance is applied to account for the potential increase in rainfall intensity over the design life of the proposed scheme and therefore minimise the risk of surcharging and flooding from the underground attenuation storage;
  - At the preliminary design stage, a minimum design cover depth for proposed underground geocellular attenuation storage systems was assumed to be 1.00m as this is typical. The site specific minimum cover depth requirements will be assessed in detail at the detailed design stage.
  - The underground geocellular attenuation storage systems are to be surrounded by fencing to prevent unauthorised access and ensure the safety of the general public; and
  - To provide a safe means of access and egress to the proposed underground geocellular attenuation storage systems for general maintenance located off the proposed highway alignment, access tracks are provided.



## 7 Selected and Alternative Attenuation Storage Locations

## 7.1 Overview

- 7.1.1 Regarding the positioning of the attenuation storage locations, it should be noted that the selected attenuation storage locations, as described in Section 5 and shown in Plate 5.2 and Plate 5.3 previously, are considered the most suitable and feasible solutions. Following on from the proposed highway drainage solutions described in Section 5 and the attenuation storage design principles (and associated landtake implications) described in Section 6, the key design considerations that informed the selection of the attenuation storage locations are as follows:
  - Accommodating, where practicable, the consultation feedback received from local landowners;
  - The proposed highway drainage system hydraulic performance requirements. The proposed highway drainage systems are designed to ensure that the proposed highways can be drained by gravity without the requirements for a pumped discharge solution;
  - Consideration of the local topography at the attenuation pond and underground geocellular attenuation storage system locations in avoiding their positioning in the vicinity of steep terrain where practicable. This is to avoid excessive earthworks and provide stable side slopes;
  - Minimising the risk of drowning by reducing the depth of attenuation ponds and underground geocellular attenuation storage systems;
  - Locating the attenuation ponds and underground geocellular attenuation storage systems close to the proposed highway alignment where practicable to minimise longer pipework alignments that could potentially create deeper attenuation storages;
  - Attenuation ponds and underground geocellular attenuation storage systems are situated outside the fluvial floodplain so as not to occupy areas of fluvial flood storage and therefore to mitigate increasing the fluvial flood risk locally. This design criteria also ensures that the attenuation ponds and underground geocellular attenuation storage systems are not inundated with fluvial floodwater and remain operational during major storm events;
  - The presence of existing and proposed underground utilities (e.g. gas pipelines, electricity cables, telecommunications cables, drainage systems, etc.) has been factored in the attenuation storage locations to minimise the number of complex utility diversions required;
  - Minimising the adverse impacts on the current landuse (e.g. the S1-OU1 and S1-OU7A attenuation ponds have been positioned to minimise the impact on the current use of land for the Chelmsford car-boot sale site);
  - The attenuation pond and underground geocellular attenuation storage system locations have been optimised and co-ordinated with the



environmental mitigation required on the proposed A12 Scheme where possible. The environmental mitigation required includes compensation tree planting, creating ecological mitigations for local wildlife, etc. and so the attenuation storage locations have been optimised to limit the creation of disjointed environmental mitigation provisions.

7.1.2 The alternative attenuation storage locations were initially considered in the development of the proposed highway drainage design proposals with the attenuation storages located closer to the A12 mainline along the southbound carriageway (i.e. south of Junction 19). However, these alternative attenuation storage locations were discounted on the basis of the design criteria described above and has taken into account the discussions with local landowners and their representatives during the highway drainage design development process. The site specific design development process for the proposed S1-OU1, S1-OU7A, S1-OU10, S1-OU10A, S1-OU11 and S1-OU12 catchment attenuation storage locations is described further in Section 7.2 to Section 7.6 below.

## 7.2 Proposed Catchment S1-OU1

### **Selected Attenuation Pond Location**

- 7.2.1 The selected S1-OU1 attenuation pond location (shown in Plate 7.1 below) is the chosen design solution as its positioning maximises the amount of the proposed S1-OU1 catchment which drains to the attenuation pond prior to discharging to the nearby River Chelmer. Therefore, this ensures that the selected attenuation pond location provides the required attenuation storage volume for the total proposed catchment and maximises the volume of surface water runoff from the proposed highway that can be subjected to the pollution treatment measures provided by the attenuation pond (described in Section 4.9 previously). As described in Section 5.2 previously the proposed S1-OU1 catchment will continue to discharge to the River Chelmer at existing site condition brownfield discharge rates. This reduces the attenuation storage volume required and therefore reduces the proposed attenuation pond volume / areal footprint.
- 7.2.2 The various alternative attenuation pond locations assessed for the proposed S1-OU1 catchment are all located on the eastern side of the A12 mainline along the southbound carriageway. This is due to the spatial constraints provided by the dense urbanised areas on the western side of the A12 mainline and to retain the existing highway drainage outfalls located on the eastern side of the A12 mainline.

### Alternative Attenuation Pond Location "A"

- 7.2.3 The S1-OU1 alternative attenuation pond location "A" was initially considered as a potential location but was discounted due to the site specific design implications regarding the attenuation pond positioning and the associated provision of a new outfall location. The site specific design implications that resulted in the discounting of this alternative attenuation pond location are as follows:
  - The S1-OU1 alternative attenuation pond location "A" would require the new outfall to be located on a different watercourse compared to that which the existing S1-OU1 catchment discharges to (i.e. River Chelmer). Therefore, the



new outfall location would be required to discharge at greenfield runoff rates as opposed to the greater existing case S1-OU1 catchment brownfield discharge rates. The reduction in allowable discharge rates to greenfield discharge rates would result in a larger attenuation pond thereby requiring a larger landtake.

- Positioning the attenuation pond at the S1-OU1 alternative attenuation pond location "A" would result in a section of the A12 mainline alignment (i.e. located between the selected S1-OU1 attenuation pond location and the S1-OU1 alternative attenuation pond location) bypassing the S1-OU1 alternative attenuation pond location "A". This would therefore require the provision of a second smaller proposed attenuation pond to enable the attenuation of surface water runoff for the aforementioned A12 mainline highway alignment that would bypass the S1-OU1 alternative attenuation pond location. The provision of two attenuation ponds would therefore increase the landtake requirement thereby resulting in the discounting of the S1-OU1 alternative attenuation pond location "A".
- Water quality treatment measures would also be better served at the selected attention pond location given that it can intercept the entire proposed S1-OU1 catchment. As stated in the previous bullet point, the S1-OU1 alternative attenuation pond location "A" would require the provision of a second smaller attenuation pond further downstream thereby requiring water quality treatment measures at two attenuation pond locations as opposed to one location.

### **Alternative Attenuation Pond Location "B"**

- 7.2.4 The S1-OU1 alternative attenuation pond location "B" was initially considered as a potential location but was discounted due to the site specific design and landuse implications regarding the attenuation pond positioning and the associated provision of a new outfall location. The site specific design implications that resulted in the discounting of this alternative attenuation pond location are as follows:
  - The S1-OU1 alternative attenuation pond location "B" was discounted due to the location being used by the Chelmsford Car Boot Sale. Through the A12 consultation process a request was received from the landowners to maintain the current use of this land as a car boot sale site.
  - Similar to the S1-OU1 alternative attenuation pond location "A", the proposed case discharge rates would have to be limited to greenfield runoff rates as a new outfall would need to be located on a different watercourse compared to that which the existing S1-OU1 catchment discharges to (i.e. River Chelmer). The reduction in allowable discharge rates to greenfield discharge rates would result in a larger attenuation pond thereby requiring a larger landtake.
  - Similar to the S1-OU1 alternative attenuation pond location "A", positioning the attenuation pond at the S1-OU1 alternative attenuation pond location "B" would result in a section of the A12 mainline alignment (i.e. located between the selected S1-OU1 attenuation pond location and the S1-OU1 alternative attenuation pond location "B") bypassing the S1-OU1 alternative attenuation pond location. This would therefore require the provision of a



second smaller proposed attenuation pond to enable the attenuation of surface water runoff for the aforementioned A12 mainline highway alignment that would bypass the S1-OU1 alternative attenuation pond location.

• Similar to the S1-OU1 alternative attenuation pond location "A", water quality treatment measures would also be better served at the selected attention pond location given that it can intercept the entire proposed S1-OU1 catchment. As stated in the previous bullet point, the S1-OU1 alternative attenuation pond location "B" would require the provision of a second smaller attenuation pond further downstream thereby requiring water quality treatment measures at two attenuation pond locations as opposed to one location.

## **Alternative Attenuation Pond Location "C"**

- 7.2.5 The S1-OU1 alternative d attenuation pond location "C" was initially considered as a potential location but was discounted due to the site specific design implications regarding the attenuation pond positioning and the associated provision of a new outfall location. The site specific design implications that resulted in the discounting of this alternative attenuation pond location are as follows:
  - The S1-OU1 alternative attenuation pond location "C" positioned the attenuation pond at a greater distance from the A12 mainline highway. This would require greater lengths of highway drainage pipework to convey the collected surface water runoff to the attenuation pond location.
  - The topography in the vicinity of the S1-OU1 alternative attenuation pond location "C" is generally steep terrain. Therefore, the steep terrain would result in a further increase in the depth of the earthworks required to form the attenuation pond at this location.
  - Similar to the S1-OU1 alternative attenuation pond locations "A" and "B", the proposed case discharge rates would have to be limited to greenfield runoff rates as a new outfall would need to be located on a different watercourse compared to that which the existing S1-OU1 catchment discharges to (i.e. River Chelmer). The reduction in allowable discharge rates to greenfield discharge rates would result in a larger attenuation pond thereby requiring a larger landtake.
  - Similar to the S1-OU1 alternative attenuation pond locations "A" and "B", positioning the proposed attenuation pond at the S1-OU1 alternative attenuation pond location "C" would result in a section of the A12 mainline alignment (i.e. located between the selected S1-OU1 attenuation pond location and the S1-OU1 alternative attenuation pond location "C") bypassing the S1-OU1 alternative attenuation pond location. This would therefore require the provision of a second smaller attenuation pond to enable the attenuation of surface water runoff for the aforementioned A12 mainline highway alignment that would bypass the S1-OU1 alternative attenuation pond locations "A" and "B", water quality treatment measures would also be better served at the selected attenuation pond location given that it can intercept the entire proposed S1-OU1 catchment. As stated in the previous bullet point, the



S1-OU1 alternative attenuation pond location "C" would require the provision of a second smaller attenuation pond further downstream thereby requiring water quality treatment measures at two attenuation pond locations as opposed to one location.



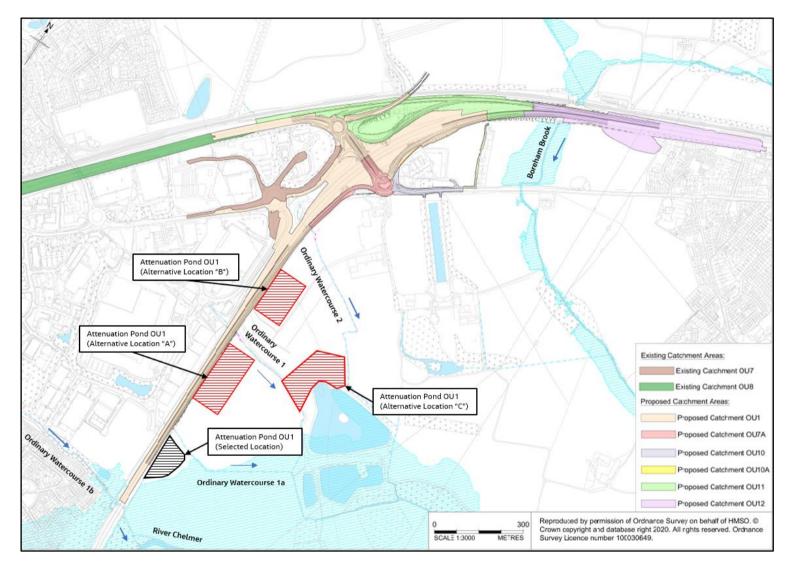


Plate 7.1 Proposed S1-OU1 Catchment Selected and Alternative Attenuation Pond Locations



## 7.3 **Proposed Catchment S1-OU7A**

### **Selected Attenuation Pond Location**

- 7.3.1 The selected S1-OU7A attenuation pond location (shown in Plate 7.2 below) is the chosen design solution as its positioning maximises the amount of the proposed S1-OU7A catchment which drains to the attenuation pond prior to discharging to the nearby Ordinary Watercourse 2. Therefore, this ensures that the selected attenuation pond location provides the required attenuation storage volume for the total proposed catchment and maximises the volume of surface water runoff from the proposed highway that can be subjected to the pollution treatment measures within the attenuation pond (described in Section 4.9 previously).
- 7.3.2 The various alternative attenuation pond locations assessed for the proposed S1-OU7A catchment are all located on the eastern side of the A12 mainline. This is due to the spatial constraints provided by the dense urbanised areas on the western side of the A12 mainline.

### **Alternative Attenuation Pond Location "A"**

- 7.3.3 The S1-OU7A alternative attenuation pond location "A" was initially considered as a potential location but was discounted due to the site specific landuse implications regarding the attenuation pond positioning. The site specific design implications that resulted in the discounting of this alternative attenuation pond location are as follows:
  - The S1-OU1 alternative attenuation pond location "A" was discounted due to the location being currently used by the Chelmsford Car Boot Sale. Through the A12 consultation process a request was received from the landowners to maintain the current use of this land as a car boot sale site.

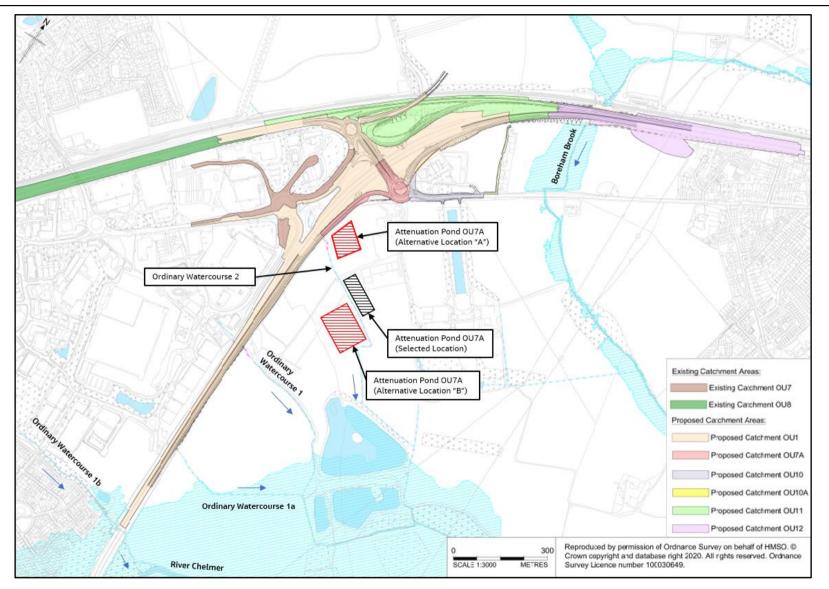
## **Alternative Attenuation Pond Location "B"**

- 7.3.4 The S1-OU7A alternative attenuation pond location "B" was initially considered as a potential location but was discounted due to the site specific landuse implications regarding the attenuation pond positioning. The site specific design implications that resulted in the discounting of this alternative attenuation pond location are as follows:
  - The S1-OU7A alternative attenuation pond location "B" and outfall arrangement was not feasible hydraulically. The option would require the attenuation pond inlet pipe to be culverted underneath the nearby Ordinary Watercourse 2 which would result in a deeper attenuation pond and associated greater areal footprint / landtake requirement.
  - The S1-OU7A alternative attenuation pond location "B" positioned the attenuation pond at a greater distance from the A12 mainline highway. This would require greater lengths of highway drainage pipework to convey the collected surface water runoff to the attenuation pond location. This would result in a deeper attenuation pond and associated larger areal footprint / landtake requirement.



• Due to the above-described design implications the S1-OU7A alternative attenuation pond location "B" is not selected as it would not be possible to drain the attenuation pond via gravity to Ordinary Watercourse 2 and a pumping station would be required





### Plate 7.2 Proposed S1-OU7A Catchment Selected and Alternative Attenuation Pond Locations



## 7.4 Proposed Catchment S1-OU10

# Selected Underground Geocellular Attenuation Storage System Location

- 7.4.1 An attenuation pond solution was discounted early in the design development process for the proposed S1-OU10 catchment due to the deep design depth required at the downstream end of the proposed S1-OU10 drainage system at the outfall location. The depth required is to maintain the connectivity of deeper existing highway drainage systems in the vicinity as part of the proposed works. The deep design depth would result in an excessively large attenuation pond for a relatively small catchment area thereby resulting in a larger landtake. Additionally, there would be an increased drowning risk during periodic maintenance works. Therefore, the selected and alternative underground geocellular attenuation storage location solutions are presented below.
- 7.4.2 The selected S1-OU10 underground geocellular attenuation storage system location (shown in Plate 7.3 below) is the chosen design solution as its close proximity to the proposed highway minimises the depth of the aforementioned attenuation storage and avoids the environmental, ecological, existing utilities and heritage (i.e. Boreham House) impacts described subsequently for the discounted S1-OU10 alternative underground geocellular attenuation storage locations "A" and "B". As described in Section 5.3 previously the proposed S1-OU10 catchment will discharge at existing case allowable discharge rates to the existing highway drainage system serving the B1137 (Main Road) via a new outfall. Therefore, this enables the underground geocellular attenuation storage system to discharge at the existing case brownfield allowable discharge rates as opposed to greenfield runoff rates. This reduces the attenuation storage volume required and therefore reduces the underground geocellular attenuation storage system volume / areal footprint.

# Alternative Underground Geocellular Attenuation Storage Location "A"

- 7.4.3 The S1-OU10 alternative underground geocellular attenuation storage system location "A" was initially considered as a potential location but was discounted due to the site specific landuse implications regarding the attenuation storage positioning. The site specific design implications that resulted in the discounting of this alternative attenuation storage location are as follows:
  - The S1-OU10 alternative attenuation storage location "A" was initially considered as a potential location but was discounted due to the available land being part of the private Boreham House. Boreham House is a Grade 1 listed building and also contains a Registered Park and Garden.
  - Positioning the proposed underground geocellular attenuation storage system at this location would result in a section of the proposed B1137 highway (i.e. located between the selected S1-OU10 attenuation storage location and the S1-OU10 alternative attenuation storage location) bypassing the S1-OU10 alternative attenuation storage location "A". This would therefore require the provision of a second smaller underground geocellular attenuation storage system to enable the attenuation of surface water runoff for the

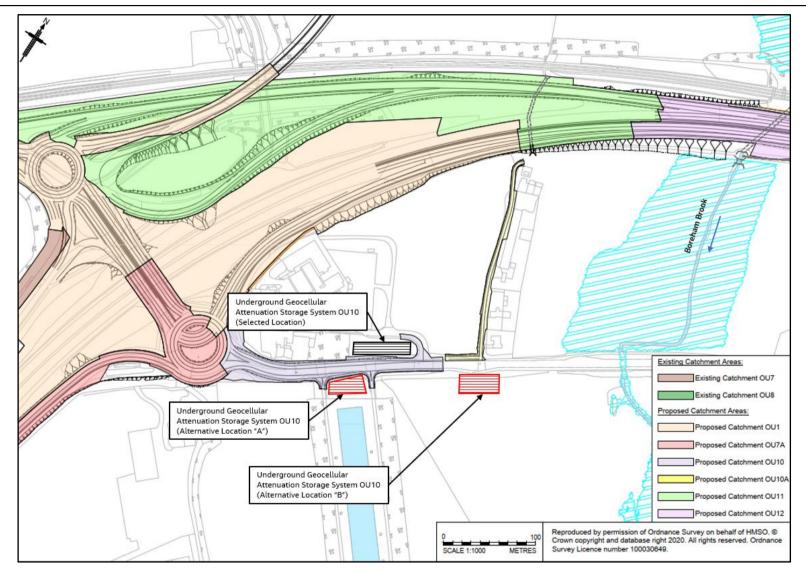


aforementioned B1137 highway alignment that would bypass the S1-OU10 alternative attenuation storage location "A". The provision of two underground geocellular attenuation storage systems would therefore increase the landtake requirement thereby resulting in the discounting of the S1-OU10 alternative attenuation storage location "A".

# Alternative Underground Geocellular Attenuation Storage Location "B"

- 7.4.4 The S1-OU10 alternative underground geocellular attenuation storage system location "B" was initially considered as a potential location but was discounted due to the site specific design implications regarding the aforementioned attenuation storage positioning. The site specific design implications that resulted in the discounting of this alternative attenuation storage location are as follows:
  - The S1-OU10 alternative attenuation storage location "B" was discounted due to the presence of mature trees within the land parcel. The loss of the aforementioned mature trees would have a negative impact on the visual amenity and ecology in the vicinity in addition to the loss of a carbon sink.
  - Existing underground utilities (e.g. telecommunications cables, electrical cables, gas pipeline, etc.) are present within the S1-OU10 alternative attenuation storage location "B" which would require utility diversions. Utility diversions would increase the proposed case landtake requirement as new utility corridors would be required





### Plate 7.3 Proposed S1-OU10 Catchment Selected and Alternative Underground Geocellular Attenuation Storage Locations



## 7.5 Proposed Catchment S1-OU10A

# Selected Underground Geocellular Attenuation Storage System Location

7.5.1 The selected S1-OU10A underground geocellular attenuation storage system location (shown in Plate 7.4 below) is the chosen design solution as its close proximity to the proposed Payne's Lane minimises the depth of the aforementioned attenuation storage in addition to avoiding the environmental, ecological and existing utilities impacts described subsequently for the discounted S1-OU10A alternative attenuation storage location "A". As described in Section 5.3 previously the proposed S1-OU10A catchment will discharge at existing case allowable discharge rates to the existing highway drainage system serving the B1137 (Main Road). Therefore, this enables the underground geocellular attenuation storage volume required and therefore reduces the underground geocellular attenuation storage volume required and therefore reduces the underground geocellular attenuation storage system volume / areal footprint.

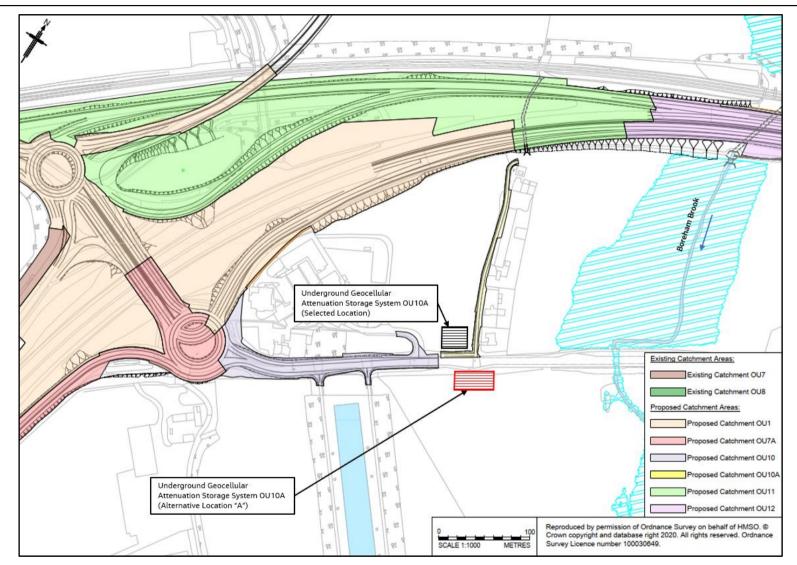
# Alternative Underground Geocellular Attenuation Storage Location "A"

- 7.5.2 The S1-OU10A alternative underground geocellular attenuation storage system location "A" was initially considered as a potential location but was discounted due to the site specific design implications regarding the aforementioned attenuation storage positioning. The site specific design implications that resulted in the discounting of this alternative attenuation storage location are as follows:
  - The S1-OU10A alternative attenuation storage location "A" was discounted due to the presence of mature trees within the land parcel. The loss of the aforementioned mature trees would have a negative impact on the visual amenity and ecology in the vicinity in addition to the loss of a carbon sink.
  - Existing underground utilities (e.g. telecommunications cables, electrical cables, gas pipeline, etc.)) are present within the S1-OU10A alternative attenuation storage location "A" which would require utility diversions. Utility diversions would increase the proposed case landtake requirement as new utility corridors would be required.
- 7.5.3 No other alternative underground geocellular attenuation storage system locations were considered for the proposed S1-OU10A catchment due to the spatial constraints to the east of Payne's Lane. Also, it is not practicable to locate the proposed underground geocellular attenuation storage system in the available land further west of Payne's Lane as it would increase the depth of the proposed highway drainage system and become more remote from a potential outfall location to the B1137 (Main Road) highway drainage system. It should be noted that an attenuation pond solution was discounted during the design development process for the proposed S1-OU10A catchment due to landtake constraints imposed by the proposed scheme permanent acquisition of land boundary. The proposed Payne's Lane WCH route (see Plate 2.1 and Plate 7.4) was developed late in the preliminary design stage after the consultation process such that the proposed scheme permanent acquisition of land boundary was



fixed at the time. Therefore, an attenuation pond solution could not be accommodated within the available land parcel. Hence, the selected and alternative underground geocellular attenuation storage location solutions are presented below.





### Plate 7.4 Proposed S1-OU10A Catchment Selected and Alternative Underground Geocellular Attenuation Storage Locations



# 7.6 Proposed Catchments S1-OU11 and S1-OU12

## Selected Attenuation Pond Location

- 7.6.1 The selected S1-OU11 and S1-OU12 attenuation pond locations (shown in Plate 7.5 below) are the chosen design solutions as their positioning maximises the amount of the proposed S1-OU11 and S1-OU12 catchments which drain to the attenuation ponds prior to discharging to the nearby Boreham Brook. Therefore, this ensures that the selected attenuation pond locations provide the required attenuation storage volume for the total catchment and maximises the volume of surface water runoff from the proposed highway that can be subjected to the pollution treatment measures within the attenuation pond (described in Section 4.9 previously). The selected S1-OU11 and S1-OU12 attenuation pond locations are not located immediately adjacent to the A12 mainline as the terrain is higher and steeper near the highway and falls away to the south. Hence, the selected S1-OU11 and S1-OU12 attenuation pond locations are located further south of the A12 mainline to take advantage of the flatter ground and thereby reduce the depth of the attenuation ponds. As described in Section 5.4 previously the proposed S1-OU11 and S1-OU12 catchments will continue to discharge to the Boreham Brook (similar to the existing site condition) via new outfalls due to site constraints associated with the proposed highway geometry and attenuation pond positioning. Therefore, this enables the attenuation ponds to discharge at the existing case brownfield allowable discharge rates as opposed to reduced greenfield runoff rates. This reduces the attenuation storage volume required and therefore reduces the attenuation pond volumes / areal footprints.
- 7.6.2 The alternative attenuation pond locations assessed for the proposed S1-OU11 and S1-OU12 catchments are all located on the southern side of the A12 mainline. This is to retain similar highway drainage outfall location arrangements to the existing site condition and due to spatial constraints provided by the Great Eastern Main Line railway embankment.

# S1-OU11 and S1-OU12 Alternative Underground Geocellular Attenuation Storage Locations "A"

- 7.6.3 The S1-OU11 and S1-OU12 alternative attenuation pond' locations "A" were initially considered as potential locations but were discounted due to the site specific design and fluvial floodplain implications regarding the attenuation storage positioning. The site specific design implications that resulted in the discounting of these alternative attenuation storage locations are as follows:
  - The S1-OU11 and S1-OU12 alternative attenuation pond locations "A" were discounted due their encroachment into the fluvial flood zones associated with Boreham Brook. Encroaching into the floodplain could increase fluvial food risk locally and potentially adversely impact the operation of the attenuation storage ponds during major storm events.
- 7.6.4 Locating the S1-OU11 and S1-OU12 alternative attenuation pond locations "A" further outside the Boreham Brook fluvial flood zones was found to be unfeasible as it would position the attenuation ponds in steeper terrain. This would create deeper attenuation ponds which has more associated health and safety risks (i.e. as stated in Section 7.1) and would also result in a larger landtake.



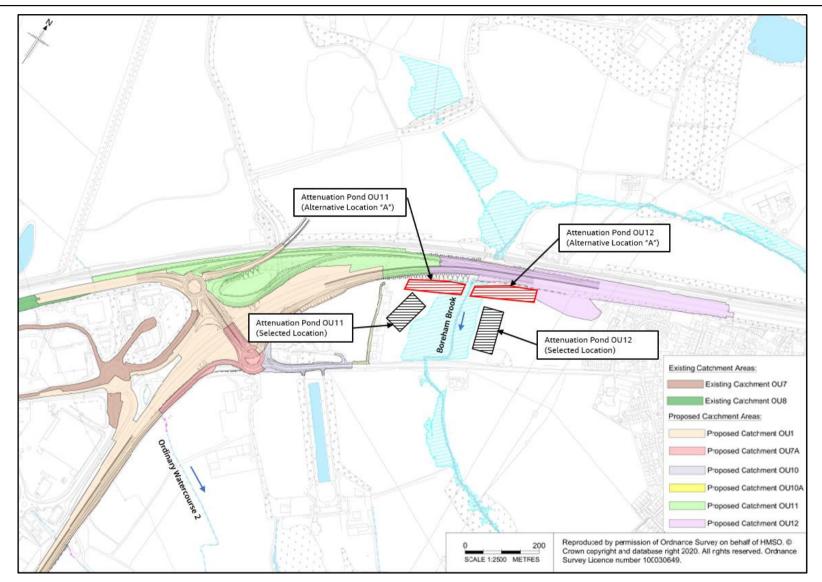


Plate 7.5 Proposed S1-OU11 and S1-OU12 Catchments Selected and Alternative Attenuation Pond Locations



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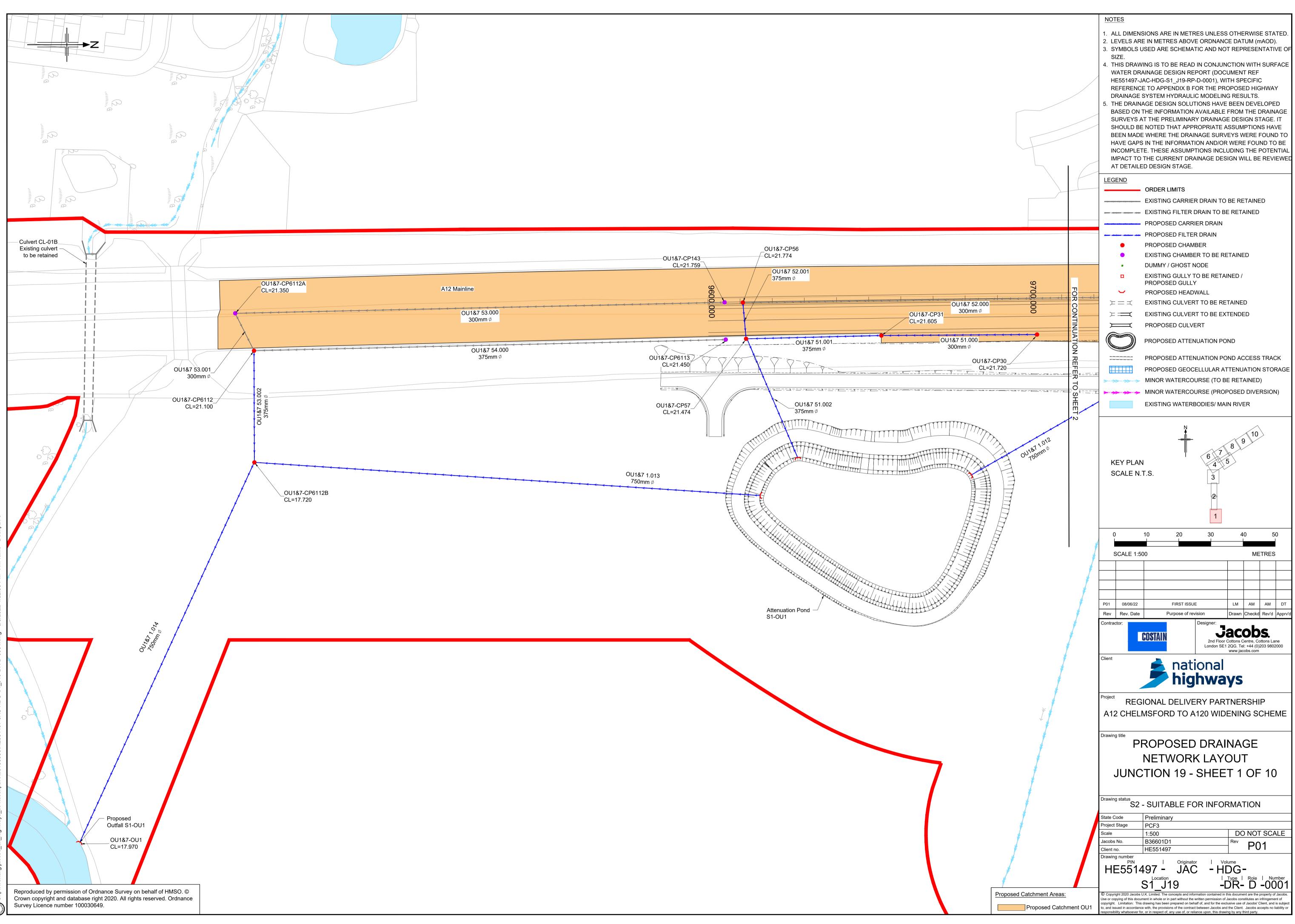
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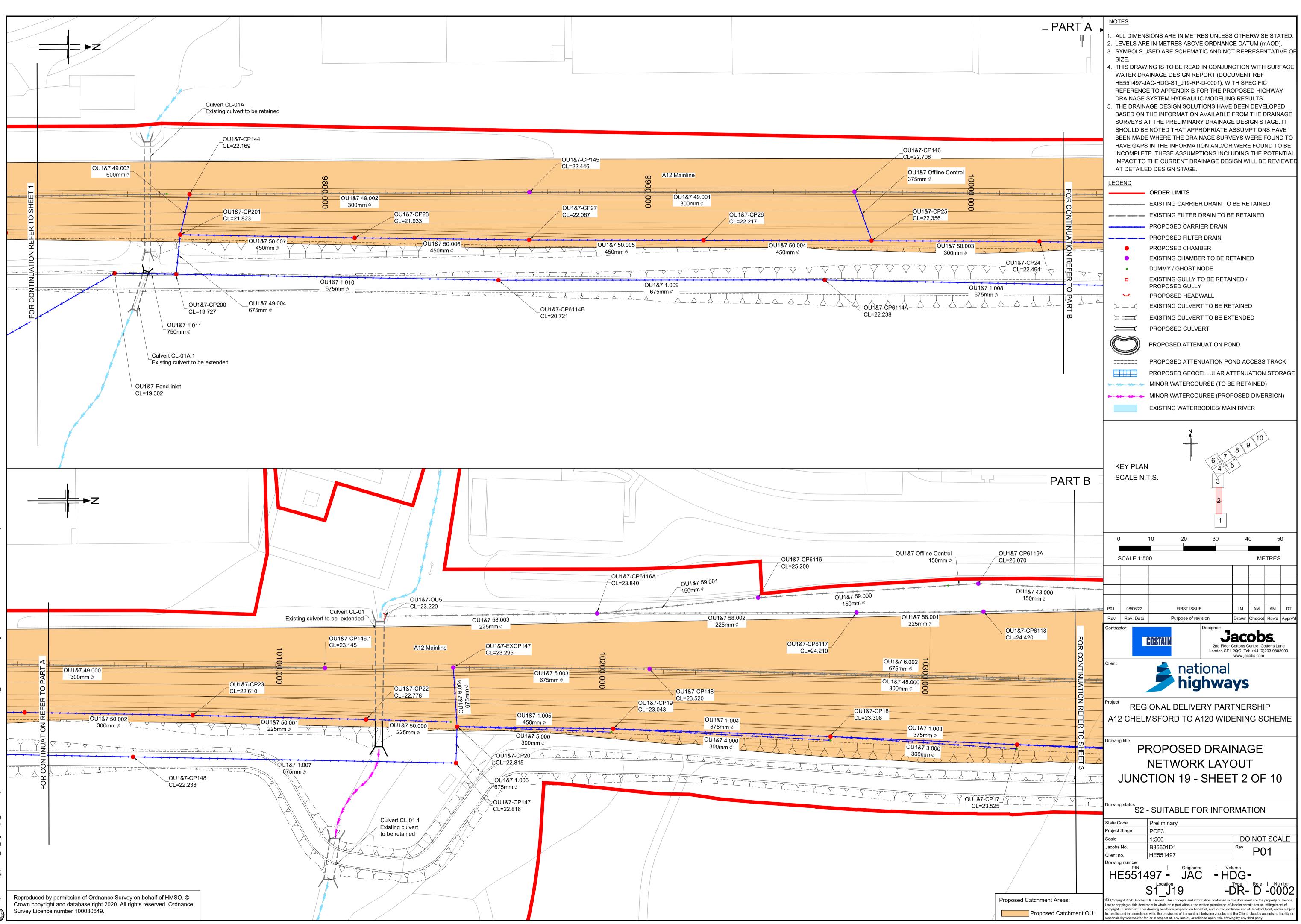
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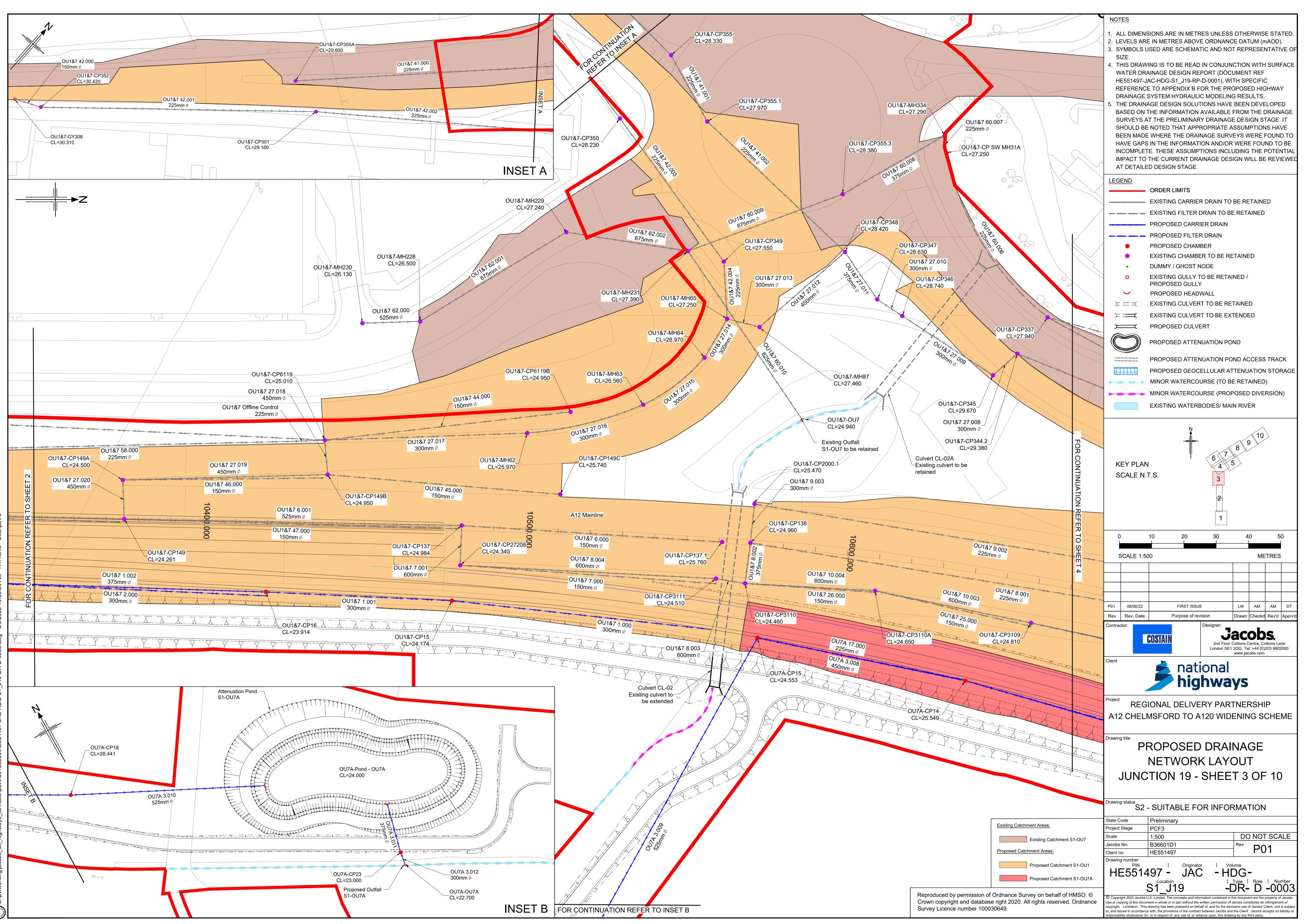


Appendix A - Junction 19 Proposed Drainage System Layouts

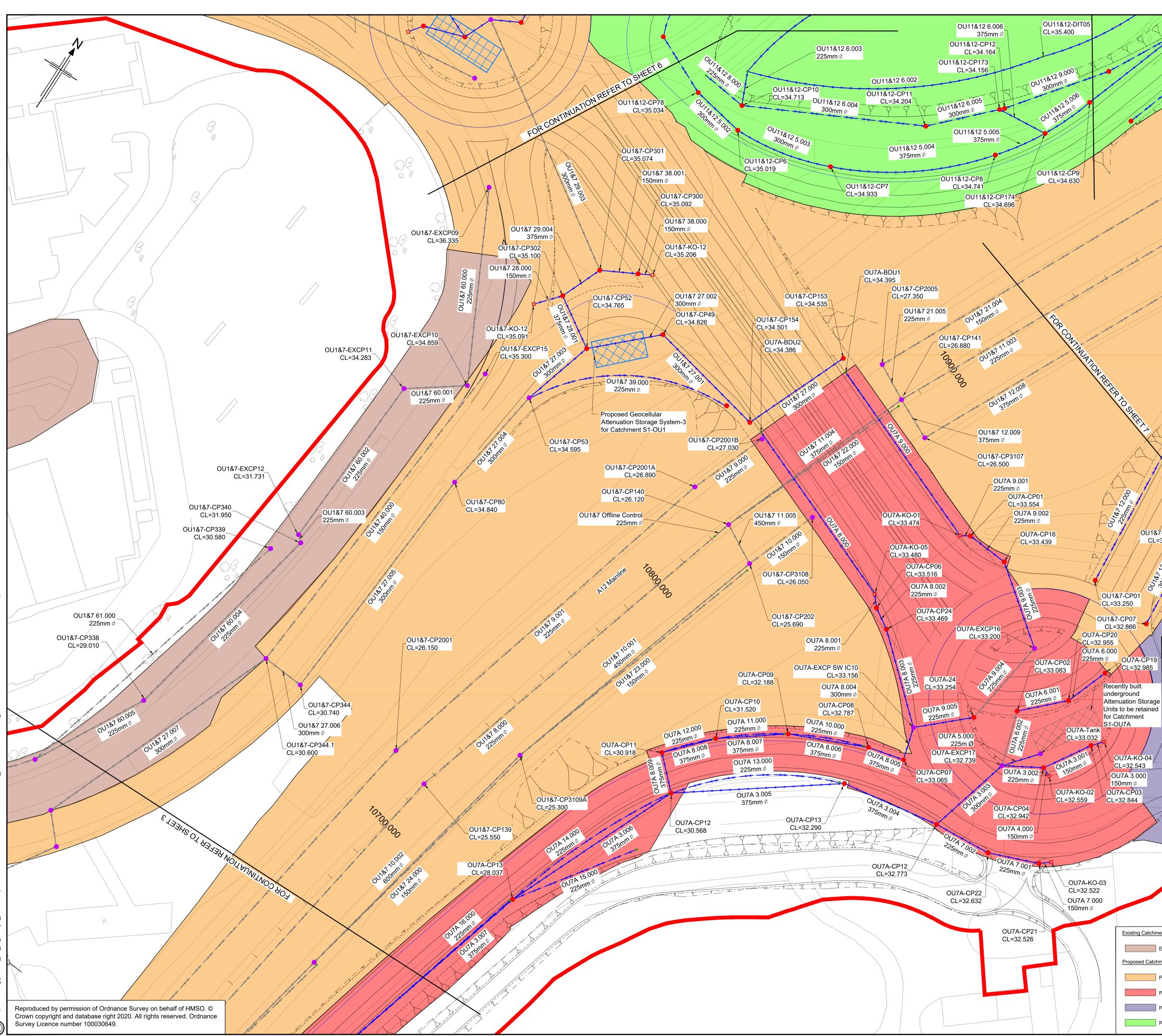




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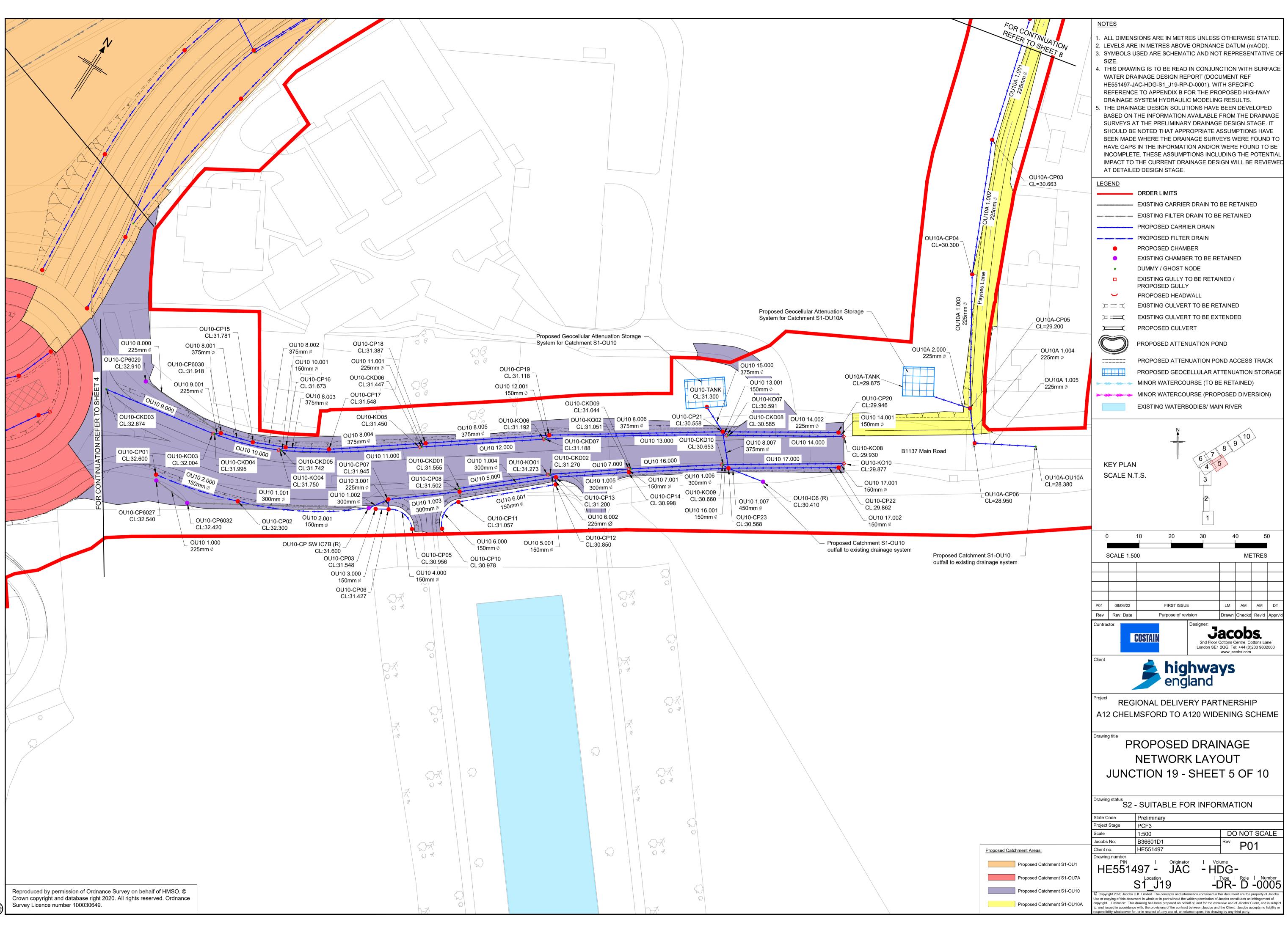
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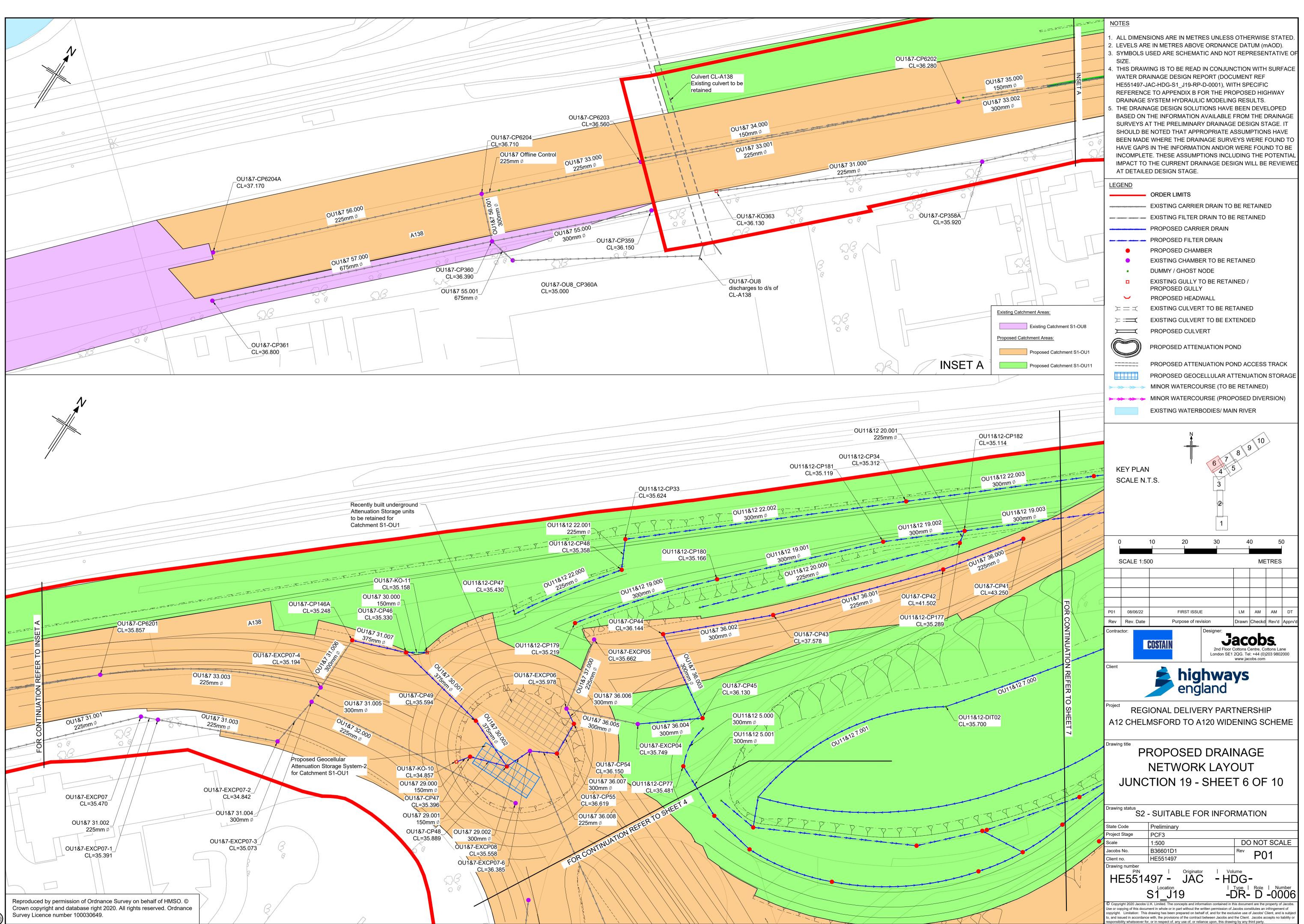
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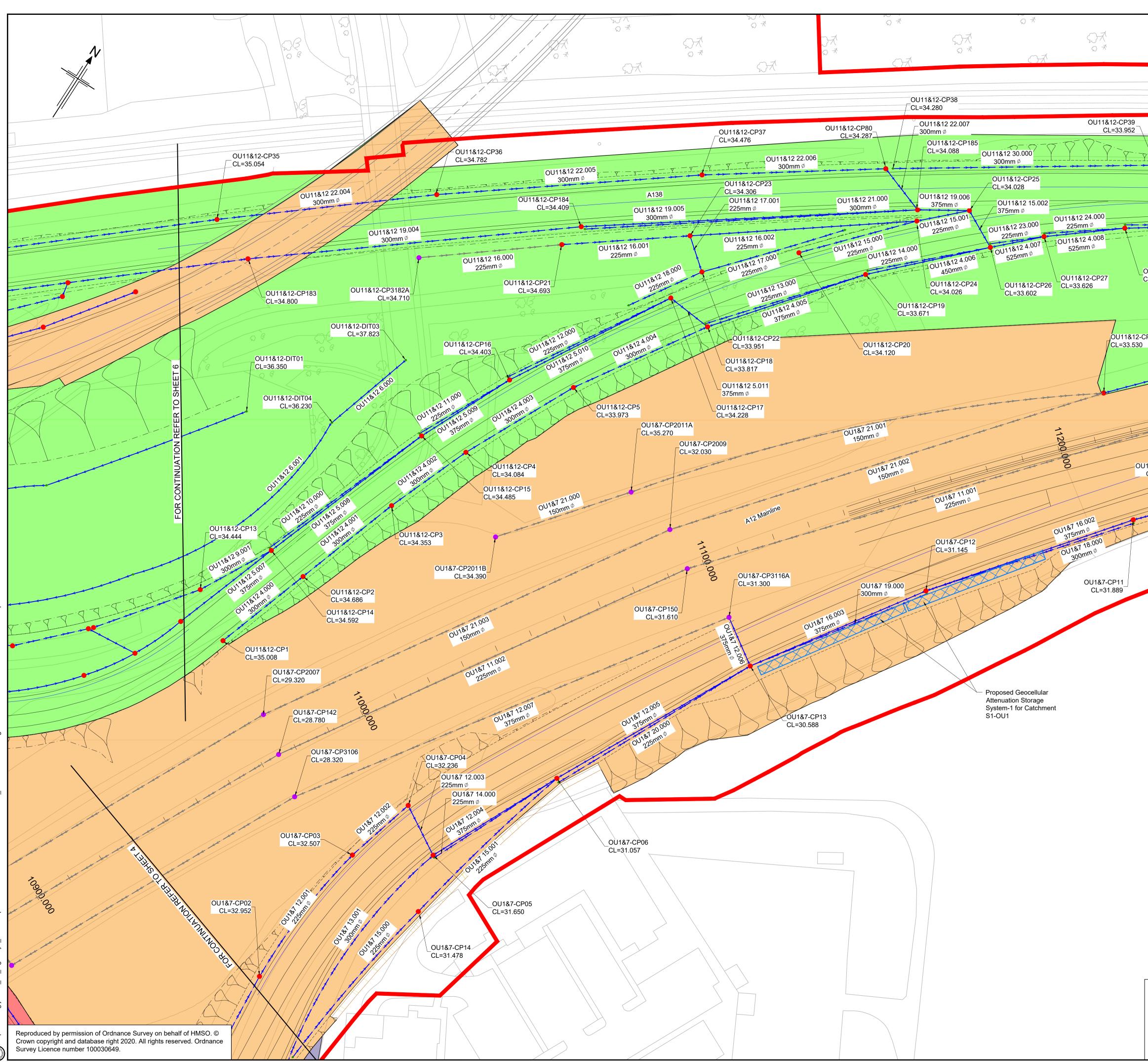
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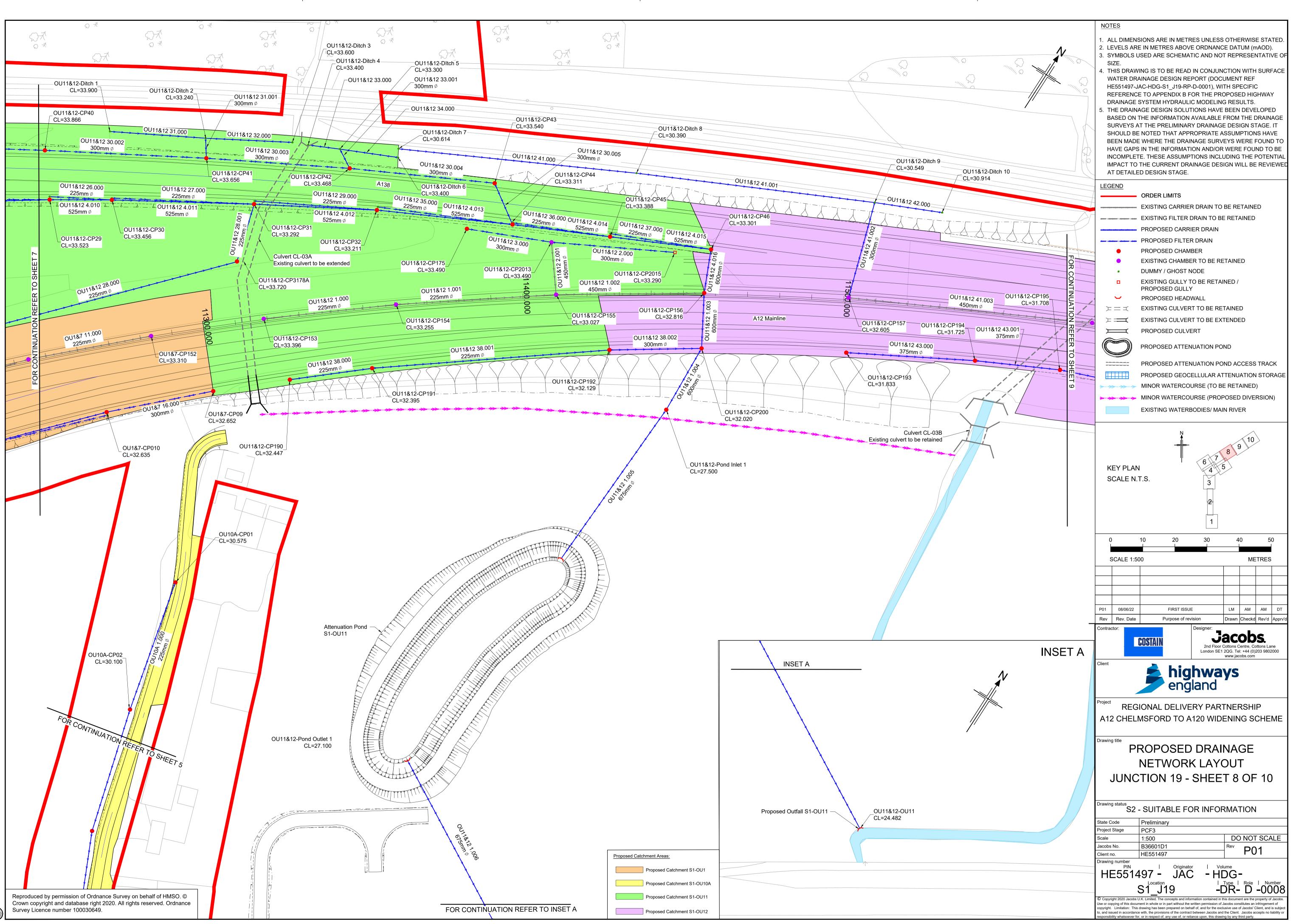


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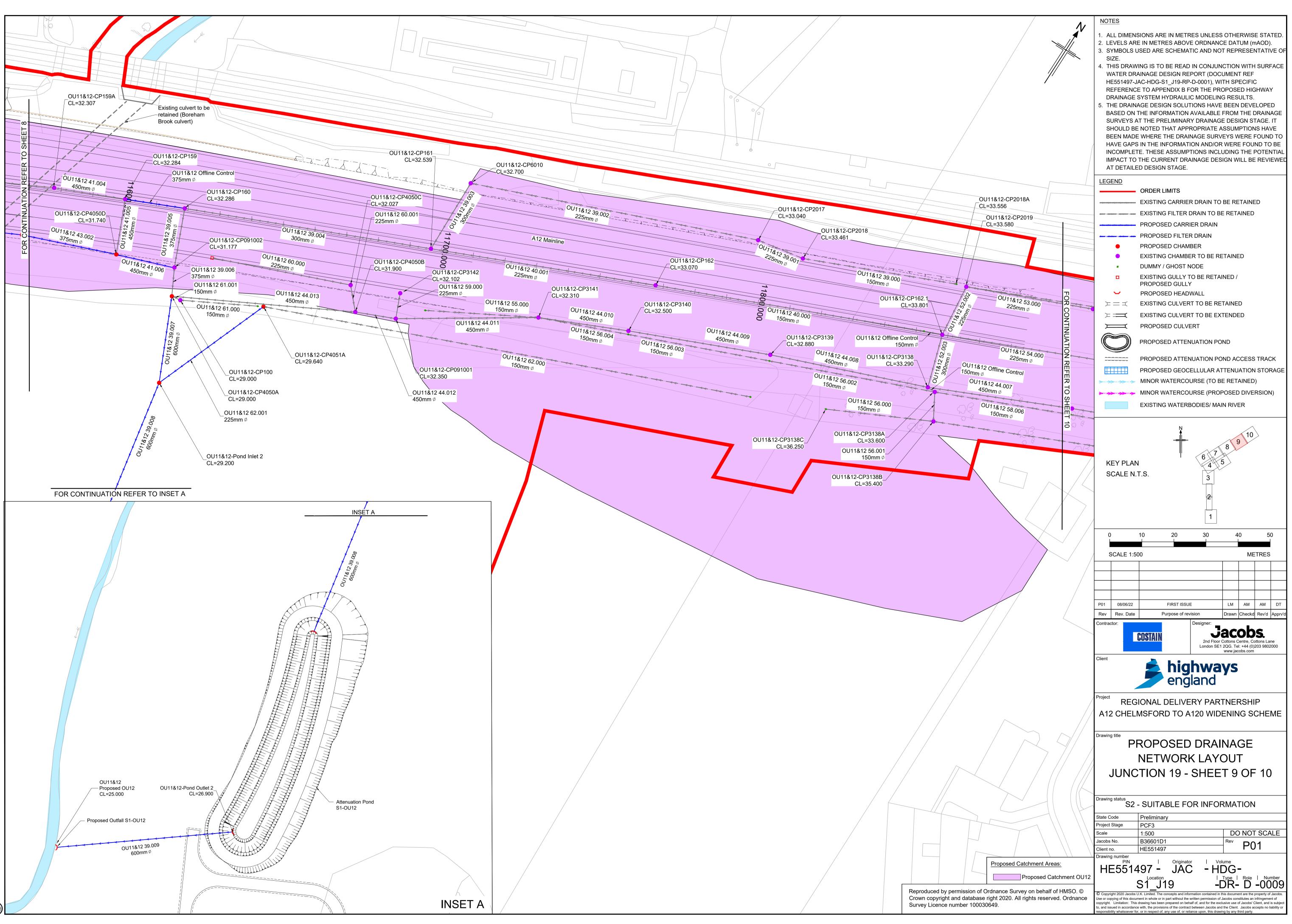


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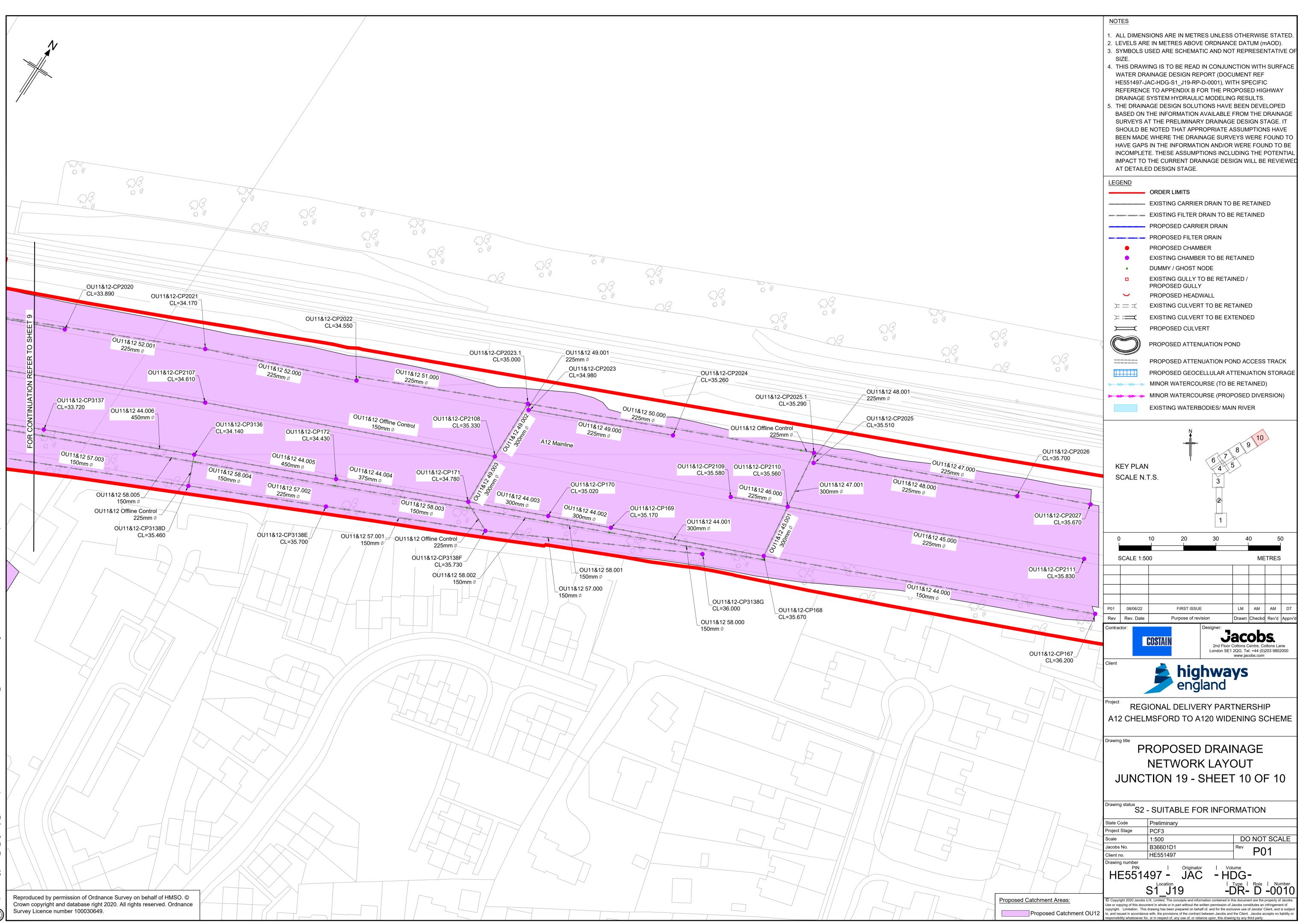
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# Appendix B - Junction 19 Proposed Drainage System Hydraulic Modelling Results

Project Name	A12 Chelmsford to A120 widening scheme
Project Number	HE551497

File Number	HE551497-JAC-HDG-S1_J19-CA-D-0001											
Document Description	MICRODRAINAGE MODELLING RESULTS FOR PROPOSED CATCHMENT S1-OU1											
Purpose of Issue	S2 - SUITABLE FOR INFORMATION	Status Code	S2									
Current Revision		P01										
Calculation Number	1	Index Page	1 of 34	Sheet Nos (incl. cover sheet)	34							

P01	FIRST ISSUE	DG	AM	AM	DT	07/06/22
Rev	Comments	Originated	Checked	Reviewed	Approved	Date

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#### Summary

This calculation sheet documents the Microdrainage modelling results (1D analysis) for the proposed highway drainage catchment "Section 1 - Outfall 1 (S1-OU1)" for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events.

It should be noted that the Microdrainage modelling results have been summarised by "the maximum water level for critical storm duration" for all design events meaning that the discharge rates presented from the Microdrianage modelling results may vary slightly from the proposed discharge rates documented within Appendix C - Table C.1 of the surface water drainage design report (Document Ref. HE551497-JAC-HDG-S1\_J19-RP-D-0001).

