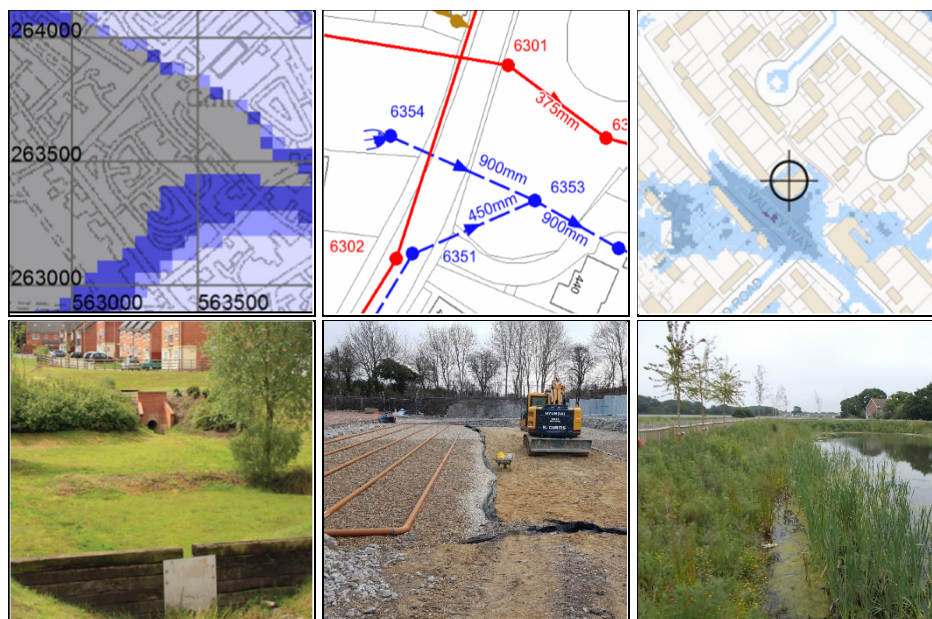




Flood Risk Assessment and Drainage Strategy

Lowford Methodist Hall School Road, Lowford, Hants

Reference: 1917

Issue: **Date:**

1	19/11/2019	
2	22/2/2021	Site layout updated
3	21/6/2023	Site layout updated

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A	Existing Layout & Proposed Site Layout
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C	Surface Water Assessment
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1. Introduction

- 1.1 Instructions were received from Andrew Loizou to undertake a Flood Risk Assessment (FRA) and set out a Drainage Strategy (DS) for change of use application for residential use at Lowford Methodist Hall, School Road, Lowford, Hants, SO31 8BU.
- 1.2 This assessment has been undertaken by A P Traves BSc CEng MIStructE MCIHT.
- 1.3 The client's attention is drawn to the conditions and limitations contained in Appendix D.

2. Development Description & Location

- 2.1 The site comprises the existing hall and curtilage of approximately 0.057 Ha at Lowford Methodist Hall, School Road, Lowford (grid ref 448275 110200). The site extents are indicated on the annotated aerial photograph in Appendix A. The existing topography is shown on P Stubbington Land Survey drawing contained in Appendix A of this report.
- 2.2 The site is approximately rectangular with the hall located centrally and hardstand parking and access to the north and west sides. The remainder of the site comprises soft landscaping. The existing hall layout is shown on P Stubbington survey drawing 5400-01-B contained in Appendix A.
- 2.3 It is proposed to refurbish the interior of the building and raise the ground floor level. The proposed layout is shown on ADP Architects drawings 1802-10d, 1802-11d and 1802-14b contained in Appendix A of this report.

3. Local Development Documents & Strategic Flood Risk Assessment

- 3.1 The Strategic Flood Risk Assessment (SFRA) for the Partnership for Urban South Hampshire (PUSH) has been reviewed and this indicates the following:
- 3.2 The SFRA mapping indicates the site lies in Flood Zone 1-3 (FZ1-3) fluvial flood risk. The resolution of the SFRA mapping is poor and reference has therefore been made to EA fluvial flood map data.
- 3.3 The SFRA mapping indicates the site is not located in an historic groundwater flood risk zone.
- 3.4 The SFRA mapping indicates there are no recorded sewer flooding incidents at the site.
- 3.5 Flood mapping data has been reviewed from the Environment Agency (EA) website and from product 4 information for the site. (refer to Appendix B). This indicates the following:
- 3.6 The EA data indicates the existing hall FFL to be located in FZ2 ie currently greater than 1%AEP but less than 0.1%AEP.
- 3.7 The EA data also indicates the majority of the existing curtilage around the building to be in FZ3 ie below 1%AEP, however the majority of the curtilage to the north side of the hall is in FZ and FZ2 ie above 0.1%AEP and 1%AEP respectively. The particulars of this are discussed in more detail in subsequent sections.
- 3.8 The EA mapping indicates the ditch on the southern side of the site is a medium risk (3.3%AEP) of surface water flooding. Some of the car park and curtilage is indicated to be at low risk (0.1-1.0%AEP). The remainder of the site, including the hall are indicated to be at very low risk (<0.1%AEP) of surface water flooding.
- 3.9 The EA mapping indicates the site is not in an area of reservoir flood risk.
- 3.10 MAGIC mapping indicates the site is not in a Source Protection Zone (SPZ).

