SUDS REPORT FOR

87 HIGH STREET, 1-5 CENTRAL AVENUE,

SITTINGBOURNE, KENT, ME10 4AU

DOCUMENT NUMBER.: C3238-R1-REV-A

PREPARED BY

Nimbus
ENGINEERING CONSULTANTS

Contents

APPENDICES

1. INTRODUCTION

1.1 Appointment

Nimbus Engineering have been appointed to provide a solution on the management of surface water run-off and to ensure that there is no risk of flooding caused by the proposed change of use of existing first and second floor from office to residential. Including erection of a third floor, resulting in a three storey rear extension to create 22 flat units

The existing and proposed site plans, can be found in Appendix A.

1.2 Objectives

This report will address the concerns raised by the Borough and provide details on a suitable Sustainable Urban Drainage System (SuDS) in order to reduce the surface water run-off leaving the site and show that the proposed development will not increase Flood Risk at the site or elsewhere.

1.3 Limitations

The general limitations of this report are:

- A number of data and information sources have been used to prepare this report. Whilst Nimbus Engineering believes them to be trustworthy, Nimbus Engineering is unable to guarantee the accuracy of data and information that has been provided by others;

- This report has been prepared using the best data and information that was available at the time of writing. There is the potential for further information or data to become available, leading to changes in the conclusions drawn by this report, for which Nimbus Engineering cannot be held responsible.

2. GEOLOGY OF THE AREA

According to, the British Geological Survey, the superficial deposits at site are unknown. However, the bedrock in the area is of the Seaford Chalk formation, consisting of Chalk, as shown in Figure 1, below.

Figure 1- Bedrock at the site. (Source: British Geological Society Website (Contains British Geological Survey materials © URKI [2024]. Base mapping is provided by ESRI)

3. SUSTAINABLE URBAN DRAINAGE SYSTEMS

Surface water arising from a developed site should, as far as is practicable, be managed in a sustainable manner to mimic the surface water flows arising from the site prior to the proposed development, while reducing the flood risk to the site itself and elsewhere, taking climate change into account.

Reducing the rate of surface water discharge from urban sites is one of the most effective ways of reducing and managing flood risk.

Traditional piped surface water systems work by removing surface water from our developments as quickly as possible, however this can cause various adverse impacts:

- Increased downstream flooding, and sudden rises in flow rates and water levels in local water courses.

- Reduction in groundwater levels and dry weather flows in watercourses.

- Reduce amenity and adversely affect biodiversity due to the surface water run-off containing contaminants such as oil, organic matter and toxic materials

SuDS are defined as a sequence of management principles and control structures designed to drain surface water in a more sustainable fashion than conventional piped drainage techniques. SuDS should utilise the natural landscape of an area which as well as slowing down the rate of runoff provides a number of environmental, ecological and social benefits.

These include:

- Protection and enhancement of water quality. As well as providing on-site attenuation, SuDS treat the water, resulting in an improved quality of water leaving the site. This is achieved when the water passes through fine soils and the roots of specially selected plants. Pollutants washed off the hard landscaping by rainfall will be safely removed before the water reaches the natural receiving water course.

- A sympathetic approach to the environmental setting by providing opportunities to create habitats for flora and fauna in urban watercourses and open spaces.

- Meeting the amenity and social needs of the local community and residents in the creation of attractive green spaces.

The various types of SuDS include:

Permeable paving	
Soakaways;	
Swales and basins;	
Bioretention/ rain gardens;	
Green roofs and rainwater re-use;	

Preferably a combination of these techniques should be used as part of the surface water management train, and it is important for all stakeholders, such as developers, architects, landscape architects and engineers to work in order to determine a feasible solution.

The SuDS management train is shown below, and this has been followed when proposing the proposed Sustainable Urban Drainage Systems for this site.

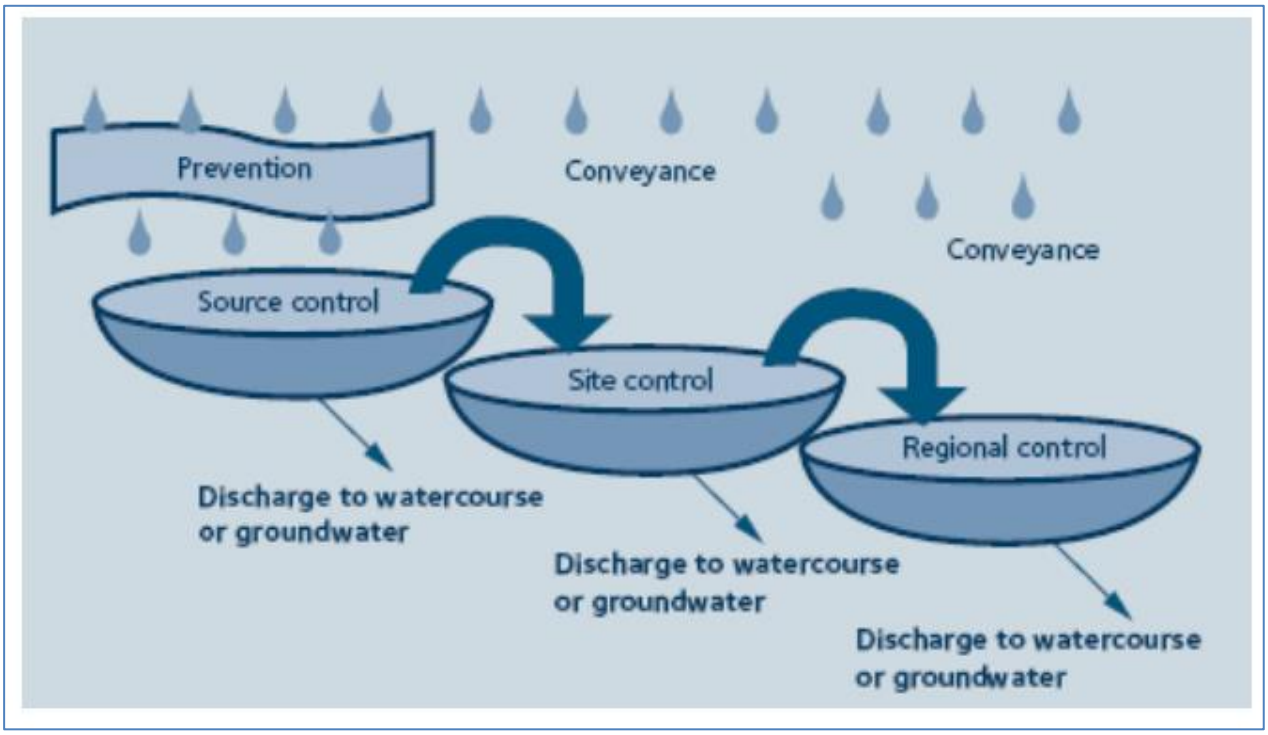


Figure 2 – SuDS Management Train

4. PROPOSED SOLUTION

The proposals are for an upwards and rear extension, in order to follow the SuDS management train, the proposed roof is flat, therefore green or sedum roofing, will be utilised for the whole roof area, which means that one level of treatment is provided for the whole roof area, as well as reducing the peak flow rate of surface water runoff from this area.

There will be no changes to the external hardstanding areas, however the remaining surface water runoff from the proposed rear extension, will be conveyed into a crate system attenuation tank, which has been modelled for the 1 in 100 year plus 45% climate change event, using FEH data, with restricted flow to be discharged to the existing surface water sewer at the site, at a rate of 0.5 l/s, to avoid blockages.

The proposed SuDS Layout and design drawings have been provided in Appendix A, the hydraulic modelling files can be found in Appendix B, and the water authority asset plans can be found in Appendix C.

5. SuDS PROPOSALS FOR DEVELOPMENT

In accordance with the CIRIA SuDS Manual C753, the SuDS hierarchy has been considered in relation to the site-specific constraints and its surroundings. Table 1 below outlines the hierarchical approach considered for the development 87 High Street, 1-5 Central Avenue, Sittingbourne, Kent, ME10 4AU.

Sustainable Drainage Proposal	Description	Constraints/Comments	Appropriate
Rainwater Use as a Resource	Use of rainwater runoff for reuse, e.g. Rainwater harvesting tanks, Blue Roofs for irrigation	Two wall mounted rainwater harvesting tanks	Yes
Rainwater Full Infiltration to Ground (Source Control)	Infiltration devices and/or soakaways. Surface water runoff stored on site and gradually percolating into receiving ground	The underlying geology consists of chalk however there is no available space for this 10 metres away from the foundations of any building, and a surf ace water sewer is present.	No
Rainwater Partial Infiltration to Ground (Source Control)	Installation of permeable/porous surfacing	There are no new hardstanding areas proposed	No
Rainwater attenuation in green infrastructure features for gradual release	The onsite storage of all surface water runoff which can then be gradually conveyed to a nearby watercourse, sewer or infiltration into the ground. Forms of green infrastructure features: Green Roofs, Raingardens, Ponds, Swales, Detention basins, Infiltration Trenches and raingarden planters	The roof will be formed of either sedum or green roofing	Yes

Rainwater discharge direct to a watercourse	All surface water runoff on site discharged at a restricted rate to a nearby watercourse	N/A	N/A
Controlled rainwater discharge to a surface water sewer or drain	All surface water runoff on site discharged at a restricted rate to a nearby surface water sewer or drain, all rainwater runoff stored in below ground attenuation features. E.g. oversized pipes or geo-cellular tanks	Remaining surface water is restricted to 0.5 l/s and discharged to an existing surface water sewer adjacent to the site	Yes
Controlled rainwater discharge to a combined sewer	All surface water runoff on site discharged at a restricted rate to a nearby combined sewer all rainwater runoff stored in below ground attenuation features. E.g. oversized pipes or geo-cellular tanks	N/A	N/A

Table 1: SuDS Control Measures for Development

6. TIMESCALE AND MAINTENANCE OF WORKS

All drainage works shall be completed prior to first occupation and there shall be no adoption of any of the drainage works within the site, the managers of the site will be responsible to oversee the long-term maintenance of the drains. The following outline maintenance strategy sets out recommended timescales for maintenance of the proposed drainage works, in line with CIRIA SuDS Design Guide:

- Regular inspection will comprise the inspection and cleaning of catchment, gutters, filters and tanks to reduce the likelihood of contamination, this is recommended to be carried out every 3 to 6 months.

Maintenance schedule	Required action	Typical Frequency
Regular Inspections	Inspect all components including soil substrate vegetation, drains irrigation systems (if applicable), membranes and roof structure for proper operation integrity of waterproofing and structural stability	Annually and after severe storms
	Inspect soil substrate for evidence of erosion channels and identify any sediment sources	Annually and after severe storms
	Inspect drain inlets to ensure unrestricted runoff from the drainage layer to the conveyance or roof drain system	Annually and after severe storms
	Inspect underside of roof for evidence of leakage	Annually and after severe storms
Regular Maintenance	Remove debris and litter to prevent clogging of inlet drains and interference with plant growth	Six monthly and annually or as required
	During establishment (ie year one) replace dead plants as required	Monthly (but usually responsibility of manufacturer)
	Post establishment, replace dead plants as required (where > 5% of coverage)	Annually (in autumn)
	Remove fallen leaves and debris from deciduous plant foliage	Six monthly or as required
	Remove nuisance and invasive vegetation, including weeds	Six monthly or as required
	Mow grasses, prune shrubs and manage other planting (if appropriate) as required- clippings should be removed and not allowed to accumulate	Six monthly or as required
Remedial Actions	If erosion channels are evident, these should e stabilised with extra soil substrate similar to the original material and sources of erosion damage should be identified and controlled	As required
	If drain inlet has settled, cracked or moved, investigate and repair as appropriate	As required

Table 2: Operation and maintenance requirement for green roofs.

Maintenance schedule	Required action	Typical Frequency
Regular maintenance	Inspection of the tank for debris and sediment build-up, inlets/outlets/withdraw devices, overflow areas, pumps, filters	Annually (and following poor performance)
	Cleaning of tank, inlets, outlets, gutters. Withdrawal devices and roof drain filters of silts and other debris	Annually (and following poor performance)
Occasional maintenance	Cleaning and/ or replacement of any filters	Three monthly (or as required)
Remedial actions	Repair of overflow erosion damage or damage to tank	As required
	Pump repairs	As required

Table 3: Operation and maintenance requirement for RWH systems.

The following table outlines the maintenance requirements for the attenuation tank:

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 blockages 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 4: Operation and maintenance requirements for attenuation storage tanks.

The following table outlines the maintenance requirements for the flow control chambers:

Maintenance schedule	Required action	Typical frequency
Regular maintenance	Inspect from surface and identify any areas that are not operating correctly. If required, take remedial action	Monthly for 3 months, then 6 monthly intervals
	Remove debris from the catchment surface (where it may cause risks to performance)	Monthly
	Orifice plates within plastic chambers or vortex controls to be jetted from the surface after heavy rainfall events to remove any debris or silt	As required
	Empty catchpits upstream of SuDS features to ensure no debris is passed downstream	3 months or as required
Remedial actions*	In the event of a blockage, a vortex flow control can be removed from the chamber via the lifting cabled located at the access, this will be cleaned at surface level and reinstalled into its original location	As required
	In the event of a blockage, the orifice plate should be jetted from surface, and if blockage is not cleared the orifice plate can be removed by removing fixing bolts. These fixing bolts should be checked and replaced if needed.	As required
Monitoring	Following installation it is important that any extraneous materials i.e. building materials: granular backfill, in-situ pour concrete etc are removed from the unit and the new flow control chamber is fully jetted down	Upon installation
	Inspect/check chamber channel for any debris or silt build-up. Upstream chambers should be checked at the same time as these monitoring works to ensure network is operating at full capacity.	Annually

Table 5: Operation and maintenance requirements for flow control chambers

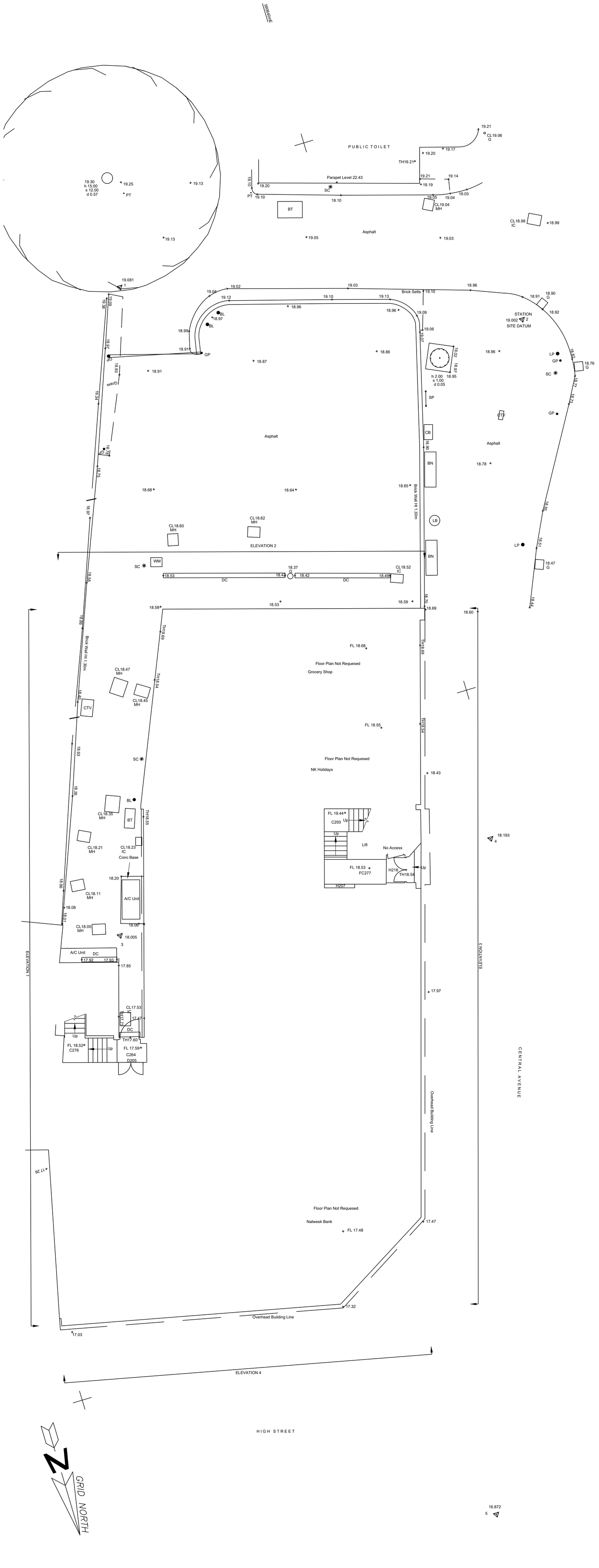
7. CONCLUSIONS

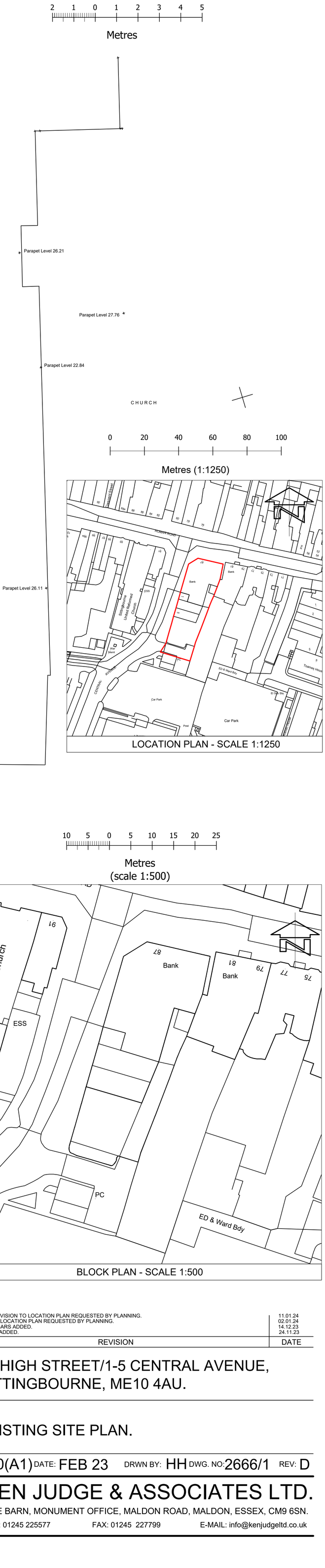
The purpose of this report is to provide a suitable SuDS strategy to the Lead Local Flooding Authority relating to surface water flows arising due to the proposed development.