Jacobs Engineering Limited		Page 1
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	- Micro
Date 15/12/2021	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3 FEH19	Checked by AM	Diamage
Innovyze	Network 2020.1.3	
	ll Details for Proposed Network S1-OU1&7	
Outfall On Pipe Number	utfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
1.014	OU1 17.970 15.970 15.820 2000 2000	
Free Flowing Outfa	ll Details for Proposed Network S1-OU1&7	
	utfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
55.001 OU8	B/CP360A 35.000 33.827 0.000 1200 0	
Free Flowing Outfa	ll Details for Proposed Network S1-OU1&7	
Outfall O Pipe Number	utfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
58.003	OU5 23.220 21.795 0.000 0 0	
Free Flowing Outfa	ll Details for Proposed Network S1-OU1&7	
Outfall Or Pipe Number	utfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
60.010	OU7 24.940 23.430 0.000 1800 0	
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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micco
ate 15/12/2021	Designed by DG	
ile proposed case drainage model_s1_ou1_7 df3 feh19	Checked by AM	Drainage
nnovyze	Network 2020.1.3	
Online Contr	cols for Proposed Network S1-OU1&7	
Orifice Manhole:	CP13, DS/PN: 12.006, Volume (m <sup>3</sup> ): 21.2	
Diameter (m) 0.243 I	Discharge Coefficient 0.600 Invert Level (m) 28.713	
Orifice Manhole:	EXCP07, DS/PN: 31.002, Volume (m³): 4.0	
Diameter (m) 0.1/1 1	Discharge Coefficient 0.600 Invert Level (m) 33.630	
<u>Hydro-Brake® Optimum Ma</u>	anhole: CP55, DS/PN: 36.008, Volume (m³): 4.8	
Unit Reference MD-SHE-0056-2000-2090-2000 Design Head (m) 2.090	Objective Minimise upstream storageInvert Level (m) 32.950ApplicationSurface Minimum Outlet Pipe Diameter (mm) 75	
Design Flow (l/s) 2.0 Sum Flush-Flo™ Calculated Di	np Available Yes Suggested Manhole Diameter (mm) 1200	
Control Points Head (m) Flow (1/s) Control Points Head	(m) Flow (1/s) Control Points Head (m) Flow (1/s) Control Points Head	d (m) Flow (l/s)
Design Point (Calculated) 2.090 2.0 Flush-Flo™ 0.	.248 1.3 Kick-Flo® 0.504 1.1 Mean Flow over Head Range	- 1.5
	hip for the Hydro-Brake® Optimum as specified. Should another type of control devi	ice other than a Hydro-H
${\tt Optimum} {\tt {\mathbb B}}$ be utilised then these storage routing calculations will be invalidated as the storage routing calculation of the storage routing c	ted	
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	.000 2.0 3.000 2.4 5.000 3.0 7.000 3.5	9.000 3.9
	200         2.0         3.500         2.5         5.500         3.1         7.500         3.6           400         2.1         4.000         2.7         6.000         3.2         8.000         3.7	9.500 4.0
	.600         2.2         4.500         2.8         6.500         3.4         8.500         3.8	
<u>Orifice Manhole:</u>	CP53, DS/PN: 27.004, Volume (m <sup>3</sup> ): 7.7	
	Discharge Coefficient 0.600 Invert Level (m) 30.987	
Diameter (m) 0.238 1		
Diameter (m) 0.238 1		

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Jacobs Engineering Limited										Page 3	
•			A12 C	Chelmsfo	rd to A120	widening					
			Secti	on 1							
			Propo	sed Net	work S1-00	1&7				Mic	
Date 15/12/2021			Desig	ned by i	DG						
File PROPOSED CASE DRAINAGE MODE	L S1 OU1 7	DF3 FEH19	Check	ed by Al	М					Ulc	inage
Innovyze			Netwo	rk 2020	.1.3						
	<u>i</u>	Storage Struc	tures	for Prop	osed Netw	ork S1-00	<u>J1&amp;7</u>				
		<u>Cellular St</u>	orage M	Ianhole.	CP13. DS/	PN• 12 0	06				
		<u>oorrarar be</u>	<u>orage r</u>			111. 12.0	00				
1-6		Invert Level (m)		Infiltratio				sity 0.95			
INT	litration Coeff	icient Base (m/hr)	0.00000		5	afety Factor	2.0				
Depth	n (m) Area (m²)	Inf. Area (m <sup>2</sup> ) D	epth (m)	Area (m²) ]	Inf. Area (m²)	Depth (m)	Area (m²) Inf	. Area (m²)			
c	240.0	0.0	0.660	240.0	0.0	0.661	0.0	0.0			
		Collular Ct		(anhala.		DN 20 0	0.0				
		<u>Cellular St</u>	orage M	lannoite:	CP40, D5/	PN: 29.0	02				
		Invert Level (m)		Infiltratio	on Coefficient	Side (m/hr)	0.00000 Porc	sity 0.95			
Inf:	iltration Coeff	icient Base (m/hr)	0.00000		S	afety Factor	2.0				
Depth	n (m) Area (m²)	Inf. Area (m²) D	epth (m)	Area (m²) ]	Inf. Area (m²)	Depth (m)	Area (m²) Inf	. Area (m²)			
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		Callelan Ct	N	(		DNL 26 0	0.0				
		<u>Cellular St</u>	orage M	lannoie:	CP33, D5/	PN: 36.0	<u>08</u>				
		Invert Level (m)		Infiltratio				sity 0.95			
Inf:	iltration Coeff	icient Base (m/hr)	0.00000		S	afety Factor	2.0				
Depth (m) Area (m <sup>2</sup> ) Inf. Area (m <sup>2</sup> ) Depth	n (m) Area (m²)	Inf. Area (m²) D	epth (m)	Area (m²) ]	Inf. Area (m²)	Depth (m)	Area (m²) Inf	. Area (m²) D	epth (m) Ar	ea (m²) Inf	. Area (m²)
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	).700 228.0 ).800 228.0		1.300 1.400	228.0 0.0	0.0		0.0	0.0	2.500	0.0	0.0
	.900 228.0		1.500	0.0	0.0		0.0	0.0			
	.000 228.0		1.600	0.0	0.0		0.0	0.0			
0.500 228.0 0.0 1	.100 228.0	0.0	1.700	0.0	0.0	2.300	0.0	0.0			
		Cellular St	orage M	Ianhole:	CP52, DS/	PN: 27.0	03				
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с	.000 100.0	0.0	0.660	100.0	0.0	0.661	0.0	0.0			
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Jacobs Engineering Limited		Page 4
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021	Designed by DG	— Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3 FEH19	Checked by AM	Diamaye
Innovyze	Network 2020.1.3	
Tank or Pond I	Manhole: Pond Outlet, DS/PN: 1.013	
	Invert Level (m) 16.820	
Depth (m) Area (m <sup>2</sup> ) Depth	(m) Area $(m^2)$ Depth (m) Area $(m^2)$ Depth (m) Area $(m^2)$	
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novyze								work 20									
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			Areal H	Reduction	Factor 1.0	00 Manho	) ole Headlos	Simulation s Coeff (G			MADD Fac	ctor * 1	0m³/ha St	orage 0.000			
				Hot Start		0 Fou	ıl Sewage p	er hectare	e (l/s) 0	.000		Inle	t Coeffie	cient 0.800			
			Hot S	Start Lev	el (mm)	0 Additic	onal Flow -	% of Tota	al Flow O	.000 Flow p	per Perso	on per D	ay (l/per	/day) 0.000			
Number of Input	Hydrogra	phs 0 Numb	per of O	nline Con	trols 4 Nur	nber of Off	fline Contr	ols 5 Num	iber of St	corage Stru	ctures 5	Number	of Time/2	Area Diagran	ns 4 Ni	umber of Re	al Time Controls
							Sunt	thetic Rain	nfall Det	ails							
					Rainfall	Model	<u>bync</u>	motro Nalli		D1 (1km)	0.282	F (1kr	n) 2.556				
				FEH	H Rainfall V				1999	D2 (1km)	0.257 Cv						
							574850 208	8550 TL 748		D3 (1km)		(Winter	:) 1.000				
					C	: (1km)			-0.023	E (1km)	0.314						
				Ma	rgin for Fl	ood Risk W	arning (mm)	)		3	00.0	DVD Sta	atus ON				
				Ма	rgin for Fl		is Timester	p 2.5 Seco	ond Increm	3 ment (Exten	ded) Ine						
				Ma	rgin for Fl			p 2.5 Seco	ond Increm								
				Ma	argin for Fl		is Timester	p 2.5 Seco	ond Increm		ded) Ine						
				Ma	argin for Fl	Analys	is Timester DTS Status	p 2.5 Seco	ond Increm		ded) Ine OFF	rtia Sta	atus ON				
					Durat	Analys Profile ion(s) (mi	is Timester DTS Status (s) ns) 15, 30	p 2.5 Seco s			ded) Ine OFF Summe	ertia Sta	inter 1440				
					Durat Return Peri	Analys Profile ion(s) (mi od(s) (yea	is Timester DTS Status (s) ns) 15, 30 rs)	p 2.5 Seco s		nent (Exten	ded) Ine OFF Summe	ertia Sta	inter 1440 1				
					Durat Return Peri	Analys Profile ion(s) (mi	is Timester DTS Status (s) ns) 15, 30 rs)	p 2.5 Seco s		nent (Exten	ded) Ine OFF Summe	ertia Sta	inter 1440				
					Durat Return Peri	Analys Profile ion(s) (mi od(s) (yea	is Timester DTS Status (s) ns) 15, 30 rs)	p 2.5 Seco s	180, 240	ment (Exten ), 360, 480	ded) Ine OFF Summe , 600, 72	ertia Sta	inter 1440 1		Disc		
	US/MH		Return		Durat Return Peri Clima	Analys Profile ion(s) (mi od(s) (yea te Change	is Timester DTS Status (s) ns) 15, 30 rs) (%)	p 2.5 Seco s	180, 240 Water	ment (Exten ), 360, 480 Surcharged	ded) Ine OFF Summe , 600, 72 Flooded	ertia Sta er and W 20, 960,	inter 1440 1 20	Half Drain Time	Pipe Flow		Level
PN	US/MH Name	Storm			Durat Return Peri	Analys Profile ion(s) (mi od(s) (yea te Change	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	180, 240 Water	ment (Exten ), 360, 480	ded) Ine OFF Summe , 600, 72 Flooded	ertia Sta er and W 20, 960,	inter 1440 1		-	Status	Level Exceeded
	Name		Period	Climate Change	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	180, 240 Water Level (m)	ment (Exten ), 360, 480 Surcharged Depth (m)	ded) Ine OFF , 600, 72 Flooded Volume (m <sup>3</sup> )	er and W 20, 960, Flow / Cap.	inter 1440 1 20 Overflow	Time	Flow (1/s)		Exceeded
<b>PN</b> 1.000 1.001	Name CPDN07	Storm 15 Summer 15 Summer		Climate	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	180, 240 Water - Level	ment (Exten ), 360, 480 Surcharged Depth	ded) Ine OFF Summe , 600, 72 Flooded Volume	er and W 20, 960, Flow / Cap. 0.36	inter 1440 1 20 Overflow	Time	Flow	01	Exceeded
1.000	Name CPDN07 CP15	15 Summer	Period	Climate Change +20%	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	180, 240 Water Level (m) 23.390	<pre>ment (Exten ), 360, 480 Surcharged Depth (m) -0.167</pre>	ded) Ine OFF , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000	er and W 20, 960, Flow / Cap. 0.36	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2	01	Exceeded
1.000 1.001 1.002 2.000	Name CPDN07 CP15 CP16 CPDN09	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 1 1 1 1 1 1	<b>Climate</b> <b>Change</b> +20% +20% +20% +20%	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m) -0.167 -0.109 -0.223 -0.097</pre>	<pre>ded) Ine     OFF     Summe , 600, 72  Flooded Volume     (m³)     0.000     0.000     0.000 </pre>	er and W 20, 960, Flow / Cap. 0.36 0.72 0.32 0.79	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8	01 01 01	Exceeded
1.000 1.001 1.002 2.000 1.003	Name CPDN07 CP15 CP16 CPDN09 CP17	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20%	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m)     -0.167     -0.109     -0.223     -0.097     -0.142</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	rtia Sta er and W 20, 960, <b>Flow /</b> <b>Cap</b> . 0.36 0.72 0.32 0.79 0.68	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8	01 01 01 01 01 01	Exceeded
1.000 1.001 1.002 2.000 1.003 3.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.140</pre>	ded) Ine OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5	00 10 10 10 10 10	Exceeded
1.000 1.001 1.002 2.000 1.003 3.000 1.004	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima <b>First (X)</b>	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.140 -0.120</pre>	ded) Ine OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.77	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5	00 01 01 01 01 01 01 01	Exceeded
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000	Name CPDN07 CP15 CPD16 CPDN09 CP17 CPDN10 CP18 CPDN11	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X)	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226</pre>	<pre>surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.140 -0.120 -0.145</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.77 0.52	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4	01 01 01 01 01 01 01 01 01	<b>Exceeded</b>
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X)	Analys Profile ion(s) (mi od(s) (yea te Change First (Y)	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370</pre>	<pre>xment (Exten xment (Exten xment (Exten xment), 360, 480 xment xment</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.75 0.52 0.64	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6	10 10 10 10 10 10 10 10	<b>Exceeded</b>
1.000 1.001 2.000 1.003 3.000 1.004 4.000 1.005 5.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	<pre>is Timester     DTS Status (s) ns) 15, 30 rs) (%) First (Z)</pre>	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m)     -0.167     -0.109     -0.223     -0.97     -0.142     -0.140     -0.120     -0.145     -0.189     -0.182</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.55 0.77 0.68 0.55 0.77 0.64 0.33	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6 18.6	0 10 10 10 10 10 10 10 10	<b>Exceeded</b>
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922 24.032</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.140 -0.120 -0.145 -0.189 -0.182 0.842</pre>	ded) Ine OFF Summe (600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	rtia Sta er and W 20, 960, Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.77 0.52 0.64 0.33 1.64	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6 18.6 19.4	01 01 01 01 01 01 01 01 01 01 01 01 01 0	Exceeded
1.000 1.001 2.000 1.003 3.000 1.004 4.000 1.005 5.000	Name CPDN07 CP15 CP109 CP17 CPDN10 CP18 CPDN11 CPDN15 CP137.1 CPDN6	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge	Analys Profile ion(s) (mi od(s) (yea te Change <b>First (Y)</b> <b>Flood</b>	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922</pre>	<pre>surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.140 -0.120 -0.145 -0.189 -0.182 0.842 0.999</pre>	ded) Ine OFF Summe (600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.77 0.52 0.64 0.33 1.64 1.60	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6 18.6 18.6 19.4 21.6	0 10 10 10 10 10 10 10 10	<b>Exceeded</b>
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CP15 CP137.1 CPDN6 CPDN1	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge 1/15 Summer 1/15 Summer	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922 24.032 24.032</pre>	<pre>surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.140 -0.120 -0.145 -0.189 -0.182 0.842 0.999</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.77 0.52 0.64 0.33 1.64 1.60 0.85	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6 18.6 19.4 21.6 22.7	OI OI OI OI OI OI OI SURCHARGEI FLOOD RISI	<b>Exceeded</b>
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN1 CPDN6 CPDN1 CP139	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge 1/15 Summer 1/15 Summer 1/15 Summer	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922 24.032 24.032 24.309 24.688</pre>	<pre>surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.142 -0.142 -0.145 -0.189 -0.182 0.842 0.999 0.183</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.55 0.77 0.52 0.64 0.33 1.64 1.60 0.85 1.19	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6 18.6 19.4 21.6 22.7	OI OI OI OI OI OI SURCHARGEI SURCHARGEI SURCHARGEI	<b>Exceeded</b>
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 8.000 8.001 9.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP19 CPDN15 CP137.1 CPDN15 CP137.1 CPDN1 CPDN19 CPDN19 CPDN19 CP139 CP2001B	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge 1/15 Summer 1/15 Summer 1/15 Summer	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922 24.032 24.032 24.688 24.527</pre>	<pre>ment (Exten ), 360, 480 Surcharged Depth (m)     -0.167     -0.109     -0.223     -0.097     -0.142     -0.140     -0.120     -0.145     -0.189     -0.182     0.842     0.999     0.183     0.412     -0.174</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.36 0.55 0.77 0.52 0.64 0.33 1.64 1.60 0.85 1.19 0.12	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.22 42.4 39.7 44.8 77.8 26.5 91.5 27.4 107.6 18.6 19.4 21.6 22.7 36.2	OI OI OI OI OI OI OI OI OI OI SURCHARGEI SURCHARGEI SURCHARGEI OI	Exceeded
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.001	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN1 CPDN1 CP139 CP2001B CP2001A	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge 1/15 Summer 1/15 Summer 1/15 Summer	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922 24.032 24.032 24.032 24.688 24.527 25.281 25.232 24.530	<pre>surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.140 -0.120 -0.145 -0.189 -0.182 0.842 0.999 0.183 0.412 -0.174 -0.083 0.005</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.52 0.64 0.33 1.64 1.60 0.85 1.19 0.12 0.62 1.01	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.6 18.6 19.4 21.6 22.7 36.2 3.9 23.4	OI OI OI OI OI OI OI SURCHARGEI SURCHARGEI SURCHARGEI OI	Exceeded
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.000 9.001 9.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN1 CP139 CP2001B CP2001A CP2001	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Durat Return Peri Clima First (X) Surcharge 1/15 Summer 1/15 Summer 1/15 Summer 1/15 Summer	Analys Profile ion(s) (mi od(s) (yea te Change First (Y) Flood	is Timester DTS Status (s) ns) 15, 30 rs) (%) First (Z)	<pre>0 2.5 Seco s , 60, 120, Overflow</pre>	<pre>180, 240 Water Level (m) 23.390 23.140 22.199 22.866 21.904 22.441 21.709 22.226 21.370 21.922 24.032 24.032 24.032 24.688 24.527 25.281 25.232</pre>	<pre>surcharged Depth (m) -0.167 -0.109 -0.223 -0.097 -0.142 -0.140 -0.120 -0.145 -0.189 -0.182 0.842 0.999 0.183 0.412 -0.174 -0.083 0.005</pre>	ded) Ine OFF Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000	Flow / Cap. 0.36 0.72 0.32 0.79 0.68 0.52 0.64 0.33 1.64 1.60 0.85 1.19 0.12 0.62 1.01	inter 1440 1 20 Overflow	Time	Flow (1/s) 21.2 42.4 39.7 44.8 77.8 26.5 91.5 27.6 18.6 19.4 21.6 22.7 36.2 3.9 23.4	OI OI OI OI OI OI OI OI SURCHARGEI SURCHARGEI OI OI SURCHARGEI	Exceeded

Jacobs Engineering Limited		Page 6
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3 FEH19	Checked by AM	Drainage
Innovyze	Network 2020.1.3	1

#### 1 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Proposed Network S1-OU1&7

										Surcharged				Half Drain	-		
	US/MH			Climate	First (X)	First (Y)	First (Z)			Depth				Time	Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(1/s)	Status	Exceeded
8.002	CP138	15 Summer	1	+20%					23.269	-0.206	0.000	0.42			65.8	OK	
10.000	CP3108	15 Summer	1	+20%					24.311	-0.039	0.000	0.88			20.2	OK	
11.000	CP152	15 Summer	1	+20%					31.707	-0.178	0.000	0.09			3.7	OK	
11.001	CP151	15 Summer	1	+20%					31.519	-0.056	0.000	0.78			36.2	OK	
11.002	CP150	15 Summer	1	+20%					29.936	-0.049	0.000	0.92			69.2	OK	
11.003	CP142	15 Summer	1	+20%	1/15 Summer				27.711	0.476	0.000	1.10			79.4	SURCHARGED	
12.000	CP01	15 Summer	1	+20%					32.198	-0.152	0.000	0.23			8.4	OK	
12.001	CP02	15 Summer	1	+20%					31.897	-0.155	0.000	0.21			9.6	OK	
12.002	CP03	15 Summer	1	+20%					31.437	-0.170	0.000	0.14			9.7	OK	
12.003	CP04	15 Summer	1	+20%					30.855	-0.181	0.000	0.08			9.9	OK	
13.000	CP07	15 Summer	1	+20%					31.644	-0.195	0.000	0.26			15.0	OK	
13.001	CP08	15 Summer	1	+20%					31.544	-0.191	0.000	0.28			35.9	OK	
12.004	CP05	15 Summer	1	+20%					29.964	-0.261	0.000	0.20			44.8	OK	
14.000	CPDN05	15 Summer	1	+20%					30.570	-0.146	0.000	0.26			13.7	OK	
15.000	CPDN06	15 Summer	1	+20%					31.498	-0.199	0.000	0.03			2.0	OK	
15.001	CP14	15 Summer	1	+20%					30.399	-0.179	0.000	0.09			3.7	OK	
12.005	CP06	15 Summer	1	+20%					29.416	-0.216	0.000	0.37			61.5	OK	
16.000	CP09	15 Summer	1	+20%					31.548	-0.226	0.000	0.14			16.1	OK	
16.001	CP010	15 Summer	1	+20%					30.901	-0.309	0.000	0.07			16.3	OK	
17.000	CPDN01	15 Summer	1	+20%					31.391	-0.107	0.000	0.54			24.1	OK	
16.002	CP11	15 Summer	1	+20%					30.125	-0.264	0.000	0.19			39.9	OK	
18.000	CPDN02	15 Summer	1	+20%					30.762	-0.179	0.000	0.34			34.8	OK	
16.003	CP12	15 Summer	1	+20%					29.430	-0.215	0.000	0.38			73.4	OK	
19.000	CPDN03	15 Summer	1	+20%					30.009	-0.193	0.000	0.27			25.4	OK	
20.000	CPDN04	15 Summer	1	+20%					29.999	-0.101	0.000	0.59			21.5	OK	
12.006	CP13	60 Summer	1	+20%					29.010	-0.078	0.000	0.30		34	46.8	OK	
12.007	CP3116A	30 Summer	1	+20%					28.697	-0.236	0.000	0.28			63.2	OK	
12.008	CP3106	30 Summer	1	+20%					26.597	-0.238	0.000	0.29			81.3	OK	
12.009	CP3107	30 Summer	1	+20%					24.222	-0.153	0.000	0.66			81.3	OK	
21.000	CP2011B	15 Summer	1	+20%					33.124	-0.066	0.000	0.37			5.0	OK	
21.001	CP2011A	15 Summer	1	+20%	1/15 Summer				33.092	0.200	0.000	1.10			14.9	SURCHARGED	
21.002	CP2011	15 Summer	1	+20%	1/15 Summer				31.667	0.337	0.000	0.86			15.9	SURCHARGED	
21.003	CP2009	15 Summer	1	+20%	1/15 Summer				30.340	0.840	0.000	1.08			20.6	SURCHARGED	
21.004	CP2007	15 Summer	1	+20%	1/15 Summer				28.333	0.673	0.000	1.13			28.0	SURCHARGED	
21.005	CP2005	15 Summer	1	+20%					25.179	-0.116	0.000	0.47			28.0	OK	
11.004		15 Summer	1	+20%					24.166	-0.089	0.000	0.94			185.9	OK	
22.000		15 Summer	1	+20%					25.252	-0.048	0.000	0.80			14.4	OK	
11.005		15 Summer	1		1/15 Summer			0	23.572	0.022	0.000	1.15	0.0			SURCHARGED	
10.001	CP202	15 Summer	1	+20%	1/15 Summer				23.295	0.095	0.000	1.17			197.9	SURCHARGED	
23.000	CPDN3	15 Summer	1	+20%	1/15 Summer	1/15 Summer			25.692	1.502	2.118	2.21			23.4	FLOOD	3
10.002	CP3109A	15 Summer	1	+20%					22.838	-0.254	0.000	0.62			219.2	OK	
24.000	CPDN4	15 Summer	1	+20%	1/15 Summer				25.207	1.407	0.000	1.94			23.2	FLOOD RISK	
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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3 FEH19	Checked by AM	Drainage
Innovyze	Network 2020.1.3	

										Surcharged				Half Drain	-		
PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (1/s)	Time (mins)	Flow (1/s)	Status	Level Exceeded
PN	Name	Storm	Perioa	change	Surcharge	F100d	Overiiow	ACC.	(m)	(m)	(m-)	Cap.	(1/5)	(mins)	(1/5)	Status	Exceeded
10.003	CP3109	15 Summer	1	+20%					22.514	-0.326	0.000	0.43			224.4	OK	
25.000	CPDN5	15 Summer	1	+20%	1/15 Summer				23.628	0.318	0.000	1.72			14.8	SURCHARGED	
10.004	CP3110A	15 Summer	1	+20%					22.150	-0.319	0.000	0.45			226.7	OK	
26.000	CP3110B	15 Summer	1	+20%	1/15 Summer				23.211	0.061	0.000	1.16			12.0	SURCHARGED	
8.003	CP3110	15 Summer	1	+20%					21.985	-0.175	0.000	0.85			293.7	OK	
8.004	CP3111	15 Summer	1	+20%					21.917	-0.113	0.000	0.77			291.4	OK	
7.001	CP27208	15 Summer	1	+20%	1/15 Summer				21.747	0.007	0.000	1.52			292.6	SURCHARGED	
6.001	CP137	15 Summer	1	+20%	1/15 Summer				21.682	0.047	0.000	1.07			291.5	SURCHARGED	
27.000	CP153	15 Summer	1	+20%					33.196	-0.139	0.000	0.55			45.8	OK	
27.001	CP154	15 Summer	1	+20%					33.021	-0.100	0.000	0.76			62.8	OK	
27.002	CP49	15 Summer	1	+20%					32.794	-0.106	0.000	0.75			72.9	OK	
28.000	KO-12	15 Summer	1	+20%					33.621	-0.088	0.000	0.36			10.2	OK	
29.000	KO-10	15 Summer	1	+20%					34.269	-0.037	0.000	0.91			22.0	OK	
29.001	CP47	15 Summer	1	+20%					34.073	-0.083	0.000	0.41			22.1	OK	
30.000	KO-11	15 Summer	1	+20%					34.496	-0.111	0.000	0.15			4.2	OK	
31.000	KO363	15 Summer	1	+20%					35.487	-0.118	0.000	0.43			22.9	OK	
31.001	CP358A	15 Summer	1	+20%					34.599	-0.101	0.000	0.57			33.6	OK	
31.002	EXCP07	15 Summer	1	+20%	1/15 Summer				34.184	0.329	0.000	0.85			29.2	SURCHARGED	
31.003	EXCP07-1	15 Summer	1	+20%	1/15 Summer				33.943	0.148	0.000	0.86			35.2	SURCHARGED	
31.004	EXCP07-2	15 Summer	1	+20%	1/15 Summer				33.745	0.135	0.000	0.52			40.4	SURCHARGED	
32.000	EXCP08	15 Summer	1	+20%					34.096	-0.129	0.000	0.37			19.7	OK	
31.005	EXCP07-3	15 Summer	1	+20%	1/15 Summer				33.637	0.137	0.000	0.87			53.2	SURCHARGED	
33.000	CPDN7	15 Summer	1	+20%					35.329	-0.116	0.000	0.07			1.0	OK	
33.001		15 Summer		+20%					35.326	-0.089	0.000	0.58			17.5	OK	
34.000	CP6203	15 Summer	1	+20%					35.674	-0.096	0.000	0.28			2.2	OK	
33.002		15 Summer		+20%					34.925	-0.165	0.000	0.41			32.4	OK	
35.000		15 Summer		+20%					35.320	-0.120	0.000	0.09			1.2	OK	
33.003		15 Summer			1/15 Summer				34.451	0.346	0.000	1.26				SURCHARGED	
		15 Summer	1		1/15 Summer				33.552	0.092	0.000	1.35				SURCHARGED	
31.007		15 Summer		+20%					33.228	-0.110	0.000	0.84			108.1	OK	
30.001		15 Summer		+20%					33.158	-0.072	0.000	0.90			108.2	OK	
30.002		30 Summer		+20%					33.059	-0.030	0.000	0.92			98.7	OK	
29.002		30 Summer			1/15 Summer				32.999	0.060	0.000	2.27		24		SURCHARGED	
36.000		15 Summer		+20%					42.212	-0.138	0.000	0.32			39.2		
36.001		15 Summer		+20%					40.478	-0.124	0.000	0.41			55.3		
36.002		15 Summer		+20%					36.488	-0.190	0.000	0.28			65.2		
36.003		15 Summer		+20%					34.886	-0.058	0.000	0.99			65.2		
36.004		15 Summer		+20%					34.736	-0.083	0.000	0.86			64.2		
36.005		15 Summer		+20%					34.600	-0.100	0.000	0.78			64.2	OK	
37.000		15 Summer		+20%					34.590	-0.135	0.000	0.33			16.8	OK	
36.006		15 Summer	1	+20%					34.350	-0.190	0.000	0.29			80.6	OK	
36.007		15 Summer			1/15 Summer				33.354	0.074	0.000	1.98				SURCHARGED	
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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3 FEH19	Checked by AM	Diamage
Innovyze	Network 2020.1.3	

N         Name         Storm         Period         Change         Stord         Period         Att.         (n)		US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water Level	Surcharged Depth	Flooded Volume	Flow /	Overflow	Half Drain Time	Pipe Flow		Level
25.003       EXCR07-6       30 Summer       1       +20%       32.826       -0.08       0.000       0.82       77.1       OK         38.001       C>30       15 Summer       1       +20%       32.4585       -0.080       0.000       0.52       23.5       DOK         38.001       C>30       15 Summer       1       +20%       32.1282       -0.080       0.00       0.53       23.3       DOK         20.001       CF32       06 Summer       1       +20%       33.130       -0.131       0.000       0.53       16.4       DOK         20.001       CF32       06 Summer       1       +20%       31.103       0.000       0.02       0.11       4.3       DOK         27.005       CF34       15 Summer       1       +20%       1/15 Summer       24.96       0.000       0.12       3.3       OK         27.005       CF344       15 Summer       1       +20%       1/15 Summer       24.664       0.000       0.23       110.2       MICAARGED         27.010       CF344       13       Summer       1       +20%       1/15 Summer       24.665       -0.144       0.000       0.14       -0.24       0.000       <	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(l/s)	Status	Exceeded
38.000KO-1215Summer1+2034.08 $-0.070$ 0.0000.0523.3OK29.004CF30130Summer1+2032.192 $-0.181$ 0.0000.400.6523.3OK29.004CF30260Summer1+2032.192 $-0.181$ 0.0000.651184.8OK27.003CF3260Summer1+2031.196 $-0.000$ 0.0000.551184.8OK27.005CF3015Sinter1+2031.196 $-0.000$ 0.0000.531184.8OK27.005CF4015Sinter1+2031.845 $-0.100$ 0.0000.5333.8OK27.005CF4015Sinter1+2031.845 $-0.114$ 0.0000.52110.0OK27.005CF34413Summer1+2031.845 $-0.144$ 0.0000.52110.0OK27.005CF34413Summer1+2011/15Summer26.6240.0980.0000.123.3OK27.005CF34413Summer1+2011/15Summer26.6240.0980.0000.123.3SUK27.005CF34413Summer1+2011/15Summer26.6240.0000.011.000.0000.1227.005CF34413Summer </td <td>36.008</td> <td>CP55</td> <td>720 Summer</td> <td>1</td> <td>+20%</td> <td>1/30 Summer</td> <td></td> <td></td> <td></td> <td>33.350</td> <td>0.175</td> <td>0.000</td> <td>0.02</td> <td></td> <td>714</td> <td>1.3</td> <td>SURCHARGED</td> <td></td>	36.008	CP55	720 Summer	1	+20%	1/30 Summer				33.350	0.175	0.000	0.02		714	1.3	SURCHARGED	
38.001       C 7200       15 Summer       1       +208       32.32       -0.624       0.000       0.79       23.3       OK         25.004       C 72102       60 Summer       1       +208       32.322       -0.131       0.000       0.68       83.7       OK         37.003       C 72102       60 Summer       1       +208       33.03       -0.007       0.000       0.05       11       84.8       OK         37.003       C P281       05 Summer       1       +208       11/15 Summer       31.676       -0.007       0.000       0.001       0.01       5.5       93.8       SURCHARGE         27.004       C P281       15 Mitther       1       +208       1/15 Summer       10.01       0.000       0.010 <t< td=""><td>29.003</td><td>EXCP07-6</td><td>30 Summer</td><td>1</td><td>+20%</td><td></td><td></td><td></td><td></td><td>32.826</td><td>-0.089</td><td>0.000</td><td>0.82</td><td></td><td></td><td>77.1</td><td>OK</td><td></td></t<>	29.003	EXCP07-6	30 Summer	1	+20%					32.826	-0.089	0.000	0.82			77.1	OK	
22.004       CP301       0.008       0.75       80.4       OK         23.003       CP32       60       Summer       1       420%       32.122       -0.131       0.000       0.055       11       84.6       OK         27.003       CP32       60       Summer       1       +20%       33.303       -0.200       0.000       0.055       11       84.6       OK         27.004       CP33       60       Summer       1       +20%       33.303       -0.200       0.000	38.000	KO-12	15 Summer	1	+20%						-0.070	0.000				23.5	OK	
28.01CP3260Summer1 $+20$ 32.132 $-0.148$ 0.0000.6881.7OK37.000CPEN1015Summer1 $+20$ 31.03 $-0.200$ 0.0000.032.30K37.004CPEN1015Summer1 $+20$ 1/15Summer31.63 $-0.200$ 0.0000.032.30K27.005CP3415Summer1 $+20$ 1/15Summer38.074 $-0.143$ 0.0000.03 $-3.3$ 93.8SURCHARDED27.005CP3415Summer1 $+20$ 1/15Summer38.074 $-0.143$ 0.0000.23 $-3.3$ 90.80K60.07CP34513Summer1 $+20$ 1/15Summer26.864 $-0.144$ 0.0000.23 $-10.2$ SURCHARDED27.006CP34533Summer1 $+20$ 1/15Summer26.854 $0.994$ 0.000 $0.31$ $-9.2$ SURCHARDED27.010CP34533Summer1 $+20$ 1/15Summer26.355 $-0.160$ 0.000 $0.44$ $-9.4$ $40.20$ 27.011CP34533Summer1 $+20$ 1/15Summer $26.937$ $-0.166$ $0.000$ $0.44$ $-30.2$ $0.66$ 41.001CP35515Summer1 $+20$ $26.937$ $-0.166$ $0.000$ $0.43$ $-3.4$ $0.60$ $1.4$ $8.4$ $0.60$ <	38.001	CP300	15 Summer	1	+20%					34.108	-0.084	0.000	0.40			23.3	OK	
27.033       CP52       60 Summer       1       +208       33.030       -0.207       0.000       0.55       11       84.8       0K         27.004       CP53       60 Summer       1       +208       33.037       -0.200       0.000       0.03       2.3       0K         27.005       CP540       15 Summer       1       +208       30.744       -0.137       0.000       0.23       93.8       0K         27.005       CP344       15 Summer       1       +208       31.667       -0.146       0.000       0.24       9.3       SURCHARGED         27.005       CP344       13 Summer       1       +208       -0.115       0.000       0.12       10.2       SURCHARGED         27.006       CP344       13 Summer       1       +208       1/15 Summer       26.685       -0.918       0.000       1.23       102.2       SURCHARGED         27.010       CP344       13 Summer       1       +208       26.685       -0.916       0.000       1.4       8.5       0.000         27.011       CP344       13 Summer       1       +208       26.535       -0.165       0.000       1.4       8.5       0.000	29.004	CP301	30 Summer	1	+20%						-0.131	0.000	0.75				OK	
39.001       CFPN10       15 Summer       1       4208       33.303       -0.200       0.000       0.03       2.3       0K         27.005       CF83       05 Summer       1       4208       1/15 Summer       28.07       0.000       0.74       0.000       0.74       93.8       0K         27.005       CF84       15 Summer       1       4208       1/15 Summer       28.07       0.000       0.23       3.3       0K         40.000       EXC15       15 Summer       1       4208       1/15 Summer       28.65       -0.115       0.000       0.23       10.0       0K         27.005       CF344.1       35 Summer       1       4208       1/15 Summer       26.973       0.983       0.000       1.23       10.0       0K         27.010       CF344.3       35 Summer       1       4208       1/15 Summer       26.519       1.139       0.000       3.14       99.4       SURC1ARGED         27.010       CF345       15 Summer       1       4208       1/15 Summer       26.519       1.000       0.16       8.5       0K         27.011       CF345       15 Summer       1       4208       1/15 Summer       26.557	28.001	CP302	60 Summer	1	+20%					32.192	-0.148	0.000				81.7	OK	
27.004CP3 60 Summer1+2081/15 Summer31.6270.3400.0000.74(85.3 SURCHARGED27.005CP34415 Summer+2081.4201/15 Summer28.9760.0960.0002.4193.9SURCHARGED27.005CP34413 Summer+2081.4201/15 Summer28.656-0.1440.0000.52110.00K27.005CP34413 Summer+2081/15 Summer26.8240.9940.0000.91100.2 SURCHARGED27.005CP34530 Summer+2041/15 Summer26.8240.9940.0000.91100.2 SURCHARGED27.015CP34530 Summer+2041/15 Summer26.5191.1390.0000.1499.4 SURCHARGED27.016CP34530 Summer+2041/15 Summer26.537-0.1650.0000.148.40K27.016CP35515 Summer+2041/15 Summer26.537-0.1650.0000.148.40K27.012CP35515 Summer+2041/15 Summer26.597-0.1650.0000.148.40K27.012CP35515 Summer+2041/15 Summer26.2980.6100.148.40K27.013CP35515 Summer+2041/15 Summer26.2990.6190.0000.148.40K27.013CP35515 Summer+2041/15 Summer26.2990.6100.0000.148.4<	27.003	CP52	60 Summer	1	+20%					31.796	-0.007	0.000	0.55		11	84.8	OK	
27.005       CP34       15 Winter       1       +208       30.744       -0.143       0.000       0.53       93.8       0K         27.005       CP344       15 Summer       1       +208       31.845       -0.115       0.000       0.241       93.9       SURCHARGED         27.007       CP344,1       30 Summer       1       +208       1.455       Summer       26.6973       0.098       0.000       0.52       110.0       0K         27.007       CP344,1       30 Summer       1       +208       1.455       Summer       26.697       0.093       0.000       1.41       99.4       SURCHARGED         27.010       CP345,4       30 Summer       1       +208       1.75       Summer       26.515       0.000       0.16       8.5       0K         27.010       CP354,5       Summer       1       +208       1.75       Summer       26.515       0.000       0.16       8.5       0K         41.001       CP354,5       Summer       1       +208       1.75       Summer       26.555       -0.168       0.000       0.44       30.2       0K         27.012       CP354,5       Summer       1       +208	39.000	CPDN10	15 Summer	1	+20%					33.303	-0.200	0.000	0.03			2.3	OK	
27.006       CP344       15 Summer       1       4208       1/15 Summer       28.976       0.096       0.000       2.41       39.9       SUMCHARGED         27.007       CP3441       30 Summer       1       4208       28.656       -0.114       0.000       0.52       110.0       0K         27.008       CP3445       30 Summer       1       4208       1/15 Summer       26.6973       0.983       0.000       1.2       SUMCHARGED         27.010       CP345       30 Summer       1       4208       1/15 Summer       26.619       1.139       0.000       3.14       99.4       SUNCHARGED         27.011       CP345       15 Summer       1       4208       1/15 Summer       26.653       0.160       0.000       0.14       8.4       0K         21.001       CP355       15 Summer       1       4208       1/15 Summer       26.536       0.100       0.14       8.4       0K         21.002       CP355       15 Summer       1       4208       1/15 Summer       26.145       1.010       0.000       0.43       109.3       SUNCHARGED         21.012       CP354       30 Summer       1       4208       1/15 Summer       26.14	27.004	CP53	60 Summer	1	+20%	1/15 Summer				31.627	0.340	0.000	0.74			85.3	SURCHARGED	
40.000       EXCPTS 15 Summer       1       +20%       31.845       -0.115       0.000       0.12       3.3       0K         27.007       CP344 1       30 Summer       1       +20%       1/15 Summer       26.93       0.983       0.000       1.29       100.2       SUMCHARGED         27.007       CP344 2       30 Summer       1       +20%       1/15 Summer       26.824       0.994       0.000       0.52       10.0.2       SUMCHARGED         27.010       CP346 30 Summer       1       +20%       1/15 Summer       26.619       1.139       0.000       3.14       99.4       SUMCHARGED         27.011       CP347 30 Summer       1       +20%       1/15 Summer       26.636       -0.168       0.000       0.16       8.5       0K         41.001       CP355 15 Summer       1       +20%       1/15 Summer       26.637       -0.168       0.000       0.14       3.0.2       0K         27.013       SUMCHARGED       1.90       1/15 Summer       26.645       1.101       0.000       0.44       30.2       0K         27.013       SUMCHARGED       1.90       1.15 Summer       20.601       -0.199       0.000       0.41       10.3	27.005	CP80	15 Winter	1	+20%					30.744	-0.143	0.000	0.53			93.8	OK	
27.007       CP344.1       30 Summer       1       +20%       28.065       -0.144       0.000       0.52       110.0       0K         27.008       CP344.2       30 Summer       1       +20%       1/15 Summer       26.073       0.993       0.000       0.91       100.2       SUKCHARGED         27.010       CP344       30 Summer       1       +20%       1/15 Summer       26.073       0.993       0.000       3.14       100.2       SUKCHARGED         27.010       CP347       30 Summer       1       +20%       1/15 Summer       26.057       -0.168       0.000       2.86       99.0       SUKCHARGED         41.001       CP355       15 Summer       1       +20%       1/15 Summer       26.057       -0.168       0.000       0.44       30.2       0K         27.012       CP348       30 Summer       1       +20%       1/15 Summer       26.153       -0.119       0.000       0.43       109.3       SUKCHARGED         27.012       CP348       30 Summer       1       +20%       1/15 Summer       26.153       -0.119       0.000       0.43       109.3       SUKCHARGED         27.013       MH87       30 Summer       1	27.006	CP344	15 Summer	1		1/15 Summer				28.976	0.096	0.000					SURCHARGED	
27.008       CP344.2       30       Summer       1       +208       1/15       Summer       1.22       SUBCHARGED         27.010       CP346       30       Summer       1       +208       1/15       Summer       26.613       0.000       3.14       99.4       SUBCHARGED         27.010       CP346       30       Summer       1       +208       1/15       Summer       28.613       0.000       3.14       99.4       SUBCHARGED         27.010       CP345A       15       Summer       1       +208       28.235       -0.165       0.000       0.14       8.4       0K         41.001       CP355A       15       Summer       1       +208       26.535       -0.168       0.000       0.44       8.4       0K         27.011       CP348       30       Summer       1       +208       26.151       1.101       0.000       0.43       109.3       SUCHARGED         27.012       CP348       30       Summer       1       +208       26.161       1.010       0.000       0.43       109.3       SUCHARGED         42.001       CP3521       15       Summer       1       +208       1/15       Sum	40.000	EXCP15	15 Summer	1	+20%					31.845	-0.115	0.000	0.12			3.3	OK	
27.019       CP345       30 Summer       1       +20k       1/15 Summer       26.024       0.994       0.000       0.91       100.2 SURCHARGED         27.010       CP347       30 Summer       1       +20k       1/15 Summer       26.365       0.950       0.000       2.86       99.0 SURCHARGED         41.001       CP355       15 Summer       1       +20k       26.365       0.016       0.000       0.14       8.4       0K         41.002       CP355       15 Summer       1       +20k       26.957       -0.168       0.000       0.44       30.2       0K         42.001       CP355       15 Summer       1       +20k       1/15 Summer       26.457       -0.168       0.000       0.41       30.2       0K         42.001       CP354       30 Summer       1       +20k       1/15 Summer       26.457       1.010       0.000       0.43       109.3 SURCHARGED         42.001       CP353       15 Summer       1       +20k       1/15 Summer       26.145       1.101       0.000       0.43       109.3 SURCHARGED         42.001       CP353       15 Summer       1       +20k       1/15 Summer       26.145       1.0101       0.000<	27.007	CP344.1	30 Summer	1	+20%					28.656	-0.144	0.000	0.52			110.0	OK	
27.010       CP346       30       Summer       1       +20       1/15       summer       26.519       1.139       0.000       3.14       99.4       SURCHARGED         41.000       CP355A       15       Summer       1       +20%       26.957       -0.165       0.000       0.16       8.5       OK         41.001       CP355       15       Summer       1       +20%       26.957       -0.165       0.000       0.14       8.4       0.02       OK         27.012       CP348       30       Summer       1       +20%       1/15       Summer       26.937       -0.163       0.000       0.44       30.2       OK         27.012       CP348       30       Summer       1       +20%       1/15       Summer       26.19       -0.109       0.000       0.44       30.2       OK         42.000       GY308       15       Summer       1       +20%       29.601       -0.109       0.000       0.17       6.1       OK         42.002       CP351       15       Summer       1       +20%       27.014       28.98       0.610       0.000       0.53       33.7       SURCHARGED         42.0																		
27.011       CP347       30 Summer       1       +208       1/15 Summer       26.365       0.950       0.000       2.66       99.0       SURCHARGED         41.001       CP355       15 Summer       1       +208       26.957       -0.168       0.000       0.14       8.4       OK         41.002       CP355       15 Summer       1       +208       26.957       -0.168       0.000       0.44       30.2       OK         27.012       CP348       30 Summer       1       +208       1/15 Summer       26.957       -0.168       0.000       0.44       30.2       OK         27.013       MH87       30 Summer       1       +208       1/15 Summer       26.145       1.101       0.000       0.41       30.2       OK         42.001       CP352       15 Summer       1       +208       28.978       -0.137       0.000       0.31       20.9       OK         42.004       CP350       15 Summer       1       +208       1/15 Summer       25.958       0.610       0.000       0.58       33.4       OK         42.004       CP350       15 Summer       1       +208       1/15 Summer       25.958       0.610	27.009	CP345	30 Summer	1	+20%	1/15 Summer					0.994							
41.001       CP355A       15       Summer       1       +20%       28.235       -0.165       0.000       0.16       8.5       OK         41.002       CP3551       15       Summer       1       +20%       26.557       -0.168       0.000       0.44       30.2       OK         27.012       CP348       30       Summer       1       +20%       26.557       -0.169       0.000       0.44       30.2       OK         27.013       MH87       30       Summer       1       +20%       26.299       0.819       0.000       0.43       109.3       SURCHARGED         42.000       GY308       15       Summer       1       +20%       29.601       -0.109       0.000       0.17       6.1       OK         42.002       CP351       15       Summer       1       +20%       22.616       -0.190       0.000       0.53       37.4       OK         42.002       CP351       15       Summer       1       +20%       1/15       Summer       25.958       0.610       0.000       0.53       37.4       OK         42.004       CP349       30       Summer       1       +20%       1/15	27.010	CP346	30 Summer	1	+20%	1/15 Summer					1.139	0.000				99.4	SURCHARGED	
41.001       CP355.1       15 Summer       1       +20%       26.957       -0.168       0.000       0.14       8.4       0K         41.002       CP355.1       15 Summer       1       +20%       1/15 Summer       26.536       -0.119       0.000       0.43       109.3       SURCHARGED         27.013       MH87       30 Summer       1       +20%       1/15 Summer       26.136       -0.119       0.000       0.43       109.3       SURCHARGED         27.013       MH87       30 Summer       1       +20%       1/15 Summer       26.137       0.000       0.14       30.2       0K         42.000       CP352       15 Summer       1       +20%       20       28.978       -0.137       0.000       0.31       20.9       0K         42.003       CP350       15 Summer       1       +20%       1/15 Summer       25.985       0.600       0.000       0.58       37.4       0K         42.003       CP350       15 Summer       1       +20%       1/15 Summer       25.985       0.600       0.000       1.55       10.75       10.75       10.75       10.75       10.75       10.75       10.75       10.75       10.75       10.7 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>1/15 Summer</td> <td></td>						1/15 Summer												
14       10.02       CP35.1       15       Summer       1       +20%       26.536       -0.119       0.000       0.44       109.3       SURCHARGED         27.013       MH87       30       Summer       1       +20%       1/15       Summer       26.145       1.101       0.000       0.43       109.3       SURCHARGED         42.000       GY308       15       Summer       1       +20%       29.601       -0.109       0.000       0.17       6.1       0K         42.000       CP351       15       Summer       1       +20%       28.978       -0.137       0.000       0.31       20.9       0K         42.002       CP351       15       Summer       1       +20%       27.014       -0.124       0.000       0.58       37.4       0K         42.004       CP349       30       Summer       1       +20%       1/15       Summer       25.958       0.610       0.000       2.52       17.8       SURCHARGED         27.014       MH65       30       Summer       1       +20%       1/15       Summer       25.958       0.610       0.000       1.39       128.1       SURCHARGED         27.015 </td <td></td> <td>-0.165</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>OK</td> <td></td>											-0.165						OK	
27.012       CF348       30 Summer       1       +20%       1/15 Summer       26.299       0.619       0.000       0.43       109.3 SURCHARGED         27.013       MH87       30 Summer       1       +20%       26.145       1.101       0.000       0.150       108.8 SURCHARGED         42.000       GY308       15 Summer       1       +20%       28.978       -0.137       0.000       0.31       20.9       0K         42.001       CP350       15 Summer       1       +20%       28.978       -0.137       0.000       0.58       37.4       0K         42.003       CP350       15 Summer       1       +20%       26.206       -0.099       0.000       0.58       37.4       0K         42.004       CP349       30 Summer       1       +20%       1/15 Summer       25.958       1.068       0.000       2.32       127.8       SURCHARGED         27.014       MH64       30 Summer       1       +20%       1/15 Summer       25.693       0.610       0.000       1.55       130.7       SURCHARGED         27.017       MH62       30 Summer       1       +20%       1/15 Summer       24.679       0.349       0.000       1.19																		
27.013       MH87       30 Summer       1       +20%       26.145       1.101       0.000       1.50       108.8       SURCHARGED         42.000       GY308       15 Summer       1       +20%       29.601       -0.137       0.000       0.31       20.9       OK         42.002       CP351       15 Summer       1       +20%       27.191       -0.124       0.000       0.39       19.8       OK         42.002       CP351       15 Summer       1       +20%       26.60       -0.99       0.000       0.53       37.4       OK         42.004       CP349       30 Summer       1       +20%       1/15 Summer       25.985       0.610       0.000       0.53       33.7       SURCHARGED         27.015       MH64       30 Summer       1       +20%       1/15 Summer       25.985       0.610       0.000       1.55       13.7       SURCHARGED         27.015       MH63       30 Summer       1       +20%       1/15 Summer       25.698       0.676       0.000       1.55       13.27       SURCHARGED         27.016       MH63       30 Summer       1       +20%       1/15 Summer       24.24.752       -0.118       0.																		
42.000       GY308       15 Summer       1       +20%       29.601       -0.109       0.000       0.17       6.1       OK         42.001       CP352       15 Summer       1       +20%       28.97%       -0.137       0.000       0.31       20.9       OK         42.002       CP351       15 Summer       1       +20%       27.191       -0.124       0.000       0.31       20.9       OK         42.003       CP350       15 Summer       1       +20%       26.206       -0.099       0.000       0.58       37.4       OK         42.004       CP349       30 Summer       1       +20%       1/15 Summer       25.958       1.068       0.000       2.32       127.8       SURCHARGED         27.014       MH65       30 Summer       1       +20%       1/15 Summer       25.958       1.068       0.000       1.39       128.1       SURCHARGED         27.015       MH64       30 Summer       1       +20%       1/15 Summer       25.266       0.676       0.000       1.19       132.7       SURCHARGED         27.017       MH62       30 Summer       1       +20%       1/15 Summer       24.4752       -0.18       0.000 <td></td> <td>CP348</td> <td></td>		CP348																
42.001CP352IS Summer1 $+20$ %28.978 $-0.137$ $0.000$ $0.31$ $20.9$ $0K$ $42.002$ CP351IS Summer1 $+20$ % $27.191$ $-0.124$ $0.000$ $0.39$ $19.8$ $0K$ $42.004$ CP34930 Summer1 $+20$ % $26.206$ $-0.099$ $0.000$ $0.58$ $37.4$ $0K$ $42.004$ CP34930 Summer1 $+20$ % $1/15$ Summer $25.985$ $0.610$ $0.000$ $2.32$ $12.8$ $SURCHARGED$ $27.014$ MH6430 Summer1 $+20$ % $1/15$ Summer $25.958$ $0.610$ $0.000$ $1.39$ $12.81$ $SURCHARGED$ $27.016$ MH6330 Summer1 $+20$ % $1/15$ Summer $25.958$ $0.610$ $0.000$ $1.55$ $130.7$ $SURCHARGED$ $27.016$ MH6330 Summer1 $+20$ % $1/15$ Summer $24.679$ $0.349$ $0.000$ $1.19$ $132.7$ $SURCHARGED$ $27.017$ MH6230 Summer1 $+20$ % $1/15$ Summer $24.4752$ $-0.118$ $0.000$ $1.19$ $132.7$ $SURCHARGED$ $27.017$ MH6230 Summer1 $+20$ % $1/15$ Summer $13$ $23.410$ $-0.105$ $0.000$ $1.37$ $12.8$ $SURCHARGED$ $27.018$ CP149830 Summer1 $+20$ % $1/15$ Summer $23.203$ $-0.267$ $0.000$ $0.35$ $132.7$ $0K$ $46.000$ CP149415 Summer1 <t< td=""><td></td><td></td><td></td><td></td><td></td><td>1/15 Summer</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>SURCHARGED</td><td></td></t<>						1/15 Summer											SURCHARGED	
42.002       CP351       15       Summer       1       +20%       27.191       -0.124       0.000       0.39       19.8       OK         42.003       CP350       15       Summer       1       +20%       26.206       -0.099       0.000       0.58       37.4       OK         42.004       CP349       30       Summer       1       +20%       1/15       Summer       25.958       0.610       0.000       0.58       37.4       OK         27.014       MH65       30       Summer       1       +20%       1/15       Summer       25.958       1.068       0.000       2.32       127.8       SURCHARGED         27.016       MH63       30       Summer       1       +20%       1/15       Summer       25.693       0.853       0.000       1.19       132.7       SURCHARGED         27.017       MH62       30       Summer       1       +20%       1/15       Summer       24.679       0.349       0.000       1.19       132.7       SURCHARGED         27.017       MH62       30       Summer       1       +20%       1/15       Summer       24.075       0.325       0.000       1.37       12.8																		
42.003       CP350       15       Summer       1       +20%       26.206       -0.099       0.000       0.58       37.4       OK         42.004       CP349       30       Summer       1       +20%       1/15       Summer       25.985       0.610       0.000       0.53       33.7       SURCHARGED         27.014       MH64       30       Summer       1       +20%       1/15       Summer       25.985       0.610       0.000       1.39       127.8       SURCHARGED         27.015       MH64       30       Summer       1       +20%       1/15       Summer       25.693       0.853       0.000       1.39       128.1       SURCHARGED         27.016       MH63       30       Summer       1       +20%       1/15       Summer       24.679       0.349       0.000       1.16       1.6       OK         43.000       CP6119A       15       Summer       1       +20%       1/15       Summer       24.075       0.325       0.000       1.37       12.8       SURCHARGED         27.018       CP6119A       15       Summer       1       +20%       1/15       Summer       1.2.8       SURCHARGED																	OK	
42.004       CP349       30       Summer       1       +20%       1/15       Summer       25.985       0.610       0.000       0.53       33.7       SURCHARGED         27.014       MH65       30       Summer       1       +20%       1/15       Summer       25.985       1.068       0.000       2.32       127.8       SURCHARGED         27.015       MH64       30       Summer       1       +20%       1/15       Summer       25.693       0.853       0.000       1.39       128.1       SURCHARGED         27.016       MH63       30       Summer       1       +20%       1/15       Summer       25.286       0.676       0.000       1.55       130.7       SURCHARGED         27.017       MH62       30       Summer       1       +20%       1/15       Summer       24.679       0.349       0.000       1.01       1.6       0.6         43.000       CP6119       15       Summer       1       +20%       1/15       Summer       24.075       -0.118       0.000       0.14       5.0       132.7       SURCHARGED         27.018       CP6119       30       Summer       1       +20%       1/15																		
27.014       MH65       30       Summer       1       +20%       1/15       Summer       25.958       1.068       0.000       2.32       127.8       SURCHARGED         27.015       MH64       30       Summer       1       +20%       1/15       Summer       25.693       0.000       1.39       128.1       SURCHARGED         27.015       MH64       30       Summer       1       +20%       1/15       Summer       25.693       0.000       1.39       128.1       SURCHARGED         27.017       MH62       30       Summer       1       +20%       1/15       Summer       24.679       0.349       0.000       1.10       1.6       1.6       0K         43.000       CP6119A       15       Summer       1       +20%       1/15       Summer       1.20%       0.000       0.10       1.6       1.6       0K         44.000       CP6119A       15       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       0K         45.000       CP149B       30       Summer       1       +20%       1/15       Summer		CP350																
27.015       MH64       30       Summer       1       +20%       1/15       Summer       25.693       0.853       0.000       1.39       128.1       SURCHARGED         27.016       MH63       30       Summer       1       +20%       1/15       Summer       25.286       0.676       0.000       1.55       130.7       SURCHARGED         27.017       MH62       30       Summer       1       +20%       1/15       Summer       24.679       0.349       0.000       1.19       132.7       SURCHARGED         43.000       CP61198       15       Summer       1       +20%       1/15       Summer       24.679       0.325       0.000       1.6       1.6       0K         44.000       CP61198       15       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       0K         45.000       CP149C       15       Summer       1       +20%       24.435       -0.160       0.000       0.74       5.0       132.2       0K         46.000       CP149       15       Summer       1       +20%       22.236       -0.216 <td></td> <td>CP349</td> <td>30 Summer</td> <td>1</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>0.610</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		CP349	30 Summer	1							0.610							
27.016       MH63       30 Summer       1       +20%       1/15 Summer       25.286       0.676       0.000       1.55       130.7 SURCHARGED         27.017       MH62       30 Summer       1       +20%       1/15 Summer       24.679       0.349       0.000       1.19       132.7 SURCHARGED         43.000       CP6119A       15 Summer       1       +20%       1/15 Summer       24.679       0.349       0.000       0.10       1.6       1.6       0.6         44.000       CP6119B       15 Summer       1       +20%       1/15 Summer       24.075       0.325       0.000       0.17       12.8 SURCHARGED         27.018       CP61193       30 Summer       1       +20%       1/15 Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       0K         45.000       CP149C       15 Summer       1       +20%       21.23       -0.105       0.000       0.19       3.0       0K         27.019       CP149B       30 Summer       1       +20%       1/15 Summer       24.447       0.807       0.000       0.35       132.7       0K         27.019       CP149A       15 Summer       1		MH65																
27.017       MH62       30       Summer       1       +20%       1/15       Summer       24.679       0.349       0.000       1.19       132.7       SURCHARGED         43.000       CP6119A       15       Summer       1       +20%       1/15       Summer       24       24.752       -0.118       0.000       0.10       1.6       1.6       OK         44.000       CP6119B       15       Summer       1       +20%       1/15       Summer       24       24.752       -0.118       0.000       0.10       1.6       1.6       OK         27.018       CP6119       30       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       OK         27.019       CP149E       30       Summer       1       +20%       1/15       Summer       23.203       -0.267       0.000       0.169       3.0       OK         27.020       CP149A       15       Summer       1       +20%       1/15       Summer       22.236       -0.210       0.000       0.56       139.5       OK         27.020       CP149A       15       Summ		MH64																
43.000       CP6119A       15       Summer       1       +20%       1/15       Summer       24       24.752       -0.118       0.000       0.10       1.6       1.6       OK         44.000       CP6119B       15       Summer       1       +20%       1/15       Summer       1       12.8       SURCHARGED         27.018       CP6119       30       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       OK         45.000       CP149C       15       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.19       3.0       OK         27.019       CP149B       30       Summer       1       +20%       23.203       -0.267       0.000       0.16       132.7       OK         46.000       CP149A       15       Summer       1       +20%       24.447       0.847       0.000       1.69       132.7       OK         47.000       CP149A       15       Summer       1       +20%       22.236       -0.210       0.000       0.56       139.5       OK	27.016	MH63	30 Summer	1	+20%	1/15 Summer				25.286	0.676	0.000	1.55			130.7	SURCHARGED	
44.000       CP6119B       15       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       OK         45.000       CP149C       15       Summer       1       +20%       1/15       Summer       13       23.410       -0.160       0.000       0.74       5.0       132.2       OK         45.000       CP149C       15       Summer       1       +20%       1/15       Summer       24.435       -0.105       0.000       0.19       3.0       OK         27.019       CP149B       30       Summer       1       +20%       23.203       -0.267       0.000       0.169       132.7       OK         46.000       CPDN9       15       Summer       1       +20%       24.447       0.847       0.000       1.69       132.7       OK         47.000       CPDN10       15       Summer       1       +20%       22.236       -0.210       0.000       0.56       139.5       OK         47.000       CPDN10       15       Summer       1       +20%       21.039       -0.176       0.000       0.66       0.7       OK	27.017	MH62	30 Summer	1	+20%	1/15 Summer				24.679	0.349	0.000				132.7	SURCHARGED	
27.018       CP6119       30 Summer       1       +20%       1/15 Summer       13 23.410       -0.160       0.000       0.74       5.0       132.2       0K         45.000       CP149C       15 Summer       1       +20%       24.435       -0.105       0.000       0.19       3.0       0K         27.019       CP149B       30 Summer       1       +20%       23.203       -0.267       0.000       0.35       132.7       0K         46.000       CPDN9       15 Summer       1       +20%       1/15 Summer       24.447       0.847       0.000       0.56       139.5       0K         27.010       CPL49A       15 Summer       1       +20%       1/15 Summer       22.236       -0.210       0.000       0.56       139.5       0K         27.010       CPDN10       15 Summer       1       +20%       23.353       -0.127       0.000       0.56       139.5       0K         47.000       CPDN10       15 Summer       1       +20%       21.039       -0.176       0.000       0.87       415.2       0K         6.002       CP149       30 Summer       1       +20%       1/15 Summer       23.136       0.116 <td< td=""><td>43.000</td><td></td><td>15 Summer</td><td>1</td><td>+20%</td><td></td><td></td><td>1/15 Summer</td><td>24</td><td>24.752</td><td>-0.118</td><td>0.000</td><td>0.10</td><td>1.6</td><td></td><td>1.6</td><td>OK</td><td></td></td<>	43.000		15 Summer	1	+20%			1/15 Summer	24	24.752	-0.118	0.000	0.10	1.6		1.6	OK	
45.000       CP149C       15       Summer       1       +20%       24.435       -0.105       0.000       0.19       3.0       OK         27.019       CP149B       30       Summer       1       +20%       23.203       -0.267       0.000       0.35       132.7       OK         46.000       CPDN9       15       Summer       1       +20%       1/15       Summer       24.447       0.847       0.000       1.69       21.9       SURCHARGED         27.020       CP149A       15       Summer       1       +20%       22.236       -0.210       0.000       1.69       21.9       SURCHARGED         27.020       CP149A       15       Summer       1       +20%       23.353       -0.127       0.000       0.66       0.7       OK         47.000       CPD10       15       Summer       1       +20%       21.039       -0.176       0.000       0.87       415.2       OK         6.002       CP149       30       Summer       1       +20%       1/15       Summer       23.136       0.116       0.000       0.87       415.2       OK         48.000       CP148       30       Summer	44.000	CP6119B	15 Summer	1	+20%	1/15 Summer				24.075	0.325	0.000	1.37			12.8	SURCHARGED	
27.019CP149B30 Summer1+20%23.203-0.2670.0000.35132.7OK46.000CPDN915 Summer1+20%1/15 Summer24.4470.8470.0001.6921.9SURCHARGED27.020CP149A15 Summer1+20%22.236-0.2100.0000.56139.5OK47.000CPDN1015 Summer1+20%23.553-0.1270.0000.060.7OK6.002CP14930 Summer1+20%21.039-0.1760.0000.87415.2OK48.000CPDN1115 Summer1+20%1/15 Summer23.1360.1160.0001.0863.7SURCHARGED6.003CP14830 Summer1+20%20.256-0.3190.0000.55425.0OK	27.018	CP6119	30 Summer	1	+20%			1/15 Summer	13	23.410	-0.160	0.000		5.0			OK	
46.000CPDN915Summer1+20%1/15Summer24.4470.8470.0001.6921.9SURCHARGED27.020CP149A15Summer1+20%22.236-0.2100.0000.56139.5OK47.000CPDN1015Summer1+20%23.353-0.1270.0000.060.7OK6.002CP14930Summer1+20%21.039-0.1760.0000.87415.2OK48.000CPDN1115Summer1+20%1/15Summer23.1360.1160.0001.0863.7SURCHARGED6.003CP14830Summer1+20%20.256-0.3190.0000.55425.0OK	45.000	CP149C	15 Summer	1	+20%					24.435	-0.105	0.000	0.19			3.0	OK	
27.020       CP149A       15       Summer       1       +20%       22.236       -0.210       0.000       0.56       139.5       OK         47.000       CPDN10       15       Summer       1       +20%       23.353       -0.127       0.000       0.06       0.7       OK         6.002       CP149       30       Summer       1       +20%       21.039       -0.176       0.000       0.87       415.2       OK         48.000       CPDN11       15       Summer       1       +20%       23.136       0.116       0.000       1.08       63.7       SURCHARGED         6.003       CP148       30       Summer       1       +20%       20.256       -0.319       0.000       0.55       425.0       OK		CP149B																
47.000       CPDN10       15       Summer       1       +20%       23.353       -0.127       0.000       0.06       0.7       OK         6.002       CP149       30       Summer       1       +20%       21.039       -0.176       0.000       0.87       415.2       OK         48.000       CPDN11       15       Summer       1       +20%       23.136       0.116       0.000       1.08       63.7       SURCHARGED         6.003       CP148       30       Summer       1       +20%       20.256       -0.319       0.000       0.55       425.0       OK						1/15 Summer												
6.002       CP149       30 Summer       1       +20%       21.039       -0.176       0.000       0.87       415.2       0K         48.000       CPDN11       15 Summer       1       +20%       1/15 Summer       23.136       0.116       0.000       1.08       63.7       SURCHARGED         6.003       CP148       30 Summer       1       +20%       20.256       -0.319       0.000       0.55       425.0       0K			15 Summer															
48.000       CPDN11       15       summer       1       +20%       1/15       summer       23.136       0.116       0.000       1.08       63.7       SURCHARGED         6.003       CP148       30       Summer       1       +20%       20.256       -0.319       0.000       0.55       425.0       OK	47.000	CPDN10	15 Summer	1	+20%					23.353	-0.127	0.000	0.06			0.7	OK	
6.003 CP148 30 Summer 1 +20% 20.256 -0.319 0.000 0.55 425.0 OK	6.002	CP149	30 Summer	1	+20%							0.000				415.2	OK	
	48.000	CPDN11	15 Summer	1	+20%	1/15 Summer					0.116	0.000				63.7	SURCHARGED	
©1982-2020 Innovyze	6.003	CP148	30 Summer	1	+20%					20.256	-0.319	0.000	0.55			425.0	OK	
@ITOT 7070 IUUOAA76								©1982	2-2020	Innovy	/ze							

Jacobs Engineering Limited		Page 9
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3 FEH19	Checked by AM	Drainage
Innovyze	Network 2020.1.3	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.		Surcharged Depth (m)	Flooded Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
				<b>-</b>	<u>-</u> -				(,	(,	(		(-/-/	(	(-/-/		
6.004	EXCP147	30 Summer	1		1/15 Summer				20.022	0.017	0.000	2.45				SURCHARGED	
1.006	CP20	30 Summer	1	+20%					19.652	-0.328	0.000	0.52			458.4	OK	
1.007	CP147	30 Summer	1	+20%					19.269	-0.236	0.000	0.75			457.3	OK	
1.008	CP148	30 Summer	1	+20%					18.789	-0.216	0.000	0.80			455.6	OK	
1.009	CP6114A	30 Summer		+20%					18.349	-0.218	0.000	0.79			453.9	OK	
1.010	CP6114B	30 Summer	1	+20%					17.906	-0.219	0.000	0.79			452.4	OK	
49.000	CP146.1		1	+20%				0	22.709	-0.156	0.000	0.41	0.0		40.2	OK	
49.001	CP146	15 Summer	1	+20%				0	21.552	-0.078	0.000	0.80	0.0		51.6	OK	
49.002	CP145	15 Summer	1 1	+20%					21.213	-0.057	0.000	1.00			64.1	OK	
49.003	CP144	15 Summer	1	+20% +20%					20.435	-0.459	0.000	0.13 0.31			64.1 9.9	OK	
50.000 50.001	CPDN CP22	15 Summer 15 Summer	1	+20%					21.811 21.445	-0.139 -0.145	0.000	0.31			9.9 9.8	OK OK	
50.001	CP22 CP23	15 Summer	1	+20%					21.445	-0.143	0.000	0.28			23.3	OK	
50.002	CP23 CP24	15 Summer	1	+20%					21.036	-0.134	0.000	0.43			36.2	OK	
50.003	CP24 CP25	15 Summer	1	+20%					20.740	-0.277	0.000	0.30			46.0	OK	
50.004	CP25 CP26	15 Summer	1	+20%					20.740	-0.264	0.000	0.35			55.4	OK	
50.005	CP20 CP27	15 Summer	1	+20%					20.014	-0.249	0.000	0.33			63.7	OK	
50.007	CP28	15 Summer	1	+20%					20.258	-0.312	0.000	0.20			71.6	OK	
49.004	CP201	15 Summer	1	+20%					19.280	-0.526	0.000	0.11			142.7	OK	
1.011	CP200	30 Winter	1	+20%					17.598	-0.165	0.000	0.84			477.9	OK	
1.012	Pond Inlet	30 Winter	1	+20%					17.540	-0.140	0.000	1.00			476.6	OK	
51.000	CP30	15 Summer	1	+20%					20.298	-0.224	0.000	0.14			14.8	OK	
51.001	CP31	15 Summer	1	+20%					19.772	-0.266	0.000	0.18			29.4	OK	
52.000	CPDN12	15 Summer	1	+20%					20.638	-0.128	0.000	0.49			25.9	OK	
52.001	CP56	15 Summer	1	+20%					20.188	-0.307	0.000	0.07			25.8	OK	
51.002	CP57	15 Summer	1	+20%					19.442	-0.273	0.000	0.17			53.9	OK	
	Pond Outlet		1	+20%					17.160	-0.410	0.000	0.42			250.7	OK	
53.000	CP143		1	+20%					20.286	-0.134	0.000	0.47			31.9	OK	
53.001	CP6112A	15 Summer	1	+20%					19.621	-0.209	0.000	0.20			31.9	OK	
54.000	CP6113		1	+20%					19.465	-0.250	0.000	0.21			33.7	OK	
53.002	CP6112	15 Summer	1	+20%					19.298	-0.282	0.000	0.13			71.5	OK	
1.014		180 Summer	1	+20%					16.597	-0.376	0.000	0.50			254.5	OK	
55.000	CP359	15 Summer	1	+20%					35.111	-0.219	0.000	0.16			14.0	OK	
56.000	CP6204A	30 Summer	1	+20%	1/15 Summer				35.728	0.205	0.000	1.45				SURCHARGED	
56.001	CP6204	30 Summer	1	+20%				0	35.068	-0.182	0.000	0.33	0.0		40.0	OK	
57.000	CP361	30 Winter	1	+20%					35.258	-0.342	0.000	0.49			279.5	OK	
55.001	CP360	30 Winter	1	+20%					34.678	-0.407	0.000	0.33			323.6	OK	
58.000	CPDN18	30 Summer	1	+20%					23.367	-0.158	0.000	0.18			4.6	OK	
58.001	CP6118	30 Summer	1	+20%					22.987	-0.168	0.000	0.15			4.8	OK	
58.002	CP6117	30 Summer	1	+20%					22.766	-0.159	0.000	0.19			4.9	OK	
59.000	CPDN19	15 Summer	1	+20%					24.624	-0.119	0.000	0.09			1.6	OK	
59.001	CP6116		1	+20%					23.821	-0.119	0.000	0.10			2.4	OK	

									Page 1	0
US/MH         Return         Period           1         year         Storm         Period           1         Name         Storm         Period           2         0.001         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.008         MH334         15         Summer         1           0.00		A12 Chelmsfo	ord to	A120wid	lening					
US/MH         Return         Period           1         year         Storm         Period           1         Name         Storm         Period           2         0.001         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.008         MH334         15         Summer         1           0.00		Section 1			2					
US/MH         Return         Period           1         year         Storm         Period           1         Name         Storm         Period           2         0.001         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.008         MH334         15         Summer         1           0.00			1-	01 01167						
US/MH         Return         Period           1         year         Storm         Period           1         Name         Storm         Period           2         0.001         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.008         MH334         15         Summer         1           0.00		Proposed Net		51-001&/					N	licro
US/MH         Return         Period           B.003         CP6116A         15         Summer         1           0.000         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW MH31A         15         Summer         1           0.008         MH334         15         Summer         1         1           0.009         CP355.3         15         Summer         1         1           0.001         MH228         15         Summer         1         1		Designed by	DG							rainac
US/MH         Return         Period           B.003         CP6116A         15         Summer         1           0.000         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW MH31A         15         Summer         1           0.008         MH334         15         Summer         1         1           0.009         CP355.3         15         Summer         1         1           0.001         MH228         15         Summer         1         1	S1 OU1 7 DF3 FEH19	Checked by A	AM							
US/MH         Return         Return </td <td></td> <td>Network 2020</td> <td>0.1.3</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		Network 2020	0.1.3							
PN         Name         Storm         Period           0.003         CP6116A         15         Summer         1           0.000         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP10         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW MH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.001         MH228         15         Summer         1           0.001         MH228         15         Summer         1	d Summary of Critical F	Results by Ma	<u>ximum</u>	Level (I	Rank 1	) for Propos	sed Netw	ork S	1-0U1&7	
PN         Name         Storm         Period           0.003         CP6116A         15         Summer         1           0.000         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP10         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW MH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.001         MH228         15         Summer         1           0.001         MH228         15         Summer         1			Water	Surcharged	Flooded		Half Drain	Pipe		
8.003       CP6116A       15       Summer       1         0.000       EXCP09       15       Summer       1         0.001       EXCP10       15       Summer       1         0.002       EXCP11       15       Summer       1         0.003       EXCP12       15       Summer       1         0.004       CP340       15       Summer       1         0.005       CP338       15       Summer       1         0.006       CP337       15       Summer       1         0.006       CP337       15       Summer       1         0.007       CP       SW       HH31A       15       Summer       1         0.008       MH334       15       Summer       1       1       0.009       CP355.3       15       Summer       1         0.000       MH228       15       Summer       1       1       2.001       MH228       15       Summer       1	Climate First (X) First (Y) F		Level	Depth	Volume	Flow / Overflow	Time	Flow		Level
D.000         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP339         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP SW MH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.001         MH228         15         Summer         1           0.001         MH228         15         Summer         1	Change Surcharge Flood C	Overflow Act.	(m)	(m)	(m³)	Cap. (1/s)	(mins)	(l/s)	Status	Exceeded
D.000         EXCP09         15         Summer         1           0.001         EXCP10         15         Summer         1           0.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.006         CP339         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP SW MH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.001         MH228         15         Summer         1           0.001         MH228         15         Summer         1	+20%		22.474	-0.166	0.000	0.15		6.5	OK	
D.002         EXCP11         15         Summer         1           0.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.000         CP339         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW         MH31A         15         Summer         1           0.008         MH334         15         Summer         1         1         0.009         CP355.3         15         Summer         1           0.000         MH220         15         Summer         1         1         1           0.001         MH228         15         Summer         1         1         1         1	+20%		34.090	-0.155	0.000	0.21		12.7	OK	
D.003         EXCP12         15         Summer         1           0.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.000         CP339         15         Summer         1           0.000         CP339         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW         H31A         15         Summer         1           0.008         MH334         15         Summer         1         1         0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1         1         0.001         MH228         15         Summer         1           0.001         MH228         15         Summer         1         1         0.002         MH229         15         Summer         1	+20%		33.275	-0.165	0.000	0.16		16.9	OK	
D.004         CP340         15         Summer         1           0.005         CP338         15         Summer         1           0.000         CP339         15         Summer         1           0.000         CP339         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW         HH31A         15         Summer         1           0.008         MH334         15         Summer         1         1         0.009         CP355.3         15         Summer         1           0.000         MH230         15         Summer         1         1         0.001         MH228         15         Summer         1           0.002         MH229         15         Summer         1         1         0.002         MH229         15         Summer         1	+20%		32.385	-0.140	0.000	0.30		28.8	OK	
0.005         CP338         15         Summer         1           0.000         CP339         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.006         CP337         15         Summer         1           0.007         CP         SW         MH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.000         MH230         15         Summer         1           0.001         MH228         15         Summer         1           0.002         MH229         15         Summer         1	+20%		30.582	-0.143	0.000	0.28		28.9	OK	
	+20%		30.065	-0.130	0.000	0.37		39.1	OK	
D.006         CP337         15         Summer         1           0.007         CP         SW         MH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.000         MH230         15         Summer         1           0.001         MH228         15         Summer         1           0.002         MH229         15         Summer         1	+20% 1/15 Summer		27.930	0.565	0.000	1.00		44.3	SURCHARGED	
D.007         CP         SW         HH31A         15         Summer         1           0.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           0.000         MH230         15         Summer         1           0.001         MH228         15         Summer         1           0.002         MH229         15         Summer         1	+20%		28.796	-0.199	0.000	0.03		2.0	OK	
D.008         MH334         15         Summer         1           0.009         CP355.3         15         Summer         1           2.000         MH230         15         Summer         1           2.001         MH228         15         Summer         1           2.002         MH229         15         Summer         1	+20% 1/15 Summer		27.680	0.595	0.000	1.34		58.3	FLOOD RISK	
O.009         CP355.3         15         Summer         1           2.000         MH230         15         Summer         1           2.001         MH228         15         Summer         1           2.002         MH229         15         Summer         1	+20% 1/15 Summer		26.606	0.121	0.000	1.95		58.2	SURCHARGED	
2.000         MH230         15         Summer         1           2.001         MH228         15         Summer         1           2.002         MH229         15         Summer         1	+20%		26.167	-0.098	0.000	0.85		110.9	OK	
2.001 MH228 15 Summer 1 2.002 MH229 15 Summer 1	+20%		25.575	-0.480	0.000	0.18		257.1	OK	
2.002 MH229 15 Summer 1	+20%		24.130	-0.525	0.000	0.00		0.0	OK	
	+20%		24.030	-0.585	0.000	0.02		9.8	OK	
0.010 MH231 15 Summer 1	+20%		23.992	-0.445	0.000	0.08		36.4	OK	
	+20%		23.970	-0.489	0.000	0.34		267.1	OK	

Jacobs Engineering Limited		Page 1
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Diamage
Innovyze	Network 2019.1	
	fall Details for Proposed Network S1-OU1&7	
Outfall Pipe Number	Outfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
1.014	OU1 17.970 15.970 15.820 2000 2000	
Free Flowing Outf	fall Details for Proposed Network S1-OU1&7	
Outfall Pipe Number	Outfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
55.001 (	OU8/CP360A 35.000 33.827 0.000 1200 0	
Free Flowing Outf	fall Details for Proposed Network S1-OU1&7	
Outfall Pipe Number	Name (m) (m) I. Level (mm) (mm) (m)	
58.003	OU5 23.220 21.795 0.000 0 0	
Free Flowing Outf	fall Details for Proposed Network S1-OU1&7	
Outfall Pipe Number		
60.010	OU7 24.940 23.430 0.000 1800 0	
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acobs Engineering Limited		Page 2
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
ate 15/12/2021 09:59	Designed by DG	
ile proposed case drainage model_s1_ou1_7 dF3.mdx	Checked by AM	Drainage
nnovyze	Network 2019.1	
<u>Online Cc</u>	ontrols for Proposed Network S1-OU1&7	
Orifice Manhol	le: CP13, DS/PN: 12.006, Volume (m³): 21.2	
<u></u>		
Diameter (m) 0.2	243 Discharge Coefficient 0.600 Invert Level (m) 28.713	
Orifice Manhold	e: EXCP07, DS/PN: 31.002, Volume (m³): 4.0	
Diameter (m) 0.1	171 Discharge Coefficient 0.600 Invert Level (m) 33.630	
Hydro-Brake® Ontimum	n Manhole: CP55, DS/PN: 36.008, Volume (m³): 4.8	
Unit Reference MD-SHE-0056-2000-2090-2000		
Design Head (m) 2.090 Design Flow (1/s) 2.0	D Application Surface Minimum Outlet Pipe Diameter (mm) 75 D Sump Available Yes Suggested Manhole Diameter (mm) 1200	
Flush-Flo™ Calculated	d Diameter (mm) 56	
Control Points Head (m) Flow (1/s) Control Points F	Head (m) Flow (l/s) Control Points Head (m) Flow (l/s) Control Points	Head (m) Flow (l/s)
Design Point (Calculated) 2.090 2.0 Flush-Flo™	0.248 1.3 Kick-Flo® 0.504 1.1 Mean Flow over Head Range	- 1.5
The hydrological calculations have been based on the Head/Discharge relat	ionship for the Hydro-Brake® Optimum as specified. Should another type of control o	device other than a Hydro-B
Optimum® be utilised then these storage routing calculations will be inva		
Depth (m) Flow (l/s) Depth (m) Flow (l/s) Depth (m) Flow (l/s) Depth	epth (m) Flow (l/s)   Depth (m) Flow (l/s)   Depth (m) Flow (l/s)   Depth (m) Flow (l/s)	s) Depth (m) Flow (l/s)
0.100 1.1 0.500 1.1 1.200 1.6	2.000 2.0 3.000 2.4 5.000 3.0 7.000 3.	.5 9.000 3.9
0.200 1.3 0.600 1.1 1.400 1.7	2.200         2.0         3.500         2.5         5.500         3.1         7.500         3.1	
0.300 1.3 0.800 1.3 1.600 1.8 0.400 1.2 1.000 1.4 1.800 1.9	2.400         2.1         4.000         2.7         6.000         3.2         8.000         3.2           2.600         2.2         4.500         2.8         6.500         3.4         8.500         3.4	
Orifica Marba	le: CP53, DS/PN: 27.004, Volume (m³): 7.7	
<u>Urifice Manno.</u>		
	238 Discharge Coefficient 0.600 Invert Level (m) 30.987	
	238 Discharge Coefficient 0.600 Invert Level (m) 30.987	

Jacobs Engineering Limited											Page 3	
•				A12 C	Chelmsford	l to A120	widening					
				Secti	on 1							
				Propo	sed Netwo	ork S1-OU	1&7				Mic	I O I
Date 15/12/2021 09:59				Desig	gned by DG	J						
File PROPOSED CASE DRAINAGE	MODEL_S1_	_OU1_7 DF3.	.MDX	Check	ed by AM						DIC	inage
Innovyze				Netwo	ork 2019.1					I		
		Stor	age Struc	tures	for Propos	sed Netwo	ork S1-OU	1&7				
		<u>Cel</u>	lular Sto	orage M	Manhole: C	2913, DS/	PN: 12.00	<u>) 6</u>				
	Infiltrati	Inve on Coefficient.			Infiltration		Side (m/hr) fety Factor	0.00000 Poro 2.0	sity 0.95			
	Depth (m) A	area (m²) Inf.	Area (m²) De	epth (m)	Area (m²) Inf	. Area (m²)	Depth (m) A	rea (m²) Inf	Area (m²)			
	0.000	240.0	0.0	0.660	240.0	0.0	0.661	0.0	0.0			
		<u>Cel</u>	lular Sto	orage M	Manhole: C	2P48, DS/	PN: 29.00	)2				
	Infiltrati	Inve on Coefficient.			Infiltration		Side (m/hr) fety Factor	0.00000 Poro 2.0	sity 0.95			
	Depth (m) A	Area (m²) Inf.	Area (m²) De	epth (m)	Area (m²) Inf	. Area (m²)	Depth (m) A	rea (m²) Inf	Area (m²)			
	0.000	140.0	0.0	1.320	140.0	0.0	1.321	0.0	0.0			
		<u>Cel</u>	lular Sto	orage M	Manhole: C	2P55, DS/	PN: 36.00	<u>) 8</u>				
	Infiltrati	Inve on Coefficient.			Infiltration		Side (m/hr) fety Factor	0.00000 Poro 2.0	sity 0.95			
Depth (m) Area (m²) Inf. Area (m²	) Depth (m) A	Area (m²) Inf.	Area (m²) De	epth (m)	Area (m²) Inf	. Area (m²)	Depth (m) A	rea (m²) Inf.	Area (m²) D	epth (m) Ar	ea (m²) Inf	. Area (m²)
0.000 228.0 0. 0.100 228.0 0.		228.0 228.0	0.0	1.200	228.0 228.0	0.0	1.800	0.0	0.0	2.400	0.0	0.0
0.200 228.0 0.	0 0.800	228.0	0.0	1.400	0.0	0.0	2.000	0.0	0.0	2.500	0.0	0.0
0.300 228.0 0. 0.400 228.0 0.		228.0 228.0	0.0	1.500 1.600	0.0 0.0	0.0	2.100 2.200	0.0 0.0	0.0			
0.500 228.0 0.		228.0	0.0	1.700	0.0	0.0	2.300	0.0	0.0			
		Cel	lular Sto	orage M	Manhole: C	P52, DS/	PN: 27.00	).3				
		<u></u>				202, 20,						
	Infiltrati	Inve on Coefficient			Infiltration		Side (m/hr) fety Factor	0.00000 Poro 2.0	sity 0.95			
	Depth (m) A	Area (m²) Inf.	Area (m²) De	epth (m)	Area (m²) Inf	. Area (m²)	Depth (m) A	rea (m²) Inf	Area (m²)			
	0.000	100.0	0.0	0.660	100.0	0.0	0.661	0.0	0.0			
				©1982	2-2019 Inn	lovyze						

acobs Engineering Limited		Page 4
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
ate 15/12/2021 09:59	Designed by DG	Micro Drainage
ile proposed case drainage model_s1_ou1_7 dF3.MdX	Checked by AM	Diamaye
nnovyze	Network 2019.1	
Tank or Pon	d Manhole: Pond Outlet, DS/PN: 1.013	
	Invert Level (m) 16.820	
Depth (m) Area (m²) De	pth (m) Area (m²) Depth (m) Area (m²) Depth (m) Area (m²)	
0.000 2000.0	0.900 2611.4 1.200 2833.3 2.099 3552.5	

acobs Engineer:	ing Lim	nited													Pac	ge 5	
						A12	Chelms	ford t	o A120	widening							
						Sec	tion 1										
						Pro	posed N	letwork	S1-OU	1247						Micco	
ate 15/12/2021	09:59						igned k		0	-						Micro	
ile PROPOSED CA		ATNACE N	AODET.	S1 OII1	7 DF3 MD8		cked by	-								Draina	age
		AINAGE P	·10DEL_	51_001			work 20										
nnovyze						Net	WOIK ZU	19.1									
2	vear I	Return 1	Period	Summa	ary of Crit	tical Resu	lts hv l	Maximum		l (Rank )	1) for	Prop	osed N	≤twor	k S1-011	£7	
<u></u>	year i		101100		ary or err		100 09 1				1) 101	1100	0500 11	CEWOL	<u>N DI OUI</u>	<u>. u /</u>	
			1 5 1		1 000		Simulation				+ 10	3 (1 - 0)	0.0				
		Ar		Start (m	actor 1.000 1 mins) 0					MADD Fact			orage U.U cient O.8				
			Hot Star			ditional Flow				w per Person							
Number of Input Hyd	drographs	0 Number	of Onlin	ne Contro	ols 4 Number o	f Offline Cont:	rols 5 Num	ber of St	orage St	ructures 5	Number o	f Time/2	Area Diag	rams 4	Number of H	Real Time Cor	ntrols 0
									-				5				
				R	ainfall Model	-	<u>thetic Rai</u> tion GB 57			850 08550 C <sup>.</sup>	v (Summe	r) 1.00	0				
					nfall Version			222 2000		Catchment C							
				Marg	in for Flood Ri	iek Warning (mm				300.0	DVD Stat	US ON					
				nary.		alysis Timeste		ond Increm	ent (Ext								
						DTS Statu	s			OFF							
						ofile(s)					and Wir						
				Pet	Duration(s)	(mins) 15, 30	), 60, 120,	180, 240	, 360, 4		, 960, 1	440					
				Ret		(mins) 15, 30 (years)	), 60, 120,	180, 240	, 360, 4			440 100					
				Ret	Duration(s) turn Period(s)	(mins) 15, 30 (years)	), 60, 120,	180, 240	, 360, 4		), 960, 1 2, 5,	440 100					
				Ret	Duration(s) turn Period(s)	(mins) 15, 30 (years)	), 60, 120,	180, 240			0, 960, 1 2, 5, 20, 20,	440 100		Pipe			
	us/mh			Climate	Duration(s) turn Period(s) Climate Cha First (X)	(mins) 15, 3( (years) ange (%) First (Y)	First (Z)		Water Level	80, 600, 720 Surcharged Depth	<ul> <li>960, 1</li> <li>2, 5,</li> <li>20, 20,</li> <li>Flooded</li> <li>Volume</li> </ul>	440 100 20 Flow /	Overflow	Flow		Level	
PN	US/MH Name	Storm	Return Period	Climate	Duration(s) turn Period(s) Climate Cha	(mins) 15, 3( (years) ange (%)			Water	80, 600, 720 Surcharged	<pre>0, 960, 1     2, 5,     20, 20, Flooded</pre>	440 100 20	Overflow (1/s)	-	Status	Level Exceeded	
<b>PN</b> 1.000	Name	<b>Storm</b> 15 Summer	Period	Climate Change	Duration(s) turn Period(s) Climate Cha First (X)	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood</pre>	First (Z)	Overflow	Water Level	80, 600, 720 Surcharged Depth	<ul> <li>960, 1</li> <li>2, 5,</li> <li>20, 20,</li> <li>Flooded</li> <li>Volume</li> </ul>	440 100 20 Flow /		Flow	<b>Status</b> OK	Exceeded	
1.000	Name CPDN07 CP15	15 Summer 15 Summer	Period 2 2	Climate Change +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer	(mins) 15, 3( (years) unge (%) First (Y) Flood 100/15 Summer	First (Z)	Overflow	Water Level (m) 23.387 23.135	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114</pre>	<pre>), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69		Flow (1/s) 20.4 40.7	OK OK	Exceeded 2 1	
1.000 1.001 1.002	Name CPDN07 CP15 CP16	15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2	<b>Climate</b> <b>Change</b> +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31		Flow (1/s) 20.4 40.7 38.1	OK OK	Exceeded 2 1	
1.000 1.001 1.002 2.000	Name CPDN07 CP15 CP16 CPDN09	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103</pre>	<pre>9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76		Flow (1/s) 20.4 40.7 38.1 43.0	OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003	Name CPDN07 CP15 CP16 CPDN09 CP17	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103 -0.148</pre>	<pre></pre>	440 100 20 <b>Flow /</b> Cap. 0.35 0.69 0.31 0.76 0.66		Flow (1/s) 20.4 40.7 38.1 43.0 74.8	OK OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103 -0.148 -0.144</pre>	<pre>9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000</pre>	440 100 20 <b>Flow /</b> Cap. 0.35 0.69 0.31 0.76 0.66 0.53		Flow (1/s) 20.4 40.7 38.1 43.0	OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103 -0.148 -0.144 -0.127</pre>	<pre></pre>	440 100 20 <b>Flow /</b> Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5	OK OK OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre></pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.50		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1	0K 0K 0K 0K 0K 0K	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103 -0.148 -0.144 -0.127 -0.149 -0.195 -0.185</pre>	<pre>p, 960, 1     2, 5,     20, 20,     Flooded     Volume     (m<sup>3</sup>)     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3	OK OK OK OK OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103 -0.148 -0.144 -0.127 -0.149 -0.195 -0.185</pre>	<pre>p, 960, 1     2, 5,     20, 20,     Flooded     Volume     (m<sup>3</sup>)     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9	OK OK OK OK OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) inge (%)  First (Y) Flood  100/15 Summer 100/15 Summer  100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1     2, 5,     20, 20,  Flooded Volume (m<sup>3</sup>)     0.000     0.</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31 1.59 1.54		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8	OK OK OK OK OK OK OK SURCHARGED SURCHARGED	<b>Exceeded</b> 2 1 3 5 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN1	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer  100/15 Summer  100/15 Summer 5/15 Summer 5/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1     2, 5,     20, 20,  Flooded Volume (m³)     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000     0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31 1.59 1.54 0.82		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9	OK OK OK OK OK OK SURCHARGED SURCHARGED	Exceeded 2 1 3 5 12 8	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 8.000 8.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN5 CP137.1 CPDN6 CPDN1 CP139	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer  100/15 Summer  100/15 Summer 5/15 Summer 5/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1 2, 5, 20, 20, Flooded Volume (m³) 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.76 0.62 0.31 1.59		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2	OK OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded 2 1 3 5 12 8 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN1 CPDN1 CPDN1 CP139 CP2001B	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	<pre>(mins) 15, 3( (years) inge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer  100/15 Summer 5/15 Summer 5/15 Summer 5/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405 25.280	<pre>80, 600, 720 Surcharged Depth (m) -0.1170 -0.114 -0.226 -0.103 -0.148 -0.144 -0.127 -0.149 -0.195 -0.185 0.755 0.881 0.123 0.290 -0.175</pre>	<pre>p, 960, 1 2, 5, 20, 20, Flooded Volume (m³) 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31 1.59 1.54 0.82 1.16 0.11		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2 3.7	OK OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded 2 1 3 3 5 12 8 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.000 8.001	Name           CPDN07           CP15           CP16           CPDN09           CP17           CPDN10           CP18           CPDN11           CP137.1           CPDN10           CP139           CPDN10           CP139           CP2001B           CP2001A	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) inge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405 25.280 25.228	<pre>80, 600, 720 Surcharged Depth (m) -0.170 -0.114 -0.226 -0.103 -0.148 -0.144 -0.127 -0.149 -0.195 -0.185 0.755 0.881 0.123 0.290 -0.175 -0.087</pre>	<pre>p, 960, 1     2, 5,     20, 20,  Flooded Volume (m<sup>3</sup>)     0.000     0.</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.52 0.31 1.59 1.54 0.82 1.16 0.11 0.60		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2 3.7 22.5	OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded 2 1 3 3 5 12 8 12 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.001 9.001 9.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6 CPDN1 CP139 CP201B CP2001B CP2001A CP2001	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) inge (%)  First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405 25.228 24.505	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1 2, 5, 20, 20, Flooded Volume (m³) 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31 1.59 1.54 0.82 1.16 0.11 0.60 1.00		Flow (1/s) 20.4 40.7 38.1 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2 3.7 22.5 29.3	OK OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK	Exceeded 2 1 3 3 5 12 8 12 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.000 9.001 9.002 9.003	Name CPDN07 CP15 CP100 CP17 CPDN10 CP18 CPDN11 CP137.1 CPDN6 CPDN1 CP139 CP2001B CP2001A CP2001 CP2001	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer  100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405 25.280 25.228 24.505 23.631	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1 2, 5, 20, 20, Flooded Volume (m³) 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.74 0.50 0.62 0.31 1.59 1.54 0.82 1.16 0.11 0.60 0.51		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2 3.7 22.5 29.3 29.3	OK OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED OK OK	Exceeded 2 1 3 5 12 8 12 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.001 9.001 9.002 9.003 8.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6 CPDN15 CP137.1 CPD016 CPDN1 CP139 CP2001A CP20011 CP20011 CP2001.1 CP2001.1 CP2001.1 CP2001.1	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405 25.280 25.228 24.505 23.631 23.267	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1 2, 5, 20, 20, Flooded Volume (m³) 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.76 0.62 0.31 1.59 1.59 1.59 1.59 1.59 1.59 1.59 1.59 0.82 1.16 0.11 0.60 1.060 1.041 0.41		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2 3.7 22.5 29.3 64.5	OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK	Exceeded 2 1 3 3 5 12 8 12 5 5 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.001 9.001 9.002 9.003 8.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6 CPDN15 CP137.1 CPD016 CPDN1 CP139 CP2001A CP20011 CP20011 CP2001.1 CP2001.1 CP2001.1 CP2001.1	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>(mins) 15, 3( (years) unge (%)  First (Y) Flood  100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	First (Z) Overflow	Overflow Act.	Water Level (m) 23.387 23.135 22.196 22.860 21.898 22.437 21.702 22.222 21.364 21.919 23.945 24.191 24.628 24.405 25.280 25.228 24.505 23.631 23.267 24.307	<pre>80, 600, 720 Surcharged Depth (m)</pre>	<pre>p, 960, 1 2, 5, 20, 20, Flooded Volume (m³) 0.000</pre>	440 100 20 Flow / Cap. 0.35 0.69 0.31 0.76 0.66 0.53 0.76 0.62 0.31 1.59 1.59 1.59 1.59 1.59 1.59 1.59 1.59 0.82 1.16 0.11 0.60 1.060 1.041 0.41		Flow (1/s) 20.4 40.7 38.1 43.0 74.8 25.5 88.1 26.3 103.7 17.9 18.7 20.8 21.9 35.2 3.7 22.5 29.3 29.3	OK OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK	Exceeded 2 1 3 3 5 12 8 12 5 5 5	