- 3.11 MAGIC mapping indicates the site is not within a drinking water safeguard or protection zone.
- 3.12 The Local Plan for Eastleigh Borough 2016-2036 has been reviewed and this indicates the following:
- 3.13 Policy DM3, Adaption to climate change, reflects national flood risk and drainage policy and practice contained in the NPPF and Non-statutory Technical Standards for Sustainable Drainage Systems (NTS SuDS).
- 3.14 Policy DM5, Managing flood risk, reflects national flood risk and drainage policy and practice contained in the NPPF.
- 3.15 Policy DM6, Sustainable surface water management and watercourse management, reflects national drainage policy and practice contained in the NPPF and Non-statutory Technical Standards for Sustainable Drainage Systems (NTS SuDS). It also reflects Lead Local Flood Authority (LLFA) and EA policy on watercourse works and current pollution prevention guidance published by the EA. Policy DM8, Pollution, overlaps DM6.
- 3.16 In essence the emerging local policies replicate the requirements of current national policies and practice, and in meeting national policy local policy will also be met.

4. Catchment Flood Management & Shoreline Management Plans

- 4.1 The site is at an elevation of some 20 m AOD and is remote from the influence of tidal flooding. Shoreline Management Plans are not applicable at this location.
- 4.2 The South East Hampshire Catchment Flood Management Plan summary – December 2009 (CFMP) indicates the site falls within sub-area 3 Lower Hamble and Lower Meon. The CFMP states that policy 6 is the preferred policy approach:

“Areas of low to moderate flood risk where we will take action with others to store water or manage run-off in locations that provide overall flood risk reduction or environmental benefits. This policy will tend to be applied where there may be opportunities in some locations to reduce flood risk locally or more widely in a catchment by storing water or managing run-off. The policy has been applied to an area (where the potential to apply the policy exists), but would only be implemented in specific locations within the area, after more detailed appraisal and consultation.”
- 4.3 Overall the CFMP does not present any issues that would prohibit the development of this site with respect to flood issues provided the surface water drainage is based on SuDS principles.

5. Catchment Data

- 5.1 The site lies within the River Hamble catchment downstream of National River Flow Archive (NRFA) gauging station (ID42011) at Frogmill (Grid Ref SU 522 149). Total catchment area 56.6 km². The catchment is described as follows: River Hamble down to Frogmill is a predominantly permeable (Chalk) catchment with some areas of reading Beds. The upper reaches of the Hamble are ephemeral. Land use is mainly rural – significant urban development in the lower catchment.
- 5.2 In a local context the site lies on the western side of the Hermitage Stream catchment. This is a small ungauged catchment.
- 5.3 BGS borehole reference SU41SE772 is located just beyond the southeast corner of the site. This indicates the soil profile to comprise around 2m of clay fill over bedrock clay geology from the Wittering Formation. A copy of the log is contained in Appendix B

6. Sewage Authority Data

- 6.1 The existing building has connection to the public Foul Water (FW) sewer in School Road.
- 6.2 The proposed redevelopment will retain the existing connection to the public FW sewer. The additional load for the dwellings will be *de minimis*, but notwithstanding this the standing wastewater Infrastructure Charge (IC), which came into force from 1st April 2018, will be paid. Should any downstream reinforcement be required Southern Water will deliver this from the development ICs they will collect.

7. Site Particulars

- 7.1 The site is some 0.057 Ha in area and is approximately rectangular with the hall located centrally and hardstand parking and access to the north and west sides. The remainder of the site comprises soft landscaping. The existing hall layout is shown on P Stubbington survey drawing 5400-01-B contained in appendix A
- 7.2 The site lies some 10-30m north of Hermitage Stream and the site falls north to south from around 21m AOD in the northeast corner to around 20m AOD on the southern boundary.
- 7.3 There is a shallow grassy ditch to the southern side of the site which is understood to discharge to the adjacent Hermitage Stream. Site runoff drains into this.
- 7.4 The land use surrounding the site comprises residential dwellings.

