STRUCTURAL
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STANMORE BUSINESS PARK
BRIDGNORTH
23/31
WATER MANAGEMENT STATEMENT
BUILDINGS 17 AND 18
January 2024

INTRODUCTION

The existing site is Brownfield and is located at the junction of Lees and Estate roads within the Stanmore Business Park, Bridgnorth, Shropshire, WV15 5HP. The proposed development will involve the construction of Building 17, Units 1,2 &3 and Building 18, Units 1 & 2.

SITE DESCRIPTION

The site is within an existing business park with several industrial units, access roads and car parking. The site is surrounded by green fields on all sides.

PROPOSED LEVELS

The proposed levels are anticipated to closely resemble existing levels to minimise the import or export of materials as far as reasonable possible.

EXISTING FLOOD RISK

The site is shown on the Environment Agency's map, attached, to be in Flood Zone 1 and is considered to be at very low risk of flooding from surface water.

FOUL DRAINAGE

The foul drainage from the proposed development will drain to the existing foul sewer network within the Business Park prior to discharging to a wastewater treatment plant off site. All drains will remain private and will be maintained by the Property Management Services based within the Stanmore Business Park.

SURFACE WATER DRAINAGE

Disposal Options

Generally the aim should be to discharge the surface water run-off to one of the following, listed in order of priority to:

1. Ground infiltration
2. Watercourse
3. Surface water sewer
4. Combined sewer

All the existing units, access roads and car park areas discharge to soakaways within the site boundary. For the purposes of this report surface water from the proposed Building 17 & 18 and service yard / car parking area will be accommodated on site by means of infiltration to ground.

Percolation tests in accordance with BRE Digest 365 have been carried out on site at the location of the proposed soakaway. Soakaway's 1,2 & 3 have been designed based on the percolation test results for a 1 in 100year return period including 40% for Climate Change. The soakaway will be a crated system with 95% free void and situated a minimum of 5000mm from any building and 2500mm from any boundary.

A silt trap will be provided upstream of the soakaway.

Flood map for planning

Your reference	Location (easting/northing)	Created
<Unspecified>	**374303/292962**	**3 Apr 2023 14:54**

Your selected location is in flood zone 1, an area with a low probability of flooding.

You will need to do a flood risk assessment if your site is **any of the following:**

- bigger that 1 hectare (ha)
- In an area with critical drainage problems as notified by the Environment Agency
- identified as being at increased flood risk in future by the local authority's strategic flood risk assessment
- at risk from other sources of flooding (such as surface water or reservoirs) and its development would increase the vulnerability of its use (such as constructing an office on an undeveloped site or converting a shop to a dwelling)

