

Kingway Nurseries

784-B080037

Drainage Strategy

For Approval

Corston Ltd

13 April 2026

Document prepared on behalf of Tetra Tech Limited.

Registered in England number: 01959704



TETRA TECH

Tetra Tech Limited. Registered in England number: 01959704

Tetra Tech Cardiff, 1st Floor, Hodge House, 114-116 St Mary's Street, Cardiff
CF10 1DY

Registered Office: 3 Sovereign Square, Sovereign Street, Leeds, United
Kingdom, LS1 4ER

Document control

If you require this document in an alternative format, such as large print or a coloured background, please request this from the author or your Tetra Tech contact.

Document:	Drainage Strategy
Document name:	Drainage Strategy
Project:	Kingway Nurseries
Client:	Corston Ltd
Project number:	784-B080037
File origin:	\\lds-dc-vm-101\Data\Projects\784-B080037_Kingsway_Corston__Wiltshire\60_Output\61_WIP\03-Reports\GWFR\784-B080037.docx

Revision:	P01	Prepared by:	MM
Date:	07/04/2026	Checked by:	
Status:	First Issue	Approved by:	
Description of revision:	Issue for design team comment		

Revision:	P02	Prepared by:	MM
Date:	13/04/2026	Checked by:	JD
Status:	Issue for Planning	Approved by:	PD
Description of revision:	Issue for Submission		

Revision:		Prepared by:	
Date:		Checked by:	
Status:		Approved by:	
Description of revision:			

Table of contents

1.0	Summary	6
1.1	Document Summary	6
1.2	Introduction	6
1.3	Related Conditions	7
2.0	Proposed Site Details	8
3.0	Surface Water Drainage Design.....	8
3.1	Infiltration	8
3.2	Discharge Point and Route.....	9
3.3	Runoff Rates.....	9
3.4	Drainage Strategy.....	9
3.5	Hydraulic Model Results	11
3.6	Half Drain-Down Time	11
3.7	Surface Water Pump	11
3.8	Water Quality	11
3.9	Overland Flood Routes.....	12
4.0	Foul Drainage Design	12
5.0	Maintenance	14
6.0	Report Summary	14

List of tables

Table 3-1: Greenfield and Existing Brownfield Runoff Rates	9
Table 4-1: General Binding Rules Review	12

Appendices

Appendix A: Decision Notice

Appendix B: Impermeable Areas Plan

Appendix C: Hydraulic Calculations

Appendix D: Drainage Strategy

Appendix E: Maintenance Guidelines

Acronyms/Abbreviations

Acronyms/Abbreviations	Definition
FRA	Flood Risk Assessment
SuDS	Sustainable Drainage Systems
BGS	British Geology Society

1.0 Summary

1.1 Document Summary

- 1.1.1 Tetra Tech has been appointed by Corston Properties Ltd to provide drainage design services for the Phase 2 commercial redevelopment at Kingway Nursery in Corston, Wiltshire.
- 1.1.2 This Technical Note has been prepared, along with the appended drawings and calculations, in response to planning conditions attached to planning consent PL/2025/03530, granted by Wiltshire Council.
- 1.1.3 The proposed development comprises the demolition of the remaining horticultural nurseries and erection of employment facilities comprising office and product development premises (Class E) and warehouse and light industrial facilities (Class B2 and B8). Ancillary uses include a mobility hub, café, and accommodation, together with landscaping, drainage, and other associated works.
- 1.1.4 All surface water from within the site will be discharged at greenfield runoff rates ($Q_{bar} = 6.4$ l/s) following attenuation in permeable paving, filter drains, and additional crates, connecting into the approved Phase 1 drainage system downstream of the Phase 1 flow controls.
- 1.1.5 Foul water will be treated in a Package Treatment Plant (PTW) and discharged to the existing Phase 1 foul drainage network.

1.2 Introduction

- 1.2.1 Planning permission was granted by Wiltshire Council for application PL/2025/03530 (Decision Date: 15 January 2026) approving the Phase 2 development pursuant to planning conditions. The Decision notice is included in full as Appendix A, with the conditions relating to surface water drainage and foul drainage are reproduced below.

Condition 9: No development shall commence on site until a scheme for the discharge of surface water from the site (including surface water from the access/driveway), incorporating sustainable drainage details, has been submitted to and approved in writing

by the Local Planning Authority. The development shall not be first brought into use until surface water drainage has been constructed in accordance with the approved scheme.

REASON: The application contained insufficient information to enable this matter to be considered prior to granting planning permission and the matter is required to be agreed with the Local Planning Authority before development commences in order that the development is undertaken in an acceptable manner, to ensure that the development can be adequately drained.

Condition 12: No development shall commence on site until details of the works for the disposal of sewerage have been submitted to and approved in writing by the Local Planning Authority. The development hereby approved shall not be first brought into use until the approved sewerage details have been fully implemented in accordance with the approved plans.

REASON: The application contained insufficient information to enable this matter to be considered prior to granting planning permission and the matter is required to be agreed with the Local Planning Authority before development commences in order that the development is undertaken in an acceptable manner, to ensure that the proposal is provided with a satisfactory means of drainage and does not increase the risk of flooding or pose a risk to public health or the environment.

- 1.2.2 This drainage design has been prepared in response to the above Conditions. This Technical Note has been completed following the drainage strategy outlined in the Flood Risk Assessment (CDA Ref: 1968, February 2025) submitted in support of the planning application.
- 1.2.3 It should be noted that the team responsible for the FRA and the approved Phase 1 drainage design has transitioned from Condon Drew Associates Ltd (CDA) to Tetra Tech. Full continuity of technical personnel and site knowledge has been maintained.

1.3 Related Conditions

- 1.3.1 Condition 10 requires a site-specific Groundwater Flood Risk Assessment.
Condition 11 requires pollution control details.

- 1.3.2 This report is concerned solely with the foul and surface water drainage design for the site but necessarily considers interactions with the groundwater mitigation proposed for the site.

2.0 Proposed Site Details

- 2.1.1 Proposals for the site comprise the demolition of the remaining horticultural nurseries and erection of approximately 5,642 m² of employment floorspace comprising office and product development premises (Class E) and warehouse and light industrial facilities (Class B2 and B8), with ancillary mobility hub, café, and accommodation, together with car parking, landscaping, and associated infrastructure. Access will be via the completed Phase 1 site.
- 2.1.2 The existing Phase 2 site covers an area of approximately 1.7 ha. There are three large greenhouses, a small building, an oil tank, and paved areas on the site. The total impermeable area of the existing site has been measured as 11,480 m² (1.15 ha). The existing impermeable area plan is included in Appendix B.
- 2.1.3 The total impermeable area post-development is 11,880 m² (1.19 ha). This represents a slight increase in impermeable area of approximately 0.04 ha.
- 2.1.4 There has been no allowance for urban creep due to the commercial/industrial development type, which is consistent with the approach taken in the FRA.

3.0 Surface Water Drainage Design

3.1 Infiltration

- 3.1.1 During the planning stage, infiltration testing carried out as part of the original Phase 1 ground investigation (Earth Science Partnership, August 2019) showed some infiltration potential in the Cornbrash Formation limestone (in the region of 2×10^{-5} m/s). However, groundwater was encountered within approximately 1 m of ground level. As infiltration devices require a minimum 1 m clearance between their base and the maximum groundwater level (CIRIA C753), infiltration has been ruled

out as a mode of surface water discharge. This is consistent with the approach taken for the approved Phase 1 drainage design.

3.2 Discharge Point and Route

- 3.2.1 Following the surface water drainage hierarchy, the next option is discharge to a surface water body. Phase 2 surface water will connect into the approved Phase 1 drainage system, downstream of the Phase 1 flow controls, discharging via the Phase 1 network to the minor watercourse at the site access. This approach limits duplication of outfall infrastructure and was established in the approved FRA.

3.3 Runoff Rates

- 3.3.1 An assessment of greenfield and existing brownfield runoff rates has been undertaken using the IH124 methodology (FSR rainfall). All calculations are included in Appendix C. The rates are summarised in Table 4.1 below:

Table 3-1: Greenfield and Existing Brownfield Runoff Rates

Return Period	Greenfield Runoff (l/s)	Existing Brownfield (l/s)
Q2	5.6	245.4
Qbar	6.4	—
Q30	12.7	451.7
Q100	15.5	572.5

- 3.3.2 Following correspondence with the LLFA during the Phase 1 pre-planning stage, it was confirmed that the discharge rate would need to match greenfield rates. As such, the Phase 2 discharge rate will be controlled to match the Qbar rate of 6.4 l/s following the same rationale, and as per the accepted FRA. This provides considerable betterment against existing brownfield conditions at all return periods.

3.4 Drainage Strategy

- 3.4.1 The surface water drainage strategy has been developed from the planning-stage layout to reflect detailed design refinements. The key changes from the planning-stage strategy are as follows:

- The swale around the northern and eastern perimeter of the proposed building has been replaced with a filter drain. This provides equivalent conveyance and interception functionality in a more compact footprint, and is better suited to the available corridor widths at detailed design stage.
- Roof drainage from the western side of the building will be conveyed via a piped connection beneath the building to the permeable paving area, as site levels do not permit gravity drainage around the full periphery of the building. Roof drainage from the remaining elevations continues to discharge via RWPs directly onto the permeable paving or into the filter drain.

3.4.2 The overall drainage strategy operates as follows:

1. Roof runoff from the outer (northern/eastern) elevations is conveyed via the filter drain around the building perimeter, discharging into the permeable paving.
2. Roof runoff from the inner (courtyard) elevations is discharged via RWPs directly onto the permeable paving.
3. Roof runoff from the western elevation is piped beneath the building to the permeable paving.
4. Hardstanding and car park runoff drains directly into the permeable paving.
5. The permeable paving (5,188 m², 400 mm subbase at 30% void ratio) provides the primary attenuation storage (approximately 623 m³).
6. A supplementary attenuation crate system (0.4 m deep, 95% void, approximately 479 m³) is located beneath the car park, providing additional storage for extreme events.
7. A Hydro-Brake flow control chamber (CTL-SHE-0120-6400-0940-6400, design depth 0.940m, design flow 6.4 l/s) limits discharge to the Qbar greenfield rate.
8. Controlled discharge connects into the Phase 1 drainage system downstream of the Phase 1 flow controls, via a 300 mm diameter pipe to the existing culvert manhole (IL 82.770).

3.4.3 The permeable paving subbase is to be lined with an impermeable membrane to prevent ingress of groundwater.

3.5 Hydraulic Model Results

3.5.1 A hydraulic model has been created for the site using Causeway Flow. The model uses FSR rainfall methodology (M5-60 = 20 mm, Ratio-R = 0.400, CV = 1.000 winter). Storm durations from 15 minutes to 1,440 minutes have been assessed.

3.5.2 The model demonstrates:

- No flooding within the 1-in-30 year event.
- No flooding off-site during any event up to and including the 1-in-100 year return period with a 45% climate change allowance.
- The critical storm for the main storage structures is the 480-minute and 7-20minute winter storms.

3.5.3 Full calculations are included in Appendix C.

3.6 Half Drain-Down Time

3.6.1 A half drain-down time of 24 hours (1,440 minutes) is achieved for the permeable paving (975 minutes) and for the attenuation crates (705 minutes).

3.7 Surface Water Pump

3.7.1 A surface water pump (2.0 l/s capacity, 1.2 m diameter chamber) is provided to manage rainwater from delivery areas on the site where ramps are present to allow vehicle-to-floor level deliveries. These ramps result in lower ground levels than the attenuation features, and would drive attenuation deeper below ground if gravity systems were employed. A larger pump would then be required, which would have the entire site's drainage pumped through it. This would result in a higher risk of flooding in the event of pump failure.