8. Source-Pathway-Receptor Assessments

- 8.1 The site is at an elevation of some 20m AOD and is not susceptible to tidal flooding.
- 8.2 The governing flood risk is fluvial from Hermitage Stream some 25m south of the site. This is culverted (1.2m DN) under the Redcroft Lane housing estate upstream (East) of the site, emerges into an open channel adjacent the site for about 30m then enters a short culvert (0.825m DN) under School Road and re-emerges into a subsequent open channel section west of the site. The culvert under School Road is less than half the sectional size of the preceeding culvert and therefore is the limiting influence on sub-surface flow capacity.
- 8.3 The upstream end of this culvert is located at grid ref 448268 110175 and we understand the associated flow rates to be:
- | | |
|------------------------|--------------------------|
| Q ₂₀ | 2.18 m ³ /sec |
| Q ₁₀₀ | 3.18 m ³ /sec |
| Q ₁₀₀₀ | 5.78 m ³ /sec |
| Q _{100+88%CC} | 5.98 m ³ /sec |
- 8.4 It is readily apparent that these magnitudes of flow will not pass through the culvert and that these would be supported by overland flow on the terrain. The profile along School Road drops down to some 19.8m AOD over the culvert and climbs either side. The existing site landscape platform levels around the building are some 20.35m NW, 20.75m NE, 20.40m SE and 20.05m SW. It is therefore apparent that save for the SW corner of the site the building and bulk of the immediate open space would remain dry up to around 20.4m AOD at which time there would be some 0.6m over the low point in the highway alignment.
- 8.5 The EA JFLOW model data indicates some 0.12m depth at Q₁₀₀ and some 0.22m at Q₁₀₀₀, with some variation, being slightly deeper on the lower southern edge of the site and slightly shallower on the higher northern edge of the site. This is consistent in the figures for the wider area from 50m upstream to downstream of the site extents. The flood outline and levels are considered to correlate to the following flood levels at the eastern (upstream) and western(downstream) ends of the site:

	Western (School Road)	Eastern (rear)	
Q ₁₀₀	20.45 m AOD	20.60m AOD	1%AEP
Q ₁₀₀₀	20.55m AOD	20.70m AOD	0.1%AEP

- 8.6 The existing FFLs are 20.54m AOD at the western end and 20.68m AOD at the eastern end. These are close to but just below 0.1%AEP levels and the existing hall is therefore considered to be in FZ2.
- 8.7 The existing external curtilage levels to the south and west of the hall are generally below 20.54m AOD and these areas are considered to be in FZ3 with a fluvial flood risk >1%AEP.
- 8.8 The existing curtilage on the northern side rises from some 20.52m AOD towards 20.8-21m AOD and is therefore considered to lie in FZs 1 and 2.
- 8.9 Further to the EA consultation response 30 September 2021 there was dialogue between ourselves and the EA culminating in our letter 19 April 2023 to ADP Architects addressing the EA concerns. A copy of that correspondence and letter 19 April 2023 is contained in Appendix B. It should however be noted that in this correspondence it relates to a climate change increase in peak river flow of +105% to 2021. Climate change allowances are changed from time to time and the current 100 year lifetime climate change allowance for peak river flow at the site is +88% (refer to mapping in Appendix B) and the associated critical flows are:

5% AEP Q ₂₀	2.18 m ³ /sec
1% AEP Q ₁₀₀	3.18 m ³ /sec
5% AEP Q ₂₀ + 88%CC	4.10 m ³ /sec
1% AEP Q ₁₀₀ +88%CC	5.98 m ³ /sec

And the associated flood levels are:

At 5% AEP Q ₂₀ + 88%CC	4.10 m ³ /sec	20.30m AOD
At 1% AEP Q ₁₀₀ + 88%CC	5.98 m ³ /sec	20.35m AOD

- 8.10 The EA mapping indicates the hall is at very low risk of surface water flooding and the car park is a low risk. The ditch on the southern side is at medium risk of surface water flooding.
- 8.11 The EA mapping indicates the site is not in an area of reservoir flood risk.
- 8.12 The SFRA indicates the site is not in a groundwater flood risk zone
- 8.13 The SFRA indicates no incidents of sewer flooding at the site. The site is therefore not considered to be at risk from sewer flooding.
- 8.14 The critical flood source is fluvial overland flow from Hermitage Stream to the south.
- 8.15 The flood receptors of the development would be:
- Residential dwellings
 - Users of the residential dwellings
- 8.16 The proposed development and existing site classifications to NPPF Annex 3 are as follows:
- Existing buildings used for assembly Less vulnerable
 - Proposed residential More vulnerable

9. Flood Probability

- 9.1 The EA flood zones shown on the outputs and included in Appendix B represents current best estimates of zone 2 and zone 3 flooding. It does not take account of potential climate change impacts. The flood zone definitions are as follows:

Zone 1	Low probability of flooding (<0.1% AEP)
Zone 2	Medium probability of tidal flooding (0.1-0.5% AEP) Medium probability of fluvial flooding (0.1-1% AEP)
Zone 3a	High probability of tidal flooding (>0.5% AEP) High probability of fluvial flooding (>1% AEP)
Zone 3b	Functional floodplain (>3.3% AEP probability of flooding)

The flood map does not differentiate between zones 3a and 3b.
Zone 3b is only considered appropriate for water-compatible development.
Zone 3a is additionally considered appropriate for less vulnerable uses.

- 9.2 The hall is located in FZ2 fluvial 0.1-1%AEP
- 9.3 The northern curtilage to the hall rises from FZ2 to FZ1 <0.1%AEP.
- 9.4 The car park and remaining curtilage are located in FZ3 fluvial >1%AEP.