As requested, SuDS have been incorporated into this design, in the form of two wall mounted rainwater harvesting tank, green or sedum roofing, with the remaining surface water runoff be attenuated and the site and conveyed to the existing surface water network with the site at a rate of 0.5 l/s.

APPENDIX A – DRAWINGS

DO NOT SCALE FROM THIS DRAWING. Dimensions stated are for guidance only, contractor to verify all boundary positions and dimensions on site prior to commencing any works, making workshop drawings or obtaining any materials.
No site supervision is implied or undertaken unless otherwise separately arranged.
The drawing does not indicate the extent of any excavation works and the contractor is to determine this prior to submitting a quotation for the works or commencing any works.
The drawing does not indicate or imply the structural condition of the property, the survey carried out was a "measure survey" for assistance in the preparation of details for Planning application purposes only. The details shown assume that the property is in sound condition and that there are no adverse ground conditions.





NO	REVISION	DATE
REV D	FURTHER REVISION TO LOCATION PLAN REQUESTED BY PLANNING.	11.01.24
REV C	REVISION TO LOCATION PLAN REQUESTED BY PLANNING.	02.01.24
REV B	NEW SCALE BARS ADDED.	14.12.23
REV A	BLOCK PLAN ADDED.	24.11.23

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE,
SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

EXISTING SITE PLAN.

SCALE: 1:100(A1) DATE: FEB 23 DRWN BY: HH DWG. NO: 2666/1 REV: D

KEN JUDGE & ASSOCIATES LTD.
THE BARN, MONUMENT OFFICE, MALDON ROAD, MALDON, ESSEX, CM9 6SN.
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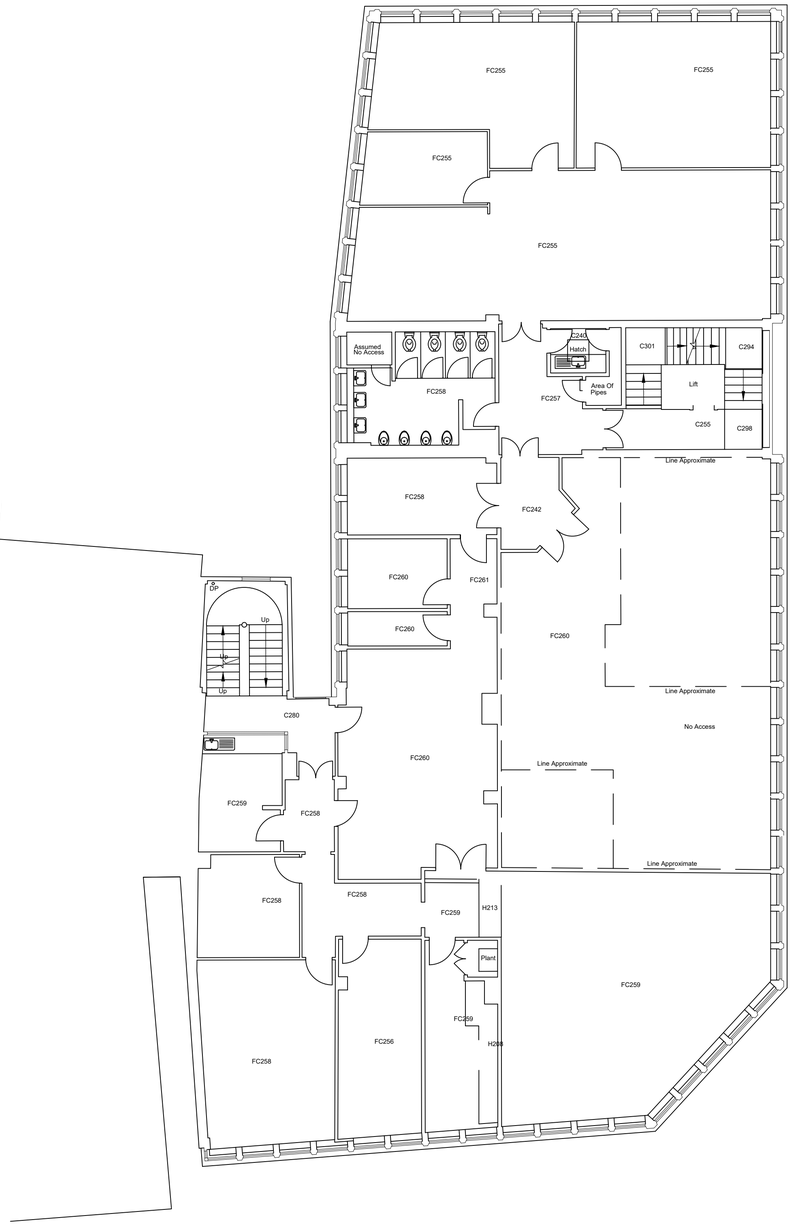
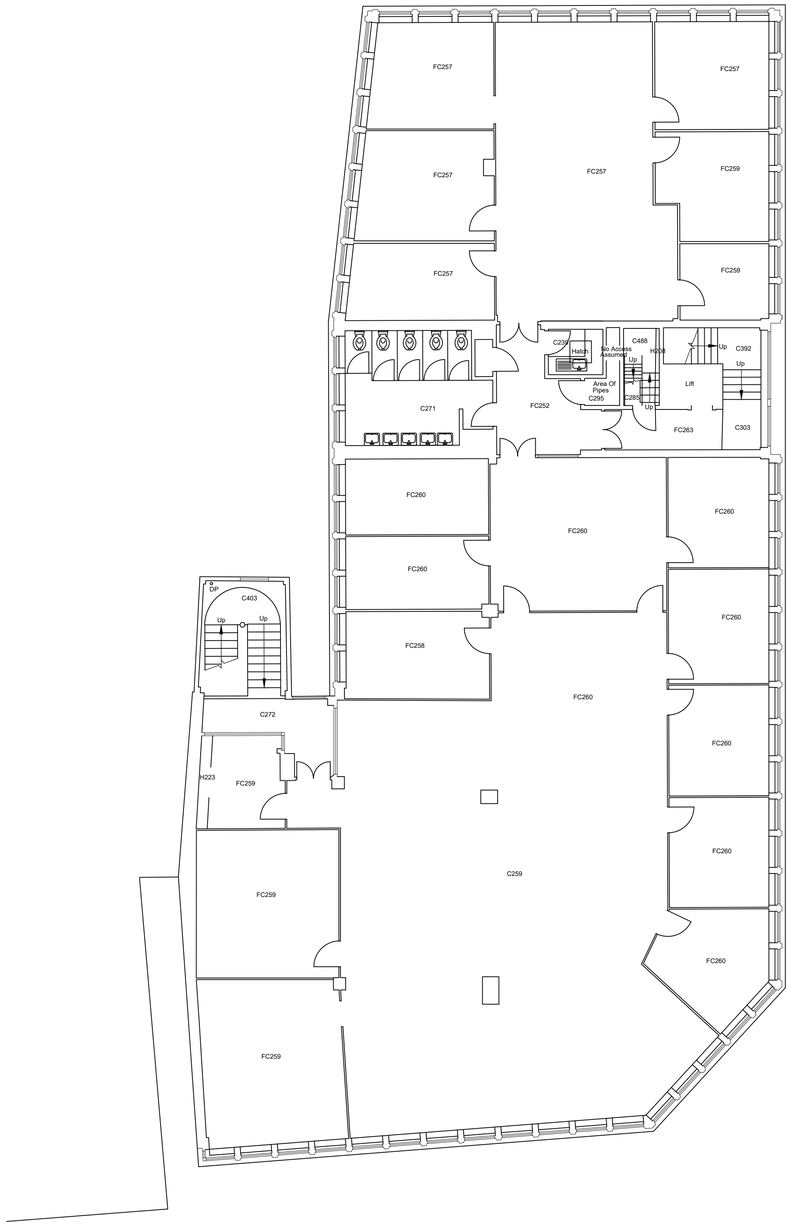
2 1 0 1 2 3 4 5

Metres



EXISTING FIRST FLOOR PLAN



EXISTING SECOND FLOOR PLAN

GRID NORTH

NO	REVISION	DATE

CONTRACT

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DRAWING TITLE

EXISTING FIRST & SECOND FLOOR PLANS.

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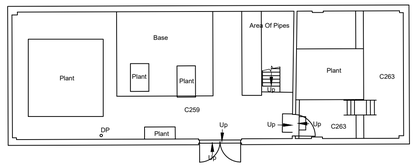
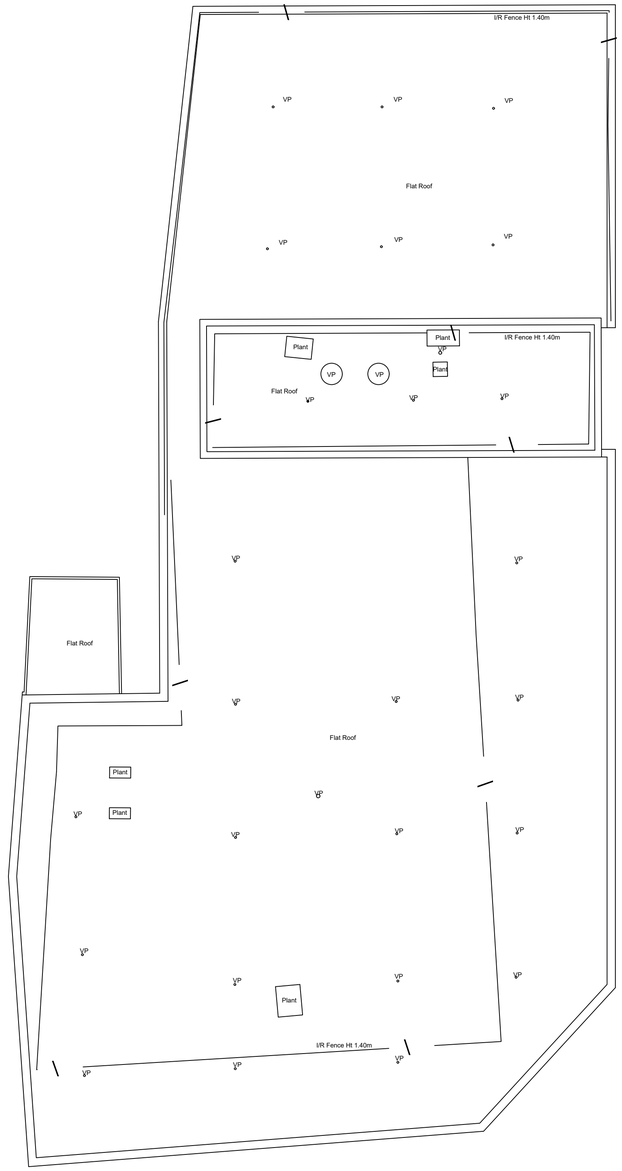


EXISTING PLANT ROOM PLAN



EXISTING ROOF PLAN

NO	REVISION	DATE

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

EXISTING PLANT AND ROOF PLANS.

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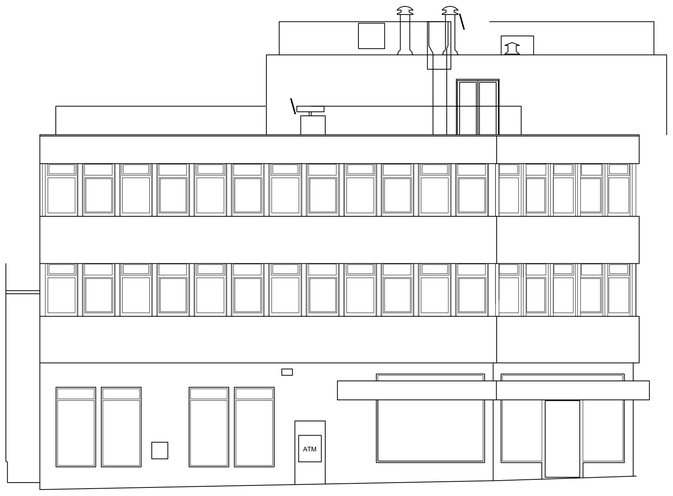
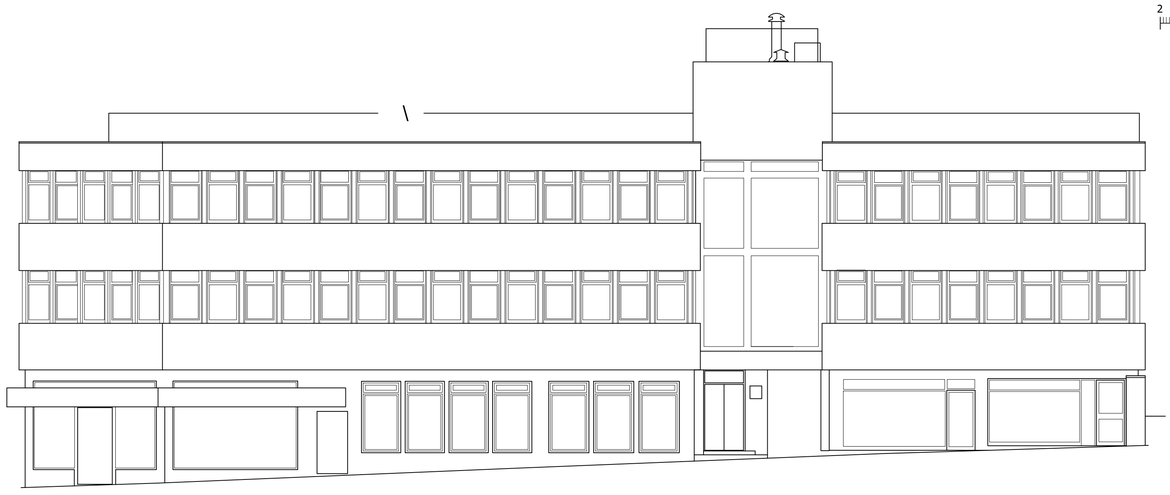


EXISTING FRONT ELEVATION



EXISTING SIDE ELEVATION

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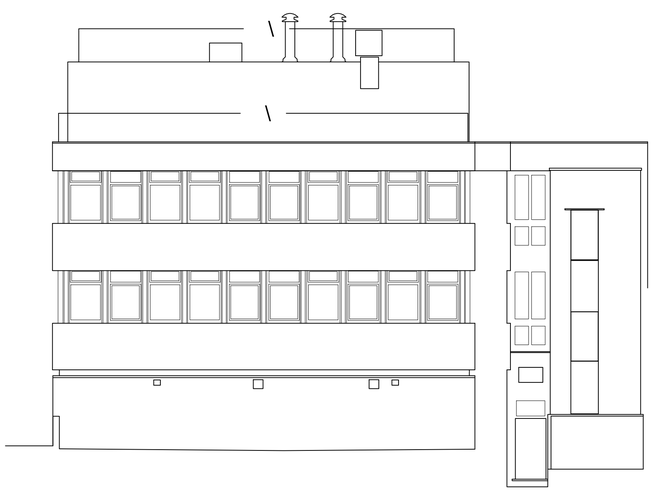
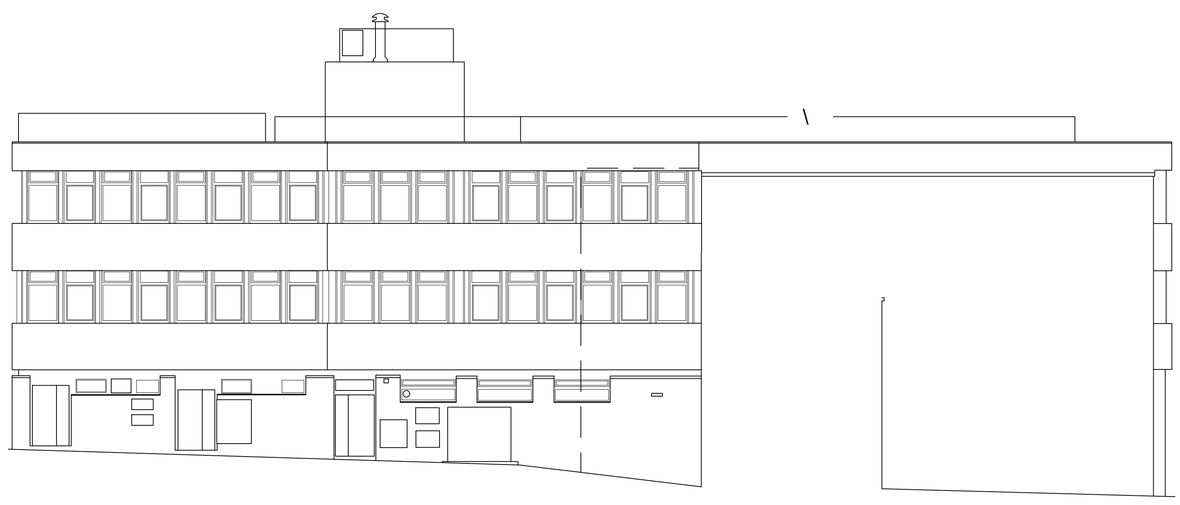
Metres