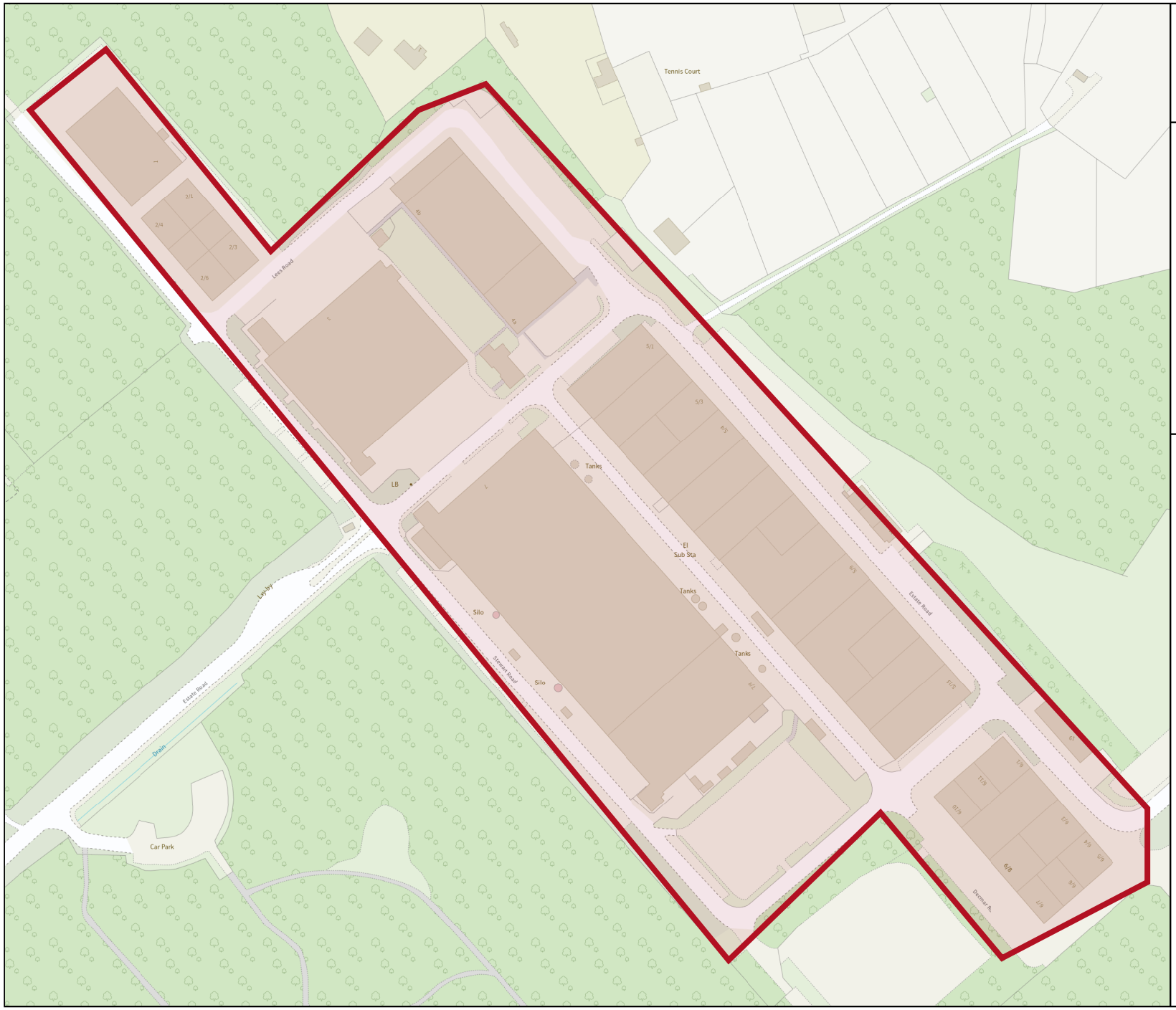
Notes

The flood map for planning shows river and sea flooding data only. It doesn't include other sources of flooding. It is for use in development planning and flood risk assessments.

This information relates to the selected location and is not specific to any property within it. The map is updated regularly and is correct at the time of printing.

Flood risk data is covered by the Open Government Licence **which** sets out the terms and conditions for using government data. https://www.nationalarchives.gov.uk/doc/open-government-licence/version/3/

Use of the address and mapping data is subject to Ordnance Survey public viewing terms under Crown copyright and database rights 2022 OS 100024198. https://flood-map-for-planning.service.gov.uk/os-terms



Environment Agency

Flood map for planning

Your reference
<Unspecified>

Location (easting/northing)
374303/292962

Scale
1:2500

Created
3 Apr 2023 14:54

- Selected area
- Flood zone 3
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

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SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.03

Design rainfall intensity

Location of catchment area	Birmingham
Impermeable area drained to the system	A = **1900.0** m^2
Return period	Period = **100** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = **0.400**
5-year return period rainfall of 60 minutes duration	M5_60min = **19.0** mm
Increase of rainfall intensity due to global warming	$p_{climate}$ = **40** %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = **2000** mm
Width of pit	w = **2000** mm
Length of pit	l = **37682** mm
Percentage free volume	V_{free} = **95** %
Soil infiltration rate	f = **10.0×10^{-6}** m/s
Wetted area of pit 50% full	a_{s50} = l × d + w × d = **79363426** mm^2

Table equations

Inflow (cl.3.3.1)	I = M100 × A
Outflow (cl.3.3.2)	O = a_{s50} × f × D
Storage (cl.3.3.3)	S = I - O

Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m^3)	Outflow (m^3)	Storage required (m^3)
5	0.37;	9.9;	1.91;	19.0;	36.01;	0.24;	35.77
10	0.52;	13.9;	1.97;	27.5;	52.18;	0.48;	51.70
15	0.63;	16.8;	2.00;	33.8;	64.17;	0.71;	63.46
30	0.80;	21.4;	2.02;	43.3;	82.20;	1.43;	80.77
60	1.00;	26.6;	2.00;	53.1;	100.94;	2.86;	98.08
120	1.21;	32.1;	1.95;	62.7;	119.12;	5.71;	113.40
240	1.45;	38.5;	1.90;	73.2;	139.07;	11.43;	127.65
360	1.60;	42.6;	1.87;	79.7;	151.43;	17.14;	134.29
600	1.79;	47.7;	1.83;	87.2;	165.72;	28.57;	137.14
1440	2.24;	59.6;	1.74;	104.0;	197.53;	68.57;	128.96

Required storage volume	S_{req} = **137.14** m^3
Soakaway storage volume	S_{act} = l × d × w × V_{free} = **143.19** m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume	t_{s50} = S_{req} × 0.5 / (a_{s50} × f) = 24hr

PASS - Soakaway discharge time less than or equal to 24 hours

SOAKAWAY DESIGN

In accordance with BRE Digest 365 - Soakaway design

Tedds calculation version 2.0.03

Design rainfall intensity

Location of catchment area	Birmingham
Impermeable area drained to the system	A = **130.0** m^2
Return period	Period = **100** yr
Ratio 60 min to 2 day rainfall of 5 yr return period	r = **0.400**
5-year return period rainfall of 60 minutes duration	M5_60min = **19.0** mm
Increase of rainfall intensity due to global warming	$p_{climate}$ = **40** %

Soakaway / infiltration trench details

Soakaway type	Rectangular
Minimum depth of pit (below incoming invert)	d = **1200** mm
Width of pit	w = **1000** mm
Length of pit	l = **7220** mm
Percentage free volume	V_{free} = **95** %
Soil infiltration rate	f = **10.0×10^{-6}** m/s
Wetted area of pit 50% full	a_{s50} = l × d + w × d = **9863891** mm^2

Table equations

Inflow (cl.3.3.1)	I = M100 × A
Outflow (cl.3.3.2)	O = a_{s50} × f × D
Storage (cl.3.3.3)	S = I - O