10. Climate Change

- 10.1 The new climate change allowances for flood risk assessment GOV.UK 27 May 2022 update have been used. Climate change values for the site are:

- Peak river flow: Table; East Hampshire, upper end 2123 +88%
- Peak rainfall intensity: East Hampshire, upper end 2123 +45%

The 2123 flood levels are discussed in paragraph 8.9.

- 10.2 The building is existing and there is some but limited opportunity to reduce the flood risk to the building by raising existing FFLs. We have liaised with the Architect and understand that it is possible to meet the minimum FFLs set out above and that raised FFLs of 20.90 and 21.06m AOD are proposed.
- 10.3 Surface water drainage strategy is discussed in Chapter 11. The volumes and flows for this strategy have been derived in accordance with CIRIA C753 and include for climate change effects.

11. Detailed Development Proposals & Surface Water Strategy

- 11.1 Surface water drainage must accord with a receptor hierarchy in which Tier 1 (infiltration) must be considered first. The site is however brownfield and the proposal is a change of use application retaining the existing hall and car park and their surface water drainage arrangements to the ditch on the southern side of the site. This will retain the existing Tier 2 discharge to watercourse.
- 11.2 The proposed change of use will not materially alter the existing surface water runoff regime. There will therefore be no adverse impact on flood flow rates outside the site.
- 11.3 Water butts should be installed to intercept roof water run-off. These will reduce the annual volume of surface water discharge but will not make a material contribution to regulation of critical run-off as these tend to be full during Winter months as there is minimal demand for irrigation in these months.
- 11.4 In summary source control will be provided by:

- Provision of water butts as outlined in paragraph 11.3
 - The existing swale on the south side of the site
- 11.5 The use comprises generally low and very low pollution hazard levels (C753 Table 26.2) and does not require groundwater risk screening.
- 11.6 Simple index approach calculations are contained in Appendix C. These demonstrate that the existing SuDS infrastructure provides the mitigation necessary.
- 11.7 The existing site falls north to south. The site morphology is not going to be altered so there will be no impact on local flood flow pathways and exceedance flows will continue to discharge south from the site to Hermitage Stream, as currently occurs.
- 11.8 A schedule of O&M maintenance requirements for the SuDS infrastructure is also contained in Appendix C. The maintenance will be undertaken by the facilities management company.

12. Sequential & Exceptions Tests

- 12.1 The proposed development is for Change of Use and the application of the Sequential Test is set out in documents by others.
- 12.2 The proposed development is for Change of Use and the application of the Exceptions Test is not required. The proposed development must however be safe.
- 12.3 With respect to the flow rates and depths (8.9 refer) the 0.10m increase in level from Q_{100} to Q_{1000} prorate for $Q_{100+88\%CC}$ would yield a further 0.03m on flood depth above Q_{1000} levels. A freeboard of 0.3m on top of this suggests the following minimum design.

	FFLs:
Rear of site min FFL	21.03m AOD
Front of site min FFL	20.88m AOD

- 12.4 The building is existing and there is some but limited opportunity to reduce the flood risk to the building by raising existing FFLs. We have liaised with the Architect and understand that it is just possible to meet the minimum FFLs set out above. An elevated FFL of 20.90 AOD is proposed. For the western end and 21.06m AOD for the eastern end.
- 12.5 With respect to access on to School Road the NW corner of the site is at some 20.35m AOD compared to $Q_{100+88\%CC}$ level of some 20.35m AOD indicating a flood depth of nil. The NE corner of the site is adjacent a public footway leading north away from the flood zone. The NE corner of the site is at some 20.75m AOD compared to $Q_{100+88\%CC}$ level of some 20.73m AOD indicating this corner of the site would remain dry. Direct communication to the footway at the NE corner of the site is therefore proposed to provide safe access for the lifetime of the development.

13. Flood Risk Management Measures

- 13.1 The source pathway receptor assessment is contained in Chapter 8.
- 13.2 Paragraph 8.14 identifies that overland fluvial flow from Hermitage Stream to the south is the governing flood source. To mitigate this risk a number of measures are proposed:
- 13.3 The building is existing and there is some but limited opportunity to reduce the flood risk to the building by raising existing FFLs. We have liaised with the Architect and understand that it is possible to meet the minimum FFLs set out in paragraph 12.3. An elevated FFL of 20.90 AOD is proposed. For the western end and 21.06m AOD for the eastern end.

- 13.4 Direct communication to the footway at the NE corner of the site is proposed to provide safe access for the lifetime of the development. (12.5 refers)
- 13.5 It is recommended that occupants subscribe to EA Flood Warning Direct (FWD) service so that they may receive flood alerts and warnings and could relocate their cars out of the car park ahead of any flood.
- 13.6 The surface water retains the existing run-off regime. There will therefore be no adverse impact on flood flow rates outside the site.

14. Off Site Impacts

- 14.1 The application is for change of use and there will be no material change to the site hydraulics save for internal raising of the FFL. There will therefore be no adverse impact on flood flow rates outside the site.
- 14.2 The surface water retains the existing run-off regime. There will therefore be no adverse impact on flood flow rates outside the site.