3.7.2 Water is pumped from the ramps (which have a very small area) into the permeable paving subbase via a dispersion chamber.

3.8 Water Quality

3.8.1 The SuDS Management Train provides treatment through the filter drain (equivalent to a swale for pollution mitigation), permeable paving, and the attenuation crate system. The Flow water quality assessment confirms that

sufficient pollution mitigation indices are achieved for TSS, metals, and hydrocarbons at the site discharge point.

3.9 Overland Flood Routes

- 3.9.1 In setting the final external levels for the development, overland surface water flows in exceedance of the design event (or arising from system failure) will be directed to the south, through Phase 1 of the development. The filter drain along the northern boundary will act as an interception feature for any flows passing the building, broadly mimicking the existing ditch covering a large portion of the northern boundary. Site levels and layout will be set to maintain an overland surface water flood path through the development.

4.0 Foul Drainage Design

- 4.1 There are no Wessex Water public foul sewers in the vicinity of the site. The nearest public foul sewer network is approximately 1.2 km to the northeast at Kingway View / Barton View in Corston.
- 4.2 It is proposed that foul flows from the Phase 2 site are discharged to the existing Phase 1 foul drainage network followed by treatment in the Package Treatment Plant (PTW) installed and operated as part of the Phase 1 foul drainage network.
- 4.3 The application site is to consist of approximately 467 m² of Class E commercial and 4,873 m² of Class B2 and B8 industrial floorspace. Expected outflow from the site is from staff toilets and personal washing. The sewage is therefore classed as domestic in line with the general binding rules.
- 4.4 The general binding rules for discharge of domestic sewage to surface water are summarised in Table 5.1 below, with the Phase 2 response.

Table 4-1: General Binding Rules Review

Greenfield Runoff (l/s)	Existing Brownfield (l/s)
Only discharge 5 cubic metres or less per day	Maximum daily flow of PTW is 5 m ³ . Phase 2 will increase the flows above 5 m ³ /day

Only discharge domestic sewage	Only domestic sewage (staff welfare facilities) is to be discharged.
Do not cause pollution of surface water or groundwater	Pollution will be monitored, with records kept of PTW maintenance.
Use the correct treatment system	A Package Treatment Plant is proposed.
Make sure your treatment system meets the right British Standard	The PTW will be compliant with BS EN 12566 Part 3.
Make sure your treatment system is installed and operated correctly and has enough capacity	To be installed by a competent contractor with manufacturer input.
Get your treatment system regularly maintained	The PTW will be maintained in line with manufacturer guidance.
Get your treatment system regularly emptied	Sludge will be removed before it reaches the maximum level.
Check if you can connect to a nearby public foul sewer	Nearest foul sewer is approximately 1.2 km to the northeast. Connection is not practicable.
Make sure the discharge point is not in or near protected sites	Closest protected site on Defra Magic Map is a SSSI approximately 1.5 km east of the site.
Make sure the surface water has flow	The minor watercourse has been noted to be constantly flowing.
Do not discharge to an enclosed lake or pond	Discharge is to a watercourse.

4.5 As the flows will increase above 5 m³/day, an Environmental Permit will be required. This is to be applied for following submission of the planning application for Discharge of Conditions and is expected to run concurrently.

4.6 The foul drainage layout is shown on the drainage layout in Appendix D.

5.0 Maintenance

- 5.1 It is anticipated that upon completion of the development, the surface water and foul drainage systems will be maintained by the client via a Management Company. All features are accessible from within open areas of the site.
- 5.2 It is recommended that, as a minimum, the maintenance guidance from the SuDS Manual (CIRIA C753) is followed. The relevant maintenance tables for permeable paving (Table 20.15) and attenuation storage tanks (Table 21.3) are included in Appendix E.
- 5.3 It is expected that a full maintenance programme will be developed on confirmation of the Management Company, based on the above guidance.

6.0 Report Summary

- 6.1 This Technical Note has been prepared in response to planning conditions 9 and 12 from Wiltshire Council for planning application PL/2025/03530 relating to surface water drainage design and foul drainage design for Phase 2 of the Kingway Nursery development.
- 6.2 Surface water has been designed to connect into the approved Phase 1 drainage system at greenfield runoff rates ($Q_{bar} = 6.4$ l/s) following attenuation in permeable paving and supplementary crates. The drainage system has been designed with no offsite flooding in any event up to and including the 1-in-100 year event with a 45% allowance for climate change.
- 6.3 Key changes from the planning-stage strategy to detailed design are the replacement of the perimeter swale with a filter drain, and piping of the western roof drainage beneath the building where levels do not permit gravity flow around the full building periphery.
- 6.4 Foul water will be discharged to the Phase 1 foul network on site and treated in a Package Treatment Plant within the existing foul drainage infrastructure. Discharge will then be via the Phase 1 network. An Environmental Permit will be required due to the volume exceeding 5 m³/day following the combination of Phase 1 and Phase 2 flows.

Appendix A: Decision Notice



The Town and Country Planning Act 1990
Approval of Full Planning Permission with Conditions
Application Reference Number: PL/2025/03530
Decision Date: 15/01/2026

Applicant:	Corston Properties Ltd C/O Morgan Elliot Planning, 35 Rodney Road, Cheltenham, GL2 9QJ
Particulars of Development:	Demolition of the remaining horticultural nurseries and erection of employment facilities comprising office and product development premises (Class E) and warehouse and light industrial facilities (Class B2 and B8). Ancillary uses include a mobility hub, café, and accommodation, together with landscaping, drainage, and other associated works.
At:	Kingway Nurseries, Chippenham Road, Corston, SN16 0HW

In pursuance of its powers under the above Act, the Council hereby **GRANT PLANNING PERMISSION** for the above development to be carried out in accordance with the application and plans submitted (listed below).

In accordance with paragraph 39 of the National Planning Policy Framework, Wiltshire Council has worked proactively to secure this development to improve the economic, social and environmental conditions of the area.

Subject to the following conditions:

- 1 The development hereby permitted shall be begun before the expiration of three years from the date of this permission.

REASON: To comply with the provisions of Section 91 of the Town and Country Planning Act 1990 as amended by the Planning and Compulsory Purchase Act 2004.

- 2 The development hereby permitted shall be carried out in accordance with the following approved plans and documents:

a) Received 07.04.2025:

Location plan

Office and Warehouse Elevations (aa, bb, cc); dated 11.02.2025

Office and Warehouse Elevations (dd, ee); dated 11.02.2025

Office and Warehouse Floor Plan

Travel Hub, Café and Ancillary Accommodation Floor Plan and Elevations; dated 28.02.2025

Landscape Mitigation Strategy; WHL-1885/06 Rev A; dated Feb 25; Contained within Landscape and Visual Impact Assessment, prepared by WHLandscape

Arboricultural Impact Assessment, prepared by Tree Frontiers; dated 28.02.2025

b) Received 31.07.2025:

Office and Warehouse Roof Plan; dated 09.07.2025

Office and Warehouse Site Plan; dated 09.07.2025

Travel Plan; prepared by cda; dated July 2025

REASON: For the avoidance of doubt and in the interests of proper planning.

- 3** The development will be carried out in strict accordance with the following documents:

BNG-Biodiversity Statement. April 2025. UES

Statutory Biodiversity Metric. April 2025. Robert Mooney

Bat Box Plan and Jersey Cudweed Receptor Site. October 2025. UES

REASON: For the avoidance of doubt and for the protection, mitigation and enhancement of biodiversity.

- 4** No external light fixture or fitting will be installed within the application site unless details of existing and proposed new lighting have been submitted to and approved by the Local Planning Authority in writing.

The submitted details will demonstrate:

i) how the proposed lighting will impact on bat habitat compared to the existing situation

ii) the measures to be taken to minimise sky glow, glare and light trespass

The plans will be in accordance with the appropriate Environmental Zone standards set out by the Institution of Lighting Professionals (ILP) Guidance Notes on the Avoidance of Obtrusive Light (GN 01/2021) and Guidance note GN08/23

“Bats and artificial lighting at night”, issued by the Bat Conservation Trust and Institution of Lighting Professionals.

The approved scheme shall be carried out as approved and maintained in effective working order at all times thereafter.

REASON: In the interest of avoiding light pollution and disturbance from light to the nearby residential properties, protected species and the visual amenity of the wider area

- 5 Prior to the commencement of any works, including vegetation removal and demolition, a species protection plan for Jersey Cudweed shall be submitted to the Local Authority for approval. The development shall be carried out in strict accordance with the approved species protection plan.

REASON: To provide mitigation/enhancement for biodiversity

- 6 No development shall commence on site (including any vegetation removal or works to existing structures), until a Construction Method Statement has been submitted to, and approved in writing by the Local Planning Authority. The Construction Method Statement shall include all precautionary measures to be implemented during the construction period, for the protection of sensitive habitats and species known to be present within or adjacent the site, with particular reference to Reptiles.

The development shall be carried out in strict accordance with the approved Construction Method Statement.

REASON: To ensure adequate protection, mitigation and compensation for protected species and priority habitats throughout the construction period.

- 7 No development shall commence until:

- a) A written programme of archaeological investigation, which should include on-site work and off-site work such as the analysis, publishing and archiving of the results, has been submitted to and approved by the Local Planning Authority; and
- b) The approved programme of archaeological work has been carried out in accordance with the approved details.

REASON: To enable the recording of any matters of archaeological interest.

- 8 No development shall commence until a remediation strategy to deal with the risks associated with contamination of the site in respect of the development hereby permitted, has been submitted to, and approved in writing by, the local planning authority.

This strategy will include the following components:

- a) A preliminary risk assessment which has identified:
 - i) all previous uses

- ii) potential contaminants associated with those uses
 - iii) a conceptual model of the site indicating sources, pathways and receptors
 - iv) potentially unacceptable risks arising from contamination at the site
- b) A site investigation scheme, based on (a) to provide information for a detailed assessment of the risk to all receptors that may be affected, including those offsite.
- c) The results of the site investigation and the detailed risk assessment referred to in (b) and, based on these, an options appraisal and remediation strategy giving full details of the remediation measures required and how they are to be undertaken.
- d) A verification plan providing details of the data that will be collected in order to demonstrate that the works set out in the remediation strategy in (c) are complete and identifying any requirements for longer-term monitoring of pollutant linkages, maintenance and arrangements for contingency action.

Any changes to these components require the written consent of the local planning authority. The scheme shall be implemented as approved.

REASON: To ensure that the development does not contribute to, and is not put at unacceptable risk from or adversely affected by, unacceptable levels of water pollution in line with paragraph 187 of the National Planning Policy Framework.

- 9** No development shall commence on site until a scheme for the discharge of surface water from the site (including surface water from the access/driveway), incorporating sustainable drainage details, has been submitted to and approved in writing by the Local Planning Authority.

The scheme must include evidence demonstrating how the surface water disposal hierarchy has been applied and how all other options have been exhausted.

The development shall not be first brought into use until surface water drainage has been constructed in accordance with the approved scheme.

REASON: To ensure that the development can be adequately drained.

- 10** No development shall commence on site until:

a) a site-specific groundwater flood risk assessment has been submitted to the Local Planning Authority. The flood risk assessment must include all available information and data from local sources and, in areas susceptible to groundwater flooding, any potential proposed infiltration SuDS must be demonstrated as appropriate. The groundwater assessment must include, but not necessarily be limited to, consideration of the following:

- i) groundwater level monitoring, taking into account seasonal variations
- ii) the interaction between different sources of flooding

- iii) how groundwater will impact on the proposed drainage system
- iv) the interaction between groundwater, groundwater recharge and aquifers
- b) any mitigation measures detailed within the flood risk assessment have been approved in writing by the Local Planning Authority.