Jacobs Engineering Limited		Page 6
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	

PN	US/MH															
E IN	Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (1/s)	Flow (1/s)	Status	Level Exceeded
	Mame	Storm	reriou	change	Surcharge	FICCU	OVEIIIOW	ACC.	(111)	(111)	(111 )	cap.	(1/3)	(1/3)	Status	Exceeded
1.000	CP152	15 Summer	2	+20%	5/15 Summer				31.706	-0.179	0.000	0.09		3.6	OK	
1.001	CP151	15 Summer	2	+20%	5/15 Summer	100/15 Summer			31.515	-0.060	0.000	0.75		34.7	OK	7
1.002	CP150	15 Summer	2	+20%		100/15 Summer			29.930	-0.055	0.000	0.88		66.5	OK	8
1.003	CP142	15 Summer	2	+20%	2/15 Summer	100/15 Summer			27.556	0.321	0.000	1.07		77.3	SURCHARGED	10
2.000	CP01	15 Summer	2	+20%					32.197	-0.153	0.000	0.22		8.1	OK	
2.001	CP02	15 Summer	2	+20%					31.896	-0.156	0.000	0.20		9.2	OK	
2.002	CP03	15 Summer	2	+20%					31.436	-0.171	0.000	0.13		9.3	OK	
2.003	CP04	15 Summer	2	+20%					30.854	-0.182	0.000	0.08		9.5	OK	
3.000	CP07	15 Summer	2	+20%					31.642	-0.197	0.000	0.25		14.4	OK	
3.001	CP08	15 Summer	2	+20%					31.541	-0.194	0.000	0.27		34.4	OK	
2.004	CP05	15 Summer	2		100/15 Summer				29.961	-0.264	0.000	0.19		43.1	OK	
4.000	CPDN05	15 Summer	2		100/30 Summer				30.568	-0.148	0.000	0.25		13.2	OK	
5.000	CPDN06	15 Summer	2	+20%					31.498	-0.199	0.000	0.03		2.0	OK	
5.001	CP14	15 Summer	2		100/30 Summer				30.398	-0.180	0.000	0.09		3.6	OK	
2.005	CP06	15 Summer	2		100/15 Summer				29.413	-0.219	0.000	0.36		59.1	OK	
.6.000	CP09	15 Summer	2	+20%					31.546	-0.228	0.000	0.13		15.5	OK	
.6.001	CP010	15 Summer	2	+20%					30.899	-0.311	0.000	0.07		15.6	OK	
7.000	CPDN01	15 Summer	2		100/15 Summer				31.388	-0.110	0.000	0.52		23.2	OK	
6.002	CP11	15 Summer	2		100/15 Summer				30.123	-0.266	0.000	0.18		38.3	OK	
8.000	CPDN02	15 Summer	2		100/15 Summer				30.759	-0.182	0.000	0.32		33.4	OK	
6.003	CP12	15 Summer	2		100/15 Summer				29.427	-0.218	0.000	0.36		70.5	OK	
9.000	CPDN03	15 Summer	2		100/15 Winter				30.006	-0.196	0.000	0.26		24.4	OK	
20.000		15 Summer	2		100/15 Summer				29.996	-0.104	0.000	0.56		20.7	OK	
2.006		120 Summer	2	+20%		100/30 Summer			29.039	-0.049	0.000	0.35		53.7	OK	5
		120 Summer	2		100/15 Summer				28.703	-0.230	0.000	0.31		69.7	OK	
2.008		120 Summer	2		100/15 Summer				26.599	-0.236	0.000	0.29		83.7	OK	
		120 Summer	2	+20%		100/30 Summer			24.226	-0.149	0.000	0.68		83.7	OK	8
		15 Summer	2	+20%	.,	100/15 Summer			33.103	-0.087	0.000	0.36		4.8	OK	10
		15 Summer	2	+20%		100/15 Summer			33.045	0.153	0.000	1.07			SURCHARGED	3
1.002	CP2011	30 Summer	2	+20%		100/15 Summer			31.553	0.223	0.000	0.83			SURCHARGED	9
1.003	CP2009	30 Summer	2	+20%		100/15 Summer			30.307	0.807	0.000	1.07			SURCHARGED	11
1.004	CP2007	30 Summer	2	+20%		100/15 Summer			28.300	0.640	0.000	1.12			SURCHARGED	11
21.005	CP2005	30 Summer	2		100/15 Summer				25.178	-0.117	0.000	0.47		27.8	OK	
1.004	CP141	30 Summer	2	+20%	5/15 Summer	100/15 0			24.165	-0.090	0.000	0.93		185.2	OK	2
22.000	CPDN2	15 Summer	2	+20%		100/15 Summer	100/20 0	~	25.249	-0.051	0.000	0.76	0.0	13.8	OK	3
1.005	CP140	30 Summer	2	+20%	2/15 Summer		100/30 Summer	9	23.567	0.017	0.000	1.14	0.0		SURCHARGED	
.0.001	CP202	30 Summer	2	+20%	2/15 Summer	0/15 0			23.283	0.083	0.000	1.16			SURCHARGED	
3.000	CPDN3	15 Summer	2 2	+20%	2/15 Summer	2/15 Summer			25.692	1.502	1.767	2.21		23.4	FLOOD	20
	CP3109A	30 Summer	2		100/15 Summer	E / 1 E . Cummer			22.837	-0.255	0.000			217.3	OK	10
4.000	CPDN4 CP3109	15 Summer 30 Summer	2	+20%	2/15 Summer 100/15 Summer	5/15 Summer			25.067	1.267	0.000	1.87 0.43		22.3	FLOOD RISK OK	12 5
.0.003 25.000		15 Summer	2	+20%		100/30 Summer 100/15 Summer			22.515 23.590	-0.325 0.280	0.000	0.43 1.65			SURCHARGED	5 9
5.000	CPDND	15 Summer	2	+20%	2/13 Summer	100/10 Summer			23.390	0.280	0.000	1.05		14.2	SURCHARGED	9

	ring Li					712	Chalmat	Ford to	<u>7120</u>	widening					Page	
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						Proj	posed Ne	etwork	S1-OU	1&7						Mic
2/202	1 09:59					Des	igned by	/ DG								
י חפקה (	775F DB	AINACE	MODET	S1 OU1	L 7 DF3.MDX		cked by									Drai
0050	CADE DR	AINAGE		51_001												
						Net	work 201	19.1								
	2 year	Return	Period	Summ	ary of Crit	tical Resul	ts by M	aximum	Level	. (Rank 1	) for	Propo	osed Ne	twor	k S1-OU1&	27
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Water Level	Surcharged Depth	Flooded Volume	Flow /	Overflow	Pipe Flow		Level
PN	Name	Storm	Period		Surcharge	Flood	Overflow	Act.	(m)	(m)	(m <sup>3</sup> )	Cap.	(1/s)	(1/s)	Status	Exceede
				· · <b>·</b>							. ,					
10.004	CP3110A	30 Summer		+20%					22.151	-0.318	0.000	0.45		227.4	OK	
26.000	CP3110B			+20%	2/15 Summer	100/15 Summer			23.191	0.041	0.000	1.12			SURCHARGED	
8.003 8.004	CP3110	30 Summer 30 Summer		+20% +20%	5/15 Summer 5/15 Summer	100/30 Summer			21.982 21.915	-0.178 -0.115	0.000	0.84 0.76		291.1 288.6	OK	
7.001	CP27208	30 Summer		+20%	2/30 Summer				21.913	0.010	0.000	1.51			SURCHARGED	
6.001		30 Summer		+20%	2/15 Summer				21.689	0.054	0.000	1.09			SURCHARGED	
27.000	CP153	15 Summer	2			100/15 Summer			33.192	-0.143	0.000	0.52		44.0	OK	
27.001	CP154	15 Summer				100/15 Summer			33.015	-0.106	0.000	0.73		60.3		
27.002 28.000	CP49	15 Summer			100/15 Summer 100/15 Summer				32.789	-0.111	0.000	0.72		70.0	OK	
28.000		15 Summer 15 Summer		+20%		100/15 Summer			33.620 34.265	-0.089 -0.041	0.000	0.34 0.87		9.8 21.2		
29.000	CP47	15 Summer			100/15 Summer	100/10 04111101			34.072	-0.084	0.000	0.39		21.2	OK	
30.000	KO-11				100/30 Summer				34.495	-0.112	0.000	0.14		4.0	OK	
31.000		15 Summer				100/15 Summer			35.484	-0.121	0.000	0.42		22.0		
31.001		15 Summer		+20%		100/15 Summer			34.596	-0.104	0.000	0.54		32.2	OK	
31.002		15 Summer 15 Summer		+20% +20%	2/15 Summer 2/15 Summer	100/15 Summer			34.135 33.912	0.280 0.117	0.000	0.82 0.83			SURCHARGED SURCHARGED	
31.004		15 Summer		+20%		100/15 Summer			33.728	0.118	0.000	0.50			SURCHARGED	1
32.000	EXCP08	15 Summer	2	+20%	100/15 Summer	100/15 Summer			34.094	-0.131	0.000	0.35		18.9	OK	
		15 Summer		+20%	2/15 Summer				33.619	0.119	0.000	0.83			SURCHARGED	
33.000	CPDN7				100/15 Summer	100/15 0			35.326	-0.119	0.000	0.07		1.0 16.8		
33.001 34.000		15 Summer 15 Summer			100/15 Summer 100/15 Summer	100/15 Summer			35.322 35.673	-0.093 -0.097	0.000	0.55 0.27		2.1	OK OK	
33.002	CP6202					100/15 Summer			34.922	-0.168	0.000	0.39		31.1	OK	
35.000		15 Summer			100/15 Summer				35.319	-0.121	0.000	0.08		1.2	OK	
33.003		15 Summer		+20%		100/15 Summer			34.387	0.282	0.000	1.21			SURCHARGED	
		15 Summer		+20%	2/15 Summer				33.533	0.073	0.000	1.30			SURCHARGED	
31.007 30.001	CP146A CP46	15 Summer 15 Summer		+20% +20%	5/15 Summer 5/15 Summer				33.220 33.127	-0.118	0.000	0.81 0.87		103.6 104.8	OK OK	
30.002	CP49	30 Summer		+20%	5/15 Summer				33.074	-0.015	0.000	0.93		99.8	OK	
29.002	CP48	30 Summer	2	+20%	2/15 Summer				33.001	0.062	0.000	2.30		77.6	SURCHARGED	
36.000		15 Summer			100/15 Summer	400/45			42.210	-0.140	0.000	0.30		37.6		
36.001		15 Summer				100/15 Summer			40.475	-0.127		0.39		53.1		
36.002 36.003		15 Summer 15 Summer		+20%	100/15 Summer 5/15 Summer	100/15 Summer			36.485 34.878	-0.193 -0.066	0.000	0.27 0.95		62.7 62.6		
36.004		15 Summer 15 Summer		+20%		100,10 Dunner			34.730	-0.089	0.000	0.93		61.6		
36.005		15 Summer			100/15 Summer				34.595	-0.105	0.000	0.75		61.7		
37.000		15 Summer				100/360 Summer			34.588	-0.137	0.000	0.32		16.1		1
	EXCP06	15 Summer			100/15 Summer				34.347	-0.193	0.000	0.28		77.5		
36.006		COO 571 -														
36.006 36.007 36.008	CP54	600 Winter 600 Winter		+20% +20%					33.499 33.499	0.219 0.324	0.000	0.25			SURCHARGED SURCHARGED	

Jacobs Engineering Limited		Page 8
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Diamaye
Innovyze	Network 2019.1	

											Surcharged				Pipe		
	US/MH				Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth		-	Overflow	Flow		Level
PN	Name	S	torm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(1/s)	Status	Exceeded
38.000	KO-12	15	Summer	2	+20%	100/15 Summer	100/15 Summer			34.583	-0.072	0.000	0.53		22.6	OK	2
38.001	CP300		Summer	2	+20%	100/15 Summer				34.107	-0.085	0.000	0.38		22.4	OK	
29.004	CP301	120	Summer	2	+20%	5/120 Summer				32.290	-0.123	0.000	0.79		84.5	OK	
28.001			Summer	2	+20%					32.202	-0.138	0.000	0.72		87.3	OK	
27.003			Summer	2	+20%	2/60 Summer				31.891	0.088	0.000	0.59			SURCHARGED	
39.000	CPDN10			2		100/15 Summer				33.303	-0.200	0.000	0.03		2.2	OK	
27.004	CP53	120	Summer	2	+20%	2/15 Summer				31.702	0.415	0.000	0.79		91.1	SURCHARGED	
27.005	CP80	120	Summer	2	+20%	100/15 Summer				30.744	-0.143	0.000	0.54		95.7	OK	
27.006	CP344	120	Summer	2	+20%	2/15 Summer	100/15 Summer			28.981	0.101	0.000	2.45		95.7	SURCHARGED	11
40.000	EXCP15		Summer	2	+20%					31.844	-0.116	0.000	0.12		3.2	OK	
	CP344.1			2	+20%		100/15 Summer			28.656	-0.144	0.000	0.53		110.6	OK	5
27.008	CP344.2			2	+20%		100/15 Summer			27.236	1.246	0.000	1.30		103.3	SURCHARGED	3
27.009	CP345	120	Summer	2	+20%	2/15 Summer				27.066	1.236	0.000	0.94		103.4	SURCHARGED	
27.010			Summer	2	+20%	2/15 Summer				26.723	1.343	0.000	3.29			SURCHARGED	
27.011			Summer	2	+20%	2/15 Summer				26.551	1.136	0.000	3.05			SURCHARGED	
41.000	CP355A			2	+20%					28.233	-0.167	0.000	0.15		8.2	OK	
41.001	CP355	15	Summer	2	+20%	5/15 Summer				26.956	-0.169	0.000	0.14		8.1	OK	
41.002	CP355.1	15	Summer	2	+20%	5/15 Summer	100/15 Summer			26.533	-0.122	0.000	0.43		29.0	OK	7
27.012	CP348	120	Summer	2	+20%	2/15 Summer				26.478	0.998	0.000	0.45		114.5	SURCHARGED	
27.013	MH87	120	Summer	2	+20%	2/15 Summer	100/15 Summer			26.323	1.279	0.000	1.58		114.7	SURCHARGED	16
42.000	GY308	15	Summer	2	+20%	100/15 Summer	100/15 Summer			29.600	-0.110	0.000	0.16		5.8	OK	2
42.001	CP352	15	Summer	2	+20%	100/15 Summer				28.976	-0.139	0.000	0.30		20.1	OK	
42.002	CP351	15	Summer	2	+20%	100/15 Summer	100/15 Summer			27.188	-0.127	0.000	0.38		19.0	OK	3
42.003	CP350	15	Summer	2	+20%	5/15 Summer	100/15 Summer			26.203	-0.102	0.000	0.56		35.9	OK	7
42.004	CP349	120	Summer	2	+20%	2/15 Summer	100/15 Summer			26.140	0.765	0.000	0.33		21.0	SURCHARGED	4
27.014	MH65	120	${\tt Summer}$	2	+20%	2/15 Summer	100/15 Summer			26.115	1.225	0.000	2.37		130.3	SURCHARGED	13
27.015	MH64	120	Summer	2	+20%	2/15 Summer	100/15 Summer			25.834	0.994	0.000	1.43		131.7	SURCHARGED	7
27.016	MH63	120	Summer	2	+20%	2/15 Summer	100/15 Summer			25.406	0.796	0.000	1.60		134.6	SURCHARGED	5
27.017	MH62	120	Summer	2	+20%	2/15 Summer				24.766	0.436	0.000	1.23			SURCHARGED	
43.000	CP6119A	15	Summer	2	+20%			2/15 Summer	72	24.751	-0.119	0.000	0.09	1.6	1.5	OK	
44.000	CP6119B	15	Summer	2	+20%	2/15 Summer	100/15 Summer			24.031	0.281	0.000	1.33		12.4	SURCHARGED	5
27.018	CP6119	120	Summer	2	+20%	100/15 Summer		2/15 Summer	57	23.417	-0.153	0.000	0.77	5.9	137.0	OK	
45.000	CP149C	15	Summer	2	+20%					24.434	-0.106	0.000	0.18		2.9	OK	
27.019	CP149B	120	Summer	2	+20%	100/30 Summer				23.207	-0.263	0.000	0.36		137.8	OK	
46.000	CPDN9	15	Summer	2	+20%	2/15 Summer	5/15 Summer			24.350	0.750	0.000	1.62		21.1	SURCHARGED	10
27.020	CP149A	120	Summer	2	+20%	100/15 Summer				22.241	-0.205	0.000	0.58		144.0	OK	
47.000	CPDN10		Summer	2	+20%					23.352	-0.128	0.000	0.05		0.7	OK	
6.002	CP149		Summer	2	+20%	5/30 Summer				21.042	-0.173	0.000	0.88		419.4	OK	
48.000	CPDN11	15	Summer	2	+20%	2/15 Summer	100/15 Summer			23.080	0.060	0.000	1.04		61.1	SURCHARGED	5
6.003	CP148	30	Summer	2	+20%	100/15 Summer				20.258	-0.317	0.000	0.55		429.4	OK	
6.004	EXCP147	120	Summer	2	+20%	2/15 Summer				20.023	0.018	0.000	2.48		430.7	SURCHARGED	
1.006	CP20	120	Summer	2	+20%	100/15 Summer				19.663	-0.317	0.000	0.55		481.2	OK	

Jacobs Engineering Limited		Page 9
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Diamaye
Innovyze	Network 2019.1	

49.001         CP146         15         Su           49.002         CP145         15         Su           49.003         CP144         15         Su           50.000         CPDN         15         Su           50.001         CP22         15         Su           50.002         CP23         15         Su           50.003         CP24         15         Su           50.004         CP25         15         Su           50.005         CP26         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.011         CP200         120         Su           51.000         CP31         15         Su           52.001         CP56         15         Su           53.000         CP143         15         Su           53.001         CP6112         15         Su           53.002         CP6112         15         Su           54.000         CP6128         180         Su           55.000	CP148 12			Change	Surcharge	Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	Cap.	Overflow (1/s)	(1/s)	Status	Level Exceeded
1.009CP6114A $120$ Su $1.010$ CP6114B $120$ Su $49.000$ CP146.1 $15$ Su $49.001$ CP146 $15$ Su $49.002$ CP144 $15$ Su $49.003$ CP144 $15$ Su $50.000$ CPDN $15$ Su $50.000$ CP20 $15$ Su $50.000$ CP23 $15$ Su $50.003$ CP24 $15$ Su $50.004$ CP25 $15$ Su $50.005$ CP26 $15$ Su $50.006$ CP27 $15$ Su $50.007$ CP28 $15$ Su $50.007$ CP28 $15$ Su $50.007$ CP201 $15$ Su $50.007$ CP201 $15$ Su $50.007$ CP201 $15$ Su $50.000$ CP0112 $15$ Su $51.000$ CP30 $15$ Su $51.000$ CP30 $15$ Su $52.001$ CP56 $15$ Su $53.001$ CP6112 $180$ Su $53.001$ CP6112 $15$ Su $53.002$ CP6112 $15$ Su $56.000$ CP239 $15$ Su $56.001$ CP6204 $30$ Su $56.001$ CP6204 $30$ Su $58.000$ CP361 $30$ Su $58.000$ CP6118 $120$ Su $58.002$ CP6117 $120$ Su			2	+20%	100/15 Summer				19.284	-0.221	0.000	0.79		480.1	OK	
1.010CP6114B120Su $49.000$ CP146.115Su $49.001$ CP14615Su $49.002$ CP14515Su $49.003$ CP14415Su $50.000$ CPDN15Su $50.001$ CP2215Su $50.002$ CP2315Su $50.003$ CP2415Su $50.004$ CP2515Su $50.005$ CP2615Su $50.006$ CP2715Su $50.006$ CP2715Su $50.006$ CP2715Su $50.006$ CP20115Su $50.006$ CP20115Su $50.006$ CP2715Su $50.007$ CP2815Su $50.000$ CP3015Su $51.000$ CP3015Su $51.001$ CP5615Su $51.002$ CP5715Su $53.000$ CP14315Su $53.000$ CP31215Su $53.000$ CP6112180Su $55.000$ CP25915Su $56.001$ CP620430Su $56.001$ CP620430Su $58.000$ CP36130Su $58.000$ CP6117120Su $58.002$ CP6117120Su	CP6114A 12		2	+20%	5/120 Summer				18.805	-0.200	0.000	0.84		478.6	OK	
49.000         CP146.1         15         Su           49.001         CP146         15         Su           49.002         CP145         15         Su           49.003         CP144         15         Su           50.000         CPDN         15         Su           50.001         CP22         15         Su           50.002         CP23         15         Su           50.003         CP24         15         Su           50.004         CP25         15         Su           50.005         CP26         15         Su           50.006         CP27         15         Su           50.007         CP28         15         Su           50.007         CP28         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.001         CP56         15         Su           53.000         CP412         15         Su           53.001         CP6112         15         Su           53.002			2	+20%	5/30 Winter				18.366	-0.201	0.000	0.83		476.7	OK	
49.001CP14615Su $49.002$ CP14515Su $49.003$ CP14415Su $50.000$ CPDN15Su $50.001$ CP2215Su $50.002$ CP2315Su $50.003$ CP2415Su $50.004$ CP2515Su $50.005$ CP2615Su $50.006$ CP2715Su $50.007$ CP2815Su $50.007$ CP2815Su $49.004$ CP20115Su $1.011$ CP200120Su $1.012$ Pond Inlet120Su $51.000$ CP3115Su $52.000$ CPDN1215Su $52.001$ CP5615Su $53.000$ CP6112A15Su $53.001$ CP6112A15Su $53.002$ CP611215Su $55.000$ CP36130Su $55.001$ CP620430Su $55.001$ CP620430Su $55.001$ CP6118120Su $58.001$ CP6118120Su $58.002$ CP6117120Su			2	+20%	5/30 Summer				18.057	-0.068	0.000	0.82		466.1	OK	
49.002         CP145         15         Su           49.003         CP144         15         Su           50.000         CPDN         15         Su           50.001         CP23         15         Su           50.003         CP24         15         Su           50.004         CP25         15         Su           50.005         CP26         15         Su           50.006         CP27         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           53.001         CP6112         15         Su           53.001         CP6112         15         Su           53.002         CP6112         15         Su           54.000         CP6112         15         Su           56.001 </td <td></td> <td>15 Summer</td> <td>2</td> <td>+20%</td> <td>100/15 Summer</td> <td>100/15 Summer</td> <td></td> <td></td> <td>22.706</td> <td>-0.159</td> <td>0.000</td> <td>0.39</td> <td></td> <td>38.6</td> <td>OK</td> <td>3</td>		15 Summer	2	+20%	100/15 Summer	100/15 Summer			22.706	-0.159	0.000	0.39		38.6	OK	3
49.003       CP144       15       Su         50.000       CPDN       15       Su         50.001       CP22       15       Su         50.002       CP23       15       Su         50.003       CP24       15       Su         50.004       CP25       15       Su         50.005       CP26       15       Su         50.006       CP27       15       Su         50.007       CP28       15       Su         49.004       CP201       15       Su         1.011       CP200       120       Su         1.012       Pond Inlet       120       Su         51.000       CP30       15       Su         52.001       CP56       15       Su         51.002       CP57       15       Su         53.001       CP6112A       15       Su         53.001       CP6112A       15       Su         53.002       CP6112       15       Su         54.000       CP612B       180       Su         55.000       CP359       15       Su         56.001       CP6204       30		15 Summer	2	+20%	5/15 Summer		5/15 Summer	13	21.545	-0.085	0.000	0.77	0.0		OK	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		15 Summer	2	+20%	5/15 Summer				21.205	-0.065	0.000	0.97		62.0	OK	
50.001         CP22         15         Su           50.002         CP23         15         Su           50.003         CP24         15         Su           50.004         CP25         15         Su           50.005         CP26         15         Su           50.006         CP27         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.001         CP56         15         Su           52.001         CP57         15         Su           53.000         CP413         15         Su           53.001         CP6112         15         Su           53.002         CP6112         15         Su           53.000         CP359         15         Su           54.000         CP6112         16         Su           55.000         CP359         15         Su           56.001		15 Summer	2	+20%					20.433	-0.461	0.000	0.12		61.8	OK	
50.002         CP23         15         Su           50.003         CP24         15         Su           50.004         CP25         15         Su           50.005         CP26         15         Su           50.006         CP27         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           53.000         CP112         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.001         CP6112A         15         Su           54.000         CP6112         15         Su           55.000         CP6204A         30         Su           55.001         CP6204         30         Su           55		15 Summer	2	+20%	100/15 Summer				21.809	-0.141	0.000	0.29		9.6	OK	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$		15 Summer	2	+20%	100/15 Summer				21.443	-0.147	0.000	0.25		9.4	OK	
50.004         CP25         15         Su           50.005         CP26         15         Su           50.006         CP27         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           53.001         CP6112A         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           55.000         CP359         15         Su           56.001         CP6204         30         Su           57.000         CP361         30         Mi           55.001         CP360         30         Mi           58.000         CP0N18         120         Su           58		15 Summer	2	+20%	100/15 Summer				21.126	-0.157	0.000	0.43		22.4	OK	
50.005         CP26         15         Su           50.006         CP27         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           53.000         CP143         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         180         Su           53.002         CP6112B         180         Su           55.000         CP359         15         Su           56.001         CP6204         30         Su           57.000         CP361         30         Mi           55.001         CP360         30         Mi           58.000         CP0N18         120         Su <td< td=""><td></td><td>15 Summer</td><td>2</td><td>+20%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>21.031</td><td>-0.124</td><td>0.000</td><td>0.65</td><td></td><td>34.7</td><td>OK</td><td></td></td<>		15 Summer	2	+20%	100/15 Summer				21.031	-0.124	0.000	0.65		34.7	OK	
50.006         CP27         15         Su           50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.000         CPDN12         15         Su           52.001         CP57         15         Su           53.002         CP57         15         Su           53.001         CP6112A         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.002         CP6112         15         Su           53.000         CP359         15         Su           56.000         CP6204A         30         Su           55.001         CP6204         30         Su           56.001         CP6204         30         Su           55.001         CP361         30         Su           55.001         CP361         30         Su <t< td=""><td></td><td>15 Summer</td><td>2</td><td>+20%</td><td>100/15 Summer</td><td></td><td></td><td></td><td>20.736</td><td>-0.281</td><td>0.000</td><td>0.29</td><td></td><td>44.2</td><td>OK</td><td></td></t<>		15 Summer	2	+20%	100/15 Summer				20.736	-0.281	0.000	0.29		44.2	OK	
50.007         CP28         15         Su           49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           53.000         CP6112A         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.000         CP6112B         180         Su           53.000         CP6112B         180         Su           55.000         CP6204A         30         Su           56.001         CP6204A         30         Su           57.000         CP361         30         Su           55.001         CP6204         30         Su           55.001         CP6204         30         Su           58.000         CPDN18         120         Su		15 Summer	2	+20%	100/15 Summer				20.610	-0.268	0.000	0.34		53.1	OK	
49.004         CP201         15         Su           1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           51.001         CP31         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           53.000         CP112A         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.002         CP6112         15         Su           53.000         CP359         15         Su           55.000         CP359         15         Su           56.001         CP6204         30         Su           57.000         CP361         30         Mi           55.001         CP360         30         Mi           58.000         CPDN18         120         Su           58.001         CP6117         120         Su		15 Summer	2	+20%	100/15 Summer				20.471	-0.253	0.000	0.39		61.2	OK	
1.011         CP200         120         Su           1.012         Pond Inlet         120         Su           51.000         CP30         15         Su           51.001         CP31         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           51.003         Pond Outlet         180         Su           53.000         CP143         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.002         CP6112B         180         Su           55.000         CP359         15         Su           56.001         CP6204A         30         Su           57.000         CP361         30         Mi           55.001         CP360         30         Mi           58.000         CPDN18         120         Su           58.001         CP6117         120         Su		15 Summer	2	+20%					20.255	-0.315	0.000	0.20		68.7	OK	
1.012         Pond Inlet         120 St           51.000         CP30         15 St           51.001         CP31         15 St           52.000         CPDN12         15 St           52.001         CP56         15 St           51.002         CP57         15 St           51.002         CP57         15 St           53.000         CP143         15 St           53.001         CP6112A         15 St           53.002         CP6112         15 St           53.002         CP6112         15 St           53.002         CP6112         15 St           55.000         CP359         15 St           56.001         CP6204         30 St           57.000         CP361         30 Wi           55.001         CP360         30 Wi           58.000         CPDN18         120 St           58.001         CP6117         120 St		15 Summer	2	+20%					19.278	-0.528	0.000	0.11		137.1	OK	
51.000         CP30         15         Su           51.001         CP31         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           53.000         CP143         15         Su           53.001         CP6112A         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.000         CP6112A         15         Su           53.000         CP6112         15         Su           1.014         CP6112B         180         Su           56.000         CP6204A         30         Su           56.001         CP6204         30         Su           57.000         CP361         30         Wi           55.001         CP6204         30         Su           57.000         CP361         30         Wi           58.001         CP0118         120         Su           58.001         CP6118         120         Su			2	+20%	5/15 Winter				17.763	0.000	0.000	0.89		503.4	OK	
51.001         CP31         15         Su           52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           1.013         Pond Outlet         180         Su           53.000         CP143         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.002         CP6112         15         Su           1.014         CP6112B         180         Su           55.000         CP359         15         Su           56.001         CP6204A         30         Su           57.000         CP361         30         Wi           55.001         CP6204         30         Su           56.001         CP6204         30         Su           55.001         CP361         30         Wi           55.001         CP361         30         Wi           58.001         CP6118         120         Su           58.002         CP6117         120         Su <td></td> <td></td> <td>2</td> <td>+20%</td> <td>5/30 Summer</td> <td></td> <td></td> <td></td> <td>17.680</td> <td>0.000</td> <td>0.000</td> <td>1.05</td> <td></td> <td>501.9</td> <td>OK</td> <td></td>			2	+20%	5/30 Summer				17.680	0.000	0.000	1.05		501.9	OK	
52.000         CPDN12         15         Su           52.001         CP56         15         Su           51.002         CP57         15         Su           1.013         Pond Outlet         180         Su           53.000         CP143         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.002         CP6112B         180         Su           55.000         CP359         15         Su           56.001         CP6204         30         Su           57.000         CP361         30         Wi           55.001         CP6204         30         Su           58.000         CPDN18         120         Su           58.001         CP6118         120         Su           58.002         CP6117         120         Su		15 Summer	2	+20%					20.296	-0.226	0.000	0.14		14.2	OK	
52.001         CP56         15         Su           51.002         CP57         15         Su           1.013         Pond Outlet         180         Su           53.000         CP143         15         Su           53.001         CP6112A         15         Su           53.002         CP6112         15         Su           53.002         CP6112B         180         Su           55.000         CP359         15         Su           56.001         CP6204A         30         Su           57.000         CP361         30         Wi           55.001         CP603         30         Wi           55.001         CP301         30         Wi           58.000         CPDN18         120         Su           58.001         CP6117         120         Su		15 Summer	2	+20%	100/15 0				19.770	-0.268	0.000	0.18		28.3	OK	
51.002       CP57       15 St         1.013       Pond Outlet       180 St         53.000       CP143       15 St         53.001       CP6112A       15 St         54.000       CP6113       15 St         53.002       CP6112       15 St         53.002       CP6112B       180 St         53.000       CP359       15 St         55.000       CP6204A       30 St         56.001       CP6204       30 St         57.000       CP361       30 Wi         55.001       CP360       30 Wi         55.001       CP360       30 Wi         55.001       CP360       30 Wi         58.000       CPDN18       120 St         58.001       CP6118       120 St         58.002       CP6117       120 St		15 Summer	2	+20%	100/15 Summer				20.633	-0.133	0.000	0.47		25.0	OK	
1.013       Pond Outlet       180 Su         53.000       CP143       15 Su         53.001       CP6112A       15 Su         54.000       CP6113       15 Su         53.002       CP6112       15 Su         53.000       CP6112B       180 Su         1.014       CP6112B       180 Su         55.000       CP359       15 Su         56.001       CP6204A       30 Su         57.000       CP361       30 Wi         55.001       CP360       30 Wi         55.001       CP360       30 Wi         58.000       CPDN18       120 Su         58.002       CP6117       120 Su			2	+20%					20.186	-0.309	0.000	0.07		24.8	OK	
53.000         CP143         15         St           53.001         CP6112A         15         St           54.000         CP6113         15         St           53.002         CP6112         15         St           1.014         CP6112B         180         St           55.000         CP359         15         St           56.000         CP6204A         30         St           56.001         CP6204         30         St           57.000         CP361         30         Wi           55.001         CP6204         30         St           57.000         CP361         30         Wi           55.001         CP360         30         Wi           58.000         CPDN18         120         St           58.001         CP6117         120         St			2	+20%	100/100 0				19.440	-0.275	0.000	0.16		51.9	OK	
53.001         CP6112A         15         St           54.000         CP6113         15         St           53.002         CP6112         15         St           1.014         CP6112B         180         St           55.000         CP359         15         St           56.000         CP6204A         30         St           56.001         CP6204         30         St           57.000         CP361         30         Wi           55.001         CP6204         30         St           57.000         CP361         30         Wi           58.001         CPA018         120         St           58.001         CP6118         120         St           58.002         CP6117         120         St			2		100/120 Summer				17.223	-0.347	0.000	0.56		333.6	OK	
54.000         CP6113         15 st           53.002         CP6112         15 st           1.014         CP6112B         180 st           55.000         CP359         15 st           56.000         CP6204A         30 st           57.000         CP361         30 wi           55.001         CP6204         30 wi           55.001         CP360         30 wi           58.000         CPDN18         120 st           58.001         CP6117         120 st			2	+20%	100/15 Summer				20.282	-0.138	0.000	0.45		30.7 30.6	OK	
53.002         CP6112         15 st           1.014         CP6112B         180 st           55.000         CP359         15 st           56.000         CP6204A         30 st           56.001         CP6204         30 st           57.000         CP361         30 wi           55.001         CP360         30 wi           55.001         CP360         30 wi           58.000         CPDN18         120 st           58.002         CP6117         120 st			2 2	+20% +20%	100/15 Summer				19.620 19.462	-0.210 -0.253	0.000	0.20 0.20		30.6 32.3	OK OK	
1.014         CP6112B         180         Su           55.000         CP359         15         Su           56.000         CP6204A         30         Su           56.001         CP6204         30         Su           57.000         CP361         30         Wi           55.001         CP360         30         Wi           55.001         CP360         30         Wi           58.000         CPDN18         120         Su           58.001         CP6118         120         Su           58.002         CP6117         120         Su			2	+20%	100/15 Summer				19.462		0.000	0.20		32.3 67.8		
55.000         CP359         15 st           56.000         CP6204A         30 st           56.001         CP6204         30 st           57.000         CP361         30 wi           55.001         CP360         30 wi           55.001         CP360         30 wi           58.000         CPDN18         120 st           58.001         CP6118         120 st           58.002         CP6117         120 st			2	+20%	100/60 Summer				19.296	-0.284 -0.303	0.000	0.13		338.2	OK OK	
56.000         CP6204A         30 St           56.001         CP6204         30 St           57.000         CP361         30 Wi           55.001         CP360         30 Wi           58.000         CPDN18         120 St           58.001         CP6117         120 St			2	+20%	100/60 Summer				35.109	-0.221	0.000	0.00		13.5	OK	
56.001         CP6204         30 st           57.000         CP361         30 Wi           55.001         CP360         30 Wi           58.000         CPDN18         120 St           58.001         CP6118         120 St           58.002         CP6117         120 St		30 Summer	2	+20%	2/15 Cummon	100/15 Summer			35.109	-0.221	0.000	1.46			SURCHARGED	8
57.000         CP361         30 Wi           55.001         CP360         30 Wi           58.000         CPDN18         120 Su           58.001         CP6118         120 Su           58.002         CP6117         120 Su		30 Summer	2	+20%	2/15 Summer	100/15 Summer		0	35.069		0.000	0.33	0.0	40.5		0
55.001         CP360         30 Wi           58.000         CPDN18         120 St           58.001         CP6118         120 St           58.002         CP6117         120 St		30 Summer 30 Winter	2	+20%	100/15 Summer			0	35.069	-0.181 -0.339	0.000	0.33	0.0	40.5 283.1	OK OK	
58.000         CPDN18         120         Su           58.001         CP6118         120         Su           58.002         CP6117         120         Su		30 Winter 30 Winter	2	+20%	100/13 Summer				35.261	-0.339	0.000	0.34		327.8	OK	
58.001 CP6118 120 Su 58.002 CP6117 120 Su			2	+20%	100/15 Summer				23.372	-0.405	0.000	0.34		327.8 5.7	OK	
58.002 CP6117 120 Su			2	+20%	100/10 Summer				22.996	-0.155	0.000	0.22		5.7 6.1	OK	
			2	+20%	100/60 Summer				22.996	-0.159	0.000	0.19		6.4	OK	
59 000 CDDN19 15 CV		15 Summer	2	+20%	100/00 Summer				24.623	-0.130	0.000	0.24		1.5	OK	
59.000 CPDN19 15 Su 59.001 CP6116 15 Su			2	+20%					23.821	-0.120	0.000	0.09		2.3	OK	
58.003 CP6116A 120 St			2	+20%					22.477	-0.163	0.000	0.09		7.3	OK	
60.000 EXCP09 15 Su			2	+20%					34.089	-0.155	0.000	0.17		12.2	OK	
			-	. 200			2-2019 In			0.100					511	

	ering Lim	ited													Page	e 10
						A12	Chelmsf	ord to	A120w	videning						
						Sect	ion 1									
						Prop	osed Ne	twork S	1-0U1	&7						Viero
Date 15/12/202	1 09.59					-	gned by									Micro
				1 0111												Drainage
Tile PROPOSED	CASE DRA.	INAGE MO	DEL_S	1_001_	_/ DF3.MDX		ked by .									
Innovyze						Netw	ork 201	9.1								
PN	US/MH Name	Storm	Return	Climate Change	ry of Criti First (X) Surcharge	First (Y) Flood	First (Z) Overflow		Water	Surcharged Depth (m)		Flow / Cap.	Overflow (1/s)	Pipe Flow (1/s)	Status	Level Exceeded
60.001		15 Summer 15 Summer	2		100/15 Summer 100/15 Summer				33.274 32.383		0.000	0.15 0.29		16.2 27.7		
60 002									32.303	-0.142	0.000	0.29		21.1	UN	
60.002					100/15 Summer	100/15 Summer			30 580		0 000	0 27		27 8	OK	
60.003	EXCP12	15 Summer	2	+20%	100/15 Summer	100/15 Summer			30.580 30.063	-0.145	0.000	0.27		27.8 37.5		3
60.003 60.004	EXCP12 CP340	15 Summer 15 Summer	2 2	+20% +20%	100/15 Summer				30.063	-0.145 -0.132	0.000	0.35		37.5	OK	3
60.003 60.004 60.005	EXCP12 CP340 CP338	15 Summer 15 Summer 15 Summer	2 2 2	+20% +20% +20%	100/15 Summer 2/15 Summer	100/15 Summer 100/15 Summer			30.063 27.837	-0.145 -0.132 0.472	0.000 0.000	0.35 0.97		37.5 42.8	OK SURCHARGED	3
60.003 60.004	EXCP12 CP340 CP338 CP339	15 Summer 15 Summer	2 2 2 2	+20% +20% +20% +20%	100/15 Summer 2/15 Summer				30.063	-0.145 -0.132 0.472 -0.199	0.000	0.35		37.5 42.8 2.0	OK SURCHARGED	3
60.003 60.004 60.005 61.000 60.006	EXCP12 CP340 CP338 CP339	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	2 2 2 2 2 2	+20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer	100/15 Summer			30.063 27.837 28.796	-0.145 -0.132 0.472 -0.199 0.515	0.000 0.000 0.000	0.35 0.97 0.03 1.29		37.5 42.8 2.0 56.4	OK SURCHARGED OK	3 6 14
60.003 60.004 60.005 61.000 60.006	EXCP12 CP340 CP338 CP339 CP337 CP SW MH31A	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	100/15 Summer			30.063 27.837 28.796 27.600	-0.145 -0.132 0.472 -0.199 0.515 0.110	0.000 0.000 0.000 0.000	0.35 0.97 0.03 1.29 1.88		37.5 42.8 2.0 56.4	OK SURCHARGED OK SURCHARGED SURCHARGED	3 6 14
60.003 60.004 60.005 61.000 60.006 60.007	EXCP12 CP340 CP338 CP339 CP337 CP SW MH31A MH334	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			30.063 27.837 28.796 27.600 26.595	-0.145 -0.132 0.472 -0.199 0.515 0.110 -0.107	0.000 0.000 0.000 0.000 0.000	0.35 0.97 0.03 1.29 1.88		37.5 42.8 2.0 56.4 56.2	OK SURCHARGED OK SURCHARGED SURCHARGED OK	3 6 14
60.003 60.004 60.005 61.000 60.006 60.007 60.008 60.009 62.000	EXCP12 CP340 CP338 CP339 CP337 CP SW MH31A MH334 CP355.3 MH230	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 120 Winter</pre>	2 2 2 2 2 2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			30.063 27.837 28.796 27.600 26.595 26.158 25.571 24.130	-0.145 -0.132 0.472 -0.199 0.515 0.110 -0.107 -0.484 -0.525	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.35 0.97 0.03 1.29 1.88 0.82 0.17 0.00		37.5 42.8 2.0 56.4 56.2 106.8 247.3 0.0	OK SURCHARGED OK SURCHARGED OK OK OK	3
60.003 60.004 60.005 61.000 60.006 60.007 60.008 60.009 62.000 62.001	EXCP12 CP340 CP338 CP339 CP37 CP SW MH31A MH334 CP355.3 MH220 MH228	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>12 Summer</li> <li>12 Winter</li> <li>15 Summer</li> </ul>	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			30.063 27.837 28.796 27.600 26.595 26.158 25.571 24.130 24.026	-0.145 -0.132 0.472 -0.199 0.515 0.110 -0.107 -0.484 -0.525 -0.589	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.35 0.97 0.03 1.29 1.88 0.82 0.17 0.00 0.02		37.5 42.8 2.0 56.4 56.2 106.8 247.3 0.0 9.5	OK SURCHARGED SURCHARGED OK OK OK	3
60.003 60.004 60.005 61.000 60.006 60.007 60.008 60.009 62.000	EXCP12 CP340 CP338 CP339 CP37 CP SW MH31A MH334 CP355.3 MH230 MH228	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 120 Winter</pre>	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			30.063 27.837 28.796 27.600 26.595 26.158 25.571 24.130	$\begin{array}{c} -0.145 \\ -0.132 \\ 0.472 \\ -0.199 \\ 0.515 \\ 0.110 \\ -0.107 \\ -0.484 \\ -0.525 \\ -0.589 \\ -0.453 \end{array}$	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.35 0.97 0.03 1.29 1.88 0.82 0.17 0.00 0.02 0.08		37.5 42.8 2.0 56.4 56.2 106.8 247.3 0.0	OK SURCHARGED OK SURCHARGED OK OK OK OK	3 6 14

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PN	US/MH Name	Storm	Return (	Ret	Pro Duration(s) urn Period(s) Climate Cha First (X)	DTS State ofile(s) (mins) 15, 3 (years) ange (%) First (Y)	us 0, 60, 120, First (Z)	180, 240 Overflow	, 360, 4 Water Level	OFF Summer 80, 600, 720 Surcharged Depth	<pre>c and Wir ), 960, 1 2, 5, 20, 20, Flooded Volume</pre>	nter 1440 100 20 Flow /	Overflow (1/s)	Flow	Status	Level Exceeded	
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1.000	Name CPDN07	15 Summer	Period 5	Ret Climate Change +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer	DTS State offile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer	us 0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44 Water Level (m) 23.417</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140	<pre>f and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000</pre>	flow / Cap. 0.49		Flow (1/s) 28.8	OK	Exceeded	
1.000	Name CPDN07 CP15	15 Summer 15 Summer	Period 5 5	Ret Climate Change +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer	DTS State offile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer	us 0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44 Water Level (m) 23.417 23.185</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064	<pre>c and Wir 0, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000</pre>	flow / Cap. 0.49 0.96		Flow (1/s) 28.8 56.5	OK	Exceeded 2 1	
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1.000	Name CPDN07 CP15 CP16 CPDN09	15 Summer 15 Summer	<b>Period</b> 5 5 5	Ret Climate Change +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer	DTS Statu offile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44 Water Level (m) 23.417 23.185</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039	<pre>c and Wir 0, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000</pre>	<pre>hter 1440 100 20 Flow / Cap. 0.49 0.96 0.44 1.08</pre>		Flow (1/s) 28.8 56.5 53.7	OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000	Name CPDN07 CP15 CP16 CPDN09 CP17	<pre>15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer	DTS Statu offile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 41 Water Level (m) 23.417 23.185 22.226 23.002</pre>	OFF Summen 80, 600, 720 Surcharged Depth (m) -0.140 -0.196 0.039 -0.081	<pre>s and Wir 9 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90		Flow (1/s) 28.8 56.5 53.7 60.9	OK OK SURCHARGED	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu offile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   23.002   21.965   22.477   21.796</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.033	<pre>f and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0	OK OK SURCHARGED OK OK	<b>Exceeded</b> 2 1 3	
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1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu offile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 41 Water Level (m) 23.417 23.185 22.226 23.002 21.965 22.477 21.796 22.260 21.422</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.103 -0.111 -0.137	<pre>f and Wir , 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.0000 0.000 0.000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9	OK OK SURCHARGED OK OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.003 4.000 1.005 5.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration (s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   23.002   21.965   22.477   21.796   22.260   21.422   21.944</pre>	OFF Summen 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.137 -0.160	<pre>r and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 25.3	OK OK SURCHARGED OK OK OK OK OK	<b>Exceeded</b> 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration (s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   23.002   21.965   22.477   21.796   22.260   21.422   21.944   24.907</pre>	OFF Summen 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.137 -0.160 1.717	F and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m <sup>3</sup> ) 0.000	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 360 118.0 37.2 138.9 25.3 24.8	OK OK SURCHARGED OK OK OK OK SURCHARGED	<b>Exceeded</b> 2 1 3 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.004 4.000 1.005 5.000 6.000 7.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration (s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   21.965   22.477   21.796   22.260   21.422   21.944   24.907   24.511</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.033 -0.111 -0.137 -0.160 1.717 1.201	<pre>f and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 25.3 24.8 23.2	OK OK SURCHARGED OK OK OK OK SURCHARGED FLOOD	Exceeded 2 1 3 5 12	
1.000 1.001 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP197 CPDN15 CP137.1 CPDN6 CPDN1	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>water Level (m) 23.417 23.185 22.226 23.002 21.965 22.477 21.796 22.260 21.422 21.944 24.907 24.511 26.120</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.137 -0.160 1.717 1.201 1.615	<pre>f and Wir 9,960,1 2,5, 20,20, Flooded Volume (m<sup>3</sup>) 0.0000 0.00000 0.0000 0.0000 0.0000 0.000000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72 1.11		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 253 24.8 23.2 29.4	OK OK SURCHARGED OK OK OK SURCHARGED FLOOD	Exceeded 2 1 3 5 12 8	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN1 CPDN6 CPDN1 CP139	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 20/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>water Level (m) 23.417 23.185 22.226 23.002 21.965 22.477 21.796 22.260 21.422 21.944 24.907 24.511 26.120 25.551</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.137 -0.160 1.717 1.201 1.615 1.436	F and Wir 960, 1 2, 5, 20, 20, Flooded Volume (m <sup>3</sup> ) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	Flow / Cap. 0.49 0.49 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72 1.11 1.64		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 25.3 24.8 23.2 29.4 49.9	OK OK SURCHARGED OK OK OK SURCHARGED FLOOD FLOOD	Exceeded 2 1 3 5 12 8 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.001 9.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN1 CPDN1 CP139 CP2001B	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>water Level (m) 23.417 23.185 22.226 23.002 21.965 22.477 21.796 22.260 21.422 21.944 24.907 24.511 26.120 25.551 25.302</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.033 -0.111 -0.137 -0.160 1.717 1.201 1.615 1.436 -0.153	F and Wir 9,960,1 2,5, 20,20, Flooded Volume (m <sup>3</sup> ) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.75 0.99 0.75 0.83 0.45 2.11 1.72 1.11 1.64 0.15		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 25.3 24.8 23.2 29.4 49.9 5.2	OK OK SURCHARGED OK OK OK SURCHARGED FLOOD FLOOD OK	Exceeded 2 1 3 3 5 12 8 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.001 9.000 9.001	Name           CPDN07           CP16           CPDN09           CP17           CPDN10           CP18           CPDN11           CP19           CPDN15           CP137.1           CPDN1           CP139           CP2001B           CP2001A	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration (s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   23.002   21.965   22.477   21.796   22.260   21.422   21.944   24.907   24.511   26.120   25.551   25.302   25.281</pre>	OFF Summen 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.137 -0.104 -0.137 -0.160 1.717 1.201 1.615 1.436 -0.153 -0.034	F and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m <sup>3</sup> ) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000000	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72 1.11 1.64 0.15 0.83		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 25.3 24.8 23.2 29.4 49.9 5.2 31.1	OK OK SURCHARGED OK OK OK SURCHARGED FLOOD FLOOD FLOOD OK OK	Exceeded 2 1 3 3 5 12 8 12 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.000 9.001 9.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6 CPDN1 CP139 CP2001B CP2001A CP2001	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration (s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   23.002   21.965   22.477   21.796   22.260   21.422   21.944   24.907   24.511   26.120   25.551   25.302   25.281   24.828</pre>	OFF Summen 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.033 -0.111 -0.137 -0.160 1.717 1.201 1.615 1.436 -0.153 -0.034 0.303	F and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.146 0.017 0.948 0.000 0.000 0.000 0.000	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72 1.11 1.64 0.15 0.83 1.22		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 25.3 24.8 23.2 29.4 49.9 5.2 31.1 35.8	OK OK SURCHARGED OK OK OK SURCHARGED FLOOD FLOOD OK	Exceeded 2 1 3 3 5 12 8 12 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.004 4.000 1.004 6.000 7.000 8.000 8.000 8.000 9.001 9.001 9.002 9.003	Name CPDN07 CP15 CP109 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6 CPDN1 CP139 CP2001B CP2001A CP2001 CP2001	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration(s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer	0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 41 Water Level (m) 23.417 23.185 22.226 23.002 21.965 22.477 21.796 22.260 21.422 21.944 24.907 24.511 26.120 25.551 25.302 25.281 24.828 23.652</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.137 -0.160 1.717 1.201 1.615 1.436 -0.153 -0.034 0.303 -0.128	<pre>f and Wir 9,960,1 2,5, 20,20, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.1146 0.017 0.948 0.000 0.000 0.000 0.000</pre>	Flow / Cap. 0.49 0.96 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72 1.11 1.64 0.15 0.83 1.22 0.62		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 118.0 118.0 118.0 25.3 24.8 23.2 29.4 49.9 5.2 31.1 35.8 35.8	OK OK SURCHARGED OK OK OK OK SURCHARGED FLOOD FLOOD FLOOD OK SURCHARGED OK	Exceeded 2 1 3 5 12 8 12 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.005 5.000 6.000 7.000 8.000 8.001 9.000 9.001 9.001 9.002 9.003 8.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN15 CP137.1 CPDN6 CPDN1 CP139 CP2001B CP2001B CP20011 CP20011 CP2001	<pre>15 Summer 15 Summer</pre>	Period 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Ret Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Pro Duration (s) urn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Statu ofile(s) (mins) 15, 3 (years) ange (%) First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer	us 0, 60, 120, First (Z) Overflow	180, 240 Overflow	<pre>, 360, 44   Water   Level   (m)   23.417   23.185   22.226   23.002   21.965   22.477   21.796   22.260   21.422   21.944   24.907   24.511   26.120   25.551   25.302   25.281   24.828</pre>	OFF Summer 80, 600, 720 Surcharged Depth (m) -0.140 -0.064 -0.196 0.039 -0.081 -0.104 -0.104 -0.033 -0.111 -0.137 -0.160 1.717 1.201 1.615 1.436 -0.153 -0.033 -0.303 -0.128 -0.179	F and Wir 9, 960, 1 2, 5, 20, 20, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.146 0.017 0.948 0.000 0.000 0.000 0.000	Flow / Cap. 0.49 0.44 1.08 0.90 0.75 0.99 0.70 0.83 0.45 2.11 1.72 1.11 1.64 0.15 0.83 1.22 0.62 0.54		Flow (1/s) 28.8 56.5 53.7 60.9 102.4 36.0 118.0 37.2 138.9 25.3 24.8 23.2 29.4 49.9 5.2 31.1 35.8 35.8 84.4	OK OK SURCHARGED OK OK OK OK SURCHARGED FLOOD FLOOD FLOOD OK SURCHARGED OK	Exceeded 2 1 3 5 12 8 12 5 5 5	

Jacobs Engineering Limited		Page 12
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Dialitacje
Innovyze	Network 2019.1	1

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Surcharged Depth (m)		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	CP152	15 Summer	5	+20%	5/15 Summer				31.954	0.069	0.000	0.12		4.8	SURCHARGED	
1.001	CP151	15 Summer	5	+20%	5/15 Summer	100/15 Summer			31.947	0.372	0.000	0.91		41.9	SURCHARGED	7
1.002	CP150	15 Summer	5	+20%	5/15 Summer	100/15 Summer			30.733	0.748	0.000	0.96		72.3	SURCHARGED	8
1.003	CP142	15 Summer	5	+20%	2/15 Summer	100/15 Summer			28.324	1.089	0.000	1.21		87.6	SURCHARGED	10
2.000	CP01	15 Summer	5	+20%					32.212	-0.138	0.000	0.31		11.4	OK	
2.001	CP02	15 Summer	5	+20%					31.910	-0.142	0.000	0.29		13.0	OK	
2.002	CP03	15 Summer	5	+20%					31.447	-0.160	0.000	0.18		13.2	OK	
2.003	CP04	15 Summer	5	+20%					30.862	-0.174	0.000	0.12		13.5	OK	
3.000	CP07	15 Summer	5	+20%					31.664	-0.175	0.000	0.35		20.3	OK	
3.001	CP08	15 Summer	5	+20%	/				31.564	-0.171	0.000	0.38		48.7	OK	
2.004	CP05	15 Summer	5		100/15 Summer				29.983	-0.242	0.000	0.27		61.0	OK	
4.000	CPDN05	15 Summer	5		100/30 Summer				30.585	-0.131	0.000	0.36		18.6	OK	
5.000	CPDN06 CP14	15 Summer 15 Summer	5	+20%	100/30 Summer				31.502 30.406	-0.195	0.000	0.04 0.13		2.8 5.1	OK	
5.001 2.005	CP14 CP06	15 Summer 15 Summer	5		100/30 Summer 100/15 Summer				29.448	-0.172 -0.184	0.000	0.13		5.1 83.4	OK	
2.005	CP08 CP09	15 Summer	5	+20%	100/15 Summer				31.562	-0.212	0.000	0.30		21.9	OK	
6.001	CP010	15 Summer	5	+20%					30.913	-0.212	0.000	0.10		21.9	OK	
7.000	CPDN01	15 Summer	5		100/15 Summer				31.417	-0.081	0.000	0.73		32.8	OK	
6.002	CP11	15 Summer	5		100/15 Summer				30.144	-0.245	0.000	0.26		54.1	OK	
8.000	CPDN02	15 Summer	5		100/15 Summer				30.785	-0.156	0.000	0.46		47.2	OK	
6.003	CP12	15 Summer	5		100/15 Summer				29.462	-0.183	0.000	0.52		99.7	OK	
9.000	CPDN03	15 Summer	5		100/15 Winter				30.029	-0.173	0.000	0.37		34.5	OK	
0.000	CPDN04	15 Summer	5		100/15 Summer	100/30 Summer			30.028	-0.072	0.000	0.80		29.3	OK	
2.006	CP13	120 Summer	5	+20%	5/30 Summer	100/30 Summer			29.150	0.062	0.000	0.44		67.4	SURCHARGED	5
2.007	CP3116A	30 Summer	5	+20%	100/15 Summer				28.723	-0.210	0.000	0.38		84.6	OK	
2.008	CP3106	30 Summer	5	+20%	100/15 Summer				26.626	-0.209	0.000	0.40		114.1	OK	
2.009	CP3107	30 Summer	5	+20%	5/15 Summer	100/30 Summer			24.612	0.237	0.000	0.88		109.1	SURCHARGED	8
	CP2011B	15 Summer	5	+20%		100/15 Summer			33.738	0.548	0.000	0.40			SURCHARGED	10
		15 Summer	5	+20%		100/15 Summer			33.701	0.809	0.000	1.27			SURCHARGED	3
1.002	CP2011	30 Summer	5	+20%		100/15 Summer			32.441	1.111	0.000	0.85			SURCHARGED	9
1.003	CP2009	30 Summer	5	+20%		100/15 Summer			31.435	1.935	0.000	1.14		21.7		11
1.004	CP2007	30 Summer	5	+20%		100/15 Summer			29.192	1.532	0.000	1.27			FLOOD RISK	11
1.005	CP2005	30 Summer	5		100/15 Summer				25.187	-0.108	0.000	0.53		31.6	OK	
1.004	CP141	30 Summer	5	+20%	5/15 Summer	100 (15 m			24.503	0.248	0.000	1.14			SURCHARGED	_
2.000	CPDN2	15 Summer	5	+20%		100/15 Summer	100 (20. 0		25.433	0.133	0.000	1.08	0.0		SURCHARGED	3
1.005	CP140	30 Summer	5	+20%	2/15 Summer		100/30 Summer	9	23.641	0.091	0.000	1.39	0.0		SURCHARGED	
0.001	CP202 CPDN3	30 Summer	5	+20% +20%	2/15 Summer	2/15 Cummerer			23.464	0.264	0.000	1.43			SURCHARGED	20
3.000	CPDN3 CP3109A	15 Summer 30 Summer	5 5		2/15 Summer 100/15 Summer	2/15 Summer			25.696 22.885	1.506 -0.207	5.571 0.000	2.21 0.75		23.5 266.2	FLOOD OK	20
4.0002	CP3109A CPDN4	15 Summer	5 5	+20%	2/15 Summer	5/15 Summer			22.885	-0.207	1.458	2.02		200.2	FLOOD	12
4.000 0.003	CPDN4 CP3109	30 Summer	5	+20%					22.555	-0.285	0.000	0.54		24.1	P LOOD	12
5.000		15 Summer	5 5	+20%		100/30 Summer 100/15 Summer			22.555	-0.285	0.000	2.33			SURCHARGED	э 9

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								tord to	A120v	videning						
						Sec	tion 1									
						Pro	posed Ne	etwork	S1-OU1	L&7						Micco
/12/2021	1 09.59						igned by									Micro
								-								Drain
OPOSED (	CASE DR	AINAGE I	MODEL_	S1_OU1	_7 DF3.MDX	Che	cked by	AM								Brain
9						Net	work 201	19.1								
<u>.</u>	5 year	Return	Period	Summa	ary of Crit	cical Resul	ts by M	laximum	Level	(Rank 1	) for	Propo	osed Ne	tworl	s1-0U18	27
										Surcharged		/		Pipe		
PN	US/MH Name	Storm	Return Period		First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overilow Act.		Depth	Volume (m³)	Flow / Cap.	Overflow (1/s)	Flow (1/s)	Status	Level Exceeded
PN	Name	Storm	Period	Change	Surcharge	F100a	OVELIIOW	ACC.	(m)	(m)	(m-)	Cap.	(1/8)	(1/5)	Status	Exceeded
10.004	CP3110A	30 Summer	5	+20%	100/15 Summer				22.408	-0.061	0.000	0.54		270.4	OK	
26.000	CP3110B	15 Summer		+20%	2/15 Summer	100/15 Summer			23.431	0.281	0.000	1.58			SURCHARGED	5
8.003		30 Summer		+20%	5/15 Summer	100/30 Summer			22.287	0.127	0.000	1.00			SURCHARGED	6
8.004 7.001	CP3111 CP27208	30 Summer 30 Summer		+20% +20%	5/15 Summer 2/30 Summer				22.226 21.998	0.196 0.258	0.000	0.91 1.80			SURCHARGED SURCHARGED	
6.001		30 Summer		+20%	2/15 Summer				21.889	0.254	0.000	1.31			SURCHARGED	
27.000	CP153	15 Summer		+20%	100/15 Summer	100/15 Summer			33.232	-0.103	0.000	0.74		62.2	OK	7
27.001						100/15 Summer			33.098	-0.023	0.000	1.00		82.1	OK	7
27.002		15 Summer			100/15 Summer				32.837	-0.063	0.000	0.98		95.6	OK	
28.000 29.000		15 Summer 15 Summer		+20%	100/15 Summer	100/15 Summer			33.633 34.383	-0.076 0.077	0.000	0.49		13.8	OK SURCHARGED	5
29.000		15 Summer			100/15 Summer	100/15 Summer			34.087	-0.069	0.000	0.56		30.0	OK	5
30.000		15 Summer			100/30 Summer				34.503	-0.104	0.000	0.20		5.7	OK	
31.000	KO363	15 Summer	5	+20%	100/15 Summer				35.508	-0.097	0.000	0.59		31.2	OK	7
31.001				+20%		100/15 Summer			34.807	0.107	0.000	0.70			SURCHARGED	7
31.002		15 Summer 15 Summer		+20% +20%	2/15 Summer 2/15 Summer	100/15 Summer			34.519 34.169	0.664 0.374	0.000	1.02			SURCHARGED SURCHARGED	7
		15 Summer		+20%		100/15 Summer			33.884	0.274	0.000	0.63			SURCHARGED	10
32.000		15 Summer		+20%	100/15 Summer				34.115	-0.110	0.000	0.50		26.7	OK	1
		15 Summer		+20%	2/15 Summer				33.778	0.278	0.000	1.13			SURCHARGED	
33.000	CPDN7	15 Summer			100/15 Summer	100/15 0			35.363	-0.082	0.000	0.10		1.4	OK	-
33.001 34.000		15 Summer 15 Summer			100/15 Summer 100/15 Summer	100/13 Summer			35.359 35.684	-0.056 -0.086	0.000	0.78 0.38		23.7 3.0	OK	5
33.002		15 Summer			100/15 Summer	100/15 Summer			34.952	-0.138	0.000	0.54		43.0	OK	2
35.000		15 Summer			100/15 Summer				35.324	-0.116	0.000	0.12		1.6	OK	
33.003		15 Summer		+20%		100/15 Summer			34.823	0.718	0.000	1.48			SURCHARGED	7
31.006 31.007		15 Summer 30 Summer		+20% +20%	2/15 Summer 5/15 Summer				33.695 33.414	0.235 0.076	0.000	1.64 0.96			SURCHARGED SURCHARGED	
30.001	CP140A CP46	30 Summer		+20%	5/15 Summer				33.305	0.075	0.000	1.05			SURCHARGED	
30.002				+20%	5/15 Summer				33.194	0.105	0.000	1.20			SURCHARGED	
29.002	CP48	30 Summer		+20%	2/15 Summer				33.107	0.168	0.000	2.84			SURCHARGED	
36.000		15 Summer			100/15 Summer	100/15 0			42.228	-0.122	0.000	0.43		53.2	OK	2
36.001 36.002		15 Summer 15 Summer			100/15 Summer 100/15 Summer	100/15 Summer			40.498 36.508		0.000			75.1 88.7		3
36.002		15 Summer 15 Summer			5/15 Summer	100/15 Summer			35.060	0.116					SURCHARGED	3
36.004		15 Summer			5/15 Summer				34.848	0.029	0.000				SURCHARGED	
36.005		15 Summer			100/15 Summer				34.683	-0.017		1.00		82.6		
37.000		15 Summer			100/15 Summer	100/360 Summer			34.606	-0.119	0.000			22.8		10
36.006 36.007		15 Summer 600 Winter			100/15 Summer 2/15 Summer				34.367 33.663	-0.173 0.383	0.000			104.0	OK SURCHARGED	
36.008		600 Winter			2/30 Summer				33.662	0.383					SURCHARGED	
		30 Summer			5/15 Summer				32.960	0.045					SURCHARGED	

Jacobs Engineering Limited		Page 14
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	

	US/MH			Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Surcharged Depth	Volume	-	Overflow	Pipe Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(l/s)	Status	Exceeded
38.000	ко-12	15 Summe	r 5	+20%	100/15 Summer	100/15 Summer			34.603	-0.052	0.000	0.75		32.0	OK	2
38.001	CP300	15 Summe	r 5	+20%	100/15 Summer				34.122	-0.070	0.000	0.54		31.7	OK	
29.004	CP301	120 Summe	r 5	+20%	5/120 Summer				32.425	0.012	0.000	0.96		102.8	SURCHARGED	
28.001	CP302	120 Summe	r 5	+20%	100/15 Summer				32.335	-0.005	0.000	0.89		106.9	OK	
27.003	CP52	120 Summe	r 5	+20%	2/60 Summer				32.245	0.442	0.000	0.72		109.8	SURCHARGED	
39.000	CPDN10	15 Summe	r 5	+20%	100/15 Summer				33.307	-0.196	0.000	0.04		3.2	OK	
27.004	CP53	120 Summe	r 5	+20%	2/15 Summer				31.977	0.690	0.000	0.96		110.4	SURCHARGED	
27.005	CP80	120 Summe	r 5	+20%	100/15 Summer				30.764	-0.123	0.000	0.65		115.2	OK	
27.006	CP344	120 Summe	r 5	+20%	2/15 Summer	100/15 Summer			29.556	0.676	0.000	2.95		115.1	SURCHARGED	11
10.000	EXCP15	15 Summe	r 5	+20%					31.851	-0.109	0.000	0.16		4.5	OK	
27.007	CP344.1	120 Summe	r 5	+20%	5/30 Summer	100/15 Summer			29.347	0.547	0.000	0.57			SURCHARGED	5
27.008	CP344.2	120 Summe	r 5	+20%		100/15 Summer			28.436	2.446	0.000	1.55			SURCHARGED	3
27.009		120 Summe		+20%	2/15 Summer				28.208	2.378	0.000	1.12			SURCHARGED	
27.010		120 Summe		+20%	2/15 Summer				27.750	2.370	0.000	3.90			SURCHARGED	
27.011		120 Summe			2/15 Summer				27.524	2.109	0.000	3.60			SURCHARGED	
11.000		15 Summe		+20%					28.245	-0.155	0.000	0.21		11.6	OK	
11.001	CP355	120 Summe	r 5	+20%	5/15 Summer				27.468	0.343	0.000	0.09		5.6	SURCHARGED	
		120 Summe		+20%		100/15 Summer			27.463	0.808	0.000	0.32			SURCHARGED	7
27.012		120 Summe		+20%	2/15 Summer				27.429	1.949	0.000	0.52			SURCHARGED	
27.013		120 Summe			,	100/15 Summer			27.274	2.230	0.000	1.85			FLOOD RISK	16
12.000	GY308	15 Summe		+2.0%		100/15 Summer			29.608	-0.102	0.000	0.23		8.3	OK	2
12.001	CP352	15 Summe		+20%	100/15 Summer	,			28.994	-0.121	0.000	0.42		28.4	OK	_
12.002	CP351	15 Summe		+20%		100/15 Summer			27.211	-0.104	0.000	0.53		26.8	OK	3
12.003	CP350	30 Summe		+20%		100/15 Summer			27.145	0.840	0.000	0.72			SURCHARGED	7
12.004		120 Summe		+20%		100/15 Summer			27.037	1.662	0.000	0.33			SURCHARGED	4
27.014		120 Summe		+20%		100/15 Summer			27.004	2.114	0.000	2.73			FLOOD RISK	13
27.015		120 Summe				100/15 Summer			26.633	1.793	0.000	1.64			SURCHARGED	
27.016		120 Summe		+20%		100/15 Summer			26.068	1.458	0.000	1.84			SURCHARGED	5
27.017		120 Summe		+20%	2/15 Summer	200,10 000000			25.219	0.889	0.000	1.42			SURCHARGED	Ŭ
	CP6119A	15 Summe		+20%	2,10 000000		2/15 Summer	72	24.757	-0.113	0.000	0.12		2.0	OK	
	CP6119B	15 Summe		+20%	2/15 Summer	100/15 Summer	_, 10 Dummer	12	24.521	0.113	0.000	1.76			SURCHARGED	5
27.018	CP6119	30 Summe		+20%		100/10 Dummer	2/15 Summer	57	23.450	-0.120	0.000	0.89		158.4	OK	5
15.000	CP149C	15 Summe		+2.0%	100/10 Dummer		2, 10 Gunuller	57	24.442	-0.098	0.000	0.05		4.1	OK	
13.000 27.019	CP149C CP149B	30 Summe		+20%	100/30 Summer				23.223	-0.247	0.000	0.20		159.7	OK	
16.000	CPDN9	15 Summe		+20%	2/15 Summer	5/15 Summer			24.951	1.351	0.535	2.00		26.0	FLOOD	10
27.020	CP149A	30 Summe		+20%		S/15 Summer			22.273	-0.173	0.000	0.70		173.5	OK	10
17.000	CPDN10	15 Summe		+20%	100/10 Summer				23.357	-0.123	0.000	0.08		0.9	OK	
6.002	CP149	30 Summe		+20%	5/30 Summer				21.246	0.031	0.000	1.06			SURCHARGED	
18.000	CPDN11	15 Summe		+20%		100/15 Summer			23.737	0.031	0.000	1.00			SURCHARGED	5
6.003	CPDN11 CP148	30 Winte		+20%		100/10 Summer			20.344	-0.231	0.000	0.66		512.0	OK	5
	EXCP140	60 Summe			2/15 Summer				20.344	0.105	0.000	2.95			SURCHARGED	
1.006	CP20	30 Summe			100/15 Summer				19.714	-0.266	0.000	0.68		592.4	OK	
T.000	CF Z U	JU JUIIIII	- J	TZU 5	TOOLTO SUUUUET				± 2 • / ± 4	-0.200	0.000	0.00		J92.4	0K	

Jacobs Engineering Limited		Page 15
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Diamage
Innovyze	Network 2019.1	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)		Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.007		120 Summer	5	+20%	100/15 Summer				19.442	-0.063	0.000			580.1	OK	
1.008		120 Summer	5	+20%	5/120 Summer				19.030	0.025	0.000				SURCHARGED	
1.009		120 Summer	5	+20%	5/30 Winter				18.621	0.054	0.000				SURCHARGED	
1.010		120 Summer	5	+20%	5/30 Summer				18.208	0.083	0.000				SURCHARGED	-
49.000		15 Summer	5	+20%	100/15 Summer	100/15 Summer	- /		22.739	-0.126	0.000			54.7	OK	3
49.001		15 Summer	5	+20%	5/15 Summer		5/15 Summer	13	21.646	0.016	0.000		12.1		SURCHARGED	
49.002	CP145	30 Summer	5	+20%	5/15 Summer				21.352	0.082	0.000				SURCHARGED	
49.003	CP144	15 Summer	5	+20%	4.0.0 / 4.5				20.443	-0.451	0.000			71.9	OK	
50.000	CPDN	15 Summer	5	+20%	100/15 Summer				21.827	-0.123	0.000			13.5	OK	
50.001	CP22	15 Summer	5	+20%	100/15 Summer				21.460	-0.130	0.000			13.3	OK	
50.002	CP23	15 Summer	5	+20%	100/15 Summer				21.160	-0.123	0.000			31.7	OK	
50.003	CP24	15 Summer	5	+20%	100/15 Summer				21.079	-0.076	0.000			47.3	OK	
50.004	CP25	15 Summer	5 5	+20%	100/15 Summer				20.790	-0.227	0.000			71.6	OK	
50.005	CP26	15 Summer		+20%	100/15 Summer				20.664	-0.214	0.000			82.5	OK	
50.006	CP27 CP28	15 Summer 15 Summer	5 5	+20% +20%	100/15 Summer				20.526		0.000			92.0	OK	
50.007			5						20.286	-0.284				101.9	OK	
49.004	CP201	15 Summer	5	+20%	E/1E Winter				19.300	-0.506	0.000			180.2	OK	
1.011		120 Summer		+20%	5/15 Winter				17.804	0.041	0.000				SURCHARGED	
1.012	Pond Inlet		5	+20%	5/30 Summer				17.710		0.000				SURCHARGED	
51.000	CP30	15 Summer	5	+20%					20.312	-0.210	0.000			20.0	OK	
51.001	CP31	15 Summer	5	+20% +20%	100/15 Summer				19.791	-0.247	0.000			39.8	OK	
52.000	CPDN12	15 Summer	5		100/15 Summer				20.678	-0.088	0.000			34.8	OK	
52.001 51.002	CP56 CP57	15 Summer 15 Summer	5	+20% +20%					20.199	-0.296	0.000			34.7 72.8	OK	
	Pond Outlet		5		100/120 Summer				19.460 17.300	-0.255	0.000			434.7	OK OK	
53.000	CP143	15 Summer	5	+20%	100/120 Summer				20.324	-0.096	0.000			434.7	OK	
53.000		15 Summer	5	+20%	100/15 Summer				19.637	-0.193	0.000			43.4	OK	
54.000	CP6112A CP6113	15 Summer	5	+20%	100/15 Summer				19.637	-0.226	0.000			45.8	OK	
53.002	CP6113 CP6112		5	+20%	100/15 Summer				19.409	-0.269	0.000			4J.8 96.4	OK	
1.014		180 Summer	5	+20%	100/60 Summer				16.761	-0.212	0.000			439.9	OK	
55.000	CP359	15 Summer	5	+20%	100/00 Summer				35.125	-0.205	0.000			19.1	OK	
56.000	CP6204A	30 Summer	5	+20%	2/15 Summor	100/15 Summer			36.163	0.640	0.000				SURCHARGED	8
56.000	CP6204A CP6204	30 Summer	5	+20%	2/15 Summer	100/15 Summer		0	35.094	-0.156	0.000		0.0	56.6	OK	0
57.000	CP361	30 Winter	5	+20%	100/15 Summer			0	35.343	-0.257	0.000		0.0	400.5	OK	
55.001	CP360 CP360	30 Winter	5	+20%	100/10 Summer				34.739	-0.346	0.000			400.3	OK	
58.000	CPDN18	30 Summer	5	+20%	100/15 Summer				23.398	-0.127	0.000			403.2 9.3	OK	
58.000		120 Summer	5	+20%	100/10 Summer				23.016	-0.139	0.000			9.3 10.2	OK	
58.001		120 Summer	5	+20%	100/60 Summer				22.799	-0.139	0.000			10.2	OK	
59.002	CPDN19	15 Summer	5	+20%	100/00 Summer				24.628	-0.115	0.000			2.1	OK	
59.000		15 Summer	5	+20%					23.826	-0.114	0.000			3.2	OK	
58.001		120 Summer	5	+20%					22.496	-0.144	0.000			12.0	OK	
60.000		15 Summer	5	+20%					34.103	-0.144	0.000			17.2	OK	
00.000	BWG1 0 2	10 Dunnier	5	1200						0.112	0.000	0.20		± / • 2	OIC	
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	ering Lim	ited													Page	e 16
						A12	Chelmsf	ord to	A120w	idening						
						Sect	ion 1									
						Prop	osed Ne	twork S	1-0U1	&7						Micco
ate 15/12/20	21 09.59					-	gned by			-						Micro
				1 0111			-									Drainage
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nnovyze						Netw	ork 201	9.1								
	5 vear R	eturn Pe	eriod	Summaı	ry of Criti	.cal Resul	ts by Ma	ximum 1	Level	(Rank 1)	for	Propos	sed Net	work	S1-OU1&	.7
								-				- 1 -				
									Water	Surcharged	Flooded			Pipe		
	US/MH			Climate	• •	First (Y)	First (Z)			Depth	Volume	-				Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(l/s)	Status	Exceeded
60.001	EXCP10	15 Summer	5	+20%	100/15 Summer				33.286		0.000	0.21		23.0	OK	
60.002		15 Summer	5		100/15 Summer	/			32.401	-0.124	0.000	0.41		39.1		
			5	+20%	100/15 Summer	100/15 Summer			30.597	-0.128	0.000	0.38		39.3	OK	3
60.003		15 Summer				100,10 000001			20 002							
60.003 60.004	CP340	15 Summer	5	+20%	100/15 Summer				30.083	-0.112	0.000	0.50		53.2	OK	
60.003 60.004 <mark>60.005</mark>	CP340 CP338	15 Summer 15 Summer	5 5	+20% +20%	100/15 Summer 2/15 Summer	100/15 Summer			28.563	-0.112 1.198	0.000 0.000	0.50 1.44		53.2 64.0	OK SURCHARGED	6
60.003 60.004 60.005 61.000	CP340 CP338 CP339	15 Summer 15 Summer 15 Summer	5 5 5	+20% +20% +20%	100/15 Summer 2/15 Summer	100/15 Summer			28.563 28.800	-0.112 1.198 -0.195	0.000 0.000 0.000	0.50 1.44 0.04		53.2 64.0 2.8	OK SURCHARGED OK	6
60.003 60.004 60.005 61.000 60.006	CP340 CP338 CP339 CP337	15 Summer 15 Summer 15 Summer 15 Summer	5 5 5 5	+20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer				28.563 28.800 27.944	-0.112 1.198 -0.195 0.859	0.000 0.000 0.000 4.429	0.50 1.44 0.04 1.48		53.2 64.0 2.8 64.8	OK SURCHARGED OK FLOOD	6
60.003 60.004 60.005 61.000 60.006 60.007	CP340 CP338 CP339 CP337 CP SW MH31A	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	5 5 5	+20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	100/15 Summer			28.563 28.800 27.944 26.645	-0.112 1.198 -0.195 0.859 0.160	0.000 0.000 0.000 4.429 0.000	0.50 1.44 0.04 1.48 2.17		53.2 64.0 2.8 64.8 64.8	OK SURCHARGED OK FLOOD SURCHARGED	6
60.003 60.004 60.005 61.000 60.006	CP340 CP338 CP339 CP337 CP SW MH31A MH334	15 Summer 15 Summer 15 Summer 15 Summer	5 5 5 5	+20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	100/15 Summer			28.563 28.800 27.944	-0.112 1.198 -0.195 0.859 0.160	0.000 0.000 0.000 4.429	0.50 1.44 0.04 1.48		53.2 64.0 2.8 64.8 64.8	OK SURCHARGED OK FLOOD SURCHARGED SURCHARGED	6 14
60.003 60.004 60.005 61.000 60.006 60.007 60.008	CP340 CP338 CP339 CP337 CP SW MH31A MH334 CP355.3	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	5 5 5 5 5 5	+20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			28.563 28.800 27.944 26.645 26.319	-0.112 1.198 -0.195 0.859 0.160 0.054 -0.447	0.000 0.000 4.429 0.000 0.000	0.50 1.44 0.04 1.48 2.17 1.13		53.2 64.0 2.8 64.8 64.8 146.2	OK SURCHARGED OK FLOOD SURCHARGED SURCHARGED	6 14
60.003 60.004 60.005 61.000 60.006 60.007 60.008 60.009	CP340 CP338 CP339 CP37 CP SW MH31A MH334 CP355.3 MH230	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	5 5 5 5 5 5 5	+20% +20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			28.563 28.800 27.944 26.645 26.319 25.608	-0.112 1.198 -0.195 0.859 0.160 0.054 -0.447 -0.525	0.000 0.000 4.429 0.000 0.000 0.000	0.50 1.44 0.04 1.48 2.17 1.13 0.24		53.2 64.0 2.8 64.8 64.8 146.2 344.6	OK SURCHARGED OK FLOOD SURCHARGED SURCHARGED OK OK	6
60.003 60.004 60.005 61.000 60.007 60.008 60.009 62.000	CP340 CP338 CP339 CP37 CP SW MH31A MH334 CP355.3 MH230 MH228	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 120 Winter</pre>	5 5 5 5 5 5 5 5	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 5/15 Summer	100/15 Summer			28.563 28.800 27.944 26.645 26.319 25.608 24.130	-0.112 1.198 -0.195 0.859 0.160 0.054 -0.447 -0.525 -0.540	0.000 0.000 4.429 0.000 0.000 0.000 0.000	0.50 1.44 0.04 1.48 2.17 1.13 0.24 0.00		53.2 64.0 2.8 64.8 64.8 146.2 344.6 0.0	OK SURCHARGED OK FLOOD SURCHARGED SURCHARGED OK OK	6