15. Residual Risks

- 15.1 The proposed flood mitigation measures for the development provides for flood events up to 1:100 year 2023_{AD} + CC fluvial flows. The residual flood risk is therefore fluvial events in excess of 1:100 year 2023_{AD} + CC flow rates. The subscription to EA Flood Warning Direct (13.5 refers) would provide warnings of such exceedance/residual risk events.

Appendix A

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Richmond Court, 94 Botley Road, Park Gate, Southampton, SO31 1BA

- | | | |
|---|----------|---|
| D | 13.06.23 | Parking update & garage removed |
| C | 9.08.21 | RW added to Spring Grove/general notes/red line updated |
| B | 24.02.21 | Bin changes & steps to decks added |
| A | 18.02.21 | Garage & rooflights added |

rev: date: note:

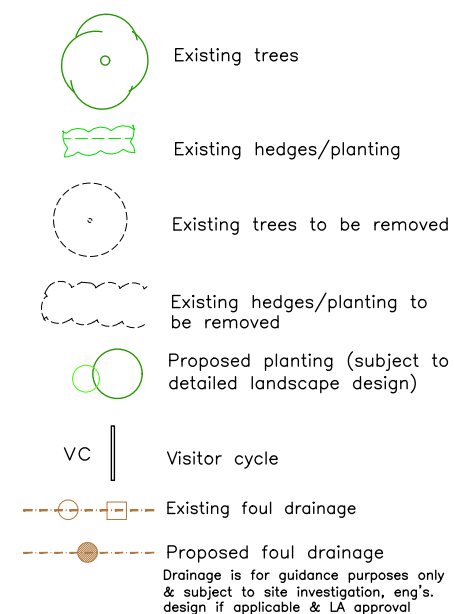
The site is based on a topographical survey undertaken by P Stubbington
Land Surveys Ltd. Surrounding information copied from Ordnance Surveys
Promap. Crown Copyright. Licence Number 100022432

SCHEDULE OF ACCOMMODATION		GA(sq.m)
PLOT 1	2 Bed House	92.3
PLOT 2	2 Bed House	82.0
PLOT 3	2 Bed House	94.2
Total = 3 Dwellings		

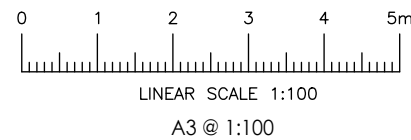
PARKING (Allocated)
2 car spaces each
TOTAL 6 Spaces