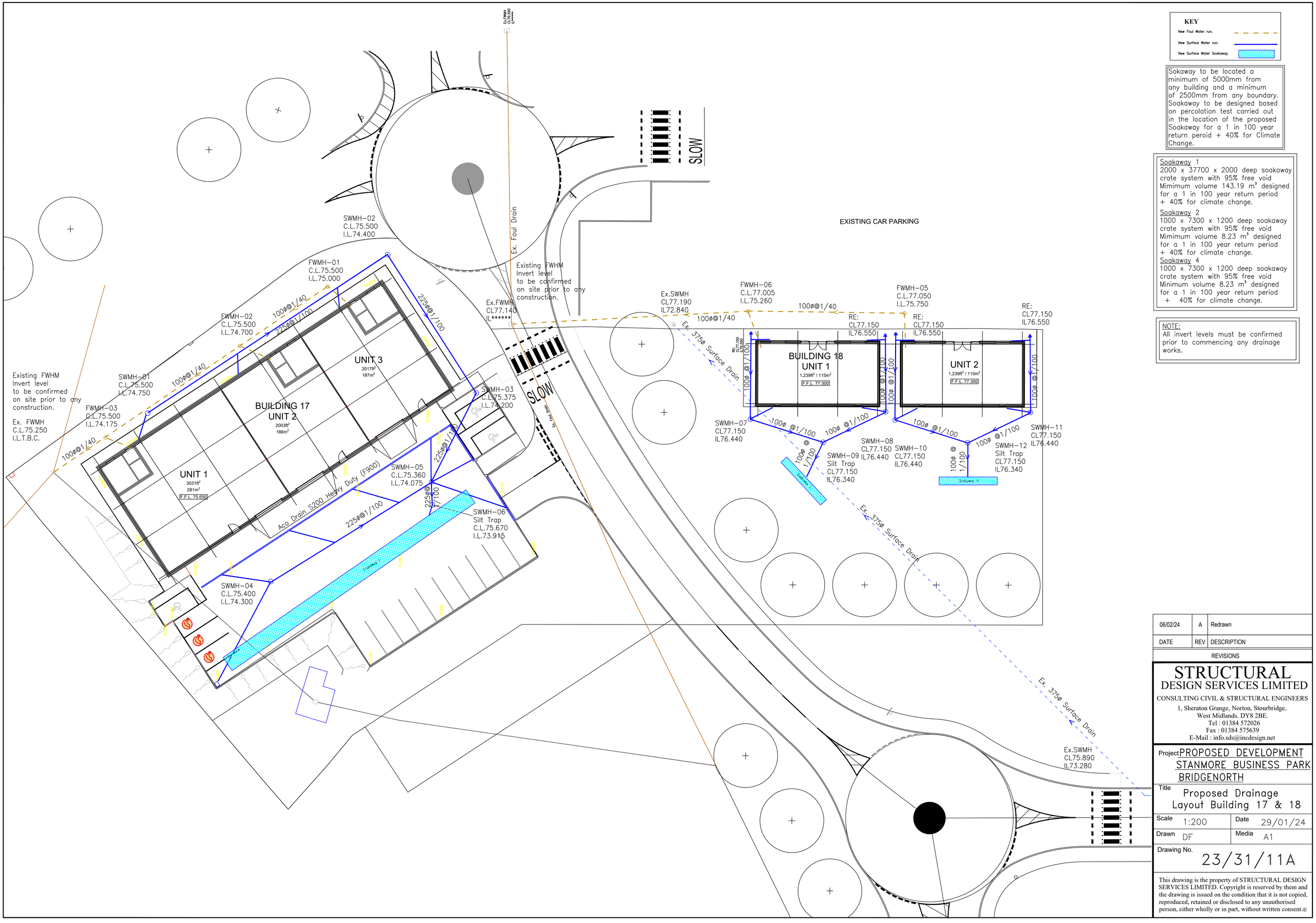
Duration, D (min)	Growth factor Z1	M5 rainfalls (mm)	Growth factor Z2	100 year rainfall, M100 (mm)	Inflow (m^3)	Outflow (m^3)	Storage required (m^3)
5	0.37;	9.9;	1.91;	19.0;	2.46;	0.03;	2.43
10	0.52;	13.9;	1.97;	27.5;	3.57;	0.06;	3.51
15	0.63;	16.8;	2.00;	33.8;	4.39;	0.09;	4.30
30	0.80;	21.4;	2.02;	43.3;	5.62;	0.18;	5.45
60	1.00;	26.6;	2.00;	53.1;	6.91;	0.36;	6.55
120	1.21;	32.1;	1.95;	62.7;	8.15;	0.71;	7.44
240	1.45;	38.5;	1.90;	73.2;	9.52;	1.42;	8.10
360	1.60;	42.6;	1.87;	79.7;	10.36;	2.13;	8.23
600	1.79;	47.7;	1.83;	87.2;	11.34;	3.55;	7.79
1440	2.24;	59.6;	1.74;	104.0;	13.52;	8.52;	4.99

Required storage volume	S_{req} = **8.23** m^3
Soakaway storage volume	S_{act} = l × d × w × V_{free} = **8.23** m^3

PASS - Soakaway storage volume

Time for emptying soakaway to half volume	t_{s50} = S_{req} × 0.5 / (a_{s50} × f) = 11hr 35min 18s

PASS - Soakaway discharge time less than or equal to 24 hours



DATE	REV	DESCRIPTION
06/02/24	A	Redrawn

REVISIONS

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Project: PROPOSED DEVELOPMENT STANMORE BUSINESS PARK BRIDGENORTH

Title: Proposed Drainage Layout Building 17 & 18

Scale	1:200	Date	29/01/24
Drawn	DF	Media	A1

Drawing No. 23/31/11A

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