The development shall not be first brought into use until the approved scheme has been carried out in full, or in accordance with any approved timetable.

REASON: In the interests of flood prevention.

- 11** No development, including demolition works, shall commence on site until:

- a) details of measures to control pollution to existing watercourses and groundwater, during demolition and construction phases have been submitted to and approved in writing by the Local Planning Authority.
- b) details of calculations which demonstrate that the drainage design provides a sufficient level of water treatment to prevent pollution to the receiving watercourse have been submitted to and approved in writing by the Local Planning Authority.

The works must be carried out in accordance with approved details.

REASON: To prevent pollution of the water environment

- 12** 1. No development shall commence until a foul water drainage scheme has been submitted to and approved in writing by the local planning authority.

The scheme shall be implemented as approved and completed prior to the development being brought into use.

REASON: To ensure that the proposed non-mains drainage system does not harm groundwater resources in line with Paragraph 187 of the National Planning Policy Framework and the 'The Environment Agency's approach to groundwater protection'.

- 13** No development shall commence on site (including any works of demolition), until:

a site plan and Construction Management Statement has been submitted to and approved in writing by the Local Planning Authority. The Construction Management Statement must include:

- i) the parking of vehicles of site operatives and visitors
- ii) Number and size of delivery vehicles/ construction vehicles
- iii) loading and unloading of plant and materials
- iv) storage of plant and materials used in constructing the development;

v) wheel washing facilities

vi) measures to control the emission of dust and dirt during construction

vii) a scheme for recycling/disposing of waste resulting from demolition and construction works; and viii) measures for the protection of the natural environment.

ix) hours of construction, including deliveries;

x) pre-condition photo survey

The approved Statement shall be adhered to throughout the construction period. The development shall not be carried out otherwise than in accordance with the approved construction method statement.

REASON: To minimise detrimental effects to the neighbouring amenities, the amenities of the area in general, detriment to the natural environment through the risks of pollution and dangers to highway safety, during the construction phase.

- 14** No development shall commence until a detailed planting plan has been submitted to and approved in writing by the Local Planning Authority.

The approved planting plan, and any mitigation strategies within, shall be adhered to.

REASON: To ensure a satisfactory landscaped setting for the development and the protection of existing important landscape features.

- 15** No development shall commence until a scheme of acoustic insulation and noise control has been submitted to and approved in writing by the Local Planning Authority. The scheme must demonstrate the following:

i) that the rating level (L_{ArTr}) of sound emitted from fixed plant or machinery associated with the unit can be at least 5 dB below the background sound level (L_{A90}) for daytime and nighttime respectively.

ii) that background sound levels (L_{A90}) measurements and calculations have been made in accordance with the methodology of BS4142:2014 +A1:2019 Method for rating and assessing industrial and commercial sound, and/or its subsequent amendments.

The development shall not be first brought into use until:

a) the approved scheme of acoustic insulation and noise control has been carried out in full

b) a post installation noise assessment has been carried within 3 months of completion, confirming compliance with noise criteria or identifying and potential additional steps which are required to achieve compliance with noise criteria.

c) the post installation noise assessment has been submitted to and approved in writing by the Local Planning Authority

d) where any additional steps have been identified as required to achieve compliance with noise criteria, these steps have been taken.

The details as approved shall be permanently retained and maintained at all times thereafter.

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenities of the area

16 The development shall not be first brought into use until:

a) a scheme of acoustic insulation and noise control has been submitted to and approved in writing by the Local Planning Authority. The scheme shall demonstrate the rating level (LArTr) of sound emitted from commercial and industrial operations associated with the unit shall not exceed background sound level LA90 for daytime or nighttime hours respectively.

The measurements and calculations shall be made in accordance with the methodology of BS4142:2014 +A1:2019 Method for rating and assessing industrial and commercial sound, and/or its subsequent amendments.

b) The approved scheme of insulation and noise control has been implemented in full

c) a post installation noise assessment has been carried within 3 months of completion, confirming compliance with noise criteria or identifying and potential additional steps which are required to achieve compliance with noise criteria.

d) the post installation noise assessment has been submitted to and approved in writing by the Local Planning Authority

e) where any additional steps have been identified as required to achieve compliance with noise criteria, these steps have been taken.

The details as approved shall be permanently retained and maintained at all times thereafter.

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenities of the area

17 The development shall not be first brought into use until a verification report demonstrating the completion of works set out in the approved remediation strategy and the effectiveness of the remediation has been submitted to, and approved in writing, by the local planning authority.

The report shall include results of sampling and monitoring carried out in accordance with the approved verification plan to demonstrate that the site remediation criteria have been met.

REASON: To ensure that the site does not pose any further risk to human health or the water environment by demonstrating that the requirements of the approved

verification plan have been met and that remediation of the site is complete, inline with Paragraph 187 of the National Planning Policy Framework.

- 18** If, during development, contamination not previously identified is found to be present at the site then no further development (unless otherwise agreed in writing with the local planning authority) shall be carried out until a remediation strategy detailing how this contamination will be dealt with has been submitted to, and approved in writing by, the local planning authority. The remediation strategy shall be implemented as approved.

REASON: To ensure that the development does not contribute to, and is not put at unacceptable risk from or adversely affected by, unacceptable levels of water pollution from previously unidentified contamination sources at the development site, inline with Paragraph 187 of the National Planning Policy Framework.

- 19** No construction work shall take place on Sundays or Public Holidays or outside the hours of 08:00 to 18:00 Monday to Friday and 08:00 to 13:00 on Saturdays.

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenity of the area.

- 20** No reversing alarms other than 'white noise beepers' will be used on site between 23:00 and 07:00.

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenities of the area.

- 21** No extraction systems that disperse emissions from industrial processes to the atmosphere shall be fitted to any Unit until a scheme of works for the control and dispersal of atmospheric emissions and in particular dust, odours, fumes, smoke or particulates has been submitted to and approved in writing by the Local Planning Authority. The approved scheme shall be implemented in full before the unit is first brought into use and shall be maintained in effective working condition at all times thereafter.

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenities of the area.

- 22** No industrial processes shall be carried outside any building/unit on the site (to include processing, working, manufacture, finishing or packaging of any materials or goods outside any building).

REASON: In the interests of the appearance of the site and the amenities of the area

- 23** Notwithstanding the provisions of the Town and Country Planning (General Permitted Development) (England) Order 2015, the site shall be used solely for purposes within Classes B2, B8 and E(g) of the Schedule to the Town and Country Planning (Use Classes) Order 1987 (as amended)(or in any provisions equivalent to that class in any statutory instrument revoking or re[1]enacting that Order with or without modification).

REASON: The proposed use is acceptable but the Local Planning Authority wish to consider any future proposal for a change of use, other than a use within the same class(es), having regard to the circumstances of the case.

- 24** The Class E, B2 and B8 uses hereby permitted shall only take place between the hours of 06:30hrs and 18:00hrs from Monday to Friday. The use shall not take place at any time on Saturdays, Sundays and Bank/Public Holidays.

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenity of the area.

- 25** The mobility hub and café hereby permitted shall be used only for purposes ancillary to the permitted uses of the site (land edged in blue and red on the approved location plan).

REASON: The site is in a position where the Local Planning Authority, having regard to planning policies pertaining to the area, would not permit a wholly separate mobility hub or café.

- 26** The accommodation hereby permitted shall not be occupied at any time other than for purposes ancillary to the permitted uses of the site (land edged in blue and red on the approved location plan).

REASON: The accommodation is sited in a position where the Local Planning Authority, having regard to the reasonable standards of residential amenity, access, and planning policies pertaining to the area, would not permit a wholly separate dwelling.

- 27** No deliveries shall be made to or collections made from the development hereby approved except between the hours of 06:30 hrs and 18:00hrs from Monday to Friday and not at any time on Saturdays, Sundays and Bank/Public Holidays

REASON: To ensure the creation/retention of an environment free from intrusive levels of noise and activity in the interests of the amenity of the area.

- 28** No burning of fires shall take place on site at any time.

REASON: In the interests of public health and safety.

- 29** The external materials to be used in the installation of the doors and windows, and hardstanding associated with the development hereby permitted shall match in material, colour and texture to those used at the adjacent site (land edged in blue on the approved location plan).

REASON: In the interests of visual amenity and the character and appearance of the area.

- 30** The parking areas shown on approved plans shall not be used other than for the parking of vehicles and shall be maintained for that purpose at all times thereafter.

REASON: To ensure that adequate provision is made for parking within the site in the interests of highway safety.

Informative

- 1
 - All British birds, their nests and eggs are protected under Section 1 of the Wildlife and Countryside Act 1981 (as amended) and the Countryside and Rights of Way Act 2000 while birds are nesting, building nests and sitting on eggs. The applicant is advised to check any structure or vegetation capable of supporting breeding birds and delay removing or altering such features until after young birds have fledged. Damage to extensive areas that could contain nests/breeding birds should be undertaken outside the breeding season. This season is usually taken to be the period between 1st March and 31st August but some species are known to breed outside these limits.
 - The buildings on site are used as a bat roost. Under the Conservation of Habitats and Species Regulations 2017 (as amended), it is an offence to harm or disturb bats or damage or destroy their roosts. Planning permission for development does not provide a defence against prosecution under this legislation. The applicant is advised that a European Protected Species Licence will be required before any work is undertaken to implement this planning permission. Future conversion of the roof space to living accommodation or replacing the roof could also breach this legislation and advice should be obtained from a professional bat ecologist before proceeding with work of this nature.
 - Archaeological work must be carried out following the Standards and Universal Guidance for archaeological field evaluation as set out by the Chartered Institute for Archaeologists (CIfA). The costs of the work are to be borne by the applicant.
 - Archaeological field evaluation forms the first stage of possible further archaeological mitigation. Further archaeological investigation may be required either prior to or during construction or both, dependent on the results of the archaeological evaluation undertaken prior to construction. Analysis and reporting commensurate with the significance of the archaeological results of further mitigation may also be required.
 - Based on "Contamination Assessment" document, the site has contamination from asbestos, heavy metals and hydrocarbons. Therefore, consultation with the Environment Agency is required, to reduce the H&S risk during development and occupation.
 - This development will require a permit under the Environmental Permitting Regulations (England and Wales) 2016. The Environment Agency do not have enough information to know if the proposed development can meet their requirements to prevent, minimise and/or control pollution.

Research should be carried out prior to using an existing works through the British Water Flow and Loads, since it is likely to be a substantial additional flow from this development. This means it is unlikely that the existing works will be able to treat the discharge to an acceptable standard. Under the General Binding Rules, any discharge over 5m³ to a watercourse or over 2m³ to ground will require a discharge permit. The large size of the proposed development will have to be compared to the cost/benefit of connecting to the mains foul sewer network. To reduce the risks to people and the environment and obtain a permit:

- i) the suitability of the location with respect to the protection of groundwater will need to be considered.
- ii) the design and/or layout of the buildings may need to change.
- iii) the design may need to include abatement technology to reduce the impact of the development beyond Best Available Techniques (BAT).
- iv) A hydrogeological risk assessment is likely to be required.