CYCLES (per unit)
1 secure & covered residents cycle
space for each dwelling

SITE AREA
0.06 Hectares



PROPOSED PLANS

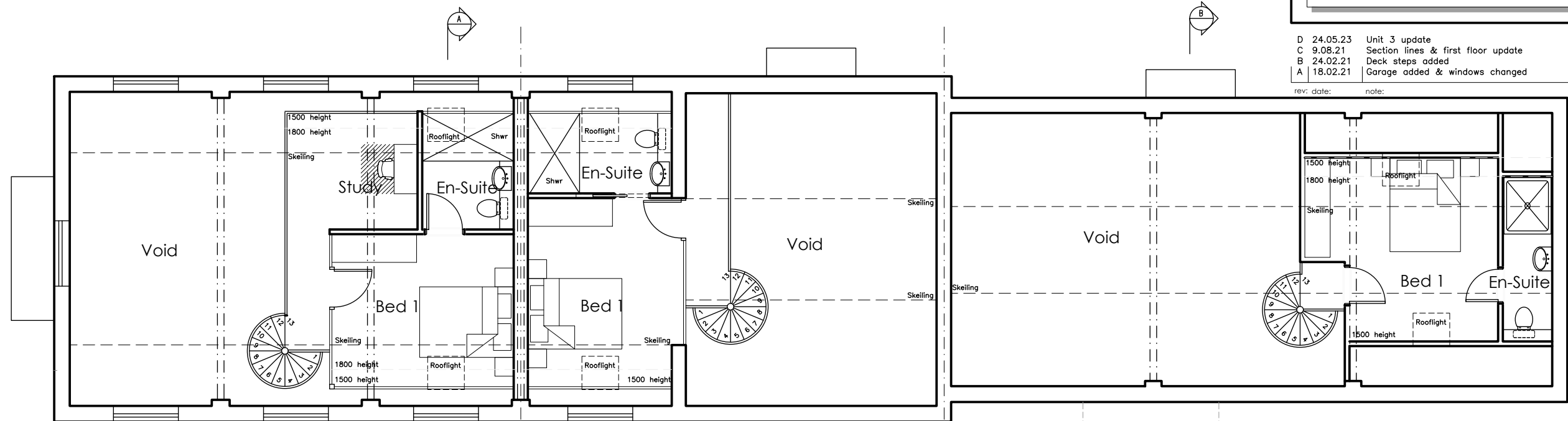




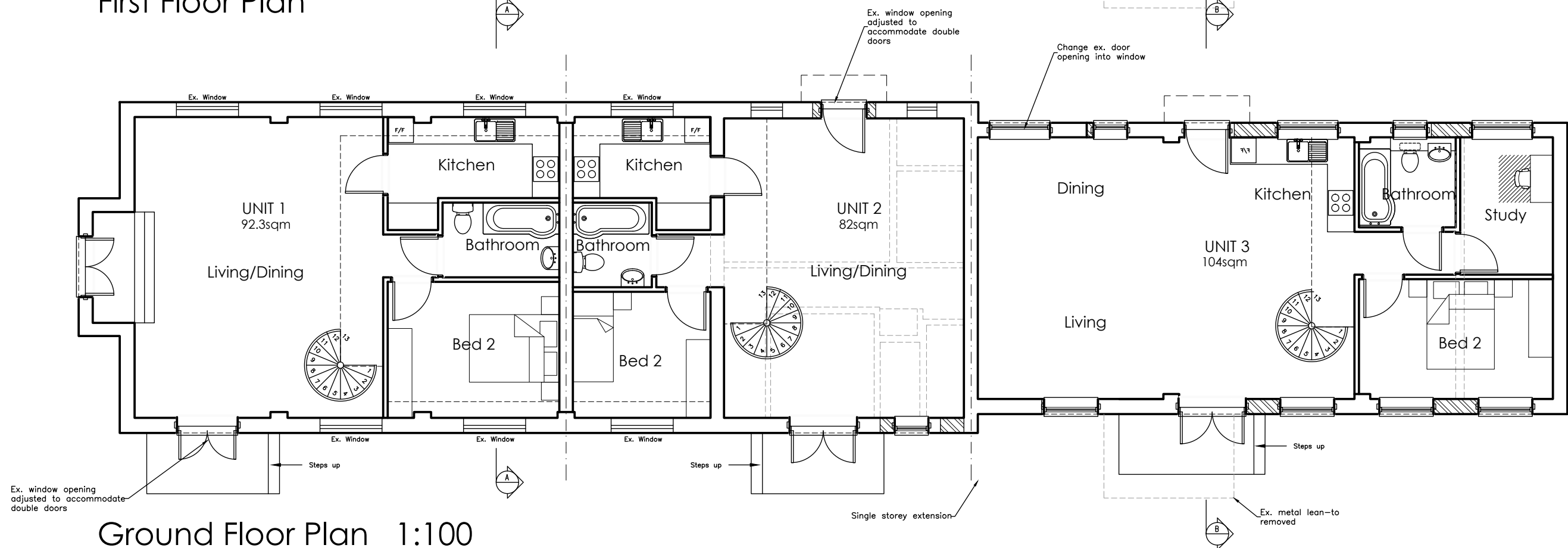
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Richmond Court, 94 Botley Road, Park Gate, Southampton, SO31 1BA

D	24.05.23	Unit 3 update
C	9.08.21	Section lines & first floor update
B	24.02.21	Deck steps added
A	18.02.21	Garage added & windows changed
rev: date:		note:



First Floor Plan



SCHEMATIC SECTIONS

adp

architects ltd

architects & urban designers

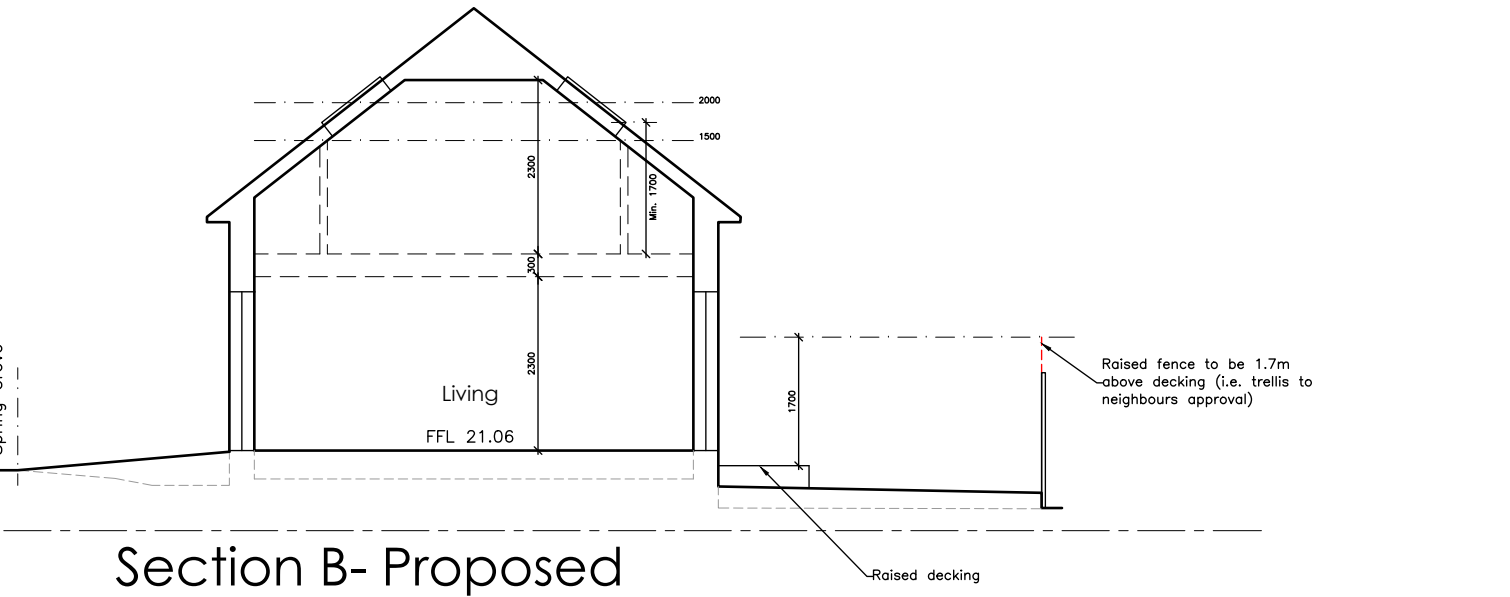
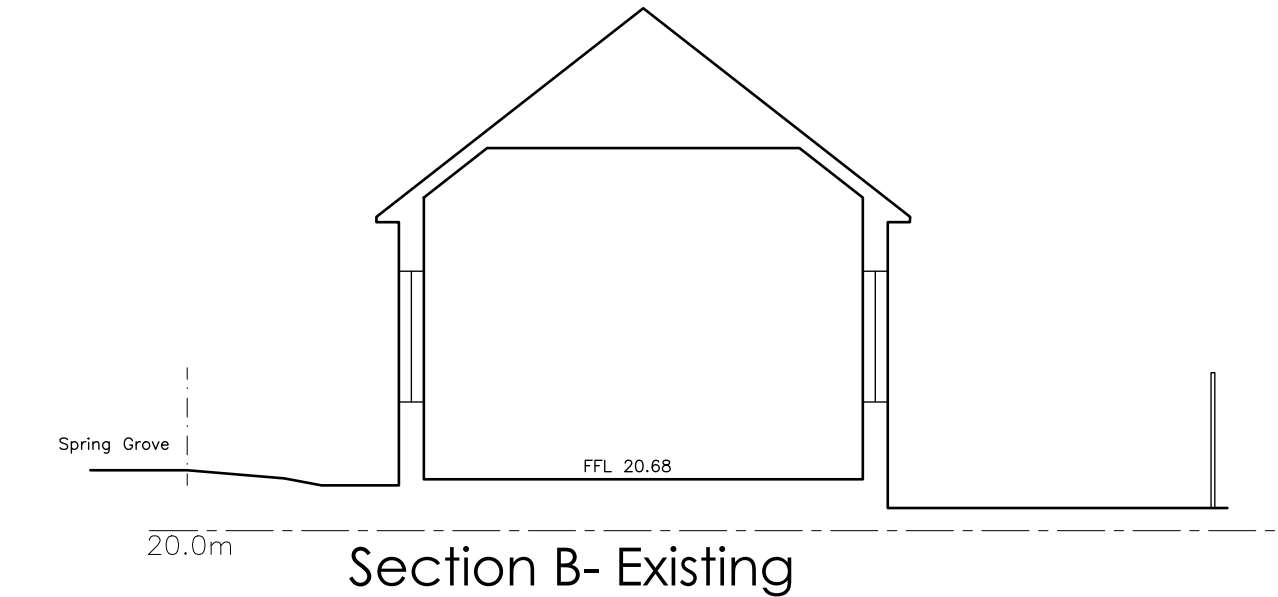