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				Margi	in for Flood Ri	isk Warning (mm	)		300.0	DVD Stat	us ON					
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1.000 1.001 1.002 2.000	Name CPDN07 : CP15 : CP16 : CPDN09 :	<pre>15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 100 100 100 100	Climate Change +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer	<pre>bfile(s) ) (mins) 15, 3( (years) ange (%)      First (Y)     Flood  100/15 Summer 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water w Level (m) 24.504 24.174 23.156 23.858	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895	<pre>), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051</pre>	440 100 20 Flow / Cap. 1.04 2.22 0.80 1.97		Flow (1/s) 61.2 130.7 98.9 111.1	FLOOD FLOOD SURCHARGED FLOOD	Exceeded	
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1.000 1.001 1.002 2.000	Name           CPDN07           CP15           CP16           CPDN09           CPDN09           CP17           CPDN10	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 100 100 100 100	Climate Change +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer	<pre>bfile(s)   (mins) 15, 3(   (years) ange (%)     First (Y)     Flood     100/15 Summer     100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water w Level (m) 24.504 24.174 23.156 23.858	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246	<pre>), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051</pre>	440 100 20 <b>Flow /</b> Cap. 1.04 2.22 0.80 1.97 1.50 1.62		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0	FLOOD FLOOD SURCHARGED FLOOD	Exceeded 2 1	
1.000 1.001 1.002 2.000 1.003 3.000	Name           CPDN07           CP15           CP16           CPDN09           CPD17           CPDN10           CP18	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100	Climate Change +20% +20% +20% +20% +20% +20% +20%	Duration(s) curn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>bfile(s)   (mins) 15, 3(   (years) ange (%)   First (Y)   Flood 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827	Summei 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636	<pre>0, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000</pre>	440 100 20 <b>Flow /</b> Cap. 1.04 2.22 0.80 1.97 1.50 1.62 1.67		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5	FLOOD FLOOD SURCHARGED FLOOD SURCHARGED SURCHARGED	Exceeded 2 1	
1.000 1.001 1.002 2.000 1.003 3.000 1.004	Name           CPDN07           CP15           CP16           CPDN09           CP17           CPDN10           CP18           CPDN11	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) curn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>bfile(s) ) (mins) 15, 3( (years) ange (%)  First (Y) Flood 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289	<pre>0, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000</pre>	440 100 20 <b>Flow /</b> Cap. 1.04 2.22 0.80 1.97 1.50 1.62 1.67 1.53		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1	FLOOD FLOOD SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED	Exceeded 2 1	
1.000 1.001 2.000 1.003 3.000 1.004 4.000 1.005 5.000	Name           CPDN07           CP15           CP16           CPDN09           CP17           CPDN10           CPDN10           CPDN11           CP19           CPDN12	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 60 Summer 60 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>bfile(s) (mins) 15, 3( (years) ange (%)  First (Y) Flood 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289 0.246 0.636 0.289 0.571 -0.058	<pre>D, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000</pre>	440 100 20 <b>Flow /</b> <b>Cap.</b> 1.04 2.22 0.80 1.97 1.50 1.62 1.67 1.53 1.30 0.65		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded 2 1 3	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 60 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) curn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	<pre>bfile(s) (mins) 15, 3( (years) ange (%)  First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.895 0.246 0.636 0.289 0.571 -0.058 2.577	<pre>D, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.0</pre>	440 100 20 <b>Flow /</b> Cap. 1.04 2.20 0.80 0.80 1.97 1.50 1.62 1.67 1.53 1.30 0.65 2.52		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7	FLOOD FLOOD SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD	<b>Exceeded</b> 2 1 3 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 60 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) curn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer	<pre>bfile(s)   (mins) 15, 3(   (years) ange (%)    First (Y)   Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767 24.522	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289 0.571 -0.058 2.577 1.212	<pre>D, 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 7.274 11.773</pre>	440 100 20 <b>Flow /</b> Cap. 1.04 2.22 0.80 1.97 1.50 1.62 1.67 1.53 1.30 0.65 2.52 1.72		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD	<b>Exceeded</b> 2 1 3 5 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000	Name           CPDN07           CP15           CPD09           CPDN10           CPDN10           CPDN11           CPDN12           CPDN15           CPDN15           CPDN16           CPDN17           CPDN18	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 60 Summer 15 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) curn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	<pre>bfile(s) ) (mins) 15, 30 (years) ange (%)      First (Y)     Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.465 22.465 22.660 22.130 22.046 25.767 24.522 26.132	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289 0.571 -0.058 2.577 1.212 1.627	<pre>b), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.274 11.773 12.064</pre>	440 100 20 <b>Flow /</b> <b>Cap.</b> 1.04 2.22 0.80 1.97 1.50 1.62 1.67 1.53 1.30 0.65 2.52 2.172 1.23		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3 32.6	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD FLOOD	Exceeded 2 1 3 3 5 12 8	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN1 CPDN9	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 60 Summer 15 Summer 15 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer	<pre>bfile(s) ) (mins) 15, 30 (years) ange (%)  First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 5/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767 24.522 26.132 25.579	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289 0.571 -0.058 2.577 1.212 1.627 1.464	<pre>b), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 1.773 12.064 28.985</pre>	440 100 20 Flow / Cap. 1.04 2.22 0.80 1.97 1.50 1.62 1.62 1.63 1.30 0.65 2.52 1.73 1.23 1.74		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3 32.6 53.1	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD FLOOD FLOOD	<b>Exceeded</b> 2 1 3 5 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.001 8.001 9.000	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN1 CP139 CP139 CP2001B	15 Summer 15 Summer 30 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer	<pre>bfile(s) (mins) 15, 30 (years) ange (%)  First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Jew Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767 24.522 26.132 25.579 26.930	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289 0.571 -0.058 2.577 1.212 1.627 1.464 1.475	<pre>b), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000 0.000 7.274 11.773 12.064 28.985 0.000</pre>	440 100 20 <b>Flow /</b> <b>Cap.</b> 1.04 2.22 0.80 1.97 1.50 1.62 1.67 1.53 1.30 0.65 2.52 1.72 1.23 1.74 0.30		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3 32.66 53.1 10.2	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD FLOOD FLOOD FLOOD	Exceeded 2 1 3 5 12 8 12	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.005 5.000 6.000 7.000 8.001 8.001 9.000	Name           CPDN07           CP15           CP16           CPDN09           CP17           CPDN10           CPDN11           CPDN15           CP137.1           CPDN6           CP139           CP139           CP2001B           CP2001A	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 160 Summer 15 Summer 15 Summer 15 Summer 160 Summer 15 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer	<pre>bfile(s) ) (mins) 15, 30 (years) ange (%)  First (Y) Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 5/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767 24.522 26.132 25.579 26.930 26.899	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.895 0.246 0.636 0.289 0.246 0.636 0.289 0.571 -0.058 2.577 1.212 1.627 1.464 1.475 1.584	<pre>b), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 7.274 11.773 12.064 28.985 0.000 8.928</pre>	440 100 20 Flow / Cap. 1.04 2.20 .80 1.97 1.50 1.62 1.67 1.50 1.62 1.67 1.30 0.65 2.52 1.72 1.23 1.74 0.30 1.20		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3 32.6 53.1	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD FLOOD FLOOD FLOOD FLOOD RISK FLOOD	Exceeded 2 1 3 3 5 12 8	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.004 4.000 5.000 6.000 7.000 8.000 8.001 9.001 9.001 9.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN6 CPDN15 CP137.1 CPDN6 CPDN15 CP139 CP2001B CP2001A	15 Summer 15 Summer 30 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer	<pre>bfile(s)   (mins) 15, 3(   (years) ange (%)    First (Y)   Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Jew Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767 24.522 26.132 25.579 26.930	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.895 0.899 0.246 0.636 0.2899 0.571 -0.058 2.577 1.212 1.627 1.464 1.475 1.584 1.627	<pre>b), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.000 0.000 0.000 0.000 0.000 0.000 7.274 11.773 12.064 28.985 0.000</pre>	440 100 20 Flow / Cap. 1.04 2.22 0.80 1.97 1.50 1.62 1.67 1.53 1.30 0.65 2.52 1.72 1.23 1.74 0.30 1.20		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3 32.6 53.1 10.2 45.1 55.6	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD FLOOD FLOOD FLOOD FLOOD RISK FLOOD	Exceeded 2 1 3 3 5 12 8 12 8 12 5	
1.000 1.001 1.002 2.000 1.003 3.000 1.004 4.000 1.004 4.000 1.005 5.000 6.000 7.000 8.000 8.001 9.001 9.001 9.002	Name CPDN07 CP15 CP16 CPDN09 CP17 CPDN10 CP18 CPDN11 CP19 CPDN15 CP137.1 CPDN16 CPDN1 CP139 CP2001B CP2001B CP20011 CP2001 CP2001	15 Summer 15 Summer 30 Summer	Period  100 100 100 100 100 100 100 100 100 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(s) turn Period(s) Climate Cha First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 2/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	<pre>bfile(s)   (mins) 15, 30   (years) ange (%)    First (Y)   Flood 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer</pre>	<pre>, 60, 120, 180, 2 First (Z) Overfl Overflow Act.</pre>	Water Level (m) 24.504 24.174 23.156 23.858 22.945 22.827 22.465 22.660 22.130 22.046 25.767 24.522 26.132 25.579 26.930 26.899 26.152	Summer 80, 600, 720 Surcharged Depth (m) 0.947 0.925 0.734 0.895 0.899 0.246 0.636 0.289 0.571 -0.058 2.577 1.212 1.627 1.464 1.475 1.584 1.627 1.073 1.210	<pre>b), 960, 1 2, 5, 20, 20, Flooded Volume (m<sup>3</sup>) 0.843 0.412 0.000 3.051 0.000 0.</pre>	440 100 20 Flow / Cap. 1.04 2.22 0.80 1.97 1.50 1.62 1.62 1.63 1.30 0.65 2.52 1.73 1.30 0.65 2.52 1.74 0.30 1.2		Flow (1/s) 61.2 130.7 98.9 111.1 171.6 78.0 198.5 81.1 218.1 37.0 29.7 23.3 32.6 53.1 10.2 45.1 55.6 55.5	FLOOD FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK FLOOD FLOOD FLOOD FLOOD FLOOD FLOOD FLOOD	Exceeded 2 1 3 3 5 12 8 12 8 12 5	

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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.		Surcharged Depth (m)		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	CP152	15 Summer	100	+20%	5/15 Summer				33.241	1.356	0.000	0.28		10.9	FLOOD RISK	
1.001	CP151	30 Summer	100	+20%		100/15 Summer			33.214	1.639	23.809	1.00		46.4	FLOOD	7
1.002	CP150	30 Summer	100	+20%		100/15 Summer			31.635	1.650		1.04		78.7	FLOOD	8
1.003	CP142	60 Summer	100	+20%	2/15 Summer	100/15 Summer			28.813	1.578	33.449	1.26		91.2	FLOOD	10
2.000 2.001	CP01 CP02	15 Summer 15 Summer	100 100	+20% +20%					32.262 31.961	-0.088 -0.091	0.000	0.66		24.8 29.3	OK OK	
2.001		15 Summer 15 Summer	100	+20%					31.483	-0.124	0.000	0.84		29.3	OK	
2.002	CP04	30 Summer	100	+20%					30.983	-0.053	0.000	0.41		27.6	OK	
3.000	CP07	15 Summer	100	+20%					31.741	-0.098	0.000	0.77		44.1	OK	
3.001	CP08	15 Summer	100	+20%					31.674	-0.061	0.000	0.97		123.4	OK	
2.004	CP05	30 Summer	100	+20%	100/15 Summer				30.951	0.726	0.000	0.60			SURCHARGED	
4.000	CPDN05	30 Summer	100		100/30 Summer				30.888	0.172	0.000	0.71			SURCHARGED	
5.000	CPDN06	15 Summer	100	+20%					31.518	-0.179	0.000	0.09		6.0	OK	
5.001	CP14	30 Summer	100		100/30 Summer				30.767	0.189	0.000	0.28			SURCHARGED	
2.005	CP06	30 Summer	100		100/15 Summer				30.793	1.161	0.000	0.99			FLOOD RISK	
6.000 6.001	CP09	15 Summer 30 Summer	100	+20% +20%					31.607 30.954	-0.167	0.000	0.40		47.6 43.1	OK OK	
7.000	CP010 CPDN01	15 Summer	100 100		100/15 Summer				30.954	-0.256 0.786	0.000	0.19			FLOOD RISK	
6.002	CP11	30 Summer	100		100/15 Summer				30.938	0.549	0.000	0.51			SURCHARGED	
8.000	CPDN02	15 Summer	100		100/15 Summer				30.944	0.003	0.000	1.00			SURCHARGED	
6.003	CP12	30 Summer	100		100/15 Summer				30.777	1.132	0.000	0.92			SURCHARGED	
9.000	CPDN03	30 Summer	100		100/15 Winter				30.879	0.677	0.000	0.73			FLOOD RISK	
0.000	CPDN04	30 Summer	100	+20%	100/15 Summer	100/30 Summer			30.999	0.899	0.006	1.56		57.4	FLOOD	
2.006	CP13	60 Summer	100	+20%	5/30 Summer	100/30 Summer			30.607	1.519	19.017	1.01		155.2	FLOOD	5
	CP3116A	60 Summer	100		100/15 Summer				29.524	0.591	0.000	0.85			SURCHARGED	
2.008	CP3106	60 Summer	100		100/15 Summer				28.021	1.186	0.000	0.78			FLOOD RISK	
2.009		120 Summer	100	+20%		100/30 Summer			26.573	2.198	72.983	1.86		229.9	FLOOD	8
		30 Summer	100 100	+20% +20%		100/15 Summer 100/15 Summer			34.401	1.211	11.252	1.08		14.3 19.0	FLOOD	10 3
		15 Summer 30 Summer	100	+20%		100/15 Summer 100/15 Summer			<b>35.272</b> 33.533	2.380 2.203	1.536 3.070	0.91		17.0	FLOOD FLOOD	3 9
1.002	CP2011 CP2009	30 Winter	100	+20%		100/15 Summer			32.041	2.203	10.838	1.22		23.1	FLOOD	11
1.003	CP2007	60 Summer	100	+20%		100/15 Summer			29.340	1.680	20.161	1.30		32.3	FLOOD	11
1.005		120 Summer	100		100/15 Summer				26.531	1.236	0.000	0.67			SURCHARGED	
1.004	CP141	120 Summer	100	+20%	5/15 Summer				26.464	2.209	0.000	1.47		291.1	SURCHARGED	
2.000	CPDN2	15 Summer	100	+20%	5/15 Summer	100/15 Summer			26.882	1.582	1.971	1.73		31.2	FLOOD	3
1.005	CP140	60 Winter	100	+20%	2/15 Summer		100/30 Summer		25.687	2.137	0.000	1.74			SURCHARGED	
0.001	CP202	60 Winter	100	+20%	2/15 Summer				25.527	2.327	0.000	1.82			FLOOD RISK	
3.000	CPDN3	30 Summer	100	+20%	2/15 Summer	2/15 Summer			25.716	1.526		2.22		23.6	FLOOD	20
	CP3109A	60 Winter	100		100/15 Summer	5 (15 0			24.981	1.889	0.000	0.91			SURCHARGED	
4.000	CPDN4 CP3109	15 Summer	100	+20%	2/15 Summer 100/15 Summer	5/15 Summer			25.313	1.513		2.03		24.2 351.9	FLOOD	12 5
0.003 5.000		60 Summer 15 Summer	100 100	+20%		100/30 Summer 100/15 Summer			24.816 24.813	1.976	5.889 3.439	0.67		27.8	FLOOD FLOOD	5 9

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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Diamaye
Innovyze	Network 2019.1	L

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)		Flow / Cap.	Overflow (1/s)	Pipe Flow (l/s)	Status	Level Exceeded
10.004	CP3110A	60 Summer	100		100/15 Summer				24.649	2.180	0.000	0.73			FLOOD RISK	
26.000	CP3110B	15 Summer	100	+20%	2/15 Summer	100/15 Summer			24.651	1.501	0.613	2.99		30.9	FLOOD	5
8.003	CP3110	60 Summer	100	+20%	5/15 Summer	100/30 Summer			24.477	2.317	17.357	1.29		446.3	FLOOD	6
8.004	CP3111 CP27208	60 Summer 60 Summer	100 100	+20% +20%	5/15 Summer 2/30 Summer				24.417 24.196	2.387 2.456	0.000	1.13			FLOOD RISK	
6.001	CP27208 CP137	60 Summer	100	+20%	2/15 Summer				24.198	2.438	0.000	1.67			SURCHARGED	
27.000	CP153	30 Summer	100			100/15 Summer			34.547	1.212	12.300	1.20		100.2	FLOOD	7
27.001	CP154	30 Summer	100	+20%	100/15 Summer	100/15 Summer			34.504	1.383	2.643	1.87		153.3	FLOOD	7
27.002	CP49	30 Summer	100		100/15 Summer	100,10 000000			34.580	1.680	0.000	1.91			FLOOD RISK	
28.000	ко-12	30 Summer	100		100/15 Summer				34.553	0.844	0.000	0.95			SURCHARGED	
29.000	ко-10	15 Summer	100	+20%	5/15 Summer	100/15 Summer			34.858	0.552	1.342	2.17		52.6	FLOOD	5
29.001	CP47	60 Summer	100	+20%	100/15 Summer				34.862	0.706	0.000	0.82		44.1	SURCHARGED	
30.000	KO-11	60 Winter	100		100/30 Summer				34.992	0.385	0.000	0.22			FLOOD RISK	
31.000	KO363	15 Summer	100		100/15 Summer	100/15 Summer			36.138	0.533	8.401	0.88		46.5	FLOOD	7
31.001	CP358A	15 Summer	100	+20%	5/15 Summer	100/15 Summer			35.924	1.224	4.261	0.80		47.3	FLOOD	7
31.002	EXCP07	30 Summer	100	+20%	2/15 Summer	100/15 Summer			35.477	1.622	7.048	1.09		37.6	FLOOD	7
	EXCP07-1	30 Summer	100	+20%	2/15 Summer	/			35.302	1.507	0.000	1.37			FLOOD RISK	
		120 Summer	100	+20%	2/15 Summer	100/15 Summer			34.903	1.293	61.016	0.75		58.0	FLOOD	10
32.000	EXCP08	15 Summer	100	+20%	100/15 Summer 2/15 Summer	100/15 Summer			35.558	1.333	0.046	0.94		50.4	FLOOD	1
33.000	EXCP07-3 CPDN7	60 Summer 15 Summer	100 100	+20%	100/15 Summer				34.978 36.577	1.478 1.132	0.000	1.57 0.21			FLOOD RISK	
33.000	CP6203	15 Summer	100			100/15 Summer			36.568	1.152	8.365	1.24		37.7	FLOOD RISK	5
34.000	CP6203	15 Summer	100		100/15 Summer	100/15 Summer			36.459	0.689	0.000	0.72			FLOOD RISK	5
33.002	CP6202	15 Summer	100	+20%		100/15 Summer			36.281	1.191	0.645	1.06		83.8	FLOOD	2
35.000	CP6202	15 Summer	100		100/15 Summer				35.906	0.466	0.000	0.24			SURCHARGED	
33.003	CP6201	30 Summer	100	+20%	2/15 Summer	100/15 Summer			35.880	1.775	22.728	1.80		78.2	FLOOD	7
31.006	EXCP07-4	60 Winter	100	+20%	2/15 Summer				35.008	1.548	0.000	1.91		151.8	FLOOD RISK	
31.007	CP146A	60 Winter	100	+20%	5/15 Summer				34.994	1.656	0.000	1.15		148.5	FLOOD RISK	
30.001	CP46	60 Winter	100	+20%	5/15 Summer				34.985	1.755	0.000	1.28			SURCHARGED	
30.002	CP49	60 Winter	100	+20%	5/15 Summer				34.910	1.821	0.000	1.50			SURCHARGED	
29.002	CP48	60 Summer	100	+20%	2/15 Summer				34.818	1.879	0.000	3.13			SURCHARGED	
36.000	CP41	15 Summer	100		100/15 Summer	/			42.940	0.590	0.000	0.90			SURCHARGED	
36.001	CP42	15 Summer	100	+20%		100/15 Summer			41.505	0.903	2.915	1.07		145.0	FLOOD	3
36.002	CP43	15 Summer	100		100/15 Summer	100/15 0			37.254	0.576	0.000	0.78			SURCHARGED	~
<b>36.003</b> 36.004	CP44	15 Summer 720 Winter	100 100	+20% +20%	5/15 Summer 5/15 Summer	100/15 Summer			36.149	1.205	5.248 0.000	2.27 0.22		150.2	FLOOD	3
36.004		600 Winter	100		100/15 Summer				35.711 35.716	1.016	0.000	0.22			SURCHARGED FLOOD RISK	
36.005		600 Winter	100	+20%		100/360 Summer			35.677	0.952	15.249	0.23		19.2	FLOOD RISK FLOOD	10
36.006		600 Winter	100		100/15 Summer	100/000 Summer			35.721	1.181	0.000	0.13			FLOOD RISK	10
36.007		600 Winter	100	+20%	2/15 Summer				35.733	2.453	0.000	0.60			SURCHARGED	
36.008		600 Winter	100	+20%	2/30 Summer				35.735	2.560	0.000	0.03			SURCHARGED	
		60 Winter	100	+20%	5/15 Summer				34.742	1.827	0.000	1.14			SURCHARGED	

Jacobs Engineering Limited		Page 20
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
38.000	ко-12	15 Summe		+20%	100/15 Summer	100/15 Summer			35.206	0.551	0.245	1.43		60.7	FLOOD	2
38.001	CP300	30 Summe			100/15 Summer				34.856	0.664	0.000	1.02			FLOOD RISK	
29.004		120 Summe		+20%	5/120 Summer				34.489	2.076	0.000	1.06			SURCHARGED	
28.001	CP302	60 Winte			100/15 Summer				34.394	2.054	0.000	1.03			SURCHARGED	
27.003	CP52	30 Summe		+20%	2/60 Summer				34.348	2.545	0.000	1.01			SURCHARGED	
39.000	CPDN10	30 Winte		+20%					33.934	0.431	0.000	0.08			SURCHARGED	
27.004	CP53	30 Summe		+20%	2/15 Summer				33.989	2.702	0.000	1.12			SURCHARGED	
27.005	CP80	60 Summe		+20%	100/15 Summer				32.413	1.526	0.000	0.91			SURCHARGED	
27.006		120 Summe		+20%	2/15 Summer	100/15 Summer			30.770	1.890	29.591	3.52		137.5		11
40.000	EXCP15	15 Summe		+20%					31.872	-0.088	0.000	0.34		9.3		
	CP344.1	30 Summe		+20%		100/15 Summer			30.603	1.803	3.187	0.72		151.5		5
	CP344.2	30 Summe		+20%		100/15 Summer			29.380	3.390	0.192	1.93		152.8		3
27.009	CP345	15 Summe		+20%	2/15 Summer				29.021	3.191	0.000	1.39			SURCHARGED	
27.010	CP346	30 Summe		+20%	2/15 Summer				28.288	2.908	0.000	5.03			SURCHARGED	
27.011		120 Summe		+20%	2/15 Summer				27.880	2.465	0.000	4.61			SURCHARGED	
41.000	CP355A	15 Summe		+20%					28.310	-0.090	0.000	0.44		23.8		
41.001	CP355	15 Summe		+20%	5/15 Summer				28.104	0.979	0.000	0.46			FLOOD RISK	
	CP355.1	30 Summe		+20%		100/15 Summer			27.981	1.326	10.671	0.67		45.6		7
27.012		120 Summe		+20%	2/15 Summer				27.744	2.264	0.000	0.80			SURCHARGED	
27.013		120 Summe		+20%		100/15 Summer			27.589		129.466	2.18		158.1	FLOOD	16
42.000	GY308	15 Summe		+20%	100/15 Summer	100/15 Summer			30.310	0.600	0.553	0.48		17.4	FLOOD	2
42.001	CP352	30 Summe		+20%	100/15 Summer				30.313	1.198	0.000	0.82			FLOOD RISK	
42.002	CP351	15 Summe		+20%	100/15 Summer				29.160	1.845	0.463	0.95		48.2		3
42.003	CP350	30 Summe		+20%	.,	100/15 Summer			28.240	1.935	10.383	0.88		56.7	FLOOD	7
42.004	CP349	15 Summe		+20%		100/15 Summer			27.550	2.175	0.118	0.93		59.1	FLOOD	4
27.014	MH65	60 Summe		+20%		100/15 Summer			27.300	2.410	49.548	2.94		161.7	FLOOD	13
27.015	MH64	30 Summe		+20%		100/15 Summer			26.975	2.135	5.313	1.76		162.0		7
27.016	MH63	30 Summe		+20%		100/15 Summer			26.563	1.953	2.824	1.92		161.9	FLOOD	5
27.017	MH62	15 Summe		+20%	2/15 Summer				25.906	1.576	0.000	1.59		177.4		
	CP6119A	15 Summe		+20%			2/15 Summer	72	24.776	-0.094	0.000	0.25		4.1	OK	
	CP6119B	15 Summe		+20%		100/15 Summer			24.955	1.205	4.791	2.24		21.0		5
27.018	CP6119	60 Summe		+20%	100/15 Summer		2/15 Summer	57	23.725	0.155	0.000	1.03			SURCHARGED	
45.000	CP149C	15 Summe		+20%	100/00 -				24.471	-0.069	0.000	0.56		9.0		
27.019	CP149B	60 Summe		+20%	100/30 Summer	_ /			23.676	0.206	0.000	0.50			SURCHARGED	
46.000	CPDN9	15 Summe		+20%	2/15 Summer	5/15 Summer			24.960	1.360	10.462	2.01		26.1	FLOOD	10
27.020	CP149A	60 Summe		+20%	100/15 Summer				23.446	1.000	0.000	0.86			SURCHARGED	
47.000	CPDN10	15 Summe		+20%	- /				23.371	-0.109	0.000	0.16		2.0		
6.002	CP149	60 Summe		+20%	5/30 Summer				23.294	2.079	0.000	1.27			SURCHARGED	
48.000	CPDN11	15 Summe		+20%		100/15 Summer			24.272	1.252	20.004	1.77		104.4	FLOOD	5
6.003	CP148	60 Summe		+20%					22.638	2.063	0.000	0.87			SURCHARGED	
	EXCP147	60 Summe		+20%	2/15 Summer				22.284	2.279	0.000	3.87			SURCHARGED	
1.006	CP20	60 Summe	er 100	+20%	100/15 Summer				22.034	2.054	0.000	0.94		817.3	SURCHARGED	
						01	982-2019									

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	l.

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.007	CP147	60 Summer	100	+20%	100/15 Summer				21.662	2.157	0.000	1.30		795.8	SURCHARGED	
1.008	CP148	60 Summer	100	+20%	5/120 Summer				20.857	1.852	0.000	1.37			SURCHARGED	
1.009	CP6114A	60 Summer	100	+20%	5/30 Winter				20.044	1.477	0.000	1.36			SURCHARGED	
1.010	CP6114B	60 Summer	100	+20%	5/30 Summer				19.219	1.094	0.000	1.37			SURCHARGED	
49.000	CP146.1	15 Summer	100	+20%		100/15 Summer			23.150	0.285	5.251	1.04		102.6		3
49.001	CP146	15 Summer	100	+20%	5/15 Summer		5/15 Summer	13	21.916	0.286	0.000	0.88	177.5		SURCHARGED	
49.002	CP145	15 Summer	100	+20%	5/15 Summer				21.815	0.545	0.000	1.69			SURCHARGED	
49.003	CP144	15 Summer	100	+20%					20.473	-0.421	0.000	0.21		106.8	OK	
50.000	CPDN	15 Summer	100	+20%	100/15 Summer				22.803	0.853	0.000	0.87			FLOOD RISK	
50.001	CP22	15 Summer	100	+20%	100/15 Summer				22.693	1.103	0.000	0.74			FLOOD RISK	
50.002	CP23	15 Summer	100	+20%	100/15 Summer				22.576	1.293	0.000	1.14			FLOOD RISK	
50.003	CP24	15 Summer	100	+20%	100/15 Summer				22.381	1.226	0.000	1.78			FLOOD RISK	
50.004	CP25	15 Summer	100	+20%	100/15 Summer				21.889	0.872	0.000	1.65			SURCHARGED	
50.005	CP26	15 Summer	100	+20%	100/15 Summer				21.617	0.739	0.000	1.65			SURCHARGED	
50.006	CP27	15 Summer	100	+20%	100/15 Summer				21.090	0.366	0.000	1.72			SURCHARGED	
50.007	CP28	30 Summer	100	+20%					20.438	-0.132	0.000	0.84		295.2	OK	
49.004	CP201	30 Summer	100	+20%					19.390	-0.416	0.000	0.31		401.2	OK	
1.011	CP200	60 Summer	100	+20%	5/15 Winter				18.413	0.650	0.000	1.75			SURCHARGED	
1.012	Pond Inlet	60 Summer	100	+20%	5/30 Summer				18.010	0.330	0.000	2.07			SURCHARGED	
51.000	CP30	15 Summer	100	+20%					20.359	-0.163	0.000	0.42		43.4	OK	
51.001	CP31	15 Summer	100	+20%					19.881	-0.157	0.000	0.61		98.0	OK	
52.000	CPDN12	15 Summer	100	+20%	100/15 Summer				21.572	0.806	0.000	1.40			SURCHARGED	
52.001	CP56	15 Summer	100	+20%					20.238	-0.257	0.000	0.21		74.2	OK	
51.002	CP57	15 Summer	100	+20%					19.529	-0.186	0.000	0.50		161.4	OK	
	Pond Outlet		100	+20%	100/120 Summer				17.605	0.035	0.000	0.99			SURCHARGED	
53.000	CP143	15 Summer	100	+20%	100/15 Summer				21.543	1.123	0.000	1.38		93.3	FLOOD RISK	
53.001	CP6112A	15 Summer	100	+20%					19.699	-0.131	0.000	0.60		93.8	OK	
54.000	CP6113	15 Summer	100	+20%	100/15 Summer				19.859	0.144	0.000	0.63		99.9	SURCHARGED	
53.002	CP6112	15 Summer	100	+20%					19.366	-0.214	0.000	0.38		204.9	OK	
1.014	CP6112B	180 Summer	100	+20%	100/60 Summer				17.029	0.056	0.000	1.17		597.9	SURCHARGED	
55.000	CP359	15 Summer	100	+20%					35.176	-0.154	0.000	0.47		40.7	OK	
56.000	CP6204A	30 Summer	100	+20%	2/15 Summer	100/15 Summer			37.198	1.675	28.393	3.09		74.8	FLOOD	8
56.001	CP6204	30 Summer	100	+20%				0	35.164	-0.086	0.000	0.83	0.0	102.0	OK	
57.000	CP361	30 Winter	100	+20%	100/15 Summer				36.131	0.531	0.000	1.56		888.6	SURCHARGED	
55.001	CP360	30 Winter	100	+20%					35.020	-0.065	0.000	1.00		968.2	OK	
58.000	CPDN18	60 Summer	100	+20%	100/15 Summer				24.326	0.801	0.000	1.08		28.0	SURCHARGED	
58.001	CP6118	60 Summer	100	+20%					23.093	-0.062	0.000	0.87		28.4	OK	
58.002	CP6117	60 Summer	100	+20%	100/60 Summer				22.941	0.016	0.000	1.03			SURCHARGED	
59.000	CPDN19	15 Summer	100	+20%					24.646	-0.097	0.000	0.26		4.6	OK	
59.001	CP6116	15 Summer	100	+20%					23.848	-0.092	0.000	0.30		7.5	OK	
58.003	CP6116A	60 Summer	100	+20%					22.553	-0.087	0.000	0.69		29.6	OK	
60.000	EXCP09	15 Summer	100	+20%					34.150	-0.095	0.000	0.61		37.3	OK	

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU1&7	Micro
Date 15/12/2021 09:59	Designed by DG	
File PROPOSED CASE DRAINAGE MODEL_S1_OU1_7 DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)		Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
60.001	EXCP10	15 Summer	100	+20%	100/15 Summer				33.450	0.010	0.000	0.48		51.8	SURCHARGED	
60.002	EXCP11	15 Summer	100	+20%	100/15 Summer				33.269	0.744	0.000	0.90		86.8	SURCHARGED	
60.003	EXCP12	15 Summer	100	+20%	100/15 Summer	100/15 Summer			31.733	1.008	2.163	0.83		84.8	FLOOD	3
60.004	CP340	15 Summer	100	+20%	100/15 Summer				31.574	1.379	0.000	0.95		101.7	SURCHARGED	
60.005	CP338	15 Summer	100	+20%	2/15 Summer	100/15 Summer			29.027	1.662	16.671	1.94		86.2	FLOOD	6
61.000	CP339	15 Summer	100	+20%					28.816	-0.179	0.000	0.09		6.0	OK	
60.006	CP337	30 Summer	100	+20%	2/15 Summer	5/15 Summer			27.991	0.906	50.682	1.51		65.8	FLOOD	14
60.007	CP SW MH31A	15 Summer	100	+20%	2/15 Summer				27.159	0.674	0.000	2.41		72.1	FLOOD RISK	
60.008	MH334	15 Summer	100	+20%	5/15 Summer				27.004	0.739	0.000	2.15		278.9	FLOOD RISK	
60.009	CP355.3	15 Summer	100	+20%					25.723	-0.332	0.000	0.50		709.9	OK	
62.000	MH230	15 Summer	100	+20%					24.420	-0.235	0.000	0.01		2.4	OK	
62.001	MH228	15 Summer	100	+20%					24.420	-0.195	0.000	0.06		30.1	OK	
62.002	MH229	15 Summer	100	+20%					24.359	-0.078	0.000	0.22		97.0	OK	
60.010	MH231	15 Summer	100	+20%					24.283	-0.176	0.000	0.95		739.3	OK	

Project Name	A12 Chelmsford to A120 widening scheme
Project Number	HE551497

File Number		HE551497-JAC-HDG-S1_J19-C	A-D-0002		
Document Description	MICRODRA	INAGE MODELLING RESULTS FOR PRO	POSED CATCHMEN	Г \$1-ОU7А	
Purpose of Issue	S2 - SUITABLE FOR INFORMATION	۱		Status Code	S2
Current Revision		P01			
Calculation Number	0002	Index Page	1 of 16	Sheet Nos (incl. cover sheet)	16

P01	FIRST ISSUE	DG	AM	AM	DT	07/06/22
Rev	Comments	Originated	Checked	Reviewed	Approved	Date

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#### Summary

This calculation sheet documents the Microdrainage modelling results (1D analysis) for the proposed highway drainage catchment "Section 1 - Outfall 7A (S1-OU7A) for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events.

It should be noted that the Microdrainage modelling results have been summarised by "the maximum water level for critical storm duration" for all design events meaning that the discharge rates presented from the Microdrianage modelling results may vary slightly from the proposed discharge rates documented within Appendix C - Table C.1 of the surface water drainage design report (Document Ref. HE551497-JAC-HDG-S1\_J19-RP-D-0001).

Jacobs Engineering Limited												Page	1
•			Chelms		d to	> A120	Owi	den	ing	J			
			cion 1										
	F	Prop	bosed 1	Netw	lork	S1-OU	U7A						Micro
Date 15/12/2021		Desi	lgned k	by D	)G								Micro Drainage
File Proposed Case Drainage Model_S1_OU7A DF3 FEH199	. 0	Chec	cked by	y AM	1								Janage
Innovyze	N	letw	vork 20	020.	1.3								
<u>Free</u> Flowing Outfa	fall	l De	etails	for	: Pro	posed	d N	etw	ork	<u>s1-0u7a</u>			
Outfall Ou	Outf	all	C. Level	т.т	.evel	Min	г	D,L	w				
Pipe Number			(m)			I. Leve							
						(m)							
3.012	0	U7A	22.700	22	2.100	0.00	00	0	0	1			
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			A12 Chelms	sford to A12	20widening		
			Section 1				
			Proposed N	Network S1-0	DU7A		Micro
te 15/12/2021			Designed k	by DG			
le Proposed Case Drai	nage Model_S1_OU	7A DF3 FEH199	Checked by	7 AM			Drainad
novyze			Network 20	20.1.3			
		Online Cont	crols for Pr	oposed Netw	ork S1-0U7A		
	<u>Hydro-B</u>	rake® Optimum Ma	anhole: EXCP	17, DS/PN:	3.003, Volume	(m <sup>3</sup> ): 3.1	
	Unit Reference MD-SHE-	0150-1150-1350-1150	Objective Min	imise upstream s	torage	Invert Level (m) 3	31.170
	Design Head (m)	1.350	Application		Surface Minimum Out	let Pipe Diameter (mm)	225
D	esign Flow (l/s) Flush-Flo™	Calculated D	ump Available Diameter (mm)		Yes Suggested 150	Manhole Diameter (mm)	1200
Control Points	Head (m) Flow (1/	s) Control Points Head	l (m) Flow (l/s)	Control Points	Head (m) Flow (l/s	) Control Points	Head (m) Flow (l/s)
Design Point (Calcula	ated) 1.350 11	.5 Flush-Flo™ 0	.398 11.4	Kick-Flo®	0.859 9.	3 Mean Flow over Head Ra	ange – 9.9
he hydrological calculations ptimum® be utilised then thes	e storage routing calcul	ations will be invalida	ated				trol device other than a Hyc w (l/s)  Depth (m) Flow (l/s
0.100 5.4				3.000	16.8 5.000	21.4 7.000	25.2 9.000 28.
0.200 10.6	0.600 11.1	1.400 11.7 2	.200 14.5	3.500	18.1 5.500	22.4 7.500	26.0 9.500 29.
0.300 11.3 0.400 11.4			15.1 15.7	4.000 4.500	19.3 6.000 20.4 6.500	23.4 8.000 24.3 8.500	26.9 27.7
·	Uridno Disoli	on Ontinum Monho	lo. Dord		. 2 011	ma (m <sup>3</sup> ) • 14 0	'
	<u>Hydro-Brak</u>	<u>e® Optimum Manho</u>	Die: Pond -	<u>007A, D57PN</u>	: 3.011, VOIU	<u>me (m²): 14.9</u>	
	Unit Reference MD-SHE-			imise upstream s		Invert Level (m) 2	
	Design Head (m) esign Flow (l/s)	0.900 5.0 Su	Application mp Available			let Pipe Diameter (mm) Manhole Diameter (mm)	150 1200
D	551gn 110W (1/5/	Calculated F	)iameter (mm)		107		
D	Flush-Flo™	Calculated	10m0001 (nm)		107		
D. Control Points	Flush-Flo™	s) Control Points Head		Control Points		) Control Points	Head (m) Flow (l/s)
	Flush-Flo™ Head (m) Flow (1/s	s)   Control Points Head		Control Points Kick-Flo®	Head (m) Flow (l/s	) Control Points	
<b>Control Points</b> Design Point (Calcula	Flush-Flo™ <b>Head (m) Flow (1/</b> ated) 0.900 5	S) Control Points Head .0 Flush-Flo <sup>™</sup> 0	(m) Flow (l/s)	Kick-Flo®	Head (m) Flow (l/s 0.590 4.	1 Mean Flow over Head Ra	ange - 4.3
<b>Control Points</b> Design Point (Calcula he hydrological calculations	Flush-Flo™ Head (m) Flow (1/s ated) 0.900 5 have been based on the H	s) Control Points Head .0 Flush-Flo™ 0 ead/Discharge relations	(m) Flow (l/s)	Kick-Flo®	Head (m) Flow (l/s 0.590 4.	1 Mean Flow over Head Ra	ange - 4.3
Control Points Design Point (Calcula he hydrological calculations ptimum® be utilised then thes	Flush-Flo™ Head (m) Flow (1/: ated) 0.900 5 have been based on the H e storage routing calcul	s) Control Points Head .0 Flush-Flo™ 0 ead/Discharge relations ations will be invalida	(m) Flow (1/s) .271 5.0 ship for the Hydr ated	Kick-Flo® o-Brake® Optimum	Head (m) Flow (l/s 0.590 4. n as specified. Sho	Mean Flow over Head Ra	ange - 4.3
Control Points Design Point (Calcula The hydrological calculations Optimum® be utilised then thes	Flush-Flo™ Head (m) Flow (1/: ated) 0.900 5 have been based on the H e storage routing calcul pth (m) Flow (1/s) Depth	s) Control Points Head .0 Flush-Flo™ 0 ead/Discharge relations ations will be invalida h (m) Flow (1/s) Depth	(m) Flow (1/s) .271 5.0 ship for the Hydr ated	Kick-Flo® o-Brake® Optimum	Head (m) Flow (l/s 0.590 4. n as specified. Sho	Mean Flow over Head Ra	ange – 4.3 trol device other than a Hyc
Control Points Design Point (Calcula The hydrological calculations Optimum® be utilised then thes Depth (m) Flow (1/s) Dep	Flush-Flo™ Head (m) Flow (1/2 ated) 0.900 5 have been based on the H e storage routing calcul pth (m) Flow (1/s) Depth 0.500 4.6 0.600 4.1	s) Control Points Head .0 Flush-Flo <sup>™</sup> 0 ead/Discharge relations ations will be invalida h (m) Flow (1/s) Pepth 1.200 5.7 2 1.400 6.1 2	(m) Flow (1/s) 1.271 5.0 Ship for the Hydr ated (m) Flow (1/s)	Kick-Flo® o-Brake® Optimun Depth (m) Flow	Head (m) Flow (1/s 0.590 4. mas specified. Sho (1/s) Depth (m) Fl	Mean Flow over Head Ra buld another type of cont .ow (l/s) Depth (m) Flow	ange - 4.3 trol device other than a Hyd w (l/s) Depth (m) Flow (l/s

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU7A	Micro
	Designed by DG	Drainage
	Checked by AM	Diamage
nnovyze	Network 2020.1.3	
<u>Storage Struct</u>	tures for Proposed Network S1-OU7A	
<u>Tank or Po</u>	ond Manhole: Tank, DS/PN: 5.000	
	Invert Level (m) 31.230	
Depth (m) Area (m <sup>2</sup> ) Depth (m) Area (m <sup>2</sup> ) Depth (m) Area (m <sup>2</sup> ) Depth	(m) Area $(m^2)$ Depth (m) Area $(m^2)$ Depth (m) Area $(m^2)$ Depth (m) Area $(m^2)$ Depth	h (m) Area (m²)
0.000 120.0 0.100 120.0 0.200 120.0 0.3	.300 120.0 0.400 120.0 0.500 120.0 0.600 120.0	0.601 0.0
mank an Dand N	Manhole: Pond - OU7A, DS/PN: 3.011	
	Mannote: Fond - 007A, DS/FN: 3.011	
	Invert Level (m) 22.240	
Depth (m) Area (m²)   Depth	(m) Area (m <sup>2</sup> ) Depth (m) Area (m <sup>2</sup> ) Depth (m) Area (m <sup>2</sup> )	
	.900 953.3 1.200 1089.2 1.760 1367.0	
0.000 000.0  0.		
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							Sec	tion 1								
							Pro	posed Networ	k S1-OU	7A						Micco
ate 15/12/20	21							igned by DG								MICTO
ile Proposed		Draina	re Mod	el S1	OU7A DE3	3 FEH199		cked by AM								Drainage
nnovyze			90 1100					work 2020.1.	3							
iiiovy20							Nec	WOIK 2020.1.								
	<u>1 y</u> e	ear Reti	ırn Pe	riod S	Summary o	of Criti	.cal Resu	lts by Maxim	num Leve	l (Ran	k 1) fo	or Prop	osed Ne	etwor	k S1-0U7	' <u>A</u>
							c	Simulation Criter	ia							
			Areal	Reducti	on Factor 1		hole Headlos	s Coeff (Global)	0.500	MADD F	actor * 10	m³/ha Sto	rage 0.00	0		
			Hot		rt (mins) evel (mm)			er hectare (l/s) % of Total Flow		, ner Per			ient 0.80			
										-			_			
Number of Input	Hydrog	raphs 0 Nu	mber of	Online C	ontrols 2 N	Number of C	)ffline Contr	cols 0 Number of	Storage Str	ructures	2 Number of	of Time/A	rea Diagra	ams 0 1	Number of R	eal Time Controls
							Synt	hetic Rainfall De								
				т	Rainfa FEH Rainfall	ll Model			EH D1 (1km) 99 D2 (1km)		F (1km)					
				Ŀ			B 574100 207	199 900 TL 74100 0790								
						C (1km)			23 E (1km)							
					Margin for H	Flood Bisk	Warning (mm)	)		300 0	DVD Stat	tus ON				
					Margin for H		Warning (mm) ysis Timestep	) p 2.5 Second Incr		300.0 ended) Ir	DVD Stat nertia Stat					
					Margin for H		-	p 2.5 Second Incr								
					Margin for 1		ysis Timestep	p 2.5 Second Incr		ended) Ir						
					-	Analy Profil	ysis Timester DTS Status le(s)	p 2.5 Second Incr s	rement (Exte	ended) Ir OFF Sum	mertia Stat mer and Wi	tus ON .nter				
					Dura	Analy Profil ation(s) (r	ysis Timester DTS Status le(s) mins) 15, 30	p 2.5 Second Incr	rement (Exte	ended) Ir OFF Sum	mertia Stat mer and Wi	tus ON .nter				
					Dura Return Per	Analy Profil	ysis Timestep DTS Status le(s) mins) 15, 30 ears)	p 2.5 Second Incr s	rement (Exte	ended) Ir OFF Sum	mertia Stat mer and Wi	nter 1440				
					Dura Return Per	Anal Profi ation(s) (r riod(s) (ye	ysis Timestep DTS Status le(s) mins) 15, 30 ears)	p 2.5 Second Incr s	rement (Exte	ended) Ir OFF Sum	mertia Stat mer and Wi	tus ON .nter 1440 1				
					Dura Return Pei Clim	Anal Profii ation(s) (r riod(s) (ye mate Change	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%)	p 2.5 Second Incr s , 60, 120, 180, 2 Water	erement (Exte 240, 360, 48 Surcharged	OFF Sum 30, 600, Flooded	mertia Stat mer and Wi 720, 960,	nter 1440 1 20	alf Drain	-		
PN	US/MH Name	Storm	Return Period	Climate	Dura Return Pei Clim	Anal Profii ation(s) (r riod(s) (ye mate Change	ysis Timestep DTS Status le(s) mins) 15, 30 ears)	p 2.5 Second Incr s , 60, 120, 180, 2 Water	ement (Exte 240, 360, 48 Surcharged Depth	OFF Sum 30, 600, Flooded	mer and Wi 720, 960, Flow / Ov	nter 1440 1 20	alf Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
	Name			Climate Change	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m)	Surcharged (m)	Sum OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> )	mer and Wi 720, 960, Flow / Ov Cap.	unter 1440 1 20 Ha verflow	Time	Flow (1/s)		Exceeded
<b>PN</b> 3.000 3.001	<b>Name</b> KO-04	Storm 15 Summer 15 Summer		Climate	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071</pre>	Ended) Ir OFF 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000	mer and Wi 720, 960, Flow / Ov Cap. 0.54	unter 1440 1 20 Ha verflow	Time	Flow	<b>Status</b> OI	Exceeded
3.000 3.001	<b>Name</b> KO-04 CP03	15 Summer	Period	Climate Change +20%	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921	Surcharged (m)	ended) Ir OFF 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000	mer and Wi 720, 960, Flow / Ov Cap. 0.54 0.37	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3	OF	Exceeded
3.000 3.001 4.000 3.002	Name KO-04 CP03 KO-02 CP04	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 1 1 1 1 1 1	Climate Change +20% +20% +20% +20%	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128</pre>	Ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	mer and Wi 720, 960, Flow / Ov Cap. 0.54 0.37 0.61 0.38	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8	IO IO IO	Exceeded
3.000 3.001 4.000 3.002 5.000	<b>Name</b> KO-04 CP03 KO-02 CP04 Tank	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20%	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149</pre>	ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	mer and Wi 720, 960, <b>Flow / Ov</b> <b>Cap</b> . 0.54 0.37 0.61 0.38 0.16	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0	IO IO IO IO IO	Exceeded
3.000 3.001 4.000 3.002 5.000 6.000	Name KO-04 CP03 KO-02 CP04 Tank CP19	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20%	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958	Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127	Ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	mer and Wi 720, 960, <b>Flow / Ov</b> <b>Cap</b> . 0.54 0.37 0.61 0.38 0.16 0.39	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1		Exceeded
3.000 3.001 4.000 3.002 5.000 6.000 6.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20%	Dura Return Pei Clir First (X)	Anal Profil ation(s) (r riod(s) (ye mate Change <b>First (Y)</b>	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306	Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179	ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0	IO IO IO IO IO	Exceeded
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	Period 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20%	Dura Return Pei Clir First (X)	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.079 -0.098</pre>	<pre>ended) Ir OFF Sum 30, 600, Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9	10 10 10 10 10 10	<b>Exceeded</b>
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	<pre>p 2.5 Second Incr s , 60, 120, 180, 2 water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.554 31.554 31.554</pre>	<pre>cement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.098 0.055 -0.099</pre>	Ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2	OF OF OF OF OF OF SURCHARGEI	<b>Exceeded</b>
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.554 31.525 31.872 31.464	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.098 0.055 -0.099 -0.162</pre>	Ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25 0.17</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1	OF OF OF OF OF OF SURCHARGET OF OF	<b>Exceeded</b>
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 EXCP17 KO-03 CP21 CP22	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.554 31.872 31.464 31.294	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.179 -0.098 0.055 -0.099 -0.162 -0.138</pre>	ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25 0.17 0.31</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1 9.2	OF OF OF OF OF OF SURCHARGET OF OF OF OF	<b>Exceeded</b>
3.000 3.001 4.000 3.002 5.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004	Name K0-04 CP03 K0-02 CP04 Tank CP19 CP20 CP02 EXCP17 K0-03 CP21 CP22 CP12	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.554 31.875 31.872 31.464 31.294 31.093	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.098 0.055 -0.098 0.055 -0.098 -0.162 -0.138 -0.273</pre>	ended) Ir OFF 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25 0.17 0.31 0.17</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1 9.2 29.0	OI OI OI OI OI SURCHARGEI OI OI OI OI OI	<b>Exceeded</b>
3.000 3.001 4.000 3.002 5.000 6.001 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.004	Name K0-04 CP03 K0-02 CP04 Tank CP19 CP02 CP02 EXCP17 K0-03 CP21 CP22 CP12 CP12	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.555 31.876 31.555 31.872 31.464 31.294 31.093 30.793	<pre>cement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.098 0.055 -0.099 -0.162 -0.138 -0.273 -0.297</pre>	right content of the second se	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.32 0.13 0.25 0.17 0.31 0.17 0.10</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1 9.2 29.0 36.1	OI OI OI OI OI OI SURCHARGEI OI OI OI OI OI OI	<b>Exceeded</b>
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP02 EXCP17 KO-03 CP21 CP22 CP13 BDU2	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	<pre>p 2.5 Second Incr s , 60, 120, 180, 2 water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.554 31.876 31.555 31.872 31.464 31.294 31.093 30.793 34.145</pre>	<pre>cement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.098 0.055 -0.099 -0.162 -0.138 -0.273 -0.273 -0.297 -0.241</pre>	ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25 0.17 0.31 0.17 0.31 0.17 0.10 0.09</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1 9.2 29.0 36.1 21.2	OF OF OF OF OF SURCHARGEI OF OF OF OF OF OF OF OF OF OF OF OF OF	<b>Exceeded</b>
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP12 CP12 CP12 CP12 CP12 CP12 CP12 CP12 CP14 CP15 CP15 CP15 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP27 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP27 CP26 CP26 CP27 CP26 CP27 CP26 CP26 CP27 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP26 CP27 CP26 CP27 CP26 CP27 CP26 CP27 CP26 CP27 CP17 CP27 CP17	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.555 31.876 31.555 31.872 31.464 31.294 31.093 30.793	<pre>cement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.127 -0.179 -0.098 0.055 -0.099 -0.162 -0.138 -0.273 -0.241 -0.165</pre>	right content of the second se	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25 0.17 0.31 0.17 0.31 0.17 0.10 0.09 0.16</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1 9.2 29.0 36.1 21.2	OF OF OF OF OF OF SURCHARGEI OF OF OF OF OF OF OF OF OF OF OF OF OF	<b>Exceeded</b>
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001 8.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2 KO-05 CP06	<pre>15 Summer 15 Summer</pre>	Period 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Dura Return Per Clir First (X) Surcharge	Profii ation(s) (r riod(s) (ye mate Change First (Y) Flood	ysis Timester DTS Status le(s) mins) 15, 30 ears) e (%) First (Z)	<pre>p 2.5 Second Incr s , 60, 120, 180, 2 Water Overflow Level Act. (m) 31.921 31.858 31.943 31.614 31.306 31.958 31.876 31.554 31.554 31.555 31.872 31.464 31.294 31.093 30.793 34.145 33.240</pre>	<pre>sement (Exter 240, 360, 48 Surcharged Depth (m) -0.071 -0.086 -0.065 -0.128 -0.149 -0.027 -0.179 -0.098 0.055 -0.099 -0.162 -0.138 -0.273 -0.297 -0.241 -0.165 -0.158</pre>	ended) Ir OFF Sum 30, 600, Flooded Volume (m <sup>3</sup> ) 0.000	<pre>mertia Stat mer and Wi 720, 960,  Flow / Ov Cap. 0.54 0.37 0.61 0.38 0.16 0.39 0.09 0.32 0.13 0.25 0.17 0.31 0.17 0.10 0.09 0.16 0.19</pre>	unter 1440 1 20 Ha verflow	Time	Flow (1/s) 7.3 7.3 19.7 26.8 5.0 7.1 7.2 13.9 11.4 9.2 9.1 9.2 29.0 36.1 21.2 21.2	OF OF OF OF OF OF SURCHARGET OF OF OF FLOOD RISK FLOOD RISK	<b>Exceeded</b>

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							-			S1-OU7A						N	licro
te 15/12/2	021						Designed by DG										
le Propose	d Case Dra	ainage M	1odel	S1 OU7	A DF3 FI	ЕН199	. Checked by AM										rainage
novyze								ork 202									
поууге							Netwo	DIK ZUZ	0.1.3								
	<u>l year</u>	Return	Perio	d Summ	ary of (	Critica	<u>l Result</u>	s by M	aximun	n Level	(Rank	1) fo:	r Propo	sed Net	work	<u> 1-0U7A</u>	
										Surcharged		/		Half Drair	-		
PN	US/MH Name	Storm			First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (1/s)	Time (mins)	Flow (l/s)	Status	Level Exceeded
EN	Name	SCOTIN	Ferrod	change	Surcharge	FICOD	OVELITOW	ACL.	(111)	(111)	(111)	Cap.	(1/5)	(11115)	(1/5)	Status	Exceeded
9.000	BDU1	15 Summer	1	+20%					34.155	-0.240	0.000	0.09			21.3	FLOOD RISK*	
9.001	KO-01	15 Summer	1	+20%					33.238	-0.161	0.000	0.18			21.4	FLOOD RISK	
9.002	CP01	15 Summer	1	+20%					32.507	-0.147	0.000	0.26			21.5	OK	
9.003	CP16	15 Summer		+20%					32.139	-0.100	0.000	0.59			30.5	OK	
9.004	EXCP16	15 Summer		+20%					31.925	-0.020	0.000	1.00			36.4	OK	
9.005	24	15 Summer		+20%					31.725	-0.073	0.000	0.79			36.4	OK	
	EXCP SW IC10	15 Summer		+20%					31.268	-0.131	0.000	0.60			69.0	OK	
8.005	CP07	15 Summer		+20%					31.043	-0.144	0.000	0.68			71.5	OK	
8.006	CP08	15 Summer		+20%					30.902	-0.234	0.000	0.30			72.0	OK	
10.000	CPDN04	15 Summer		+20%					31.635	-0.219	0.000	0.01			0.4	OK	
8.007	CP09	15 Summer		+20%					30.444	-0.249	0.000	0.25			72.5	OK	
11.000		15 Summer		+20%					31.038	-0.220	0.000	0.00			0.3	OK	
8.008	CP10	15 Summer		+20%					29.843	-0.252	0.000	0.00			72.6	OK	
12.000		15 Summer		+20%					30.369	-0.221	0.000	0.00			0.3	OK	
8.009	CP11	15 Summer		+20%					29.262	-0.231	0.000	0.31			72.3	OK	
13.000	CPDN01	15 Summer		+20%					31.184	-0.172	0.000	0.13			10.6	OK	
3.006	CP12	15 Summer		+20%					28.904	-0.239	0.000	0.28			115.9	OK	
14.000		15 Summer		+20%					29.453	-0.176	0.000	0.11			10.5	OK	
15.000	CPDN08	15 Summer		+20%					28.183	-0.199	0.000	0.03			2.6	OK	
		15 Summer		+20%					26.390	-0.222	0.000	0.35			126.6	OK	
.5.007	CPDN03	15 Summer		+20%					26.957	-0.152	0.000	0.23			19.6	OK	
3.007 16.000		15 Summer		+20%					23.867	-0.257	0.000	0.38			141.9	OK	
16.000	CP14		-						24.503	-0.128	0.000	0.38			20.9	OK	
16.000 3.008			1	+20%						0.120	0.000	0.00				010	
16.000 3.008 17.000	CPDN03	15 Summer		+20% +20%						-0.165	0.000	0.72			143.1	0K	
16.000 3.008 17.000 3.009	CPDN03 CP15	15 Summer 15 Summer	1	+20%					22.963	-0.165	0.000	0.72			143.1 136.1	OK	
16.000 3.008 17.000	CPDN03 CP15 CP18	15 Summer 15 Summer 15 Summer	1 1							-0.165 -0.243 -0.090	0.000 0.000 0.000	0.72 0.56 0.08			143.1 136.1 5.0	OK OK	

Jacobs Engineering Limited		Page 1		
•	A12 Chelmsford to A120widening			
	Section 1			
	Proposed Network S1-OU7A	Micco		
Date 15/12/2021 10:04	Designed by DG	——— Micro Drainage		
File PROPOSED CASE DRAINAGE MODEL_S1_OU7A DF3.MDX	Checked by AM	Dialitaye		
Innovyze	Network 2019.1			
<u>Free Flowing Out</u>	fall Details for Proposed Network S1-OU7A			
Outfall	Outfall C. Level I. Level Min D,L W			
Pipe Number				
3.012	OU7A 22.700 22.100 0.000 0 0			
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				msford to Al	20wideni	ng				
			Section							
			Proposed	Network S1-	OU7A				Mi	cro
e 15/12/2021 10:04			Designed	by DG						ainage
e PROPOSED CASE DRAINAG	E MODEL_S1_OU7A	DF3.MDX	Checked	by AM						
ovyze			Network	2019.1						
		<u>Online Co</u>	ntrols for H	Proposed Net	work S1-0	<u>0U7A</u>				
	<u>Hydro-Bra</u>	ake® Optimum 3	Manhole: EX(	CP17, DS/PN:	3.003,	Volume	(m³): 3.1			
Uni	t Reference MD-SHE-01	50-1150-1350-1150	Objective P	linimise upstream	storage		Invert Level (m)	31.170		
Desid	gn Head (m)	1.350	Application		Surface Mir		t Pipe Diameter (mm)	225		
Design	Flow (l/s) Flush-Flo™		Sump Available Diameter (mm)		Yes 5 150	Suggested M	anhole Diameter (mm)	1200		
Control Points	Head (m) Flow (l/s)	Control Points He	ead (m) Flow (1/:	3) Control Points	Head (m) H	[low (l/s)	Control Points	Head	d (m) Flow	(1/s)
Design Point (Calculated)	1.350 11.5	Flush-Flo™	0.398 11.	4 Kick-Flo®	0.859	9.3	Mean Flow over Head	Range	-	9.9
ne hydrological calculations have i	been based on the Hea	d/Discharge relatio	onship for the H	vdro-Brake® Optimi	um as specif	ied. Shoul	d another type of co	ontrol devi	ce other th	an a Hvdro-B
btimum® be utilised then these sto				dio Dianco opeim	un do opcorr	100. 01100	a another eype of ee			an a njaro D
Depth (m) Flow (l/s) Depth (r	m) Flow (l/s) Depth	(m) Flow (l/s) Dep	pth (m) Flow (1/:	s) Depth (m) Flow	r (l/s)   Dept	ch (m) Flow	n (l/s) Depth (m) Fl	ow (1/s)   D	epth (m) F	low (l/s)
0.100 5.4 0.50	00 11.3 1.3	200 10.9	2.000 13.	8 3.000	16.8	5.000	21.4 7.000	25.2	9.000	28.4
0.200 10.6 0.60		100 11.7	2.200 14.			5.500	22.4 7.500	26.0	9.500	29.2
0.300 11.3 0.80 0.400 11.4 1.00		500 12.5 300 13.2	2.400 15. 2.600 15.		19.3 20.4	6.000 6.500	23.4 8.000 24.3 8.500	26.9 27.7		
		·					·			
	<u>Hydro-Brake@</u>	Optimum Man	<u>hole: Pond</u>	- OU7A, DS/P	N: 3.011	, Volume	<u>e (m³): 14.9</u>			
Uni	t Reference MD-SHE-01	07-5000-0900-5000	Objective !	Minimise upstream	storage		Invert Level (m)	22.240		
	gn Head (m)	0.900	Application	-	Surface Mir		t Pipe Diameter (mm)	150		
Design	Flow (l/s) Flush-Flo™		Sump Available Diameter (mm)		Yes 5 107	suggested M	anhole Diameter (mm)	1200		
Control Points	Head (m) Flow (l/s)	Control Points He	ead (m) Flow (1/:	3) Control Points	Head (m) H	[low (l/s)	Control Points	Head	i (m) Flow	(1/s)
	0.900 5.0	Flush-Flo™	0.271 5.	0 Kick-Flo®	0.590	4.1	Mean Flow over Head	Range	-	4.3
Design Point (Calculated)	0.900 9.0	1								
ne hydrological calculations have	been based on the Hea			dro-Brake® Optim	um as specif	ied. Shoul	ld another type of co	ontrol devi	ce other th	an a Hydro-B
ne hydrological calculations have	been based on the Hea			dro-Brake® Optimu	um as specif	ied. Shoul	ld another type of co	ontrol devi	ce other th	an a Hydro-B
ne hydrological calculations have	been based on the Hea rage routing calculat	ions will be inval	idated	-	-					-
ne hydrological calculations have a potimum® be utilised then these sto	been based on the Hea rage routing calculat m) Flow (1/s) Depth	ions will be inval (m) Flow (l/s) Der	idated	;)   Depth (m) Flow	r (l/s) Dept					-
he hydrological calculations have in otimum® be utilised then these sto Depth (m) Flow (l/s) Depth (r 0.100 3.6 0.200 4.9 0.60	been based on the Hearage routing calculat m) Flow (1/s) Depth 00 4.6 1.1 00 4.1 1.1	ions will be inval (m) Flow (l/s) Deg 200 5.7 400 6.1	idated pth (m) Flow (1/s 2.000 7. 2.200 7.	2 3.000 6 3.500	7 (1/s) Dept 8.8 9.4	<b>ch (m) Flow</b> 5.000 5.500	7 (1/s) Depth (m) F1 11.2 7.000 11.7 7.500	ow (1/s) [ 13.1 13.6	Oepth (m) F	low (l/s)
he hydrological calculations have in otimum® be utilised then these sto Depth (m) Flow (1/s) Depth (r 0.100 3.6 0.50	been based on the Hea rage routing calculat m) Flow (1/s) Depth 00 4.6 1. 00 4.1 1.	ions will be inval (m) Flow (l/s) Dep 200 5.7 100 6.1 500 6.5	idated pth (m) Flow (1/s 2.000 7, 2.200 7, 2.400 7,	2 3.000 6 3.500	7 (1/s) Dept	<b>ch (m) Flow</b> 5.000	7 (1/s) Depth (m) F1	ow (1/s) [ 13.1	<b>Depth (m) F</b> 9.000	- low (1/s) 14.8
he hydrological calculations have is ptimum® be utilised then these sto Depth (m) Flow (1/s) Depth (r 0.100 3.6 0.56 0.200 4.9 0.66 0.300 5.0 0.80	been based on the Hea rage routing calculat m) Flow (1/s) Depth 00 4.6 1. 00 4.1 1.	ions will be inval (m) Flow (l/s) Dep 200 5.7 100 6.1 500 6.5	idated pth (m) Flow (1/s 2.000 7, 2.200 7, 2.400 7,	<ul> <li>Depth (m) Flow</li> <li>3.000</li> <li>3.500</li> <li>4.000</li> </ul>	7 (1/s) Dept 8.8 9.4 10.1	5.000 5.500 6.000	7 (1/s) Depth (m) F1 11.2 7.000 11.7 7.500 12.2 8.000	ow (1/s) 13.1 13.6 14.0	<b>Depth (m) F</b> 9.000	- low (1/s) 14.8

	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU7A	Micro
te 15/12/2021 10:04	Designed by DG	Drainage
le proposed case drainage model_s1_ou7a dF3.MdX	Checked by AM	Drainage
novyze	Network 2019.1	
<u>Storage S</u>	tructures for Proposed Network S1-OU7A	
Tank c	or Pond Manhole: Tank, DS/PN: 5.000	
	Invert Level (m) 31.230	
Depth (m) Area (m²)   Depth (m) Area (m²)   Depth (m) Area (m²)	Depth (m) Area (m <sup>2</sup> )	Depth (m) Area (m²)
0.000 120.0 0.100 120.0 0.200 120.0	0.300 120.0 0.400 120.0 0.500 120.0 0.600 120.0	
		1 0.001 0.00
Tank or Pe	ond Manhole: Pond - OU7A, DS/PN: 3.011	
	Invert Level (m) 22.240	
_	Depth (m) Area (m <sup>2</sup> ) Depth (m) Area (m <sup>2</sup> ) Depth (m) Area (m <sup>2</sup> )	
0.000 600.0	0.900 953.3 1.200 1089.2 1.760 1367.0	
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	III LI	mited												Pa	ige 4	
						A	12 Chelm	sford to A	20wideni	ng						
						S	ection 1									
						P	roposed	Network S1-	-OU7A						Mice	
te 15/12/2021	10:04	1					esigned i								Mici	
le PROPOSED C			MODET	. S1 OT	מא צידת בלוז		hecked b	-							Urai	naqe
	AGE DI	MINAGE	HODEL		OTA DIS.HD.		etwork 2									
novyze						ING	etwork z	.019.1								
	2 vear	Returr	n Peri	od Sun	nmarv of Ci	ritical Rea	sults bv	Maximum Le	evel (Ran	k 1) f	or Pr	oposed	Netw	ork S1-OU	J7A	
	•				·											
			Areal Re	eduction	Factor 1.000	Manhole Head		<u>on Criteria</u> (Global) 0.500	MADD F	actor * 1	.0m³/ha	Storage 0	.000			
			Hc	ot Start	(mins) O	Foul Sewage	e per hectar	re (l/s) 0.000		Inle	et Coeff	iecient 0	.800			
			Hot St	cart Leve	e⊥ (mm) 0	Additional Flor	w - % of Tot	tal Flow 0.000	Flow per Per	son per I	ay (l/p	er/day) 0	.000			
Number of Input Hy	ydrograph	s 0 Numbe	er of Onl	line Cont	trols 2 Number	of Offline Co	ntrols 0 Nu	umber of Storage	Structures	2 Number	of Time	e/Area Dia	agrams	0 Number of	Real Time	Controls
						S	vnthetic Ra	infall Details								
						l FEH Site Lo	cation GB 5	574100 207900 TI								
				FEH R	ainfall Version	n 2013 Dat	а Туре		Catchment	Cv (Win	ter) 1.	000				
				Ma	rain for Flood	Risk Warning (	(mm)		300.0	DVD St	atus ON					
				1101	-	-		cond Increment								
						DTS Sta	atus		OFF							
						DTS Sta	itus		OF.F.							
					T		itus			mer and W	linter					
						Profile(s)		0, 180, 240, 360	Sum	mer and W 720, 960,						
				I	Duration Return Period(s	Profile(s) (s) (mins) 15, s) (years)		0, 180, 240, 360	Sum	720, 960, 2, 5	1440 5, 100					
				I	Duration Return Period(s	Profile(s) (s) (mins) 15,		0, 180, 240, 360	Sum	720, 960, 2, 5	1440					
				Ι	Duration Return Period(s	Profile(s) (s) (mins) 15, s) (years)			Sun , 480, 600,	720, 960, 2, 5 20, 2	1440 5, 100		Pine			
	US/MH		Return	I	Duration Return Period(s	Profile(s) (s) (mins) 15, s) (years)	30, 60, 120		Sum , 480, 600, Surcharged	720, 960, 2, 5 20, 2 Flooded	1440 5, 100 20, 20	Overflow	Pipe Flow		Level	
PN	US/MH Name	Storm	Return Period	Climate	Duration Return Period(s Climate C	Profile(s) (s) (mins) 15, s) (years) Change (%)	30, 60, 120	Water	Sum , 480, 600, Surcharged	720, 960, 2, 5 20, 2 Flooded	1440 5, 100 20, 20	Overflow (1/s)	-	Status	Level Exceeded	
<b>PN</b> 3.000	Name	<b>Storm</b> 15 Summer		Climate Change	Duration Return Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) 15, s) (years) Change (%) <b>First (Y)</b>	30, 60, 120 First (Z)	Water Overflow Leve	Sur , 480, 600, Surcharged Depth (m)	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> )	1440 5, 100 20, 20 Flow /		Flow	Status		
	<b>Name</b> KO-04		Period 2	Climate Change +20%	Duration Return Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) 15, s) (years) Change (%) <b>First (Y)</b>	30, 60, 120 First (Z)	Water Overflow Leve Act. (m)	Sum , 480, 600, Surcharged Depth (m) -0.073	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000	<pre>1440 5, 100 20, 20 Flow / Cap.</pre>		Flow (l/s)	OK	Exceeded	
3.000 3.001 4.000	Name KO-04 CP03 KO-02	15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2	<b>Climate</b> <b>Change</b> +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water Overflow Leve: Act. (m) 31.919 31.85 31.942	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.066	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000	<pre>Flow / Cap. 0.52 0.36 0.59</pre>		Flow (1/s) 7.1 7.1 19.2	OK OK		
3.000 3.001 4.000 3.002	Name KO-04 CP03 KO-02 CP04	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water Overflow Level Act. (m) 31.91 31.85 31.94 31.61 31.61	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.066 -0.130	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	<pre>Flow / Cap. 0.52 0.36 0.59 0.37</pre>		Flow (1/s) 7.1 7.1 19.2 26.0	OK OK OK	Exceeded	
3.000 3.001 4.000 3.002 5.000	Name KO-04 CP03 KO-02 CP04 Tank	15 Summer 15 Summer 15 Summer 15 Summer 30 Summer	<b>Period</b> 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water Overflow Level Act. (m) 31.919 31.85 31.944 31.61 31.303	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.087 -0.066 -0.130 -0.152	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	<pre>Flow / Cap. 0.52 0.36 0.59 0.37 0.13</pre>		Flow (1/s) 7.1 7.1 19.2 26.0 4.1	OK OK OK	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000	Name KO-04 CP03 KO-02 CP04 Tank CP19	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water Overflow Leve: Act. (m) 31.91 31.85 31.942 31.61 31.30 31.95	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.066 -0.130 -0.152 -0.128	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.52 0.36 0.57 0.37 0.13 0.38		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9	OK OK OK OK	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20	<pre>15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.91:         31.85'           31.94:         31.61:           31.31:         31.30'           31.95'         31.87'	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.066 -0.130 -0.152 -0.128 -0.179	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.52 0.36 0.59 0.37 0.13 0.38 0.09		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0	0K 0K 0K 0K 0K 0K	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02	<pre>15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.91:         31.85'           31.94:         31.61:           31.30:         31.95'           31.95'         31.94'           31.61:         31.95'           31.95'         31.85'           31.95'         31.95'	Surcharged Depth (m) -0.073 -0.087 -0.066 -0.130 -0.152 -0.128 -0.179 -0.100	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.52 0.36 0.59 0.37 0.13 0.38 0.09 0.31		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0 13.6	OK OK OK OK	Exceeded	
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3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 EXCP17 KO-03 CP21 CP22 CP12 CP13	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.919         31.857           31.942         31.612           31.301         31.957           31.857         31.857           31.857         31.877           31.461         31.292           31.922         31.092           31.923         31.092	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.086 -0.130 -0.152 -0.128 -0.179 -0.100 0.052 -0.100 0.052 -0.100 -0.163 -0.140 -0.274 -0.297	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.52 0.36 0.59 0.31 0.13 0.23 0.31 0.13 0.24 0.17 0.30		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0 13.6 11.4 8.9 8.9 8.9 8.9 9 28.5 35.4	OK OK OK OK OK SURCHARGED OK OK OK	Exceeded	
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3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 EXCP17 KO-03 CP21 CP22 CP12 CP12 CP13 BDU2 KO-05 CP06	<pre>15 Summer 15 Summer 15 Summer 30 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.919         31.857           31.914         31.611           31.31.611         31.301           31.957         31.877           31.522         31.877           31.461         31.292           31.929         31.092           30.792         34.144           33.232         34.144	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.087 -0.087 -0.130 -0.130 -0.132 -0.128 -0.179 -0.100 0.052 -0.100 -0.163 -0.140 -0.274 -0.242 -0.166 -0.159	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.52 0.37 0.13 0.38 0.09 0.31 0.13 0.24 0.17 0.30 0.16 0.09 0.15		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0 13.6 11.4 8.9 8.9 8.9 28.5 35.4 20.6 20.6	OK OK OK OK OK SURCHARGED OK OK OK FLOOD RISK* FLOOD RISK* OK	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001 8.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2 KO-05 CP06 CP24	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 100/15 Summer	Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.91'         31.85'           31.942         31.61'           31.31'         31.30'           31.95'         31.87'           31.522         31.87'           31.42'         31.42'           31.92'         31.92' </td <td>Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.066 -0.130 -0.152 -0.128 -0.179 -0.100 0.052 -0.100 0.052 -0.100 -0.163 -0.140 -0.274 -0.242 -0.242 -0.242 -0.159 -0.125</td> <td>720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000</td> <td>Flow / Cap. 0.52 0.36 0.59 0.37 0.13 0.38 0.09 0.31 0.13 0.24 0.17 0.30 0.16 0.09 0.15 0.19</td> <td></td> <td>Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0 13.6 11.4 8.9 8.9 8.9 28.5 35.4 20.6 20.6 20.6 20.7 24.2</td> <td>OK OK OK OK OK SURCHARGED OK OK OK FLOOD RISK* FLOOD RISK* OK</td> <td>Exceeded</td> <td></td>	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.066 -0.130 -0.152 -0.128 -0.179 -0.100 0.052 -0.100 0.052 -0.100 -0.163 -0.140 -0.274 -0.242 -0.242 -0.242 -0.159 -0.125	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000	Flow / Cap. 0.52 0.36 0.59 0.37 0.13 0.38 0.09 0.31 0.13 0.24 0.17 0.30 0.16 0.09 0.15 0.19		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0 13.6 11.4 8.9 8.9 8.9 28.5 35.4 20.6 20.6 20.6 20.7 24.2	OK OK OK OK OK SURCHARGED OK OK OK FLOOD RISK* FLOOD RISK* OK	Exceeded	
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001 8.001 8.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2 KO-05 CP06 CP24 BDU1	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration Return Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 100/15 Summer	<pre>Profile(s) (s) (mins) 15, s) (years) Change (%)  First (Y) Flood  100/15 Summer</pre>	30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.919         31.815           31.942         31.612           31.301         31.957           31.877         31.552           31.877         31.462           31.092         31.092           31.922         31.877           31.463         32.232           31.292         31.092           32.342         31.792           34.144         32.323           32.333         31.744	Sur , 480, 600, Surcharged Depth (m) -0.073 -0.087 -0.087 -0.130 -0.152 -0.128 -0.179 -0.100 0.052 -0.100 0.052 -0.100 -0.163 -0.140 -0.274 -0.297 -0.242 -0.159 -0.125 -0.241	720, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000	Flow / Cap. 0.52 0.36 0.59 0.37 0.13 0.38 0.09 0.31 0.13 0.24 0.17 0.30 0.16 0.09 0.15 0.09 0.15 0.19 0.40		Flow (1/s) 7.1 7.1 19.2 26.0 4.1 6.9 7.0 13.6 11.4 8.9 8.9 8.9 9 28.5 35.4 20.6 20.6 20.6 20.6 20.7	OK OK OK OK OK SURCHARGED OK OK OK FLOOD RISK* FLOOD RISK* FLOOD RISK	Exceeded	

acobs Engineer	ing Limit	ed												Page	<u>۶</u>
					A12 Ch	nelmsfor	d to A	20wid	ening						
					Sectio	on 1									
					Propos	sed Netw	ork S1-	-OU7A							Micco
Date 15/12/2021	10.04				-	ned by D								-	Micro
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:	2 year Ret	urn Per	iod Summa	ry of Critic	cal Results	s by Max	imum Le		Rank 1) Surcharged		copose	d Netwo	Pipe	<u>1-0U7</u>	<u>7</u>
	US/MH		Return Clima		First (Y)	First (Z)			Depth		-	Overflow			Level
PN	Name	Storm	Period Chan	ge Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(1/s)	Status	Exceeded
9.002	CP01	15 Summer	2 +2	0% 100/15 Summer				32.505	-0.149	0.000	0.25		20.9	OK	
9.003	CP16	15 Summer	2 +2	0% 100/15 Summer	100/15 Summer			32.137	-0.102	0.000	0.57		29.7	OK	2
9.004		15 Summer	2 +2					31.900	-0.045	0.000	0.98		35.9	OK	
9.005	24	15 Summer	2 +2					31.724	-0.074	0.000	0.78		36.0	OK	
	EXCP SW IC10	15 Summer		0% 100/15 Summer				31.266	-0.133	0.000	0.58		67.3	OK	
8.005	CP07	15 Summer	2 +2					31.040	-0.147	0.000	0.67		70.2	OK	
8.006		15 Summer	2 +2					30.900	-0.236	0.000	0.29		70.6	OK	
10.000		15 Summer	2 +2					31.635	-0.219	0.000	0.01		0.4	OK	
8.007 11.000	CP09 CPDN05	15 Summer 15 Summer	2 +2 2 +2	0% 0%				30.443 31.038	-0.250 -0.220	0.000	0.24 0.00		70.9 0.3	OK OK	
8.008	CPDN05 CP10	15 Summer		0%				29.842	-0.220	0.000	0.00		70.9	OK	
12.000		15 Summer		0%				30.368	-0.233	0.000	0.23		0.3	OK	
8.009		15 Summer	2 +2					29.261	-0.232	0.000	0.30		70.5	OK	
		15 Summer		0%				31.184	-0.172	0.000	0.12		10.3	OK	
13.000			2 +2					28.902	-0.241	0.000	0.28		113.1	OK	
13.000 3.006	CP12	15 Summer												OK	
		15 Summer 15 Summer	2 +2					29.453	-0.176	0.000	0.11		10.2	UN	
3.006	CPDN02		2 +2					29.453 28.183	-0.176 -0.199	0.000 0.000	0.11 0.03		10.2 2.5	OK	
3.006 14.000 15.000 3.007	CPDN02 CPDN08 CP13	15 Summer 15 Summer 15 Summer	2 +2 2 +2 2 +2	0% 0% 0% 100/15 Summer				28.183 26.388			0.03 0.34		2.5 123.4		
3.006 14.000 15.000 3.007 16.000	CPDN02 CPDN08 CP13 CPDN03	<pre>15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 +2 2 +2 2 +2 2 +2 2 +2	0% 0% 0% 100/15 Summer 0%				28.183 26.388 26.956	-0.199 -0.224 -0.153	0.000 0.000 0.000	0.03 0.34 0.22		2.5 123.4 19.0	OK OK	
3.006 14.000 15.000 3.007 16.000 3.008	CPDN02 CPDN08 CP13 CPDN03 CP14	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2	0% 0% 0% 100/15 Summer 0% 0% 100/15 Summer				28.183 26.388 26.956 23.865	-0.199 -0.224 -0.153 -0.259	0.000 0.000 0.000 0.000	0.03 0.34 0.22 0.37		2.5 123.4 19.0 138.2	OK OK OK	
3.006 14.000 15.000 3.007 16.000 3.008 17.000	CPDN02 CPDN08 CP13 CPDN03 CP14 CPDN03	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2	0% 0% 100/15 Summer 0% 100/15 Summer 0% 100/15 Summer				28.183 26.388 26.956 23.865 24.501	-0.199 -0.224 -0.153 -0.259 -0.130	0.000 0.000 0.000 0.000 0.000	0.03 0.34 0.22 0.37 0.37		2.5 123.4 19.0 138.2 20.3	OK OK OK OK	
3.006 14.000 15.000 3.007 16.000 3.008 17.000 3.009	CPDN02 CPDN08 CP13 CPDN03 CP14 CPDN03 CP15	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2	0% 0% 100/15 Summer 0% 100/15 Summer 0% 100/15 Summer 0% 100/15 Summer				28.183 26.388 26.956 23.865 24.501 22.956	-0.199 -0.224 -0.153 -0.259 -0.130 -0.172	0.000 0.000 0.000 0.000 0.000 0.000	0.03 0.34 0.22 0.37 0.37 0.70		2.5 123.4 19.0 138.2 20.3 139.6	OK OK OK OK	
3.006 14.000 15.000 3.007 16.000 3.008 17.000	CPDN02 CPDN08 CP13 CPDN03 CP14 CPDN03 CP15	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2 2 +2	0% 0% 100/15 Summer 0% 100/15 Summer 0% 100/15 Summer				28.183 26.388 26.956 23.865 24.501	-0.199 -0.224 -0.153 -0.259 -0.130	0.000 0.000 0.000 0.000 0.000	0.03 0.34 0.22 0.37 0.37		2.5 123.4 19.0 138.2 20.3	OK OK OK OK	