The Environment Agency will not be able to determine a permit application until this information has been provided and they recommend that the developer considers parallel tracking the planning and permit applications as this can help identify and resolve any issues at the earliest opportunity. Parallel tracking can also prevent the need for post-permission amendments to the planning application. Further guidance can be found at: <https://www.gov.uk/government/collections/risk-assessments-for-specific-activities-environmental-permits>

- The northwestern part of the site is underlain by shrinking and swelling clays of the Kellaways Clay Formation. Geotechnical tests must be conducted to assess the strength and stability of the soil under varying moisture conditions.
- The water disposal hierarchy is:
 - a) Surface water runoff is collected for use.
 - b) Discharge into the ground via infiltration.
 - c) Discharge to a watercourse or other surface water body.
 - d) Discharge to surface water sewer or other drainage system, discharging to a watercourse or other surface water body.
 - e) Discharge to a combined sewer
- Please refer to Wiltshire Councils Groundwater Management Strategy and Surface Water Soakaway Guidance for the standards that must be met for planning approval.
- When compared with the pre-condition photo survey referred to in 13(x) should there be any highways damage resulting from the development, this damage must be put right, to the satisfaction of the Local Highways Authority, within 6 months of the development completion. Please contact HighwaysDevelopment@wiltshire.gov.uk if you have any queries regarding this requirement or any requirements relating to condition 13.
- Any works on this land will need to be undertaken following engagement with Asset Protection to determine the interface with Network Rail assets, buried or otherwise and by entering into a Basic Asset Protection Agreement, if required, with a minimum of 3months notice before works start. Initially the outside party should contact assetprotectionwestern@networkrail.co.uk.

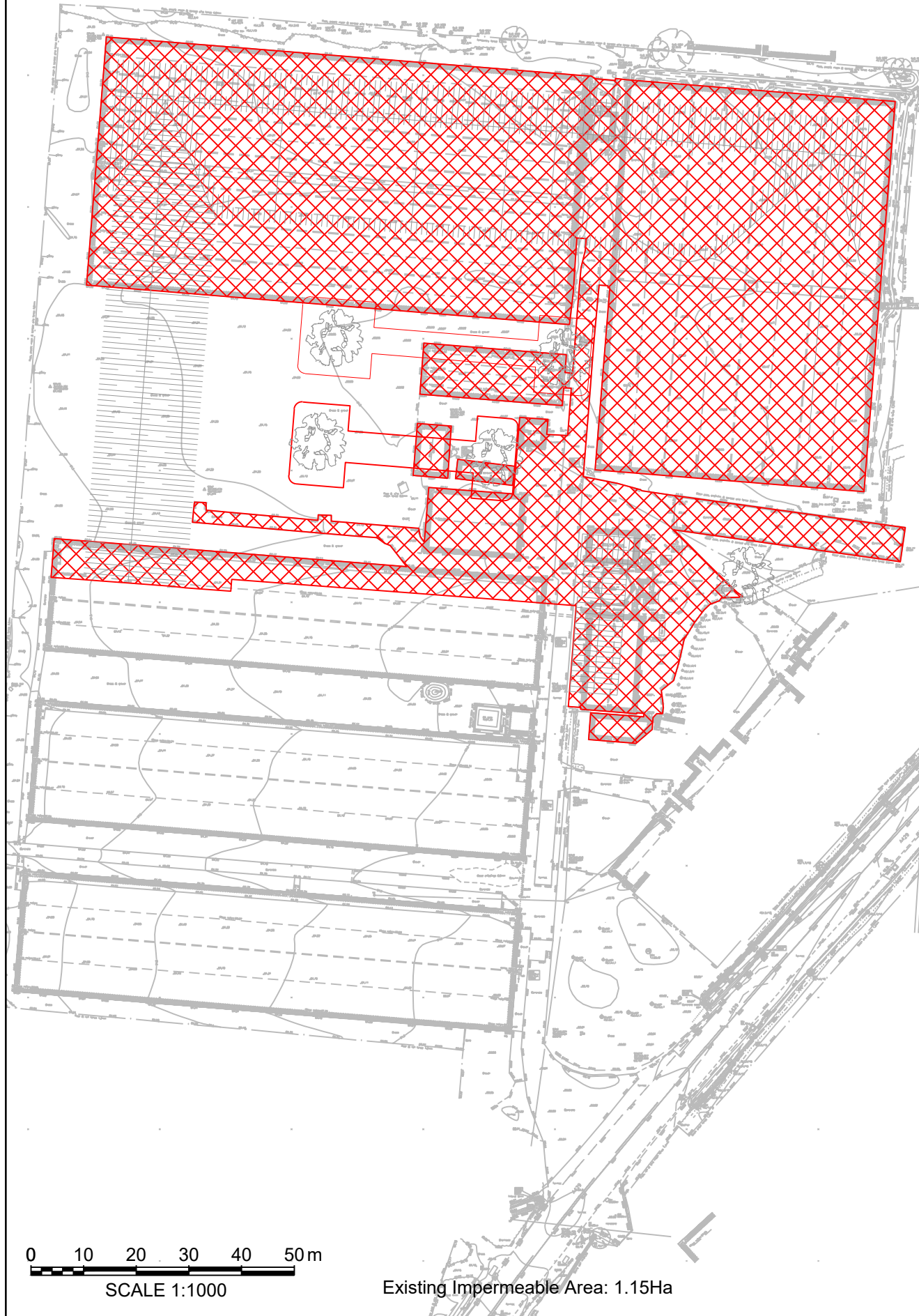
- Applications that are likely to generate an increase in trips under railway bridges may be of concern to Network Rail where there is potential for an increase in 'Bridge strikes'. Vehicles hitting railway bridges cause significant disruption and delay to rail users. Consultation with Network Rail's Asset Protection Engineers is necessary to understand if there is a problem. Where any damage, injury or delay to the rail network is caused by an abnormal load (related to the application site), the applicant or developer will incur full liability.
- Soakaways / attenuation ponds / septic tanks etc, as a means of storm/surface water disposal must not be constructed near/within 5 metres of Network Rail's boundary or at any point which could adversely affect the stability of Network Rail's property/infrastructure. Storm/surface water must not be discharged onto Network Rail's property or into Network Rail's culverts or drains. Network Rail's drainage system(s) are not to be compromised by any work(s). Suitable drainage or other works must be provided and maintained by the Developer to prevent surface water flows or run-off onto Network Rail's property / infrastructure. Ground levels – if altered, to be such that water flows away from the railway. Drainage does not show up on Buried service checks.

Nic Thomas - Director of Planning, Economy and Regeneration

NOTES

- 1 **Other Necessary Consents.** This document only conveys permission for the proposed development under Part III of the Town and Country Planning Act 1990 and the applicant must also comply with all the byelaws, regulations and statutory provisions in force in the area and secure such other approvals and permissions as may be necessary under other parts of the Town and Country Planning Act 1990 or other legislation.
 - 1.1 the need in appropriate cases to obtain approval under Building Regulations. **(The Building Regulations may be applicable to this proposal. Please contact the Council's Building Control team before considering work on site);**
 - 1.2 the need to obtain an appropriate order if the proposal involves the stopping up or diversion of a public right of way or other highway (including highway verge);
 - 1.3 the need to obtain a separate "Listed Building Consent" to the demolition, alteration or extension of any listed building of architectural or historic interest;
 - 1.4 the need to make any appropriate arrangements under the Highways Act 1980, in respect of any works within the limits of a highway. The address of the Highway Authority is County Hall, Trowbridge, BA14 8JD (It is the responsibility of the applicant to ascertain whether the proposed development affects any listed building or public right of way / other highway, including highway verge).
- 2 **Appeals.** If the applicant is aggrieved by the decision of the local planning authority to grant permission subject to conditions, he may appeal to the Secretary of State for the Environment in accordance with Section 78(1) of the Town and Country Planning Act 1990 within six months of the date of this decision. (Information and forms relating to the appeals process can be found at the Planning Portal - <http://www.planningportal.gov.uk/planning/appeals>).
- 3 **Climate Change.** Wiltshire Council acknowledges the climate emergency and is seeking to make the county carbon neutral. You are encouraged to include energy efficiency that exceeds building regulations and to meet residual energy demand through renewable energy and low-carbon technologies, including high levels of electric vehicle charging points. The developer is encouraged to contact the climate team to discuss this further. climate@wiltshire.gov.uk
- 4 **CIL.** The applicant is advised that the development hereby approved may represent chargeable development under the Community Infrastructure Levy Regulations 2010 (as amended) and Wiltshire Council's CIL Charging Schedule. A separate Community Infrastructure Levy Liability Notice will be issued by the Local Planning Authority. Should you require further information with regards to CIL please refer to the Council's Website [Community Infrastructure Levy \(CIL\) - Wiltshire Council](#)

Appendix B: Impermeable Areas Plan



PRELIMINARY ISSUE

Rev	Description	Date	JD	MM	MM
P01	PRELIMINARY FIRST ISSUE	07.04.2026	JD	MM	MM

Document Control

Tetra Tech Leicester
4th Floor, No1 Great Central Square,
Vaughan Way, Leicester, United Kingdom,
LE1 4JS
Tel: +44 (0)11 6234 8000
www.tetratecheurope.com



Client
CORSTON PROPERTIES

Project Name
KINGWAY NURSERY

Sheet Title
IMPERMEABLE AREAS

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A3	Suitability
784-B060037	JD	Apr '26	MM	Apr '26	MM	Apr '26	1:1000	S0
Client Project Number	Originator	Function	Spatial	Form	Role	Number	Revision	
B080037	- TTE	- HDG	- ZZ	- DR	- CH	- 0502	P01	

Appendix C: Hydraulic Calculations

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
SITE	1.150	5.00	84.000	391287.999	182771.659	1.575	82.425
OUT			84.000	391289.251	182771.676	1.588	82.412

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
1.000	SITE	OUT	1.252	0.600	82.425	82.412	0.013	100.0	375	5.01	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
1.000	1.812	200.1	155.9	1.200	1.213	1.150	0.0	250	1.995

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.000	1.252	100.0	375	Circular	84.000	82.425	1.200	84.000	82.412	1.213

Link	US Node	Node Type	DS Node	Node Type
1.000	SITE	Junction	OUT	Junction

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Connections	Link	IL (m)	Dia (mm)
SITE	391287.999	182771.659	84.000	1.575				
						1.000	82.425	375
OUT	391289.251	182771.676	84.000	1.588		1.000	82.412	375

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	2880
Rainfall Events	Singular	Additional Storage (m³/ha)	0.0
FSR Region	England and Wales	Starting Level (m)	
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	2 year (l/s)	5.6
Summer CV	0.750	30 year (l/s)	12.7
Winter CV	1.000	100 year (l/s)	15.5
Analysis Speed	Detailed	Check Discharge Volume	✓
Skip Steady State	✓	100 year 360 minute (m³)	

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.98
Greenfield Method	IH124	Growth Factor 100 year	2.42
Positively Drained Area (ha)	1.692	Betterment (%)	0
SAAR (mm)	766	QBar	6.4
Soil Index	3	Q 2 year (l/s)	5.6
SPR	0.40	Q 30 year (l/s)	12.7
Region	8	Q 100 year (l/s)	15.5
Growth Factor 2 year	0.88		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	1.692	Storm Duration (mins)	360
Soil Index	3	Betterment (%)	0
SPR	0.40	PR	
CWI		Runoff Volume (m³)	

Results for 1 year Critical Storm Duration. Lowest mass balance: 99.14%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SITE	10	82.704	0.279	189.7	0.0000	0.0000	OK
15 minute winter	OUT	10	82.683	0.271	183.0	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SITE	1.000	OUT	183.0	2.114	0.915	0.1084	88.1

Results for 30 year Critical Storm Duration. Lowest mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SITE	10	82.881	0.456	452.9	0.0000	0.0000	SURCHARGED
15 minute summer	OUT	8	82.767	0.355	359.9	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SITE	1.000	OUT	446.2	4.046	2.230	0.1367	213.9