EXISTING REAR ELEVATION



EXISTING SIDE ELEVATION

NO	REVISION	DATE

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EXISTING ELEVATIONS

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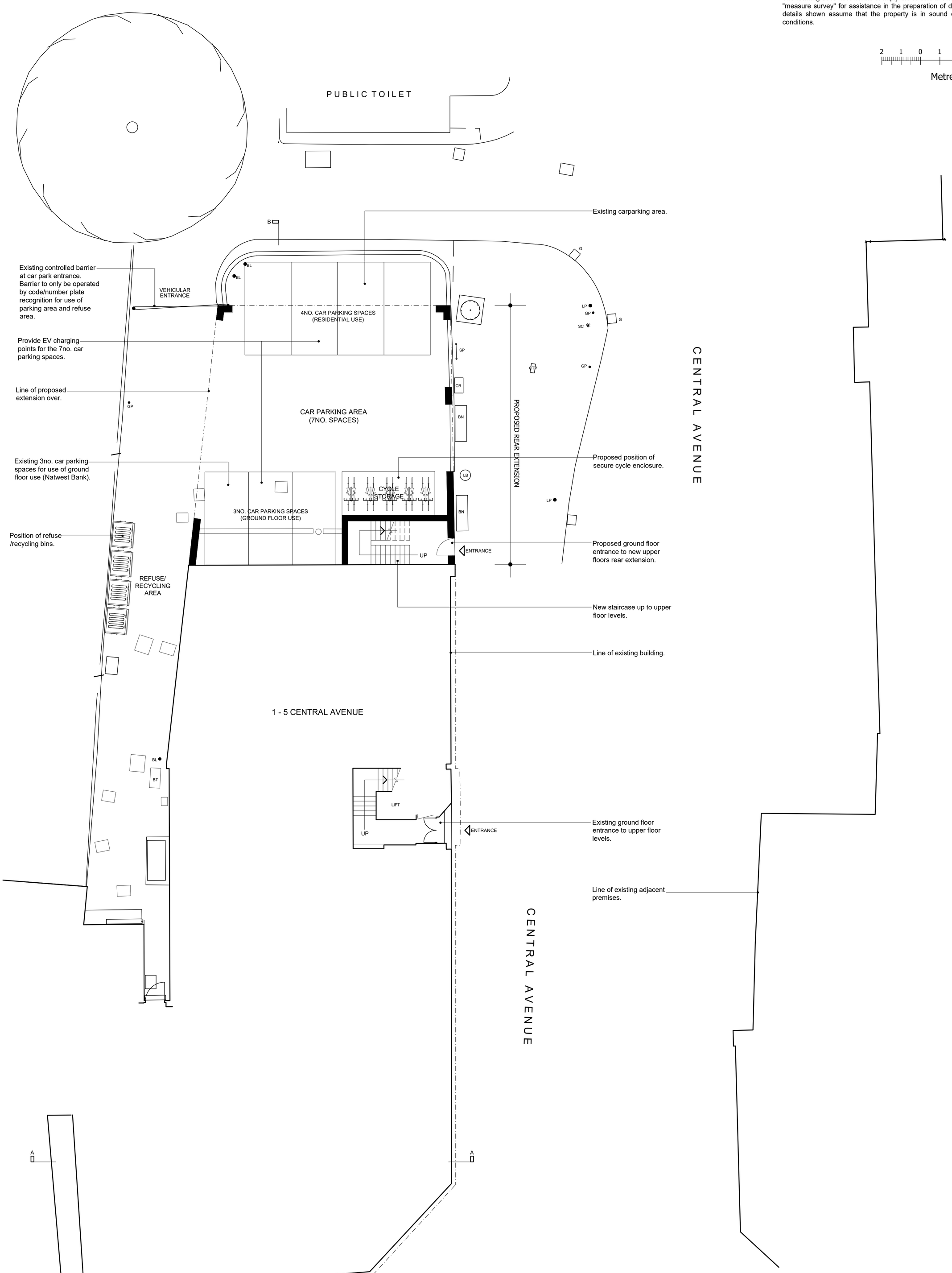

PROPOSED SITE PLAN

NO	REVISION	DATE
REV A	FURTHER DETAILS ADDED.	13.11.23

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

PROPOSED SITE PLAN.

SCALE: 1:100(A1) DATE: SEPT 23 DRWN BY: DJR DWG. NO: 2666/10 REV: A

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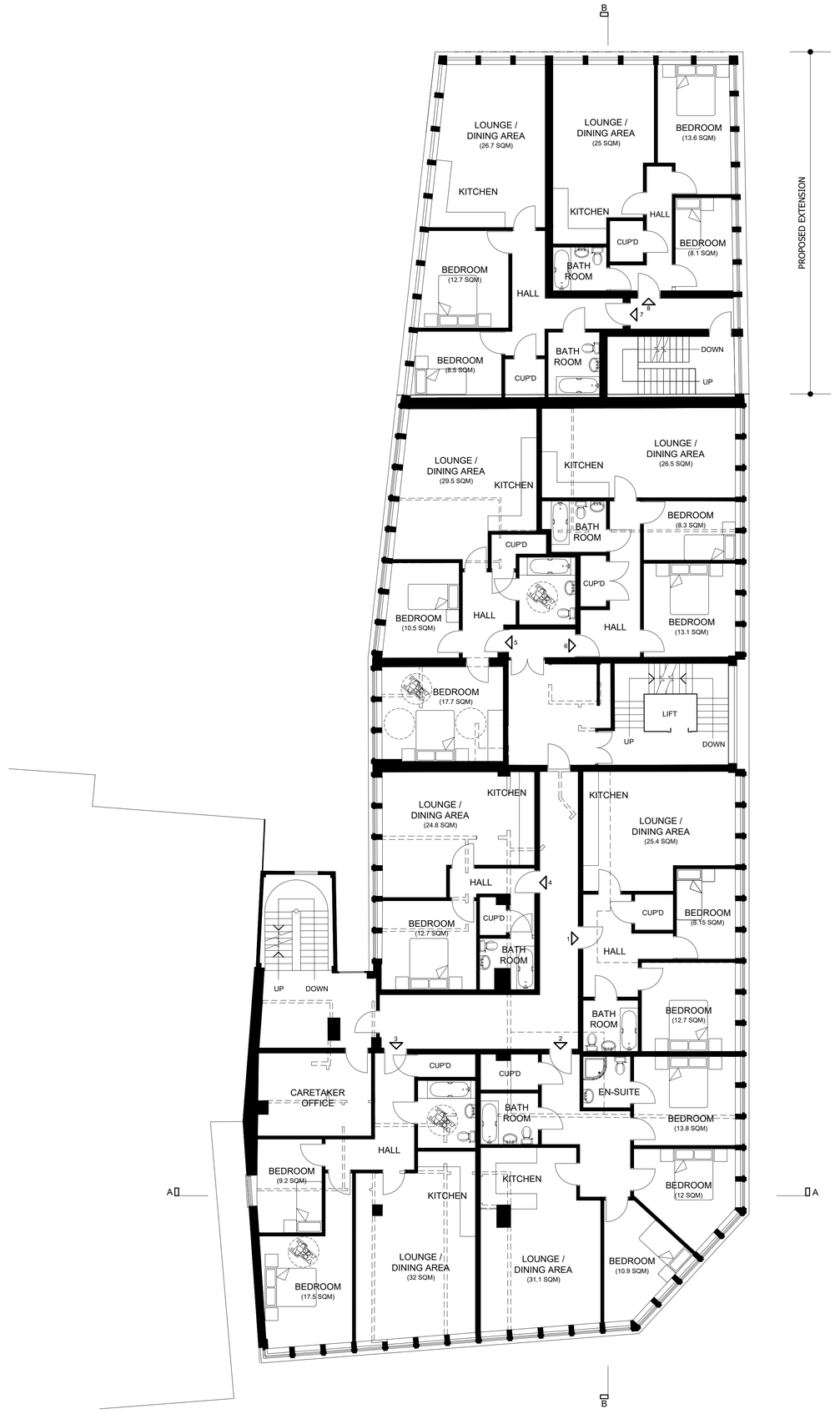
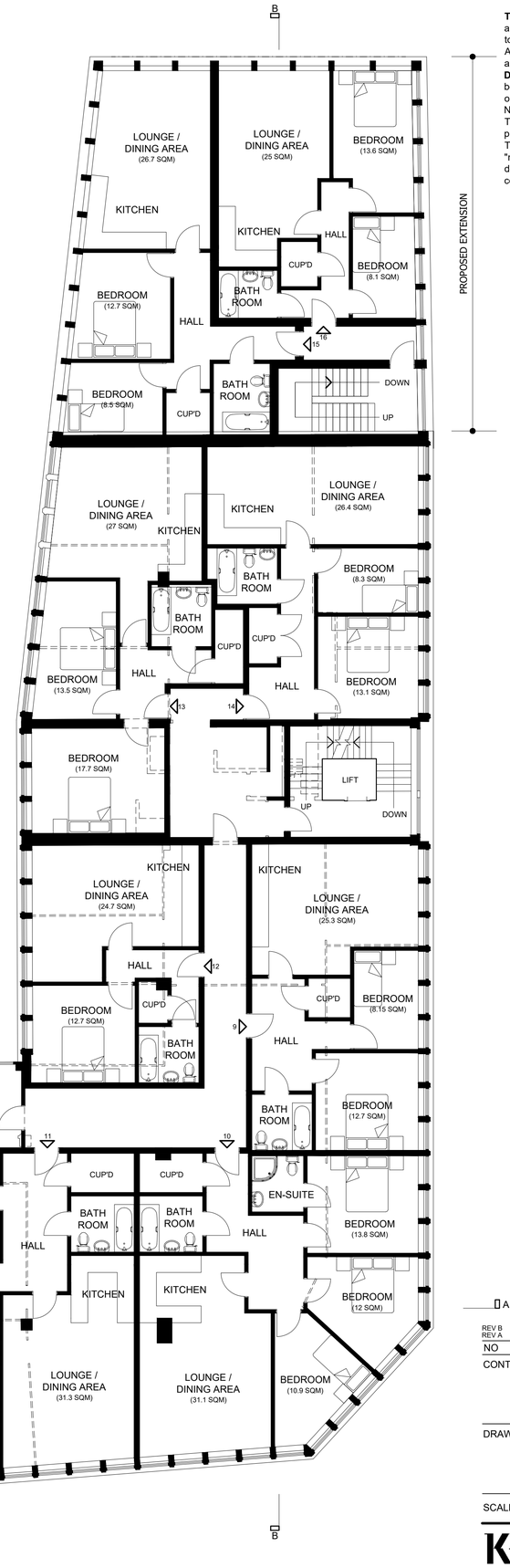


PROPOSED FIRST FLOOR PLAN



PROPOSED SECOND FLOOR PLAN

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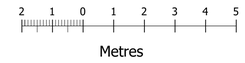

FLAT AREAS

FLAT No.	GIA	CLDK	STORAGE
FLAT 1 (2b3p):	65.3sq.m	25.4sq.m	2.0sq.m
FLAT 2 (3b5p):	95.7sq.m	31.3q.m	3.0sq.m
FLAT 3 (2b3p):	79.5sq.m	32.0sq.m	2.0sq.m
FLAT 4 (1b2p):	50.8sq.m	24.8sq.m	1.5sq.m
FLAT 5 (2b3p):	75.4sq.m	29.5sq.m	2.1sq.m
FLAT 6 (2b3p):	67.3sq.m	26.5sq.m	2.0sq.m
FLAT 7 (2b3p):	68.0sq.m	26.7sq.m	2.1sq.m
FLAT 8 (2b3p):	61.7sq.m	25.0sq.m	2.0sq.m
FLAT 9 (2b3p):	65.1sq.m	25.3sq.m	2.0sq.m
FLAT 10 (3b5p):	95.7sq.m	31.1sq.m	3.0sq.m
FLAT 11 (3b5p):	94.5sq.m	31.3sq.m	3.1sq.m
FLAT 12 (1b2p):	50.5sq.m	24.7sq.m	1.5sq.m
FLAT 13 (2b4p):	75.9sq.m	27sq.m	2.6sq.m
FLAT 14 (2b3p):	67.4sq.m	26.4sq.m	2.0sq.m
FLAT 15 (2b3p):	68.0sq.m	26.7sq.m	2.2sq.m
FLAT 16 (2b3p):	61.7sq.m	25.0sq.m	2.0sq.m

NOTES:

1b2p = 1 bedroom / 2 person
2b3p = 2 bedroom / 3 person
2b4p = 2 bedroom / 4 person
3b4p = 3 bedroom / 4 person
3b5p = 3 bedroom / 5 person
GIA = Gross Internal Area
CLDK = Combined Living, Dining and Kitchen Area

NO	REVISION	DATE
REV B	FURTHER DETAILS ADDED.	13.11.23
REV A	REVISIONS REQUESTED BY THE CLIENT.	02.10.23

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

PROPOSED FIRST & SECOND FLOOR PLANS.

SCALE: 1:100(A1) DATE: SEPT 23 DRWN BY: DJR DWG. NO: 2666/11 REV: B

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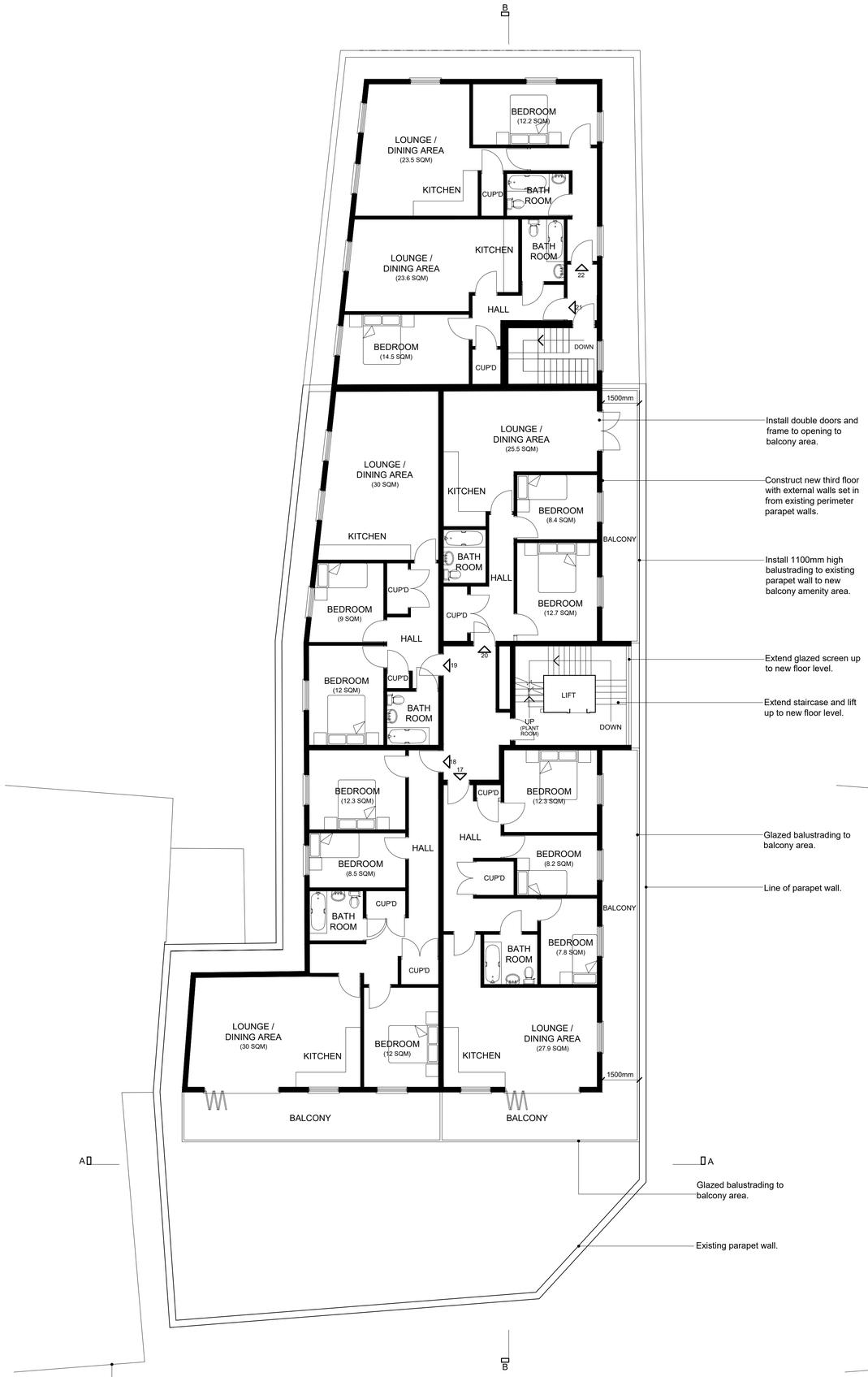
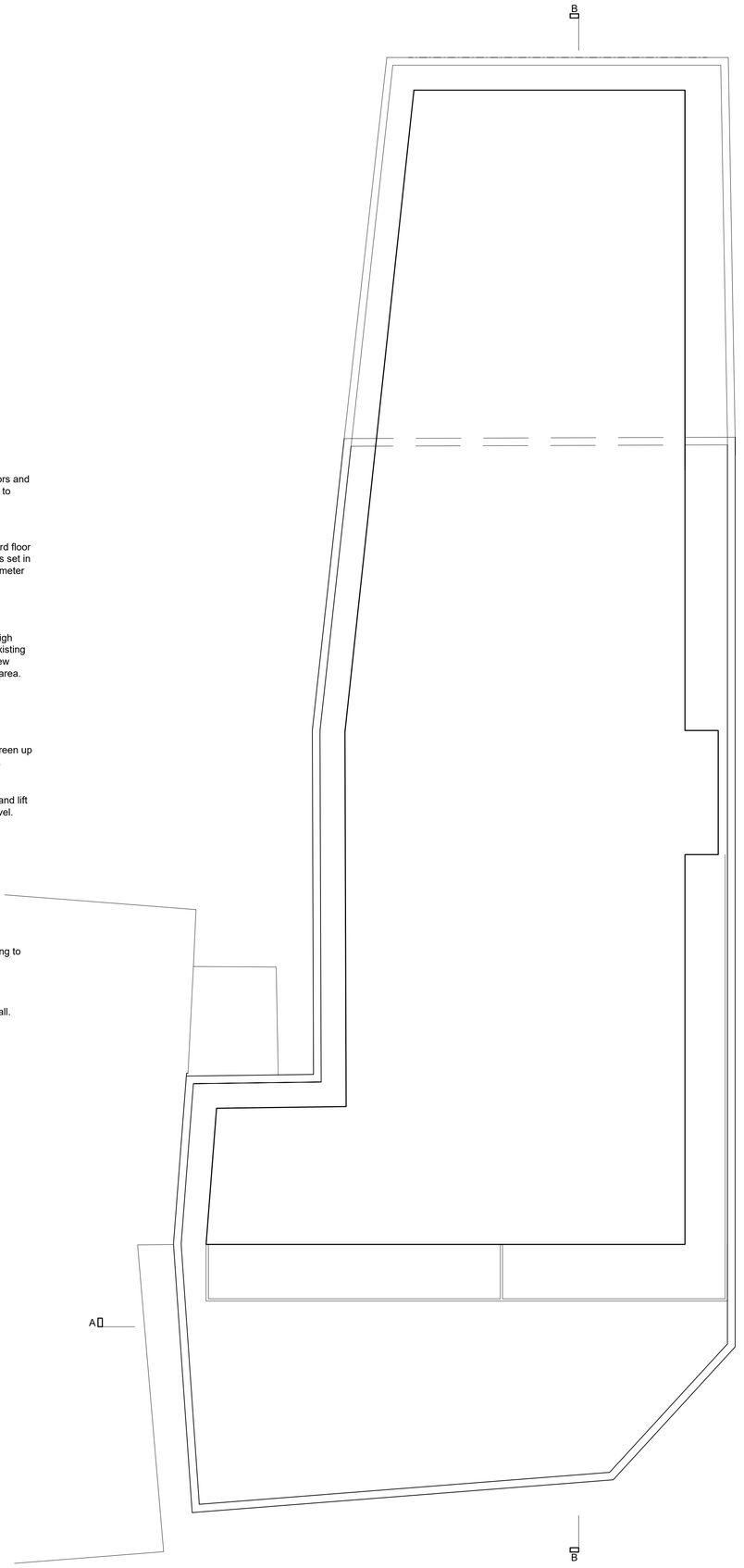