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PN	US/MH Name	Storm	Return Period	Climate	F Duration( Return Period(s Climate C	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%)	atus 30, 60, 120	0, 180, 240, 360 Water	OFF Sun , 480, 600, Surcharged	nmer and W 720, 960, 2, 5 20, 2	Winter , 1440 5, 100 20, 20	Overflow (1/s)	-	Status	Level Exceeded	
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<b>PN</b> 3.000 3.001	<b>Name</b> KO-04	Storm 15 Summer 15 Summer	Period 5	Climate Change +20%	F Duration ( Return Period(s Climate C <b>First (X)</b>	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y)	atus 30, 60, 120 First (Z)	0, 180, 240, 360 Water Overflow Level	OFF Sun , 480, 600, Surcharged Depth (m) -0.055	<pre>mmer and W 720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000</pre>	Winter , 1440 5, 100 20, 20 Flow / Cap. 0.72		Flow	<b>Status</b> OK OK	Exceeded	
3.000 3.001 4.000	Name KO-04 CP03 KO-02	15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5	<b>Climate</b> <b>Change</b> +20% +20% +20%	F Duration ( Return Period (s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360 Water Overflow Level Act. (m) 31.937 31.87( 31.963	OFF Sun , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045	<pre>umer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 Flow / Cap. 0.72 0.50 0.82		Flow (1/s) 9.9 9.8 26.6	OK OK	Exceeded 3	
3.000 3.001 4.000 3.002	Name KO-04 CP03 KO-02 CP04	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 5 5 5 5	Climate Change +20% +20% +20% +20%	F Duration ( Return Period (s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360 Water Overflow Level Act. (m) 31.93 31.87( 31.963 31.648	OFF Sun , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094	<pre>mer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.72 0.50 0.82 0.51		Flow (1/s) 9.9 9.8 26.6 36.2	OK OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000	Name KO-04 CP03 KO-02 CP04 Tank	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20%	F Duration ( Return Period (s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360         Water         Overflow       Level         Act.       (m)         31.937         31.870         31.644         31.358	OFF Sun , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.094	<pre>mer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27		Flow (1/s) 9.9 9.8 26.6 36.2 8.4	OK OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000	Name KO-04 CP03 KO-02 CP04 Tank CP19	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20%	F Duration ( Return Period (s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	Water Overflow Level Act. (m) 31.93 31.87( 31.963 31.644 31.358 31.977	OFF Sun , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108	<pre>mer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6	OK OK OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20	<pre>15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20%	F Duration ( Return Period (S Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	Water         Water         Overflow       Level         Act.       (m)         31.937       31.87(         31.945       31.963         31.356       31.977         31.937       31.876         31.937       31.887         31.937       31.881	OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.097 -0.097 -0.108 -0.172	<pre>mmer and V 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> <b>Cap.</b> 0.72 0.50 0.82 0.51 0.27 0.53 0.13		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7	0K 0K 0K 0K 0K 0K	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	D, 180, 240, 360         Water         Overflow       Level         Act.       (m)         31.937         31.644         31.977         31.973         31.973         31.643         31.973         31.973         31.974         31.975 <t< td=""><td>OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.094 -0.097 -0.108 -0.172 -0.049</td><td><pre>amer and v 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre></td><td>Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42</td><td></td><td>Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7</td><td>OK OK OK OK</td><td>Exceeded 3</td><td></td></t<>	OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.094 -0.097 -0.108 -0.172 -0.049	<pre>amer and v 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7	OK OK OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17	<pre>15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	F Duration ( Return Period (S Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360         Water         Overflow       Level         Act.       (m)         31.937         31.870         31.963         31.356         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.568	OFF Sum , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.049 0.098	<pre>mer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7	OK OK OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03	<pre>15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360         Water         Overflow       Level         Act.       (m)         31.937         31.810         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.937         31.936         31.937         31.861         31.861         31.861         31.861         31.861         31.861         31.861	OFF Sum , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.048 -0.172 -0.098 -0.098 -0.090	mer and V 720, 960, 20, 2 20, 2 <b>Flooded</b> Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.34		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4	OK OK OK OK OK OK SURCHARGED	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000	Name KO-04 CP03 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21	<pre>15 Summer 15 Summer 15 Summer 30 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360         Water         Overflow       Level         Act.       (m)         31.937         31.870         31.963         31.356         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.602         31.568	OFF Sum , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.049 0.098 -0.090 0.098 -0.090 -0.151	<pre>mer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m<sup>3</sup>) 0.000</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> <b>Cap</b> . 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.42 0.13 0.42 0.34 0.23		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4	OK OK OK OK OK SURCHARGED OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002	Name KO-04 CP03 CP04 Tank CP19 CP20 CP20 CP02 EXCP17 KO-03 CP21 CP22	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	Water         Water         Overflow       Level         Act.       (m)         31.937       31.870         31.943       31.644         31.943       31.644         31.943       31.644         31.945       31.977         31.883       31.660         31.566       31.881         31.475       31.847	OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.094 -0.097 -0.108 -0.172 -0.049 0.098 -0.090 0.098 -0.090 -0.151 -0.123	mer and V 720, 960, 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Winter , 1440 5, 100 20, 20 <b>Flow /</b> <b>Cap</b> . 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.34 0.23 0.42		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3	OK OK OK OK OK SURCHARGED OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.937         31.87(           31.963         31.648           31.355         31.977           31.883         31.602           31.566         31.475           31.475         31.475	OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.049 0.098 -0.172 -0.099 -0.151 -0.23 -0.261	<pre>mmer and v 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.0</pre>	Winter , 1440 5, 100 20, 20 Flow / Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.42 0.13 0.42 0.23 0.42 0.20		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3 12.4	OK OK OK OK OK SURCHARGED OK OK	Exceeded 3	
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 EXCP17 KO-03 CP21 CP22 CP12 CP13	<ul> <li>15 Summer</li> </ul>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	0, 180, 240, 360         Water         Overflow       Level         Act.       (m)         31.937         31.870         31.937         31.646         31.356         31.603         31.666         31.881         31.603         31.861         31.881         31.881         31.81         31.81         31.803         31.81         31.81         31.300         31.105	OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.049 0.098 -0.172 -0.049 0.098 -0.151 -0.123 -0.261 -0.289	<pre>mer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.00</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.34 0.23 0.42 0.20		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3 12.4 35.2 44.7	OK OK OK OK OK SURCHARGED SURCHARGED OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP13 BDU2	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>30 Summer</li> <li>15 Summer</li> </ul>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	D, 180, 240, 360 Water Overflow Level Act. (m) 31.937 31.870 31.648 31.355 31.648 31.355 31.602 31.568 31.883 31.475 31.305 31.105 31.2	OFF Sum , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.097 -0.108 -0.172 0.098 -0.090 -0.151 -0.123 -0.261 -0.289 -0.228	mer and V 720, 960, 2, 5 20, 2 <b>Flooded</b> Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.34 0.23 0.42 0.20		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3 12.4 35.2 44.7 28.6	OK OK OK OK OK SURCHARGED OK OK OK OK	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP13 BDU2 KO-05	<pre>15 Summer 15 Summer 15 Summer 30 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	Water         Water         Overflow       Level         Act.       (m)         31.937       31.870         31.937       31.870         31.937       31.863         31.937       31.863         31.937       31.863         31.937       31.863         31.566       31.861         31.565       31.881         31.477       31.303         31.105       30.801         34.158       34.158	OFF Sum , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.099 0.098 -0.090 -0.151 -0.289 -0.228 -0.154	mer and V 720, 960, 20, 2 20, 2 <b>Flooded</b> Volume (m <sup>3</sup> ) 0.000	Winter , 1440 5, 100 20, 20 <b>Flow /</b> <b>Cap</b> . 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.34 0.23 0.42 0.20		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3 12.4 35.2 44.7 28.6	OK OK OK OK OK SURCHARGED OK OK OK FLOOD RISK*	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 CP20 CP22 EXCP17 KO-03 CP21 CP22 CP12 CP12 CP13 BDU2 KO-05 CP06	<ul> <li>15 Summer</li> </ul>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	F Duration ( Return Period (s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood	atus 30, 60, 120 First (Z)	Water         Water         Overflow       Level         Act.       (m)         31.937       31.870         31.943       31.644         31.945       31.945         31.945       31.947         31.956       31.977         31.881       31.642         31.956       31.956         31.957       31.881         31.956       31.956         31.956       31.956         31.951       31.475         33.251       33.251	OFF Sum , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.049 0.098 -0.172 -0.049 0.097 -0.108 -0.172 -0.28 -0.228 -0.228 -0.28 -0.28	<pre>mer and 0 720, 960, 2, 5 20, 2 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9 9</pre>	Winter , 1440 5, 100 20, 20 <b>Flow /</b> Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.42 0.20 0.12 0.13 0.42 0.21 0.26		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3 12.4 35.2 44.7 28.6 28.6	OK OK OK OK OK SURCHARGED OK OK OK OK FLOOD RISK*	Exceeded 3	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001 8.002	Name KO-04 CP03 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2 KO-05 CP06 CP24	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	F Duration ( Return Period (S Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer	DTS Sta Profile(s) (s) (mins) 15, s) (years) Change (%) First (Y) Flood 100/15 Summer	atus 30, 60, 120 First (Z)	Water           Overflow         Level           Act.         (m)           31.937         31.877           31.963         31.663           31.951         31.963           31.963         31.663           31.963         31.663           31.963         31.663           31.963         31.963           31.975         31.883           31.975         31.863           31.975         31.303           31.105         30.801           34.155         33.251           32.346         32.346	OFF Sur , 480, 600, Surcharged Depth (m) -0.055 -0.074 -0.045 -0.094 -0.097 -0.108 -0.172 -0.049 0.098 -0.172 -0.049 0.098 -0.172 -0.123 -0.289 -0.228 -0.154 -0.147 -0.144 -0.147 -0.144 -0.147	<pre>mmer and 0 720, 960, 2, 5 20, 2 Flooded Volume (m³) 0.000 0.0</pre>	Winter , 1440 5, 100 20, 20 Flow / Cap. 0.72 0.50 0.82 0.51 0.27 0.53 0.13 0.42 0.13 0.42 0.13 0.42 0.20 0.12 0.13 0.21 0.26 0.56		Flow (1/s) 9.9 9.8 26.6 36.2 8.4 9.6 9.7 18.7 11.4 12.4 12.3 12.4 12.3 12.4 43.5 28.6 28.6 28.7 33.5 28.8	OK OK OK OK OK SURCHARGED OK OK OK FLOOD RISK* FLOOD RISK	Exceeded 3	

Jacobs Engineering Limited		Page 7
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU7A	Micro
Date 15/12/2021 10:04	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU7A DF3.MDX	Checked by AM	Diamaye
Innovyze	Network 2019.1	

### 5 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Proposed Network S1-OU7A

	US/MH		Poturn	Climate	First (X)	First (Y)	First (Z)	Overflow	Water Level	Surcharged Depth		Flow /	Overflow	Pipe Flow		Level
PN	Name	Storm		Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m <sup>3</sup> )	Cap.	(1/s)	(1/s)	Status	Exceeded
0 000	2201	15 0	-		100/15 0				20 501	0 1 2 2	0 000	0.05				
9.002 9.003		15 Summer 15 Summer	5	+20% +20%	100/15 Summer 100/15 Summer	100/15 0			32.521	-0.133	0.000	0.35		28.9	OK OK	2
9.003		15 Summer 15 Summer	э 5	+20%	5/15 Summer	100/15 Summer			32.227 32.052	-0.012 0.107	0.000	1.33		40.0	SURCHARGED	2
9.004		15 Summer	5	+20%					31.794	-0.004	0.000	1.00		46.1	OK	
	EXCP SW IC10	15 Summer	5	+20%	100/15 Summer				31.301	-0.098	0.000	0.78		89.6	OK	
8.004		15 Summer	5	+20%					31.093	-0.098	0.000	0.78		93.4	OK	
8.005		15 Summer	5	+20%	100/15 Summer				30.924	-0.212	0.000	0.39		94.0	OK	
10.000		15 Summer	5	+20%					31.638	-0.212	0.000	0.01		0.6	OK	
8.007		15 Summer	5	+20%					30.464	-0.210	0.000	0.01		94.5	OK	
11.000		15 Summer	5	+20%					31.039	-0.219	0.000	0.01		0.5	OK	
8.008		15 Summer	5	+20%					29.862	-0.233	0.000	0.31		94.5	OK	
12.000		15 Summer	5	+20%					30.370	-0.220	0.000	0.00		0.4	OK	
8.009		15 Summer	5	+20%					29.285	-0.208	0.000	0.41		94.1	OK	
13.000		15 Summer	5	+20%					31.194	-0.162	0.000	0.17		14.3	OK	
3.006		15 Summer	5	+20%					28.924	-0.219	0.000	0.36		148.9	OK	
14.000		15 Summer	5	+20%					29.461	-0.168	0.000	0.15		14.2	OK	
15.000		15 Summer	5	+20%					28.187	-0.195	0.000	0.04		3.5	OK	
3.007	CP13	15 Summer	5	+20%	100/15 Summer				26.413	-0.199	0.000	0.45		163.4	OK	
16.000	CPDN03	15 Summer	5	+20%					26.970	-0.139	0.000	0.31		26.4	OK	
3.008	CP14	15 Summer	5	+20%	100/15 Summer				23.900	-0.224	0.000	0.50		184.5	OK	
17.000	CPDN03	15 Summer	5	+20%	100/15 Summer				24.521	-0.110	0.000	0.52		28.2	OK	
3.009	CP15	15 Summer	5	+20%	100/15 Summer				23.107	-0.021	0.000	0.93		185.3	OK	
3.010	CP18	15 Summer	5	+20%	100/15 Summer				22.736	-0.188	0.000	0.73		176.8	OK	
3.011	Pond - OU7A	480 Winter	5	+20%	5/120 Summer				22.705	0.090	0.000	0.08		5.0	SURCHARGED	
3.012	CP23	600 Summer	5	+20%					22.249	-0.251	0.000	0.06		5.0	OK	

acobs Enginee:	ring L	imited													Pag	ge 8	
						A1	L2 Chelms	sford to	5 A12	Owidenin	ıg						
						Se	ection 1										
						Pr	coposed 1	Network	S1-0	U7A						Micro	
ate 15/12/2021	L 10:0	4				De	esigned b	by DG									
ile PROPOSED (	CASE D	RAINAGE	MODEL	S1 OU	7A DF3.MDX	Ch	necked by	у АМ								Drain	Idye
nnovyze						Ne	etwork 20	019.1									
<u>1</u>	.00 ye	ar Retur	n Per	iod Su	mmary of C	ritical Re	esults by	y Maximu	um Le	vel (Ran	ık 1) 1	for Pr	coposed	Netv	vork S1-0	<u>U7A</u>	
							Simulatio	n Criteria									
		1			Factor 1.000		oss Coeff (	Global) 0.		MADD Fa			torage 0				
				t Start ) art Level		Foul Sewage dditional Flow	e per hectar / - % of Tot			ow per Pers			ecient 0. r/day) 0.				
Number of Travit "		.h.a. 0								-	-		-		0 Number	Dool mine C	ontw-1-
Number of Input H	yurograp	nis o Numbel	T OT OUT	ine conti	LOIS Z NUMBER	or orrine con	ICTOIS U NU	mber or Sto	orage S	cructures 2	. Number	OT LIW6	/Ared D1a	y t ailis	, wumper of i	hear rime Co	UNLIOIS
					Rainfall Model	-	<u>ynthetic Rai</u>			4100 07000	Cir (Siimm	(or) 1 0	0.0				
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				Mar	gin for Flood	Pick Marping (	mm )			300.0	DVD Sta	tuc ON					
				Mai	-	Analysis Times		ond Increme	ent (Ex								
						DTS Sta	tus			OFF							
						DTS Sta	tus			OFF							
						rofile(s)		100 040	2.60	Summ	er and W						
				R		rofile(s) s) (mins) 15,		, 180, 240,	, 360,	Summ	20, 960,						
				R	Duration(	rofile(s) s) (mins) 15, ) (years)		, 180, 240,	, 360,	Summ	20, 960,	1440 , 100					
				R	Duration( eturn Period(s	rofile(s) s) (mins) 15, ) (years)				Summ 480, 600, 7	20, 960, 2, 5, 20, 2)	1440 , 100					
	US/MH		Return	R	Duration( eturn Period(s	rofile(s) s) (mins) 15, ) (years)		,		Summ	20, 960, 2, 5 20, 2 Flooded	1440 , 100 0, 20	Overflow	Pipe Flow		Level	
PN	US/MH Name	Storm	Return Period	Climate	Duration( eturn Period(s Climate C	rofile(s) s) (mins) 15, ) (years) hange (%)	30, 60, 120	,	Water	Summ 480, 600, 7 Surcharged	20, 960, 2, 5 20, 2 Flooded	1440 , 100 0, 20	Overflow (1/s)	-	Status	Level Exceeded	
				Climate Change	Duration( eturn Period(s Climate C First (X)	rofile(s) s) (mins) 15, ) (years) hange (%) <b>First (Y)</b>	30, 60, 120 First (Z)	Overflow Act.	Water Level	Summ 480, 600, 7 Surcharged Depth	20, 960, 2, 5 20, 2 Flooded Volume	1440 , 100 0, 20 Flow /		Flow			
3.000 3.001	<b>Name</b> KO-04 CP03	15 Summer 15 Summer	<b>Period</b> 100 100	Climate Change +20% +20%	Duration(. eturn Period(s Climate C: First (X) Surcharge 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3	Water Level (m) 32.488 32.377	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433	20, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05		Flow (1/s) 20.8 20.3	FLOOD RISK SURCHARGED	Exceeded	
3.000 3.001 4.000	Name KO-04 CP03 KO-02	15 Summer 15 Summer 15 Summer	<b>Period</b> 100 100 100	Climate Change +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	N Overflow Act. 3 3 3	Water Level (m) 32.488 32.377 32.561	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553	20, 960, 2, 5, 20, 20 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 2.202	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43		Flow (1/s) 20.8 20.3 46.2	FLOOD RISK SURCHARGED FLOOD		
3.000 3.001 4.000 3.002	Name KO-04 CP03 KO-02 CP04	<pre>15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 100 100 100 100	Climate Change +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000 0.202 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87		Flow (1/s) 20.8 20.3 46.2 61.9	FLOOD RISK SURCHARGED FLOOD SURCHARGED	Exceeded	
3.000 3.001 4.000	Name KO-04 CP03 KO-02 CP04 Tank	15 Summer 15 Summer 15 Summer	<b>Period</b> 100 100 100 100 100 100	Climate Change +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198	20, 960, 2, 5 20, 20 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 2.202 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35		Flow (1/s) 20.8 20.3 46.2 61.9 10.8	FLOOD RISK SURCHARGED FLOOD SURCHARGED SURCHARGED	Exceeded	
3.000 3.001 4.000 3.002 5.000	Name KO-04 CP03 KO-02 CP04 Tank CP19	<pre>15 Summer 15 Summer 15 Summer 15 Summer 120 Summer</pre>	<b>Period</b> 100 100 100 100 100 100 100	Climate Change +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act.	Water Level (m) 32.488 32.377 32.561 32.146	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046	20, 960, 2, 5 20, 20 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 2.202 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6	FLOOD RISK SURCHARGED FLOOD SURCHARGED	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20	<pre>15 Summer 15 Summer 15 Summer 15 Summer 120 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100	Climate Change +20% +20% +20% +20% +20% +20%	Duration ( eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043	20, 960, 2, 5 20, 20 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4	FLOOD RISK SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>120 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> </ul>	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131 32.098 32.007 31.932	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4	FLOOD RISK SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded	
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 CP02 EXCP17 KO-03	<pre>15 Summer 15 Summer 15 Summer 15 Summer 16 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131 32.067 31.932 31.932	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462 -0.053	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1	FLOOD RISK SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded	
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 CP20 EXCP17 KO-03 CP21	<pre>15 Summer 15 Summer 15 Summer 120 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.146 31.653 32.131 32.098 32.067 31.932 31.918 31.516	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462 -0.053 -0.110	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.51		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 26.9	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded	
3.000 3.001 4.000 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 CP02 EXCP17 KO-03 CP21 CP22	<pre>15 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131 32.098 32.098 32.067 31.932 31.918 31.516 31.516 31.377	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462 -0.053 -0.110 -0.055	20, 960, 2, 5 20, 20 Flooded Volume (m <sup>3</sup> ) 0.0000 0.00000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.35 1.12 0.29 0.95 0.13 0.74 0.51 0.92		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 26.9 27.1	FLOOD RISK SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004	Name KO-04 CP03 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12	<pre>15 Summer 15 Summer 15 Summer 120 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.098 32.007 31.932 31.918 31.516 31.377 31.157	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462 -0.053 -0.110 -0.055 -0.209	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.52 0.29 0.95		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 26.9 27.1 69.3	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP13	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>120 Summer</li> <li>15 Summer</li> </ul>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131 32.098 32.007 31.932 31.918 31.516 31.377 30.846	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.462 0.043 0.415 0.462 -0.053 -0.110 -0.055 -0.209 -0.244	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.51 0.95 0.40		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.6 41.9 11.4 27.1 26.9 27.1 69.3 97.2	FLOOD RISK SURCHARGED FLOOD SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>120 Summer</li> <li>15 Summer</li> </ul>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration (. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131 32.067 31.932 31.932 31.932 31.918 31.516 31.377 30.846 34.207	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.043 0.415 0.404 0.043 0.415 0.462 -0.053 -0.110 -0.055 -0.209 -0.244 -0.179	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.51 0.92 0.40 0.26 0.27		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 26.9 27.1 69.3 97.2 62.4	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK OK SK FLOOD RISK*	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.001 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP13 BDU2 KO-05	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>12 Summer</li> <li>15 Summer</li> </ul>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.131 32.087 31.918 31.918 31.918 31.516 31.377 31.157 30.846 34.207 33.289	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462 -0.053 -0.110 -0.055 -0.209 -0.224 -0.179 -0.116	20, 960, 2, 5 20, 21 Flooded Volume (m <sup>3</sup> ) 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.052 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.51 0.92 0.46		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 26.9 27.1 69.3 97.2 62.4 62.4	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK OK OK OK FLOOD RISK*	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001 8.002	Name KO-04 CP03 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP12 CP13 BDU2 KO-05 CP06	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>12 Summer</li> <li>15 Summer</li> </ul>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.371 32.561 32.146 31.653 32.146 31.653 32.131 32.098 32.067 31.932 31.918 31.516 31.377 31.516 31.377 31.517 30.846 34.207 33.289 32.705	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.416 0.043 0.446 0.043 0.446 0.043 0.446 0.043 0.446 0.053 -0.110 -0.055 -0.209 -0.244 -0.179 -0.116 0.212	20, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 2.202 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.51 0.92 0.40 0.26 0.25		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 26.9 27.1 69.3 97.2 62.4 62.4 61.5	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK OK OK SURCHARGED	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.001 7.002 3.004 3.004 3.005 8.000 8.001 8.002	Name KO-04 CP03 CP04 Tank CP19 CP20 CP02 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2 KO-05 CP06 CP24	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>120 Summer</li> <li>15 Summer</li> </ul>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.377 32.561 32.146 31.653 32.138 32.098 32.007 31.932 31.918 31.516 31.377 31.157 30.846 34.207 33.289 32.705 32.705	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.046 0.043 0.415 0.462 -0.053 -0.110 -0.055 -0.209 -0.244 -0.179 -0.116 0.212 0.651	20, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.52 0.92 0.95 0.13 0.74 0.55 1.21		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 69.3 97.2 62.4 62.4 62.4 61.5 72.2	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK FLOOD RISK* FLOOD RISK* SURCHARGED	Exceeded	
3.000 3.001 4.000 3.002 5.000 6.000 6.001 6.002 3.003 7.000 7.001 7.002 3.004 3.005 8.000 8.001 8.002 8.003 9.000	Name KO-04 CP03 KO-02 CP04 Tank CP19 CP20 CP20 EXCP17 KO-03 CP21 CP22 CP12 CP13 BDU2 KO-05 CP06 CP24 BDU1	<ul> <li>15 Summer</li> <li>15 Summer</li> <li>15 Summer</li> <li>12 Summer</li> <li>15 Summer</li> </ul>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration(. eturn Period(s Climate C First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer 2/15 Summer	rofile(s) s) (mins) 15, ) (years) hange (%) First (Y) Flood 100/15 Summer	30, 60, 120 First (Z) Overflow	Overflow Act. 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3 3	Water Level (m) 32.488 32.371 32.561 32.146 31.653 32.146 31.653 32.131 32.098 32.067 31.932 31.918 31.516 31.377 31.516 31.377 31.517 30.846 34.207 33.289 32.705	Summ 480, 600, 7 Surcharged Depth (m) 0.496 0.433 0.553 0.404 0.198 0.462 -0.053 -0.110 -0.055 -0.209 -0.244 -0.179 -0.116 0.212 0.651 -0.178	20, 960, 2, 5 20, 2 Flooded Volume (m <sup>3</sup> ) 0.000 2.202 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	1440 , 100 0, 20 Flow / Cap. 1.52 1.05 1.43 0.87 0.35 1.12 0.29 0.95 0.13 0.74 0.51 0.92 0.40 0.26 0.25		Flow (1/s) 20.8 20.3 46.2 61.9 10.8 20.6 22.4 41.9 11.4 27.1 69.3 97.2 62.4 62.4 62.4 61.5 72.2	FLOOD RISK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK OK OK OK OK SURCHARGED	Exceeded	

Jacobs Engineering Limited		Page 9
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU7A	Micro
Date 15/12/2021 10:04	Designed by DG	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU7A DF3.MDX	Checked by AM	Drainage
Innovyze	Network 2019.1	

# 100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Proposed Network S1-OU7A

	US/MH		Poturn	Climate	First (X)	First (Y)	First (Z)	Overflow		Surcharged Depth		Flow /	Overflow	Pipe Flow		Level
PN	Name	Storm		Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m <sup>3</sup> )	Cap.	(1/s)	(1/s)	Status	Exceeded
9.002	CP01	15 Winter	100	+20%	100/15 Summer				33.467	0.813	0.000	0.71		59.0	FLOOD RISK	
9.003	CP16	15 Summer	100	+20%	100/15 Summer	100/15 Summer			33.439	1.200	0.194	1.28		66.5	FLOOD	2
9.004	EXCP16	15 Summer	100	+20%	5/15 Summer				33.159	1.214	0.000	2.24		81.7	FLOOD RISK	
9.005	24	15 Summer	100	+20%	100/15 Summer				32.419	0.621	0.000	1.77		81.4	SURCHARGED	
8.004	EXCP SW IC10	15 Summer	100	+20%	100/15 Summer				31.898	0.499	0.000	1.57		180.6	SURCHARGED	
8.005	CP07	15 Summer	100	+20%	100/15 Summer				31.365	0.178	0.000	1.81		188.8	SURCHARGED	
8.006	CP08	15 Summer	100	+20%					31.015	-0.121	0.000	0.78		187.9	OK	
10.000	CPDN04	15 Summer	100	+20%					31.648	-0.206	0.000	0.02		1.2	OK	
8.007	CP09	15 Summer	100	+20%					30.540	-0.153	0.000	0.65		190.7	OK	
11.000	CPDN05	15 Summer	100	+20%					31.047	-0.211	0.000	0.01		1.0	OK	
8.008	CP10	15 Summer	100	+20%					29.938	-0.157	0.000	0.63		192.3	OK	
12.000	CPDN06	15 Summer	100	+20%					30.376	-0.214	0.000	0.01		0.9	OK	
8.009	CP11	15 Summer	100	+20%					29.382	-0.111	0.000	0.83		192.7	OK	
13.000	CPDN01	15 Summer	100	+20%					31.227	-0.129	0.000	0.37		31.3	OK	
3.006	CP12	15 Summer	100	+20%					29.013	-0.130	0.000	0.73		301.0	OK	
14.000	CPDN02	15 Summer	100	+20%					29.492	-0.137	0.000	0.32		31.0	OK	
15.000	CPDN08	15 Summer	100	+20%					28.203	-0.179	0.000	0.09		7.6	OK	
3.007	CP13	15 Summer	100	+20%	100/15 Summer				26.701	0.089	0.000	0.89		325.8	SURCHARGED	
16.000	CPDN03	15 Summer	100	+20%					27.021	-0.088	0.000	0.67		57.6	OK	
3.008	CP14	15 Summer	100	+20%	100/15 Summer				24.729	0.605	0.000	0.99		365.5	SURCHARGED	
17.000	CPDN03	15 Summer	100	+20%	100/15 Summer				24.903	0.272	0.000	1.11		60.9	SURCHARGED	
3.009	CP15	15 Summer	100	+20%	100/15 Summer				23.779	0.651	0.000	1.83		364.8	SURCHARGED	
3.010	CP18	480 Winter	100	+20%	100/15 Summer				23.171	0.247	0.000	0.26		62.6	SURCHARGED	
3.011	Pond - OU7A	600 Winter	100	+20%	5/120 Summer				23.167	0.552	0.000	0.08			SURCHARGED	
3.012	CP23	600 Winter	100	+20%					22.249	-0.251	0.000	0.06		5.0	OK	

Project Name	A12 Chelmsford to A120 widening scheme
Project Number	HE551497

File Number	HE551497-JAC-HDG-S1_J19-CA-D-0003								
Document Description	MICRODRA	INAGE MODELLING RESULTS FOR PRO	POSED CATCHMENT	r S1-OU10					
Purpose of Issue	S2 - SUITABLE FOR INFORMATION	J		Status Code	S2				
Current Revision		P01		-					
Calculation Number	0003	Index Page	1 - 5 1 C	Sheet Nos (incl. cover sheet)	16				

P01	FIRST ISSUE	LM	AM	AM	DT	07/06/22
Rev	Comments	Originated	Checked	Reviewed	Approved	Date

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### Summary

This calculation sheet documents the Microdrainage modelling results (1D analysis) for the proposed highway drainage catchment "Section 1 - Outfall 10 (S1-OU10)" for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events.

It should be noted that the Microdrainage modelling results have been summarised by "the maximum water level for critical storm duration" for all design events meaning that the discharge rates presented from the Microdrianage modelling results may vary slightly from the proposed discharge rates documented within Appendix C - Table C.1 of the surface water drainage design report (Document Ref. HE551497-JAC-HDG-S1\_J19-RP-D-0001).

Jacobs Engineering Limited		Page 1
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10	Micro
Date 15/12/2021	Designed by LM	Dcainago
File PROPOSED CASE DRAINAGE MODEL_S1_OU10_FREE OUTFA	Checked by AM	Drainage
Innovyze	Network 2020.1.3	
Free Flowing Outfal	ll Details for Proposed network S1-OU10	
Outfall Out Pipe Number Na	tfall C. Level I. Level Min D,L W ame (m) (m) I. Level (mm) (mm) (m)	
1.007 IC6	5 (R) 30.410 28.249 28.249 300 0	
Simulation Crit	teria for Proposed network S1-OU10	
Volumetric Runoff Coeff 1.000 Hot Start Level (mm) Areal Reduction Factor 1.000 Manhole Headloss Coeff (Global) Hot Start (mins) 0 Foul Sewage per hectare (l/s)	0.500 MADD Factor * 10m³/ha Storage 0.000 Run Time (mir	is) 120
Number of Input Hydrographs 0 Number of Online Controls 1 Number of Offline (	Controls 0 Number of Storage Structures 1 Number of Time/Area Diagrams 1 Number	of Real Time Controls 0
Synt	thetic Rainfall Details	
Rainfall Model Return Period (years) FEH Rainfall Version Site Location GB 574850 208550 5	FEH Data Type Catchment Cv (Winter) 0.840 100 Summer Storms Yes Storm Duration (mins) 60 2013 Winter Storms No TL 74850 08550 Cv (Summer) 1.000	
	©1982-2020 Innovyze	

Jacobs Engineering Limited		Page 2
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10	Micco
Date 15/12/2021	Designed by LM	- Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU10_FREE OUTFA	Checked by AM	Diamaye
Innovyze	Network 2020.1.3	
Online Cont:	rols for Proposed network S1-OU10	
Orifice Manhole:	: CP23, DS/PN: 1.007, Volume (m³): 7.8	
Diameter (m) 0.240 E	Discharge Coefficient 0.600 Invert Level (m) 28.295	
	©1982-2020 Innovyze	

cobs Engi	ineering	f Limited											Page	3
						A12	Chelmsf	ord to A120	widenin	g			[	
						Sect	ion 1							
								twork S1-OU	10					Micro
e 15/12,	/2021					Desi	gned by	LM						Drainage
e PROPO	SED CASE	DRAINAGE	MODEL_S1	_OU10_F	REE OUTFA		ked by .							Diamage
novyze						Netw	ork 202	0.1.3						
				:	Storage Str	uctures	for Pr	oposed netw	ork S1-	OU10				
				-			-							
					<u>Cellular S</u>	torage	Manhole	: TANK, DS/	PN: 15.	000				
								ion Coefficient			Porosity 0.95			
					cient Base (m/hr				afety Facto		_			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²
0.000 0.100		76.0 79.5		110.0 110.0	96.9 100.4	1.200 1.300							0.0	
0.200	110.0	83.0	0.800	110.0	103.9	1.320	110.0	122.0	2.000	0.0	125.2	2.600	0.0	125.
0.300 0.400		86.5 89.9			107.4 110.9	1.321 1.600								
0.500		93.4			114.4	1.700								

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						A12 (	Chelmsf	ord to	A120wi	dening						
						Sect	ion 1									
						Propo	osed Ne	twork	S1-0U10							licco
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	D CASE DRAINA	JE MODE.	L_SI_0	UIU_FREE	001FA		ked by A									
nnovyze						Netwo	ork 202	0.1.3								
	<u>l year Ret</u> i	ırn Per	iod Su	mmary of	Critica	l Result	ts by Ma	aximum	level	(Rank	1) fo	r Propo	sed net	work	S1-0U10	
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						Si	mulation C	riteria								
				Factor 1.00		e Headloss	Coeff (Glo	obal) 0.		1ADD Fact			age 0.000			
			ot Start tart Lev			Sewage per			000 000 Flow pe	r Person			ent 0.800			
		not S	cart Dev	(nun)	- AUUILIUN	at tion - 9	, or iocal	110W U.	000 riow be	. rerson	ber ng	X (T) Der/0	y) 0.000			
Number of Inpu	ut Hydrographs 0 Nu	mber of On	line Con	trols 1 Numb	per of Offl	ine Control	Ls 0 Numbe	er of Sto	orage Struct	ures 1	Number (	of Time/Ar	ea Diagram	s 1 Num	ber of Real	Time Controls
						Synthe	etic Rainfa	all Deta	<u>ils</u>							
				Rainfall					D1 (1km) 0.		F (1km)					
			FEF	Rainfall Ve Site Loc		74850 20855	50 TT. 74850		D2 (1km) 0. D3 (1km) 0.							
					(1km)	14030 20033			E (1km) 0.		(wincer)	1.000				
			Ma	rgin for Flo	od Risk War	rning (mm)			300		DVD Stat	ULS ON				
			110				2 5 600000	Thorom								
					Analysis		2.5 Second	d Increme	ent (Extende							
				Durati Return Perio	Analysis I Profile(s on(s) (mins	s Timestep DTS Status s) s) 15, 30,			ent (Extende	ed) Inert )FF Summer	tia Stat and Wi	us ON				
				Durati Return Perio	Analysis I Profile(s on(s) (mins d(s) (years	s Timestep DTS Status s) s) 15, 30,		.80, 240,	ent (Extende 0 360, 480,	ed) Inert DFF Summer 600, 720	tia Stat and Wi	us ON nter 1440 1				
	115 /MH	Betu		Durati Return Perio Climat	Analysis I Profile(s on(s) (mins d(s) (years e Change (%	<pre>s Timestep DTS Status s) s) 15, 30, s) %)</pre>	60, 120, 1	.80, 240, Water	ent (Extende 360, 480, Surcharged	ed) Iner DFF Summer 600, 720 <b>Flooded</b>	and Wi , 960,	nter 1440 20	Half Drain	-		Ioval
PN	US/MH Name St		rn Clima	Durati Return Perio Climat te First (X)	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1	.80, 240, Water	ent (Extende 0 360, 480,	ed) Iner DFF Summer 600, 720 <b>Flooded</b>	and Wi , 960, Flow /	us ON nter 1440 1	Half Drair Time (mins)	n Pipe Flow (1/s)	Status	Level Exceeded
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	Name St	orm Peri	rn Clima od Chang	Durati Return Perio Climat te First (X) ge Surcharge 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	.80, 240, Water Level (m)	Surcharged (m)	ed) Iner DFF Summer 600, 720 Flooded Volume (m <sup>3</sup> )	and Wi , 960, Flow / Cap.	nter 1440 1 20 Overflow	Time	Flow (1/s)	OF OF	Exceeded
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1.000 1.001 2.000 2.001 1.002 CI	Name         Student           CP6027         15         S           CP6032         15         S           CP01         15         S           CP02         15         S           CP02         15         S           CP03         15         S           CP03         15         S           CP03         15         S           CP03         15         S	nmer ummer ummer ummer ummer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266	ed) Iner Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.11 0.03</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5	OF OF OF OF	Exceeded
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1.000 1.001 2.000 2.001 1.002 Ct 3.000 4.000 3.001 1.003	Name         State           CP6027         15         5           CP6032         15         5           CP01         15         5           CP02         15         5           CP03         15         5           CP04         15         5           CP05         15         5           CP06         15         5           CP06         15         5           CP06         15         5           CP06         15         5           CP07         15         5	orm Peri Immer Immer Immer Immer Immer Immer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.705 29.361	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207 -0.239	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3	40 40 40 40 40 40 40 40 40 40	Exceeded
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001	Name         St.           CP6027         15         S.           CP6032         15         S.           CP01         15         S.           CP03         15         S.           CP03         15         S.           CP03         15         S.           CP03         15         S.           CP04         15         S.           CP05         15         S.           CP04         15         S.	nmmer ammer ammer ammer ammer ammer ammer ammer ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati- Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.705	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.8 5.6	40 40 40 40 40 40 40 40 40 40	Exceeded
1.000 1.001 2.000 2.001 1.002 C1 3.000 4.000 3.001 1.003 1.004	Name         State           CP6027         15         S           CP6032         15         S           CP01         15         S           CP02         15         S           CP03         15         S           CP03         15         S           CP03         15         S           CP03         15         S           CP04         15         S           CP05         15         S           CP04         15         S	norm Peri Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.934 29.705 29.361 29.272	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207 -0.239 -0.236	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.8 5.6	OF OF OF OF OF OF OF FLOOD RISK*	Exceeded
1.000 1.001 2.000 2.001 1.002 C1 3.000 4.000 3.001 1.003 1.004 5.000	Name         State           CP6027         15         S           CP6027         15         S           CP0         15         S           CP0         CP0         15         S           CP0         CP0         15         S           CP0         SW         IC7B         R         15         S           CP00         15         S         CP08         15         S           CP08         IC         S         CP08         15         S           CP08         IC         S         CP08         15         S	norm Peri Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.934 29.705 29.361 29.272 31.319	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207 -0.239 -0.236 -0.236	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat f and Wi , 960,  Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.36</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 1.3 5.8 5.6 6.7	OF OF OF OF OF OF OF FLOOD RISK*	Exceeded
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001	Name         State           CP6027         15         S           CP6027         15         S           CP0         15         S           CP0         CP0         15         S           CP0         CP0         15         S           CP0         SW         IC7B         R         S         S           CP0         SW         IC7B         R         S         S           CP00         IS         S         S         S         S           CP00         IS         S         S         C         S         S           CP00         IS         S         S         C         S         S           CP00         IS         S         S         C         S         S           CH00         IS         S         S         C         S         S	Derni Peri Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.705 29.361 29.272 31.319 30.635	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207 -0.239 -0.236 -0.236 -0.236 -0.236 -0.236	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.36 0.09</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.8 5.6 6.7 6.7	OF OF OF OF OF OF OF FLOOD RISK*	Exceeded
1.000 1.001 2.000 2.001 1.002 C1 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.001 6.001	Name         State           CP6027         15         S           CP6032         15         S           CP02         15         S           CP02         15         S           CP03         15         S           CP03         15         S           CP03         15         S           CP04         15         S           CP05         15         S           CP04         15         S           CP14         15         S           CP14         15         S	norm Peri Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati. Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.934 29.934 29.361 29.272 31.319 30.635 29.959 29.838 29.446	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.239 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.238 -0.236 -0.236 -0.236 -0.238 -0.238 -0.212 -0.212 -0.212 -0.225 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.226 -0.227 -0.227 -0.122 -0.127 -0.122 -0.207 -0.122 -0.207 -0.207 -0.122 -0.207 -0.122 -0.207 -0	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.36 0.02</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.8 5.6 6.7 6.7 1.5 1.5	OF OF OF OF OF OF OF FLOOD RISK* OF OF OF OF OF OF OF OF OF OF OF OF	Exceeded
1.000 1.001 2.000 2.001 1.002 CI 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002 1.005	Name         State           CP6027         15         S           CP6023         15         S           CP0         15         S           CP1         15         S	Derri Ammer ammer ammer ammer ammer ammer ammer ammer ammer ammer ammer ammer ammer ammer ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 31.588 31.283 29.684 30.499 29.934 29.934 29.9361 29.272 31.319 30.635 29.959 29.838 29.446 29.186	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207 -0.239 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.119 -0.118 -0.202 -0.230	ed) Inert Summer 600, 720 Flooded Volume (m <sup>3</sup> ) 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.01 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.36 0.09 0.10 0.02 0.09 0.12</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.8 5.6 6.7 6.7 1.3 1.5 1.5 1.5 1.5	OF OF OF OF OF OF OF FLOOD RISK* OF OF OF OF OF OF OF OF OF OF OF OF OF	Exceeded
1.000 1.001 2.000 2.001 1.002 CI 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.001 6.002 1.005 7.000	Name         State           CP6027         15         S           CP6027         15         S           CP0         S         CP0         15         S           CP0         S         CP0         15         S           CP0         S         CP0         15         S           CP0         S         CP03         15         S           CP0         S         CP03         15         S           CP0         S         CP03         15         S           CP04         15         S         CP04         15         S           CP04         15         S         CP04         15         S           CP04         15         S         CP04         15         S           CP04         15         S         CP14         15         S           CP14         15         S         CP14         15         S           CP14         15         S         CP14         15         S           CP13         15         S         CP14         15         S           CP14         15         S         CP14         15	Derri Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati- Return Perio Climat te First (X) je Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	<pre>80, 240, Water Level (m) 30.903 30.043 31.588 31.283 29.684 30.499 29.934 29.934 29.934 29.9361 29.272 31.319 30.635 29.959 29.838 29.446 29.186 31.017</pre>	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.0149 -0.122 -0.207 -0.239 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.230 -0.212 -0.212 -0.212 -0.212 -0.212 -0.119 -0.119 -0.118 -0.212 -0.253	ed) Inert Summer 600, 720 Flooded Volume (m³) 0.000	<pre>tia Stat f and Wi , 960,  Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.36 0.09 0.10 0.02 0.12 0.03</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.6 6.7 6.7 1.3 1.5 1.5 1.5 1.5 1.2 2.4	OF OF OF OF OF OF OF FLOOD RISK* OF OF OF OF OF OF OF OF OF OF OF OF OF	Exceeded
1.000 1.001 2.000 2.001 1.002 CI 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002 1.005	Name         State           CP6027         15         S           CP6023         15         S           CP0         15         S           CP1         15         S	Derri Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer Ammer	rn Clima od Chang 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2 1 +2	Durati Return Perio Climat te First (X) ge Surcharge 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Analysis Profile(s on(s) (mins d(s) (years e Change (% First (Y)	<pre>s Timestep DTS Status s) s) 15, 30, s) k) First (Z)</pre>	60, 120, 1 Overflow	Water Level (m) 30.903 31.588 31.283 29.684 30.499 29.934 29.934 29.9361 29.272 31.319 30.635 29.959 29.838 29.446 29.186	Surcharged Depth (m) -0.212 -0.277 -0.112 -0.117 -0.266 -0.149 -0.122 -0.207 -0.239 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.236 -0.119 -0.118 -0.202 -0.230	ed) Inert Summer 600, 720 Flooded Volume (m³) 0.000	<pre>tia Stat f and Wi , 960, Flow / Cap. 0.01 0.02 0.14 0.01 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.36 0.09 0.10 0.02 0.09 0.12</pre>	nter 1440 1 20 Overflow (1/s)	Time	Flow (1/s) 1.4 1.4 2.2 3.2 4.5 0.0 1.3 1.3 5.8 5.6 6.7 6.7 1.3 1.5 1.5 1.5 1.5	OF OF OF OF OF OF OF FLOOD RISK* OF OF OF OF OF OF OF OF OF OF OF OF OF	Exceeded

cobs Enginee	ering	Limited	b													Page	5
							A12	Chelm	sford	to A1200	wideni	ng					
							Sec	tion 1									
									Jotuca	ck S1-OUI	1 0						
								•		.K 51-00.	LU						Micro
te 15/12/202	21						Des	igned ]	oy LM								
le PROPOSED	CASE	DRAINAG	GE MOD	EL S1	OU10 FRE	E OUTFA	Che	cked b	y AM								Drainago
novyze								work 2		. 3							
	<u>1 ye</u>	ar Retu	ırn Pe	riod S	ummary o	f Critic	cal Resu	lts by	Maxin	num Level	l (Ran	k 1) f	for Pro	posed ne	etwor	<u>k S1-OU10</u>	<u>)</u>
									Water	Surcharged	Flooded			Half Drain	Pipe		
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow		Depth	Volume	Flow /	Overflow	Time	Flow		Level
PN	Name	Storm		Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m <sup>3</sup> )	Cap.	(1/s)	(mins)	(1/s)	Status	Exceeded
				-	-							-					
1.006		15 Summer	1	+20%					28.924	-0.225	0.000	0.13			15.2	OK	
		15 Summer	1	+20%					30.828	-0.187	0.000	0.07			3.2	OK	
9.000		15 Summer	1	+20%					32.672	-0.202	0.000	0.18				FLOOD RISK*	
9.001		15 Summer	1	+20%					31.403	-0.088	0.000	0.68			27.4	OK	
		15 Summer	1	+20%					30.533	-0.185	0.000	0.51			73.3	OK	
8.002		15 Summer	1	+20%					30.410	-0.171	0.000	0.57			72.9	OK	
10.000		15 Summer	1	+20%					31.767	-0.228	0.000	0.10				FLOOD RISK*	
10.001		15 Summer	1	+20%					31.132	-0.067	0.000	0.58			10.1	OK	
8.003		15 Summer	1	+20%					30.309	-0.164	0.000	0.59			82.3	OK	
8.004		15 Summer	1	+20%					30.193	-0.155	0.000	0.64			82.6	OK	
11.000		15 Summer	1	+20%					31.560	-0.182	0.000	0.28				FLOOD RISK*	
11.001		15 Summer	1	+20%					30.837	-0.100	0.000	0.58			22.1	OK	
8.005		15 Summer	1	+20%					30.037	-0.150	0.000	0.66			102.8	OK	
12.000		15 Summer	1	+20%					31.228	-0.219	0.000	0.12				FLOOD RISK*	
12.001		15 Summer	1	+20%					30.574	-0.067	0.000	0.58 0.42			9.7 111.7	OK	
8.006 13.000		15 Summer 15 Summer	1	+20% +20%					29.694 30.970	-0.204	0.000	0.42				OK FLOOD RISK*	
13.000		15 Summer 15 Summer	1	+208					29.978	-0.218	0.000	0.13			12.7	FLOOD RISK^	
14.000		15 Summer	1	+20%					30.358	-0.227	0.000	0.84				FLOOD RISK*	
14.000		15 Summer 15 Summer	1	+20%					29.333	-0.227	0.000	0.10			13.3	FLOOD RISK^	
14.001		15 Summer	1	+20%					29.333	-0.119	0.000	0.81			13.2	OK	
14.002		15 Summer	1	+20%					28.701	-0.119	0.000	0.34			29.5	OK	
8.007		15 Summer	1		1/15 Summer				28.898	0.078	0.000	0.45			29.J 69.4		
16.000		15 Summer	1	+20%	1/10 Summer				20.090	-0.248	0.000	0.03				FLOOD RISK*	
		15 Summer	1	+20%					30.008	-0.248	0.000	0.04			4.1	OK	
			1	+20%					30.406	-0.247	0.000	0.23				FLOOD RISK*	
16.001		15 Summer							JU UU	0.24/	0.000	0.04			5.0	TTOOD VIDU.	
16.001 17.000	CKD10	15 Summer							29 236	-0 090	0 000	0 33			56	∩r	
16.001	CKD10 KO10	15 Summer 15 Summer 15 Summer	1	+20%					29.236 28.895	-0.090 -0.067	0.000	0.33 0.41			5.6 5.5	OK OK	

Jacobs Engineering Limited		Page 1
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10	Micro
Date 15/12/2021	Designed by LM	Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU10_	FREE OUTFA Checked by AM	Diamaye
Innovyze	Network 2020.1.3	
<b>D</b>		
Free	Flowing Outfall Details for Proposed network S1-0	010
	Outfall Outfall C. Level I. Level Min D,L W Pipe Number Name (m) (m) I. Level (mm) (mm)	
	(m)	
	1.007 IC6 (R) 30.410 28.249 28.249 300 0	

Jacobs Engineering Limited		Page 2
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10	Micco
Date 15/12/2021	Designed by LM	- Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU10_FREE OUTFA	Checked by AM	Diamaye
Innovyze	Network 2020.1.3	
Online Cont:	rols for Proposed network S1-OU10	
Orifice Manhole:	: CP23, DS/PN: 1.007, Volume (m³): 7.8	
Diameter (m) 0.240 E	Discharge Coefficient 0.600 Invert Level (m) 28.295	
	©1982-2020 Innovyze	

cobs Engi	ineering	f Limited											Page	3
						A12	Chelmsf	ord to A120	widenin	g			[	
						Sect	ion 1							
								twork S1-OU	10					Micro
e 15/12,	/2021					Desi	gned by	LM						Drainage
e PROPO	SED CASE	DRAINAGE	MODEL_S1	_OU10_F	REE OUTFA		ked by .							Diamage
novyze						Netw	ork 202	0.1.3						
				:	Storage Str	uctures	for Pr	oposed netw	ork S1-	OU10				
				-			-							
					<u>Cellular S</u>	torage	Manhole	: TANK, DS/	PN: 15.	000				
								ion Coefficient			Porosity 0.95			
					cient Base (m/hr				afety Facto		_			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²
0.000 0.100		76.0 79.5		110.0 110.0	96.9 100.4	1.200 1.300							0.0	
0.200	110.0	83.0	0.800	110.0	103.9	1.320	110.0	122.0	2.000	0.0	125.2	2.600	0.0	125.
0.300 0.400		86.5 89.9			107.4 110.9	1.321 1.600								
0.500		93.4			114.4	1.700								

cobs Engi	incering 11															Page 4	
							A12 Ch	elmsfor	d to 1	A120wide	ning						
							Sectio	n 1									
									ionle C	1_01110							
	/						_	ed Netw		1-0010						– M	icro
e 15/12/	/2021						Design	ed by I	M								rainage
e PROPOS	SED CASE DF	RAINAGE	MODEL	S1_OU	J10_FREE O	UTFA	Checke	d by AM	1								rainage
novyze							Networ	k 2020.	1.3								
	<u>2 year</u>	Return	Peri	od Sum	mary of C:	ritical	Results	by Max	<u>kimum i</u>	Level (R	<u>ank 1)</u>	for	Propos	ed netwo	ork Sl	<u>1-0U10</u>	
			Areal Re	duction 1	Factor 1.000	Manhole H		<u>lation Cri</u> eff (Globa		0 MAD	D Factor	* 1.0 m <sup>3</sup> /	'ha Storag	e 0 000			
		1		ot Start			ewage per h						na Storag Deffiecien				
				art Level						0 Flow per							
		0 1			1 1	6 0 6 6 3 1		0 11 1	6 G.	<u>.</u>	4	, .	m! /-		1	6 F 3 -	
Number of Ir	nput Hydrograph	is U Numbe	r of Onl	Line Cont	rois 1 Number	of Offline	e Controls	0 Number	of Stora	age Structur	es 1 Nu	mber of	'l'ime/Area	Diagrams :	1 Numbe	r of Real T	ime Controls
							Syntheti	c Rainfall	l Details	s							
					Rainfall Mode	l FEH Sit	-			_	550 Cv	Summer)	1.000				
				FEH Ra	ainfall Versio	n 2013	Data Type			Catchm	ent Cv	Winter)	1.000				
				Mar	gin for Flood					300.0		) Status					
								5 Second I	Increment	t (Extended)		a Status	ON				
						DTS	Status			OFF	1						
						DTS	Status			OFF	, ,						
							Status										
						Profile(s)		100 100	0.4.0		Summer a						
					Duration	Profile(s) (s) (mins)		, 120, 180	), 240, 3		Summer a 0, 720,	960, 144	10				
				R	Duration eturn Period(s	Profile(s) (s) (mins) s) (years)		, 120, 180	) <b>,</b> 240 <b>,</b> 3		Summer a 0, 720,	960, 144 2, 5, 10	10 00				
				R	Duration eturn Period(s	Profile(s) (s) (mins)		, 120, 180	), 240, 3		Summer a 0, 720,	960, 144	10 00				
				R	Duration eturn Period(s	Profile(s) (s) (mins) s) (years)		, 120, 180		360, 480, 60	Summer a 0, 720, 2	960, 144 2, 5, 10	10 00				
			Patron		Duration eturn Period(s Climate (	Profile(s) (s) (mins) s) (years) Change (%)	15, 30, 60,		Water	360, 480, 60 Surcharged	Summer a 0, 720, 2 Flooded	960, 144 2, 5, 10 0, 20, 2	10 00 20	Half Drain	-		T and 1
PN	US/MH Name	Storm		Climate	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level	<ul> <li>360, 480, 60</li> <li>Surcharged</li> <li>Depth</li> </ul>	Summer a 0, 720, 2 Flooded Volume	960, 144 2, 5, 10 0, 20, 2 Flow /	10 20 Overflow	Time	Flow	Status	Level Exceeded
PN	US/MH Name	Storm	Return Period	Climate	Duration eturn Period(s Climate (	Profile(s) (s) (mins) s) (years) Change (%)	15, 30, 60,		Water	360, 480, 60 Surcharged	Summer a 0, 720, 2 Flooded	960, 144 2, 5, 10 0, 20, 2	10 00 20		-	Status	Level Exceeded
1.000	Name CP6027	15 Summer	Period	Climate Change +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903	360, 480, 60 Surcharged Depth (m) -0.212	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01	10 20 Overflow	Time	Flow (1/s)	OI	Exceeded
1.000	<b>Name</b> CP6027 CP6032	15 Summer 15 Summer	Period 2 2	<b>Climate</b> <b>Change</b> +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042	Surcharged Depth (m) -0.212 -0.278	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02	10 20 Overflow	Time	Flow (1/s) 1.3 1.3	OI	Exceeded
1.000 1.001 2.000	<b>Name</b> CP6027 CP6032 CP01	15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2	<b>Climate</b> <b>Change</b> +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587	Surcharged Depth (m) -0.212 -0.278 -0.113	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1	OI OI	Exceeded
1.000 1.001 2.000 2.001	Name CP6027 CP6032 CP01 CP02	<pre>15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1 3.1	OI OI OI	Exceeded
1.000 1.001 2.000 2.001 1.002 C	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R)	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1 3.1 4.4	OI OI OI	Exceeded
1.000 1.001 2.000 2.001 1.002 C 3.000	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP03	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0		Exceeded
1.000 1.001 2.000 2.001 1.002 C 3.000 4.000	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP03 CP03	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 <b>Flow /</b> Cap. 0.01 0.02 0.14 0.01 0.03 0.00 0.08	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0 1.2	00 00 01 01 01 01 01	Exceeded
1.000 1.001 2.000 2.001 1.002 C 3.000 4.000 3.001	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP05 CP05 CP06	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.03 0.00 0.08 0.02	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0 1.2 1.3	10 10 10 10 10 10 10 10	Exceeded
1.000 1.001 2.000 2.001 1.002 C 3.000 4.000 3.001 1.003	Name           CP6027           CP0032           CP01           CP02           CP           SW IC7B (R)           CP05           CP06           CP06	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.360	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.03 0.00 0.08 0.02 0.09	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6	10 10 10 10 10 10 10 10 10	<b>Exceeded</b>
1.000 1.001 2.000 1.002 C 3.000 4.000 3.001 1.003 1.004	Name           CP6027           CP6032           CP01           CP02           CP03           CP05           CP07	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.360 29.271	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240 -0.237	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.00 0.08 0.09 0.10	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4	10 10 10 10 10 10 10 10 10 10	<b>Exceeded</b>
1.000 1.001 2.000 2.001 1.002 C 3.000 4.000 3.001 1.003 1.004 5.000	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP03 CP05 CP06 CP07 CP08 CP07 CP08 CP07 CP08 CP07 CP08 CP07 CP08 CP07	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.934 29.704 29.360 29.271 31.318	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240 -0.237 -0.237	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4 6.5	OI OI OI OI OI OI FLOOD RISK	<b>Exceeded</b>
1.000 1.001 2.000 1.002 C 3.000 4.000 3.001 1.003 1.004	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CR01 K001	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.360 29.271	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240 -0.237	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.00 0.08 0.09 0.10	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4	10 10 10 10 10 10 10 10 10 10	<b>Exceeded</b>
1.000 1.001 2.000 1.002 C 3.000 4.000 3.001 1.003 1.004 5.000 5.001	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CF001 K001 K001 CP10	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.704 29.360 29.271 31.318 30.634	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.220 -0.237 -0.237 -0.237 -0.237	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.01 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.35	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4 6.5 6.4	OI OI OI OI OI OI FLOOD RISK'	<b>Exceeded</b>
1.000 1.001 2.000 1.002 C 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000	Name CP6027 CP6032 CP02 CP02 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CKD01 K001 CP10	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.271 31.318 30.634 29.958	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240 -0.237 -0.237 -0.237 -0.088 -0.120	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.03 0.00 0.08 0.02 0.09 0.10 0.05 0.09	10 20 Overflow	Time	Flow (1/s) 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4 6.4 1.3	OI OI OI OI OI OI OI FLOOD RISK OI OI OI	Exceeded
1.000 1.001 2.000 2.001 1.002 C 3.000 4.000 3.001 1.003 1.004 5.001 5.001 6.000	Name CP6027 CP6032 CP002 CP02 CP03 C	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period( Climate ( First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.360 29.271 31.318 30.634 29.958 29.837	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240 -0.237 -0.237 -0.237 -0.237 -0.238 -0.120 -0.119	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.35 0.09 0.10	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4 6.5 6.4 1.3 1.4	OI OI OI OI OI OI OI FLOOD RISK OI OI OI OI	Exceeded
1.000 1.001 2.000 2.001 1.002 C 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.001 6.001 6.002	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP02 CP03 CP02 CP02 CP02 CP02 CP02 CP02 CP03 CP05 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP03 CP05 CP04 CP03 CP05 CP04 CP03 CP03 CP05 CP04 CP03 CP03 CP05 CP04 CP03 CP05 CP04 CP01 CP12	<pre>15 Summer 15 Summer</pre>	Period 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration eturn Period(s Climate ( First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.903 30.042 31.587 31.283 29.684 30.499 29.934 29.704 29.360 29.271 31.318 30.634 29.58 29.837 29.446	Surcharged Depth (m) -0.212 -0.278 -0.113 -0.117 -0.266 -0.149 -0.122 -0.208 -0.240 -0.237 -0.237 -0.237 -0.237 -0.120 -0.119 -0.202	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.01 0.02 0.14 0.11 0.03 0.00 0.08 0.02 0.09 0.10 0.07 0.35 0.09 0.10 0.02	10 20 Overflow	Time	Flow (1/s) 1.3 1.3 2.1 3.1 4.4 0.0 1.2 1.3 5.6 5.4 6.5 6.4 1.3 1.4 1.3 1.4 1.2 1.3 1.4 1.4 1.2 1.3 1.4 1.4 1.4 1.5 1.5 1.5 1.5 1.5 1.5 1.5 1.5	FLOOD RISK OI OI OI OI OI OI OI OI OI OI OI OI OI	Exceeded
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	US/MH		Return		First (X)		First (Z)		Level	Depth			Overflow	Time	Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(l/s)	Status	Exceeded
9.000	CKD03	15 Summer	2	+20%					32.670	-0.204	0.000	0.18			26 5	FLOOD RISK*	
9.001		15 Summer	2		100/15 Summer				31.400	-0.091	0.000	0.65			26.3	OK	
8.001		15 Summer	2	+20%	100/15 Summer				30.529	-0.189	0.000	0.49			70.4	OK	
8.002		15 Summer	2		100/15 Summer				30.405	-0.176	0.000	0.54			70.0		
10.000		15 Summer	2	+20%					31.766	-0.229	0.000	0.09				FLOOD RISK*	
10.001		15 Summer	2	+20%	100/15 Summer				31.129	-0.070	0.000	0.55			9.7	OK	
8.003		15 Summer	2		100/15 Summer				30.304	-0.169	0.000	0.57			79.0		
8.004		15 Summer	2		100/15 Summer				30.187	-0.161	0.000	0.62			79.4		
11.000		15 Summer	2	+20%	100,10 000001				31.558	-0.184	0.000	0.27				FLOOD RISK*	
11.001		15 Summer	2		100/15 Summer				30.834	-0.103	0.000	0.56			21.2		
8.005		15 Summer	2		100/15 Summer				30.031	-0.156	0.000	0.63			98.8		
12.000		15 Summer	2	+20%	100,10 000001				31.226	-0.221	0.000	0.12				FLOOD RISK*	
		15 Summer	2		100/15 Summer				30.572	-0.069	0.000	0.56			9.4	OK	
12.001																011	
12.001 8.006	CP19	15 Summer							29.690		0.000	0.41			107.3	OK	
12.001 8.006 13.000		15 Summer 15 Summer	2		100/15 Summer				29.690 30.968	-0.208	0.000	0.41 0.12			107.3 12.2	OK FLOOD RISK*	
8.006	CKD07		2	+20% +20%						-0.208							
8.006 13.000	CKD07 K007	15 Summer	2 2	+20% +20%	100/15 Summer				30.968	-0.208 -0.220 -0.064	0.000	0.12			12.2 12.3	FLOOD RISK* OK	
8.006 13.000 13.001	CKD07 KO07 CKD08	15 Summer 15 Summer	2 2 2	+20% +20% +20%	100/15 Summer 100/15 Summer				30.968 29.976	-0.208 -0.220	0.000 0.000 0.000	0.12 0.61			12.2 12.3 12.8	FLOOD RISK*	
8.006 13.000 13.001 14.000 14.001	CKD07 KO07 CKD08 KO08	<pre>15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2	+20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer				30.968 29.976 30.357 29.330	-0.208 -0.220 -0.064 -0.228 -0.049	0.000 0.000 0.000 0.000	0.12 0.61 0.10 0.78			12.2 12.3 12.8 12.7	FLOOD RISK* OK FLOOD RISK* OK	
8.006 13.000 13.001 14.000 14.001 14.002	CKD07 K007 CKD08 K008 CP20	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2	+20% +20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer				30.968 29.976 30.357 29.330 28.920	-0.208 -0.220 -0.064 -0.228 -0.049 -0.126	0.000 0.000 0.000 0.000 0.000	0.12 0.61 0.10 0.78 0.33			12.2 12.3 12.8 12.7 12.6	FLOOD RISK* OK FLOOD RISK* OK OK	
8.006 13.000 13.001 14.000 14.001 14.002 15.000	CKD07 K007 CKD08 K008 CP20 TANK	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer				30.968 29.976 30.357 29.330 28.920 28.682	-0.208 -0.220 -0.064 -0.228 -0.049 -0.126 -0.162	0.000 0.000 0.000 0.000 0.000 0.000	0.12 0.61 0.10 0.78 0.33 0.43			12.2 12.3 12.8 12.7 12.6 28.2	FLOOD RISK* OK FLOOD RISK* OK OK	
8.006 13.000 13.001 14.000 14.001 14.002 15.000 8.007	CKD07 K007 CKD08 K008 CP20 TANK CP21	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2	+20% +20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer				30.968 29.976 30.357 29.330 28.920 28.682 28.892	-0.208 -0.220 -0.064 -0.228 -0.049 -0.126 -0.162 0.072	0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.12 0.61 0.10 0.78 0.33 0.43 0.64			12.2 12.3 12.8 12.7 12.6 28.2 68.1	FLOOD RISK* OK FLOOD RISK* OK OK SURCHARGED	
8.006 13.000 13.001 14.000 14.002 15.000 8.007 16.000	CKD07 KO07 CKD08 KO08 CP20 TANK CP21 CKD09	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer				30.968 29.976 30.357 29.330 28.920 28.682 28.892 30.795	-0.208 -0.220 -0.064 -0.228 -0.049 -0.126 -0.162 0.072 -0.249	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.12 0.61 0.10 0.78 0.33 0.43 0.64 0.04			12.2 12.3 12.8 12.7 12.6 28.2 68.1 4.0	FLOOD RISK* OK FLOOD RISK* OK OK SURCHARGED FLOOD RISK*	
8.006 13.000 13.001 14.000 14.002 15.000 8.007 16.000 16.001	CKD07 K007 CKD08 K008 CP20 TANK CP21 CKD09 K009	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer				30.968 29.976 30.357 29.330 28.920 28.682 28.892 30.795 30.007	-0.208 -0.220 -0.064 -0.228 -0.049 -0.126 -0.162 0.072 -0.249 -0.102	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.12 0.61 0.10 0.78 0.33 0.43 0.64 0.04 0.22			12.2 12.3 12.8 12.7 12.6 28.2 68.1 4.0 3.9	FLOOD RISK* OK FLOOD RISK* OK SURCHARGED FLOOD RISK* OK	
8.006 13.000 13.001 14.000 14.001 14.002 15.000 8.007 16.000 16.001 17.000	CKD07 K007 CKD08 K008 CP20 TANK CP21 CKD09 K009 CKD10	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	+20% +20% +20% +20% +20% +20% +20% +20%	100/15 Summer 100/15 Summer 5/15 Summer 100/15 Summer 100/15 Summer 2/15 Summer				30.968 29.976 30.357 29.330 28.920 28.682 28.892 30.795 30.007 30.406	$\begin{array}{c} -0.208 \\ -0.220 \\ -0.064 \\ -0.228 \\ -0.049 \\ -0.126 \\ -0.162 \\ 0.072 \\ -0.249 \\ -0.102 \\ -0.247 \end{array}$	0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	0.12 0.61 0.78 0.33 0.43 0.64 0.04 0.22 0.04			12.2 12.3 12.8 12.7 12.6 28.2 68.1 4.0 3.9 5.4	FLOOD RISK* OK FLOOD RISK* OK SURCHARGED FLOOD RISK* OK FLOOD RISK*	
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PN	US/MH Name	Storm	Return Period	Climate	Duration( eturn Period(s.	Profile(s) (s) (mins) (years) Change (%) First (Y)			Water	360, 480, 60	Summer a 0, 720, 2 Flooded	960, 144 2, 5, 10 0, 20, 2	10 00	Half Drain Time (mins)	Pipe Flow (1/s)	Status	Level Exceeded
	Name		Period	Climate Change	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m)	Surcharged Depth (m)	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> )	960, 144 2, 5, 10 0, 20, 2 Flow / Cap.	0 0 20 <b>Overflow</b>	Time	Flow (1/s)		Exceeded
<b>PN</b> 1.000 1.001	Name CP6027	Storm 15 Summer 15 Summer		Climate	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level	<ul> <li>360, 480, 60</li> <li>Surcharged</li> <li>Depth</li> </ul>	Summer a 0, 720, 2 Flooded Volume	960, 144 2, 5, 10 0, 20, 2 Flow /	0 0 20 <b>Overflow</b>	Time	Flow	<b>Status</b> OK OK	Exceeded
1.000	Name CP6027 CP6032	15 Summer	Period 5 5	Climate Change +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908	360, 480, 60 Surcharged Depth (m) -0.207	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02	0 0 20 <b>Overflow</b>	Time	Flow (1/s)	OK OK	Exceeded
1.000 1.001 2.000 2.001	Name CP6027 : CP6032 : CP01 : CP02 :	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5	Climate Change +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02 0.19 0.15	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3	OK OK OK	Exceeded
1.000 1.001 2.000 2.001 1.002 C:	Name	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.15 0.04	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2	OK OK OK	Exceeded
1.000 1.001 2.000 2.001 1.002 Ci 3.000	Name CP6027 : CP6032 : CP01 : CP02 : CP02 : CP03 :	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148	Summer a 0, 720, 2 Flooded (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02 0.19 0.15 0.04 0.00	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1	OK OK OK	Exceeded
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000	Name CP6027 CP6032 CP01 CP02 CP02 CP03 CP03 CP05	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 <b>Flow /</b> <b>Cap.</b> 0.02 0.19 0.15 0.04 0.00 0.11	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7	OK OK OK OK	Exceeded
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1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP05 : CP06 : CP07 :	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.370	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.230	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.8	OK OK OK OK OK OK	Exceeded
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP05 : CP06 : CP07 : CP07 : CP08	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.370 29.283	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.202 -0.202 -0.202 -0.225	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13 0.14	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.8 7.6	OK OK OK OK OK OK OK OK	Exceeded
1.000 1.001 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP06 : CP06 : CP07	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b> Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.7370 29.283 31.327	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.230 -0.225 -0.228	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02 0.02 0.15 0.04 0.01 0.02 0.11 0.02 0.11 0.02 0.11 0.02	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.8 7.6 9.1	OK OK OK OK OK OK FLOOD RISK*	Exceeded
1.000 1.001 2.000 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001	Name CP6027 : CP001 : CP02 : CP03 : CP03 : CP03 : CP05 : CP06 : CP07 : CP07 : CP08 : CP07 : CP08 : CP01 : CP01 : CP03 : CP05 : CP05 : CP06 : CP05 : CP06 : CP05 : CP06 : CP07 : CP05 : CP06 : CP07 : CP05 : CP08	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.370 29.370 29.283 31.327 30.648	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.230 -0.225 -0.228 -0.074	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.04 0.04 0.01 0.02 0.13 0.14 0.10 0.50	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.8 7.8 7.6 9.1 9.1	OK OK OK OK OK OK FLOOD RISK* OK	Exceeded
1.000 1.001 2.000 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP06 : CP07 : CP07 : CP08 : CP07 : CP08 : CP01 : CP03 : CP05 : CP05 : CP06 : CP06 : CP05 : CP06 : CP07 : CP08 : CP05 : CP07 : CP08 : CP07 : CP08 : CP08 : CP08 : CP08 : CP08 : CP07 : CP08 : CP07 : CP08 : CP07 : CP08 : CP07 : CP08 : CP07 : CP08 : CP07 : CP07 : CP08 : CP07 : CP07 : CP08 : CP07 : CP08 : CP07 : CP07 : CP08 : CP01 : CP07 : CP07 : CP07 : CP08 : CP01 : CP07 : CP01 : CP10	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b> Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.283 31.327 30.648 29.964	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.230 -0.225 -0.225 -0.228 -0.074 -0.114	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13 0.14 0.50 0.50 0.13	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.00 4.3 6.2 0.1 1.7 1.8 7.8 7.6 9.1 9.1 1.8	OK OK OK OK OK OK FLOOD RISK*	Exceeded
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001	Name CP6022 : CP0032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP06 : CP07 : CP08 : CF07 : CP08 : CF01 : K001 : CP10 : CP11 :	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b> Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.370 29.283 31.327 30.648 29.964 29.843	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.202 -0.228 -0.228 -0.074 -0.114 -0.113	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13 0.14 0.10 0.013 0.14	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.6 9.1 9.1 1.8 2.0	OK OK OK OK OK OK FLOOD RISK* OK OK	Exceeded
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP05 : CP06 : CP07 : CP08 : CP08 : CP01 : CP01 : CP01 : CP02 : CP02 : CP02 : CP02 : CP02 : CP03 : CP05 : CP05 : CP05 : CP05 : CP05 : CP07 : CP05 : CP07 : CP10 : CP10 : CP11 : CP11 : CP12	15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.370 29.283 31.327 30.648 29.964 29.843 29.448	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.202 -0.202 -0.228 -0.228 -0.074 -0.114 -0.113 -0.200	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13 0.14 0.10 0.50 0.14 0.14 0.03	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.8 7.6 9.1 9.1 1.8 2.0 2.0	OK OK OK OK OK OK FLOOD RISK* OK OK OK	Exceeded
1.000 1.001 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002 1.005	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP05 : CP05 : CP06 : CP07 : CP08 : CP08 : CKD01 : K001 : CP10 : CP12 : CP13 :	15 Summer 15 Summer	<b>Period</b> 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b> Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.283 31.327 30.648 29.964 29.964 29.964 29.9448 29.448 29.199	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.225 -0.228 -0.074 -0.114 -0.113 -0.200 -0.207	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.02 0.02 0.02 0.15 0.04 0.01 0.13 0.14 0.13 0.14 0.50 0.13 0.13 0.13 0.14	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.00 4.3 6.2 0.1 1.7 1.8 7.8 7.6 9.1 9.1 1.8 2.0 2.0 18.1	OK OK OK OK OK FLOOD RISK* OK OK OK OK OK	Exceeded
1.000 1.001 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.001 6.001 6.002 1.005 7.000	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP05 : CP06 : CP07 : CP08 : CP07 : CP08 : CP08 : CP01 : CP01 : CP11 : CP12 : CP13	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.283 31.327 30.648 29.964 29.964 29.964 29.964 29.964 29.964 29.448 29.964 29.448 29.199 31.021	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.220 -0.225 -0.228 -0.074 -0.114 -0.113 -0.200 -0.217 -0.249	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13 0.14 0.10 0.50 0.13 0.14 0.00 0.17 0.04	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.6 9.1 9.1 1.8 2.0 2.00 18.1 3.2	OK OK OK OK OK OK FLOOD RISK* OK OK OK OK OK OK OK OK	Exceeded
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1.000 1.001 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002 1.005 7.000	Name CP6027 : CP6032 : CP01 : CP02 : CP03 : CP03 : CP03 : CP05 : CP06 : CP07 : CP08 : CP07 : CP08 : CP01 : CP10 : CP11 : CP12 : CP13 : CP13 : CP13 : CP13 : CP14 : CP14 : CP14 : CP14 : CP14 : CP14 : CP14 : CP14 : CP14 : CP15 : CP11 : CP12 : CP13 : CP15	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) (years) Change (%) First (Y)	15, 30, 60 First (Z)	Overflow	Water Level (m) 30.908 30.051 31.595 31.289 29.689 30.500 29.939 29.710 29.283 31.327 30.648 29.964 29.964 29.964 29.964 29.964 29.964 29.448 29.964 29.448 29.199 31.021	Surcharged Depth (m) -0.207 -0.269 -0.105 -0.111 -0.261 -0.148 -0.117 -0.202 -0.220 -0.225 -0.228 -0.074 -0.114 -0.113 -0.200 -0.217 -0.249	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.02 0.19 0.15 0.04 0.00 0.11 0.02 0.13 0.14 0.10 0.50 0.13 0.14 0.00 0.17 0.04	0 0 20 <b>Overflow</b>	Time	Flow (1/s) 1.9 1.8 3.0 4.3 6.2 0.1 1.7 1.8 7.6 9.1 9.1 1.8 2.0 2.00 18.1 3.2	OK OK OK OK OK OK FLOOD RISK* OK OK OK OK OK OK OK OK	Exceeded

obs Engine	ering	Limite	ed													Page	7
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							Prop	bosed N	etwor.	k S1-OU10	)						Micro
e 15/12/20	)21						Desi	lgned b	y LM								
PROPOSEI	I CASE		GE MO	DET. 91	OU10 FREE	CIITEA	Cher	cked by	ΔM								Drainaq
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	<u>5 y</u>	<u>ear Ret</u>	urn P	eriod	Summary of	Critic	al Resul	lts by	Maxim	um Level	(Rank	1) f	or Prop	osed ne	twork	<u>S1-OU10</u>	
	US/MH		Detum	Climate	First (X)	Finat (V)	First (Z)	0	Water Level	Surcharged Depth	Flooded Volume	<b>F</b> low /	Overflow	Half Drain Time	I Pipe Flow		Level
PN	Name	Storm		Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m <sup>3</sup> )	Cap.	(1/s)	(mins)	(1/s)	Status	Exceeded
	Hume	Deorm	101104	chunge	burenarge	11000	0001110	11000	()	(11)	(	cup.	(1/5)	(11110)	(1/5/	blucub	Inceeded
9.000	CKD03	15 Summer	5	+20%					32.686	-0.188	0.000	0.25			37.5	FLOOD RISK*	
9.001		15 Summer			100/15 Summer				31.437	-0.054	0.000	0.92			37.3	OK	
		15 Summer			100/15 Summer				30.574	-0.144	0.000	0.69			99.6		
8.002		15 Summer			100/15 Summer				30.457	-0.124	0.000	0.77			99.0	OK	
10.000		15 Summer		+20%	/				31.778	-0.217	0.000	0.13				FLOOD RISK*	
10.001		15 Summer			100/15 Summer				31.150	-0.049	0.000	0.78			13.8	OK	
8.003		15 Summer			100/15 Summer				30.358	-0.115	0.000	0.81			112.3	OK	
8.004		15 Summer			100/15 Summer				30.246	-0.102	0.000	0.87			112.2	OK	
11.000		15 Summer		+20%	400/45 0				31.579	-0.163	0.000	0.38				FLOOD RISK*	
11.001		15 Summer			100/15 Summer				30.866	-0.071	0.000	0.79			30.0	OK	
8.005		15 Summer			100/15 Summer				30.092	-0.095	0.000	0.89			140.0	OK	
12.000		15 Summer		+20%	100/15 0				31.241	-0.206	0.000	0.17				FLOOD RISK*	
12.001		15 Summer			100/15 Summer				30.593	-0.048	0.000	0.79			13.2	OK	
8.006		15 Summer			100/15 Summer				29.728	-0.170	0.000	0.58			151.3	OK	
13.000		15 Summer		+20%	100/15 Summer				30.983	-0.205	0.000	0.18 0.86				FLOOD RISK*	
13.001		15 Summer			100/15 Summer				29.999	-0.041	0.000				17.4	OK	
14.000		15 Summer		+20%	E / 1 E . Current				30.369	-0.216	0.000	0.14				FLOOD RISK*	
14.001		15 Summer		+20%	5/15 Summer				29.389	0.010	0.000	1.10			18.0		
14.002		15 Summer		+20%	100/15 Summer				28.998	-0.048	0.000	0.44			17.0	OK	
15.000		15 Summer			100/15 Summer				28.843	-0.001	0.000	0.68			44.4	OK	
8.007		15 Summer		+20%	2/15 Summer				28.957	0.137	0.000	0.67			72.2		
		15 Summer		+20%					30.801	-0.243	0.000	0.05				FLOOD RISK*	
16.000	KOU9	15 Summer		+20%					30.017	-0.092	0.000	0.32			5.6	OK	
16.001			5	+20%					30.412	-0.241	0.000	0.06				FLOOD RISK*	
16.001 17.000	CKD10				100/15 0												
16.001 17.000 17.001	CKD10 KO10	15 Summer	5	+20%	100/15 Summer				29.248	-0.078	0.000	0.45			7.6	OK	
16.001 17.000	CKD10 KO10 CP22		5 5		100/15 Summer 5/15 Summer 2/15 Summer				29.248 28.981 28.905	-0.078 0.019 0.160	0.000 0.000 0.000	0.45 0.56 0.58			7.6 7.5 84.3	SURCHARGED	