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 99.04%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SITE	10	82.982	0.557	646.8	0.0000	0.0000	SURCHARGED
15 minute summer	OUT	8	82.767	0.355	500.6	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SITE	1.000	OUT	634.3	5.752	3.170	0.1367	301.3

Results for 100 year Critical Storm Duration. Lowest mass balance: 99.05%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SITE	10	82.960	0.535	608.9	0.0000	0.0000	SURCHARGED
15 minute summer	OUT	8	82.767	0.355	475.9	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SITE	1.000	OUT	597.9	5.421	2.988	0.1367	280.1

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 99.16%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	SITE	10	83.143	0.718	875.4	0.0000	0.0000	SURCHARGED
15 minute summer	OUT	7	82.767	0.355	681.8	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	SITE	1.000	OUT	855.8	7.760	4.277	0.1367	403.9

Design Settings

Rainfall Methodology	FSR	Maximum Time of Concentration (mins)	30.00
Return Period (years)	2	Maximum Rainfall (mm/hr)	50.0
Additional Flow (%)	0	Minimum Velocity (m/s)	1.00
FSR Region	England and Wales	Connection Type	Level Soffits
M5-60 (mm)	20.000	Minimum Backdrop Height (m)	0.200
Ratio-R	0.400	Preferred Cover Depth (m)	1.200
CV	0.750	Include Intermediate Ground	✓
Time of Entry (mins)	5.00	Enforce best practice design rules	x

Nodes

Name	Area (ha)	T of E (mins)	Cover Level (m)	Diameter (mm)	Easting (m)	Northing (m)	Depth (m)	Invert Level (m)
S01	0.027	5.00	84.700	450	391257.453	182734.579	0.550	84.150
S02	0.027	5.00	84.600	450	391265.022	182828.173	0.500	84.100
S03	0.026	5.00	84.650	450	391261.489	182784.484	0.885	83.765
DISPERSION_1			84.200		391289.398	182782.235	0.600	83.600
ATT_2		5.00	84.200		391382.388	182739.838	0.961	83.239
G1	0.007	5.00	82.500	450	391291.032	182797.250	0.700	81.800
G2	0.007	5.00	82.500	450	391375.033	182790.458	0.700	81.800
PUMP			84.200	1200	391332.769	182790.589	2.928	81.272
DISPERSION_2			84.200		391332.366	182785.606	0.575	83.625
FT_1	0.046	5.00	84.800	450	391301.949	182828.698	0.575	84.225
FT_2	0.046	5.00	84.550	450	391413.932	182819.641	0.646	83.904
FT_3	0.047	5.00	84.300	450	391408.416	182751.833	0.590	83.710
DISPERSION_3			84.200		391407.820	182743.755	0.600	83.600
ATT_1			84.200		391343.406	182746.745	0.961	83.239
PP	0.995	5.00	84.200	1200	391348.370	182741.094	1.011	83.189
S04			84.000	1200	391353.248	182728.335	0.867	83.133
FCC			84.000	1200	391351.008	182676.153	1.080	82.920
EX CULVERT			83.900		391380.205	182653.870	1.130	82.770

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
3.000	S01	S03	50.068	0.600	84.150	83.808	0.342	146.4	150	6.01	50.0
4.000	S02	S03	43.832	0.600	84.100	83.808	0.292	150.0	150	5.89	50.0
3.001	S03	DISPERSION_1	27.999	0.600	83.765	83.600	0.165	170.0	225	6.47	50.0
5.000	G1	PUMP	42.265	0.600	81.800	81.272	0.528	80.0	100	5.82	50.0
6.000	G2	PUMP	42.264	0.600	81.800	81.272	0.528	80.0	100	5.82	50.0
	Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)	
3.000		0.828	14.6	3.7	0.400	0.692	0.027	0.0	51	0.691	
4.000		0.818	14.5	3.7	0.350	0.692	0.027	0.0	51	0.682	
3.001		1.000	39.7	10.8	0.660	0.375	0.080	0.0	80	0.856	
5.000		0.861	6.8	0.9	0.600	2.828	0.007	0.0	25	0.606	
6.000		0.861	6.8	0.9	0.600	2.828	0.007	0.0	25	0.606	

Links

Name	US Node	DS Node	Length (m)	ks (mm) / n	US IL (m)	DS IL (m)	Fall (m)	Slope (1:X)	Dia (mm)	T of C (mins)	Rain (mm/hr)
5.001	PUMP	DISPERSION_2	4.999	0.600	81.272	83.775	-2.503	-2.0	63	30.00	26.0
2.000	ATT_2	ATT_1	39.589	0.600	83.239	83.239	0.000	0.0	300	5.66	50.0
1.000	FT_1	FT_2	112.349	0.600	84.225	83.904	0.321	350.0	225	7.70	50.0
1.001	FT_2	FT_3	68.032	0.600	83.904	83.710	0.194	350.0	225	9.34	50.0
1.002	FT_3	DISPERSION_3	8.100	0.600	83.710	83.600	0.110	73.6	225	9.43	50.0
2.001	ATT_1	PP	7.522	0.600	83.239	83.189	0.050	150.0	150	5.81	50.0
2.002	PP	S04	13.660	0.600	83.189	83.133	0.056	245.0	300	6.04	50.0
2.003	S04	FCC	52.230	0.600	83.133	82.920	0.213	245.0	300	6.91	50.0
2.004	FCC	EX CULVERT	36.729	0.600	82.920	82.770	0.150	244.9	300	7.52	50.0

Name	Vel (m/s)	Cap (l/s)	Flow (l/s)	US Depth (m)	DS Depth (m)	Σ Area (ha)	Σ Add Inflow (l/s)	Pro Depth (mm)	Pro Velocity (m/s)
5.001	0.003	0.0	1.0	2.865	0.362	0.014	0.0	63	0.000
2.000	1.000	70.7	0.0	0.661	0.661	0.000	0.0	0	0.000
1.000	0.693	27.6	6.2	0.350	0.421	0.046	0.0	73	0.562
1.001	0.693	27.6	12.5	0.421	0.365	0.092	0.0	106	0.675
1.002	1.525	60.7	18.8	0.365	0.375	0.139	0.0	86	1.348
2.001	0.818	14.5	0.0	0.811	0.861	0.000	0.0	0	0.000
2.002	1.000	70.7	134.8	0.711	0.567	0.995	0.0	300	1.013
2.003	1.000	70.7	134.8	0.567	0.780	0.995	0.0	300	1.013
2.004	1.000	70.7	134.8	0.780	0.830	0.995	0.0	300	1.013

Pipeline Schedule

Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
3.000	50.068	146.4	150	Circular	84.700	84.150	0.400	84.650	83.808	0.692
4.000	43.832	150.0	150	Circular	84.600	84.100	0.350	84.650	83.808	0.692
3.001	27.999	170.0	225	Circular	84.650	83.765	0.660	84.200	83.600	0.375
5.000	42.265	80.0	100	Circular	82.500	81.800	0.600	84.200	81.272	2.828
6.000	42.264	80.0	100	Circular	82.500	81.800	0.600	84.200	81.272	2.828
5.001	4.999	-2.0	63	Circular	84.200	81.272	2.865	84.200	83.775	0.362
2.000	39.589	0.0	300	Circular	84.200	83.239	0.661	84.200	83.239	0.661
1.000	112.349	350.0	225	Circular	84.800	84.225	0.350	84.550	83.904	0.421

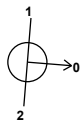
Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
3.000	S01	450	Manhole	Adoptable	S03	450	Manhole	Adoptable
4.000	S02	450	Manhole	Adoptable	S03	450	Manhole	Adoptable
3.001	S03	450	Manhole	Adoptable	DISPERSION_1		Junction	
5.000	G1	450	Manhole	Adoptable	PUMP	1200	Manhole	Adoptable
6.000	G2	450	Manhole	Adoptable	PUMP	1200	Manhole	Adoptable
5.001	PUMP	1200	Manhole	Adoptable	DISPERSION_2		Junction	
2.000	ATT_2		Junction		ATT_1		Junction	
1.000	FT_1	450	Manhole	Adoptable	FT_2	450	Manhole	Adoptable

Pipeline Schedule

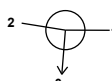
Link	Length (m)	Slope (1:X)	Dia (mm)	Link Type	US CL (m)	US IL (m)	US Depth (m)	DS CL (m)	DS IL (m)	DS Depth (m)
1.001	68.032	350.0	225	Circular	84.550	83.904	0.421	84.300	83.710	0.365
1.002	8.100	73.6	225	Circular	84.300	83.710	0.365	84.200	83.600	0.375
2.001	7.522	150.0	150	Circular	84.200	83.239	0.811	84.200	83.189	0.861
2.002	13.660	245.0	300	Circular	84.200	83.189	0.711	84.000	83.133	0.567
2.003	52.230	245.0	300	Circular	84.000	83.133	0.567	84.000	82.920	0.780
2.004	36.729	244.9	300	Circular	84.000	82.920	0.780	83.900	82.770	0.830

Link	US Node	Dia (mm)	Node Type	MH Type	DS Node	Dia (mm)	Node Type	MH Type
1.001	FT_2	450	Manhole	Adoptable	FT_3	450	Manhole	Adoptable
1.002	FT_3	450	Manhole	Adoptable	DISPERSION_3		Junction	
2.001	ATT_1		Junction		PP	1200	Manhole	Adoptable
2.002	PP	1200	Manhole	Adoptable	S04	1200	Manhole	Adoptable
2.003	S04	1200	Manhole	Adoptable	FCC	1200	Manhole	Adoptable
2.004	FCC	1200	Manhole	Adoptable	EX CULVERT		Junction	

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)
S01	391257.453	182734.579	84.700	0.550	450				
						0	3.000	84.150	150
S02	391265.022	182828.173	84.600	0.500	450				
						0	4.000	84.100	150
S03	391261.489	182784.484	84.650	0.885	450		1	4.000	83.808
						2	3.000	83.808	150
						0	3.001	83.765	225
DISPERSION_1	391289.398	182782.235	84.200	0.600		1	3.001	83.600	225
									
ATT_2	391382.388	182739.838	84.200	0.961					
						0	2.000	83.239	300
G1	391291.032	182797.250	82.500	0.700	450				
						0	5.000	81.800	100

Manhole Schedule

Node	Easting (m)	Northing (m)	CL (m)	Depth (m)	Dia (mm)	Connections	Link	IL (m)	Dia (mm)	
G2	391375.033	182790.458	82.500	0.700	450		0	6.000	81.800	100
PUMP	391332.769	182790.589	84.200	2.928	1200		1 2	6.000 5.000	81.272 81.272	100 100
DISPERSION_2	391332.366	182785.606	84.200	0.575			0 1	5.001 5.001	81.272 83.775	63 63
FT_1	391301.949	182828.698	84.800	0.575	450		0	1.000	84.225	225
FT_2	391413.932	182819.641	84.550	0.646	450		1 0	1.000 1.001	83.904 83.904	225 225
FT_3	391408.416	182751.833	84.300	0.590	450		1 0	1.001 1.002	83.710 83.710	225 225
DISPERSION_3	391407.820	182743.755	84.200	0.600			1	1.002	83.600	225
ATT_1	391343.406	182746.745	84.200	0.961			1 0	2.000 2.001	83.239 83.239	300 150
PP	391348.370	182741.094	84.200	1.011	1200		1 0	2.001 2.002	83.189 83.189	150 300
S04	391353.248	182728.335	84.000	0.867	1200		1 0	2.002 2.003	83.133 83.133	300 300
FCC	391351.008	182676.153	84.000	1.080	1200		1 0	2.003 2.004	82.920 82.920	300 300
EX CULVERT	391380.205	182653.870	83.900	1.130			1	2.004	82.770	300