PROPOSED THIRD FLOOR PLAN



PROPOSED ROOF PLAN

2 1 0 1 2 3 4 5

Metres

FLAT AREAS			
FLAT No.	GIA	CLDK	STORAGE
FLAT 17 (3b4p):	80.2sq.m	27.9sq.m	2.0sq.m
FLAT 18 (3b5p):	91.1sq.m	30.0sq.m	3.0sq.m
FLAT 19 (2b3p):	68.4sq.m	30.0sq.m	2.0sq.m
FLAT 20 (2b3p):	62.1sq.m	25.5.0sq.m	2.1sq.m
FLAT 21 (1b2p):	51.7sq.m	23.6sq.m	1.5sq.m
FLAT 22 (1b2p):	52.3sq.m	25.6sq.m	1.5sq.m
NOTES:			
1b2p = 1 bedroom / 2 person			
2b3p = 2 bedroom / 3 person			
3b4p = 3 bedroom / 4 person			
3b5p = 3 bedroom / 5 person			
GIA = Gross Internal Area			
CLDK = Combined Living, Dining and Kitchen Area			

NO	REVISION	DATE
REV B	FURTHER DETAILS ADDED.	13.11.23
REV A	REVISIONS REQUESTED BY THE CLIENT.	29.09.23

CONTRACT

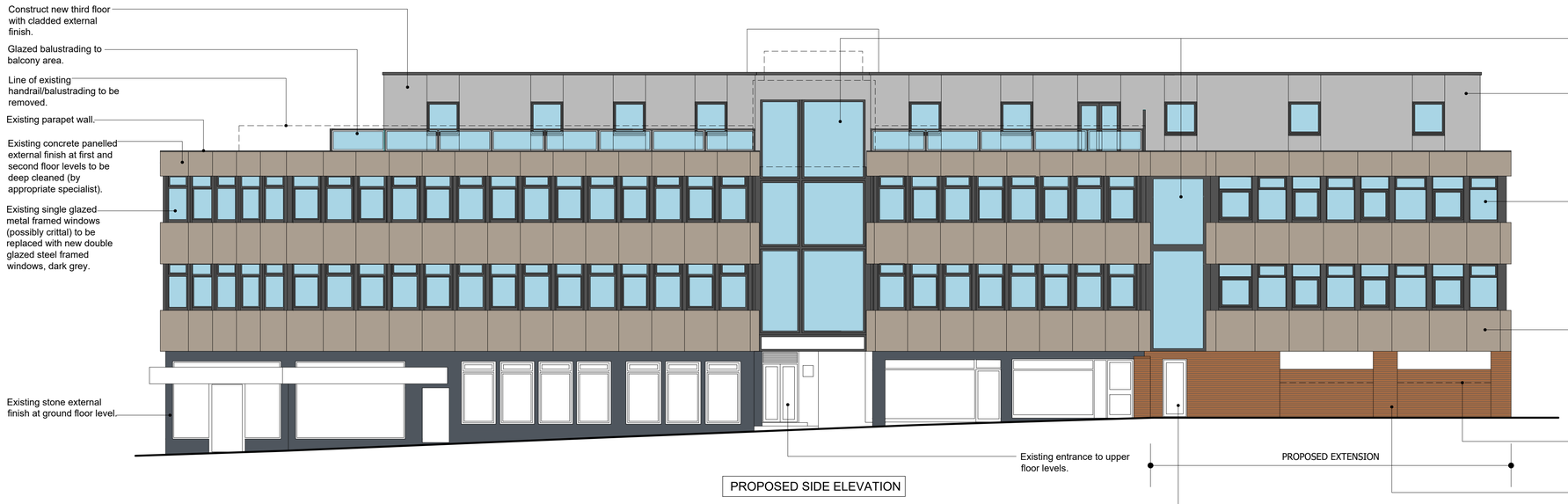
87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

PROPOSED THIRD FLOOR & ROOF PLANS.

SCALE: 1:100(A1) DATE: SEPT 23 DRWN BY: DJR DWG. NO: 2666/12 REV: B

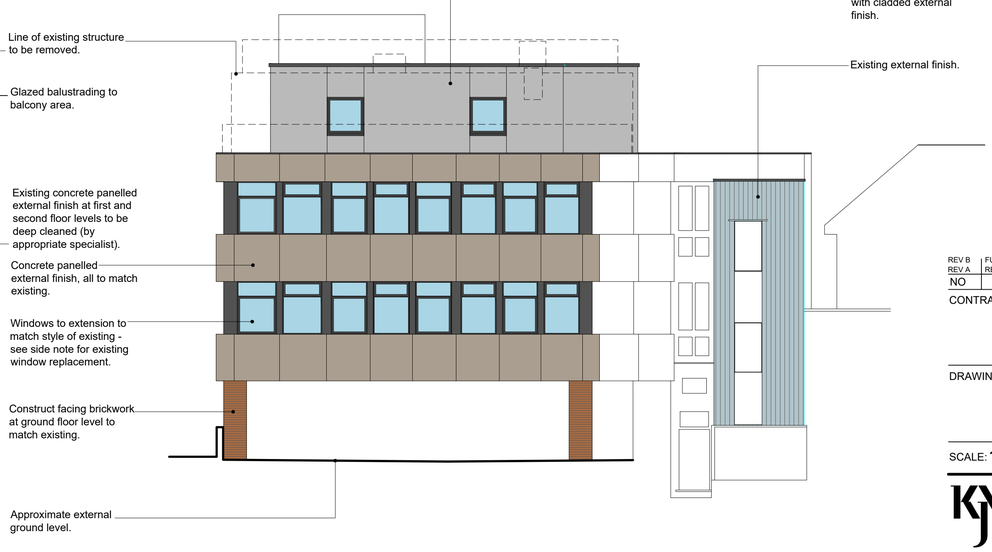
KEN JUDGE & ASSOCIATES LTD.
THE BARN, MONUMENT OFFICE, MALDON ROAD, MALDON, ESSEX, CM9 6SN.
TEL: 01245 225577 FAX: 01245 227799 E-MAIL: info@kenjudgeltd.co.uk



PROPOSED SIDE ELEVATION

PROPOSED SIDE ELEVATION

PROPOSED FRONT ELEVATION



PROPOSED REAR ELEVATION

2 1 0 1 2 3 4 5

Metres

EXTERNAL MATERIALS

EXISTING CONCRETE PANELLED EXTERNAL FINISH AT FIRST AND SECOND FLOOR LEVELS TO BE DEEP CLEANED (BY APPROPRIATE SPECIALIST).

THE EXISTING SINGLE GLAZED METAL FRAMED WINDOWS (POSSIBLY CRITTAL) TO BE REPLACED WITH NEW DOUBLE GLAZED STEEL FRAMED WINDOWS, DARK GREY.

NO	REVISION	DATE
REV B	FURTHER DETAILS ADDED.	13.11.23
REV A	REVISIONS REQUESTED BY THE CLIENT WITH FURTHER DETAILS ADDED.	29.09.23

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

PROPOSED ELEVATIONS.

SCALE: 1:100(A1) DATE: SEPT 23 DRWN BY DJR DWG. NO: 2667/13 REV: B

KEN JUDGE & ASSOCIATES LTD.
THE BARN, MONUMENT OFFICE, MALDON ROAD, MALDON, ESSEX, CM9 6SN.
TEL: 01245 225577 FAX: 01245 227799 E-MAIL: info@kenjudgeltd.co.uk

DO NOT SCALE FROM THIS DRAWING. Dimensions stated are for guidance only, contractor to verify all boundary positions and dimensions on site prior to commencing any works, making workshop drawings or obtaining any materials.
No site supervision is implied or undertaken unless otherwise separately arranged.
The drawing does not indicate the extent of any excavation works and the contractor is to determine this prior to submitting a quotation for the works or commencing any works.
The drawing does not indicate or imply the structural condition of the property, the survey carried out was a "measure survey" for assistance in the preparation of details for Planning application purposes only. The details shown assume that the property is in sound condition and that there are no adverse ground conditions.

EXISTING PARAMETER PLAN (BUILDING HEIGHT) - SCALE 1:1000

PROPOSED BUILDING HEIGHT COMPLIANCE PLAN - SCALE 1:1000

10 5 0 10 20 30 40 50

Metres
(scale 1:1000)

BUILDING HEIGHT

- Proposed upper floor (Minimum 11.2m & Maximum 15.7m)
- Proposed 3 storey high rear extension (Maximum 9.9m)
- Church (Minimum 12m & Maximum 27m)
- Up to 4 storey high (Minimum 3.3m & Maximum 16.7m)
- Up to 3 storey high (Minimum 8.3m & Maximum 11.2m)
- Up to 2 storey high (Minimum 6.7m & Maximum 8.4m)

NO	REVISION	DATE
REV A	NEW SCALE BAR ADDED.	14.12.23

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

EXISTING & PROPOSED PARAMETER PLAN.

SCALE: 1:1000(A2) DATE: NOV 23 DRWN BY: DJR DWG. NO: 2667/14 REV: A

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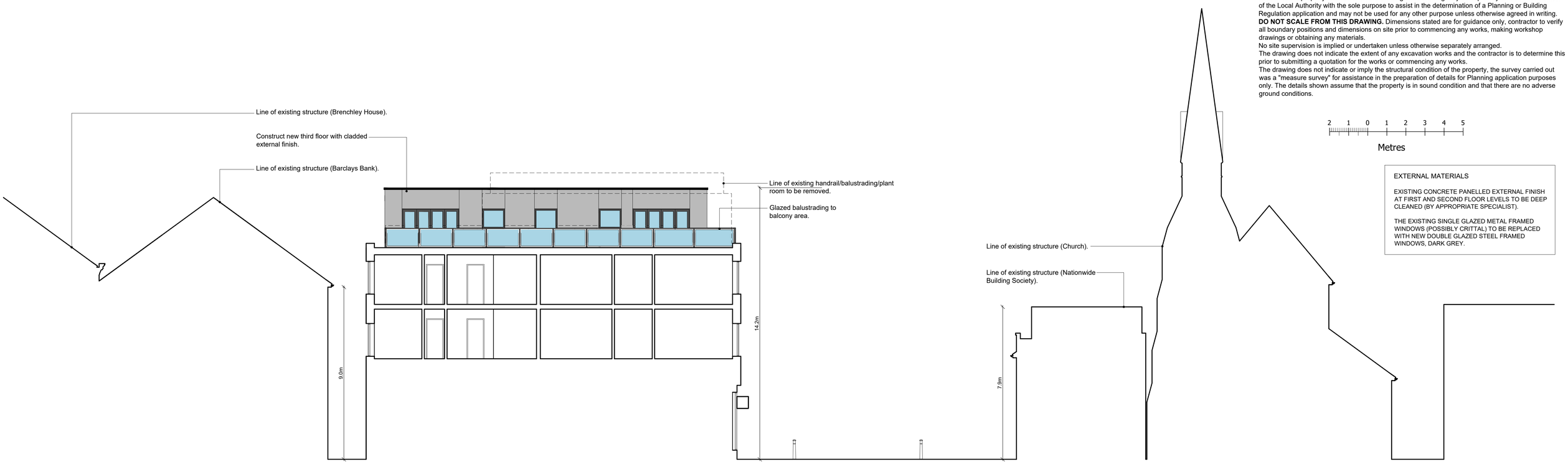
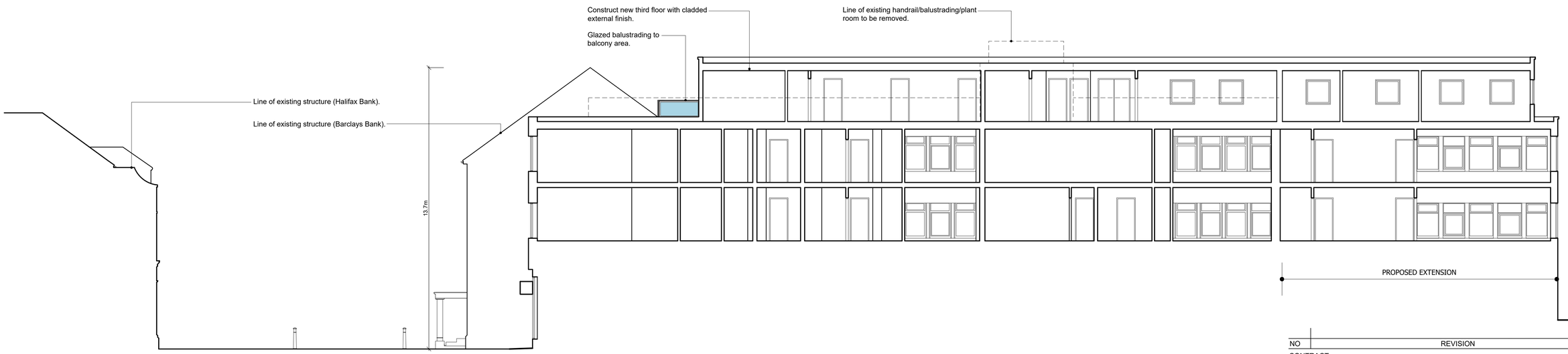


EXTERNAL MATERIALS

EXISTING CONCRETE PANELLED EXTERNAL FINISH AT FIRST AND SECOND FLOOR LEVELS TO BE DEEP CLEANED (BY APPROPRIATE SPECIALIST).

THE EXISTING SINGLE GLAZED METAL FRAMED WINDOWS (POSSIBLY CRITTAL) TO BE REPLACED WITH NEW DOUBLE GLAZED STEEL FRAMED WINDOWS, DARK GREY.

PROPOSED SECTION A-A



PROPOSED SECTION B-B

EXTERNAL MATERIALS

EXISTING CONCRETE PANELLED EXTERNAL FINISH AT FIRST AND SECOND FLOOR LEVELS TO BE DEEP CLEANED (BY APPROPRIATE SPECIALIST).

THE EXISTING SINGLE GLAZED METAL FRAMED WINDOWS (POSSIBLY CRITTAL) TO BE REPLACED WITH NEW DOUBLE GLAZED STEEL FRAMED WINDOWS, DARK GREY.

NO	REVISION	DATE

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

DRAWING TITLE

PROPOSED SECTIONS.