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							A12 Ch	elmsfor	d to 2	A120wide	ning						
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							Syntheti	<u>c Rainfall</u>	l Details	3							
					Rainfall Model		e Location			TL 74850 08							
				FEH Ra	infall Versior	n 2013	Data Type			Catchm	ent Cv (	Winter)	1.000				
				Mar	gin for Flood					300.0		Status					
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						Profile(s)					Summer a						
				R	Duration(	Profile(s) (s) (mins)		, 120, 180	), 240, 3		Summer a 0, 720,	960, 144	0				
				R	Duration( eturn Period(s	Profile(s) (s) (mins)		, 120, 180	), 240, 3		Summer a 0, 720,		0 0				
				R	Duration( eturn Period(s	Profile(s) (s) (mins) s) (years)		, 120, 180	), 240, 3		Summer a 0, 720,	960, 144 2, 5, 10	0 0				
				R	Duration( eturn Period(s	Profile(s) (s) (mins) s) (years)		, 120, 180			Summer a 0, 720, 2	960, 144 2, 5, 10	0 0 2 0	Half Drain	Pipe		
	US/MH			Climate	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level	<ul> <li>360, 480, 60</li> <li>Surcharged</li> <li>Depth</li> </ul>	Summer a 0, 720, 2 Flooded Volume	960, 144 2, 5, 10 0, 20, 2 <b>Flow /</b>	Overflow	Time	Flow		Level
PN	US/MH Name	Storm	Return Period	Climate	Duration( eturn Period(s Climate C	Profile(s) (s) (mins) s) (years) Change (%)	15, 30, 60, First (Z)		Water	60, 480, 60 Surcharged	Summer a 0, 720, 2 Flooded	960, 144 2, 5, 10 0, 20, 2	0 0 0 0		-	Status	Level Exceeded
1.000	<b>Name</b> CP6027	15 Summer	Period	Climate Change +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918	Surcharged Depth (m) -0.197	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 <b>Flow /</b> <b>Cap</b> . 0.04	Overflow	Time	Flow (1/s) 4.1	OK	
1.000	<b>Name</b> CP6027 CP6032	15 Summer 15 Summer	<b>Period</b> 100 100	<b>Climate</b> <b>Change</b> +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062	Surcharged Depth (m) -0.197 -0.258	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05	Overflow	Time	Flow (1/s) 4.1 4.0	OK OK	
1.000 1.001 2.000	Name CP6027 CP6032 CP01	15 Summer 15 Summer 15 Summer	<b>Period</b> 100 100 100	<b>Climate</b> <b>Change</b> +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618	Surcharged Depth (m) -0.197 -0.258 -0.082	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41	Overflow	Time	Flow (1/s) 4.1 4.0 6.5	OK OK	
1.000 1.001 2.000 2.001	Name CP6027 CP6032 CP01 CP02	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 100 100 100 100	Climate Change +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1	OK OK	
1.000 1.001 2.000 2.001	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R)	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 100 100 100	<b>Climate</b> <b>Change</b> +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 <b>Flow /</b> <b>Cap.</b> 0.04 0.05 0.41 0.36 0.10	Overflow	Time	Flow (1/s) 4.1 4.0 6.5	OK OK OK	
1.000 1.001 2.000 2.001 1.002 Ci	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP03	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 100 100 100 100 100 100	Climate Change +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 <b>Flow /</b> <b>Cap</b> . 0.04 0.05 0.41 0.05 0.10 0.01	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2	OK OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP03 CP05	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 100 100 100 100 100 100	Climate Change +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1	OK OK OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000	Name CP6027 CP6032 CP01 CP02 CP SW IC7B (R) CP03 CP05 CP06	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.05 0.21	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8	OK OK OK OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004	Name CP6027 CP6032 CP01 CP02 CP02 CP03 CP03 CP05 CP06 CP07 CP08	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter</pre>	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	<b>Climate</b> <b>Change</b> +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y)	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.471	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.02 0.21 0.23	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 13.1 12.8	OK OK OK OK OK OK OK OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000	Name CP6027 CP6032 CP01 CP02 CP05 CP03 CP05 CP06 CP07 CP08 CKD01	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 15 Summer	Period 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.471 31.358	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.02 0.21 0.23 0.21	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 13.1 12.8 19.9	OK OK OK OK OK OK FLOOD RISK*	
1.000 1.001 2.000 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CKD01 KO01	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 15 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C <b>First (X)</b>	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.475 29.471 31.358 30.732	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.197 0.010	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.05 0.21 0.23 0.21 1.07	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 13.1 12.8 19.9 19.7	OK OK OK OK OK OK FLOOD RISK* SURCHARGED	
1.000 1.001 2.000 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CKD01 K001 CP10	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 15 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.471 31.358 30.732 29.982	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.100 -0.096	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.05 0.21 0.23 0.21 1.07 0.28	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 13.1 12.8 19.9 19.7 4.0	OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CKD01 K001 CP11	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 15 Summer 15 Summer 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) s) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.471 31.358 <b>30.732</b> 29.982 29.863	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 -0.197 -0.096 -0.093	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.04 0.05 0.21 0.23 0.21 1.07 0.28 0.30	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 13.1 12.8 19.9 19.7 4.0 4.5	OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002	Name CP6027 CP6032 CP01 CP02 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CK001 K001 CP10 CP11 CP12	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 15 Summer 15 Summer 35 Summer 30 Winter 30 Winter</pre>	Period 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) )) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.475 29.471 31.358 30.732 29.982 29.863 29.863 29.468	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.010 -0.096 -0.093 -0.180	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.23 0.21 1.07 0.28 0.30 0.30	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 3.8 3.8 13.1 12.8 19.9 19.7 4.0 4.5 3.3	OK OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002 1.005	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CKD01 K001 CP10 CP12 CP12 CP12	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter	Period 100 100 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) )) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.471 31.358 30.732 29.9863 29.468 29.468	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.010 -0.096 -0.093 -0.180 0.052	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.01 0.21 0.23 0.21 1.07 0.28 0.30 0.05 0.28	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 3.8 3.3 12.8 19.9 19.7 4.0 4.5 3.3 29.2	OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK OK SURCHARGED	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.000 5.001 6.000 6.001 6.002	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP03 CP03 CP03 CP04 CP14	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 15 Summer 15 Summer 35 Summer 30 Winter 30 Winter</pre>	Period 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) )) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.475 29.471 31.358 <b>30.732</b> 29.982 29.863 29.863 29.468	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.010 -0.096 -0.093 -0.180	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.23 0.21 1.07 0.28 0.30 0.30	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 3.8 3.8 3.3 12.8 19.9 19.7 4.0 4.5 3.3 29.2	OK OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK OK	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.003 1.004 5.000 5.001 6.000 6.001 6.002 1.005 7.000	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP06 CP07 CP08 CKD01 K001 CP10 CP11 CP12 CP13 CKD02 K002	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 15 Summer 15 Summer 15 Summer 30 Winter 30 Winter 30 Winter 30 Winter	Period 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) )) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.475 29.471 31.358 30.732 29.982 29.863 29.468 29.468 31.036	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.010 -0.096 -0.093 -0.180 0.052 -0.234	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.01 0.24 0.05 0.21 1.07 0.28 0.30 0.30 0.08 0.08	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 13.1 12.8 13.1 12.8 13.1 12.8 19.7 4.0 4.5 3.3 29.2 7.0 6.9	OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK SURCHARGED FLOOD RISK*	
1.000 1.001 2.000 2.001 1.002 C: 3.000 4.000 3.001 1.003 1.004 5.001 6.000 6.001 6.000 1.005 7.000 7.001	Name CP6027 CP6032 CP01 CP02 CP03 CP03 CP03 CP05 CP06 CP07 CP08 CKD01 K001 CP11 CP12 CP13 CKD02 CKD02 K002 CF14	15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Winter 15 Summer 15 Summer 15 Summer 30 Winter 15 Summer 30 Winter 15 Summer 30 Winter 15 Summer 15 Summer	Period 100 100 100 100 100 100 100 10	Climate Change +20% +20% +20% +20% +20% +20% +20% +20%	Duration ( eturn Period(s Climate C First (X) Surcharge	Profile(s) (s) (mins) )) (years) Change (%) First (Y) Flood	15, 30, 60, First (Z)	Overflow	Water Level (m) 30.918 30.062 31.618 31.313 29.712 30.502 29.955 29.719 29.471 31.358 30.732 29.982 29.863 29.468 29.468 31.036 30.434	Surcharged Depth (m) -0.197 -0.258 -0.082 -0.087 -0.238 -0.146 -0.101 -0.193 -0.125 -0.037 -0.197 0.010 -0.096 -0.093 -0.180 0.052 -0.234 -0.066	Summer a 0, 720, 2 Flooded Volume (m <sup>3</sup> ) 0.000	960, 144 2, 5, 10 0, 20, 2 Flow / Cap. 0.04 0.05 0.41 0.36 0.10 0.01 0.24 0.05 0.21 1.07 0.28 0.30 0.05 0.28 0.30 0.05 0.28 0.39 0.24	Overflow	Time	Flow (1/s) 4.1 4.0 6.5 10.1 14.2 0.1 3.8 13.1 12.8 19.9 19.7 4.0 4.5 3.3 29.2 7.0 6.9 28.3	OK OK OK OK OK OK OK FLOOD RISK* SURCHARGED OK SURCHARGED FLOOD RISK* OK	

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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU10_FREE OUTFA	Checked by AM	Diamaye
Innovyze	Network 2020.1.3	

# 100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Proposed network S1-OU10

										Surcharged				Half Drain	-		
	US/MH			Climate	First (X)	First (Y)		Overflow	Level	Depth	Volume	Flow /	Overflow	Time	Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(l/s)	Status	Exceeded
9.000	CKD03	15 Summer	100	+20%					32.741	-0.133	0.000	0.55			81.4	FLOOD RISK*	
9.001	KO03	15 Summer	100	+20%	100/15 Summer				31.999	0.508	0.000	1.89			76.7	FLOOD RISK	
8.001	CP6030	15 Summer	100	+20%	100/15 Summer				31.821	1.103	0.000	1.31			189.6	FLOOD RISK	
8.002	CP15	15 Summer	100	+20%	100/15 Summer				31.636	1.055	0.000	1.39			178.5	FLOOD RISK	
10.000	CKD04	15 Summer	100	+20%					31.814	-0.181	0.000	0.29			30.1	FLOOD RISK*	
10.001	KO04	15 Summer	100	+20%	100/15 Summer				31.658	0.459	0.000	1.68			29.6	FLOOD RISK	
8.003	CP16	15 Summer	100	+20%	100/15 Summer				31.501	1.028	0.000	1.45			201.2	FLOOD RISK	
8.004	CP17	15 Summer	100	+20%	100/15 Summer				31.326	0.978	0.000	1.49			191.5	FLOOD RISK	
11.000	CKD05	15 Summer	100	+20%					31.667	-0.075	0.000	0.82			64.8	FLOOD RISK*	
11.001	KO05	15 Summer	100	+20%	100/15 Summer				31.222	0.285	0.000	1.72			65.2	FLOOD RISK	
8.005	CP18	15 Summer	100	+20%	100/15 Summer				31.059	0.872	0.000	1.55			242.2	SURCHARGED	
12.000	CKD06	15 Summer	100	+20%					31.281	-0.166	0.000	0.36			28.5	FLOOD RISK*	
12.001	KO06	15 Summer	100	+20%	100/15 Summer				30.782	0.141	0.000	1.72			28.8	SURCHARGED	
8.006	CP19	15 Summer	100	+20%	100/15 Summer				30.433	0.535	0.000	0.98			257.3	SURCHARGED	
13.000	CKD07	15 Summer	100	+20%					31.025	-0.163	0.000	0.38			37.4	FLOOD RISK*	
13.001	KO07	15 Summer	100	+20%	100/15 Summer				30.306	0.266	0.000	1.88			37.8	FLOOD RISK	
14.000	CKD08	15 Summer	100	+20%					30.406	-0.179	0.000	0.29			39.3	FLOOD RISK*	
14.001	KO08	15 Summer	100	+20%	5/15 Summer				29.762	0.383	0.000	2.36			38.5	FLOOD RISK	
14.002	CP20	30 Winter	100	+20%	100/15 Summer				29.562	0.516	0.000	0.70			27.0	SURCHARGED	
15.000	TANK	30 Summer	100	+20%	100/15 Summer				29.524	0.680	0.000	0.89			57.6	SURCHARGED	
8.007	CP21	30 Winter	100	+20%	2/15 Summer				29.541	0.721	0.000	1.00			107.4	SURCHARGED	
16.000	CKD09	15 Summer	100	+20%					30.820	-0.224	0.000	0.11			12.2	FLOOD RISK*	
16.001	KO09	15 Summer	100	+20%					30.052	-0.057	0.000	0.69			12.1	OK	
17.000	CKD10	15 Summer	100	+20%					30.432	-0.221	0.000	0.12			16.6	FLOOD RISK*	
17.001	KO10	15 Summer	100	+20%	100/15 Summer				29.531	0.205	0.000	0.97			16.2	SURCHARGED	
17.002	CP22	15 Summer	100	+20%	5/15 Summer				29.487	0.525	0.000	1.05			14.2	SURCHARGED	
1.007	CP23	30 Winter	100	+20%	2/15 Summer				29.449	0.704	0.000	0.83			121.8	SURCHARGED	

Project Name	A12 Chelmsford to A120 widening scheme
Project Number	HE551497

File Number		HE551497-JAC-HDG-S1_J19-C	A-D-0004		
Document Description	MICRODRAII	NAGE MODELLING RESULTS FOR PROP	OSED CATCHMENT	S1-OU10A	
Purpose of Issue	S2 - SUITABLE FOR INFORMATION	J		Status Code	S2
Current Revision		P01			
Calculation Number	0004	Index Page	1 of 12	Sheet Nos (incl. cover sheet)	12

P01	FIRST ISSUE	LM	AM	AM	DT	07/06/22
Rev	Comments	Originated	Checked	Reviewed	Approved	Date

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### Summary

This calculation sheet documents the Microdrainage modelling results (1D analysis) for the proposed highway drainage catchment "Section 1 - Outfall 10A (S1-OU10A) for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events.

It should be noted that the Microdrainage modelling results have been summarised by "the maximum water level for critical storm duration" for all design events meaning that the discharge rates presented from the Microdrianage modelling results may vary slightly from the proposed discharge rates documented within Appendix C - Table C.1 of the surface water drainage design report (Document Ref. HE551497-JAC-HDG-S1\_J19-RP-D-0001).

Jacobs Engineering Limited		Page 1
•	A12 Chelmsford to A120widening	
	Section 1	
•	Proposed Network S1-OU10A	Micco
Date 15/12/2021	Designed by LM	Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU10A.MDX	Checked by AM	Urainage
Innovyze	Network 2020.1.3	
Free	Flowing Outfall Details for Storm	
Outfal Pipe Num	l Outfall C. Level I. Level Min D,L W aber Name (m) (m) I. Level (mm) (mm) (m)	
1.	005 OU10A 28.380 26.955 26.219 0 0	
	©1982-2020 Innovyze	

Jacobs Engineering Limited		Page 2
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10A	Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL S1 OU10A.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	
Hydro-Brake® Op	Online Controls for Storm	
Unit Reference MD-SHE-0107-5000-090 Design Head (m) Design Flow (1/s) Flush-Flo™ Calc	D-5000     Objective Minimise upstream storage     Invert Level (m) 2       0.900     Application     Surface Minimum Outlet Pipe Diameter (mm)       5.0     Sump Available     Yes       Suggested Manhole Diameter (mm)     107	27.537 150 1200
Control Points Head (m) Flow (1/s) Control Po	nts Head (m) Flow (l/s) Control Points Head (m) Flow (l/s) Control Points	Head (m) Flow (l/s)
Design Point (Calculated) 0.900 5.0 Flush-	Clo™ 0.271 5.0 Kick-Flo® 0.590 4.1 Mean Flow over Head Ra	ange - 4.3
Optimum® be utilised then these storage routing calculations will be	relationship for the Hydro-Brake® Optimum as specified. Should another type of con- invalidated (s)   Depth (m) Flow (1/s)   Depth (m) Flow (1/s)   Depth (m) Flow (1/s)   Depth (m) Flow	-
0.100 3.6 0.500 4.6 1.200	2.000         7.2         3.000         8.8         5.000         11.2         7.000	13.1 9.000 14.8
0.200 4.9 0.600 4.1 1.400	1         2.200         7.6         3.500         9.4         5.500         11.7         7.500           5.5         2.400         7.9         4.000         10.1         6.000         12.2         8.000	13.6 9.500 15.2 14.0
		14 4

8.2

4.500

10.6

6.500

12.7

8.500

14.4

0.400

4.9

1.000

5.2

1.800

6.9

2.600

obs Engi	ineering	Limited											Page	3	
						A12	Chelmsfo	ord to A12	Owidenin	ıg			[		
						Sect	ion 1								
						Prop	osed Net	work S1-0	U10A					Micro	
e 15/12/	/2021					Desi	gned by	LM						Draina	
e PROPOS	SED CASE	DRAINAGE I	MODEL_S1	L_OU10A.ME	X		ked by A								Ŋе
ovyze						Netw	ork 2020	0.1.3							
					St	orage S	Structur	<u>es for Sto</u>	orm						
				<u>(</u>	<u>Cellular S</u>	<u>torage</u>	Manhole	: TANK, DS	/PN: 2.0	000					
			Infiltra		nvert Level (m ent Base (m/hr				Side (m/h) Safety Facto		Porosity 0.95				
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²) In	f. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²)	Inf. Area	a (m²)
0.000		45.0			55.7	0.800		66.5					0.0		80.
0.100 0.200		47.7 50.4			58.4 61.1	0.900 1.000		69.1 71.8							
0.300	45.0	53.0	0.700	45.0	63.8	1.100	45.0	74.5	1.321	0.0	80.4				

Jacobs Engineering Limited						Page 4	
•	A12 Chelm	sford to A120w	videning				
	Section 1						
	Proposed	Network S1-OU1	.0A			Micco	
Date 15/12/2021	Designed	by LM				– MICCO	
File PROPOSED CASE DRAINAGE MODEL S1 OU10A	MDX Checked b	y AM				Draina	IGE
Innovyze	Network 2	-					
<u>1 year Return Peri</u>	d Summary of Critical	Results by Max	imum Level	(Rank 1) for	Storm		
		on Criteria					
Areal Reduction Factor Hot Start (mins)	1.000 Manhole Headloss Coeff 0 Foul Sewage per hecta			10m <sup>3</sup> /ha Storage 2. let Coeffiecient 0.			
Hot Start Level (mm)	0 Additional Flow - % of To						
Number of Input Hydrographs 0 Number of Online Controls	Number of Offline Controls 0 N	umber of Storage Str	uctures 1 Numb	er of Time/Area Diag	grams O Numb	per of Real Time Cont	trols 0
	Synthetic Pa	infall Details					
Rai	fall Model	FEH D1 (1km)	0.282 F (1	km) 2.556			
	ll Version e Location GB 574850 208550 TL 7		0.257 Cv (Summ				
51	C (1km)	-0.023 E (1km)		er) 1.000			
Margin f	r Flood Risk Warning (mm)		300.0 DVD S	tatus ON			
indigin i	Analysis Timestep 2.5 Se		nded) Inertia S				
	DTS Status		OFF				
	Profile(s)		Summer and	Winter			
	uration(s) (mins) 15, 30, 60, 12 Period(s) (years)	0, 180, 240, 360, 48	0, 600, 720, 96	0, 1440 1			
	limate Change (%)			20			
US/MH Return Climate First (	) First (Y) First (Z) Overflow	Water Surcharged Level Depth	Flooded Volume Flow /	Half Drai Overflow Time	n Pipe Flow	Level	
PN Name Storm Period Change Surchar		(m) (m)	(m <sup>3</sup> ) Cap.	(1/s) (mins)		Status Exceeded	
1.000 CP01 15 Summer 1 +20%		29.497 -0.178	0.000 0.09		5.0	OK	
1.001 CP02 15 Summer 1 +20%		29.050 -0.150	0.000 0.24		11.7	OK	
1.002 CP03 15 Summer 1 +20%		28.660 -0.146			13.0	OK	
1.003 CP04 15 Summer 1 +20% 2.000 TANK 30 Summer 1 +20%		28.231 -0.150 27.711 -0.063	0.000 0.24 0.000 0.17		14.5 4.1	OK OK	
1.004 CP05 15 Summer 1 +20% 1/15 Sum	er	27.798 0.036	0.000 0.11		5.0 SUR		
1.005 CP06 30 Summer 1 +20%		27.463 -0.187			5.0	OK	

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10A	Micro
Date 15/12/2021 09:29	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU10A_V4.MDX	Checked by AM	Diamage
Innovyze	Network 2019.1	
Free Flowing Out	Ifall Details for Proposed Network S1-OU10A	
Outfall Pipe Numbe	Outfall C. Level I. Level Min D,L W er Name (m) (m) I. Level (mm) (mm) (m)	
1.00	D5 OU10A 28.380 26.955 26.219 0 0	

cobs Engineering Limited	Page	2
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU10A	Micro
te 15/12/2021 09:29	Designed by LM	
le proposed case drainage model s1 ouloa v4.mdx	Checked by AM	Drainage
novyze	Network 2019.1	
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s)	imum Manhole: CP05, DS/PN: 1.004, Volume (m <sup>3</sup> ): 3.6 -5000 Objective Minimise upstream storage Invert Level (m) 27.537 0.900 Application Surface Minimum Outlet Pipe Diameter (mm) 150 5.0 Sump Available Yes Suggested Manhole Diameter (mm) 1200 lated Diameter (mm) 107	
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s) Flush-Flo™ Calcu	-5000 Objective Minimise upstream storage Invert Level (m) 27.537 0.900 Application Surface Minimum Outlet Pipe Diameter (mm) 150 5.0 Sump Available Yes Suggested Manhole Diameter (mm) 1200	low (1/s)
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s) Flush-Flo™ Calcu	-5000 Objective Minimise upstream storage Invert Level (m) 27.537 0.900 Application Surface Minimum Outlet Pipe Diameter (mm) 150 5.0 Sump Available Yes Suggested Manhole Diameter (mm) 1200 lated Diameter (mm) 107 nts Head (m) Flow (1/s) Control Points Head (m) Flow (1/s) Control Points Head (m) Fl	<b>low (1/s)</b> 4.3
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s) Flush-Flo <sup>™</sup> Calcu Control Points Head (m) Flow (1/s) Control Poi Design Point (Calculated) 0.900 5.0 Flush-F	-5000 Objective Minimise upstream storage Invert Level (m) 27.537 0.900 Application Surface Minimum Outlet Pipe Diameter (mm) 150 5.0 Sump Available Yes Suggested Manhole Diameter (mm) 1200 lated Diameter (mm) 107 hts Head (m) Flow (1/s) Control Points Head (m) Flow (1/s) Control Points Head (m) Fl 10 <sup>m</sup> 0.271 5.0 Kick-Flo® 0.590 4.1 Mean Flow over Head Range - relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other	4.3
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s) Flush-Flo™ Calcu Control Points Head (m) Flow (1/s) Control Poi Design Point (Calculated) 0.900 5.0 Flush-F The hydrological calculations have been based on the Head/Discharge Optimum© be utilised then these storage routing calculations will be	-5000 Objective Minimise upstream storage Invert Level (m) 27.537 0.900 Application Surface Minimum Outlet Pipe Diameter (mm) 150 5.0 Sump Available Yes Suggested Manhole Diameter (mm) 1200 lated Diameter (mm) 107 hts Head (m) Flow (1/s) Control Points Head (m) Flow (1/s) Control Points Head (m) Fl 10 <sup>m</sup> 0.271 5.0 Kick-Flo® 0.590 4.1 Mean Flow over Head Range - relationship for the Hydro-Brake® Optimum as specified. Should another type of control device other	4.3 r than a Hydro-Brak
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s) Flush-Flo™ Calcu Control Points Head (m) Flow (1/s) Control Poi Design Point (Calculated) 0.900 5.0 Flush-F The hydrological calculations have been based on the Head/Discharge Optimum® be utilised then these storage routing calculations will be Depth (m) Flow (1/s) Depth (m) Flow (1/s) Depth (m) Flow (1/	-5000       Objective Minimise upstream storage       Invert Level (m) 27.537         0.900       Application       Surface Minimum Outlet Pipe Diameter (mm) 150         5.0       Sump Available       Yes       Suggested Manhole Diameter (mm) 1200         lated       Diameter (mm)       107       107         nts       Head (m)       Flow (1/s)       Control Points       Head (m)       Fl         lo <sup>m</sup> 0.271       5.0       Kick-Flo®       0.590       4.1       Mean Flow over Head Range       -         celationship       for the Hydro-Brake® Optimum as specified.       Should another type of control device other invalidated	4.3 r than a Hydro-Brai
Unit Reference MD-SHE-0107-5000-0900 Design Head (m) Design Flow (1/s) Flush-Flo <sup>™</sup> Calcu Control Points Head (m) Flow (1/s) Control Poi Design Point (Calculated) 0.900 5.0 Flush-F The hydrological calculations have been based on the Head/Discharge Optimum® be utilised then these storage routing calculations will be Depth (m) Flow (1/s) Depth (m) Flow (1/s) Depth (m) Flow (1/ 0.100 3.6 0.500 4.6 1.200 5 0.200 4.9 0.600 4.1 1.400 6	-5000       Objective Minimise upstream storage       Invert Level (m) 27.537         0.900       Application       Surface Minimum Outlet Pipe Diameter (mm) 150         5.0       Sump Available       Yes       Suggested Manhole Diameter (mm) 1200         lated       Diameter (mm)       107         hts       Head (m)       Flow (1/s)       Control Points       Head (m)       Fl         lo <sup>m</sup> 0.271       5.0       Kick-Flo®       0.590       4.1       Mean Flow over Head Range       -         relationship for the Hydro-Brake® Optimum as specified.       Should another type of control device other invalidated       Should another type of control device other invalidated	4.3 r than a Hydro-Brai a) Flow (1/s) 0 14.8

cobs Eng	ineering	Limited											Page	3
							Chelmsford	to A120	widening	1				
						Sect	ion 1							
							osed Netwo		10A					Micro
	/2021 09					Desi	gned by LM	I						Drainag
e PROPO	SED CASE	DRAINAGE .	MODEL_S1	_OU10A_V4.1	MDX		ked by AM							brainay
novyze						Netwo	ork 2019.1							
				Stor	age Struc	tures	for Propos	sed Netwo	ork S1-0	<u>U10A</u>				
				Ce	<u>llular St</u>	orage	Manhole: 1	TANK, DS/	'PN: 2.0	00				
			Infiltrat	Inve ion Coefficient			Infiltration		Side (m/hr) fety Factor	0.00000 Porc	osity 0.95			
Depth (m)	Area (m²)	Inf. Area (m²)	Depth (m)	Area (m²) Inf.	Area (m²) De	epth (m)	Area (m²) Inf	. Area (m²)	Depth (m)	Area (m²) Inf	. Area (m²)	Depth (m)	Area (m²)	Inf. Area (
0.000	45.0	45.0	0.400	45.0	55.7	0.800	45.0	66.5	1.200	45.0	77.2	2.326	0.0	8
0.100 0.200		47.7 50.4		45.0 45.0	58.4 61.1	0.900 1.000	45.0 45.0	69.1 71.8	1.300 1.320		79.9 80.4			
0.300		53.0		45.0	63.8	1.100		74.5			80.4			

		mited														Page 4	
							A12 Che	lmsford	to Al	20widen	ing						
		Section 1															
							Proposed Network S1-OU10A									Micro	
ate 15/12/2021		Designed by LM															
File PROPOSED CASE DRAINAGE MODEL_S1_OU10A_V4.MDX							Checked by AM									Drainage	
nnovyze							Network										
2	vear	Return I	Period	Summa	ry of Crit	ical Be	sults h	w Maxim	uum T.e	vel (Bar	1) t	for Pr	onosed	Neta	vork S1-		
2	ycar			<u> </u>	<u>iy or cric</u>	<u>icar ne</u>	JULICS L	y Haxin			IN 1/ 1		.000500		VOIR DI	00101	
		Ar	eal Redu	ction Fac	ctor 1.000 M	Manhole Hea		<u>tion Crite</u> f (Global)		MADD	Factor *	10m³/ha	Storage	2.000			
				Start (mi rt Level (	ins) 0		age per hec			Flow per Pe			fiecient				
										-	-	-					
Number of Input Hyd	rographs	0 Number	of Onlin	le Contro	is 1 Number of	: Offline (	Controls 0	Number of	Storage	Structures	1 Numb	er of Ti	me/Area I	iagram	s O Number	of Real Time Controls	
							<u>Synthetic</u>										
					infall Model fall Version 2		Location G ata Type	в 574850 2	08550 TI	74850 0855 Catchmen							
				ren Kain	Tall Version 2	.013 D	ata iype			Catcillien	L CV (W1	incer) i	.000				
				Margi	n for Flood Ris			Cocord Tro	noment	300.0 Extended)		Status C					
					Allo	DTS S	-	Second Inc	rement	OFF	inercia a	status t	/14				
					Pro	file(s)				Su	mmer and	Winter					
				Pot	Duration(s) urn Period(s)		, 30, 60,	120, 180,	240, 360	, 480, 600,		0, 1440 5, 100					
				Ret	Climate Char							20, 20					
			Data	<b>01</b> imate		Direct (V)	Timet (T)	0		Surcharged		<b>1</b> 1 (	061	Pipe		T	
PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow			Surcharged Depth (m)		Flow / Cap.	Overflow (l/s)	-	Status	Level Exceeded	
	Name		Period	Change					Level (m)	Depth (m)	Volume (m³)	Cap.		Flow (1/s)		Exceeded	
<b>PN</b> 1.000 1.003	Name CP01		Period	Change +20%					Level	Depth	Volume	<b>Cap</b> .		Flow	OK	Exceeded	
1.000 1.002 1.002	Name           0         CP01           1         CP02           2         CP03	15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2	<b>Change</b> +20% +20% +20%	Surcharge				Level (m) 29.496 29.048 28.658	Depth (m) -0.179 -0.152 -0.148	Volume (m <sup>3</sup> ) 0.000 0.000 0.000	Cap. 0.09 0.23 0.25	(l/s)	Flow (1/s) 4.8 11.2 12.5	OK OK	Exceeded	
1.000 1.003 1.002 1.003	Name           0         CP01           1         CP02           2         CP03           3         CP04	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2 2 2 2	<b>Change</b> +20% +20% +20% +20%	Surcharge				Level (m) 29.496 29.048 28.658 28.230	Depth (m) -0.179 -0.152 -0.148 -0.151	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	Cap. 0.09 0.23 0.25 0.23	(l/s)	Flow (1/s) 4.8 11.2 12.5 13.9	OK OK OK	Exceeded	
1.000 1.003 1.003 1.003 2.000	Name           0         CP01           1         CP02           2         CP03           3         CP04           0         TANK	15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2 2 2 2 2 2 2	<b>Change</b> +20% +20% +20%	Surcharge 100/15 Summer 5/15 Summer				Level (m) 29.496 29.048 28.658	Depth (m) -0.179 -0.152 -0.148	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	Cap. 0.09 0.23 0.25	(1/s)	Flow (1/s) 4.8 11.2 12.5 13.9 2.7	OK OK	Exceeded	

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ms 0 Number of Real Time Controls
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2
) Status Exceeded
8 ОК
9 OK 8 OK
7 OK
2 SURCHARGED
0 SURCHARGED
0 ОК
8 0 8 7 4 0

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•							A12 Che	lmsford	to Al	120widen	ing						
				Propose	d Netwo	rk S1-	-OU10A						Micro				
Date 15/12/2021 (		Designed by LM															
File PROPOSED CASE DRAINAGE MODEL_S1_OU10A_V4.MDX							Checked	by AM								Drainage	
Innovyze							Network	2019.1									
<u>100</u>	year	<u>Return</u>	Perio	<u>d Summ</u>	ary of Cr	itical B	Results	by Maxi	<u>imum L</u>	evel (Ra	ank 1)	for F	ropose	ed Net	work S1	-0U10A	
							Simula	tion Crite:	ria								
		Ar		ction Fac Start (mi	ctor 1.000 I ins) 0		adloss Coef age per hec			MADD	Factor *		Storage fiecient				
				t Level (						Flow per Pe							
Number of Input Hydr	rograph	s () Number	of Onlir	e Contro'	ls 1 Number c	f Offline (	Controls 0	Number of	Storage	Structures	s 1 Numb	er of Ti	me/Area	Diagrams	0 Number	of Real Time Controls	
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				Ra	infall Model	FEH Site	Synthetic Location G			74850 0855	50 Cv (Si	mmer) 1	.000				
					fall Version		ata Type	5 0,1000 2	00000 11		nt Cv (Wi						
				Margi	n for Flood Ri	isk Warning	(mm)			300.0	DVD S	tatus C	N				
						nalysis Tim	estep 2.5	Second Inc	rement /	(Extended)							
						DTS S	tatus			OFF							
					_												
						ofile(s) (mins) 15	5, 30, 60,	120, 180,	240, 360	Su ), 480, 600,	ummer and , 720, 96						
				Reti	urn Period(s)							5, 100					
					Climate Cha	ange (%)					20,	20, 20					
									Water	Surcharged	Flooded			Pipe			
	US/MH			Climate	First (X)		First (Z)			Depth		-	Overflow		<u>.</u>	Level	
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	ACT.	(m)	(m)	(m³)	Cap.	(l/s)	(1/s)	Status	Exceeded	
1.000		15 Summer		+20% +20%					29.532 29.135	-0.143 -0.065		0.28 0.81		14.7 39.7	OK OK		
		15 Summer 15 Summer							29.135	-0.065		0.81		39.7 45.2	OK		
		120 Summer		+20%	100/15 Summer				28.456	0.075		0.39			SURCHARGED		
		120 Summer			5/15 Summer				28.446	0.672		0.19			SURCHARGED		
		120 Summer 120 Summer			2/15 Summer				28.447 27.463			0.11 0.07		5.0 5.0	SURCHARGED		
1.005	CP06	120 Summer	100	+20%					27.463	-0.187	0.000	0.07		5.0	OK		

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Project Name	A12 Chelmsford to A120 widening scheme					
Project Number	HE551497					

File Number	HE551497-JAC-HDG-S1_J19-CA-D-0005								
Document Description	MICRODRAINAGE MODELLING RESULTS FOR PROPOSED CATCHMENT S1-OU11 & 12								
Purpose of Issue	S2 - SUITABLE FOR INFORMATION		Status Code	S2					
Current Revision		P01							
Calculation Number	0005	Index Page	1 of 32	Sheet Nos (incl. cover sheet)	32				

P01	FIRST ISSUE	LM	AM	AM	DT	07/06/22
Rev	Comments	Originated	Checked	Reviewed	Approved	Date

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### Summary

This calculation sheet documents the Microdrainage modelling results (1D analysis) for the proposed highway drainage catchments "Section 1 - Outfalls 11 & 12 (S1-OU11 & S1-OU12) for the 1 in 1, 1 in 2, 1 in 5 and 1 in 100 year return period design events.

It should be noted that the Microdrainage modelling results have been summarised by "the maximum water level for critical storm duration" for all design events meaning that the discharge rates presented from the Microdrianage modelling results may vary slightly from the proposed discharge rates documented within Appendix C - Table C.1 of the surface water drainage design report (Document Ref. HE551497-JAC-HDG-S1\_J19-RP-D-0001).

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	
Free Flowing Outfal	l Details for Proposed Network S1-OU11&12	
Outfall C Pipe Number	Outfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
1.006	OU11 24.482 23.262 22.600 675 0	
Free Flowing Outfal	ll Details for Proposed Network S1-OU11&12	
Outfall O Pipe Number	Outfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (m)	
39.009 Prop	posed OU12 25.000 24.016 24.016 600 0	
Simulation Crit	teria for Proposed Network S1-OU11&12	
Volumetric Runoff Coeff 1.000 Hot Start Level (m Areal Reduction Factor 1.000 Manhole Headloss Coeff (Globa Hot Start (mins) 0 Foul Sewage per hectare (1/	al) 0.500 MADD Factor * 10m³/ha Storage 0.000 Run Time	(mins) 60
Number of Input Hydrographs 0 Number of Online Controls 2 Number of Offline	ne Controls 7 Number of Storage Structures 4 Number of Time/Area Diagrams 0 $N_{\rm T}$	umber of Real Time Controls O
Sy	unthetic Rainfall Details	
Rainfall Model Return Period (years) FEH Rainfall Version Site Location GB 574850 20855	FEH Data Type Catchment Cv (Winter) 0.840 100 Summer Storms Yes Storm Duration (mins) 30 2013 Winter Storms No 30 TL 74850 08550 Cv (Summer) 1.000	
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•	A12 Chelmsford to A120widening	
•	Section 1	
	Proposed Network S1-OU11 & 12	Mirro
Date 15/12/2021	Designed by LM	— Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	
Online Contr	cols for Proposed Network S1-0U11&12	
Orifice Manhole: Pon	nd Outlet 1, DS/PN: 1.006, Volume (m³): 50.8	
Diameter (m) 0.224	Discharge Coefficient 0.600 Invert Level (m) 25.900	
Orifice Manhole: Pon	nd Outlet 2, DS/PN: 39.009, Volume (m³): 5.4	
Diameter (m) 0.595	Discharge Coefficient 0.600 Invert Level (m) 25.700	
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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	
Storage Struc	tures for Proposed Network S1-OU11&12	
Infiltration	Trench Manhole: CP179, DS/PN: 19.000	
Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Inv Safety Factor 2.0 Tre	Porosity 0.20 Trench Length (m) 46.0 Cap Infiltration Depth (m) 0.000 vert Level (m) 33.789 Slope (1:X) 200.0 ench Width (m) 1.0 Cap Volume Depth (m) 0.000	
Infiltration	Trench Manhole: CP180, DS/PN: 19.001	
Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Inv Safety Factor 2.0 Tre	Porosity 0.20 Trench Length (m) 52.6 Cap Infiltration Depth (m) 0.000 vert Level (m) 33.614 Slope (1:X) 300.6 ench Width (m) 1.0 Cap Volume Depth (m) 0.000	
Tank or Pond	Manhole: Pond Outlet 1, DS/PN: 1.006	
	Invert Level (m) 25.900	
Depth (m) Area	a (m²)   Depth (m) Area (m²)   Depth (m) Area (m²)	
0.000	1200.0 0.900 1682.8 1.200 1861.8	
Tank or Pond I	Manhole: Pond Outlet 2, DS/PN: 39.009	
	Invert Level (m) 25.700	
Depth (m) Area	a (m²)   Depth (m) Area (m²)   Depth (m) Area (m²)	
0.000	500.0 0.900 826.1 1.200 952.9	
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	A12 Chelms	ford to A120wi	idening					
	Section 1							
		Network S1-OU11	L. 12					
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ate 15/12/2021	Designed b	-						Drainage
ile proposed case drainage model_s1_oul1 & oul2	Checked by	/ AM						Diginiage
nnovyze	Network 20	20.1.3						
<u>1 year Return Period Summary of Cr</u>	itical Results by Ma	aximum Level (	Rank 1)	for Propo	sed Netwo	ork S	1-0U1	1&12
Areal Deduction Frater 1 000	Simulation		MADD Fasta	n * 10m3/ba Ct				
Areal Reduction Factor 1.000 Hot Start (mins) 0	Manhole Headloss Coeff (G Foul Sewage per hectare		MADD Facto	r * 10m³/ha St Inlet Coeffie				
	Additional Flow - % of Tota		per Person ;					
		where of the co		when a C m L (	D'	- 0		
Number of Input Hydrographs 0 Number of Online Controls 2 Number	r of UTILINE CONTROLS / Num	wer of storage Struc	ctures 4 Ni	under of Time/.	area Diagram	s v Nu	mber of	Real Time Controls
	Synthetic Rain							
Rainfall Mor		FEH D1 (1km) (		' (1km) 2.556				
FEH Rainfall Vers	ion ion GB 574850 208550 TL 748	1999 D2 (1km) ( 850 08550 D3 (1km) (						
C (1		-0.023 E (1km) (		111Cer) 1.000				
	Diele Menseinen (mm)							
Margin for Flood	Analysis Timestep 2.5 Seco DTS Status		ded) Inerti OFF					
Duration Return Period(	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120,	ond Increment (Extend	ded) Inerti OFF Summer	a Status ON and Winter				
Duration Return Period(	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years)	ond Increment (Extend	ded) Inerti OFF Summer	a Status ON and Winter 960, 1440 1				
Duration Return Period(	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years)	ond Increment (Extend	ded) Inerti OFF Summer , 600, 720,	a Status ON and Winter 960, 1440 1	Half Drain	Pipe		
Duration Return Period( Climate US/MH Return Climate First (X) Fi	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	<pre>Dond Increment (Extend 180, 240, 360, 480, Water Surcharged Level Depth</pre>	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl	and Winter 960, 1440 1 20 ow / Overflow	Time	Flow		Level
Duration Return Period( Climate	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	ond Increment (Extend 180, 240, 360, 480, Water Surcharged	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl	a Status ON and Winter 960, 1440 1 20		Flow	Status	Level Exceeded
Duration Return Period( Climate US/MH Return Climate First (X) Fi	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	<pre>Dond Increment (Extend 180, 240, 360, 480, Water Surcharged Level Depth</pre>	ded) Inerti OFF , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C	and Winter 960, 1440 1 20 ow / Overflow	Time	Flow	Status	
Duration Return Period ( Climate US/MH Return Climate First (X) Fi PN Name Storm Period Change Surcharge	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water Surcharged (m) (m) (m)	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s)	Time	Flow (l/s)		
Duration Return Period ( Climate <b>US/MH Return Climate First (X) Fi</b> <b>PN Name Storm Period Change Surcharge</b> 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	water       Surcharged         Level       Depth         (m)       (m)         31.603       -0.182         31.422       -0.133         32.096       -0.294	ded) Inerti OFF 500, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00	Time	Flow (1/s) 2.9 14.6 0.3	OK OK	
Duration Return Period ( Climate <b>US/MH Return Climate First (X) Fi</b> <b>PN Name Storm Period Change Surcharge</b> 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20% 3.000 CP175 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01	Time	Flow (1/s) 2.9 14.6 0.3 0.8	OK OK OK	
Duration Return Period ( Climate <b>US/MH Return Climate First (X) Fi</b> <b>PN Name Storm Period Change Surcharge</b> 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20% 3.000 CP175 15 Summer 1 +20% 2.001 CP2013 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365	<pre>ded) Inerti OFF Summer , 600, 720,  Flooded Volume Fl (m<sup>3</sup>) C 0.000 0.000 0.000 0.000 0.000 0.000</pre>	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4	OK OK OK OK	
Duration Return Period ( Climate PN Name Storm Period Change Surcharge 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20% 3.000 CP175 15 Summer 1 +20% 2.001 CP2013 15 Summer 1 +20% 2.001 CP2013 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           30.3025         -0.365           30.022         -0.328	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000 0.000 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0	OK OK OK OK	
Duration Return Period ( Climate PN Name Storm Period Change Surcharge 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20% 3.000 CP175 15 Summer 1 +20% 2.001 CP2013 15 Summer 1 +20% 1.002 CP155 15 Summer 1 +20% 1.002 CP155 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water       Surcharged         Level       Depth         (m)       (m)         31.603       -0.182         31.422       -0.133         32.096       -0.294         32.303       -0.287         30.025       -0.328         33.819       -0.289	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000 0.000 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4	OK OK OK OK	
Duration Return Period ( Climate <b>US/MH</b> Return Climate First (X) Fi <b>PN</b> Name Storm Period Change Surcharge 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20% 3.000 CP175 15 Summer 1 +20% 2.001 CP2013 15 Summer 1 +20% 1.002 CP155 15 Summer 1 +20% 4.000 CP1 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365           33.819         -0.289           33.500         -0.255	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 5.5	OK OK OK OK OK	
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Duration Return Period ( Climate US/MH Return Climate First (X) Fi PN Name Storm Period Change Surcharge 1.000 CP153 15 Summer 1 +20% 1.001 CP154 15 Summer 1 +20% 2.000 CP2015 15 Summer 1 +20% 3.000 CP175 15 Summer 1 +20% 2.001 CP2013 15 Summer 1 +20% 1.002 CP155 15 Summer 1 +20% 4.000 CP1 15 Summer 1 +20% 4.001 CP2 15 Summer 1 +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365           33.819         -0.289           33.500         -0.255           33.131         -0.234	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05 0.11	Time	Flow (l/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 5.5 10.8	OK OK OK OK OK	
US/MH         Return         Climate           Name         Storm         Period         Change           1.000         CP153         15         Summer         1         +20%           1.001         CP154         15         Summer         1         +20%           2.000         CP2015         15         Summer         1         +20%           3.000         CP175         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           1.002         CP155         15         Summer         1         +20%           1.002         CP155         15         Summer         1         +20%           4.000         CP1         15         Summer         1         +20%           4.001         CP2         15         Summer         1         +20%           4.002         CP3         15         Summer         1         +20%           4.003         CP4         15         Summer         1         +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           180, 240, 360, 480,           Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365           30.025         -0.328           33.819         -0.289           33.500         -0.255           33.131         -0.234           32.833         -0.217	<pre>ded) Inerti OFF Summer , 600, 720,  Flooded Volume Fl (m<sup>3</sup>) C 0.000 0.00</pre>	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05 0.11 0.17	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 5.5 10.8 17.6	OK OK OK OK OK OK	
US/MH         Return         Climate         First (X)         Fi           PN         Name         Storm         Period         Change         Surcharge           1.000         CP153         15         Summer         1         +20%           1.001         CP154         15         Summer         1         +20%           2.000         CP2015         15         Summer         1         +20%           3.000         CP175         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           4.002         CP155         15         Summer         1         +20%           4.001         CP2         15         Summer         1         +20%           4.002         CP3         15         Summer         1         +20%           4.003         CP4         15         Summer         1         +20%           4.004         CP5         15         Summer	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365           33.819         -0.289           33.500         -0.255           33.131         -0.234           32.833         -0.217           32.418         -0.200           34.851         -0.228           34.381         -0.200	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05 0.11 0.7 0.24 0.13 0.24	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 5.5 10.8 17.6 24.9 21.0 35.1	0K 0K 0K 0K 0K 0K 0K 0K 0K 0K	
US/MH         Return         Climate         First (X)         Fi           PN         Name         Storm         Period         Change         Surcharge           1.000         CP153         15         Summer         1         +20%           1.001         CP154         15         Summer         1         +20%           2.000         CP2015         15         Summer         1         +20%           3.000         CP175         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           1.002         CP155         15         Summer         1         +20%           4.000         CP1         15         Summer         1         +20%           4.001         CP2         15         Summer         1         +20%           4.002         CP3         15         Summer         1         +20%           4.003         CP4         15         Summer         1         +20%           4.004         CP5         15         Summer         1         +20%           5.001         CP78         15         Summer	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.328           33.819         -0.289           33.3131         -0.234           32.833         -0.217           32.418         -0.203           34.851         -0.228           34.851         -0.220           33.864         -0.204	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.000	a Status ON and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.035 0.00 0.01 0.02 0.16 0.01 0.05 0.11 0.17 0.24 0.22	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 5.5 10.8 17.6 24.9 21.0 35.1 34.8	0K 0K 0K 0K 0K 0K 0K 0K 0K 0K	
US/MH         Return         Climate           PN         Name         Storm         Period         Change         Surcharge           1.000         CP153         15         Summer         1         +20%           1.001         CP154         15         Summer         1         +20%           2.000         CP2015         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           1.002         CP155         15         Summer         1         +20%           4.000         CP1         15         Summer         1         +20%           4.001         CP2         15         Summer         1         +20%           4.002         CP3         15         Summer         1         +20%           4.003         CP4         15         Summer         1         +20%           4.004         CP5         15         Summer         1         +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           180, 240, 360, 480,           Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365           30.025         -0.365           33.819         -0.228           33.819         -0.228           33.131         -0.234           32.833         -0.217           32.418         -0.200           34.851         -0.228           34.381         -0.200           33.454         -0.186	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05 0.11 0.17 0.24 0.22 0.30	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 1.4 29.0 0.5 5 10.8 17.6 24.9 21.0 35.1 34.8 43.0	0K 0K 0K 0K 0K 0K 0K 0K 0K 0K 0K 0K	
US/MH         Return         Climate         First (X)         Fi           PN         Name         Storn         Period         Change         Surcharge           1.000         CP153         15         Summer         1         +20%           1.001         CP154         15         Summer         1         +20%           2.000         CP2015         15         Summer         1         +20%           3.000         CP175         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           1.002         CP155         15         Summer         1         +20%           4.000         CP1         15         Summer         1         +20%           4.001         CP2         15         Summer         1         +20%           4.002         CP3         15         Summer         1         +20%           4.003         CP4         15         Summer         1         +20%           5.001         CP77         15         Summer	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           180, 240, 360, 480,           180, 240, 360, 480,           Uater           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           180, 240, 360, 480,           31.402           0.22           0.33, 819           0.22           0.33, 819           0.22           33.11           0.234           32.833           0.217           32.418           0.200           34.851           0.228           33.454           0.204           33.454           0.216	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.0000 0.0000 0.0000 0.000000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05 0.01 0.05 0.11 0.17 0.24 0.13 0.24 0.13 0.24 0.13 0.24 0.35 0.37	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 5.5 10.8 17.6 24.9 21.0 35.1 34.8 43.0 51.4	0K 0K 0K 0K 0K 0K 0K 0K 0K 0K 0K 0K	
US/MH         Return         Climate           PN         Name         Storm         Period         Change         Surcharge           1.000         CP153         15         Summer         1         +20%           1.001         CP154         15         Summer         1         +20%           2.000         CP2015         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           2.001         CP2013         15         Summer         1         +20%           1.002         CP155         15         Summer         1         +20%           4.000         CP1         15         Summer         1         +20%           4.001         CP2         15         Summer         1         +20%           4.002         CP3         15         Summer         1         +20%           4.003         CP4         15         Summer         1         +20%           4.004         CP5         15         Summer         1         +20%	Analysis Timestep 2.5 Seco DTS Status Profile(s) (s) (mins) 15, 30, 60, 120, s) (years) Change (%) .rst (Y) First (Z) Overflow	Water         Surcharged           Level         Depth           (m)         (m)           31.603         -0.182           31.422         -0.133           32.096         -0.294           32.303         -0.287           30.025         -0.365           33.819         -0.238           33.819         -0.234           32.833         -0.217           32.418         -0.200           34.851         -0.228           34.381         -0.200           33.454         -0.186           32.874         -0.216	ded) Inerti OFF Summer , 600, 720, Flooded Volume Fl (m <sup>3</sup> ) C 0.0000 0.000 0.0000 0.0000 0.0000 0.000000	and Winter 960, 1440 1 20 ow / Overflow ap. (1/s) 0.08 0.35 0.00 0.01 0.02 0.16 0.01 0.05 0.11 0.17 0.24 0.22 0.30	Time	Flow (1/s) 2.9 14.6 0.3 0.8 1.4 29.0 0.8 1.4 29.0 0.5 5 10.8 17.6 24.9 21.0 35.1 34.8 43.0	0K 0K 0K 0K 0K 0K 0K 0K 0K 0K 0K 0K	

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	PN	Name	Storm			Surcharge	First (I) Flood	First (Z) Overflow	Act.	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (l/s)	Time (mins)	Flow (1/s)	Status	Level Exceeded
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	6.001	DIT04	15 Summer	1	+20%					35.770	-0.460	0.000	0.01			10.0	OK	
	6.002		15 Summer		+20%					34.969	-0.431	0.000	0.03			13.0		
	7.000		15 Summer		+20%					35.888	-0.462	0.000	0.01			9.1	OK	
	7.001		15 Summer		+20%					35.254	-0.446	0.000	0.02			13.7		
	6.003		15 Summer		+20%					34.715	-0.147	0.000	0.26			26.3		
	8.000		15 Summer		+20%					33.904	-0.219	0.000	0.01			0.4	OK	
	6.004 6.005		15 Summer		+20% +20%					33.629 33.123	-0.184	0.000	0.31 0.33			29.0 30.5		
	6.005		15 Summer 15 Summer		+20%					32.794	-0.181 -0.285	0.000	0.33			30.5		
	5.006		15 Summer		+20%					32.623	-0.106	0.000	0.13			79.2		
	5.000		15 Summer		+20%					32.560	-0.119	0.000	0.79			81.1	OK	
	9.000		15 Summer		+20%					33.003	-0.261	0.000	0.04			2.1		
	9.001		15 Summer		+20%					32.909	-0.254	0.000	0.06			2.9		
	5.008		15 Summer		+20%					32.450	-0.126	0.000	0.76			81.1	OK	
	10.000		15 Summer		+20%					33.535	-0.157	0.000	0.20			7.1		
	5.009	CP15	15 Summer	1	+20%					32.291	-0.116	0.000	0.81			81.8	OK	
	11.000	DN21	15 Summer	1	+20%					33.396	-0.189	0.000	0.06			2.5	OK	
	5.010	CP16	15 Summer	1	+20%					32.188	-0.126	0.000	0.76			80.7	OK	
	12.000		15 Summer		+20%					33.307	-0.196	0.000	0.04			1.6		
	5.011		15 Summer		+20%					32.054	-0.099	0.000	0.89			79.8	OK	
	4.005		15 Summer		+20%					31.995	-0.116	0.000	0.81			85.8	OK	
	13.000		15 Summer		+20%					32.793	-0.124	0.000	0.42			13.0	OK	
	4.006		15 Summer		+20%					31.774	-0.188	0.000	0.58			86.8	OK	
	14.000		15 Summer		+20%					32.662	-0.109	0.000	0.52			15.1	OK	
	15.000		15 Summer		+20% +20%					33.005	-0.215	0.000	0.01 0.21			0.6 8.8		
	16.000		15 Summer 15 Summer		+20%					33.584 33.224	-0.155 -0.155	0.000	0.21			10.4	OK	
	17.000		15 Summer 15 Summer		+20%					32.959	-0.133	0.000	0.21			10.4	OK	
	18.000		15 Summer		+20%					33.314	-0.200	0.000	0.00			1.0		
	17.001		15 Summer		+20%					32.827	-0.147	0.000	0.13			3.5		
	16.002		15 Summer		+20%					32.817	-0.121	0.000	0.41			12.8		
	15.001		15 Summer		+20%					32.526	-0.168	0.000				13.4	OK	
	19.000		15 Summer		+20%					34.140	-0.179					21.3		
	19.001		15 Summer	1						33.955		0.000				29.7		
	19.002	CP181	15 Summer	1	+20%					33.788	-0.126	0.000	0.62			32.2	OK	
	20.000		15 Summer		+20%					35.395	-0.193		0.05			2.9		
			15 Summer							33.895	-0.194	0.000				2.9		
	19.003		15 Summer							33.700	-0.129	0.000				39.4		
	19.004		15 Summer							33.478	-0.108	0.000				47.0		
	19.005		30 Summer							32.977	-0.161	0.000				46.3		
	21.000 22.000		15 Summer 15 Summer							33.318 34.326	-0.191 -0.204	0.000				22.0 0.8		
	000	QL 17	_o ouningr	Ť	1200							0.000	0.02			0.0	010	
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								Prop	osed Ne	etwork	S1-OU11	& 12						Micco
5/12/2	2021							Desi	gned by	7 LM								Micro
				MODET	C1 OTT	11 6 0111	2 MDV											Draina
	ED CF	ASE DR.	AINAGE I	MODEL_	_51_00	11 & OU1	Z.MDX		ked by									
ze								Netw	ork 202	20.1.3								
	1 .	year R	eturn P	eriod	Summa	ry of Ci	ritical	Results	s by Ma	ximum	Level (1	Rank 1	) for	Propos	ed Netw	ork S	1-0U1	1&12
										Water	Surcharged	Flooded			Half Drain	n Pipe		
		US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow		Depth		Flow /	Overflow	Time	Flow		Level
	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Status	Exceeded
-	22.001	0049	15 Summor	1	+20%					33.979	-0 179	0.000	0.03			1 1	OK	
	22.001		15 Summer 15 Summer		+20%					33.979	-0.179 -0.117	0.000	0.03			1.1 37.7		
	22.003		15 Summer		+20%					33.598	-0.124	0.000	0.62			38.2		
	22.004		15 Summer							33.350	-0.123	0.000	0.63			38.5		
2	22.005	CP36	15 Summer	1	+20%					33.097	-0.124	0.000	0.62			38.5	OK	
2	22.006	CP37	15 Summer	1	+20%					32.794	-0.124	0.000	0.63			38.2	OK	
2	22.007	CP80	15 Summer	1	+20%					32.507	-0.203	0.000	0.23			38.4	OK	
1	L9.006	CP185	15 Summer	1	+20%					32.082	-0.164	0.000	0.61			87.8	OK	
	L5.002	CP25	30 Summer	1	+20%					31.918	-0.191	0.000	0.49			94.2	OK	
	4.007		15 Summer		+20%					31.695	-0.169	0.000	0.80			178.1		
	23.000		15 Summer		+20%					32.547	-0.155	0.000	0.21			9.2		
	4.008		30 Summer		+20%					31.618	-0.187	0.000	0.74			179.8		
	24.000		15 Summer							32.575	-0.151	0.000	0.23			11.0		
	4.009		30 Summer		+20%					31.518	-0.200	0.000	0.70			180.8		
	25.000 4.010		15 Summer 30 Summer		+20% +20%					32.570 31.411	-0.138 -0.178	0.000	0.31 0.77			14.0 182.8		
	26.000		15 Summer		+20%					32.461	-0.162	0.000	0.17			8.3		
	4.011		30 Summer		+20%					31.305	-0.206	0.000	0.68			183.5		
	27.000		15 Summer							32.428	-0.128	0.000	0.38			16.7		
	28.000		15 Summer		+20%					31.905	-0.160	0.000	0.16			6.2		
			15 Summer							31.130	-0.175	0.000	0.11			6.3		
	4.012	CP31	30 Summer	1	+20%					31.069	-0.265	0.000	0.49			186.5	OK	
2	29.000	DN11	15 Summer	1	+20%					32.252	-0.140	0.000	0.30			13.3	OK	
	4.013		30 Summer		+20%					30.756	-0.265	0.000	0.49			188.2		
	30.000		15 Summer							33.129	-0.251	0.000	0.06			4.3		
	30.001		15 Summer							32.721	-0.245	0.000	0.07			5.4		
	30.002		15 Summer							32.578	-0.240	0.000	0.09			6.6		
			15 Summer		+20%					33.421	-0.479	0.000	0.00			1.5		
			15 Summer							33.124	-0.476	0.000	0.00			1.4		
			15 Summer		+20% +20%					32.772	-0.268	0.000	0.03			2.9		
	30.003		15 Summer 15 Summer		+20%					32.258 32.916	-0.230 -0.484	0.000	0.12			9.1 0.6		
			15 Summer 15 Summer		+20%					32.916	-0.484					0.0		
			15 Summer 15 Summer							32.924	-0.290		0.00			1.5		
	30.001		15 Summer							31.972	-0.223	0.000				11.1		
	30.005		15 Summer		+20%					31.673	-0.219	0.000				11.0		
	35.000		15 Summer							32.174	-0.137	0.000				12.3		
	4.014		30 Summer							30.459	-0.215	0.000				192.3		
	36.000		15 Summer							32.252	-0.159	0.000	0.19			7.0		
	4.015		30 Summer		+20%					30.297	-0.216	0.000				193.0		
	37.000		15 Summer							32.318	-0.170	0.000				7.2		
	4.016	CP46	30 Summer	1	+20%					30.073	-0.273	0.000	0.58			193.8	OK	
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							A12 Ch	nelmsfor	rd to	A120wide	ening						
							Sectio	on 1									
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							Propos	sed Netw	work S	31-OU11 a	& 12					N	licro
Date 15/12/	2021						Design	ned by I	LM								
Tile PROPOS	ED CASE DRA	AINAGE M	ODEL	S1 OU1	.1 & OU12	.MDX	Checke	ed by AN	M								Irainage
Innovyze								ck 2020.									
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									Water	Surcharged	Flooded				<b>-</b> ·		
PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.		Depth (m)	Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Flow (1/s)	Status	Level Exceeded
	Name			Change					Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	(1/s)	Time	Flow (1/s)		Exceeded
1.003	Name CP156	30 Winter		Change +20%					Level (m) 29.339	<b>Depth</b> (m) -0.273	Volume (m³) 0.000	Flow / Cap. 0.58	(1/s)	Time	Flow (1/s) 200.0	OK	Exceeded
	Name CP156 CP190			Change					Level (m)	Depth (m) -0.273 -0.148	Volume (m <sup>3</sup> ) 0.000 0.000	Flow / Cap. 0.58 0.25	(1/s)	Time	Flow (1/s)		Exceeded
1.003 38.000	Name CP156 CP190 CP191	30 Winter 15 Summer		<b>Change</b> +20% +20%					Level (m) 29.339 31.129	<b>Depth</b> (m) -0.273	Volume (m <sup>3</sup> ) 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44	(1/s)	Time	Flow (1/s) 200.0 10.9	OR	Exceeded
1.003 38.000 38.001	Name CP156 CP190 CP191 CP192	30 Winter 15 Summer 15 Summer		<b>Change</b> +20% +20% +20%					Level (m) 29.339 31.129 30.949	Depth (m) -0.273 -0.148 -0.116	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8	OR OR	Exceeded
1.003 38.000 38.001 38.002	Name CP156 CP190 CP191 CP192 CP200	30 Winter 15 Summer 15 Summer 15 Summer		Change +20% +20% +20% +20%					Level (m) 29.339 31.129 30.949 30.360	Depth (m) -0.273 -0.148 -0.116 -0.175	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2	OK OK	Exceeded
1.003 38.000 38.001 38.002 1.004 1.005	Name CP156 CP190 CP191 CP192 CP200	30 Winter 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer		Change +20% +20% +20% +20% +20%					Level (m) 29.339 31.129 30.949 30.360 28.409	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5	OK OK OK	Exceeded
1.003 38.000 38.001 38.002 1.004 1.005 1.006 39.000	Name CP156 CP190 CP191 CP192 CP200 Pond Inlet 1 Pond Outlet 1 CP2018A	30 Winter 15 Summer 15 Summer 30 Summer 30 Summer 360 Summer 15 Summer		Change +20% +20% +20% +20% +20% +20% +20%	Surcharge	Flood			Level (m) 29.339 31.129 30.949 30.360 28.409 26.697 26.182 32.485	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441 -0.378 -0.393 -0.065	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40 0.03 0.61	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5 214.6 40.0 2.9	OK OK OK OK OK	Exceeded
1.003 38.000 38.001 38.002 1.004 1.005 1.006 39.000 39.001	Name CP156 CP190 CP191 CP192 CP200 Pond Inlet 1 Pond Outlet 1 CP2018A CP2018	30 Winter 15 Summer 15 Summer 30 Summer 30 Summer 360 Summer 15 Summer		Change +20% +20% +20% +20% +20% +20% +20% +20%		Flood			Level (m) 29.339 31.129 30.949 30.360 28.409 26.697 26.182 32.485 32.301	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441 -0.378 -0.393 -0.065 0.006	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40 0.03 0.61 1.82	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5 214.6 40.0 2.9 17.9	OK OK OK OK OK OK OK OK	Exceeded
1.003 38.000 38.001 38.002 1.004 1.005 1.006 39.000 39.001 39.002	Name CP156 CP190 CP191 CP192 CP200 Pond Inlet 1 Pond Outlet 1 CP2018A CP2018 CP2017	30 Winter 15 Summer 15 Summer 30 Summer 30 Summer 360 Summer 15 Summer 15 Summer		Change +20% +20% +20% +20% +20% +20% +20% +20%	Surcharge	Flood			Level (m) 29.339 31.129 30.949 30.360 28.409 26.697 26.182 32.485 32.301 31.893	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441 -0.378 -0.393 -0.065 0.006 -0.082	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40 0.03 0.61 1.82 0.71	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5 214.6 40.0 2.9 17.9 22.7	OK OK OK OK OK SURCHARGEL OK	Exceeded
1.003 38.000 38.001 38.002 1.004 1.005 1.006 39.000 39.000 39.002 39.003	Name CP156 CP190 CP191 CP192 CP200 Pond Inlet 1 Pond Outlet 1 CP2018A CP2018 CP2017 CP6010	30 Winter 15 Summer 15 Summer 30 Summer 30 Summer 360 Summer 15 Summer 15 Summer 15 Summer 15 Summer		Change +20% +20% +20% +20% +20% +20% +20% +20%	Surcharge	Flood			Level (m) 29.339 31.129 30.949 30.360 28.409 26.697 26.182 32.485 <b>32.301</b> 31.893 30.929	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441 -0.378 -0.393 -0.065 0.006 -0.082 -0.211	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40 0.03 0.61 1.82 0.71 0.19	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5 214.6 40.0 2.9 17.9 22.7 22.5	OK OK OK OK OK OK SURCHARGED OK	
1.003 38.000 38.001 38.002 1.004 1.005 1.006 39.000 39.001 39.002 39.002 39.003 40.000	Name CP156 CP190 CP191 CP202 Pond Inlet 1 Pond Outlet 1 CP2018A CP2018 CP2017 CP6010 CPDN10	30 Winter 15 Summer 15 Summer 30 Summer 30 Summer 360 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer		Change +20% +20% +20% +20% +20% +20% +20% +20%	Surcharge	Flood			Level (m) 29.339 31.129 30.949 30.360 28.409 26.697 26.182 32.485 32.301 31.893 30.929 32.329	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441 -0.378 -0.393 -0.065 0.006 -0.082 -0.211 -0.110	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40 0.03 0.61 1.82 0.71 0.19 0.15	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5 214.6 40.0 2.9 17.9 22.7 22.5 2.4	OK OK OK OK OK SURCHARGEL OK OK	Exceeded
1.003 38.000 38.001 38.002 1.004 1.005 1.006 39.000 39.000 39.002 39.003	Name CP156 CP190 CP191 CP192 CP200 Pond Inlet 1 Pond Outlet 1 CP2018A CP2018 CP2017 CP6010 CP162	30 Winter 15 Summer 15 Summer 30 Summer 30 Summer 360 Summer 15 Summer 15 Summer 15 Summer 15 Summer		Change +20% +20% +20% +20% +20% +20% +20% +20%	Surcharge	Flood			Level (m) 29.339 31.129 30.949 30.360 28.409 26.697 26.182 32.485 <b>32.301</b> 31.893 30.929	Depth (m) -0.273 -0.148 -0.116 -0.175 -0.441 -0.378 -0.393 -0.065 0.006 -0.082 -0.211 -0.110 -0.137	Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	Flow / Cap. 0.58 0.25 0.44 0.36 0.16 0.40 0.03 0.61 1.82 0.71 0.19 0.15 0.32	(1/s)	Time	Flow (1/s) 200.0 10.9 18.8 42.2 216.5 214.6 40.0 2.9 17.9 22.7 22.5	OK OK OK OK OK OK SURCHARGED OK	

39.003	CP6010	15 Summer	1	+20%	30.929	-0.211	0.000	0.19		22.5	OK	
40.000	CPDN10	15 Summer	1	+20%	32.329	-0.110	0.000	0.15		2.4	OK	
40.001	CP162	15 Summer	1	+20%	31.578	-0.137	0.000	0.32		17.9	OK	
39.004	CP161	15 Summer	1	+20%	30.616	-0.144	0.000	0.51		60.7	OK	
39.005	CP160	15 Summer	1	+20%	29.536	-0.254	0.000	0.22		91.1	OK	
41.000	Ditch 7	15 Summer	1	+20%	30.381	-0.233	0.000	0.04		3.8	FLOOD RISK	
41.001	Ditch 8	15 Summer	1	+20%	30.178	-0.212	0.000	0.07		6.5	FLOOD RISK	
42.000	Ditch 10	15 Summer	1	+20%	30.630	-0.284	0.000	0.00		1.2	FLOOD RISK	
41.002	Ditch 9	15 Summer	1	+20%	29.916	-0.244	0.000	0.08		7.1	OK	
41.003	CP157	15 Summer	1	+20%	29.567	-0.343	0.000	0.12		23.1	OK	
41.004	CP159A	15 Summer	1	+20%	29.316	-0.284	0.000	0.29		48.4	OK	
41.005	CP159	15 Summer	1	+20%	0 29.135	-0.374	0.000	0.07	0.0	62.4	OK	
43.000	CP193	15 Summer	1	+20%	30.396	-0.244	0.000	0.26		26.4	OK	
43.001	CP194	15 Summer	1	+20%	30.295	-0.216	0.000	0.36		36.2	OK	
43.002	CP195	15 Summer	1	+20%	30.219	-0.203	0.000	0.43		43.8		
41.006	EXCP4050D	15 Winter	1	+20% 1/15 Summe:		0.060	0.000	0.61			SURCHARGED	
39.006	CP091002	15 Winter	1	+20% 1/15 Summe:		0.047	0.000	0.58			SURCHARGED	
44.000	CP167	15 Summer	1	+20%	35.067	-0.103	0.000	0.21		2.9		
45.000	CP2111	15 Summer	1	+20%	34.420	-0.155	0.000	0.19		7.8		
46.000	CP2109	15 Summer	1	+20%	34.991	-0.184	0.000	0.08		4.8	OK	
47.000	CP2027	15 Summer	1	+20%	34.745	-0.190	0.000	0.05		1.9		
48.000	CP2026	15 Summer	1	+20%	34.695	-0.130	0.000	0.34		9.7	OK	
48.001	CP2025	15 Summer	1	+20%	34.522	-0.093	0.000	0.64		27.2	OK	
47.001	CP2025.1	15 Summer	1	+20%	0 34.231	-0.199	0.000	0.25	0.0	29.1	OK	
45.001	CP2110	15 Summer	1	+20% 1/15 Summe:		0.052	0.000	2.28			SURCHARGED	
44.001	CP168	15 Summer	1	+20%	33.780	-0.100	0.000	0.77		72.0		
44.002	CP169	15 Summer	1	+20% 1/15 Summe:			0.000	0.93			SURCHARGED	
44.003	CP170	15 Summer	1	+20% 1/15 Summe:		0.017	0.000	1.09			SURCHARGED	
49.000	CP2024	15 Summer	1	+20%	34.136	-0.099	0.000	0.57		13.8	OK	
49.001	CP2023	15 Summer	1	+20%	34.066		0.000	0.88		25.4		
50.000	CPDN11	15 Summer	1	+20%	34.441	-0.189	0.000	0.06		2.2		
51.000	CP2023.1A	120 Winter	1	+20%	33.950	-0.225	0.000	0.00		0.0	OK	

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Jacobs Engineering Limited		Page 8
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	

	US/MH		Detum	Climate	First (X)	First (Y)	First (Z)	Overflow	Water Level	Surcharged	Flooded Volume	Flow /	Overflow	Half Drain Time	Pipe Flow		Level
PN	Name	Storm	Period		Surcharge	Flood	Overflow	Act.	(m)	Depth (m)	(m <sup>3</sup> )	Cap.	(1/s)	(mins)	(1/s)	Status	Exceede
19.002	CP2023.1	15 Summer	1	+20%					33.830	-0.190	0.000	0.28			29.2	OK	
19.002 19.003	CP2023.1 CP2108	15 Summer	1	+20%				0	33.277	-0.203	0.000	0.28	0.0		29.2	OK	
14.004	CP171	15 Summer	1	+20%				0	33.085	-0.130	0.000	0.23	0.0		116.4	OK	
14.005	CP172	15 Summer	1	+20%					32.758	-0.222	0.000	0.51			126.6	OK	
14.006	CP3136	15 Summer	1	+20%					32.448	-0.162	0.000	0.63			136.0	OK	
14.007	CP3137	15 Summer	1		1/15 Summer				32.344	0.024	0.000	1.26				SURCHARGED	
52.000	CP2022	15 Summer	1	+20%	1,10 Dunine1				33.504	-0.081	0.000	0.69			19.1	OK	
52.001	CP2021	15 Summer	1	+20%					33.323	-0.092	0.000	0.63			34.0	OK	
53.000	CP2021	15 Summer	1	+20%					32.778	-0.127	0.000	0.39			14.7	OK	
52.002	CP2019	15 Summer	1		1/15 Summer				32.509	0.244	0.000	5.49			56.8	SURCHARGED	
54.000		120 Winter	1	+20%	1, 10 Summer				33.090	-0.225	0.000	0.00			0.0	OK	
52.003	CP162.1	15 Summer	1		1/15 Summer			0	32.238	0.028	0.000	2.79	0.0			SURCHARGED	
14.008	CP3138	15 Summer	1	+20%	1, 10 Cummer			Ŭ	32.062	-0.188	0.000	0.63	0.0		210.2	OK	
14.009	CP3139	15 Summer	1	+20%					31.454	-0.136	0.000	0.82			217.6	OK	
14.010	CP3140	15 Summer	1		1/15 Summer				31.090	0.150	0.000	1.26				SURCHARGED	
55.000	CP3141A	15 Summer	1	+20%	1,10 Dunine1				30.781	-0.119	0.000	0.09			0.9	OK	
56.000	CP3138C	15 Summer	1	+20%					34.096	-0.104	0.000	0.21			3.6	OK	
57.000	CP3138G	15 Summer	1	+20%					35.128	-0.122	0.000	0.08			0.6	OK	
57.001	CP3138F	15 Summer	1	+20%			1/15 Summer	24	34.958	-0.142	0.000	0.01	1.1		0.2	OK	
57.002	CP3138E	15 Summer	1	+20%			1/10 Dummer	21	34.451	-0.199	0.000	0.03	1.1		0.7	OK	
57.003	CP3138D	15 Summer	1	+20%			1/15 Summer	24	34.301	-0.139	0.000	0.02	1.4		0.2	OK	
56.001	CP3138B	15 Summer	1	+20%			1,10 000000		33.325	-0.125	0.000	0.06			3.8	OK	
58.000	CPDN1	15 Summer	1	+20%					34.241	-0.109	0.000	0.16			1.7	OK	
58.001	CPDN2	15 Summer	1	+20%					34.055	-0.065	0.000	0.61			2.2	OK	
58.002	CPDN3	15 Summer	1	+20%					34.000	-0.100	0.000	0.24			2.9	OK	
58.003	CPDN4	15 Summer	1	+20%					33.837	-0.093	0.000	0.30			3.9	OK	
58.004	CPDN5	15 Summer	1	+20%					33.430	-0.080	0.000	0.44			5.3	OK	
58.005	CPDN6	15 Summer	1	+20%					32.805	-0.075	0.000	0.48			6.8	OK	
58.006	CPDN7	15 Summer	1	+20%					32.415	-0.045	0.000	0.81			8.4	OK	
56.002	CP3138A	60 Winter	1	+20%			1/15 Summer	2.4	32.190	0.000	0.000	0.99	5.6		4.7	OK	
56.003	CPDN8	15 Winter	1	+20%				2.1	32.088	-0.092	0.000	0.31			5.7	OK	
56.004	CPDN9	15 Summer	1	+20%					31.412	-0.098	0.000	0.26			6.1	OK	
14.011	CP3141	15 Summer	1	+20%					30.747	-0.175	0.000	0.69			228.2	OK	
59.000	CP3142	15 Summer	1	+20%					31.079	-0.166	0.000	0.15			17.1	OK	
	CP091001	15 Summer	1		1/15 Summer				30.306	0.115	0.000	2.31				SURCHARGED	
50.000	GY3068	15 Summer	1	+20%					31.265	-0.180	0.000	0.09			7.9	OK	
50.001	CP4050C	15 Summer	1	+20%					29.807	-0.172	0.000	0.12			17.0	OK	
14.013	CP4050B	15 Summer	1	+20%					28.532	-0.118	0.000	0.89			234.7	OK	
51.000	DN40	15 Summer	1	+20%					28.863	-0.132	0.000	0.03			1.2	OK	
51.001	CP100	15 Summer	1	+20%					27.461	-0.118	0.000	0.10			1.2	OK	
39.007	CP4050A	15 Summer	1		1/15 Summer				26.593	0.066	0.000	0.96				SURCHARGED	
52.000		15 Summer	1	+20%					32.655	-0.045	0.000	0.83			19.5	OK	
		u	-	. 200						0.010						010	

obs Engir	neering Lir	nited														Page 9	
									rd to	A120wide	ening						
							Sectio										
							Propos	sed Net	work S	S1-OU11 &	à 12					N	
e 15/12/2	2021						Desigr	ned by	LM							7 🖁	licro rainage
e PROPOSE	D CASE DRA	AINAGE N	10DEL_S	S1_OU1	1 & OU12	.MDX	Checke	ed by A	М								lailiage
ovyze							Networ	ck 2020	.1.3								
	<u>l year R</u>	eturn P	eriod	Summar	ry of Cri	tical F	Results	by Maxi	.mum L	evel (Ra	nk 1)	for P	ropose	d Networ	k S1-	<u>0U11&amp;12</u>	
PN	US/MH Name	Storm			First (X) Surcharge	First (Y) Flood		Overflow Act.		Surcharged Depth (m)		Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
	CP4051A Pond Inlet 2 Pond Outlet 2		1	+20%	1/15 Summer				28.940 26.434 26.114	0.073	0.000 0.000 0.000	0.18 1.18 0.20			19.4 399.3 183.2	OK SURCHARGED OK	