Simulation Settings

Rainfall Methodology	FSR	Drain Down Time (mins)	2880
Rainfall Events	Singular	Additional Storage (m³/ha)	0.0
FSR Region	England and Wales	Starting Level (m)	
M5-60 (mm)	20.000	Check Discharge Rate(s)	✓
Ratio-R	0.400	2 year (l/s)	5.6
Summer CV	0.750	30 year (l/s)	12.7
Winter CV	1.000	100 year (l/s)	15.5
Analysis Speed	Detailed	Check Discharge Volume	✓
Skip Steady State	✓	100 year 360 minute (m³)	

Storm Durations

15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440

Return Period (years)	Climate Change (CC %)	Additional Area (A %)	Additional Flow (Q %)
1	0	0	0
30	0	0	0
30	40	0	0
100	0	0	0
100	45	0	0

Pre-development Discharge Rate

Site Makeup	Greenfield	Growth Factor 30 year	1.98
Greenfield Method	IH124	Growth Factor 100 year	2.42
Positively Drained Area (ha)	1.692	Betterment (%)	0
SAAR (mm)	766	QBar	6.4
Soil Index	3	Q 2 year (l/s)	5.6
SPR	0.40	Q 30 year (l/s)	12.7
Region	8	Q 100 year (l/s)	15.5
Growth Factor 2 year	0.88		

Pre-development Discharge Volume

Site Makeup	Greenfield	Return Period (years)	100
Greenfield Method	FSR/FEH	Climate Change (%)	0
Positively Drained Area (ha)	1.692	Storm Duration (mins)	360
Soil Index	3	Betterment (%)	0
SPR	0.40	PR	
CWI		Runoff Volume (m³)	

Node FCC Online Hydro-Brake® Control

Flap Valve	x	Objective	(HE) Minimise upstream storage
Replaces Downstream Link	✓	Sump Available	✓
Invert Level (m)	82.920	Product Number	CTL-SHE-0120-6400-0940-6400
Design Depth (m)	0.940	Min Outlet Diameter (m)	0.150
Design Flow (l/s)	6.4	Min Node Diameter (mm)	1200

Node PUMP Online Pump Control

Flap Valve	✓	Design Depth (m)	1.000	Switch off depth (m)	0.050
Replaces Downstream Link	✓	Design Flow (l/s)	2.0		
Invert Level (m)	81.272	Switch on depth (m)	0.100		

Depth (m) Flow (l/s)
1.000 2.000

Node PP Flow through Pond Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Main Channel Length (m)	50.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	83.600	Main Channel Slope (1:X)	2000.0
Safety Factor	2.0	Time to half empty (mins)	975	Main Channel n	0.030

Inlets

DISPERSION_1 DISPERSION_3 DISPERSION_2

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	5188.0	0.0	0.400	5188.0	0.0	0.401	0.0	0.0

Node ATT_1 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	83.239
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	705

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	936.1	0.0	0.400	936.1	0.0	0.401	0.0	0.0

Node ATT_2 Depth/Area Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Safety Factor	2.0	Invert Level (m)	83.239
Side Inf Coefficient (m/hr)	0.00000	Porosity	0.95	Time to half empty (mins)	705

Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)	Depth (m)	Area (m ²)	Inf Area (m ²)
0.000	65.0	65.0	0.400	65.0	76.4	0.401	0.0	76.4

Node FT_2 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.000
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	83.904	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	6	Diameter (mm)	350

Node FT_3 Link Surround Storage Structure

Base Inf Coefficient (m/hr)	0.00000	Porosity	0.30	Link	1.001
Side Inf Coefficient (m/hr)	0.00000	Invert Level (m)	83.710	Surround Shape	(Trench)
Safety Factor	2.0	Time to half empty (mins)	0	Diameter (mm)	350

Results for 1 year Critical Storm Duration. Lowest mass balance: 95.94%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S01	11	84.206	0.056	4.5	0.0090	0.0000	OK
15 minute winter	S02	11	84.157	0.057	4.5	0.0091	0.0000	OK
15 minute winter	S03	11	83.852	0.087	12.8	0.0139	0.0000	OK
15 minute winter	DISPERSION_1	11	83.729	0.129	12.8	0.0000	0.0000	OK
240 minute winter	ATT_2	232	83.394	0.155	6.2	9.5642	0.0000	OK
15 minute winter	G1	10	81.828	0.028	1.2	0.0044	0.0000	OK
15 minute winter	G2	10	81.828	0.028	1.2	0.0044	0.0000	OK
60 minute winter	PUMP	44	81.553	0.281	1.2	0.3180	0.0000	SURCHARGED
30 minute winter	DISPERSION_2	27	83.659	0.034	0.6	0.0000	0.0000	OK
15 minute winter	FT_1	11	84.302	0.077	7.7	0.0123	0.0000	OK
15 minute winter	FT_2	12	84.015	0.111	14.4	0.1300	0.0000	OK
15 minute winter	FT_3	12	83.801	0.091	19.0	0.0942	0.0000	OK
30 minute winter	DISPERSION_3	28	83.661	0.061	16.1	0.0000	0.0000	OK
240 minute winter	ATT_1	232	83.394	0.155	32.6	137.5523	0.0000	SURCHARGED
30 minute winter	PP	29	83.658	0.469	133.6	0.5301	0.0000	SURCHARGED
30 minute winter	S04	29	83.657	0.524	21.5	0.5929	0.0000	SURCHARGED
15 minute winter	FCC	9	83.680	0.760	28.0	0.8594	0.0000	SURCHARGED
15 minute summer	EX CULVERT	1	82.770	0.000	6.4	0.0000	0.0000	OK

Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S01	3.000	S03	4.3	0.722	0.296	0.3003	
15 minute winter	S02	4.000	S03	4.4	0.716	0.302	0.2667	
15 minute winter	S03	3.001	DISPERSION_1	12.8	0.687	0.323	0.5278	
15 minute winter	DISPERSION_1	Flow through Pond	PP	-42.2	-0.040	-0.013	61.4087	
240 minute winter	ATT_2	2.000	ATT_1	-6.2	-0.340	-0.088	1.4507	
15 minute winter	G1	5.000	PUMP	1.1	0.443	0.170	0.2027	
15 minute winter	G2	6.000	PUMP	1.1	0.443	0.170	0.2027	
60 minute winter	PUMP	Pump	DISPERSION_2	0.6				
30 minute winter	DISPERSION_2	Flow through Pond	PP	-37.8	-0.037	-0.012	70.4137	
15 minute winter	FT_1	1.000	FT_2	7.1	0.481	0.258	1.7479	
15 minute winter	FT_2	1.001	FT_3	12.5	0.743	0.455	1.1709	
15 minute winter	FT_3	1.002	DISPERSION_3	19.0	2.023	0.313	0.0810	
30 minute winter	DISPERSION_3	Flow through Pond	PP	-37.8	-0.037	-0.012	70.4137	
240 minute winter	ATT_1	2.001	PP	-32.6	-2.180	-2.256	0.1324	
30 minute winter	PP	2.002	S04	21.5	0.853	0.304	0.9619	
30 minute winter	S04	2.003	FCC	19.3	0.727	0.274	3.6780	
15 minute winter	FCC	Hydro-Brake®	EX CULVERT	6.4				91.0

Results for 30 year Critical Storm Duration. Lowest mass balance: 96.15%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S01	10	84.247	0.097	11.1	0.0155	0.0000	OK
15 minute winter	S02	10	84.199	0.099	11.1	0.0157	0.0000	OK
15 minute winter	S03	11	83.919	0.154	32.6	0.0245	0.0000	OK
15 minute winter	DISPERSION_1	11	83.822	0.222	31.9	0.0000	0.0000	OK
480 minute winter	ATT_2	424	83.678	0.439	8.3	24.7309	0.0000	SURCHARGED
30 minute winter	G1	25	81.929	0.129	2.2	0.0206	0.0000	SURCHARGED
30 minute winter	G2	25	81.929	0.129	2.2	0.0206	0.0000	SURCHARGED
30 minute winter	PUMP	25	81.923	0.651	4.4	0.7368	0.0000	SURCHARGED
60 minute winter	DISPERSION_2	53	83.770	0.145	2.8	0.0000	0.0000	OK
15 minute winter	FT_1	11	84.355	0.130	18.9	0.0207	0.0000	OK
15 minute winter	FT_2	12	84.127	0.223	35.9	0.4826	0.0000	OK
15 minute winter	FT_3	12	83.861	0.151	47.5	0.2179	0.0000	OK
60 minute winter	DISPERSION_3	55	83.771	0.171	28.1	0.0000	0.0000	OK
480 minute winter	ATT_1	432	83.687	0.448	32.4	356.1627	0.0000	SURCHARGED
60 minute winter	PP	56	83.769	0.580	208.9	0.6562	0.0000	SURCHARGED
60 minute winter	S04	56	83.769	0.636	25.6	0.7189	0.0000	FLOOD RISK
60 minute winter	FCC	56	83.767	0.847	20.3	0.9578	0.0000	FLOOD RISK
15 minute summer	EX CULVERT	1	82.770	0.000	6.4	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S01	3.000	S03	11.0	0.861	0.749	0.6446	
15 minute winter	S02	4.000	S03	11.0	0.855	0.759	0.5669	
15 minute winter	S03	3.001	DISPERSION_1	31.9	0.899	0.803	0.9615	
15 minute winter	DISPERSION_1	Flow through Pond	PP	-233.1	-0.104	-0.074	191.3376	
480 minute winter	ATT_2	2.000	ATT_1	-8.3	-0.304	-0.117	2.7878	
30 minute winter	G1	5.000	PUMP	2.2	0.501	0.325	0.3307	
30 minute winter	G2	6.000	PUMP	2.2	0.501	0.325	0.3307	
30 minute winter	PUMP	Pump	DISPERSION_2	1.3				
60 minute winter	DISPERSION_2	Flow through Pond	PP	-68.2	-0.044	-0.022	243.7044	
15 minute winter	FT_1	1.000	FT_2	17.8	0.586	0.648	3.5026	
15 minute winter	FT_2	1.001	FT_3	30.7	0.890	1.113	2.3119	
15 minute winter	FT_3	1.002	DISPERSION_3	46.7	2.449	0.769	0.1999	
60 minute winter	DISPERSION_3	Flow through Pond	PP	-68.2	-0.044	-0.022	243.7044	
480 minute winter	ATT_1	2.001	PP	-32.4	-1.956	-2.242	0.1324	
60 minute winter	PP	2.002	S04	25.6	0.901	0.362	0.9619	
60 minute winter	S04	2.003	FCC	20.3	0.728	0.288	3.6780	
60 minute winter	FCC	Hydro-Brake®	EX CULVERT	6.4				368.3