SCALE: 1:100(A1) DATE: NOV 23 DRWN BY DJR DWG. NO: 2667/15 REV:

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THE BARN, MONUMENT OFFICE, MALDON ROAD, MALDON, ESSEX, CM9 6SN.
TEL: 01245 225577 FAX: 01245 227799 E-MAIL: info@kenjudgeltd.co.uk

PROPOSED BLOCK PLAN - SCALE 1:500

10 5 0 5 10 15 20 25

Metres
(scale 1:500)

REV A	NEW SCALE BAR ADDED.	14.12.23
NO	REVISION	DATE

CONTRACT

87 HIGH STREET/1-5 CENTRAL AVENUE, SITTINGBOURNE, ME10 4AU.

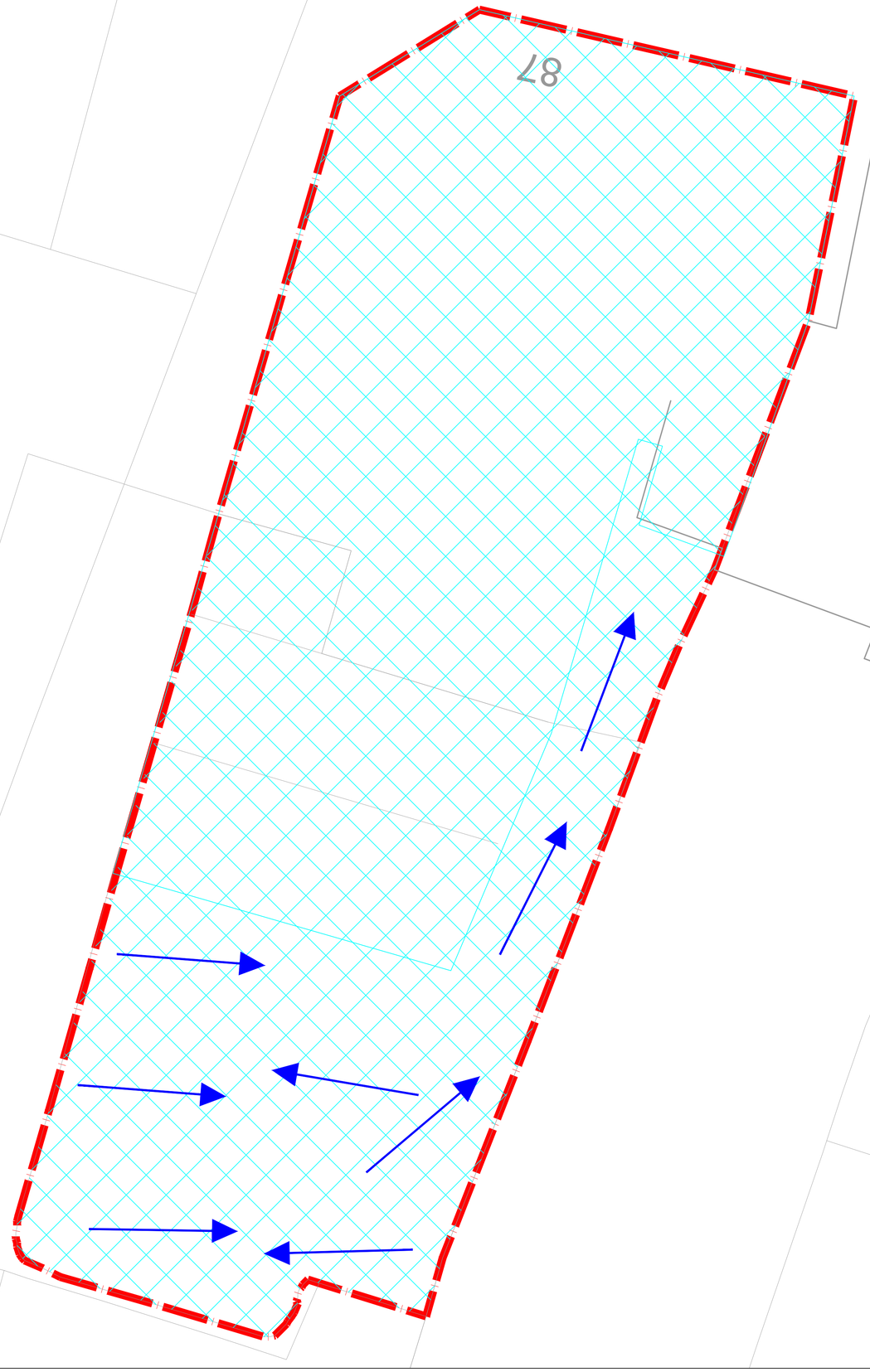
DRAWING TITLE

PROPOSED BLOCK PLAN.

SCALE: 1:500(A2) DATE: NOV 23 DRWN BY: HH DWG. NO: 2667/16 REV: A

KEN JUDGE & ASSOCIATES LTD.
THE BARN, MONUMENT OFFICE, MALDON ROAD, MALDON, ESSEX, CM9 6SN.
TEL: 01245 225577 FAX: 01245 227799 E-MAIL: info@kenjudgeltd.co.uk

NORTH
Indicative



Proposed Red Boundary Total Area is Approx. 949m²

Existing Impermeable Area is Approx. 949m²

Existing Soft Total Area is Approx. 0m²

Existing Impermeable area represent app. 100% from total considered area.

DRAWING TO BE PRINTED IN COLOUR.

KEY:

Existing Soft Areas as per topographical survey provided by architect. Soft areas include grass, shrubs and trees but for ease of reference is shown as same hatch.

Existing impermeable areas as per existing site layout. Impermeable areas are roofs and pavements but for ease of reference is shown as same hatch.

Proposed Site Boundary.

Existing Exceedance SW routes.

NOTES:

1. DRAWING WILL NEED TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS FROM ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER AND M&E.
2. EXISTING ROUTES FOR UNDERGROUND UTILITIES ARE CURRENTLY UNKNOWN.

NOT FOR CONSTRUCTION

REV	DATE	DRAWN	DESCRIPTION	CHECK	APPR.
A	28/03/24	N.E	For Information.	S.L	S.L

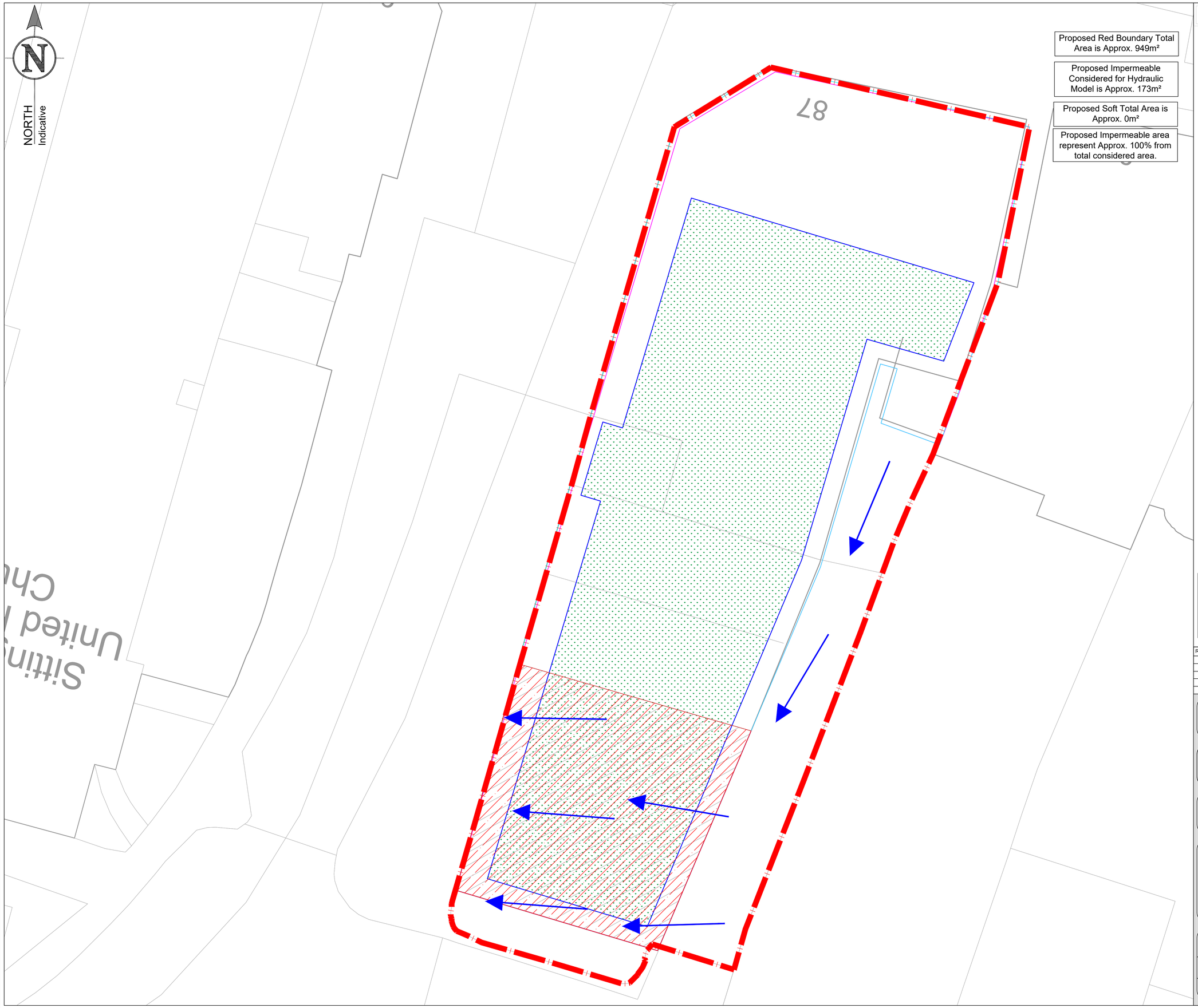
C3238 - 97 High Street/1-5 Central Avenue, Sittingbourne, Kent, ME10 4AU

Pre-Development Impermeable Areas & Exceedance Routes

Ken Judge & Associates Ltd.

Nimbus ENGINEERING CONSULTANTS

S.L	28/03/24	S.L	28/03/24
N.E	1:100	C3238-01	A
28/03/24	A1		



DRAWING TO BE PRINTED IN COLOUR.

KEY:

- Proposed Soft Areas as per Landscape drawing. Soft areas include grass, shrubs and trees but for ease of reference is shown as same hatch.
- Proposed Impermeable Area from roof and pavements of proposed structures that is being Considered For Hydraulic Model.
- Proposed Green Roof.
- Proposed Site Boundary.
- Proposed assumed overland flow routes To be confirmed once the detailed external levels design is undertaken.

NOTES:

1. DRAWING WILL NEED TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS FROM ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER AND M&E.
2. ROOT PROTECTION AREA WAS NOT PROVIDED AND ONCE THAT INFORMATION IS MADE AVAILABLE DESIGNED WILL NEED TO BE REVIEWED.
3. EXISTING AND PROPOSED LEVELS ARE BASED ON TOPO INFORMATION THEREFORE WILL NEED TO BE CONFIRMED IN SUBSEQUENT DESIGN STAGES.
4. PROPOSED FLOW ARROWS TO BE CONFIRMED ONCE A DETAILED EXTERNAL LEVELS DESIGN IS PROVIDED.
5. EXISTING ROUTES FOR UNDERGROUND UTILITIES ARE CURRENTLY UNKNOWN.

NOT FOR CONSTRUCTION

REV	DATE	DRAWN	DESCRIPTION	CHECK	APPR.
A	28/03/24	N.E	For Information.	S.L	S.L

C3238 - 97 High Street/1-5 Central Avenue, Sittingbourne, Kent, ME10 4AU

Post-Development Impermeable Areas & Exceedance Routes

Ken Judge & Associates Ltd.

Nimbus ENGINEERING CONSULTANTS

S.L	28/03/24	S.L	28/03/24
N.E	1:100	C3238-02	A
28/03/24	A1		

NORTH
Indicative

SCHEDULE OF SURFACE WATER PIPES				
PIPE NAME	START AND END STRUCTURE	DIAMETER (m)	LENGTH (m)	GRADIENT
SWP-01	SWC-01 to Attenuation Tank	0.100	2.553	1:25
SWP-02	SWC-02 to Attenuation Tank	0.100	2.720	1:27
SWP-03	Attenuation Tank to SWC-03	0.100	14.554	1:14
SWP-04	SWC-03 to Connection Junction	0.100	9.083	1:50

SCHEDULE OF SURFACE WATER CHAMBERS *COVER LEVELS TO BE CONFIRMED ON SITE PRIOR TO CONSTRUCTION					
NAME	TYPE	DIAMETER (m)	COVER LEVEL (m)	INVERT LEVEL (m)	DEPTH (m)
SWC-01	CP	0.600	18.500	17.700	0.800
SWC-02	CP	0.600	18.500	17.700	0.800
SWC-03	FCC	0.600	18.500	17.405	1.095

Existing SW chamber 6655
Position taken from Southern Water Asset map. TBC on site.
CL. 17.810m
IL. 16.500m

Existing SW chamber 6654
Position taken from Southern Water Asset map. TBC on site.
CL. 18.190m
IL. 16.780m

IL. 15.850m

Existing SW chamber 6654
Position taken from Southern Water Asset map. TBC on site.
CL. 16.790m
IL. 15.850m

87

87

RWP-02
SWC-01
RWP-01
Connection Junction
SWC-03
Flow Control Chamber to have 15mm Diameter Orifice as minimum to reduce likelyhood of blockages, restricting maximum discharge to 0.5l/s
Surface Water Underground Cellular Attenuation Tank from Polystorm or similar approved product to be at least 6.0mx3.0mx0.4m deep with 95% void ratio to provide minimum 6.84m³ net storage to avoid any flooding for 1:100 storm event +45% Climate Change.
CL: Varies and min. 18.500m AOD is considered
Top of tank:18.000m AOD
IL of tank:17.600m AOD
RWP-04
SWC-02
RWP-03

DRAWING TO BE PRINTED IN COLOUR.

KEY:

- Proposed Surface Water Pipes.
- Existing Southern Water Surface Water pipes.
- Filter drain position shown indicative at this design stage. Threshold drains to be detailed by the architects.
- Proposed Site Boundary.
- Proposed RWP. Locations TBC by Architect or M&E Engineer.
- Proposed SW inspection/catchpit chamber.
- Proposed Green Roof.
- Proposed geocellular underground attenuation tank to be Polystorm or similar approved product. Supplier to provide structural calculation and guidance for installation.

NOTES:

1. DRAWING WILL NEED TO BE READ IN CONJUNCTION WITH ALL OTHER RELEVANT DRAWINGS FROM ARCHITECT, LANDSCAPE ARCHITECT, STRUCTURAL ENGINEER AND M&E.
2. ROOT PROTECTION AREAS NOT PROVIDED. TO BE CHECKED IN SUBSEQUENT DESIGN STAGES ONCE THIS INFORMATION IS MADE AVAILABLE.

NOT FOR CONSTRUCTION

REV	DATE	DRAWN	DESCRIPTION	CHECK	APPR.
A	28/03/24	N.E	For Information.	S.L	S.L

C3238 - 97 High Street/1-5 Central Avenue, Sittingbourne, Kent, ME10 4AU

Proposed Surface Water Drainage & SuDs Layout

Ken Judge & Associates Ltd.

Nimbus ENGINEERING CONSULTANTS

S.L	28/03/24	S.L	28/03/24
N.E	1:100	C3238-03	A
28/03/24	A1		

NORTH
Indicative

XX

MAINTENANCE REQUIREMENTS FOR ALL DRAINAGE FEATURES WITHIN DEVELOPMENT	
OWNER OF THE HOUSE WILL BE RESPONSIBLE FOR ALL DRAINAGE FEATURES	
IDENTIFIER	MAINTENANCE REQUIREMENTS & REMEDIAL ACTIONS
1. FLOW CONTROL CHAMBER	THE FLOW CONTROL CHAMBER FROM THE ATTENUATION TANK IS TO BE INSPECTED EVERY 3 MONTHS, ESPECIALLY AFTER A HEAVY RAINFALL EVENT. IF UPSTREAM NETWORK IS MAINTAINED CORRECTLY NO PARTS SHOULD HAVE TO BE REMOVED OR REPLACED WITHIN FLOW CONTROL CHAMBER.
2. DRAINAGE RUNS	ANY DEFORMED OR DAMAGED PIPEWORK IS TO BE IDENTIFIED BY A DRAINAGE/CCTV SURVEY AND IS TO BE REPLACED BY APPOINTED MANAGEMENT COMPANY.
3. ATTENUATION TANK	INSPECT AND IDENTIFY ANY AREAS THAT ARE NOT OPERATING CORRECTLY MONTHLY FOR 3 MONTHS THEN ANNUALLY. IF REQUIRED, TAKE REMEDIAL ACTION. AS# REQUIRED REPAIR/REHABILITATE INLETS/OUTLETS. EVERY 5 YEARS SURVEY INSIDE OF TANK FOR SEDIMENT BUILD-UP AND REMOVE IF NECESSARY.ANNUALLY INSPECT SILT ACCUMULATION RATES AND ESTABLISH APPROPRIATE BRUSHING FREQUENCIES.
4. CATCHPITS	CATCHPIT CHAMBERS ARE TO BE INSPECTED AND EMPTIED EVERY 3 MONTHS, ESPECIALLY AFTER A HEAVY RAINFALL EVENT TO ENSURE THE SYSTEM DOES NOT CLOG UP WITH SILT OR GET BLOCKED.

04
02
01
03
02
04

NOT FOR CONSTRUCTION

REV	DATE	DRAWN	DESCRIPTION	CHECK	APPR.
A	28/03/24	N.E	For Information.	S.L	S.L

C3238 - 97 High Street/1-5 Central Avenue, Sittingbourne, Kent, ME10 4AU

Proposed Maintenance and Management Plan

Ken Judge & Associated Ltd.