Jacobs Engineering Limited		Page 1
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	- Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	
Free Flowing Outfa.	11 Details for Proposed Network S1-OU11&12	
Outfall Pipe Number	Outfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
1.006	OU11 24.482 23.262 22.600 675 0	
Free Flowing Outfai	ll Details for Proposed Network S1-OU11&12	
Outfall Pipe Number	Outfall C. Level I. Level Min D,L W Name (m) (m) I. Level (mm) (mm) (m)	
39.009 Pro	pposed OU12 25.000 24.016 24.016 600 0	
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Jacobs Engineering Limited		Page 2
•	A12 Chelmsford to A120widening	
•	Section 1	
	Proposed Network S1-OU11 & 12	Mirro
Date 15/12/2021	Designed by LM	— Micro Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	
Online Contr	cols for Proposed Network S1-0U11&12	
Orifice Manhole: Pon	nd Outlet 1, DS/PN: 1.006, Volume (m³): 50.8	
Diameter (m) 0.224	Discharge Coefficient 0.600 Invert Level (m) 25.900	
Orifice Manhole: Pon	nd Outlet 2, DS/PN: 39.009, Volume (m³): 5.4	
Diameter (m) 0.595	Discharge Coefficient 0.600 Invert Level (m) 25.700	
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Jacobs Engineering Limited		Page 3
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	
Storage Struc	tures for Proposed Network S1-OU11&12	
Infiltration	Trench Manhole: CP179, DS/PN: 19.000	
Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Inv Safety Factor 2.0 Tre	Porosity 0.20 Trench Length (m) 46.0 Cap Infiltration Depth (m) 0.000 vert Level (m) 33.789 Slope (1:X) 200.0 ench Width (m) 1.0 Cap Volume Depth (m) 0.000	
Infiltration	Trench Manhole: CP180, DS/PN: 19.001	
Infiltration Coefficient Base (m/hr) 0.00000 Infiltration Coefficient Side (m/hr) 0.00000 Inv Safety Factor 2.0 Tre	Porosity 0.20 Trench Length (m) 52.6 Cap Infiltration Depth (m) 0.000 vert Level (m) 33.614 Slope (1:X) 300.6 ench Width (m) 1.0 Cap Volume Depth (m) 0.000	
Tank or Pond	Manhole: Pond Outlet 1, DS/PN: 1.006	
	Invert Level (m) 25.900	
Depth (m) Area	a (m²)   Depth (m) Area (m²)   Depth (m) Area (m²)	
0.000	1200.0 0.900 1682.8 1.200 1861.8	
Tank or Pond I	Manhole: Pond Outlet 2, DS/PN: 39.009	
	Invert Level (m) 25.700	
Depth (m) Area	a (m²)   Depth (m) Area (m²)   Depth (m) Area (m²)	
0.000	500.0 0.900 826.1 1.200 952.9	
	©1982-2020 Innovyze	

	in Third T	Limited														ray	e 4
							A12 C	helmsfo	ord to	A120wic	dening						
							Secti	on 1									
							Propo	sed Net	work	S1-OU11	& 12						Micco
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ile PROPOSED			F MODE	יד פו מ	111 c OII1	2 MDV	-	ed by A									Drainage
	CASE I	JAINAGI	E MODE	п <sup>_</sup> эт <sup>_</sup> (	011 & 001			=									
novyze							Netwo	rk 2020	J.1.3								
2	2 year	Return	Perio	od Sum	mary of Cr	itical	Results	by Max	imum I	evel (R	ank 1)	for 1	Propose	d Netwo	rk Sl	-OU11	<u>&amp;12</u>
			Areal	Reduction	Factor 1.000	Manhole	<u>Sim</u> Headloss C	ulation Cr Coeff (Glo)		00 M	ADD Facto	or * 10m	/ha Stora	ae 0.000			
			I	Hot Start	(mins) O	Foul	Sewage per	hectare (	1/s) 0.0	00		Inlet (	Coeffiecie	nt 0.800			
			Hot :	Start Lev	rel (mm) 0	Additiona	l Flow - %	of Total 1	Flow 0.0	00 Flow pe	r Person	per Day	(l/per/da	y) 0.000			
Number of Input	Hydrogra	phs 0 Numk	ber of O	nline Cor	ntrols 2 Numbe	er of Offli	ne Controls	s 7 Number	r of Sto	rage Struct	ures 4 N	iumber of	Time/Are	a Diagrams	0 Numb	per of R	eal Time Controls
							Sun+h-+	tia Doinfo	11 Doto:	1.0							
					Rainfall Mod	el FEH Si	-	<u>tic Rainfa</u> n GB 57485			08550 Cv	(Summer	) 1.000				
				FEH	Rainfall Versi		Data Typ				hment Cv						
				м	ngin fan Eloo	d Diek Mem	oing (mm)			200	0 D	VD Ctoty	a 011				
				M	argin for Floc		Timestep 2	5 Second	Increme	300 nt (Extende		VD Statu ia Statu					
						-	IS Status		THEFENC		FF	Iu blucu	5 014				
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					Duurstiis	Profile(s)	)	0 100 10	00 040		Summer	and Win					
						Profile(s) n(s) (mins)	) 15, 30, 6	50, 120, 18	80, 240,		Summer	960, 1	440				
					Return Period	Profile(s) n(s) (mins) (s) (years)	) ) 15, 30, 6	50, 120, 18	80, 240,		Summer 600, 720,	960, 1 2, 5,	440 100				
					Return Period	Profile(s) n(s) (mins)	) ) 15, 30, 6	50, 120, 18	80, 240,		Summer 600, 720,	960, 1	440 100				
					Return Period	Profile(s) n(s) (mins) (s) (years)	) ) 15, 30, 6	50, 120, 18		360, 480,	Summer 600, 720,	960, 1 2, 5,	440 100 20	Half Drain	Pine		
	US/MH		Return	Climate	Return Period	Profile(s) n(s) (mins) (s) (years) Change (%)	) 15, 30, 6 )		Water		Summer 600, 720, Flooded	960, 1 2, 5, 3 20, 20,	440 100 20	Half Drain Time	Pipe Flow		Level
PN	US/MH Name	Storm		Climate Change	Return Period Climate	Profile(s) n(s) (mins) (s) (years) Change (%)	) 15, 30, 6		Water	360, 480, Surcharged	Summer 600, 720, Flooded	960, 1 2, 5, 3 20, 20,	440 100 20		Flow	Status	Level Exceeded
	Name	Storm 15 Summer			Return Period Climate	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level	360, 480, Surcharged Depth	Summer 600, 720, Flooded Volume	960, 1 2, 5, 2 20, 20, Flow /	440 100 20 <b>Overflow</b>	Time	Flow	<b>Status</b> OK	
1.000 1.001	<b>Name</b> CP153 CP154	15 Summer 15 Summer	Period 2 2	<b>Change</b> +20% +20%	Return Period Climate	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420	360, 480, Surcharged Depth (m) -0.183 -0.135	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0	OK OK	
1.000 1.001 2.000	Name CP153 CP154 CP2015	15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2	<b>Change</b> +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33 0.00	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2	OK OK OK	
1.000 1.001 2.000 3.000	Name CP153 CP154 CP2015 CP175	15 Summer 15 Summer 15 Summer 15 Summer	<b>Period</b> 2 2 2 2 2 2 2	<b>Change</b> +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	960, 1 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8	OK OK OK	
1.000 1.001 2.000 3.000 2.001	Name CP153 CP154 CP2015 CP175 CP2013	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3	OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002	Name CP153 CP154 CP2015 CP175 CP2013 CP155	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8	OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.022 33.818	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7	OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499	360, 480, Surcharged Depth (m) -0.183 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.05	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3	OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y)	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130	360, 480, Surcharged Depth (m) -0.183 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256 -0.235	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.05 0.10	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7	OK OK OK OK	
1.000 1.001 2.000 2.001 1.002 4.000 4.001 4.002 4.003	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256 -0.235 -0.219	Summer 600, 720, Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.01 0.01 0.10	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9	OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.003	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256 -0.219 -0.202	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.05 0.10 0.16 0.23	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9	OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.003 4.004 5.000	Name CP153 CP154 CP2015 CP2015 CP2013 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.255 -0.219 -0.202 -0.230	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1: 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.05 0.10 0.10 0.12	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2	OK OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.004 5.000	Name CP153 CP154 CP2015 CP2013 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP4 CP5 DN18 CP77	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416	360, 480, Surcharged Depth (m) -0.183 -0.295 -0.287 -0.388 -0.330 -0.290 -0.256 -0.235 -0.219 -0.202 -0.202 -0.202 -0.202	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.05 0.10 0.16 0.22 0.23	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2 33.7	OK OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.004 5.000	Name CP153 CP154 CP2015 CP175 CP175 CP175 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849 34.379	360, 480, Surcharged Depth (m) -0.183 -0.295 -0.287 -0.388 -0.330 -0.290 -0.256 -0.235 -0.219 -0.202 -0.202 -0.202 -0.202	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1 2, 5, 2 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.05 0.10 0.16 0.23 0.12 0.23 0.21	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2	OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\end{array}$	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849 34.379 33.862	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.2200 -0.256 -0.235 -0.219 -0.202 -0.202 -0.202 -0.206 -0.188	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.05 0.10 0.16 0.23 0.12 0.23 0.12 0.23	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2 33.7 33.4	OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\end{array}$	Name CP153 CP154 CP2015 CP175 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849 34.379 33.862 33.852	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256 -0.235 -0.219 -0.202 -0.203 -0.205 -0.219 -0.205 -0.219 -0.205 -0.219 -0.205 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.205 -0.219 -0.225 -0.219 -0.225 -0.219 -0.205 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.225 -0.219 -0.220 -0.200 -0.200 -0.200 -0.200 -0.200 -0.200 -0.200 -0.200 -0.	Summer 600, 720, Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.02 0.16 0.01 0.10 0.12 0.23 0.23 0.23 0.22 0.23	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2 33.4 41.3	OK OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\end{array}$	Name CP153 CP154 CP2015 CP2013 CP255 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849 34.379 33.862 33.452 33.452 32.871	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.255 -0.219 -0.220 -0.219 -0.220 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.219 -0.218	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	960, 1: 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.01 0.05 0.10 0.05 0.10 0.12 0.23 0.21 0.23 0.21 0.35 0.43	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2 33.7 33.4 41.3 49.4	OK OK OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.003\\ 5.004\\ 5.005\\ 6.000\\ 6.001\\ \end{array}$	Name CP153 CP154 CP2013 CP175 CP175 CP175 CP175 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8 DIT03 DIT04	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849 34.379 33.862 33.452 32.871 32.643 37.336 35.769	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256 -0.235 -0.219 -0.262 -0.235 -0.219 -0.202 -0.202 -0.202 -0.206 -0.188 -0.219 -0.188 -0.219 -0.188 -0.202 -0.206 -0.188 -0.219 -0.202 -0.206 -0.188 -0.219 -0.202 -0.246 	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.05 0.10 0.16 0.23 0.12 0.23 0.21 0.29 0.35 0.35 0.00 0.01	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2 33.7 33.4 41.3 49.4 51.5 9.7	OK OK OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.003\\ 5.004\\ 5.005\\ 6.000\\ 6.001\\ \end{array}$	Name CP153 CP154 CP2013 CP175 CP175 CP175 CP175 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8 DIT03 DIT04	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Period Climate First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile(s) n(s) (mins) (s) (years) Change (%) First (Y) Flood	) 15, 30, 6	Overflow	Water Level (m) 31.602 31.420 32.095 32.303 30.022 30.020 33.818 33.499 33.130 32.831 32.416 34.849 34.379 33.862 33.452 32.871 32.643 37.336	360, 480, Surcharged Depth (m) -0.183 -0.135 -0.295 -0.287 -0.368 -0.330 -0.290 -0.256 -0.235 -0.219 -0.262 -0.235 -0.219 -0.202 -0.202 -0.202 -0.206 -0.188 -0.219 -0.188 -0.219 -0.188 -0.202 -0.206 -0.188 -0.219 -0.202 -0.206 -0.188 -0.219 -0.202 -0.246 	Summer 600, 720, Flooded Volume (m <sup>3</sup> ) 0.000	960, 1. 2, 5, 20, 20, Flow / Cap. 0.08 0.33 0.00 0.01 0.02 0.16 0.05 0.10 0.16 0.23 0.12 0.23 0.21 0.29 0.35 0.35 0.00 0.01	440 100 20 <b>Overflow</b>	Time	Flow (1/s) 2.8 14.0 0.2 0.8 1.3 27.8 0.7 5.3 10.4 16.9 23.9 20.2 33.7 33.4 41.3 49.4 51.2 3.5	OK OK OK OK OK OK OK OK OK OK OK OK	

Jacobs Engineering Limited		Page 5
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)		Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Flow	Status	Level Exceeded
7.000		15 Summer		+20%					35.887	-0.463	0.000	0.01			8.8	OK	
7.001		15 Summer	2	+20%					35.253	-0.447	0.000	0.02			13.2	OK	
6.003		15 Summer	2	+20%					34.714	-0.148	0.000	0.25			25.4	OK	
8.000		15 Summer	2		100/15 Summer				33.904	-0.219	0.000	0.01			0.3	OK	
6.004		15 Summer	2		100/15 Summer				33.627	-0.186	0.000	0.30			27.9	OK	
6.005		15 Summer				100/15 Summer			33.121	-0.183	0.000	0.32			29.4	OK	5
6.006		15 Summer	2		100/15 Summer	100/15 Summer			32.793	-0.286	0.000	0.13			29.4	OK	3
5.006		15 Summer		+20%	5/15 Summer				32.615	-0.114	0.000	0.83			76.1	OK	
5.007		15 Summer			100/15 Summer				32.553	-0.126	0.000	0.76			77.9	OK	
9.000		15 Summer			100/15 Summer				33.003	-0.261	0.000	0.04			2.1	OK	
9.001 5.008		15 Summer 15 Summer			100/15 Summer 100/15 Summer				32.908 32.443	-0.255	0.000	0.05 0.73			2.8 77.9	OK OK	
10.000		15 Summer			100/13 Summer 100/30 Summer				33.533	-0.133 -0.159	0.000	0.13			6.8	OK	
5.009		15 Summer			100/30 Summer				32.284	-0.139	0.000	0.19			78.6	OK	
11.000		15 Summer			100/30 Summer				33.395	-0.123	0.000	0.06			2.4	OK	
5.010		15 Summer	2		100/15 Summer				32.181	-0.133	0.000	0.00			77.6	OK	
12.000		15 Summer		+20%	100710 Dummer				33.307	-0.196	0.000	0.04			1.5	OK	
5.011		15 Summer		+20%	5/15 Winter				32.046	-0.107	0.000	0.86			76.7	OK	
4.005		30 Summer			100/15 Summer				31.991	-0.120	0.000	0.80			84.1	OK	
13.000		15 Summer			100/15 Summer				32.791	-0.126	0.000	0.40			12.5	OK	
4.006		30 Summer			100/15 Summer				31.775	-0.187	0.000	0.57			86.2	OK	
14.000		15 Summer	2		100/15 Summer				32.659	-0.112	0.000	0.50			14.5	OK	
15.000	CP20	15 Summer		+20%					33.005	-0.215	0.000	0.01			0.6	OK	
16.000	CP3182A	15 Summer	2	+20%					33.583	-0.156	0.000	0.20			8.5	OK	
16.001	CP21	15 Summer	2	+20%					33.223	-0.156	0.000	0.20			10.0	OK	
17.000	DN04	15 Summer	2	+20%	100/30 Summer				32.958	-0.189	0.000	0.06			1.7	OK	
18.000	DN05	15 Summer	2	+20%					33.314	-0.200	0.000	0.03			1.8	OK	
17.001	CP22	15 Summer	2	+20%	100/15 Summer				32.824	-0.150	0.000	0.13			3.3	OK	
16.002	CP23	15 Summer	2	+20%	100/15 Summer				32.815	-0.123	0.000	0.39			12.3	OK	
15.001	CP24	15 Summer	2	+20%	100/15 Summer				32.525	-0.169	0.000	0.14			12.8	OK	
19.000		15 Summer	2		100/15 Summer				34.137	-0.182	0.000	0.31			20.4	OK	
19.001		15 Summer			100/15 Summer				33.951	-0.138	0.000	0.53			28.4	OK	
19.002		15 Summer	2		100/15 Summer				33.783	-0.131	0.000	0.59			30.7	OK	
20.000		15 Summer		+20%					35.394	-0.194	0.000	0.05			2.7	OK	
20.001		15 Summer			100/15 Summer				33.894	-0.195	0.000	0.04			2.7	OK	
19.003		30 Summer	2		100/15 Summer				33.697	-0.132	0.000	0.59			38.8	OK	
19.004		30 Summer			100/15 Summer				33.479	-0.107	0.000	0.71			47.7	OK	
19.005		30 Summer	2		100/15 Summer				32.978	-0.160	0.000	0.44			46.9	OK	
21.000		15 Summer	2	+20%					33.316	-0.193	0.000	0.27			21.2	OK	
22.000		15 Summer			100/15 Summer	/			34.325	-0.205	0.000	0.02			0.8	OK	
22.001		15 Summer	2		100/15 Summer	100/15 Summer			33.975	-0.183	0.000	0.03			1.0	OK	3
22.002	CP33	15 Summer	2	+20%	100/15 Summer				33.972	-0.122	0.000	0.58			36.2	OK	
							@1982-2	020 Tor	0.011170								

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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Dialitaye
Innovyze	Network 2020.1.3	

	US/MH		Detum	Climate	First (V)	First (V)	First (Z)	0		Surcharged Depth		Flow /	Overflow	Half Drain Time	Pipe Flow		Level
PN	Name	Storm		Change	First (X) Surcharge	Flood	Overflow	Act.	(m)	(m)	(m <sup>3</sup> )	Cap.	(1/s)	(mins)		Status	Exceeded
				-	-							-					
22.003		15 Summer	2		100/15 Summer				33.594	-0.128	0.000	0.60			36.7	OK	
22.004		15 Summer	2		100/15 Summer				33.346	-0.127	0.000	0.60			37.0	OK	
22.005		15 Summer	2		100/15 Summer				33.093	-0.128	0.000	0.60			37.0	OK	
22.006		15 Summer	2		100/15 Summer				32.789	-0.129	0.000	0.61			36.7	OK	
22.007		15 Summer	2		100/15 Summer				32.505	-0.205	0.000	0.22			36.9	OK	
19.006		30 Summer	2		100/15 Summer				32.083	-0.163	0.000	0.61			88.2	OK	
15.002		30 Summer	2		100/15 Summer				31.919	-0.190	0.000	0.49			95.5	OK	
4.007		30 Summer	2	+20%	5/30 Summer				31.698	-0.166	0.000	0.81			180.5	OK	
23.000		15 Summer	2		100/30 Summer				32.546	-0.156	0.000	0.20			8.9	OK	
4.008		30 Summer	2		100/15 Summer				31.621	-0.184	0.000	0.75			182.0	OK	
24.000		15 Summer	2	+20%					32.573	-0.153	0.000	0.22			10.6	OK	
4.009		30 Summer	2		100/15 Summer				31.521	-0.197	0.000	0.71			183.1	OK	
25.000		15 Summer	2	+20%					32.568	-0.140	0.000	0.30			13.4	OK	
4.010		30 Summer	2		100/15 Summer				31.414	-0.175	0.000	0.78			185.1	OK	
26.000		15 Summer	2	+20%					32.459	-0.164	0.000	0.17			8.0	OK	
4.011		30 Summer	2		100/15 Summer				31.308	-0.203	0.000	0.69			185.8	OK	
27.000		15 Summer	2		100/15 Summer				32.426	-0.130	0.000	0.37			16.0	OK	
28.000		15 Summer	2	+20%					31.903	-0.162	0.000	0.15			6.0	OK	
	CP3178A	15 Summer	2	+20%	100/15 Summer				31.129	-0.176	0.000	0.11			6.0	OK	
4.012	CP31	30 Summer	2	+20%	100/15 Summer				31.071	-0.263	0.000	0.50			188.9	OK	
29.000	DN11	15 Summer	2	+20%					32.251	-0.141	0.000	0.29			12.8	OK	
4.013	CP32	30 Summer	2	+20%	100/15 Summer				30.758	-0.263	0.000	0.50			190.6	OK	
30.000	CP38	15 Summer	2	+20%					33.128	-0.252	0.000	0.06			4.2	OK	
30.001	CP39	15 Summer	2	+20%					32.719	-0.247	0.000	0.07			5.2	OK	
30.002	CP40	15 Summer	2	+20%					32.577	-0.241	0.000	0.08			6.3	OK	
31.000	Ditch 1	15 Summer	2	+20%					33.420	-0.480	0.000	0.00			1.4	OK	
32.000	Ditch 3	15 Summer	2	+20%					33.123	-0.477	0.000	0.00			1.4	OK	
31.001	Ditch 2	15 Summer	2	+20%					32.772	-0.268	0.000	0.02			2.8	OK	
30.003	CP41	15 Summer	2	+20%					32.257	-0.231	0.000	0.12			8.8	OK	
33.000	Ditch 4	15 Summer	2	+20%					32.915	-0.485	0.000	0.00			0.6	OK	
34.000	DItch 6	15 Summer	2	+20%					32.923	-0.477	0.000	0.00			0.9	OK	
33.001	DItch 5	15 Summer	2	+20%					32.810	-0.290	0.000	0.01			1.5	OK	
30.004	CP42	15 Summer	2	+20%					31.970	-0.225	0.000	0.14			10.6	OK	
30.005	CP43	15 Summer	2	+20%					31.672	-0.220	0.000	0.16			10.6	OK	
35.000	DN12	15 Summer	2	+20%					32.172	-0.139	0.000	0.31			11.8	OK	
4.014	CP44	30 Summer	2	+20%	100/15 Summer				30.461	-0.213	0.000	0.66			194.8	OK	
36.000		15 Summer	2	+20%					32.251	-0.160	0.000	0.18			6.7	OK	
4.015		30 Summer	2	+20%	100/15 Summer				30.300	-0.213	0.000	0.66			195.5	OK	
37.000		15 Summer	2	+20%					32.317	-0.171	0.000	0.13			6.9	OK	
4.016		30 Summer	2	+20%	100/15 Summer				30.076	-0.270	0.000	0.59			196.3	OK	
1.003		30 Winter	2		100/15 Summer				29.341	-0.271	0.000	0.58			202.4	OK	
38.000		15 Summer	2	+20%	100/15 Summer				31.127	-0.150	0.000	0.24			10.5	OK	
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Jacobs Engineering Limited		Page 7
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamaye
Innovyze	Network 2020.1.3	

									Water	Surcharged	Flooded			Half Drain	. Pipe		
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume	Flow /	Overflow	Time	Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(1/s)	Status	Exceeded
38.001	CP191	15 Summer	2	+20%	100/15 Summer				30.947	-0.118	0.000	0.42			18.1	OK	
38.002	CP192	15 Summer	2	+20%	100/15 Summer				30.358	-0.177	0.000	0.35			40.6	OK	
1.004	CP200	30 Summer	2	+20%					28.410	-0.440	0.000	0.16			219.3	OK	
1.005			2		100/30 Summer				26.699	-0.376	0.000	0.41			217.2	OK	
	Pond Outlet 1		2		100/60 Summer				26.256	-0.319	0.000	0.04			51.7	OK	
39.000		15 Summer	2		100/15 Summer	100/15 Summer			32.483	-0.067	0.000	0.58			2.8	OK	1
39.001	CP2018		2	+20%	2/15 Summer				32.299	0.004	0.000	1.75				SURCHARGED	
39.002	CP2017	15 Summer	2		100/15 Summer	100/15 Summer			31.889	-0.086	0.000	0.69			21.8	OK	3
39.003	CP6010	15 Summer	2	+20%					30.927	-0.213	0.000	0.18			21.6	OK	
40.000	CPDN10	15 Summer	2		100/15 Summer	100/15 Summer			32.328	-0.111	0.000	0.14			2.3	OK	7
40.001		15 Summer	2		100/15 Summer				31.576	-0.139	0.000	0.31			17.3	OK	
39.004	CP161	15 Summer	2		100/15 Summer				30.612	-0.148	0.000	0.49			58.5	OK	
39.005	CP160	15 Summer	2	+20%					29.533	-0.257	0.000	0.21			87.9	OK	
41.000	Ditch 7		2	+20%					30.379	-0.235	0.000	0.04				FLOOD RISK	
41.001		15 Summer	2	+20%					30.176	-0.214	0.000	0.07				FLOOD RISK	
42.000		15 Summer	2	+20%					30.630	-0.284	0.000	0.00				FLOOD RISK	
41.002		15 Summer	2	+20%					29.914	-0.246	0.000	0.08			6.9	OK	
41.003		15 Summer	2	+20%					29.565	-0.345	0.000	0.11			22.1	OK	
41.004	CP159A	15 Summer	2	+20%					29.312	-0.288	0.000	0.27			46.4	OK	
41.005	CP159	15 Summer	2	+20%	/			0	29.133	-0.376	0.000	0.06	0.0		59.8	OK	
43.000	CP193	15 Summer	2		100/15 Summer				30.393	-0.247	0.000	0.25			25.3	OK	
43.001	CP194	15 Summer	2		100/15 Summer				30.291	-0.220	0.000	0.35			34.7	OK	
43.002	CP195	15 Summer	2		100/15 Summer				30.215	-0.207	0.000	0.41			42.1	OK	
41.006	EXCP4050D	15 Summer	2	+20%	2/15 Summer				26.743	0.048	0.000	0.61				SURCHARGED	
39.006	CP091002	15 Summer	2	+20%	2/15 Summer				26.620	0.038	0.000	0.59				SURCHARGED	
44.000	CP167	15 Summer	2		100/15 Summer				35.066	-0.104	0.000	0.20			2.8	OK	
45.000	CP2111	15 Summer			100/15 Summer	100/15 0			34.419	-0.156	0.000	0.18 0.07			7.5	OK	2
46.000	CP2109	15 Summer	2		100/15 Summer	100/15 Summer			34.990	-0.185	0.000				4.6	OK	2
47.000	CP2027	15 Summer	2		100/15 Summer	100/15 0			34.745	-0.190	0.000	0.05			1.9	OK OK	2
48.000	CP2026	15 Summer	2		100/15 Summer				34.693	-0.132	0.000	0.33			9.4		3
48.001 47.001	CP2025 CP2025.1	15 Summer 15 Summer	2		100/15 Summer	100/15 Summer : 100/15 Summer :	100/15 0	7	34.519 34.229	-0.096 -0.201	0.000	0.62 0.24	0.0		26.1 27.9	OK OK	3 5
	CP2025.1 CP2110		2	+20%		100/15 Summer . 100/15 Summer	100/15 Summer	1	34.229	0.044	0.000	2.20	0.0			SURCHARGED	2
45.001 44.001	CP2110 CP168	15 Summer 15 Summer	2	+20%	5/15 Summer	100/15 Summer			33.974	-0.105	0.000	0.74			69.2	OK	2
44.001		15 Summer	2	+20%	.,	100/15 Summer			33.481	-0.019	0.000	0.74			74.9	OK	4
44.002	CP109 CP170	15 Summer	2	+20%		100/15 Summer			33.361	0.001	0.000	1.04				SURCHARGED	3
49.000	CP2024	15 Summer 15 Summer	2	+20%					34.133	-0.102	0.000	0.55			13.3	OK	1
49.000			2	+20%		100/15 Summer			34.133	-0.064	0.000	0.33			24.4	OK	4
50.000		15 Summer	2		100/15 Summer				34.001	-0.190	0.000	0.04			24.4	OK	4
51.000		120 Winter	2		100/15 Summer				33.950	-0.225	0.000	0.00			0.0	OK	5
49.002		120 Winter 15 Summer	2		100/15 Summer 100/15 Summer				33.950	-0.225	0.000	0.00			28.0	OK	5
49.002		15 Summer	2		100/15 Summer		100/15 Summer	6	33.275	-0.205	0.000	0.27	0.0		28.0	OK	Ť
-2.003	C12100	10 Summer	2	1200	100/10 Dummer					0.205	0.000	0.22	0.0		20.2	OK	
						(	©1982-2020	Innov	yze								

Jacobs Engineering Limited		Page 8
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	

H         Ham         Stom         Period         Berline         Berline         Berline         Ast.         Berline										Water	Surcharged	Flooded			Half Drain	Pipe		
44.004       CP171       15       Summer       100/15       Summer       32.078       -0.137       0.000       0.72       112.3       OK         44.005       CP132       15       Summer       2       *208       100/15       Summer       32.733       -0.227       0.000       0.49       122.1       OK         44.005       CP132       15       Summer       2       2.433       -0.17       0.000       0.61       131.2       OK         44.007       CP132       15       Summer       2       2.438       30.18       -0.227       0.000       0.61       131.2       OK         52.002       CP2021       15       Summer       22.035       -0.129       0.000       0.47       14.1       OK         52.002       CP2021       15       Summer       100/15       Summer       32.040       0.000       0.49       12.21       OK         52.002       CP2021       15       Summer       100/15       Summer       32.040       0.000       0.49       12.23       OK         52.003       CP1201       120       Minter       2       2.000       0.000       0.000       0.000       0.000       0.0		US/MH		Return	Climate	First (X)			Overflow		Depth		Flow /					Level
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Status	Exceeded
14.066       CP135       15       Summer       2       4.48       107/15       Summer       32.433       -0.17       0.00       0.61       113.2       0K         52.080       CP2021       15       Summer       2       420       107/15       Summer       33.500       -0.085       0.000       0.66       18.4       0K         52.081       CP2021       15       Summer       2       420       107/15       Summer       33.120       -0.085       0.00       0.66       18.4       0K         52.081       CP2021       15       Summer       2       420       107/15       Summer       33.120       -0.135       0.00       0.60       0.00	44.004	CP171	15 Summer	2	+20%	100/15 Summer	100/15 Summer			33.078		0.000	0.72			112.3	OK	2
44.007       CP137       15 Summer       2       +204       100/15 Summer       32.307       0.010       0.121       137.6       50000         52.000       CP2021       15 Summer       2       +204       100/15 Summer       33.300       -0.089       0.000       0.66       32.7       0K         53.000       CP2020       15 Summer       2       +204       100/15 Summer       33.207       -0.089       0.000       0.67       14.1       0K         52.000       CP2020       15 Summer       2       +204       100/15 Summer       33.100       -0.28       0.00       0.57       0.0       0.0       0.0       0.00       0.0       0.00       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.00       0.0       0.0       0.0       0.0       0.0       0.0       0.00       0.0		CP172	15 Summer							32.753								
52.000       CP2022       15 Summer       2       4208       100/15 Summer       33.300       -0.095       0.000       0.66       32.7       CK         52.000       CP2021       15 Summer       2       4208       100/15 Summer       33.200       -0.095       0.000       0.00       0.00       32.7       CK         52.002       CP2021       15 Summer       2       4208       100/15 Summer       32.476       -0.129       0.000       0.37       14.1       CK         52.002       CP2019       15 Summer       2       4208       100/15 Summer       32.476       -0.129       0.000       0.00       0.0					+20%													1
52.001       Cr2021       15       Summer       2       4/201       100/15       Summer       33.200       -0.095       0.000       0.00       32.7       OK         53.000       CP2021       15       Summer       2       4/201       2/15       Summer       32.76       0.000       0.00       5.30       54.9       SURCHARDED         54.000       CP2107       15       Summer       2       4/201       2/15       Summer       33.900       -0.225       0.000       5.30       54.9       SURCHARDED         54.000       CP2107       15       Summer       2       4/201       30.900       -0.225       0.000       0.00       5.9       94.5       SURCHARDED         54.000       CP3139       15       Summer       2       4/201       SURMER       32.050       0.000       0.100       0.000		CP3137								32.337							SURCHARGED	3
S1:000       CP2020       15 Summer       2       +208       100/15 Summer       32,776       -0.129       0.000       0.37       10.1       OK         S2:002       CP2020       12 Summer       2       +208       100/15 Summer       32,476       0.022       0.000       0.50       0.0       0.5       0.0       0.5       0.00       0.5       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0       0.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>3</td></t<>																		3
52.002       CP2019       15 Summer       2       +208       21.001 Summer       32.400       0.225       0.000       5.30       -5.40       0.0       0.00																		6
54.000       CP2107       120 Winter       2       4208       2/15 Summer       100/15 Summer       33.090       -0.223       0.000       0.00       0.0       0.0       0.0         44.003       CP313       15 Summer       2       420 S       100/15 Summer       100/15 Summer       32.050       -0.200       0.000       0.78       2.68       0.000       189.3       0K         44.003       CP3141       15 Summer       2       420 S       5/15 Summer       31.069       0.002       0.00       0.9       0.78       205.2       0K         55.000       CP3146       15 Summer       2       420 S       100/15 Summer       31.069       0.000       0.00       0.09       0.7       3.4       0K         57.000       CP31386       15 Summer       2       420 S       2/15 Summer       32.498       -0.142       0.000       0.01       1.0       0.2       0K         57.000       CP31386       15 Summer       2       420 S       2/15 Summer       34.430       -0.100       0.000       0.01       1.0       0.2       0K         56.001       CP13186       15 Summer       2       420 S       100/15 Summer       34.324       -0.10<					+20%					32.776								1
52.003       CP12.1       15 Summer       2       +208       100/15 Summer       100/15 Summer       32.234       0.002       0.00       0.58       0.0       54.5       00KCHABGED         44.009       CP3139       15 Summer       2       +204       50/15 Summer       31.441       -0.109       0.000       0.59       0.00       1.98       205.2       0K         55.000       CP3134       15 Summer       2       +204       50/15 Summer       30.781       -0.139       0.000       0.09       0.0       9.0       9.0       0.0       9.0       0.00       0.05       0.00       0.01       0.00       0.02       0.00       0.01       0.00       0.02       0.00       0.01       0.00       0.01       0.00       0.02       0.00       0.01       0.00       0.01       0.00       0.01       0.00       0.01       0.00       0.01       0.00       0.01       1.0       0.02       0.00       0.01							100/15 Summer											6
44.008       CP1138       15 Summer       2       +208       50/15 Summer       31.641       -0.149       0.000       0.59       120.8       200.8         44.010       CP1140       15 Summer       2       +208       5/15 Summer       31.641       -0.149       0.000       0.59       100       SURCHARGED         55.000       CP3143       15 Summer       2       +208       30.781       -0.139       0.000       0.09       0.09       0.09       0.00       0.00       5.000       0.20       3.4       0K         57.000       CP31386       15 Summer       2       +208       2/15 Summer       72.4558       -0.123       0.000       0.01       1.0       0.2       0.00       0.01       1.0       0.2       0.00       0.01       1.0       0.2       0.00       0.01       1.0       0.2       0.00       0.01       1.0       0.2       0.00       0.01       1.0       0.2       0.00       0.01       1.0       0.0       0.00       0.01       1.0       0.0       0.00       0.01       1.0       0.0       0.00       0.01       1.0       0.0       0.00       0.01       1.0       0.0       0.00       0.01       1.0 <td></td> <td>CP2107</td> <td></td> <td></td> <td>+20%</td> <td></td> <td></td> <td></td> <td></td> <td>33.090</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>		CP2107			+20%					33.090								
44.009       CP3139       15 Summer       2       +208       5/15 Summer       31.441       -0.149       0.000       0.78       205.2       OR         55.000       CP31316       15 Summer       2       +208       207.5       Summer       30.069       0.029       0.000       0.19       200.8       SURCHARGED         55.000       CP3136       15 Summer       2       +208       30.069       -0.155       0.000       0.09       0.09       0.09       0.07       0.5       OK         57.001       CP3136       15 Summer       2       +208       2/15 Summer       72.34.958       -0.142       0.000       0.01       1.0       0.2       OK         57.001       CP3138       15 Summer       2       +208       2/15 Summer       72.34.958       -0.142       0.000       0.01       1.0       0.2       OK         57.003       CP3138       15 Summer       2       +208       10/15 Summer       72.43.900       -0.160       0.000       0.01       1.3       0.2       OK         58.001       CPIN3       15 Summer       2       +208       10/15 Summer       72.43.900       -0.010       0.03       0.07       0.05       1.0		CP162.1	15 Summer		+20%	2/15 Summer		100/15 Summer	8	32.234		0.000		0.0			SURCHARGED	
							100/15 Summer											5
55.000       CP3141A       15 Summer       2       4.201       34.095       -0.119       0.000       0.09       0.9       0.4         57.000       CP31386       15 Summer       2       4.201       34.095       -0.112       0.000       0.07       0.5       0.00         57.001       CP31388       15 Summer       2       4.201       2/15 Summer       72       34.950       -0.123       0.000       0.01       1.0       0.5       0.00         57.001       CP31388       15 Summer       2       +204       2/15 Summer       72       34.950       -0.126       0.000       0.01       1.0       0.7       0.00         55.001       CP31388       15 Summer       2       +204       2/15 Summer       72       34.940       -0.126       0.000       0.01       1.3       0.2       0.00         56.001       CPDN1       15 Summer       2       +204       100/15 Summer       34.240       -0.101       0.000       0.58       2.1       0.000       0.58       2.1       0.00       0.58       2.1       0.00       0.58       2.1       0.000       0.58       5.1       0.00       0.58       0.000       0.23       5.0																		
56.000       CP3138C       15 Summer       2       +208       34.095       -0.105       0.000       0.20       3.4       0K         57.001       CP3138E       15 Summer       2       +208       2/15 Summer       72       34.958       -0.123       0.000       0.01       1.0       0.2       0K         57.002       CP3138E       15 Summer       2       +208       2/15 Summer       72       34.450       -0.142       0.000       0.01       1.0       0.2       0K         57.003       CP3138E       15 Summer       2       +208       2/15 Summer       72       34.450       -0.142       0.000       0.01       1.3       0.2       0K         58.001       CPDN18       15 Summer       2       +208       100/15 Summer       33.324       -0.016       0.000       0.58       2.1       0K         58.001       CPDN1       15 Summer       2       +208       100/15 Summer       33.432       -0.017       0.000       0.58       2.1       0K         58.004       CPDN1       15 Summer       2       +208       100/15 Summer       33.435       -0.075       0.000       0.48       5.1       0K         58.0																		
57.00       CP31386       15 Summer       2       4.20       2/15 Summer       2       4.958       -0.142       0.00       0.01       1.0       0.2       0K         57.002       CP31386       15 Summer       2       420       2/15 Summer       2       4.958       -0.120       0.00       0.01       1.0       0.2       0K         57.003       CP31386       15 Summer       2       420       2/15 Summer       3.324       -0.126       0.00       0.01       1.3       0.2       0K         56.001       CP1138       15 Summer       2       420       100/15 Summer       3.324       -0.126       0.00       0.01       1.3       0.2       0K         58.001       CP1N1       15 Summer       2       420       100/15 Summer       3.324       -0.126       0.000       0.01       1.3       0.2       0K         58.001       CP1N4       15 Summer       2       420       100/15 Summer       3.324       -0.010       0.000       0.23       2.1       0K         58.003       CPDN4       15 Summer       2       420       100/15 Summer       101/15 Summer       3.429       -0.081       0.000       0.43       5.1 </td <td></td>																		
57.001       CP3138F       15       Summer       2       +20%       2/15       Summer       72       34.958       -0.120       0.000       0.01       1.0       0.2       0K         57.003       CP3138B       15       Summer       2       +20%       2/15       Summer       72       34.300       -0.100       0.00       0.01       1.3       0.2       0K         56.001       CP3138B       15       Summer       2       +20%       2/15       Summer       -0.110       0.000       0.01       1.3       0.2       0K         58.000       CPDN1       15       Summer       2       +20%       100/15       Summer       33.324       -0.101       0.000       0.05       2.1       0K         58.001       CPDN1       15       Summer       2       +20%       100/15       Summer       33.999       -0.0101       0.000       0.29       3.8       0K         58.003       CPDN1       15       Summer       2       +20%       100/15       Summer       33.429       -0.0101       0.000       0.46       6.6       0K         58.005       CPDN1       15       Summer       100/15       Summer </td <td></td>																		
57.002       CP3138       15       Summer       2       +20       -2/15       Summer       72       34.450       -0.200       0.000       0.01       1.3       0.2       OK         57.003       CP3138       15       Summer       2       +20%       -2/15       Summer       -0.126       0.000       0.01       1.3       0.2       OK         56.001       CP3138       15       Summer       2       +20%       100/15       Summer       -0.126       0.000       0.06       0.06       3.6       OK         58.001       CPDN1       15       Summer       2       +20%       100/15       Summer       34.240       -0.101       0.000       0.23       2.1       OK         58.002       CPDN1       15       Summer       2       +20%       100/15       Summer       38.35       -0.081       0.000       0.23       2.8       OK         58.004       CPDN5       15       Summer       100/15       Summer       2.11       SUM																		
57.003       CP3138D       15       Summer       2       +20%       2/15 Summer       72       34.300       -0.126       0.000       0.01       1.3       0.2       OK         56.001       CP3138D       15       Summer       2       +20%       100/15 Summer       33.224       -0.126       0.000       0.06       3.6       OK         58.001       CPDN2       15       Summer       2       +20%       100/15 Summer       34.240       -0.126       0.000       0.05       2.1       OK         58.002       CPDN2       15       Summer       2       +20%       100/15 Summer       100/15 Summer       33.499       -0.061       0.000       0.23       3.8       OK         58.003       CPDN4       15       Summer       2       +20%       100/15 Summer       33.429       -0.081       0.000       0.43       5.1       OK         58.005       CPDN7       15       Summer       2       +20%       100/15 Summer       2/15 Summer       32.412       -0.048       0.000       0.000       0.46       6.6       OK         56.003       CPDN8       35       Summer       2       100/15       Summer       2/15 Summer <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2/15 Summer</td> <td>72</td> <td></td> <td></td> <td></td> <td></td> <td>1.0</td> <td></td> <td></td> <td></td> <td></td>								2/15 Summer	72					1.0				
56.001       CP3138B       15 Summer       2       +20%																		
58.000       CEDN1       15       Summer       2       +20%       100/15       Summer       34.240       -0.100       0.000       0.15       1.6       OK         58.001       CPDN2       15       Summer       2       +20%       100/15       Summer       34.053       -0.067       0.000       0.58       2.1       OK         58.002       CPDN4       15       Summer       100/15       Summer       100/15       Summer       33.835       -0.097       0.000       0.29       3.8       OK         58.003       CPDN4       15       Summer       100/15       Summer       100/15       Summer       33.835       -0.097       0.000       0.46       6.6       OK         58.005       CPDN7       15       Summer       100/15       Summer       100/15       Summer       2.15       Summer       10.000       0.000       0.000       0.016       6.6       OK         56.003       CPDN8       30       Summer       100/15       Summer       100/15       Summer       31.412       -0.048       0.000       0.26       6.1       OK         56.003       CPDN4       15       Summer       100/15       Summer <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>2/15 Summer</td> <td>72</td> <td></td> <td></td> <td></td> <td></td> <td>1.3</td> <td></td> <td></td> <td></td> <td></td>								2/15 Summer	72					1.3				
58.001       CPDN2       15       Summer       2       +20%       100/15       Summer       34.053       -0.067       0.000       0.58       2.1       OK         58.002       CPDN1       15       Summer       2       +20%       100/15       Summer       33.999       -0.101       0.000       0.23       2.8       OK         58.003       CPDN1       15       Summer       100/15       Summer       100/15       Summer       33.835       -0.081       0.000       0.29       3.8       OK         58.005       CPDN6       15       Summer       2       +20%       100/15       Summer       32.803       -0.081       0.000       0.46       6.6       OK         58.006       CPDN7       15       Summer       100/15       Summer       2/15       Summer       32.412       -0.048       0.000       0.78       4.5       SURCHARGED         56.003       CPDN8       30       Summer       2       +20%       100/15       Summer       32.088       -0.092       0.000       0.31       5.7       OK         56.004       CPDN8       30       Summer       2       +20%       100/15       Summer       3																		
58.002       CPDN3       15       Summer       2       +20%       100/15       Summer       33.999       -0.101       0.000       0.23       2.8       0K         58.003       CPDN4       15       Summer       2       +20%       100/15       Summer       33.835       -0.095       0.000       0.29       3.8       0K         58.004       CPDN5       15       Summer       2       +20%       100/15       Summer       33.429       -0.0181       0.000       0.43       5.1       0K         58.005       CPDN6       15       Summer       100/15       Summer       2/15       32.412       -0.048       0.000       0.46       6.6       0K         56.002       CP3138       15       Summer       100/15       Summer       2/15       Summer       72       32.190       0.000       0.000       0.95       16.3       4.5       SURCHARGED         56.003       CPDN8       30       Summer       2       +20%       100/15       Summer       30.739       -0.183       0.000       0.26       6.1       0K         44.011       CP3141       15       Summer       2       +20%       100/15       Summer<																		
58.003       CPDN4       15       Summer       2       +20%       100/15       Summer       100																		
58.004       CPDN5       15       Summer       2       +20%       100/15       Summer       100/15       Summer       33.429       -0.081       0.000       0.43       5.1       OK         58.005       CPDN6       15       Summer       2       +20%       100/15       Summer       100/15       Summer       32.803       -0.077       0.000       0.43       6.6       OK         58.005       CPDN7       15       Summer       2       +20%       5/15       Summer       2/15       Summer       32.812       -0.078       0.000       0.43       5.1       OK         56.002       CP13138A       15       Summer       2       +20%       5/15       Summer       10/15       Summer       72       32.18       -0.098       0.000       0.95       16.3       A4.5       SURCHARGED         56.003       CPDN9       30       Summer       2       +20%       100/15       Summer       100/15       Summer       31.412       -0.081       0.000       0.31       6.1       OK         44.011       CP3141       15       Summer       2       +20%       100/15       Summer       30.291       0.100       0.000 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																		
58.005       CPDN6       15       Summer       2       +20%       100/15       Summer       32.803       -0.077       0.000       0.46       6.6       OK         58.006       CPDN7       15       Summer       2       +20%       5/15       Summer       2/15       32.412       -0.048       0.000       0.78       8.0       OK         56.003       CPDN8       30       Summer       2       +20%       2/15       Summer       72       32.100       0.000       0.000       0.95       16.3       4.5       SURCHARGED         56.003       CPDN8       30       Summer       2       +20%       100/15       Summer       2/15       Summer       32.088       -0.092       0.000       0.31       5.7       OK         56.004       CPDN9       30       Summer       2       +20%       100/15       Summer       31.412       -0.098       0.000       0.26       6.1       OK         59.000       CP3142       15       Summer       2       +20%       2/15       Summer       30.291       0.100       0.000       2.20       215.5       SUCHARGED         60.001       CP091001       15       Summer																		
58.006       CPDN7       15       Summer       2       +20%       5/15       Summer       2/15       Summer       72       32.102       -0.048       0.000       0.000       0.95       16.3       4.5       SURCHARGED         56.002       CP3138A       15       Summer       2       +20%       100/15       Summer       2/15       Summer       72       32.108       -0.092       0.000       0.95       16.3       4.5       SURCHARGED         56.003       CPDN8       30       Summer       2       +20%       100/15       Summer       32.088       -0.092       0.000       0.26       6.1       OK         44.011       CP3141       15       Summer       2       +20%       100/15       Summer       30.739       -0.183       0.000       0.26       6.1       OK         44.011       CP3141       15       Summer       2       +20%       2/15       Summer       30.739       -0.183       0.000       0.16       217.8       OK         44.012       CP091001       15       Summer       2       +20%       215.5       Summer       30.264       -0.181       0.000       0.102       16.4       OK																		1
56.002       CP3138A       15       Summer       2       +20%       2/15       Summer       2/15       Summer       72       32.190       0.000       0.000       0.95       16.3       4.5       SURCHARGED         56.003       CPDN8       30       Summer       2       +20%       100/15       Summer       32.088       -0.092       0.000       0.31       5.7       OK         56.004       CPDN9       30       Summer       2       +20%       100/15       Summer       31.412       -0.098       0.000       0.26       6.1       OK         44.011       CP3141       15       Summer       2       +20%       2/15       Summer       30.737       -0.188       0.000       0.15       16.4       OK         44.012       CP091001       15       Summer       2       +20%       2/15       Summer       30.291       0.100       0.000       2.20       219.5       SURCHARGED         60.000       GY3068       15       Summer       2       +20%       2/15       Summer       30.291       0.100       0.000       0.08       7.6       OK         61.001       CP4050C       15       Summer       2 <td></td> <td>3</td>																		3
56.003       CPDN8       30       Summer       2       +20%       100/15       Summer       32.088       -0.092       0.000       0.31       5.7       OK         56.004       CPDN9       30       Summer       2       +20%       100/15       Summer       31.412       -0.098       0.000       0.26       6.1       OK         44.011       CP3141       15       Summer       2       +20%       100/15       Summer       30.739       -0.188       0.000       0.26       6.1       OK         59.00       CP3142       15       Summer       2       +20%       2/15       Summer       30.739       -0.188       0.000       0.15       16.4       OK         44.012       CP091001       15       Summer       2       +20%       2/15       Summer       30.291       0.100       0.000       2.20       219.5       SURCHARGED         60.000       GY3068       15       Summer       2       +20%       2/15       Summer       29.806       -0.181       0.000       0.08       224.3       OK         44.013       CP4050C       15       Summer       2       +20%       5/15       Summer       28.862 <td></td> <td></td> <td></td> <td></td> <td></td> <td>.,</td> <td>100/15 Summer</td> <td></td> <td>5</td>						.,	100/15 Summer											5
56.004       CPDN9       30       Summer       2       +20%       100/15       Summer       31.412       -0.098       0.000       0.26       6.1       OK         44.011       CP3141       15       Summer       2       +20%       100/15       Summer       30.739       -0.183       0.000       0.66       217.8       OK         59.000       CP3142       15       Summer       2       +20%       2/15       Summer       30.739       -0.183       0.000       0.15       16.4       OK         44.012       CP091001       15       Summer       2       +20%       2/15       Summer       30.291       0.100       0.000       2.20       219.5       SURCHARGED         60.000       GY3068       15       Summer       2       +20%       2/15       Summer       31.264       -0.181       0.000       0.08       7.6       OK         44.013       CP4050E       15       Summer       2       +20%       5/15       Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.001       CP100       15       Summer       2       +20%       10/15       Summer       27.460 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>,</td> <td> /</td> <td>2/15 Summer</td> <td>72</td> <td></td> <td></td> <td></td> <td></td> <td>16.3</td> <td></td> <td></td> <td></td> <td></td>						,	/	2/15 Summer	72					16.3				
44.011       CP3141       15 Summer       2       +20%       100/15 Summer       30.739       -0.183       0.000       0.66       217.8       OK         59.000       CP3142       15 Summer       2       +20%       2/15 Summer       31.077       -0.168       0.000       0.15       16.4       OK         44.012       CP091001       15 Summer       2       +20%       2/15 Summer       30.291       0.100       0.000       2.20       219.5       SURCHARGED         60.000       GY3068       15 Summer       2       +20%       2/15 Summer       30.291       0.100       0.000       0.220       219.5       SURCHARGED         60.001       CP4050C       15 Summer       2       +20%       7/15 Summer       29.806       -0.173       0.000       0.08       7.6       OK         44.013       CP4050B       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.460       -0.119       0.000       0.09       1.1       OK         39.007       CP4050A       30 Summer							100/15 Summer											4
59.000       CP3142       15 Summer       2       +20%       31.077       -0.168       0.000       0.15       16.4       OK         44.012       CP091001       15 Summer       2       +20%       2/15 Summer       30.291       0.100       0.000       2.20       219.5 SURCHARGED         60.000       GY3068       15 Summer       2       +20%       31.264       -0.181       0.000       0.08       7.6       OK         60.001       CP4050C       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         44.013       CP4050B       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.000       DN40       15 Summer       2       +20%       100/15 Summer       28.764       -0.133       0.000       0.03       1.2       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       26.578       0.051       0.000       0.93       31.1 <surcharged< td="">         39.007       CP405DA       30 Summer       2       +20%       5/15 Summer       26.578       <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></t<></surcharged<>																		
44.012       CP091001       15 Summer       2       +20%       2/15 Summer       30.291       0.100       0.000       2.20       219.5 SURCHARGED         60.000       GY3068       15 Summer       2       +20%       31.264       -0.181       0.000       0.08       7.6       OK         60.001       CP4050C       15 Summer       2       +20%       29.806       -0.173       0.000       0.12       16.3       OK         44.013       CP4050B       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.000       DN40       15 Summer       2       +20%       5/15 Summer       28.862       -0.133       0.000       0.03       1.2       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.460       -0.119       0.000       0.09       1.1       OK         39.007       CP4050A       30 Summer       2       +20%       2/15 Summer       26.578       0.051       0.000       0.99       381.1       SURCHARGED         62.001       CP4051B       15 Summer       2       +20%       5/15 Summer       32.652<																		
60.000       GY3068       15 Summer       2       +20%       31.264       -0.181       0.000       0.08       7.6       OK         60.001       CP4050C       15 Summer       2       +20%       29.806       -0.173       0.000       0.12       16.3       OK         44.013       CP4050B       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.000       DN40       15 Summer       2       +20%       5/15 Summer       28.862       -0.133       0.000       0.03       1.2       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.6       0.000       0.03       1.2       OK         39.007       CP4050A       30 Summer       2       +20%       100/15 Summer       26.578       0.051       0.000       0.93       381.1       SURCHARGED         39.007       CP4050B       15 Summer       2       +20%       5/15 Summer 100/15 Summer       26.572       -0.048       0.000       0.79       18.7       OK         62.001       CP4051A       15 Summer       2       +20%       5/15 Summer 100/15 Summer																		
60.001       CP4050C       15 Summer       2       +20%       29.806       -0.173       0.000       0.12       16.3       OK         44.013       CP4050B       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.000       DN40       15 Summer       2       +20%       100/15 Summer       28.862       -0.133       0.000       0.03       1.2       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.460       -0.119       0.000       0.09       1.1       OK         39.007       CP4050A       30 Summer       2       +20%       2/15 Summer       26.57       0.051       0.000       0.93       381.1       SURCHARGED         62.000       CP4051B       15 Summer       2       +20%       5/15 Summer 100/15 Summer       28.938       -0.162       0.000       0.79       18.7       OK         62.001       CP4051A       15 Summer       2       +20%       5/15 Summer 100/15 Summer       28.938       -0.162       0.000       0.18       18.7       OK																		
44.013       CP4050B       15 Summer       2       +20%       5/15 Summer       28.521       -0.129       0.000       0.85       224.3       OK         61.000       DN40       15 Summer       2       +20%       28.62       -0.123       0.000       0.03       1.2       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.460       -0.119       0.000       0.09       1.1       OK         39.007       CP4050A       30 Summer       2       +20%       2/15 Summer       26.52       -0.048       0.000       0.93       381.1 SURCHARGED         62.001       CP4051A       15 Summer       2       +20%       5/15 Summer 100/15 Summer       28.938       -0.162       0.000       0.79       18.7       OK																		
61.000       DN40       15 Summer       2       +20%       28.862       -0.133       0.000       0.03       1.2       OK         61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.460       -0.119       0.000       0.09       1.1       OK         39.007       CP4050A       30 Summer       2       +20%       2/15 Summer       26.578       0.051       0.000       0.93       381.1 SURCHARGED         62.000       CP4051B       15 Summer       2       +20%       5/15 Summer 100/15 Summer       32.652       -0.048       0.000       0.79       18.7       OK         62.001       CP4051A       15 Summer       2       +20%       5/15 Summer       28.938       -0.162       0.000       0.18       18.7       OK																		
61.001       CP100       15 Summer       2       +20%       100/15 Summer       27.460       -0.119       0.000       0.09       1.1       OK         39.007       CP4050A       30 Summer       2       +20%       2/15 Summer       26.578       0.051       0.000       0.93       381.1 SURCHARGED         62.000       CP4051B       15 Summer       2       +20%       5/15 Summer 100/15 Summer       32.652       -0.048       0.000       0.79       18.7       OK         62.001       CP4051A       15 Summer       2       +20%       5/15 Summer       28.938       -0.162       0.000       0.18       18.7       OK						5/15 Summer												
39.007       CP4050A       30 Summer       2       +20%       2/15 Summer       26.578       0.051       0.000       0.93       381.1 SURCHARGED         62.000       CP4051B       15 Summer       2       +20%       5/15 Summer 100/15 Summer       32.652       -0.048       0.000       0.79       18.7       0K         62.001       CP4051A       15 Summer       2       +20%       28.938       -0.162       0.000       0.18       18.7       0K																		
62.000       CP4051B       15 Summer       2       +20%       5/15 Summer       100/15 Summer       32.652       -0.048       0.000       0.79       18.7       OK         62.001       CP4051A       15 Summer       2       +20%       28.938       -0.162       0.000       0.18       18.7       OK																		
62.001 CP4051A 15 Summer 2 +20% 28.938 -0.162 0.000 0.18 18.7 OK							400/45											_
						5/15 Summer	100/15 Summer											6
						0 (45 - 0												
39.008 Pond Inlet 2         15 Summer         2         +20%         2/15 Summer         26.430         0.069         0.000         1.15         388.4         SURCHARGED	39.008	Pond Inlet 2	15 Summer	2	+20%	2/15 Summer				26.430	0.069	0.000	1.15			388.4	SURCHARGED	
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novyze								Network	2020.1.	3						I		
	2	2 year R	eturn Pe	eriod Su	ummary	of Criti	cal Re	sults by	Maximu	m Leve	l (Rank	1) fo	r Pro	posed 1	Network	<u>S1-OU</u>	11&12	
										Water S	Surcharged	Flooded			Half Drair	. Pipe		
D	'n	US/MH Name	Storm	Return C Period C		First (X) Surcharge		S) First (Z) Overflow		Level (m)	Depth (m)	Volume (m³)		Overflow (1/s)	Time (mins)	Flow (1/a)	Status	Level Exceeded
P	'n	Name	SCOTI	Period	Jiange	Surcharge	F100d	Overiiow	ACC.	(m)	(m)	(m-)	Cap.	(1/5)	(mins)			Exceeded
39.	009 Por	nd Outlet 2	120 Summer	2	+20% 1	L00/15 Summer				26.153	-0.147	0.000	0.22			207.1	OK	
								©1982-20	20 Innc	WWZe								

acobs Engine	eering		a													Page	TO
							A12	Chelms	ford t	o A120w	idenin	g					
							Sect	tion 1									
							Prop	posed N	etwork	S1-0U11	1 & 12						Micco
te 15/12/20	021						Desi	igned by	y LM								
le PROPOSEI		DRAINA	.GE MOI	DEL S1	OU11 & OU	J12.MDX		cked by	-								Drainage
novyze								work 20									
	5 yea	ar Retur	n Per	iod Su	mmary of (	Critical	l Result	s by Ma	aximum	Level (	Rank 1	.) for	r Propos	sed Netw	ork S	1-0U11&1	12
							s	Simulation	Criteria	3							
			Area		on Factor 1.0		le Headloss	s Coeff (G	lobal) O	.500	MADD Fac			rage 0.000			
			Hot		ert (mins) Level (mm)		11 Sewage pe 2014 December 10 Sewage Pe			.000 .000 Flow p	oer Perso			ient 0.800 day) 0.000			
												-		-			
Number of Inpu	it Hydrog	raphs 0 Nu	umber of	Online C	Controls 2 Nur	nber of Off	fline Contro	ols 7 Numł	ber of St	corage Struc	ctures 4	Number	of Time/A	rea Diagra	ms 0 Nu	mber of Rea	l Time Controls
							Syntl	hetic Rain	fall Det	ails							
									4850 2085	550 TL 74850							
				FEI	H Rainfall Ver	sion 2013	Data T	уре		Cat	tchment (	Cv (Wint	ter) 1.000				
					Margin for Fl	ood Risk W	arning (mm)			31	00.0	DVD St	atus ON				
						Analuc	the million entrance	2 5 6 9 9 9 9			ded) Ine	rtia St	otuc ON				
						Anarys	-		na increi	ment (Extend		1010 000	acus on				
						Allalys	DTS Status		na increi	ment (Extend	OFF	1014 00	acus on				
						Allaiys	-		na increi	ment (Extend		1010 00.	atus on				
						Profile	DTS Status		na increi	nent (Extend	OFF	er and W					
						Profile ion(s) (min	DTS Status (s) ns) 15, 30,			), 360, 480,	OFF	er and W 20, 960,	Jinter 1440				
					Return Peri	Profile ion(s) (min od(s) (yea:	DTS Status (s) ns) 15, 30, rs)				OFF	er and W 20, 960, 2, 5	7inter 1440 5, 100				
					Return Peri	Profile ion(s) (min	DTS Status (s) ns) 15, 30, rs)				OFF	er and W 20, 960, 2, 5	Jinter 1440				
					Return Peri	Profile ion(s) (min od(s) (yea:	DTS Status (s) ns) 15, 30, rs)		180, 240	), 360, 480,	OFF Summe , 600, 72	er and W 20, 960, 2, 5	Jinter 1440 5, 100 20, 20	Half Drain	Pipe		
	US/MH		Return	Climate	Return Peri	Profile ion(s) (min od(s) (yea te Change	DTS Status (s) ns) 15, 30, rs)	. 60, 120,	180, 240 Water		OFF Summe , 600, 72 Flooded	er and W 20, 960, 2, 5 20, 2	Jinter 1440 5, 100 20, 20	Half Drain Time	Pipe Flow		Level
PN	US/MH Name	Storm	Return Period		Return Peri Clima	Profile ion(s) (min od(s) (yea te Change	DTS Status (s) ns) 15, 30, rs) (%)	. 60, 120,	180, 240 Water	), 360, 480, Surcharged	OFF Summe , 600, 72 Flooded	er and W 20, 960, 2, 5 20, 2	Jinter 1440 5, 100 20, 20		-	Status	Level Exceeded
	Name	Storm 15 Summer			Return Peri Clima First (X)	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	180, 240 Water Level	), 360, 480, Surcharged Depth	OFF Summe , 600, 72 Flooded Volume	er and W 20, 960, 2, 5 20, 2 <b>Flow /</b>	Jinter 1440 5,100 20,20 Overflow	Time	Flow	Status	
1.000	Name CP153		Period	Change +20%	Return Peri Clima First (X)	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	180, 240 Water Level (m)	), 360, 480, Surcharged Depth (m)	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> )	er and W 20, 960, 2, 5 20, 2 Flow / Cap.	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s)		
1.000 1.001 2.000	Name CP153 CP154 CP2015	15 Summer 15 Summer 15 Summer	<b>Period</b> 5 5 5	<b>Change</b> +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098</pre>	<b>Surcharged</b> <b>Depth</b> (m) -0.175 -0.116 -0.292	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.47 0.01	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3	OK OK	
1.000 1.001 2.000 3.000	Name CP153 CP154 CP2015 CP175	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 5 5 5 5 5 5 5	Change +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098 32.308</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.47 0.01 0.01	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1	OK OK OK	
1.000 1.001 2.000 3.000 2.001	Name CP153 CP154 CP2015 CP175 CP2013	<ol> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> <li>Summer</li> </ol>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098 32.308 30.046</pre>	<b>Surcharged</b> <b>Depth</b> (m) -0.175 -0.116 -0.292 -0.282 -0.344	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.47 0.01 0.01 0.02	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9	OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002	Name CP153 CP154 CP2015 CP175 CP2013 CP155	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 <b>Flow /</b> Cap. 0.11 0.47 0.01 0.01 0.02 0.22	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3	OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823</pre>	<pre>Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 <b>Flow /</b> <b>Cap</b> . 0.11 0.47 0.01 0.02 0.22 0.01	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0	OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044</pre>	<pre>Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 <b>Flow /</b> <b>Cap</b> . 0.11 0.47 0.01 0.02 0.22 0.01	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4	OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000	Name CP153 CP154 CP2015 CP2013 CP155 CP1 CP2 CP3	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509</pre>	<pre>Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.01 0.01 0.02 0.22 0.01 0.07 0.14	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0	OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.001 4.002 4.003	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.202</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.47 0.01 0.02 0.22 0.01 0.07 0.14 0.23	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8	OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.202</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.47 0.01 0.02 0.22 0.01 0.07 0.14 0.23	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7	OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.004	Name CP153 CP154 CP2015 CP2015 CP2013 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.202 -0.182</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 20, 2 20, 2 <b>Flow /</b> Cap. 0.11 0.47 0.01 0.02 0.22 0.01 0.07 0.14 0.23 0.32	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8	OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\end{array}$	Name CP153 CP154 CP2015 CP2013 CP155 CP1 CP2 CP3 CP4 CP4 CP5 DN18 CP77	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864	<pre>Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.202 -0.182 -0.215</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 <b>Flow /</b> Cap. 0.11 0.01 0.02 0.22 0.01 0.07 0.14 0.32 0.32 0.18	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6	OK OK OK OK OK OK OK OK	
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.004 5.000	Name CP153 CP154 CP2013 CP175 CP175 CP17 CP2 CP3 CP4 CP5 DN18 CP77 CP78	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864 34.399</pre>	<pre>Surcharged Depth (m)</pre>	OFF Summe , 600, 72 Flooded Volume (m³) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.01 0.02 0.01 0.02 0.01 0.07 0.14 0.23 0.32 0.32	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6 47.6	OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\end{array}$	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864 34.864 34.399 33.881</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.246 -0.223 -0.202 -0.182 -0.182 -0.182 -0.187</pre>	OFF Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.01 0.01 0.02 0.01 0.07 0.14 0.23 0.32 0.32 0.32	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6 47.6 47.3	OK OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\end{array}$	Name CP153 CP154 CP2015 CP175 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864 34.864 34.899 33.881 33.476</pre>	0, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.202 -0.182 -0.194 -0.102 -0.292 -0.285 -0.202 -0.215 -0.216 -0.215 -0.216 -0.223 -0.216 -0.223 -0.216 -0.223 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.225 -0.216 -0.215 -0.216 -0.225 -0.216 -0.215 -0.216 -0.215 -0.216 -0.225 -0.216 -0.215 -0.216 -0.215 -0.216 -0.215 -0.216 -0.215 -0.216 -0.215 -0.216 -0.215 -0.215 -0.216 -0.215 -0.215 -0.182 -0.182 -0.164	OFF Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.01 0.01 0.02 0.22 0.01 0.02 0.22 0.01 0.02 0.14 0.32 0.32 0.30 0.41	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6 47.6 47.6 47.3 58.5 69.9	OK OK OK OK OK OK OK OK OK OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\\ 6.000\\ \end{array}$	Name CP153 CP155 CP2015 CP2015 CP205 CP10 CP25 CP1 CP23 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8 DIT03	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864 34.399 33.881 33.476 32.905 32.830 37.339</pre>	<pre>Surcharged Depth (m)</pre>	OFF Summe , 600, 72 Flooded Volume (m³) 0.000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.111 0.01 0.01 0.02 0.22 0.01 0.07 0.14 0.23 0.32 0.32 0.32 0.30 0.41 0.56 0.00	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6 47.6 47.3 58.5 69.9 66.7 4.9	OK OK OK OK OK OK OK OK OK SURCHARGED OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\\ 6.000\\ 6.001\end{array}$	Name CP153 CP154 CP2013 CP175 CP175 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8 DIT03 DIT04	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864 34.864 34.864 34.864 33.881 33.476 32.905 32.830 37.339 35.778</pre>	<pre>D, 360, 480, Surcharged Depth (m) -0.175 -0.116 -0.292 -0.282 -0.344 -0.306 -0.285 -0.246 -0.223 -0.246 -0.223 -0.246 -0.223 -0.246 -0.223 -0.246 -0.223 -0.246 -0.225 -0.182 -0.182 -0.187 -0.164 -0.185 0.007 -0.484 -0.452</pre>	OFF Summe, 600, 72 Flooded Volume (m³) 0.0000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.11 0.01 0.01 0.02 0.02 0.01 0.07 0.14 0.23 0.32 0.32 0.32 0.32 0.32 0.32 0.32	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6 47.6 47.3 58.5 69.9 66.7 4.9 13.6	OK OK OK OK OK OK OK OK OK SURCHARGED OK	
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\\ 6.000\\ 6.001\\ \end{array}$	Name CP153 CP154 CP2013 CP175 CP175 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8 DIT03 DIT04	<pre>15 Summer 15 Summer</pre>	<b>Period</b> 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5 5	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	Profile ion(s) (min od(s) (yea: te Change <b>First (Y)</b> <b>Flood</b>	<pre>DTS Status (s) ns) 15, 30, rs) (%) First (Z)</pre>	0verflow	<pre>180, 240 Water Level (m) 31.610 31.439 32.098 32.308 30.046 30.044 33.823 33.509 33.142 32.848 32.436 34.864 34.399 33.881 33.476 32.905 32.830 37.339</pre>	<pre>Surcharged Depth (m)</pre>	OFF Summe, 600, 72 Flooded Volume (m³) 0.0000 0.000 0.000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.000000	er and W 20, 960, 2, 5 20, 2 Flow / Cap. 0.111 0.01 0.01 0.02 0.22 0.01 0.07 0.14 0.23 0.32 0.32 0.32 0.30 0.41 0.56 0.00	Jinter 1440 5,100 20,20 Overflow	Time	Flow (1/s) 4.0 19.8 0.3 1.1 1.9 39.3 1.0 7.4 14.7 23.8 33.8 28.6 47.6 47.3 58.5 69.9 66.7 4.9	OK OK OK OK OK OK OK OK OK SURCHARGED OK	

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	

										Surcharged				Half Drain	-		
	US/MH			Climate	First (X)	First (Y)		Overflow	Level	Depth			Overflow	Time	Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(1/s)	Status	Exceeded
7.000	DIT01	15 Summer	5	+20%					35.896	-0.454	0.000	0.01			12.2	OK	
7.001	DIT02	15 Summer	5	+20%					35.263	-0.437	0.000	0.02			18.3	OK	
6.003	DN02	15 Summer	5	+20%					34.729	-0.133	0.000	0.35			35.1	OK	
8.000	DN 3 0	15 Summer	5	+20%	100/15 Summer				33.906	-0.217	0.000	0.01			0.5	OK	
6.004	CP10	15 Summer	5	+20%	100/15 Summer				33.649	-0.164	0.000	0.42			39.0	OK	
6.005	CP11	15 Summer	5	+20%	100/15 Summer	100/15 Summer			33.145	-0.159	0.000	0.44			40.7	OK	5
6.006	CP173	15 Summer	5	+20%	100/15 Summer	100/15 Summer			32.810	-0.269	0.000	0.18			40.9	OK	3
5.006	CP174	15 Summer	5	+20%	5/15 Summer				32.741	0.012	0.000	1.00			92.4	SURCHARGED	
5.007	CP9	15 Summer	5	+20%	100/15 Summer				32.592	-0.087	0.000	0.94			96.3	OK	
9.000	CP12	15 Summer	5	+20%	100/15 Summer				33.010	-0.254	0.000	0.06			2.9	OK	
9.001	CP13	15 Summer	5	+20%	100/15 Summer				32.918	-0.245	0.000	0.08			3.9	OK	
5.008	CP14	15 Summer	5	+20%	100/15 Summer				32.485	-0.091	0.000	0.92			97.9	OK	
10.000	DN20	15 Summer	5	+20%	100/30 Summer				33.546	-0.146	0.000	0.27			9.7	OK	
5.009	CP15	30 Summer	5	+20%	100/15 Summer				32.363	-0.044	0.000	1.00			100.5	OK	
11.000	DN21	15 Summer	5	+20%	100/30 Summer				33.403	-0.182	0.000	0.08			3.3	OK	
5.010	CP16	30 Summer	5	+20%	100/15 Summer				32.290	-0.024	0.000	0.91			96.6	OK	
12.000	DN22	15 Summer	5	+20%					33.312	-0.191	0.000	0.06			2.1	OK	
5.011	CP17	30 Summer	5	+20%	5/15 Winter				32.176	0.023	0.000	1.01			90.5	SURCHARGED	
4.005	CP18	30 Summer	5	+20%	100/15 Summer				32.093	-0.018	0.000	0.98			103.6	OK	
13.000	DN23	15 Summer	5	+20%	100/15 Summer				32.814	-0.103	0.000	0.57			17.6	OK	
4.006	CP19	30 Summer	5	+20%	100/15 Summer				31.956	-0.006	0.000	0.75			113.1	OK	
14.000		15 Summer	5		100/15 Summer				32.687	-0.084	0.000	0.71			20.5	OK	
15.000	CP20	15 Summer	5	+20%					33.009	-0.211	0.000	0.01			0.8	OK	
		15 Summer	5	+20%					33.596	-0.143	0.000	0.28			12.0	OK	
16.001		15 Summer	5	+20%					33.237	-0.142	0.000	0.29			14.1	OK	
17.000		15 Summer	5	+20%	100/30 Summer				32.966	-0.181	0.000	0.08			2.4	OK	
18.000	DN05	15 Summer	5	+20%					33.317	-0.197	0.000	0.04			2.6	OK	
17.001		15 Summer	5		100/15 Summer				32.846	-0.128	0.000	0.18			4.7	OK	
16.002	CP23	15 Summer	5	+20%	100/15 Summer				32.838	-0.100	0.000	0.55			17.4	OK	
15.001	CP24	15 Summer	5	+20%	100/15 Summer				32.537	-0.157	0.000	0.20			18.1	OK	
19.000	CP179	15 Summer	5	+20%	100/15 Summer				34.164	-0.155	0.000	0.45			29.5	OK	
19.001	CP180	15 Summer	5	+20%	100/15 Summer				33.995	-0.094	0.000	0.77			41.6	OK	
19.002	CP181	15 Summer	5	+20%	100/15 Summer				33.832	-0.082	0.000	0.87			44.9	OK	
20.000	DN31	15 Summer	5	+20%					35.401	-0.187	0.000	0.06			3.9	OK	
20.001		15 Summer	5		100/15 Summer				33.900	-0.189	0.000	0.06			3.9	OK	
19.003		15 Summer	5		100/15 Summer				33.743	-0.086	0.000	0.84			55.1	OK	
19.004	CP183	30 Summer	5	+20%	100/15 Summer				33.564	-0.022	0.000	0.99			66.8	OK	
19.005		30 Summer	5		100/15 Summer				33.010	-0.128	0.000	0.62			66.3	OK	
21.000	CPDN15	15 Summer	5	+20%					33.339	-0.170	0.000	0.38			29.9	OK	
22.000	CP47	15 Summer	5	+20%	100/15 Summer				34.329	-0.201	0.000	0.03			1.1	OK	
22.001	CP48	15 Summer	5	+20%	100/15 Summer	100/15 Summer			34.024	-0.134	0.000	0.05			1.7	OK	3
22.002	CP33	15 Summer	5	+20%	100/15 Summer				34.022	-0.072	0.000	0.83			51.3	OK	
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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamaye
Innovyze	Network 2020.1.3	

	US/MH		Potura	Climate	First (V)	First (V)	First (7)	0		Surcharged		Flow /	Oworfler-	Half Drain Time	-		Level
PN	Name	Storm		Climate Change	First (X) Surcharge	First (I) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m³)	Flow / Cap.	Overflow (1/s)	(mins)	Flow (1/s)	Status	Exceeded
				2	2							-					
22.003		15 Summer	5		100/15 Summer				33.640	-0.082	0.000	0.84			51.6	OK	
22.004		15 Summer	5		100/15 Summer				33.390	-0.083	0.000	0.85			52.3	OK	
22.005		15 Summer	5		100/15 Summer				33.139	-0.082	0.000	0.84			52.1	OK	
22.006		15 Summer	5		100/15 Summer				32.834	-0.084	0.000	0.85			51.7	OK	
22.007		15 Summer	5		100/15 Summer				32.523	-0.187	0.000	0.31			51.6	OK	
19.006		30 Summer	5		100/15 Summer				32.138	-0.108	0.000	0.85			123.7	OK	
15.002		30 Summer	5		100/15 Summer				31.982	-0.127	0.000	0.69			132.8	OK	
4.007		30 Summer	5	+20%	5/30 Summer				31.866	0.002	0.000	1.07				SURCHARGED	
23.000		15 Summer	5		100/30 Summer				32.560	-0.142	0.000	0.29			12.5	OK	
4.008		30 Summer	5		100/15 Summer				31.700	-0.105	0.000	1.00			241.2	OK	
24.000		15 Summer	5	+20%	100/15 0				32.588	-0.138	0.000	0.32			14.9	OK	
4.009		30 Summer	5		100/15 Summer				31.621	-0.097	0.000	0.92			239.1	OK	
25.000		15 Summer	5	+20%	100/15 0				32.586	-0.122	0.000	0.42			19.0	OK	
4.010		30 Summer	5		100/15 Summer				31.515	-0.074	0.000	1.00			237.6	OK	
26.000		15 Summer	5	+20%					32.472	-0.151	0.000	0.24			11.3	OK	
4.011		30 Winter	5		100/15 Summer				31.373	-0.138	0.000	0.89			239.8	OK	
27.000		15 Summer	5		100/15 Summer				32.447	-0.109	0.000	0.52			22.7	OK	
28.000		15 Summer	5	+20%					31.916	-0.149	0.000	0.22			8.4	OK	
		15 Summer	5		100/15 Summer				31.138	-0.167	0.000	0.15			8.5	OK	
4.012		30 Winter	5		100/15 Summer				31.119	-0.215	0.000	0.65			248.2	OK	
29.000		15 Summer	5	+20%					32.269	-0.123	0.000	0.41			18.0	OK	
4.013		30 Winter	5	+20%	100/15 Summer				30.807	-0.214	0.000	0.66			252.4	OK	
30.000		15 Summer	5	+20%					33.139	-0.241	0.000	0.08			5.9	OK	
30.001		15 Summer	5	+20%					32.730	-0.236	0.000	0.10			7.3	OK	
30.002		15 Summer	5	+20%					32.587	-0.231	0.000	0.12			9.0	OK	
31.000	Ditch 1	15 Summer	5	+20%					33.425	-0.475	0.000	0.00			2.0	OK	
32.000	Ditch 3	15 Summer	5	+20%					33.129	-0.471	0.000	0.00			1.9	OK	
31.001	Ditch 2	15 Summer	5	+20%					32.776	-0.264	0.000	0.03			3.9	OK	
30.003	CP41	15 Summer	5	+20%					32.271	-0.217	0.000	0.17			12.5	OK	
33.000	Ditch 4	15 Summer	5	+20%					32.919	-0.481	0.000	0.00			0.8	OK	
34.000	DItch 6	15 Summer	5	+20%					32.929	-0.471	0.000	0.00			1.2	OK	
33.001	DItch 5	15 Summer	5	+20%					32.814	-0.286	0.000	0.01			2.1	OK	
30.004	CP42	15 Summer	5	+20%					31.987	-0.208	0.000	0.20			15.2	OK	
30.005	CP43	15 Summer	5	+20%					31.688	-0.204	0.000	0.23			15.1	OK	
35.000	DN12	15 Summer	5	+20%					32.190	-0.121	0.000	0.43			16.7	OK	
4.014	CP44	30 Winter	5	+20%	100/15 Summer				30.536	-0.138	0.000	0.89			263.2	OK	
36.000	DN13	15 Summer	5	+20%					32.264	-0.147	0.000	0.26			9.5	OK	
4.015	CP45	30 Winter	5	+20%	100/15 Summer				30.375	-0.138	0.000	0.89			264.7	OK	
37.000		15 Summer	5	+20%					32.328	-0.160	0.000	0.18			9.7	OK	
4.016		30 Winter	5	+20%	100/15 Summer				30.151	-0.195	0.000	0.79			266.2	OK	
1.003		30 Winter	5	+20%	100/15 Summer				29.422	-0.190	0.000	0.81			280.3	OK	
38.000		15 Summer	5		100/15 Summer				31.143	-0.134	0.000	0.34			14.8	OK	