Results for 30 year +40% CC Critical Storm Duration. Lowest mass balance: 95.28%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S01	11	84.436	0.286	15.6	0.0455	0.0000	FLOOD RISK
15 minute winter	S02	11	84.400	0.300	15.6	0.0477	0.0000	FLOOD RISK
15 minute winter	S03	11	84.080	0.315	42.4	0.0500	0.0000	SURCHARGED
15 minute winter	DISPERSION_1	12	83.873	0.273	42.1	0.0000	0.0000	OK
600 minute winter	ATT_2	585	83.824	0.585	3.3	24.7309	0.0000	SURCHARGED
30 minute winter	G1	25	82.231	0.431	3.1	0.0685	0.0000	FLOOD RISK
30 minute winter	G2	25	82.231	0.431	3.1	0.0685	0.0000	FLOOD RISK
30 minute winter	PUMP	25	82.220	0.948	5.6	1.0720	0.0000	SURCHARGED
60 minute winter	DISPERSION_2	59	83.858	0.233	3.7	0.0000	0.0000	OK
15 minute winter	FT_1	12	84.410	0.185	26.5	0.0294	0.0000	OK
15 minute winter	FT_2	12	84.261	0.357	50.6	1.6406	0.0000	FLOOD RISK
15 minute winter	FT_3	12	83.901	0.191	62.8	0.3400	0.0000	OK
60 minute winter	DISPERSION_3	58	83.858	0.258	38.8	0.0000	0.0000	OK
600 minute winter	ATT_1	585	83.824	0.585	30.3	356.1627	0.0000	SURCHARGED
60 minute winter	PP	59	83.857	0.668	292.5	0.7550	0.0000	SURCHARGED
60 minute winter	S04	59	83.856	0.723	30.8	0.8175	0.0000	FLOOD RISK
60 minute winter	FCC	59	83.854	0.934	27.6	1.0562	0.0000	FLOOD RISK
15 minute summer	EX CULVERT	1	82.770	0.000	6.4	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S01	3.000	S03	14.1	0.875	0.961	0.8814	
15 minute winter	S02	4.000	S03	14.2	0.868	0.983	0.7717	
15 minute winter	S03	3.001	DISPERSION_1	42.1	1.060	1.060	1.1136	
15 minute winter	DISPERSION_1	Flow through Pond	PP	-336.7	-0.122	-0.107	289.1809	
600 minute winter	ATT_2	2.000	ATT_1	-3.3	-0.239	-0.047	2.7878	
30 minute winter	G1	5.000	PUMP	2.8	0.532	0.414	0.3307	
30 minute winter	G2	6.000	PUMP	2.8	0.532	0.414	0.3307	
30 minute winter	PUMP	Pump	DISPERSION_2	1.9				
60 minute winter	DISPERSION_2	Flow through Pond	PP	-96.4	-0.044	-0.031	379.8820	
15 minute winter	FT_1	1.000	FT_2	24.1	0.637	0.876	4.1973	
15 minute winter	FT_2	1.001	FT_3	39.1	0.994	1.418	2.5745	
15 minute winter	FT_3	1.002	DISPERSION_3	61.4	2.455	1.013	0.2806	
60 minute winter	DISPERSION_3	Flow through Pond	PP	-96.4	-0.044	-0.031	379.8820	
600 minute winter	ATT_1	2.001	PP	-30.3	-1.796	-2.097	0.1324	
60 minute winter	PP	2.002	S04	30.8	0.968	0.436	0.9619	
60 minute winter	S04	2.003	FCC	27.6	0.775	0.391	3.6780	
60 minute winter	FCC	Hydro-Brake®	EX CULVERT	6.4				510.8

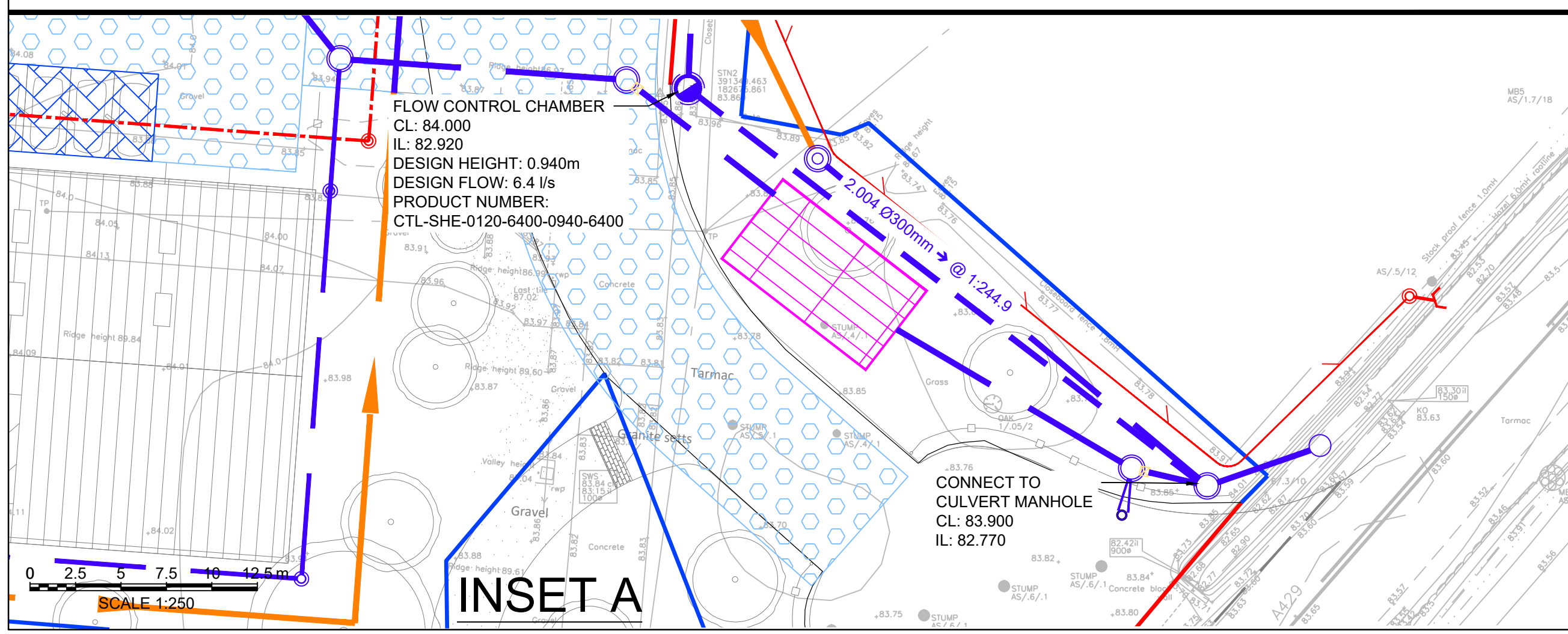
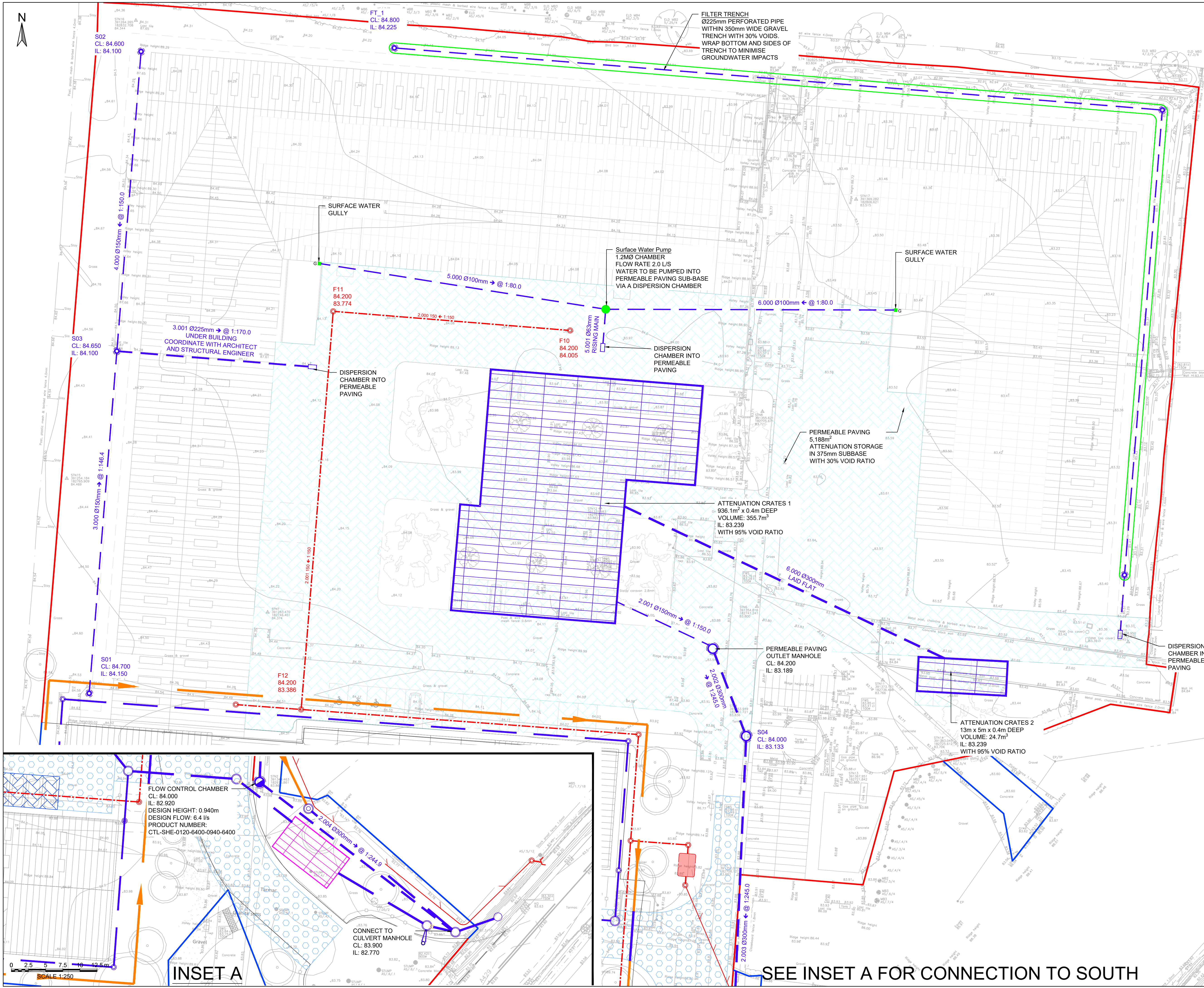
Results for 100 year Critical Storm Duration. Lowest mass balance: 98.23%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S01	11	84.295	0.145	14.4	0.0231	0.0000	OK
15 minute winter	S02	11	84.290	0.190	14.4	0.0303	0.0000	SURCHARGED
15 minute winter	S03	11	84.027	0.262	41.6	0.0417	0.0000	SURCHARGED
15 minute winter	DISPERSION_1	12	83.858	0.258	38.4	0.0000	0.0000	OK
240 minute winter	ATT_2	260	83.785	0.546	6.1	24.7309	0.0000	SURCHARGED
30 minute winter	G1	25	82.167	0.367	2.9	0.0584	0.0000	SURCHARGED
30 minute winter	G2	25	82.167	0.367	2.9	0.0584	0.0000	SURCHARGED
30 minute winter	PUMP	25	82.157	0.885	5.3	1.0014	0.0000	SURCHARGED
60 minute winter	DISPERSION_2	59	83.840	0.215	2.5	0.0000	0.0000	OK
15 minute winter	FT_1	11	84.381	0.156	24.6	0.0248	0.0000	OK
15 minute winter	FT_2	12	84.228	0.324	46.9	1.3011	0.0000	SURCHARGED
15 minute winter	FT_3	12	83.891	0.181	59.5	0.3055	0.0000	OK
60 minute winter	DISPERSION_3	60	83.840	0.240	36.6	0.0000	0.0000	OK
480 minute winter	ATT_1	464	83.779	0.540	32.3	356.1627	0.0000	SURCHARGED
60 minute winter	PP	59	83.838	0.649	274.7	0.7344	0.0000	SURCHARGED
60 minute winter	S04	59	83.838	0.705	30.7	0.7970	0.0000	FLOOD RISK
60 minute winter	FCC	59	83.836	0.916	26.2	1.0356	0.0000	FLOOD RISK
15 minute summer	EX CULVERT	1	82.770	0.000	6.4	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S01	3.000	S03	14.0	0.876	0.956	0.8773	
15 minute winter	S02	4.000	S03	13.8	0.870	0.952	0.7717	
15 minute winter	S03	3.001	DISPERSION_1	38.4	0.966	0.967	1.1136	
15 minute winter	DISPERSION_1	Flow through Pond	PP	-306.5	-0.122	-0.097	264.0206	
240 minute winter	ATT_2	2.000	ATT_1	-6.1	-0.339	-0.087	2.7878	
30 minute winter	G1	5.000	PUMP	2.6	0.501	0.389	0.3307	
30 minute winter	G2	6.000	PUMP	2.6	0.501	0.389	0.3307	
30 minute winter	PUMP	Pump	DISPERSION_2	1.8				
60 minute winter	DISPERSION_2	Flow through Pond	PP	-89.6	-0.044	-0.028	351.5440	
15 minute winter	FT_1	1.000	FT_2	23.0	0.617	0.835	3.8865	
15 minute winter	FT_2	1.001	FT_3	37.6	0.969	1.364	2.5174	
15 minute winter	FT_3	1.002	DISPERSION_3	58.3	2.467	0.961	0.2620	
60 minute winter	DISPERSION_3	Flow through Pond	PP	-89.6	-0.044	-0.028	351.5440	
480 minute winter	ATT_1	2.001	PP	-32.3	-1.976	-2.236	0.1324	
60 minute winter	PP	2.002	S04	30.7	0.955	0.434	0.9619	
60 minute winter	S04	2.003	FCC	26.2	0.764	0.371	3.6780	
60 minute winter	FCC	Hydro-Brake®	EX CULVERT	6.4				481.9