Nimbus ENGINEERING CONSULTANTS

S.L	28/03/24	S.L	28/03/24
N.E	1:100	C3238-04	A
28/03/24	A1		

APPENDIX B – HYDRAULIC MODELLING OUTPUTS

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Attenuation Tank		Time of Concentration	0.005	100	0	100	0.005
Green Roof	Attenuation Tank		Green Roof	0.013		0		0.013
TOTAL		**0.0**		**0.017**				**0.017**

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Title: Rainfall Analysis Criteria	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 590652 163622 TQ 90652 63622
Rainfall Version	2022
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

FEH: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FEH: 100 years: +45 %: 15 mins: Winter	0.00	3.0	1.393
Green Roof	FEH: 100 years: +45 %: 30 mins: Winter	0.01	2.4	4.260

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

FEH: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWC-01	FEH: 100 years: +45 %: 600 mins: Winter	18.500	17.700	18.176	0.476	0.2	0.135	0.000	0.1	0.559	Surcharged
SWC-02	FEH: 100 years: +45 %: 600 mins: Winter	18.500	17.700	18.176	0.476	0.1	0.135	0.000	0.1	0.559	Surcharged
Connection Junction	FEH: 100 years: +45 %: 600 mins: Winter		17.223	17.238	0.015	0.4			0.4	17.701	OK
SWC-03	FEH: 100 years: +45 %: 600 mins: Winter	18.500	17.405	18.176	0.771	0.5	0.218	0.000	0.4	17.702	Surcharged

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

FEH: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Attenuation Tank	FEH: 100 years: +45 %: 600 mins: Winter	18.177	18.177	0.577	0.577	1.2	7.014	0.000	0.000	0.5	18.837	4.437	OK

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

FEH: 100 years: Increase Rainfall (%): +45: Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
SWP-01	FEH: 100 years: +45 %: 240 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.118	0.100	0.000	0.0	0.01	0.1	Surcharged
SWP-02	FEH: 100 years: +45 %: 240 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.117	0.100	0.000	0.0	0.01	0.1	Surcharged
SWP-03	FEH: 100 years: +45 %: 30 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.855	0.100	1.372	0.6	0.05	0.8	Surcharged
SWP-04	FEH: 100 years: +45 %: 600 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.176	0.015	17.701	0.6	0.05	0.4	Surcharged

Phase
FEH: 100 years: Increase Rainfall (%): +45: 600 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Connection Junction			0.4	17.701
TOTAL	1.2	17.729	0.4	17.701

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Attenuation Tank		Time of Concentration	0.005	100	0	100	0.005
Green Roof	Attenuation Tank		Green Roof	0.013		0		0.013
TOTAL		**0.0**		**0.017**				**0.017**

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Title: Rainfall Analysis Criteria	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 590652 163622 TQ 90652 63622
Rainfall Version	2022
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
100.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for Catchment Area: Rank By: Max. Inflow

Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
FEH: 100 years: +45 %: 15 mins: Summer	0.00	2.8	1.252
FEH: 100 years: +45 %: 15 mins: Winter	0.00	3.0	1.393
FEH: 100 years: +45 %: 30 mins: Summer	0.00	1.9	1.637
FEH: 100 years: +45 %: 30 mins: Winter	0.00	2.0	1.841
FEH: 100 years: +45 %: 60 mins: Summer	0.00	1.6	2.049
FEH: 100 years: +45 %: 60 mins: Winter	0.00	1.5	2.292
FEH: 100 years: +45 %: 120 mins: Summer	0.00	1.2	2.543
FEH: 100 years: +45 %: 120 mins: Winter	0.00	1.0	2.850
FEH: 100 years: +45 %: 180 mins: Summer	0.00	1.0	2.904
FEH: 100 years: +45 %: 180 mins: Winter	0.00	0.8	3.228
FEH: 100 years: +45 %: 240 mins: Summer	0.00	0.8	3.174
FEH: 100 years: +45 %: 240 mins: Winter	0.00	0.6	3.558
FEH: 100 years: +45 %: 360 mins: Summer	0.00	0.6	3.636
FEH: 100 years: +45 %: 360 mins: Winter	0.00	0.5	4.062

FEH: 100 years: +45 %: 480 mins: Summer	0.00	0.6	4.050
FEH: 100 years: +45 %: 480 mins: Winter	0.00	0.4	4.518
FEH: 100 years: +45 %: 600 mins: Summer	0.00	0.5	4.398
FEH: 100 years: +45 %: 600 mins: Winter	0.00	0.3	4.920
FEH: 100 years: +45 %: 720 mins: Summer	0.00	0.4	4.734
FEH: 100 years: +45 %: 720 mins: Winter	0.00	0.3	5.256
FEH: 100 years: +45 %: 960 mins: Summer	0.00	0.3	5.202
FEH: 100 years: +45 %: 960 mins: Winter	0.00	0.3	5.850
FEH: 100 years: +45 %: 1440 mins: Summer	0.00	0.3	5.880
FEH: 100 years: +45 %: 1440 mins: Winter	0.00	0.2	6.558
FEH: 100 years: +45 %: 2160 mins: Summer	0.00	0.2	6.594
FEH: 100 years: +45 %: 2160 mins: Winter	0.00	0.1	7.380
FEH: 100 years: +45 %: 2880 mins: Summer	0.00	0.2	6.852
FEH: 100 years: +45 %: 2880 mins: Winter	0.00	0.1	7.728
FEH: 100 years: +45 %: 4320 mins: Summer	0.00	0.1	7.212
FEH: 100 years: +45 %: 4320 mins: Winter	0.00	0.1	8.082
FEH: 100 years: +45 %: 5760 mins: Summer	0.00	0.1	7.872

FEH: 100 years: +45 %: 5760 mins: Winter	0.00	0.1	8.502
FEH: 100 years: +45 %: 7200 mins: Summer	0.00	0.1	8.382
FEH: 100 years: +45 %: 7200 mins: Winter	0.00	0.0	8.904
FEH: 100 years: +45 %: 8640 mins: Summer	0.00	0.1	9.018
FEH: 100 years: +45 %: 8640 mins: Winter	0.00	0.0	9.228
FEH: 100 years: +45 %: 10080 mins: Summer	0.00	0.0	8.472
FEH: 100 years: +45 %: 10080 mins: Winter	0.00	0.0	9.798

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for Green Roof: Rank By: Max. Inflow

Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m³)
FEH: 100 years: +45 %: 15 mins: Summer	0.01	1.9	2.175
FEH: 100 years: +45 %: 15 mins: Winter	0.01	2.1	2.434
FEH: 100 years: +45 %: 30 mins: Summer	0.01	2.2	3.802
FEH: 100 years: +45 %: 30 mins: Winter	0.01	2.4	4.260
FEH: 100 years: +45 %: 60 mins: Summer	0.01	2.2	5.277
FEH: 100 years: +45 %: 60 mins: Winter	0.01	2.3	5.913
FEH: 100 years: +45 %: 120 mins: Summer	0.01	1.9	6.613
FEH: 100 years: +45 %: 120 mins: Winter	0.01	1.9	7.411
FEH: 100 years: +45 %: 180 mins: Summer	0.01	1.7	7.513
FEH: 100 years: +45 %: 180 mins: Winter	0.01	1.6	8.409
FEH: 100 years: +45 %: 240 mins: Summer	0.01	1.6	8.227
FEH: 100 years: +45 %: 240 mins: Winter	0.01	1.4	9.225
FEH: 100 years: +45 %: 360 mins: Summer	0.01	1.3	9.463
FEH: 100 years: +45 %: 360 mins: Winter	0.01	1.1	10.586

FEH: 100 years: +45 %: 480 mins: Summer	0.01	1.2	10.548
FEH: 100 years: +45 %: 480 mins: Winter	0.01	1.0	11.783
FEH: 100 years: +45 %: 600 mins: Summer	0.01	1.1	11.424
FEH: 100 years: +45 %: 600 mins: Winter	0.01	0.9	12.809
FEH: 100 years: +45 %: 720 mins: Summer	0.01	1.0	12.234
FEH: 100 years: +45 %: 720 mins: Winter	0.01	0.8	13.706
FEH: 100 years: +45 %: 960 mins: Summer	0.01	0.9	13.557
FEH: 100 years: +45 %: 960 mins: Winter	0.01	0.6	15.186
FEH: 100 years: +45 %: 1440 mins: Summer	0.01	0.7	15.348
FEH: 100 years: +45 %: 1440 mins: Winter	0.01	0.5	17.193
FEH: 100 years: +45 %: 2160 mins: Summer	0.01	0.5	16.983
FEH: 100 years: +45 %: 2160 mins: Winter	0.01	0.4	19.059
FEH: 100 years: +45 %: 2880 mins: Summer	0.01	0.4	18.006
FEH: 100 years: +45 %: 2880 mins: Winter	0.01	0.3	20.067
FEH: 100 years: +45 %: 4320 mins: Summer	0.01	0.3	19.278
FEH: 100 years: +45 %: 4320 mins: Winter	0.01	0.2	21.597
FEH: 100 years: +45 %: 5760 mins: Summer	0.01	0.2	19.896

FEH: 100 years: +45 %: 5760 mins: Winter	0.01	0.2	22.365
FEH: 100 years: +45 %: 7200 mins: Summer	0.01	0.2	20.760
FEH: 100 years: +45 %: 7200 mins: Winter	0.01	0.1	22.527
FEH: 100 years: +45 %: 8640 mins: Summer	0.01	0.2	20.694
FEH: 100 years: +45 %: 8640 mins: Winter	0.01	0.1	23.292
FEH: 100 years: +45 %: 10080 mins: Summer	0.01	0.1	21.069
FEH: 100 years: +45 %: 10080 mins: Winter	0.01	0.1	24.159

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWC-01: Rank By: Max. Depth

Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
FEH: 100 years: +45 %: 15 mins: Summer	18.500	17.700	17.750	0.050	0.1	0.014	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 15 mins: Winter	18.500	17.700	17.769	0.069	0.3	0.019	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 30 mins: Summer	18.500	17.700	17.824	0.124	0.1	0.035	0.000	0.0	0.000	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	18.500	17.700	17.855	0.155	0.2	0.044	0.000	0.0	0.000	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	18.500	17.700	17.882	0.182	0.3	0.051	0.000	0.0	0.019	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	18.500	17.700	17.920	0.220	0.2	0.062	0.000	0.0	0.018	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	18.500	17.700	17.937	0.237	0.2	0.067	0.000	0.0	0.100	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	18.500	17.700	17.985	0.285	0.1	0.081	0.000	0.0	0.103	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	18.500	17.700	17.961	0.261	0.1	0.074	0.000	0.0	0.176	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	18.500	17.700	18.064	0.364	0.1	0.103	0.000	0.1	0.244	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	18.500	17.700	17.968	0.268	0.1	0.076	0.000	0.0	0.242	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	18.500	17.700	18.118	0.418	0.2	0.118	0.000	0.1	0.368	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	18.500	17.700	17.978	0.278	0.1	0.079	0.000	0.0	0.324	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	18.500	17.700	18.154	0.454	0.2	0.129	0.000	0.1	0.533	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	18.500	17.700	17.985	0.285	0.1	0.081	0.000	0.0	0.333	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	18.500	17.700	18.175	0.475	0.2	0.135	0.000	0.1	0.559	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	18.500	17.700	17.988	0.288	0.1	0.081	0.000	0.0	0.336	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	18.500	17.700	18.176	0.476	0.2	0.135	0.000	0.1	0.559	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	18.500	17.700	17.988	0.288	0.1	0.082	0.000	0.0	0.337	Surcharged

FEH: 100 years: +45 %: 720 mins: Winter	18.500	17.700	18.159	0.459	0.2	0.130	0.000	0.1	0.542	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	18.500	17.700	17.982	0.282	0.1	0.080	0.000	0.0	0.329	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	18.500	17.700	18.091	0.391	0.1	0.111	0.000	0.1	0.476	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	18.500	17.700	17.951	0.251	0.0	0.071	0.000	0.0	0.293	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	18.500	17.700	17.970	0.270	0.0	0.076	0.000	0.0	0.315	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	18.500	17.700	17.891	0.191	0.0	0.054	0.000	0.0	0.223	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	18.500	17.700	17.882	0.182	0.0	0.051	0.000	0.0	0.212	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	18.500	17.700	17.834	0.134	0.0	0.038	0.000	0.0	0.156	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	18.500	17.700	17.804	0.104	0.0	0.029	0.000	0.0	0.122	Surcharged
FEH: 100 years: +45 %: 4320 mins: Summer	18.500	17.700	17.745	0.045	0.0	0.013	0.000	0.0	0.052	OK
FEH: 100 years: +45 %: 4320 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 5760 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 5760 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 7200 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 7200 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 8640 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 8640 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 10080 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 10080 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWC-02: Rank By: Max. Depth

Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
FEH: 100 years: +45 %: 15 mins: Summer	18.500	17.700	17.750	0.050	0.1	0.014	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 15 mins: Winter	18.500	17.700	17.769	0.069	0.2	0.019	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 30 mins: Summer	18.500	17.700	17.824	0.124	0.1	0.035	0.000	0.0	0.000	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	18.500	17.700	17.855	0.155	0.2	0.044	0.000	0.0	0.000	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	18.500	17.700	17.882	0.182	0.3	0.051	0.000	0.0	0.019	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	18.500	17.700	17.920	0.220	0.2	0.062	0.000	0.0	0.018	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	18.500	17.700	17.937	0.237	0.2	0.067	0.000	0.0	0.100	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	18.500	17.700	17.985	0.285	0.1	0.081	0.000	0.0	0.103	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	18.500	17.700	17.961	0.261	0.1	0.074	0.000	0.0	0.176	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	18.500	17.700	18.064	0.364	0.1	0.103	0.000	0.1	0.243	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	18.500	17.700	17.968	0.268	0.1	0.076	0.000	0.0	0.242	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	18.500	17.700	18.117	0.417	0.1	0.118	0.000	0.1	0.368	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	18.500	17.700	17.978	0.278	0.1	0.079	0.000	0.0	0.324	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	18.500	17.700	18.154	0.454	0.2	0.129	0.000	0.1	0.531	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	18.500	17.700	17.985	0.285	0.1	0.081	0.000	0.0	0.333	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	18.500	17.700	18.175	0.475	0.2	0.135	0.000	0.1	0.560	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	18.500	17.700	17.988	0.288	0.1	0.081	0.000	0.0	0.336	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	18.500	17.700	18.176	0.476	0.1	0.135	0.000	0.1	0.559	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	18.500	17.700	17.988	0.288	0.1	0.082	0.000	0.0	0.337	Surcharged

FEH: 100 years: +45 %: 720 mins: Winter	18.500	17.700	18.159	0.459	0.2	0.130	0.000	0.1	0.541	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	18.500	17.700	17.982	0.282	0.1	0.080	0.000	0.0	0.329	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	18.500	17.700	18.091	0.391	0.1	0.111	0.000	0.1	0.473	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	18.500	17.700	17.951	0.251	0.0	0.071	0.000	0.0	0.293	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	18.500	17.700	17.970	0.270	0.0	0.076	0.000	0.0	0.315	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	18.500	17.700	17.891	0.191	0.0	0.054	0.000	0.0	0.223	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	18.500	17.700	17.882	0.182	0.0	0.051	0.000	0.0	0.212	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	18.500	17.700	17.834	0.134	0.0	0.038	0.000	0.0	0.156	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	18.500	17.700	17.804	0.104	0.0	0.029	0.000	0.0	0.122	Surcharged
FEH: 100 years: +45 %: 4320 mins: Summer	18.500	17.700	17.745	0.045	0.0	0.013	0.000	0.0	0.052	OK
FEH: 100 years: +45 %: 4320 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 5760 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 5760 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 7200 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 7200 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 8640 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 8640 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 10080 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
FEH: 100 years: +45 %: 10080 mins: Winter	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for Connection Junction: Rank By: Max. Depth

Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
FEH: 100 years: +45 %: 15 mins: Summer		17.223	17.235	0.012	0.3			0.3	0.332	OK
FEH: 100 years: +45 %: 15 mins: Winter		17.223	17.235	0.012	0.3			0.3	0.345	OK
FEH: 100 years: +45 %: 30 mins: Summer		17.223	17.236	0.013	0.3			0.3	0.805	OK
FEH: 100 years: +45 %: 30 mins: Winter		17.223	17.236	0.013	0.3			0.3	0.837	OK
FEH: 100 years: +45 %: 60 mins: Summer		17.223	17.236	0.013	0.3			0.3	1.840	OK
FEH: 100 years: +45 %: 60 mins: Winter		17.223	17.236	0.013	0.3			0.3	1.911	OK
FEH: 100 years: +45 %: 120 mins: Summer		17.223	17.236	0.013	0.3			0.3	3.979	OK
FEH: 100 years: +45 %: 120 mins: Winter		17.223	17.237	0.014	0.4			0.4	4.148	OK
FEH: 100 years: +45 %: 180 mins: Summer		17.223	17.237	0.014	0.3			0.3	6.080	OK
FEH: 100 years: +45 %: 180 mins: Winter		17.223	17.237	0.014	0.4			0.4	6.371	OK
FEH: 100 years: +45 %: 240 mins: Summer		17.223	17.237	0.014	0.3			0.3	8.077	OK
FEH: 100 years: +45 %: 240 mins: Winter		17.223	17.237	0.014	0.4			0.4	8.553	OK
FEH: 100 years: +45 %: 360 mins: Summer		17.223	17.237	0.014	0.4			0.4	11.778	OK
FEH: 100 years: +45 %: 360 mins: Winter		17.223	17.238	0.015	0.4			0.4	12.559	OK
FEH: 100 years: +45 %: 480 mins: Summer		17.223	17.237	0.014	0.4			0.4	14.566	OK
FEH: 100 years: +45 %: 480 mins: Winter		17.223	17.238	0.015	0.4			0.4	16.071	OK
FEH: 100 years: +45 %: 600 mins: Summer		17.223	17.237	0.014	0.4			0.4	15.808	OK
FEH: 100 years: +45 %: 600 mins: Winter		17.223	17.238	0.015	0.4			0.4	17.701	OK
FEH: 100 years: +45 %: 720 mins: Summer		17.223	17.237	0.014	0.4			0.4	16.958	OK

FEH: 100 years: +45 %: 720 mins: Winter	17.223	17.238	0.015	0.4	0.4	18.942	OK
FEH: 100 years: +45 %: 960 mins: Summer	17.223	17.237	0.014	0.4	0.4	18.750	OK
FEH: 100 years: +45 %: 960 mins: Winter	17.223	17.237	0.014	0.4	0.4	21.024	OK
FEH: 100 years: +45 %: 1440 mins: Summer	17.223	17.237	0.014	0.3	0.3	21.221	OK
FEH: 100 years: +45 %: 1440 mins: Winter	17.223	17.237	0.014	0.3	0.3	23.744	OK
FEH: 100 years: +45 %: 2160 mins: Summer	17.223	17.236	0.013	0.3	0.3	23.570	OK
FEH: 100 years: +45 %: 2160 mins: Winter	17.223	17.236	0.013	0.3	0.3	26.432	OK
FEH: 100 years: +45 %: 2880 mins: Summer	17.223	17.236	0.013	0.3	0.3	24.852	OK
FEH: 100 years: +45 %: 2880 mins: Winter	17.223	17.236	0.013	0.3	0.3	27.789	OK
FEH: 100 years: +45 %: 4320 mins: Summer	17.223	17.235	0.012	0.3	0.3	26.484	OK
FEH: 100 years: +45 %: 4320 mins: Winter	17.223	17.235	0.012	0.2	0.2	29.673	OK
FEH: 100 years: +45 %: 5760 mins: Summer	17.223	17.234	0.011	0.2	0.2	27.762	OK
FEH: 100 years: +45 %: 5760 mins: Winter	17.223	17.234	0.011	0.2	0.2	30.860	OK
FEH: 100 years: +45 %: 7200 mins: Summer	17.223	17.234	0.011	0.2	0.2	29.135	OK
FEH: 100 years: +45 %: 7200 mins: Winter	17.223	17.233	0.010	0.2	0.2	31.424	OK
FEH: 100 years: +45 %: 8640 mins: Summer	17.223	17.234	0.011	0.2	0.2	29.705	OK
FEH: 100 years: +45 %: 8640 mins: Winter	17.223	17.232	0.009	0.2	0.2	32.513	OK
FEH: 100 years: +45 %: 10080 mins: Summer	17.223	17.233	0.010	0.2	0.2	29.534	OK
FEH: 100 years: +45 %: 10080 mins: Winter	17.223	17.232	0.009	0.1	0.1	33.950	OK