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	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	

									Water	Surcharged	Flooded			Half Drain	Pipe		
	US/MH		Return	Climate	First (X)	First (Y)	First (Z)	Overflow	Level	Depth	Volume	Flow /	Overflow	Time	Flow		Level
PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(l/s)	(mins)	(l/s)	Status	Exceeded
38.001	CP191	15 Summer	5	+20%	100/15 Summer				30.972	-0.093	0.000	0.60			25.5	OK	
38.002	CP192	15 Summer	5	+20%	100/15 Summer				30.384	-0.151	0.000	0.49			57.1	OK	
1.004	CP200	30 Summer	5	+20%					28.441	-0.409	0.000	0.22			303.9	OK	
1.005	Pond Inlet 1	30 Summer	5	+20%	100/30 Summer				26.765	-0.310	0.000	0.56			300.7	OK	
	Pond Outlet 1		5		100/60 Summer				26.348	-0.227	0.000	0.04			60.7	OK	
39.000	CP2018A	15 Summer	5	+20%	100/15 Summer	100/15 Summer			32.505	-0.045	0.000	0.83			3.9	OK	1
39.001	CP2018	15 Summer	5	+20%	2/15 Summer				32.319	0.024	0.000	2.46				SURCHARGED	
39.002	CP2017	15 Summer	5		100/15 Summer	100/15 Summer			31.929	-0.046	0.000	0.97			30.8	OK	3
39.003	CP6010	15 Summer	5		100/15 Summer				30.944	-0.196	0.000	0.26			30.5	OK	
40.000	CPDN10	15 Summer	5		100/15 Summer	100/15 Summer			32.337	-0.102	0.000	0.20			3.3	OK	7
40.001	CP162	15 Summer	5		100/15 Summer				31.594	-0.121	0.000	0.43			23.9	OK	
39.004	CP161	15 Summer	5		100/15 Summer				30.650	-0.110	0.000	0.69			82.3	OK	
39.005	CP160	15 Summer	5	+20%					29.556	-0.234	0.000	0.29			123.0	OK	
41.000	Ditch 7	15 Summer	5	+20%					30.392	-0.222	0.000	0.06				FLOOD RISK	
41.001	Ditch 8	15 Summer	5	+20%					30.192	-0.198	0.000	0.10				FLOOD RISK	
42.000	Ditch 10	15 Summer	5	+20%					30.633	-0.281	0.000	0.01				FLOOD RISK	
41.002		15 Summer	5	+20%					29.925	-0.235	0.000	0.11			9.8	OK	
41.003	CP157	15 Summer	5	+20%					29.587	-0.323	0.000	0.17			31.8	OK	
41.004	CP159A	15 Summer	5	+20%					29.348	-0.252	0.000	0.39			66.5	OK	
41.005	CP159	15 Summer	5	+20%				0	29.151	-0.358	0.000	0.09	0.0		87.1	OK	
43.000	CP193	15 Summer	5		100/15 Summer				30.420	-0.220	0.000	0.35			35.8	OK	
43.001	CP194	15 Summer	5		100/15 Summer				30.327	-0.184	0.000	0.49			49.1	OK	
43.002	CP195	15 Summer	5		100/15 Summer				30.254	-0.168	0.000	0.59			59.5	OK	
41.006	EXCP4050D	15 Summer	5	+20%	2/15 Summer				26.997	0.302	0.000	0.87				SURCHARGED	
39.006	CP091002	30 Summer	5	+20%	2/15 Summer				26.873	0.291	0.000	0.83				SURCHARGED	
44.000	CP167	15 Summer	5		100/15 Summer				35.075	-0.095	0.000	0.29			4.0	OK	
45.000	CP2111	15 Summer	5		100/15 Summer				34.432	-0.143	0.000	0.26			10.6	OK	
46.000	CP2109	15 Summer	5		100/15 Summer	100/15 Summer			34.998	-0.177	0.000	0.10			6.6	OK	2
47.000	CP2027	15 Summer	5		100/15 Summer				34.753	-0.182	0.000	0.07			2.6	OK	
48.000	CP2026	15 Summer	5		100/15 Summer				34.714	-0.111	0.000	0.46			13.2	OK	3
48.001	CP2025	15 Summer	5	+20%	100/15 Summer				34.554	-0.061	0.000	0.87			37.0	OK	3
47.001	CP2025.1	15 Summer	5			100/15 Summer	100/15 Summer	7	34.250	-0.180	0.000	0.33	0.0		39.3	OK	5
45.001	CP2110	15 Summer	5	+20%		100/15 Summer			34.132	0.202	0.000	2.92				SURCHARGED	2
44.001	CP168	15 Summer	5	+20%	5/15 Summer				33.999	0.119	0.000	0.92				SURCHARGED	
44.002	CP169	15 Summer	5	+20%		100/15 Summer			33.682	0.182	0.000	1.16				SURCHARGED	4
44.003	CP170	15 Summer	5	+20%		100/15 Summer			33.478	0.118	0.000	1.37				SURCHARGED	3
49.000	CP2024	15 Summer	5		100/15 Summer				34.223	-0.012	0.000	0.75			18.3	OK	1
49.001	CP2023	15 Summer	5	+20%		100/15 Summer			34.157	0.032	0.000	1.16				SURCHARGED	4
50.000		15 Summer	5		100/15 Summer				34.449	-0.181	0.000	0.08			2.9	OK	
51.000		120 Winter	5		100/15 Summer				33.950	-0.225	0.000	0.00			0.0	OK	
49.002		15 Summer	5		100/15 Summer				33.849	-0.171	0.000	0.38			38.9	OK	1
49.003	CP2108	15 Summer	5	+20%	100/15 Summer		100/15 Summer	6	33.291	-0.189	0.000	0.30	0.0		38.8	OK	
						(	©1982-2020	) Innov	yze								

Jacobs Engineering Limited		Page 14
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
44.004		15 Summer	5		100/15 Summer	100/15 Summer			33.133	-0.082	0.000	0.96			149.0	OK	
44.005		15 Summer	5		100/15 Summer				32.796	-0.184	0.000	0.65			162.5	OK	
44.006		15 Summer	5		100/15 Summer				32.579	-0.031	0.000	0.80			172.5	OK	
44.007		15 Summer	5	+20%		100/15 Summer			32.414	0.094	0.000	1.60				SURCHARGED	3
52.000	CP2022		5		100/15 Summer				33.540	-0.045	0.000	0.94			26.0	OK	
52.001		15 Summer	5		100/15 Summer				33.364	-0.051	0.000	0.84			45.4	OK	
53.000	CP2020	15 Summer	5		100/15 Summer				32.797	-0.108	0.000	0.52			19.8	OK	
52.002	CP2019	15 Summer	5	+20%		100/15 Summer			32.698	0.433	0.000	6.97				SURCHARGED	
54.000		120 Winter	5		100/15 Summer				33.090	-0.225	0.000	0.00			0.0	OK	
52.003		15 Summer	5	+20%			100/15 Summer	8	32.275	0.065	0.000	3.53	0.0			SURCHARGED	
44.008		15 Summer	5		100/15 Summer	100/15 Summer			32.108	-0.142	0.000	0.81			269.9	OK	5
44.009		15 Summer	5	+20%					31.611	0.021	0.000	1.04				SURCHARGED	
44.010		15 Summer	5	+20%					31.196	0.156	0.000	1.58				SURCHARGED	
55.000	CP3141A		5		100/15 Summer				30.822	-0.078	0.000	0.11			1.1	OK	
56.000		15 Summer	5	+20%					34.104	-0.096	0.000	0.28			4.8	OK	
57.000	CP3138G	15 Summer	5	+20%					35.133	-0.117	0.000	0.11			0.8	OK	
57.001		15 Summer	5	+20%			2/15 Summer	72	34.961	-0.139	0.000	0.02	1.5		0.2	OK	
57.002	CP3138E	15 Summer	5	+20%					34.454	-0.196	0.000	0.04			1.0	OK	
57.003	CP3138D	15 Summer	5	+20%			2/15 Summer	72	34.305	-0.135	0.000	0.02	1.8		0.3	OK	
56.001	CP3138B	15 Summer	5	+20%					33.330	-0.120	0.000	0.09			5.1	OK	
58.000	CPDN1	15 Summer	5	+20%	100/15 Summer				34.248	-0.102	0.000	0.21			2.2	OK	
58.001	CPDN2	15 Summer	5	+20%	100/15 Summer				34.075	-0.045	0.000	0.82			3.0	OK	
58.002	CPDN3	15 Summer	5	+20%	100/15 Summer	100/15 Summer			34.009	-0.091	0.000	0.32			3.9	OK	
58.003	CPDN4	15 Summer	5	+20%	100/15 Summer	100/15 Summer			33.847	-0.083	0.000	0.41			5.3	OK	
58.004	CPDN5	15 Summer	5		100/15 Summer				33.445	-0.065	0.000	0.60			7.1	OK	
58.005	CPDN6	15 Summer	5	+20%	100/15 Summer	100/15 Summer			32.821	-0.059	0.000	0.66			9.4	OK	
58.006	CPDN7	15 Summer	5	+20%	5/15 Summer	100/15 Summer			32.494	0.034	0.000	1.08			11.2	SURCHARGED	5
56.002	CP3138A	15 Summer	5	+20%	2/15 Summer		2/15 Summer	72	32.195	0.005	0.000	0.91	17.2			SURCHARGED	
56.003	CPDN8	15 Summer	5	+20%	100/15 Summer	100/15 Summer			32.091	-0.089	0.000	0.33			6.2	OK	4
56.004	CPDN9	15 Summer	5	+20%	100/15 Summer				31.415	-0.095	0.000	0.29			6.7	OK	
44.011	CP3141	30 Summer	5	+20%	100/15 Summer				30.820	-0.102	0.000	0.85			283.6	OK	
59.000	CP3142	15 Summer	5	+20%					31.090	-0.155	0.000	0.21			23.3	OK	
44.012	CP091001	30 Summer	5	+20%	2/15 Summer				30.398	0.207	0.000	2.88			287.3	SURCHARGED	
60.000	GY3068	15 Summer	5	+20%					31.272	-0.173	0.000	0.12			10.8	OK	
60.001	CP4050C	15 Summer	5	+20%					29.816	-0.163	0.000	0.17			23.1	OK	
44.013	CP4050B	30 Summer	5	+20%	5/15 Summer				28.737	0.087	0.000	1.11			292.8	SURCHARGED	
61.000	DN40	15 Summer	5	+20%					28.865	-0.130	0.000	0.05			1.6	OK	
61.001	CP100	15 Summer	5	+20%	100/15 Summer				27.466	-0.113	0.000	0.13			1.6	OK	
39.007	CP4050A	30 Summer	5	+20%	2/15 Summer				26.838	0.311	0.000	1.28			521.9	SURCHARGED	
62.000	CP4051B	15 Summer	5	+20%	5/15 Summer	100/15 Summer			33.240	0.540	0.000	1.07			25.2	SURCHARGED	6
62.001	CP4051A	15 Summer	5	+20%					28.949	-0.151	0.000	0.24			25.2	OK	
20.000	Pond Inlet 2	15 Summer	5	+20%	2/15 Summer				26.565	0.204	0.000	1.61			542.6	SURCHARGED	

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PN	US/MH Name	Storm	Return Climate Period Change	First (X) Surcharge		First (Z) Overflow			Surcharged Depth (m)		Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Flow	Status E	Level xceeded
			-	100/15 Summer				26.250					<b>x</b> - <b>y</b>	284.8		
39.009	Pond Outlet 2	120 Summer	5 +20%	100/15 Summer				26.250	-0.050	0.000	0.30			284.8	OK	
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	100 ve	ar Retu	rn Pe	riod S	ummary of	Critica	al Resul	ts by M	Maximuu	m Level	(Rank	1) fo	or Propo	osed Net	work	S1-0U11	&12
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			Area	l Reducti	ion Factor 1.0	00 Manho	ole Headlos	Simulation			MADD Fac	tor * 1	Om <sup>3</sup> /ba Sto	rage 0.000			
			ALCO		art (mins)		il Sewage p				MADD Fac			ient 0.800			
			Hot	t Start I	Level (mm)	0 Additic	onal Flow -	% of Tota	al Flow C	0.000 Flow p	per Perso	on per D	ay (l/per/	day) 0.000			
Number of Inpu	t Hydrog	raphs 0 Nu	umber of	Online (	Controls 2 Nur	nber of Off	fline Contr	ols 7 Num	ber of S	torage Stru	ctures 4	Number	of Time/A	rea Diagran	ns O Ni	umber of Rea	al Time Controls
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					Rainfall M	iodel FEH		<u>hetic Rair</u> ion GB 57		<u>ails</u> 550 TL 74850	0 08550 (	Cv (Sum	mer) 1.000				
				FE	H Rainfall Ver		Data I						ter) 1.000				
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					Return Peri	ion(s) (mi od(s) (yea	(s) ns) 15, 30 rs)		180, 24	0, 360, 480,	Summe	20, 960, 2, 5	1440 5, 100				
					Return Peri	ion(s) (mi	(s) ns) 15, 30 rs)		180, 24	0, 360, 480	Summe	20, 960, 2, 5	1440				
					Return Peri	ion(s) (mi od(s) (yea	(s) ns) 15, 30 rs)				Summe , 600, 72	20, 960, 2, 5	1440 5, 100 20, 20	Nelf Ducin	Disc		
	US/MH		Return	Climate	Return Peri	ion(s) (mi od(s) (yea te Change	(s) ns) 15, 30 rs)	, 60, 120,	Water	0, 360, 480 Surcharged Depth	Summe , 600, 72 Flooded	20, 960, 2, 5 20, 2	1440 5, 100 20, 20	Half Drain Time	Pipe Flow		Level
PN	US/MH Name	Storm	Return Period		Return Peri Clima	ion(s) (mi od(s) (yea te Change	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water	Surcharged	Summe , 600, 72 Flooded	20, 960, 2, 5 20, 2	1440 5, 100 20, 20		-	Status	Level Exceeded
	Name		Period	Change	Return Peri Clima First (X)	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m)	Surcharged Depth (m)	Summe , 600, 72 Flooded Volume (m <sup>3</sup> )	20, 960, 2, 5 20, 2 Flow / Cap.	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (l/s)		
	Name CP153	Storm 15 Summer 15 Summer		Change +20%	Return Peri Clima First (X)	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level	Surcharged Depth	Summe , 600, 72 Flooded Volume	20, 960, 2, 5 20, 2 Flow /	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3	Status OK SURCHARGED	
1.000	<b>Name</b> CP153 CP154	15 Summer	Period	Change +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689	Surcharged Depth (m) -0.096	Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000	<pre>20, 960, 2, 5 20, 2</pre> Flow / Cap. 0.23	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3	OK	Exceeded
1.000 1.001 2.000	Name CP153 CP154 CP2015	15 Summer 15 Summer	Period 100 100	<b>Change</b> +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667	Surcharged Depth (m) -0.096 0.112	Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000	<pre>20, 960, 2, 5 20, 2</pre> Flow / Cap. 0.23 1.13	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8	OK SURCHARGED	Exceeded
1.000 1.001 2.000 3.000 2.001	Name CP153 CP154 CP2015 CP175 CP2013	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 100 100 100 100 100 100	Change +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241	Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	<pre>80, 960, 2, 5 20, 2</pre> Flow / Cap. 0.23 1.13 0.01 0.03 0.05	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4	OK SURCHARGED OK OK OK	Exceeded
1.000 1.001 2.000 3.000 2.001 1.002	Name CP153 CP154 CP2015 CP175 CP2013 CP155	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 100 100 100 100 100 100 100	Change +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000	<pre>80, 960, 2, 5 20, 2 Flow / Cap. 0.23 1.13 0.01 0.03 0.05 0.57</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0	OK SURCHARGED OK OK OK	Exceeded
1.000 1.001 2.000 3.000 2.001 1.002 4.000	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>80, 960, 2, 5 20, 2 80, 20, 20, 20, 20, 20, 20, 20, 20, 20, 2</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2	OK SURCHARGED OK OK OK OK	Exceeded
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer</pre>	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>20, 960, 2, 5 20, 2</pre> Flow / Cap. 0.23 1.13 0.01 0.03 0.05 0.57 0.02 0.20	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9	OK SURCHARGED OK OK OK OK OK	Exceeded
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer</pre>	<b>Period</b> 100 100 100 100 100 100 100 100 100 10	<b>Change</b> +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.208 -0.057	Summe , 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>20, 960, 2, 5 20, 2</pre> Flow / Cap. 0.23 1.13 0.01 0.03 0.05 0.57 0.02 0.20 0.35	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0	OK SURCHARGED OK OK OK OK OK OK	Exceeded
1.000 1.001 2.000 2.001 1.002 4.000 4.001 4.002 4.003	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP3 CP4	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.301	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>Example 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8	OK SURCHARGED OK OK OK OK SURCHARGED	Exceeded
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.003	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP1 CP2 CP3 CP4 CP5	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 10	<b>Change</b> +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.301 33.287	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>Example 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\end{array}$	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer 15 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	<b>Change</b> +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.301 33.287 34.908	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.0251 0.669 -0.171	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.00000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	<pre>Example 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 360 58.8 77.0 62.0	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED OK	Exceeded
1.000 1.001 2.000 3.000 2.001 1.002 4.000 4.001 4.002 4.003 4.004 5.000 5.001	Name CP153 CP154 CP2015 CP203 CP175 CP203 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 16 Summer 30 Summer 30 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	<b>Change</b> +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.547 33.308 33.301 33.287 34.908 34.743	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.00000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000000	<pre>Example 2 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 = 1 =</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0 62.0 102.5	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED OK SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\end{array}$	Name CP153 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.301 33.287 34.908 34.743 34.601	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162 0.533	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.00000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	<pre>Example 2 Content 2 C</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.0 9 36.0 58.8 77.0 62.0 102.5 100.6	OK SURCHARGED OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\end{array}$	Name CP153 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 10 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.301 33.287 34.908 34.743 34.601 34.474	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162 0.533 0.834	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.00000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	<pre>Example 2 Content of the second second</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0 62.0 102.5 100.6 115.9	OK SURCHARGED OK OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\end{array}$	Name CP153 CP154 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.301 33.287 34.908 34.743 34.601 34.474 34.306	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162 0.533 0.834 1.216	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.00000 0.0000 0.0000 0.00000 0.0000 0.00000 0.00000 0.00000 0.00000 0.00000 0.000000 0.000000 0.00000000	<pre>Example 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1: 1:</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0 62.0 102.5 100.6 115.9 124.3	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\end{array}$	Name CP153 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 3.308 33.301 33.287 34.908 34.743 34.601 34.474 34.306 34.189	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162 0.533 0.834 1.216 1.366	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000 0.000	<pre>Example 2.5 Flow / 2, 5 20, 2 Flow / Cap. 0.23 1.13 0.01 0.03 0.05 0.57 0.02 0.20 0.35 0.57 0.73 0.38 0.70 0.64 0.82 0.89 1.06</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0 62.0 102.5 100.6 115.9 124.3 127.7	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\end{array}$	Name CP153 CP154 CP2015 CP175 CP203 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP8 DIT03	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer</pre>	Period 100 100 100 100 100 100 100 100 100 10	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 33.308 33.547 33.308 33.287 34.908 34.743 34.601 34.474 34.306 34.189 37.348	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162 0.533 0.834 1.216 1.366 -0.475	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	<pre>Example 2.5 Conversion 1.5 Conversion 2.5 Conv</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0 62.0 102.5 100.6 115.9 124.3 127.7 10.6	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED	Exceeded
$\begin{array}{c} 1.000\\ 1.001\\ 2.000\\ 3.000\\ 2.001\\ 1.002\\ 4.000\\ 4.001\\ 4.002\\ 4.003\\ 4.004\\ 5.000\\ 5.001\\ 5.002\\ 5.003\\ 5.004\\ 5.005\\ 6.000\\ 6.001\\ \end{array}$	Name CP153 CP2015 CP175 CP2013 CP155 CP1 CP2 CP3 CP4 CP5 DN18 CP77 CP78 CP6 CP7 CP78 CP6 CP7 CP78 CP6 CP7 CP78 CP6 CP73 CP154 CP2013 CP154 CP2013 CP155 CP154 CP2013 CP154 CP2013 CP155 CP175 CP2013 CP205 CP175 CP2013 CP205 CP175 CP205 CP175 CP205	<pre>15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 15 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer 30 Summer</pre>	Period  100 100 100 100 100 100 100 100 100 1	Change +20% +20% +20% +20% +20% +20% +20% +20%	Return Peri Clima First (X) Surcharge 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer 100/15 Summer	ion(s) (mi od(s) (yea te Change <b>First (Y)</b>	(s) ns) 15, 30 rs) (%) First (Z)	, 60, 120, Overflow	Water Level (m) 31.689 31.667 32.107 32.323 30.149 30.148 33.839 33.547 3.308 33.301 33.287 34.908 34.743 34.601 34.474 34.306 34.189	Surcharged Depth (m) -0.096 0.112 -0.283 -0.267 -0.241 -0.202 -0.269 -0.208 -0.057 0.251 0.669 -0.171 0.162 0.533 0.834 1.216 1.366	Summe, 600, 72 Flooded Volume (m <sup>3</sup> ) 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.0000 0.00000 0.00000 0.00000 0.00000 0.000000 0.00000000	<pre>Example 2.5 Flow / 2, 5 20, 2 Flow / Cap. 0.23 1.13 0.01 0.03 0.05 0.57 0.02 0.20 0.35 0.57 0.73 0.38 0.70 0.64 0.82 0.89 1.06</pre>	1440 5, 100 20, 20 <b>Overflow</b>	Time	Flow (1/s) 8.3 47.8 0.8 2.4 4.4 101.0 2.2 20.9 36.0 58.8 77.0 62.0 102.5 100.6 115.9 124.3 127.7	OK SURCHARGED OK OK OK OK SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED SURCHARGED OK	Exceeded

Jacobs Engineering Limited		Page 17
•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	

			<b>_</b> .	<b>61</b> · · ·				o 61		Surcharged		/		Half Drain	Pipe		
PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Level (m)	Depth (m)	Volume (m <sup>3</sup> )	Flow / Cap.	Overflow (1/s)	Time (mins)	Flow (1/s)	Status	Level Exceeded
		00021	101104	onango	Sulonalye	11000	0.01110		()	(,	( )	oup.	(=/ 0/	(	(_/0/	000000	2
7.000	DIT01	15 Summer	100	+20%					35.921	-0.429	0.000	0.03			26.3	OK	
7.001		15 Summer		+20%					35.306	-0.394	0.000	0.05			41.5	OK	
6.003	DN02	15 Summer	100	+20%					34.786	-0.076	0.000	0.71			71.8	OK	
8.000		30 Summer			100/15 Summer				34.553	0.430	0.000	0.02				SURCHARGED	
6.004		30 Summer			100/15 Summer				34.552	0.739	0.000	0.80				FLOOD RISK	
6.005		30 Summer			100/15 Summer				34.215	0.911	10.665	0.65			59.5	FLOOD	5
6.006		30 Summer			100/15 Summer	100/15 Summer			34.158	1.079	2.215	0.26			60.0	FLOOD	3
5.006		30 Summer		+20%	5/15 Summer				34.096	1.367	0.000	1.66				SURCHARGED	
5.007	CP9	30 Summer	100		100/15 Summer				34.017	1.338	0.000	1.50			153.0	SURCHARGED	
9.000		30 Summer			100/15 Summer				33.905	0.641	0.000	0.11				FLOOD RISK	
9.001	CP13	30 Summer			100/15 Summer				33.901	0.738	0.000	0.33				SURCHARGED	
5.008		30 Summer			100/15 Summer				33.898	1.322	0.000	1.25				SURCHARGED	
10.000		30 Summer			100/30 Summer				33.741	0.049	0.000	0.53				SURCHARGED	
5.009		30 Summer			100/15 Summer				33.721	1.314	0.000	1.32				SURCHARGED	
11.000		30 Summer			100/30 Summer				33.588	0.003	0.000	0.16				SURCHARGED	
5.010		30 Summer			100/15 Summer				33.583	1.269	0.000	1.21				SURCHARGED	
12.000		30 Summer		+20%					33.373	-0.130	0.000	0.11			4.2	OK	
5.011		30 Summer		+20%	5/15 Winter				33.369	1.216	0.000	1.42				SURCHARGED	
4.005		30 Summer			100/15 Summer				33.265	1.154	0.000	1.34				SURCHARGED	
13.000		30 Summer			100/15 Summer				33.024	0.107	0.000	1.11				SURCHARGED	
4.006		30 Summer			100/15 Summer				33.003	1.041	0.000	1.01				SURCHARGED	
14.000		15 Summer			100/15 Summer				32.969	0.198	0.000	1.53				SURCHARGED	
15.000		30 Summer		+20%					33.150	-0.070	0.000	0.03			1.6	OK	
		15 Summer		+20%					33.644	-0.095	0.000	0.61			26.0	OK	
16.001		15 Summer		+20%					33.288	-0.091	0.000	0.64			31.8	OK	
17.000		30 Summer			100/30 Summer				33.181	0.034	0.000	0.16				SURCHARGED	
18.000		15 Summer		+20%					33.332	-0.182	0.000	0.08			5.6	OK	
17.001		30 Summer			100/15 Summer				33.178	0.204	0.000	0.33				SURCHARGED	
16.002		30 Summer			100/15 Summer				33.176	0.238	0.000	0.99				SURCHARGED	
15.001		30 Summer			100/15 Summer				33.149	0.455	0.000	0.31				SURCHARGED	
19.000		30 Summer			100/15 Summer				34.962	0.643	0.000	0.62				FLOOD RISK	
19.001		30 Summer			100/15 Summer				34.876	0.787	0.000	0.92				FLOOD RISK	
19.002		30 Summer			100/15 Summer				34.774	0.860	0.000	1.05				SURCHARGED	
20.000		15 Summer		+20%	/				35.420	-0.168	0.000	0.14			8.4	OK	
20.001		30 Summer			100/15 Summer				34.681	0.592	0.000	0.11				SURCHARGED	
19.003		30 Summer			100/15 Summer				34.690	0.861	0.000	1.09				SURCHARGED	
19.004		30 Summer	100		100/15 Summer				34.501	0.915	0.000	1.56				FLOOD RISK	
19.005		30 Summer			100/15 Summer				33.859	0.721	0.000	0.81				SURCHARGED	
21.000		15 Summer		+20%	100/15 0				33.421	-0.088	0.000	0.83			65.0	OK	
22.000		15 Summer			100/15 Summer	100/15			35.370	0.840	0.000	0.06				FLOOD RISK	-
22.001		15 Summer			100/15 Summer	100/15 Summer			35.362	1.204	4.346	1.04			36.2	FLOOD	3
22.002	CP33	15 Summer	100	+20%	100/15 Summer				35.514	1.420	0.000	1.82			113.0	FLOOD RISK	
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Jacobs Engineering Limited		Page 18
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Digiliada
Innovyze	Network 2020.1.3	

PN	US/MH Name	Storm		Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)		Flow / Cap.	Overflow (1/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
				2	-							-					
22.003		30 Summer	100		100/15 Summer				35.097	1.375	0.000	1.63				FLOOD RISK	
22.004		30 Summer	100		100/15 Summer				34.836	1.363	0.000	1.48				FLOOD RISK	
22.005 22.006		30 Summer 30 Summer	100 100		100/15 Summer 100/15 Summer				34.457 33.961	1.236 1.043	0.000	1.34 1.34				SURCHARGED SURCHARGED	
22.000		30 Summer	100		100/15 Summer				33.575	0.865	0.000	0.55				SURCHARGED	
19.006		30 Summer	100		100/15 Summer				33.344	1.098	0.000	1.24				SURCHARGED	
15.002		30 Summer	100		100/15 Summer				33.135	1.026	0.000	0.96				SURCHARGED	
4.007		30 Summer	100	+20%	5/30 Summer				32.908	1.044	0.000	1.54				SURCHARGED	
23.000		30 Summer	100		100/30 Summer				32.716	0.014	0.000	0.57				SURCHARGED	
4.008		30 Summer	100		100/15 Summer				32.706	0.901	0.000	1.44				SURCHARGED	
24.000		15 Summer	100	+20%					32.639	-0.087	0.000	0.69			32.4		
4.009		30 Summer	100		100/15 Summer				32.498	0.780	0.000	1.37				SURCHARGED	
25.000		15 Summer	100	+20%					32.654	-0.054	0.000	0.91			41.3	OK	
4.010		30 Summer	100		100/15 Summer				32.271	0.682	0.000	1.52				SURCHARGED	
26.000		15 Summer	100	+20%					32.512	-0.111	0.000	0.51			24.5	OK	
4.011	CP30	30 Summer	100	+20%	100/15 Summer				32.077	0.566	0.000	1.36			365.3	SURCHARGED	
27.000	DN10	15 Summer	100	+20%	100/15 Summer				32.676	0.120	0.000	1.13			49.5	SURCHARGED	
28.000	CP2011	15 Summer	100	+20%					31.958	-0.107	0.000	0.47			18.3	OK	
28.001	CP3178A	30 Summer	100	+20%	100/15 Summer				31.841	0.536	0.000	0.25			14.2	SURCHARGED	
4.012	CP31	30 Summer	100	+20%	100/15 Summer				31.796	0.462	0.000	1.00			378.9	SURCHARGED	
29.000	DN11	15 Summer	100	+20%					32.335	-0.057	0.000	0.90			39.1	OK	
4.013	CP32	30 Summer	100	+20%	100/15 Summer				31.497	0.476	0.000	1.01			385.8	SURCHARGED	
30.000	CP38	15 Summer	100	+20%					33.167	-0.213	0.000	0.18			12.8	OK	
30.001	CP39	15 Summer	100	+20%					32.765	-0.201	0.000	0.23			16.7	OK	
30.002	CP40	15 Summer	100	+20%					32.628	-0.190	0.000	0.27			20.8	OK	
31.000	Ditch 1	15 Summer	100	+20%					33.439	-0.461	0.000	0.01			4.3	OK	
32.000	Ditch 3	15 Summer	100	+20%					33.144	-0.456	0.000	0.01			4.2	OK	
31.001	Ditch 2	15 Summer	100	+20%					32.794	-0.246	0.000	0.07			8.5	OK	
30.003	CP41	15 Summer	100	+20%					32.319	-0.169	0.000	0.39			29.1	OK	
33.000	Ditch 4	15 Summer	100	+20%					32.930	-0.470	0.000	0.00			1.8	OK	
34.000	DItch 6	15 Summer	100	+20%					32.945	-0.455	0.000	0.01			2.7	OK	
33.001	DItch 5	15 Summer	100	+20%					32.830	-0.270	0.000	0.02			4.5	OK	
30.004	CP42	15 Summer	100	+20%					32.038	-0.157	0.000	0.45			34.2	OK	
30.005	CP43	15 Summer	100	+20%					31.745	-0.147	0.000	0.52			34.4	OK	
35.000	DN12	15 Summer	100	+20%					32.260	-0.051	0.000	0.94			36.3	OK	
4.014	CP44	30 Summer	100	+20%	100/15 Summer				31.148	0.474	0.000	1.46				SURCHARGED	
36.000		15 Summer	100	+20%					32.307	-0.104	0.000	0.55			20.5	OK	
4.015		30 Summer	100		100/15 Summer				30.811	0.298	0.000	1.47				SURCHARGED	
37.000		15 Summer	100	+20%					32.361	-0.127	0.000	0.39			21.1	OK	
4.016		30 Summer	100		100/15 Summer				30.446	0.100	0.000	1.33				SURCHARGED	
1.003		30 Summer	100		100/15 Summer				29.743	0.131	0.000	1.42				SURCHARGED	
38.000	CP190	15 Summer	100	+20%	100/15 Summer				31.797	0.520	0.000	0.74			32.1	SURCHARGED	
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•	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	— Micro
Date 15/12/2021	Designed by LM	
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Drainage
Innovyze	Network 2020.1.3	1

PRYearStornPoicelOtherOutputStornPoicelOutput <t< th=""><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th></th><th>Water</th><th>Surcharged</th><th>Flooded</th><th></th><th></th><th>Half Drain</th><th>Pipe</th><th></th><th></th></t<>										Water	Surcharged	Flooded			Half Drain	Pipe		
38.001       CT151       50mmer       100       + 401       100/15       Summer       100       + 401       100/15       Summer       100       100/16       Summer		US/MH		Return	Climate	First (X)		First (Z)	Overflow	Level	Depth	Volume	Flow /		Time			
1.002       CPC02       30 Summer       100       1.00       1.10       1.00       1.10       1.00	PN	Name	Storm	Period	Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(l/s)	Status	Exceeded
1.003       0.004       0.005 <td< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>																		
1.005       Pond Intel 1 30 Bummer       100       +040       1005 Pond Intel 1 30       53.3       SUNCHARGED         39.001       C2210A       15 Bummer       100 + 204       100/15 Summer       23.536       1.008       0.006       1.03       50.01       10000       1000       10000       1000 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td>100/15 Summer</td> <td></td>						100/15 Summer												
1.006       Fond Outlet 1       240       Summer       52.764       0.189       0.000       0.07       90.8       SURCHAGED         39.001       CF2018       15       Summer       100       4208       100/15       Summer       10.105       0.000       6.23       66.1       77       66.1       FLCOD       <						/												
33.001       C2P018A       13 5 Summer       100/15 Summer       100/15 Summer       33.467       1.08       1.08       4.09       FLOOD R184         33.002       C2P017       15 Summer       100/15 Summer       33.047       1.182       0.08       5.05       6.2.       FLOOD R184         33.002       C2P017       15 Summer       100/15 Summer       100/15 Summer       33.047       1.08       3.05       1.07       5.15       7.4.5       SUMMARCE       3       7.4.5       SUMMARCE       3       7.4.5       SUMMARCE       3       7.4.5       SUMMARCE       3       7.4.5       SUMMARCE       7.5.5       SUMMARCE       7.5.5       SUMMARCE       7.5.5       SUMMARCE       7.5.5       SUMMARCE       7.5.5       SUMMARCE       7.5.5       SUMMARCE																		
19.01       CP2011       13 Summer       100       2/15 Summer       100/15 Summer       33.447       1.152       0.000       6.22       FLOO R18K         39.003       CP010       13 Summer       100/15 Summer       100/15 Summer       33.003       1.068       3.168       1.70       5.16       1.70       5.11       FLOO       3         40.000       CP016       13 Summer       100       420       100/15 Summer       100/15 Summer       33.603       1.361       0.000       0.32       1.18       15.2       SURCHARGED         39.005       CP160       13 Summer       100       420       100/15 Summer       30.424       -0.162       0.000       0.13       11.1       FLOO R18K         41.000       D11ch7       13 Summer       100       420       33.424       -0.162       0.000       0.13       11.1       FLOO R18K         41.003       D11ch7       13 Summer       100       420       2							100/15 0											
39.002       CP201       15 Summer       100       +208       100/15 Summer       33.043       1.068       3.1628       1.00       0.000       0.010       Ti.6       SURCHARGED         40.000       CP2010       33 Summer       100       +208       100/15 Summer       33.029       0.352       1.38       0.032       1.38       10.2       ELCOD       7         33.004       CP161       15 Summer       100       +208       100/15 Summer       31.624       0.854       0.000       0.62       262.1       0.00       0.62       262.1       0.00       0.62       262.1       0.00       0.62       262.1       0.00       0.62       262.1       0.00       0.62       262.1       0.00       0.62       262.1       0.00       0.01       3.5       FLOOD R18K       41.000       11.0       FLOOD R18K       41.000       10.00       0.00       0.01       3.5       FLOOD R18K       41.000       10.01       10.00       0.00       0.01       3.5       FLOOD R18K       41.000       10.01       10.01       0.00       0.01       10.01       0.00       0.01       10.01       0.00       10.01       10.01       10.01       10.01       10.01       10.01							100/15 Summer											T
30.03]       CP010       15 Summer       100       +208<100/15 Summer							100/15 0											2
40.001       CPN10       30 Summer       100       +208       100/15 Summer       33.000       1.661       0.522       1.18       19.2       FLOOD       7         30.001       CP161       15 Summer       100       +208       100/15 Summer       31.624       0.060       0.33       160.6       SUGRIARGED         30.005       CP161       15 Summer       100       +208       100/15 Summer       28.636       -0.168       0.000       0.62       26.2.1       OK         41.000       Ditch 7       15 Summer       100       +208       30.642       -0.168       0.000       0.21       13.0       FLOOD RISK         41.003       Ditch 10       15 Summer       100       +208       30.642       -0.228       0.000       0.01       3.5       FLOOD RISK         41.003       CP157       15 Summer       100       +208       28.681       -0.228       0.000       0.44       84.9       OK         41.003       CP157       15 Summer       100       +208       0.015 Summer       30.643       -0.228       0.000       0.41       39.29.2       0.00       1.451       31.52.3       SURMARKED         41.004       CP158       15 Summer <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>100/15 Summer</td> <td></td> <td>3</td>							100/15 Summer											3
0:001       CP162       15 Summer       100       +208       100/15 Summer       32.574       0.689       0.000       0.98       55.2 SURCHARGED         33.003       CP160       15 Summer       100       +208       30.004       -0.134       0.000       0.62       22.2.1       OK         41.001       D1tch 7       15 Summer       100       +208       30.043       -0.147       0.000       0.23       11.1       FLOOD RTSK         42.000       D1tch 7       15 Summer       100       +208       30.043       -0.147       0.000       0.23       21.3       OK         41.002       D1tch 9       15 Summer       100       +208       29.586       -0.229       0.000       0.23       21.3       OK         41.005       CP159A       15 Summer       100       +208       100/15 Summer       30.648       -0.029       0.000       0.25       0.0       23.8.3       OK         43.000       CP159A       15 Summer       100       +208       100/15 Summer       30.688       0.004       0.73       75.3       SUKAARGED         43.000       CP159 15 Summer       100       +208       100/15 Summer       30.688       0.000       1.33 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>100/15 0</td> <td></td> <td>7</td>							100/15 0											7
39.004       CP161       15 summer       100       +208       31.624       0.864       0.000       1.34       161.6       SURCHARGED         41.000       D1ch 7       15 summer       100       +208       30.432       -0.147       0.00       0.21       131.0       FLOOD RISK         42.000       D1ch 8       15 summer       100       +208       30.432       -0.147       0.00       0.21       13.0       FLOOD RISK         42.000       D1ch 7       15 summer       100       +208       30.442       -0.220       0.000       0.21       35.7       FLOOD RISK         41.003       CP157       15 summer       100       +208       229.681       -0.229       0.000       0.44       84.9       0K         41.004       CP159       15 summer       100       +208       100/15 Summer       30.648       0.008       0.00       1.33       SURCHARGED         43.001       CP194       15 Summer       100       +208       100/15 Summer       30.648       0.000       1.08       100.3 SURCHARGED         44.000       CP194       15 Summer       100       +208       100/15 Summer       30.648       0.000       1.08       100.3 SURCHARGED							100/15 Summer											/
39.005       CP160       15 summer       100       +20%       29.636       -0.154       0.000       0.62       26.1       0K         41.001       Ditch 8       15 summer       100       +20%       30.432       -0.147       0.000       0.21       110.1       FLOOP RISK         42.000       Ditch 10       15 summer       100       +20%       30.643       -0.147       0.000       0.21       19.0       FLOOP RISK         41.002       Ditch 9       15 summer       100       +20%       29.558       -0.220       0.000       0.23       22.1.3       0K         41.003       CP159A       15 summer       100       +20%       29.571       -0.029       0.000       1.01       166.0       0K         41.003       CP159A       15 summer       100       +20%       100/15 Summer       30.643       -0.027       0.000       1.01       100.3.5       100.4       20%         43.000       CP159       15 Summer       100       +20%       100/15 Summer       30.643       -0.027       0.000       1.01       100.3.5       100.5       100.5       100.5       100.5       100.5       100.5       100.5       100.5       100.5       100.5																		
41.000       Ditch 7       15 Summer       100       +20%       30.432       -0.147       0.000       0.13       11.1       FLOOD RISK         42.000       Ditch 10       15 Summer       100       +20%       30.643       -0.147       0.000       0.01       3.5       FLOOD RISK         42.000       Ditch 3       15 Summer       100       +20%       29.598       -0.202       0.000       0.43       44.9       0K         41.003       CP157       15 Summer       100       +20%       29.598       -0.202       0.000       0.44       44.9       0K         41.004       CP159       15 Summer       100       +20%       100/15 Summer       30.688       0.000       0.73       73.3       SUSCHARGED         43.001       CP194       15 Summer       100       +20%       100/15 Summer       30.687       0.068       0.000       1.01       108.3< SUSCHARGED						100/15 Summer												
41.001       bitch 8       15 Summer       100       +20%       30.643       -0.147       0.000       0.21       19.0       FLOO RISK         41.002       Ditch 9       15 Summer       100       +20%       29.58       -0.22       0.000       0.23       21.3       0K         41.003       CPI57       15 Summer       100       +20%       29.581       -0.22       0.000       0.24       48.9       0K         41.004       CPI57       15 Summer       100       +20%       29.571       -0.029       0.000       0.73       75.3       SURCHARGED         43.000       CPI93       15 Summer       100       +20%       100/15 Summer       30.668       0.048       0.000       0.73       75.3       SURCHARGED         43.001       CPI93       15 Summer       100       +20%       100/15 Summer       30.659       0.068       0.000       1.01       136.3       SURCHARGED         43.001       CPI93       15 Summer       100       +20%       100/15 Summer       30.43       -0.618       0.000       1.81       33.65       0.101       1.31       30.65       0.000       0.49       6.8       SURCHARGED       30.666       0.000																		
42.000       Ditch 10       15 Summer       100       +208       30.644       -0.270       0.000       0.11       3.5 FLOOP RISK         41.003       CP157       15 Summer       100       +208       29.681       -0.229       0.000       0.43       84.9       OK         41.004       CP1598       15 Summer       100       +208       29.671       -0.029       0.000       0.23       0.0       238.3       OK         43.000       CP159       15 Summer       100       +208       100/15 Summer       30.688       0.048       0.000       0.33       75.3       SURCHARGED         43.000       CP159       15 Summer       100       +208       100/15 Summer       30.687       0.065       0.000       1.31       133.6       SURCHARGED         43.000       CP157       15 Summer       100       +208       100/15 Summer       30.487       0.065       0.000       1.31       133.6       SURCHARGED         43.000       CP157       15 Summer       100       +208       100/15 Summer       29.115       2.124       0.000       1.91       35.92       0.71       75.33       SURCHARGED         44.000       CP157       15 Summer																		
41.002       Ditch 9       15 Summer       100       +20%       29.958       -0.202       0.000       0.23       21.3       OK         41.003       CP153       15 Summer       100       +20%       29.958       -0.228       0.000       0.44       84.9       OK         41.004       CP153       15 Summer       100       +20%       29.971       -0.029       0.00       0.43       CP133       OK         43.000       CP134       15 Summer       100       +20%       100/15 Summer       30.688       0.048       0.000       1.03       108.3       SURCHARGED         43.002       CP195       15 Summer       100       +20%       100/15 Summer       30.687       0.000       1.31       133.6       SURCHARGED         41.006       EXCPL00D       15 Summer       100       +20%       2/15 Summer       28.115       2.420       0.000       1.81       39.20       GRCHARGED         45.000       CP161       18 Summer       100       +20%       2/15 Summer       28.115       2.420       0.000       1.81       39.20       GRCHARGED         46.000       CP1211       18 Summer       100       +20%       10/15 Summer       35.665 <td></td>																		
41.003       CP157       15       Summer       100       +20%       29.681       -0.229       0.000       0.44       84.9       OK         41.005       CP159       15       Summer       100       +20%       0       29.482       -0.027       0.000       0.25       0.0       238.3       K         43.000       CP193       15       Summer       100       +20%       100/15       Summer       30.686       0.000       0.73       75.3       SURCHARGED         43.002       CP139       15       Summer       100       +20%       100/15       Summer       30.487       0.065       0.000       1.01       39.2       SURCHARGED         43.002       CP19102       30       Summer       100       +20%       2/15       Summer       29.115       2.420       0.000       0.11       39.2       SURCHARGED         44.000       CP1610       30       Summer       100       +20%       10/15       Summer       29.116       2.13       0.000       0.44       84.9       0.4         41.006       CP1010       30       30.407       0.005       0.000       1.00       1.00       1.00       10.15       10.15																		
41.004       CP159A       15       Summer       100       +208       29.571       -0.029       0.000       1.00       169.0       OK         41.004       CP159A       15       Summer       100       +208       100/15       Summer       30.688       0.004       0.000       0.73       75.3       SURCHARGED         43.001       CP19A       15       Summer       100       +208       100/15       Summer       30.688       0.004       0.000       0.73       75.3       SURCHARGED         43.002       CP19A       15       Summer       100       +208       100/15       Summer       30.689       0.000       1.08       106.3       SURCHARGED         43.002       CP19A       15       Summer       100       +208       100/15       Summer       24.116       2.134       0.000       1.67       612.3       SURCHARGED         44.000       CP167       15       Summer       100/15       Summer       35.790       1.215       0.000       0.49       6.8       SURCHARGED         45.000       CP2109       15       Summer       100/15       Summer       35.328       0.301       0.28       1.77       FLOOD																		
41.005       CP159       15       Summer       100       +208       100/15       Summer       30.688       -0.027       0.000       0.25       0.0       228.3       OK         43.000       CP193       15       Summer       100       +208       100/15       Summer       30.688       0.048       0.000       0.753       SURCHARGED         43.002       CP155       15       Summer       100       +208       100/15       Summer       30.487       0.065       0.000       1.31       133.6       SURCHARGED         41.005       EXCP405D       15       Summer       100       +208       2/15       Summer       29.115       2.420       0.000       1.87       612.3       SURCHARGED         43.000       CP2110       15       Summer       100/15       Summer       35.665       0.495       0.000       0.54       22.0       FLOOD RISK         44.000       CP2111       15       Summer       100/15       Summer       100/15       Summer       35.328       0.303       0.000       0.54       22.0       FLOOD RISK         45.000       CP2202       15       Summer       100/15       Summer       35.328       0.335																		
43.000       CP193       15 Summer       100       +20%       100/15 Summer       30.688       0.0048       0.000       0.73       77.3 SURCHARGED         43.002       CP195       15 Summer       100       +20%       100/15 Summer       30.688       0.008       0.000       1.31       133.6 SURCHARGED         41.006       EXCP405DD       15 Summer       100       +20%       2/15 Summer       29.115       2.420       0.000       2.11       39.92       SURCHARGED         44.000       CP167       15 Summer       100       +20%       2/15 Summer       28.716       2.134       0.000       1.41       39.92       SURCHARGED         44.000       CP167       15 Summer       100       +20%       100/15 Summer       35.665       0.495       0.000       0.49       6.8 SURCHARGED         45.000       CP2109       15 Summer       100       +20%       100/15 Summer       35.580       0.405       0.301       0.28       17.7       FLOOD       2         47.000       CP2026       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.512       0.405       0.401       0.49       55.2       5.6       FLOOD       3 <tr< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>0</td><td></td><td></td><td></td><td></td><td>0.0</td><td></td><td></td><td></td><td></td></tr<>									0					0.0				
43.001       CP194       15 Summer       100       +20%       100/15 Summer       30.699       0.088       0.000       1.08       108.3 SURCRARGED         43.002       CP195       15 Summer       100       +20%       2/15 Summer       20       100/15 Summer       29.115       2.420       0.000       2.11       39.2 SURCRARGED         39.066       CP091002       30 Summer       100       +20%       2/15 Summer       28.716       2.134       0.000       1.87       612.3 SURCRARGED         44.000       CP171 IS Summer       100       +20%       100/15 Summer       35.790       1.215       0.000       0.49       6.8 SURCRARGED         45.000       CP2102       15 Summer       100       +20%       100/15 Summer       35.780       0.405       0.301       0.28       22.0 FLOOD RISK         46.000       CP2025       15 Summer       100       +20%       100/15 Summer       35.780       0.497       0.413       4.9 SURCHARGED         48.001       CP2025       15 Summer       100/15 Summer       100/15 Summer       35.780       0						100/15 Summer			0					0.0				
43.002       CP195       15 Summer       100       +208       100/15 Summer       30.487       0.065       0.000       1.31       133.6       SURCHARGED         41.006       EXCP405D       15 Summer       100       +208       2/15 Summer       29.115       2.420       0.000       2.11       339.2       SURCHARGED         44.000       CP167       15 Summer       100       +208       2/15 Summer       28.16       2.134       0.000       1.87       612.3       SURCHARGED         44.000       CP167       15 Summer       100       +208       100/15 Summer       35.665       0.495       0.000       0.49       6.8       SURCHARGED         45.000       CP2109       15 Summer       100       +208       100/15 Summer       100/15 Summer       35.580       0.405       0.301       0.28       17.7       FLOOD       2         47.000       CP2202       15 Summer       100/15 Summer       100/15 Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       3         48.001       CP2205       15 Summer       100/15 Summer       100/15 Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       3																		
41.006       EXCP405D0       15 Summer       100       +208       2/15 Summer       29.115       2.420       0.000       2.11       399.2       SUBCHARGED         39.006       CP01002       30 Summer       100       +208       2/15 Summer       28.716       2.134       0.000       1.87       6612.3       SUBCHARGED         44.000       CP167       15 Summer       100       +208       100/15 Summer       35.790       1.215       0.000       0.49       6.8       SUBCHARGED         45.000       CP2119       15 Summer       100       +208       100/15 Summer       100/15 Summer       35.790       1.215       0.000       0.54       22.0       FLOOR RISK         46.000       CP2026       15 Summer       100       +208       100/15 Summer       100/15 Summer       35.700       0.875       0.401       0.89       25.6       FLOOD       3         47.001       CP2025       15 Summer       100/15 Summer       100/15 Summer       7 35.305       0.875       1.59       67.3       FLOOD       3         47.001       CP2025.1       15 Summer       100/15 Summer       100/15 Summer       7 35.305       0.875       1.59       67.3       FLOOD       3																		
39.06       CP091002       30 Summer       100       +20%       2/15 Summer       28.716       2.134       0.000       1.87       612.3 SURCHARGED         44.000       CP167       15 Summer       100       +20%       100/15 Summer       35.665       0.495       0.000       0.49       6.8 SURCHARGED         45.000       CP2101       15 Summer       100       +20%       100/15 Summer       10/15 Summer       35.780       1.215       0.000       0.49       6.8 SURCHARGED         46.000       CP2107       15 Summer       100       +20%       100/15 Summer       10/15 Summer       35.328       0.333       0.000       0.13       4.9 SURCHARGED         48.001       CP2026       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       3         47.001       CP2025,1       15 Summer       100/15 Summer       100/15 Summer       35.52       0.897       2.392       1.59       67.3       FLOOD       5         45.001       CP2025,1       15 Summer       100/15 Summer       100/15 Summer       35.561       1.631       0.658       3.43       105.0       FLOOD       5																		
44.000       CP167       15       Summer       100       +20%       100/15       Summer       35.665       0.495       0.000       0.49       6.8       SURCHARGED         45.000       CP2109       15       Summer       100       +20%       100/15       Summer       100/15       Summer       35.790       1.215       0.000       0.54       22.0       FLOOD RISK         46.000       CP2109       15       Summer       100       +20%       100/15       Summer       100/15       Summer       35.780       0.495       0.000       0.13       4.9       SURCHARGED         47.000       CP2027       15       Summer       100       +20%       100/15       Summer       100/15       Summer       35.780       0.495       0.401       0.89       25.6       FLOOD       3         48.001       CP2025       15       Summer       100/15       Summer       100/15       Summer       35.561       1.631       0.658       3.43       105.0       FLOOD       3         45.001       CP2025.1       15       Summer       100/15       Summer       100/15       Summer       35.561       1.631       0.658       3.43       105.0       <																		
45.000       CP2111       15 Summer       100       +20%       100/15 Summer       35.790       1.215       0.000       0.54       22.0       FLOOD RISK         46.000       CP2102       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.580       0.405       0.311       0.28       17.7       FLOOD RISK         47.000       CP2027       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.328       0.333       0.000       0.13       4.9       SURCHARGED         48.001       CP2025       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       3         45.001       CP2101       15 Summer       100/15 Summer       100/15 Summer       100/15 Summer       75.561       1.611       0.658       3.43       105.0       FLOOD       2         44.002       CP168       15 Winter       100       +20%       5/15 Summer       100/15 Summer       35.201       1.661       0.800       0.97       91.4       FLOOD RISK         44.002       CP168       15 Summer       100/15 Summer       100/15 Summer       35.521																		
46.000       CP2109       15       Summer       100       +20%       100/15       Summer       35.580       0.405       0.301       0.28       17.7       FLOOD       2         47.000       CP2027       15       Summer       100       +20%       100/15       Summer       35.328       0.393       0.000       0.13       4.9       SURCHARGED         48.001       CP2025       15       Summer       100       +20%       100/15       Summer       100/15       Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       3         47.001       CP2025.1       15       Summer       100       15       Summer       100/15       Summer       100/15       Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       5         45.001       CP2101       15       Summer       100/15       Summer       100/15       Summer       35.561       1.631       0.658       3.43       105.0       FLOOD       2         44.001       CP168       15       Summer       100/15       Summer       100/15       Summer       35.221       1.672       1.746       1.38       116.0																		
47.000       CP2027       15       Summer       100       +20%       100/15       Summer       100/15       Summer       35.328       0.393       0.000       0.13       4.9       SURCHARGED         48.000       CP2026       15       Summer       100       +20%       100/15       Summer       100/15       Summer       35.700       0.875       0.401       0.89       25.6       FLOOD       3         48.001       CP2025       15       Summer       100/15       Summer       100/15       Summer       100/15       Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       5         47.001       CP2025.1       15       Summer       100/15       Summer       100/15       Summer       7.3       SLOOD       5         45.001       CP210       15       Summer       100/15       Summer       100/15       Summer       35.561       1.631       0.658       3.43       105.0       FLOOD       2         44.001       CP168       15       Winter       100       +20%       5/15       Summer       35.721       1.661       0.820       1.83       139.9       FLOOD       4 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>100/15 Summer</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td></td><td>2</td></t<>							100/15 Summer											2
48.000       CP2026       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.700       0.875       0.401       0.89       25.6       FLOOD       3         48.001       CP2025       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.512       0.897       2.392       1.59       67.3       FLOOD       3         47.001       CP205.1       15 Summer       100       15 Summer       100/15 Summer       100/15 Summer       7       35.305       0.875       15.205       0.49       55.2       57.6       FLOOD       2         44.001       CP168       15 Winter       100       +20%       5/15 Summer       100/15 Summer       35.523       1.643       0.000       0.97       91.4       FLOOD RISK         44.002       CP169       30 Summer       100       +20%       5/15 Summer       100/15 Summer       35.523       1.661       0.820       1.83       116.0       FLOOD       4         44.003       CP170       15 Summer       100/15 Summer       35.261       1.025       0.049       1.49       36.0       FLOOD       3         49.000       CP2024       15 Summer       100/15 Summer       <																		
48.001       CP2025       15 Summer       100       +20%       100/15       Summer       100/15							100/15 Summer											3
47.001CP2025.115 Summer100+20%100/15 Summer100/15 Summer100/15 Summer735.3050.87515.2050.4955.257.6FLOOD245.001CP211015 Summer100+20%2/15 Summer100/15 Summer35.5611.6310.6583.43105.0FLOOD244.001CP16815 Winter100+20%5/15 Summer100/15 Summer35.5231.6430.0000.9791.4FLOOD RISK44.002CP16930 Summer100+20%5/15 Summer100/15 Summer35.1721.6721.7461.38116.0FLOOD444.003CP17015 Summer100+20%2/15 Summer100/15 Summer35.2601.0250.0491.4936.0FLOOD149.001CP202315 Summer100+20%5/15 Summer100/15 Summer35.1570.52712.0591.2945.6FLOOD450.000CP2023.1A30 Summer100100/15 Summer100/15 Summer34.5580.3838.2121.9729.2FLOOD549.002CP2023.1A30 Summer100/15 Summer100/15 Summer35.0000.9800.0540.9396.0FLOOD149.003CP210830 Summer100/15 Summer100/15 Summer35.0000.9800.0540.9396.0FLOOD149.003CP210830 Summer100/15 Summer100/15 Summer		CP2025	15 Summer	100	+20%	100/15 Summer	100/15 Summer			35.512	0.897	2.392	1.59			67.3	FLOOD	3
45.001       CP2110       15       Summer       100       +20%       2/15       Summer       100/15       Summer       35.561       1.631       0.658       3.43       105.0       FLOOD       2         44.001       CP168       15       Winter       100       +20%       5/15       Summer       35.523       1.643       0.000       0.97       91.4       FLOOD RISK         44.002       CP169       30       Summer       100       +20%       5/15       Summer       100/15       Summer       35.523       1.643       0.000       0.97       91.4       FLOOD RISK         44.003       CP170       15       Summer       100/15       Summer       100/15       Summer       35.021       1.661       0.820       1.83       139.9       FLOOD       3         49.000       CP2023       15       Summer       100/15       Summer       100/15       Summer       35.260       1.025       0.049       1.49       36.0       FLOOD       4         40.001       CP2023       15       Summer       100/15       Summer       100/15       Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6					+20%			100/15 Summer	7					55.2				
44.001       CP168       15 Winter       100       +20%       5/15 Summer       35.523       1.643       0.000       0.97       91.4 FLOOD RISK         44.002       CP169       30 Summer       100       +20%       5/15 Summer       100/15 Summer       35.523       1.643       0.000       0.97       91.4 FLOOD RISK         44.003       CP170       15 Summer       100       +20%       5/15 Summer       100/15 Summer       35.021       1.661       0.820       1.83       139.9       FLOOD       3         49.000       CP2024       15 Summer       100       +20%       2/15 Summer       100/15 Summer       35.260       1.025       0.049       1.49       36.0       FLOOD       1         49.001       CP2023       15 Summer       100/15 Summer       100/15 Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       4         50.000       CP2023.1A       30 Summer       100/15 Summer       100/15 Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6         51.000       CP2023.1A       30 Summer       100/15 Summer       100/15 Summer       35.000       0.980       0.054       0.93       96.0<	45.001	CP2110	15 Summer	100	+20%	2/15 Summer	100/15 Summer			35.561	1.631	0.658	3.43			105.0	FLOOD	2
44.002       CP169       30 Summer       100       +20%       5/15 Summer       100/15 Summer       35.172       1.672       1.746       1.38       116.0       FLOOD       4         44.003       CP170       15 Summer       100       +20%       2/15 Summer       100/15 Summer       35.021       1.661       0.820       1.83       139.9       FLOOD       3         49.000       CP2024       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.260       1.025       0.049       1.49       36.0       FLOOD       1         49.001       CP2023       15 Summer       100       +20%       5/15 Summer       100/15 Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6         50.000       CP2023.1A       30 Summer       100/15 Summer       100/15 Summer       34.558       0.383       8.212       1.97       29.2       FLOOD       5         49.002       CP2023.1       30 Summer       100/15 Summer       100/15 Summer       35.000       0.980       0.054       0.93       96.0       FLOOD       5         49.002       CP2023.1       30 Summer       100/15 Summer       100/15 Summer       35		CP168	15 Winter	100	+20%	5/15 Summer				35.523	1.643	0.000	0.97			91.4	FLOOD RISK	
49.000       CP2024       15 Summer       100       +20%       100/15 Summer       100/15 Summer       35.260       1.025       0.049       1.49       36.0       FLOOD       1         49.001       CP2023       15 Summer       100       +20%       5/15 Summer       100/15 Summer       34.984       0.859       3.749       2.86       83.0       FLOOD       4         50.000       CPDN11       30 Summer       100       +20%       100/15 Summer       100/15 Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6         51.000       CP2023.1A       30 Summer       100       +20%       100/15 Summer       100/15 Summer       34.558       0.383       8.212       1.97       29.2       FLOOD       5         49.002       CP2023.1       30 Summer       100       +20%       100/15 Summer       100/15 Summer       35.000       0.980       0.054       0.93       96.0       FLOOD       1         49.003       CP2108       30 Summer       100/15 Summer       100/15 Summer       100/15 Summer       6       34.946       1.466       0.000       0.75       18.5       97.1 SURCHARGED		CP169		100	+20%	5/15 Summer	100/15 Summer				1.672	1.746						4
49.001       CP2023       15       Summer       100       +20%       5/15       Summer       100/15       Summer       34.984       0.859       3.749       2.86       83.0       FLOOD       4         50.000       CPDN11       30       Summer       100       +20%       100/15       Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6         51.000       CP2023.1A       30       Summer       100       +20%       100/15       Summer       34.558       0.383       8.212       1.97       29.2       FLOOD       5         49.002       CP2023.1       30       Summer       100/15       Summer       100/15       Summer       35.000       0.980       0.054       0.93       96.0       FLOOD       1         49.003       CP2108       30       Summer       100/15       Summer       100/15       5       34.946       1.466       0.000       0.75       18.5       97.1       SURCHARGED		CP170	15 Summer	100	+20%					35.021	1.661	0.820	1.83			139.9	FLOOD	3
49.001       CP2023       15       Summer       100       +20%       5/15       Summer       100/15       Summer       34.984       0.859       3.749       2.86       83.0       FLOOD       4         50.000       CPDN11       30       Summer       100       +20%       100/15       Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6         51.000       CP2023.1A       30       Summer       100       +20%       100/15       Summer       34.558       0.383       8.212       1.97       29.2       FLOOD       5         49.002       CP2023.1       30       Summer       100/15       Summer       100/15       Summer       35.000       0.980       0.054       0.93       96.0       FLOOD       1         49.003       CP2108       30       Summer       100/15       Summer       100/15       5       34.946       1.466       0.000       0.75       18.5       97.1       SURCHARGED		CP2024	15 Summer	100	+20%	100/15 Summer	100/15 Summer			35.260	1.025	0.049	1.49			36.0	FLOOD	1
50.000       CPDN11       30 Summer       100       +20%       100/15 Summer       100/15 Summer       35.157       0.527       12.059       1.29       45.6       FLOOD       6         51.000       CP2023.1A       30 Summer       100       +20%       100/15 Summer       100/15 Summer       34.558       0.383       8.212       1.97       29.2       FLOOD       5         49.002       CP2023.1       30 Summer       100       +20%       100/15 Summer       100/15 Summer       35.000       0.980       0.054       0.93       96.0       FLOOD       1         49.003       CP2108       30 Summer       100       +20%       100/15 Summer       100/15 Summer       6       34.946       1.466       0.000       0.75       18.5       97.1       SURCHARGED				100	+20%	5/15 Summer	100/15 Summer					3.749				83.0		
49.002       CP2023.1       30 Summer       100       +20% 100/15 Summer       100/15 Summer       35.000       0.980       0.054       0.93       96.0       FLOOD       1         49.003       CP2108       30 Summer       100       +20% 100/15 Summer       100/15 Summer       6       34.946       1.466       0.000       0.75       18.5       97.1       SURCHARGED	50.000	CPDN11	30 Summer	100	+20%	100/15 Summer	100/15 Summer			35.157	0.527	12.059	1.29			45.6	FLOOD	6
49.003         CP2108         30         Summer         100/15         Summer         6         34.946         1.466         0.000         0.75         18.5         97.1         SURCHARGED	51.000	CP2023.1A	30 Summer	100	+20%	100/15 Summer	100/15 Summer			34.558	0.383	8.212	1.97			29.2	FLOOD	5
	49.002	CP2023.1	30 Summer	100	+20%	100/15 Summer	100/15 Summer			35.000	0.980	0.054	0.93			96.0	FLOOD	1
	49.003	CP2108	30 Summer	100	+20%	100/15 Summer		100/15 Summer	6	34.946	1.466	0.000	0.75	18.5		97.1	SURCHARGED	
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Jacobs Engineering Limited		Page 20
	A12 Chelmsford to A120widening	
	Section 1	
	Proposed Network S1-OU11 & 12	Micro
Date 15/12/2021	Designed by LM	Drainage
File PROPOSED CASE DRAINAGE MODEL_S1_OU11 & OU12.MDX	Checked by AM	Diamage
Innovyze	Network 2020.1.3	-

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Half Drain Time (mins)	Pipe Flow (l/s)	Status	Level Exceeded
44.004	CP171 3	15 Summer	100	+20%	100/15 Summer	100/15 Summer			34.780	1.565	0.439	1.36			210.9	FLOOD	2
44.005	CP172 2	15 Summer	100	+20%	100/15 Summer				34.397	1.417	0.000	0.91			226.9	FLOOD RISK	
44.006	CP3136 1	15 Summer	100	+20%	100/15 Summer	100/15 Summer			34.140	1.530	0.079	1.22			265.0	FLOOD	1
44.007	CP3137 1	15 Summer	100	+20%	2/15 Summer	100/15 Summer			33.722	1.402	2.109	2.46			278.6	FLOOD	3
52.000	CP2022 1	15 Summer	100	+20%	100/15 Summer	100/15 Summer			34.553	0.968	2.514	1.57			43.4	FLOOD	3
52.001	CP2021 3	30 Summer	100	+20%	100/15 Summer	100/15 Summer			34.184	0.769	14.351	1.00			54.1	FLOOD	6
53.000	CP2020 1	15 Summer	100	+20%	100/15 Summer	100/15 Summer			33.890	0.985	0.007	1.03			39.4	FLOOD	1
52.002	CP2019 3	30 Summer	100	+20%	2/15 Summer	100/15 Summer			33.595	1.330	14.946	9.57			99.0	FLOOD	6
54.000	CP2107 3	30 Summer	100	+20%	100/15 Summer				33.569	0.254	0.000	0.39			17.4	SURCHARGED	
52.003	CP162.1 3	30 Summer	100	+20%	2/15 Summer		100/15 Summer	8	33.490	1.280	0.000	4.55	20.5		92.4	SURCHARGED	
44.008	CP3138 3	30 Summer	100	+20%	100/15 Summer	100/15 Summer			33.301	1.051	11.302	1.04			347.0	FLOOD	5
44.009	CP3139 1	15 Summer	100	+20%	5/15 Summer				32.830	1.240	0.000	1.34			354.4	FLOOD RISK	
44.010	CP3140 3	30 Summer	100	+20%	2/15 Summer				32.215	1.175	0.000	2.15			381.3	FLOOD RISK	
55.000	CP3141A 3	30 Summer	100	+20%	100/15 Summer				31.705	0.805	0.000	0.24			2.4	FLOOD RISK	
56.000	CP3138C 1	15 Summer	100	+20%					34.135	-0.065	0.000	0.60			10.5	OK	
57.000	CP3138G 1	15 Summer	100	+20%					35.149	-0.101	0.000	0.21			1.5	OK	
57.001	CP3138F 1	15 Summer	100	+20%			2/15 Summer	72	34.974	-0.126	0.000	0.06	3.4		0.8	OK	
57.002	CP3138E 1	15 Summer	100	+20%					34.479	-0.171	0.000	0.12			2.9	OK	
57.003	CP3138D 1	15 Summer	100	+20%			2/15 Summer	72	34.318	-0.122	0.000	0.08	5.0		1.1	OK	
56.001	CP3138B 3	30 Summer	100	+20%					33.391	-0.059	0.000	0.18			10.4	OK	
58.000	CPDN1 1	15 Summer	100	+20%	100/15 Summer				34.622	0.272	0.000	0.46			4.8	SURCHARGED	
58.001	CPDN2	15 Summer	100	+20%	100/15 Summer				34.574	0.454	0.000	1.66			6.1	SURCHARGED	
58.002	CPDN3 3	30 Summer	100	+20%	100/15 Summer	100/15 Summer			34.533	0.433	0.013	0.53			6.5	FLOOD	
58.003	CPDN4	15 Summer	100	+20%	100/15 Summer	100/15 Summer			34.488	0.558	0.028	0.78			10.1	FLOOD	
58.004	CPDN5	15 Summer	100	+20%	100/15 Summer	100/15 Summer			34.430	0.920	0.061	1.04			12.4	FLOOD	1
58.005	CPDN6	15 Summer	100	+20%	100/15 Summer	100/15 Summer			34.140	1.260	0.165	0.99			14.1	FLOOD	3
58.006	CPDN7 3	30 Summer	100	+20%	5/15 Summer	100/15 Summer			33.721	1.261	0.921	1.68			17.3	FLOOD	5
56.002	CP3138A 3	30 Summer	100	+20%	2/15 Summer		2/15 Summer	72	33.356	1.166	0.000	3.67	18.0		17.4	FLOOD RISK	
56.003	CPDN8 3	30 Summer	100	+20%	100/15 Summer	100/15 Summer			32.880	0.700	0.039	1.07			19.9	FLOOD	4
56.004	CPDN9 3	30 Summer	100	+20%	100/15 Summer				32.114	0.604	0.000	0.89			20.7	SURCHARGED	
44.011	CP3141 3	30 Summer	100	+20%	100/15 Summer				31.688	0.766	0.000	1.23				SURCHARGED	
59.000	CP3142 1	15 Summer	100	+20%					31.126	-0.119	0.000	0.45			50.5	OK	
44.012	CP091001 3	30 Summer	100	+20%	2/15 Summer				30.785	0.594	0.000	4.49			447.9	SURCHARGED	
60.000	GY3068 3	15 Summer	100	+20%					31.298	-0.147	0.000	0.26			23.4		
60.001	CP4050C 3	30 Summer	100	+20%					29.933	-0.046	0.000	0.37			51.2		
44.013	CP4050B 3		100	+20%	5/15 Summer				29.874	1.224	0.000	1.79				SURCHARGED	
61.000		15 Summer	100	+20%					28.877	-0.118	0.000	0.10			3.6		
61.001		30 Summer	100	+20%					28.422	0.843	0.000	0.61				SURCHARGED	
39.007	CP4050A 3		100	+20%	2/15 Summer				28.419	1.892	0.000	2.47				SURCHARGED	
62.000	CP4051B 1		100	+20%	5/15 Summer	100/15 Summer			33.757	1.057	7.325	1.14			26.8	FLOOD	6
62.001	CP4051A 1		100	+20%					28.952	-0.148	0.000	0.25			26.8		
39.008 1	Pond Inlet 2 3	30 Summer	100	+20%	2/15 Summer				27.411	1.050	0.000	3.07			1037.3	SURCHARGED	
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	US/MH		Return Climate			First (Z)		Level	Surcharged Depth	Volume	Flow /	Overflow		Flow		Level
PN	Name	Storm	Period Change	Surcharge	Flood	Overflow	Act.	(m)	(m)	(m³)	Cap.	(1/s)	(mins)	(1/s)	Status	Exceeded
39.00	09 Pond Outlet 2	60 Summer	100 +20%	100/15 Summer				26.595	0.295	0.000	0.61			571.2	SURCHARGED	
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# Appendix C - Discharge Rate and Attenuation Storage Volume Summary Tables



# Table C.1 Junction 19 Proposed Site Condition Outfall Discharge Rates and Attenuation Storage Volumes

Proposed Catchment	Receiving Watercourse <sup>1</sup>	A	llowable	ak Discha Discharg I Discharg	e Rates (	A) <sup>3, 6</sup>	Flow Control Type	Attenuation Storage Type	Modelled Attenuation Storage Volume <sup>5</sup>	Catchment Specific Comments
		A/P	1yr	2yr	5yr	100yr			(m³)	
							Orifice Plate	Underground Geocellular Attenuation Storage No.1	151	Brownfield discharge rates applicable due to the online highway widening
24 2014	River Chelmer	A	510.4	533.3	605.0	925.9	Geocellular System Outlet Pipe	Underground Geocellular Attenuation Storage No. 2	176	works at A12 mainline, slip roads and adjoining Junction 19 improvement works. Catchment S1-OU1 attenuation pond will require a new outfall to the River Chelmer. The existing underground geocellular attenuation storage is installed in the
S1-OU1	River Cheimer						 Existing Hydrobrake	Existing Underground Attenuation Storage	289	Junction 19 Generals Lane roundabout as part of the Junction 19 upgrade for the Beaulieu Park development which precedes the proposed A12 scheme. This attenuation storage is to be
		Р	254.5	338.2	439.9	597.9	Orifice Plate	Underground Geocellular Attenuation Storage No. 3	63	retained. Additional new underground geocellular attenuation storage is required to meet the requirements for proposed A12 scheme.
							Pond Outlet Pipe	Attenuation Pond	2069	



Proposed Catchment	Receiving Watercourse <sup>1</sup>	A	llowable	ak Discha Discharg I Discharg	e Rates (	( <b>A</b> ) <sup>3, 6</sup>	Flow Control Type	Attenuation Storage Type	Modelled Attenuation Storage Volume <sup>5</sup>	Catchment Specific Comments
		A/P	1yr	2yr	5yr	100yr			(m³)	
S1-OU7A		A		(See Co	mments)		Existing Hydrobrake	Existing Underground Attenuation Storage	72	The proposed S1-OU7A drainage catchment was part of existing S1-OU1 drainage catchment. However, it is now separated out due to potential spatial constraints in providing attenuation storage for the proposed S1-OU7A catchment and other site-specific constraints (i.e. potential clash with existing culvert crossing). A new outfall for the
	Ordinary Watercourse 2	Ρ	5.0	5.0	5.0	5.0	Vortex Flow Control Device	Attenuation Pond	693	proposed S1-OU7A catchment to Ordinary Watercourse 2 will be required. The existing underground geocellular attenuation storage is installed in the Junction 19 Generals Farm roundabout as part of the Junction 19 upgrade for the Beaulieu Park development which precedes the proposed A12 scheme. This attenuation storage is to be retained.



Proposed Catchment	Receiving Watercourse <sup>1</sup>	A	llowable	ak Discha Discharg I Discharg	e Rates (	(A) <sup>3, 6</sup>	Flow Control Type	Attenuation Storage Type	Modelled Attenuation Storage Volume <sup>5</sup>	Catchment Specific Comments
		A/P	1yr	2yr	5yr	100yr			(m³)	
S1-OU10	Existing Highway Drainage	A	84.8	81.6	105.4	179.4	Orifice Plate	Underground Geocellular Attenuation	138	Brownfield discharge rates applicable due to online highway widening works. An underground geocellular attenuation storage has been used due to spatial constraints on site in addition to the proposed highway drainage
	System serving the B1137 road	Ρ	81.0	80.2	84.3	122.1	Office Flate	Storage System	130	system being relatively deep at its downstream end (i.e. avoids a deep attenuation pond). Outfalls into an existing un-surveyed manhole. Further drainage survey is required.
S1-OU10A	Existing Highway Drainage	A	6.5	6.3	8.9	16.7	Vortex Flow	Underground Geocellular Attenuation	56	Brownfield discharge rates applicable given that the existing Payne's Lane site is currently paved and the proposed S1-OU10A highway drainage is discharging to the B1137 local road highway drainage system.
	System serving the B1137 road	Р	5.0	5.0	5.0	5.0	Control Device	Storage System		An underground geocellular attenuation storage has been used. Outfalls into an existing un-surveyed manhole. Further drainage survey is required.



Proposed Catchment	Receiving Watercourse <sup>1</sup>	A	llowable	ak Discha Discharg I Discharg	e Rates (	A) <sup>3, 6</sup>	Flow Control Type	Attenuation Storage Type	Modelled Attenuation Storage Volume <sup>5</sup>	Catchment Specific Comments
		A/P	1yr	2yr	5yr	100yr			(m³)	
\$1 01111	Boreham	A		(See Co	mments)		Orifice Plate	Attenuation	1291	Brownfield discharge rates applicable due to online highway widening works. The existing case S1-OU12 catchment has been divided up in the proposed case due to the proposed highway geometry. The existing
S1-OU11	Brook	Р	40.0	51.7	60.7	90.8		Pond	1291	S1-OU12 catchment allowable discharge rates are apportioned between the proposed case S1-OU11 and S1-OU12 catchments. A new outfall for S1-OU11 to Boreham Brook will be required.
S1-OU12	Boreham Brook	A	402.8	390.5	536.4	909.0	Orifice Plate	Attenuation Pond	590	Brownfield discharge rates applicable due to online highway widening works. The catchment specific comments for the proposed S1-OU11 catchment are applicable to the proposed S1-OU12 catchment. The existing outfall needs to be re-positioned on
	DIOOK	Р	183.2	207.1	284.8	571.2		Fond		Boreham Brook. The combined proposed discharge rates from the proposed S1-OU11 and S1-OU12 catchments are less than the existing case S1-OU12 allowable discharge rates.



Proposed Catchment	Receiving Watercourse <sup>1</sup>	Modelled Peak Discharge Rates (I/s) <sup>2</sup> Allowable Discharge Rates (A) <sup>3, 6</sup> Proposed Discharge Rates (P) <sup>4</sup>						Flow Control Type	Attenuation Storage Type	Modelled Attenuation Storage Volume <sup>5</sup>	Catchment Specific Comments
		A/P	1yr	2yr	5yr	100yr				(m³)	
Combined S1-OU11 & S1-OU12	Boreham Brook	A	402.8	390.5	536.4	909.0		N/A	N/A	N/A	A check has been undertaken to ensure the combined proposed discharge rates from the S1-OU11 and S1-OU12 catchments are less than existing case S1-OU12 allowable discharge rates.
		Р	223.2	258.8	345.5	662.0					

#### Notes:

- 1. Where there is no nearby receiving watercourse locally (i.e. Main River, Ordinary Watercourse, exiting drainage ditch or proposed drainage ditch), the proposed catchments in such situations discharge to the nearest available existing highway drainage system which will ultimately discharge to a watercourse further downstream.
- 2. FEH2013 rainfall data has been used in the hydraulic modelling of the proposed highway drainage systems for the proposed scheme. FEH2013 rainfall cannot be used for the assessment of the 1 in 1 year return period storm event. Therefore, FEH1999 rainfall data has been used for the assessment of the 1 in 1 year return period storm event.
- 3. The existing case allowable discharge rates do not include a climate change allowance given that current climatic conditions are required inform the discharge rates for the proposed highway drainage systems. Where applicable the brownfield allowable discharge rates have been determined based on the information available from the drainage surveys undertaken at the preliminary design stage. It is noted that the drainage surveys were found to have gaps in the information and/or were found to be incomplete and as such appropriate design assumptions have been made where necessary. These assumptions including the potential impact to the current brownfield discharge rate estimates presented in this summary table would need to be reviewed at detailed design stage.
- 4. The proposed case discharge rates include a climate change allowance as described in Section 4.4 (Climate Change Allowance) of this report. At an individual outfall the proposed discharge rates may be less than the allowable discharge rates, such that the cumulative impacts of all discharges to a receiving watercourse generally provide a reduction in the downstream flood risk and to allow for a margin of uncertainty in estimating the existing highway drainage system discharge rates.
- 5. The modelled proposed case attenuation storage volumes are determined for the 1 in 100 year return period storm event plus a 20% climate change allowance.
- 6. For the proposed drainage catchments subject to online highway widening works, the modelled allowable discharge rates are modelled brownfield discharge rates for the existing paved area footprint.