Results for 100 year +45% CC Critical Storm Duration. Lowest mass balance: 96.47%

Node Event	US Node	Peak (mins)	Level (m)	Depth (m)	Inflow (l/s)	Node Vol (m³)	Flood (m³)	Status
15 minute winter	S01	10	84.700	0.550	20.9	0.0875	0.4416	FLOOD
15 minute winter	S02	10	84.600	0.500	20.9	0.0795	0.5495	FLOOD
15 minute winter	S03	10	84.210	0.445	52.5	0.0708	0.0000	SURCHARGED
600 minute winter	DISPERSION_1	555	84.004	0.404	5.6	0.0000	0.0000	OK
600 minute winter	ATT_2	555	84.004	0.765	2.5	24.7309	0.0000	FLOOD RISK
30 minute winter	G1	21	82.500	0.700	4.2	0.1113	0.2876	FLOOD
30 minute winter	G2	21	82.500	0.700	4.2	0.1113	0.2876	FLOOD
30 minute winter	PUMP	22	82.491	1.219	5.7	1.3788	0.0000	SURCHARGED
600 minute winter	DISPERSION_2	555	84.003	0.378	1.0	0.0000	0.0000	OK
15 minute winter	FT_1	10	84.800	0.575	35.7	0.0914	0.9680	FLOOD
15 minute winter	FT_2	12	84.550	0.646	66.0	4.4778	0.4618	FLOOD
15 minute winter	FT_3	12	84.009	0.299	76.4	0.9005	0.0000	FLOOD RISK
600 minute winter	DISPERSION_3	555	84.004	0.404	12.0	0.0000	0.0000	OK
600 minute winter	ATT_1	555	84.004	0.765	28.5	356.1627	0.0000	FLOOD RISK
600 minute winter	PP	555	84.003	0.814	69.6	0.9210	0.0000	FLOOD RISK
720 minute winter	S04	630	84.000	0.867	12.6	0.9806	23.1156	FLOOD
600 minute winter	FCC	540	83.998	1.078	8.3	1.2189	0.0000	FLOOD RISK
15 minute summer	EX CULVERT	1	82.770	0.000	6.4	0.0000	0.0000	OK
Link Event (Upstream Depth)	US Node	Link	DS Node	Outflow (l/s)	Velocity (m/s)	Flow/Cap	Link Vol (m³)	Discharge Vol (m³)
15 minute winter	S01	3.000	S03	16.9	0.959	1.153	0.8814	
15 minute winter	S02	4.000	S03	16.1	0.917	1.116	0.7717	
15 minute winter	S03	3.001	DISPERSION_1	52.3	1.315	1.316	1.1136	
600 minute winter	DISPERSION_1	Flow through Pond	PP	-37.5	0.026	-0.012	601.7758	
600 minute winter	ATT_2	2.000	ATT_1	-2.5	-0.227	-0.035	2.7878	
30 minute winter	G1	5.000	PUMP	2.8	0.523	0.419	0.3307	
30 minute winter	G2	6.000	PUMP	2.8	0.523	0.419	0.3307	
30 minute winter	PUMP	Pump	DISPERSION_2	2.0				
600 minute winter	DISPERSION_2	Flow through Pond	PP	-37.5	0.026	-0.012	601.7758	
15 minute winter	FT_1	1.000	FT_2	30.4	0.764	1.102	4.4682	
15 minute winter	FT_2	1.001	FT_3	44.3	1.114	1.608	2.7057	
15 minute winter	FT_3	1.002	DISPERSION_3	72.7	2.573	1.199	0.3221	
600 minute winter	DISPERSION_3	Flow through Pond	PP	-37.5	0.026	-0.012	601.7758	
600 minute winter	ATT_1	2.001	PP	-28.5	-1.634	-1.969	0.1324	
600 minute winter	PP	2.002	S04	14.1	0.640	0.200	0.9619	
720 minute winter	S04	2.003	FCC	7.9	0.339	0.112	3.6780	
600 minute winter	FCC	Hydro-Brake®	EX CULVERT	6.8				1168.2

Appendix D: Drainage Strategy



FILTER TRENCH
Ø225mm PERFORATED PIPE
WITHIN 350mm WIDE GRAVEL
TRENCH WITH 30% VOIDS.
WRAP BOTTOM AND SIDES OF
TRENCH TO MINIMISE
GROUNDWATER IMPACTS

Surface Water Pump
1.2MØ CHAMBER
FLOW RATE 2.0 L/S
WATER TO BE PUMPED INTO
PERMEABLE PAVING SUB-BASE
VIA A DISPERSION CHAMBER

PERMEABLE PAVING
5,188m²
ATTENUATION STORAGE
IN 375mm SUBBASE
WITH 30% VOID RATIO

ATTENUATION CRATES 1
936.1m² x 0.4m DEEP
VOLUME: 355.7m³
IL: 83.239
WITH 95% VOID RATIO

PERMEABLE PAVING
OUTLET MANHOLE
CL: 84.200
IL: 83.189

ATTENUATION CRATES 2
13m x 5m x 0.4m DEEP
VOLUME: 24.7m³
IL: 83.239
WITH 95% VOID RATIO

SEE INSET A FOR CONNECTION TO SOUTH

- NOTES:
- DO NOT SCALE FROM THIS DRAWING.
 - THIS DRAWING IS FOR ILLUSTRATIVE PURPOSES ONLY AND NOT FOR CONSTRUCTION.
 - THIS DRAWING IS TO BE READ AND PRINTED IN COLOUR.
 - ALL DIMENSIONS ARE SHOWN IN METRES, UNLESS SPECIFIED OTHERWISE.
 - ACC DRAINS TO BE CONSTRUCTED AT SERVICE YARD THRESHOLDS TO DIRECT SURFACE WATER RUNOFF TO TREATMENT. LOCATIONS TO BE VERIFIED WITH ARCHITECT AND OWNER PRIOR TO CONSTRUCTION.
 - GULLIES TO BE CONSTRUCTED ON SITE TO DIRECT PARKING LOT SURFACE WATER RUNOFF TO TREATMENT. VERIFY LOCATIONS WITH ARCHITECT AND OWNER PRIOR TO CONSTRUCTION.
 - PERMEABLE PAVING AT PARKING BAYS SHALL HAVE PERFORATED OVERFLOW PIPES DESIGNED AND LOCATED IN THE FIELD.
- KEY:
- PROPOSED SURFACE WATER PIPE
 - PROPOSED SURFACE WATER MANHOLE
 - PROPOSED FLOW CONTROL CHAMBER
 - PROPOSED SURFACE WATER PUMP
 - PROPOSED GULLY
 - PROPOSED FILTER TRENCH
 - PROPOSED HEADWALL
 - PROPOSED ATTENUATION TANK
 - PERMEABLE BLOCK PAVING
 - PROPOSED FOUL WATER PIPE
 - PROPOSED FOUL WATER MANHOLE (4500)

PRELIMINARY ISSUE

P01	PRELIMINARY FIRST ISSUE	07.04.2026	JD	MM	MM
Rev	Description	Date	By	CHK	App

Issuing Office
Tetra Tech Leicester
4th Floor, No1 Great Central Square,
Vaughan Way, Leicester, United Kingdom,
LE1 4JS
Tel: +44 (0)11 6234 8000
www.tetrattechurope.com



Client
CORSTON PROPERTIES

Project Name
KINGWAY NURSERY

Sheet Title
**DRAINAGE LAYOUT
PHASE 2**

TTE Project Number	Drawn By	Date	Checked By	Date	Approved By	Date	Scale @ A1	Suitability
784-0080037	JD	Apr '26	MM	Apr '26	MM	Apr '26	1:250	S0
Client Project Number	Originator	Function	Spatial	Form	Role	Number	Revision	
B080037	- TTE	- HDG	- ZZ	- DR	- CH	- 0501	P01	

© Copyright Tetra Tech TTE_MT_v1

Appendix E: Maintenance Guidelines

TABLE 21.3 Operation and maintenance requirements for attenuation storage tanks

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then annually
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	For systems where rainfall infiltrates into the tank from above, check surface of filter for blockage by sediment, algae or other matter; remove and replace surface infiltration medium as necessary.	Annually
	Remove sediment from pre-treatment structures and/or internal forebays	Annually, or as required
Remedial actions	Repair/rehabilitate inlets, outlet, overflows and vents	As required
Monitoring	Inspect/check all inlets, outlets, vents and overflows to ensure that they are in good condition and operating as designed	Annually
	Survey inside of tank for sediment build-up and remove if necessary	Every 5 years or as required

TABLE 20.15 Operation and maintenance requirements for pervious pavements

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Brushing and vacuuming (standard cosmetic sweep over whole surface)	Once a year, after autumn leaf fall, or reduced frequency as required, based on site-specific observations of clogging or manufacturer's recommendations – pay particular attention to areas where water runs onto pervious surface from adjacent impermeable areas as this area is most likely to collect the most sediment
Occasional maintenance	Stabilise and mow contributing and adjacent areas	As required
	Removal of weeds or management using glyphosate applied directly into the weeds by an applicator rather than spraying	As required – once per year on less frequently used pavements
Remedial Actions	Remediate any landscaping which, through vegetation maintenance or soil slip, has been raised to within 50 mm of the level of the paving	As required
	Remedial work to any depressions, rutting and cracked or broken blocks considered detrimental to the structural performance or a hazard to users, and replace lost jointing material	As required
	Rehabilitation of surface and upper substructure by remedial sweeping	Every 10 to 15 years or as required (if infiltration performance is reduced due to significant clogging)
Monitoring	Initial inspection	Monthly for three months after installation
	Inspect for evidence of poor operation and/or weed growth – if required, take remedial action	Three-monthly, 48 h after large storms in first six months
	Inspect silt accumulation rates and establish appropriate brushing frequencies	Annually
	Monitor inspection chambers	Annually