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWC-03: Rank By: Max. Depth

Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
FEH: 100 years: +45 %: 15 mins: Summer	18.500	17.405	17.750	0.345	0.5	0.098	0.000	0.3	0.347	Surcharged
FEH: 100 years: +45 %: 15 mins: Winter	18.500	17.405	17.769	0.363	0.5	0.103	0.000	0.3	0.360	Surcharged
FEH: 100 years: +45 %: 30 mins: Summer	18.500	17.405	17.825	0.419	0.6	0.119	0.000	0.3	0.821	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	18.500	17.405	17.855	0.450	0.8	0.127	0.000	0.3	0.853	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	18.500	17.405	17.882	0.477	0.7	0.135	0.000	0.3	1.855	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	18.500	17.405	17.920	0.515	0.5	0.146	0.000	0.3	1.927	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	18.500	17.405	17.937	0.532	0.4	0.150	0.000	0.3	3.995	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	18.500	17.405	17.985	0.580	0.4	0.164	0.000	0.4	4.164	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	18.500	17.405	17.961	0.556	0.4	0.157	0.000	0.3	6.095	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	18.500	17.405	18.064	0.659	0.5	0.187	0.000	0.4	6.386	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	18.500	17.405	17.968	0.563	0.4	0.159	0.000	0.3	8.092	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	18.500	17.405	18.118	0.712	0.6	0.202	0.000	0.4	8.568	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	18.500	17.405	17.978	0.573	0.4	0.162	0.000	0.4	11.792	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	18.500	17.405	18.154	0.749	0.6	0.212	0.000	0.4	12.573	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	18.500	17.405	17.985	0.580	0.4	0.164	0.000	0.4	14.569	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	18.500	17.405	18.175	0.770	0.5	0.218	0.000	0.4	16.083	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	18.500	17.405	17.988	0.582	0.4	0.165	0.000	0.4	15.810	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	18.500	17.405	18.176	0.771	0.5	0.218	0.000	0.4	17.702	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	18.500	17.405	17.989	0.583	0.4	0.165	0.000	0.4	16.959	Surcharged

FEH: 100 years: +45 %: 720 mins: Winter	18.500	17.405	18.159	0.753	0.5	0.213	0.000	0.4	18.943	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	18.500	17.405	17.982	0.577	0.4	0.163	0.000	0.4	18.755	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	18.500	17.405	18.091	0.686	0.5	0.194	0.000	0.4	21.028	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	18.500	17.405	17.951	0.546	0.3	0.154	0.000	0.3	21.236	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	18.500	17.405	17.970	0.565	0.4	0.160	0.000	0.3	23.758	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	18.500	17.405	17.891	0.486	0.3	0.138	0.000	0.3	23.602	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	18.500	17.405	17.882	0.477	0.3	0.135	0.000	0.3	26.464	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	18.500	17.405	17.834	0.429	0.3	0.121	0.000	0.3	24.895	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	18.500	17.405	17.804	0.399	0.3	0.113	0.000	0.3	27.833	Surcharged
FEH: 100 years: +45 %: 4320 mins: Summer	18.500	17.405	17.745	0.339	0.3	0.096	0.000	0.3	26.550	Surcharged
FEH: 100 years: +45 %: 4320 mins: Winter	18.500	17.405	17.694	0.289	0.2	0.082	0.000	0.2	29.743	Surcharged
FEH: 100 years: +45 %: 5760 mins: Summer	18.500	17.405	17.683	0.278	0.2	0.079	0.000	0.2	27.858	Surcharged
FEH: 100 years: +45 %: 5760 mins: Winter	18.500	17.405	17.621	0.216	0.2	0.061	0.000	0.2	30.949	Surcharged
FEH: 100 years: +45 %: 7200 mins: Summer	18.500	17.405	17.639	0.234	0.2	0.066	0.000	0.2	29.258	Surcharged
FEH: 100 years: +45 %: 7200 mins: Winter	18.500	17.405	17.562	0.157	0.2	0.044	0.000	0.2	31.545	Surcharged
FEH: 100 years: +45 %: 8640 mins: Summer	18.500	17.405	17.614	0.208	0.2	0.059	0.000	0.2	29.852	Surcharged
FEH: 100 years: +45 %: 8640 mins: Winter	18.500	17.405	17.517	0.111	0.2	0.032	0.000	0.2	32.670	Surcharged
FEH: 100 years: +45 %: 10080 mins: Summer	18.500	17.405	17.579	0.174	0.2	0.049	0.000	0.2	29.716	Surcharged
FEH: 100 years: +45 %: 10080 mins: Winter	18.500	17.405	17.503	0.098	0.1	0.028	0.000	0.1	34.126	OK

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for Attenuation
Tank: Rank By: Max. Avg. Depth

Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
FEH: 100 years: +45 %: 15 mins: Summer	17.750	17.750	0.150	0.150	4.7	2.561	0.000	0.000	0.5	0.858	65.106	OK
FEH: 100 years: +45 %: 15 mins: Winter	17.769	17.769	0.169	0.169	5.0	2.883	0.000	0.000	0.5	0.936	60.728	OK
FEH: 100 years: +45 %: 30 mins: Summer	17.824	17.824	0.224	0.224	4.1	3.838	0.000	0.000	0.6	1.596	47.709	OK
FEH: 100 years: +45 %: 30 mins: Winter	17.855	17.855	0.255	0.255	4.4	4.360	0.000	0.000	0.8	1.736	40.593	OK
FEH: 100 years: +45 %: 60 mins: Summer	17.882	17.882	0.282	0.282	3.8	4.817	0.000	0.000	0.7	2.817	34.368	OK
FEH: 100 years: +45 %: 60 mins: Winter	17.920	17.920	0.320	0.320	3.6	5.479	0.000	0.000	0.5	3.023	25.360	OK
FEH: 100 years: +45 %: 120 mins: Summer	17.937	17.937	0.337	0.337	3.1	5.759	0.000	0.000	0.4	5.067	21.545	OK
FEH: 100 years: +45 %: 120 mins: Winter	17.985	17.985	0.385	0.385	2.7	6.582	0.000	0.000	0.4	5.401	10.332	OK
FEH: 100 years: +45 %: 180 mins: Summer	17.961	17.961	0.361	0.361	2.6	6.170	0.000	0.000	0.4	7.176	15.946	OK
FEH: 100 years: +45 %: 180 mins: Winter	18.064	18.064	0.464	0.464	2.3	6.907	0.000	0.000	0.5	7.765	5.899	OK
FEH: 100 years: +45 %: 240 mins: Summer	17.968	17.968	0.368	0.368	2.3	6.300	0.000	0.000	0.4	9.134	14.172	OK
FEH: 100 years: +45 %: 240 mins: Winter	18.118	18.118	0.518	0.518	2.0	6.958	0.000	0.000	0.6	10.015	5.199	OK
FEH: 100 years: +45 %: 360 mins: Summer	17.978	17.978	0.378	0.378	1.9	6.462	0.000	0.000	0.4	12.737	11.962	OK
FEH: 100 years: +45 %: 360 mins: Winter	18.154	18.154	0.554	0.554	1.6	6.993	0.000	0.000	0.6	13.999	4.733	OK

FEH: 100 years: +45 %: 480 mins: Summer	17.985	17.985	0.385	0.385	1.7	6.584	0.000	0.000	0.4	15.240	10.293	OK
FEH: 100 years: +45 %: 480 mins: Winter	18.176	18.176	0.576	0.576	1.4	7.013	0.000	0.000	0.5	17.372	4.449	OK
FEH: 100 years: +45 %: 600 mins: Summer	17.988	17.988	0.388	0.388	1.5	6.629	0.000	0.000	0.4	16.483	9.692	OK
FEH: 100 years: +45 %: 600 mins: Winter	18.177	18.177	0.577	0.577	1.2	7.014	0.000	0.000	0.5	18.837	4.437	OK
FEH: 100 years: +45 %: 720 mins: Summer	17.988	17.988	0.388	0.388	1.4	6.643	0.000	0.000	0.4	17.634	9.498	OK
FEH: 100 years: +45 %: 720 mins: Winter	18.159	18.159	0.559	0.559	1.1	6.997	0.000	0.000	0.5	20.050	4.668	OK
FEH: 100 years: +45 %: 960 mins: Summer	17.982	17.982	0.382	0.382	1.2	6.528	0.000	0.000	0.4	19.411	11.059	OK
FEH: 100 years: +45 %: 960 mins: Winter	18.092	18.092	0.492	0.492	0.9	6.933	0.000	0.000	0.5	21.976	5.544	OK
FEH: 100 years: +45 %: 1440 mins: Summer	17.951	17.951	0.351	0.351	0.9	5.998	0.000	0.000	0.3	21.808	18.289	OK
FEH: 100 years: +45 %: 1440 mins: Winter	17.970	17.970	0.370	0.370	0.7	6.328	0.000	0.000	0.4	24.376	13.791	OK
FEH: 100 years: +45 %: 2160 mins: Summer	17.891	17.891	0.291	0.291	0.7	4.982	0.000	0.000	0.3	24.019	32.123	OK
FEH: 100 years: +45 %: 2160 mins: Winter	17.882	17.882	0.282	0.282	0.5	4.818	0.000	0.000	0.3	26.859	34.363	OK
FEH: 100 years: +45 %: 2880 mins: Summer	17.834	17.834	0.234	0.234	0.6	4.000	0.000	0.000	0.3	25.166	45.501	OK
FEH: 100 years: +45 %: 2880 mins: Winter	17.804	17.804	0.204	0.204	0.4	3.492	0.000	0.000	0.3	28.034	52.425	OK
FEH: 100 years: +45 %: 4320 mins: Summer	17.745	17.745	0.145	0.145	0.4	2.472	0.000	0.000	0.3	26.590	66.323	OK
FEH: 100 years: +45 %: 4320 mins: Winter	17.694	17.694	0.094	0.094	0.3	1.613	0.000	0.000	0.2	29.675	78.027	OK
FEH: 100 years: +45 %: 5760 mins: Summer	17.683	17.683	0.083	0.083	0.3	1.425	0.000	0.000	0.2	27.764	80.585	OK

FEH: 100 years: +45 %: 5760 mins: Winter	17.621	17.621	0.021	0.021	0.2	0.361	0.000	0.000	0.2	30.862	95.077	OK
FEH: 100 years: +45 %: 7200 mins: Summer	17.639	17.639	0.039	0.039	0.3	0.673	0.000	0.000	0.2	29.137	90.831	OK
FEH: 100 years: +45 %: 7200 mins: Winter	17.607	17.607	0.007	0.007	0.2	0.117	0.000	0.000	0.2	31.426	98.403	OK
FEH: 100 years: +45 %: 8640 mins: Summer	17.614	17.614	0.014	0.014	0.2	0.235	0.000	0.000	0.2	29.707	96.799	OK
FEH: 100 years: +45 %: 8640 mins: Winter	17.606	17.606	0.006	0.006	0.2	0.108	0.000	0.000	0.2	32.515	98.525	OK
FEH: 100 years: +45 %: 10080 mins: Summer	17.607	17.607	0.007	0.007	0.2	0.120	0.000	0.000	0.2	29.536	98.366	OK
FEH: 100 years: +45 %: 10080 mins: Winter	17.606	17.606	0.006	0.006	0.1	0.105	0.000	0.000	0.1	33.952	98.570	OK

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWP-01: Rank By: Max. Flow

Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
FEH: 100 years: +45 %: 15 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.750	0.100	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 15 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.769	0.100	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 30 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.824	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.855	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.882	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.920	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.937	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.985	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.961	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.064	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.968	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.118	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.978	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.154	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.985	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.175	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.988	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.176	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.988	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 720 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.159	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.982	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	18.091	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.951	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.970	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.891	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.882	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.834	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.804	0.100	0.000	0.0	0	0.0	Surcharged

FEH: 100 years: +45 %: 4320 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.745	0.095	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 4320 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.047	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 5760 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.042	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 5760 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.011	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 7200 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.020	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 7200 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.003	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 8640 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.007	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 8640 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.003	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 10080 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.004	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 10080 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.003	0.000	0.0	0	0.0	OK

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWP-02: Rank By: Max. Flow

Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
FEH: 100 years: +45 %: 15 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.750	0.100	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 15 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.769	0.100	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 30 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.824	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.855	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.882	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.920	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.937	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.985	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.961	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.064	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.968	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.117	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.978	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.154	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.985	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.175	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.988	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.176	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.988	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 720 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.159	0.100	0.000	0.0	0	0.1	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.982	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	18.091	0.100	0.000	0.0	0.01	0.1	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.951	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.970	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.891	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.882	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.834	0.100	0.000	0.0	0	0.0	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.804	0.100	0.000	0.0	0	0.0	Surcharged

FEH: 100 years: +45 %: 4320 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.745	0.095	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 4320 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.047	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 5760 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.042	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 5760 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.011	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 7200 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.020	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 7200 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.003	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 8640 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.007	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 8640 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.003	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 10080 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.004	0.000	0.0	0	0.0	OK
FEH: 100 years: +45 %: 10080 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.003	0.000	0.0	0	0.0	OK

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 100 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWP-03: Rank By: Max. Flow

Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
FEH: 100 years: +45 %: 15 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.750	0.100	0.740	0.7	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 15 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.769	0.100	0.775	0.6	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 30 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.824	0.100	1.305	0.2	0.04	0.6	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.855	0.100	1.372	0.6	0.05	0.8	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.882	0.100	2.392	0.3	0.04	0.7	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.920	0.100	2.509	0.3	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.937	0.100	4.514	0.4	0.03	0.4	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.985	0.100	4.736	0.4	0.03	0.4	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.961	0.100	6.567	0.4	0.03	0.4	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.064	0.100	6.913	0.3	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.968	0.100	8.507	0.2	0.03	0.4	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.118	0.100	9.033	0.4	0.04	0.6	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.978	0.100	12.088	0.3	0.02	0.4	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.154	0.100	12.916	0.3	0.03	0.6	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.985	0.100	14.574	0.3	0.02	0.4	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.176	0.100	16.231	0.2	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.988	0.100	15.811	0.3	0.02	0.4	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.177	0.100	17.697	0.3	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.988	0.100	16.960	0.3	0.02	0.4	Surcharged
FEH: 100 years: +45 %: 720 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.159	0.100	18.945	0.2	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.982	0.100	18.753	0.2	0.02	0.4	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	18.092	0.100	21.024	0.2	0.03	0.5	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.951	0.100	21.223	0.3	0.02	0.3	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.970	0.100	23.746	0.2	0.02	0.4	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.891	0.100	23.572	0.2	0.02	0.3	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.882	0.100	26.434	0.2	0.02	0.3	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.834	0.100	24.853	0.2	0.02	0.3	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.804	0.100	27.791	0.2	0.02	0.3	Surcharged

FEH: 100 years: +45 %: 4320 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.745	0.100	26.486	0.2	0.02	0.3	Surcharged
FEH: 100 years: +45 %: 4320 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.694	0.100	29.675	0.1	0.02	0.2	OK
FEH: 100 years: +45 %: 5760 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.683	0.100	27.764	0.2	0.02	0.2	OK
FEH: 100 years: +45 %: 5760 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.621	0.100	30.862	0.1	0.01	0.2	OK
FEH: 100 years: +45 %: 7200 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.639	0.100	29.137	0.1	0.01	0.2	OK
FEH: 100 years: +45 %: 7200 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.607	0.082	31.426	0.1	0.01	0.2	OK
FEH: 100 years: +45 %: 8640 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.614	0.100	29.707	0.1	0.01	0.2	OK
FEH: 100 years: +45 %: 8640 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.606	0.059	32.515	0.1	0.01	0.2	OK
FEH: 100 years: +45 %: 10080 mins: Summer	Pipe	Attenuation Tank	SWC-03	18.500	17.607	0.091	29.536	0.1	0.01	0.2	OK
FEH: 100 years: +45 %: 10080 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.606	0.052	33.952	0.1	0.01	0.1	OK

FEH: 100 years: Increase Rainfall (%): +45: Summary Results for SWP-04: Rank By: Max. Flow

Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
FEH: 100 years: +45 %: 15 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.750	0.012	0.332	0.5	0.03	0.3	Surcharged
FEH: 100 years: +45 %: 15 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.769	0.012	0.345	0.5	0.03	0.3	Surcharged
FEH: 100 years: +45 %: 30 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.825	0.013	0.805	0.5	0.03	0.3	Surcharged
FEH: 100 years: +45 %: 30 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.855	0.013	0.837	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 60 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.882	0.013	1.840	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 60 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.920	0.014	1.911	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 120 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.937	0.014	3.979	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 120 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.985	0.014	4.148	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 180 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.961	0.014	6.080	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 180 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.064	0.014	6.371	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 240 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.968	0.014	8.077	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 240 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.118	0.015	8.553	0.5	0.05	0.4	Surcharged
FEH: 100 years: +45 %: 360 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.978	0.014	11.778	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 360 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.154	0.015	12.559	0.6	0.05	0.4	Surcharged
FEH: 100 years: +45 %: 480 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.985	0.014	14.566	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 480 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.175	0.015	16.071	0.6	0.05	0.4	Surcharged
FEH: 100 years: +45 %: 600 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.988	0.014	15.808	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 600 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.176	0.015	17.701	0.6	0.05	0.4	Surcharged
FEH: 100 years: +45 %: 720 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.989	0.014	16.958	0.5	0.04	0.4	Surcharged

FEH: 100 years: +45 %: 720 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.159	0.015	18.942	0.6	0.05	0.4	Surcharged
FEH: 100 years: +45 %: 960 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.982	0.014	18.750	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 960 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	18.091	0.015	21.024	0.5	0.04	0.4	Surcharged
FEH: 100 years: +45 %: 1440 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.951	0.014	21.221	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 1440 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.970	0.014	23.744	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 2160 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.891	0.013	23.570	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 2160 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.882	0.013	26.432	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 2880 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.834	0.013	24.852	0.5	0.04	0.3	Surcharged
FEH: 100 years: +45 %: 2880 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.804	0.013	27.789	0.5	0.03	0.3	Surcharged
FEH: 100 years: +45 %: 4320 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.745	0.012	26.484	0.5	0.03	0.3	Surcharged
FEH: 100 years: +45 %: 4320 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.694	0.012	29.673	0.5	0.03	0.2	Surcharged
FEH: 100 years: +45 %: 5760 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.683	0.012	27.762	0.5	0.03	0.2	Surcharged
FEH: 100 years: +45 %: 5760 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.621	0.011	30.860	0.5	0.02	0.2	Surcharged
FEH: 100 years: +45 %: 7200 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.639	0.011	29.135	0.5	0.03	0.2	Surcharged
FEH: 100 years: +45 %: 7200 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.562	0.010	31.424	0.4	0.02	0.2	Surcharged
FEH: 100 years: +45 %: 8640 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.614	0.011	29.705	0.5	0.02	0.2	Surcharged
FEH: 100 years: +45 %: 8640 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.517	0.009	32.513	0.4	0.02	0.2	Surcharged
FEH: 100 years: +45 %: 10080 mins: Summer	Pipe	SWC-03	Connection Junction	18.500	17.579	0.010	29.534	0.4	0.02	0.2	Surcharged
FEH: 100 years: +45 %: 10080 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.503	0.009	33.950	0.4	0.02	0.1	OK

Phase
FEH: 100 years: Increase Rainfall (%): +45: 600 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Connection Junction			0.4	17.701
TOTAL	1.2	17.729	0.4	17.701

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Attenuation Tank		Time of Concentration	0.005	100	0	100	0.005
Green Roof	Attenuation Tank		Green Roof	0.013		0		0.013
TOTAL		**0.0**		**0.017**				**0.017**

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Title: Rainfall Analysis Criteria	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 590652 163622 TQ 90652 63622
Rainfall Version	2022
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
30.0	45.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FEH: 30 years: +45 %: 15 mins: Winter	0.00	2.3	1.099
Green Roof	FEH: 30 years: +45 %: 30 mins: Winter	0.01	1.8	3.297

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWC-01	FEH: 30 years: +45 %: 240 mins: Winter	18.500	17.700	17.909	0.209	0.1	0.059	0.000	0.0	0.230	Surcharged
SWC-02	FEH: 30 years: +45 %: 240 mins: Winter	18.500	17.700	17.909	0.209	0.1	0.059	0.000	0.0	0.230	Surcharged
Connection Junction	FEH: 30 years: +45 %: 240 mins: Winter		17.223	17.236	0.013	0.3			0.3	7.599	OK
SWC-03	FEH: 30 years: +45 %: 240 mins: Winter	18.500	17.405	17.909	0.504	0.4	0.143	0.000	0.3	7.613	Surcharged

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Attenuation Tank	FEH: 30 years: +45 %: 240 mins: Winter	17.909	17.909	0.309	0.309	1.5	5.288	0.000	0.000	0.4	8.461	27.953	OK

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +45% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
SWP-01	FEH: 30 years: +45 %: 240 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.909	0.100	0.000	0.0	0	0.0	Surcharged
SWP-02	FEH: 30 years: +45 %: 240 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.909	0.100	0.000	0.0	0	0.0	Surcharged
SWP-03	FEH: 30 years: +45 %: 60 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.838	0.100	2.253	0.4	0.04	0.7	Surcharged
SWP-04	FEH: 30 years: +45 %: 240 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.909	0.014	7.599	0.5	0.04	0.3	Surcharged

Phase
FEH: 30 years: Increase Rainfall (%): +45: 240 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Connection Junction			0.3	7.599
TOTAL	1.5	9.921	0.3	7.599

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Attenuation Tank		Time of Concentration	0.005	100	0	100	0.005
Green Roof	Attenuation Tank		Green Roof	0.013		0		0.013
TOTAL		**0.0**		**0.017**				**0.017**

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Title: Rainfall Analysis Criteria	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 590652 163622 TQ 90652 63622
Rainfall Version	2022
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
30.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FEH: 30 years: +0 %: 15 mins: Winter	0.00	1.6	0.760
Green Roof	FEH: 30 years: +0 %: 30 mins: Winter	0.01	1.3	2.277

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWC-01	FEH: 30 years: +0 %: 180 mins: Winter	18.500	17.700	17.789	0.089	0.1	0.025	0.000	0.0	0.104	OK
SWC-02	FEH: 30 years: +0 %: 180 mins: Winter	18.500	17.700	17.789	0.089	0.1	0.025	0.000	0.0	0.104	OK
Connection Junction	FEH: 30 years: +0 %: 180 mins: Winter		17.223	17.235	0.012	0.3			0.3	4.976	OK
SWC-03	FEH: 30 years: +0 %: 180 mins: Winter	18.500	17.405	17.790	0.384	0.3	0.109	0.000	0.3	4.990	Surcharged

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Attenuation Tank	FEH: 30 years: +0 %: 180 mins: Winter	17.789	17.789	0.189	0.189	1.2	3.239	0.000	0.000	0.3	5.493	55.868	OK

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 30 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
SWP-01	FEH: 30 years: +0 %: 180 mins: Winter	Pipe	SWC-01	Attenuation Tank	18.500	17.789	0.100	0.000	0.0	0	0.0	OK
SWP-02	FEH: 30 years: +0 %: 180 mins: Winter	Pipe	SWC-02	Attenuation Tank	18.500	17.789	0.100	0.000	0.0	0	0.0	OK
SWP-03	FEH: 30 years: +0 %: 15 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.685	0.100	0.624	0.6	0.11	1.8	OK
SWP-04	FEH: 30 years: +0 %: 180 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.790	0.013	4.976	0.5	0.03	0.3	Surcharged

Phase
FEH: 30 years: Increase Rainfall (%): +0: 180 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Connection Junction			0.3	4.976
TOTAL	1.2	6.270	0.3	4.976

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 2 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Details: Type: Inflow Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Inflow Label	Connected To	Flow (L/s)	Runoff Method	Area (ha)	Percentage Impervious (%)	Urban Creep (%)	Adjusted Percentage Impervious (%)	Area Analysed (ha)
Catchment Area	Attenuation Tank		Time of Concentration	0.005	100	0	100	0.005
Green Roof	Attenuation Tank		Green Roof	0.013		0		0.013
TOTAL		**0.0**		**0.017**				**0.017**

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 2 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Title: Rainfall Analysis Criteria	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Runoff Type	Dynamic
Output Interval (mins)	5
Time Step	Default
Urban Creep	Apply Global Value
Urban Creep Global Value (%)	0
Junction Flood Risk Margin (mm)	300
Perform No Discharge Analysis	☐

Rainfall

FEH

Type: FEH

Site Location	GB 590652 163622 TQ 90652 63622
Rainfall Version	2022
Summer	☑
Winter	☑

Return Period

Return Period (years)	Increase Rainfall (%)
2.0	0.000

Storm Durations

Duration (mins)	Run Time (mins)
15	30
30	60
60	120
120	240
180	360
240	480
360	720
480	960
600	1200
720	1440
960	1920
1440	2880
2160	4320
2880	5760
4320	8640
5760	11520
7200	14400
8640	17280
10080	20160

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 2 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Inflows Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Inflow

Inflow	Storm Event	Inflow Area (ha)	Max. Inflow (L/s)	Total Inflow Volume (m^3)
Catchment Area	FEH: 2 years: +0 %: 15 mins: Winter	0.00	0.7	0.327
Green Roof	FEH: 2 years: +0 %: 30 mins: Winter	0.01	0.5	0.979

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 2 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024			Nimbus ENGINEERING CONSULTANTS
	Designed by: N.E	Checked by: S.L	Approved By: S.L	
Report Details: Type: Junctions Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX			

Critical Storm Per Item: Rank By: Max. Depth

Junction	Storm Event	Cover Level (m)	Invert Level (m)	Max. Level (m)	Max. Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Status
SWC-01	FEH: 2 years: +0 %: 15 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
SWC-02	FEH: 2 years: +0 %: 15 mins: Summer	18.500	17.700	17.700	0.000	0.0	0.000	0.000	0.0	0.000	OK
Connection Junction	FEH: 2 years: +0 %: 180 mins: Winter		17.223	17.234	0.011	0.2			0.2	3.152	OK
SWC-03	FEH: 2 years: +0 %: 180 mins: Winter	18.500	17.405	17.667	0.262	0.3	0.074	0.000	0.2	3.154	Surcharged

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 2 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Stormwater Controls Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Avg. Depth

Stormwater Control	Storm Event	Max. US Level (m)	Max. DS Level (m)	Max. US Depth (m)	Max. DS Depth (m)	Max. Inflow (L/s)	Max. Resident Volume (m³)	Max. Flooded Volume (m³)	Total Lost Volume (m³)	Max. Outflow (L/s)	Total Discharge Volume (m³)	Percentage Available (%)	Status
Attenuation Tank	FEH: 2 years: +0 %: 180 mins: Winter	17.667	17.667	0.067	0.067	0.6	1.151	0.000	0.000	0.3	3.157	84.317	OK

87 Highstreet/1-5 Central Avenue, Sittingbourn: Kent, ME10 4AU. Erection of Third Floor, A Three Storey Rear Extensioon. 2 Years Storm Event +0% CCA, Restricted Flow to 0.5l/s	Date: 28/03/2024		
	Designed by: N.E	Checked by: S.L	Approved By: S.L
Report Details: Type: Connections Summary Storm Phase: Phase	Company Address: Nimbus Engineering Ltd. 124 City Road, London, EC1V 2NX		

Critical Storm Per Item: Rank By: Max. Flow

Connection	Storm Event	Connection Type	From	To	Upstream Cover Level (m)	Max. US Water Level (m)	Max. Flow Depth (m)	Discharge Volume (m³)	Max. Velocity (m/s)	Flow / Capacity	Max. Flow (L/s)	Status
SWP-01	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SWC-01	Attenuation Tank	18.500	17.700	0.009	0.000	0.0	0	0.0	OK
SWP-02	FEH: 2 years: +0 %: 15 mins: Summer	Pipe	SWC-02	Attenuation Tank	18.500	17.700	0.009	0.000	0.0	0	0.0	OK
SWP-03	FEH: 2 years: +0 %: 30 mins: Winter	Pipe	Attenuation Tank	SWC-03	18.500	17.636	0.100	0.841	0.4	0.05	0.9	OK
SWP-04	FEH: 2 years: +0 %: 180 mins: Winter	Pipe	SWC-03	Connection Junction	18.500	17.667	0.011	3.152	0.5	0.03	0.2	Surcharged

Phase
FEH: 2 years: Increase Rainfall (%): +0: 180 mins: Winter

Tables

Name	Max. Inflow (L/s)	Total Inflow Volume (m³)	Max. Outflow (L/s)	Total Outflow Volume (m³)
Connection Junction			0.2	3.152
TOTAL	0.6	3.175	0.2	3.152

APPENDIX C – WATER AUTHORITY ASSET PLANS

Date: 26/03/24

Scale: 1:1250

Map Centre: 590660,163642

Data updated: 12/01/24

Our Ref: 1430691 - 1

Wastewater Plan A3

The positions of pipes shown on this plan are believed to be correct, but Southern Water Services Ltd accept no responsibility in the event of inaccuracy. The actual positions should be determined on site. This plan is produced by Southern Water Services Ltd (c) Crown copyright and database rights 2024 Ordnance Survey 100031673 .This map is to be used for the purposes of viewing the location of Southern Water plant only. Any other uses of the map data or further copies is not permitted.

WARNING: BAC pipes are constructed of Bonded Asbestos Cement.

WARNING: Unknown (UNK) materials may include Bonded Asbestos Cement.

Foul Gravity Sewer
Combined Gravity Sewer
Culverted Water Course or Treated Effluent
Surface Water Gravity Sewer
Rising Main, Vacuum or Syphon
Combined Outfall
Surface Water Outfall
Foul Outfall
Surface Water Inlet
Combined Pumping Station
Surface Water Pumping Station
Foul Pumping Station
Water Treatment Works
Section 104 Area
Building Over Agreement Area
Foul Manhole
Combined Manhole
Surface Water Manhole
Side Entry Manhole, Decarcation Chamber, Dummy Manhole or Surface Water Soakaway

sadia@nimbusengineering.co.uk

C3238

WATER for LIFE

from Southern Water

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
4501	C	22.04	20.60	
4601	C	18.68	15.61	
4701	C	18.35	15.89	
4702	C	18.33	15.84	
4703	C	18.68	15.60	
4704	C	18.40	15.78	
4705	C	17.91	15.43	
5601	C	17.69	15.16	
5602	C	17.73	15.19	
6601	C	17.39	14.99	
6602	C	17.01	14.70	
6603	C	17.42	15.04	
6604	C	17.07	14.80	
6605	C	16.73	14.23	
7602	C	15.68	12.83	
7603	C	15.70	12.86	
7604	C	15.16	12.18	
8602	C	12.28	9.65	
8603	C	9.70	7.60	
8604	C	12.34	9.66	
8605	C	9.64	7.62	
4602	F	0.00	0.00	
4708	F	0.00	0.00	
5502	F	20.18	17.98	
5503	F	19.95	17.15	
5701	F	17.42	16.37	
5702	F	17.39	15.90	
5703	F	17.40	15.80	
5704	F	18.45	15.81	
5705	F	18.38	15.49	
5706	F	18.35	17.20	
5707	F	17.38	15.73	
5708	F	18.15	16.93	
6501	F	19.02	16.61	
6502	F	19.95	18.88	
6503	F	19.27	16.77	
6606	F	18.66	16.34	
6607	F	18.64	16.28	
6608	F	18.48	15.88	
6609	F	18.37	14.75	
6610	F	17.46	14.59	
6611	F	17.04	14.50	
6612	F	0.00	0.00	
6613	F	0.00	0.00	
6701	F	16.68	0.00	
6702	F	16.74	16.25	
6703	F	16.77	16.18	
6704	F	16.76	16.14	
6705	F	16.79	16.09	
6706	F	16.87	15.94	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
6709	F	16.73	15.67	
6710	F	19.39	17.23	
6711	F	19.33	17.05	
6712	F	19.36	16.99	
6713	F	19.41	16.93	
6714	F	19.35	18.04	
6715	F	19.35	18.32	
6716	F	19.37	18.48	
6717	F	19.38	18.52	
6718	F	18.72	17.64	
7601	F	16.12	13.77	
7605	F	0.00	0.00	
7606	F	0.00	0.00	
7701	F	14.62	13.54	
7702	F	13.18	11.44	
8601	F	13.08	9.83	
8606	F	0.00	0.00	
8607	F	0.00	0.00	
8701	F	12.38	10.18	
8702	F	11.35	6.85	
9508	F	0.00	0.00	
9701	F	9.74	0.00	
4750	S	18.23	16.49	
5650	S	18.13	16.53	
5651	S	17.67	17.13	
5750	S	18.01	17.37	
5751	S	18.06	0.00	
5752	S	17.87	0.00	
5757	S	16.48	0.00	
5759	S	17.45	16.65	
5760	S	17.43	16.52	
5762	S	17.42	16.49	
5763	S	17.41	16.41	
5764	S	17.41	16.32	
5769	S	17.85	15.67	
6550	S	19.77	18.38	
6551	S	19.35	17.90	
6650	S	17.41	16.26	
6651	S	17.41	15.83	
6652	S	17.23	15.70	
6653	S	0.00	0.00	
6654	S	18.19	16.78	
6655	S	17.81	16.50	
6656	S	17.43	0.00	
6663	S	16.79	15.85	
6751	S	16.82	15.84	
6752	S	16.81	15.78	
6753	S	16.77	15.65	
6754	S	16.71	15.41	
6755	S	16.64	14.93	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
6756	S	16.78	14.40	
6757	S	16.83	14.32	
6758	S	16.77	14.24	
6759	S	16.80	14.18	
6760	S	16.89	14.10	
6761	S	17.55	16.18	
6762	S	17.61	16.14	
6763	S	17.07	14.03	
6764	S	17.39	14.31	
6765	S	16.90	14.51	
6766	S	16.58	14.84	
6767	S	19.23	17.07	
6768	S	18.96	17.16	
6769	S	19.40	18.49	
6770	S	19.34	18.31	
6771	S	19.36	18.15	
6772	S	19.36	18.01	
6773	S	19.37	17.91	
6774	S	19.36	18.23	
6775	S	19.40	18.41	
6776	S	19.49	17.73	
6777	S	17.53	0.00	
6778	S	17.54	0.00	
6779	S	17.55	0.00	
6780	S	17.57	0.00	
6781	S	17.57	0.00	
6782	S	17.56	0.00	
6783	S	17.55	0.00	
7650	S	16.36	14.48	
7651	S	15.29	14.37	
7652	S	13.54	12.58	
7653	S	15.18	0.00	
7654	S	16.14	14.42	
7655	S	15.16	13.75	
7660	S	16.27	0.00	
7665	S	0.00	0.00	
7666	S	0.00	0.00	
7750	S	18.27	17.35	
7751	S	15.59	12.99	
7752	S	14.73	13.33	
7753	S	14.19	0.00	
7754	S	14.01	0.00	
8650	S	12.34	11.19	
8651	S	9.94	8.21	
8652	S	12.22	10.75	
8653	S	11.08	0.00	
8654	S	10.05	9.33	
8655	S	11.07	9.15	
8656	S	12.27	10.82	
8661	S	9.79	0.00	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert
8665	S	0.00	0.00	
8750	S	12.75	0.00	
8751	S	11.34	7.94	
8752	S	10.53	7.87	
9651	S	9.38	8.46	
9751	S	9.46	7.80	

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert

Manhole Reference	Liquid Type	Cover Level	Invert Level	Depth to Invert