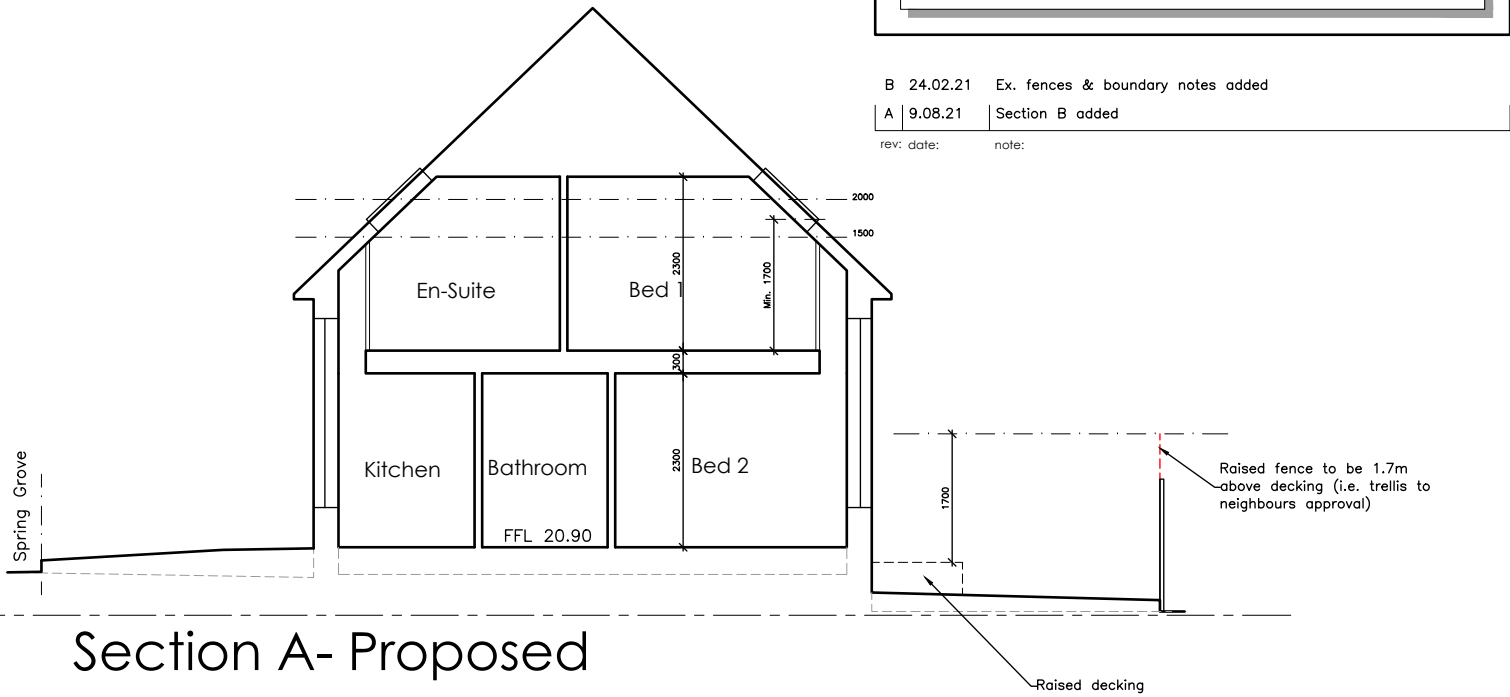
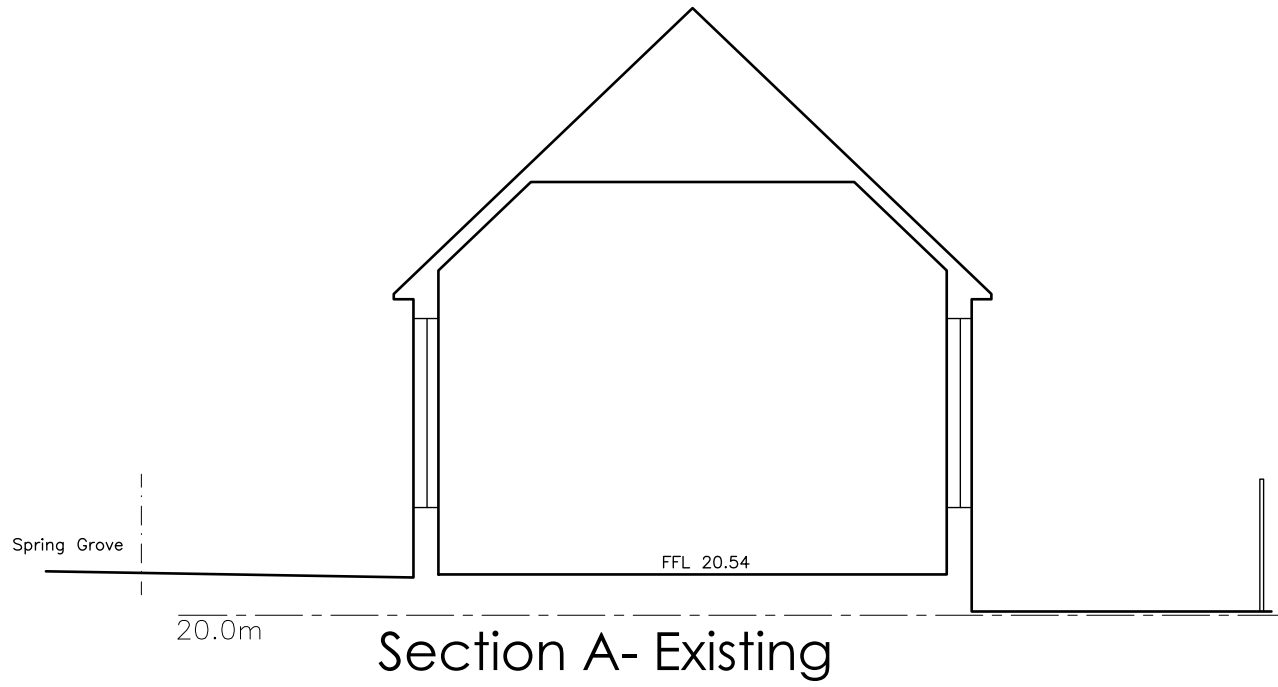
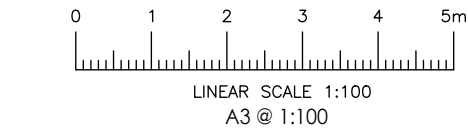
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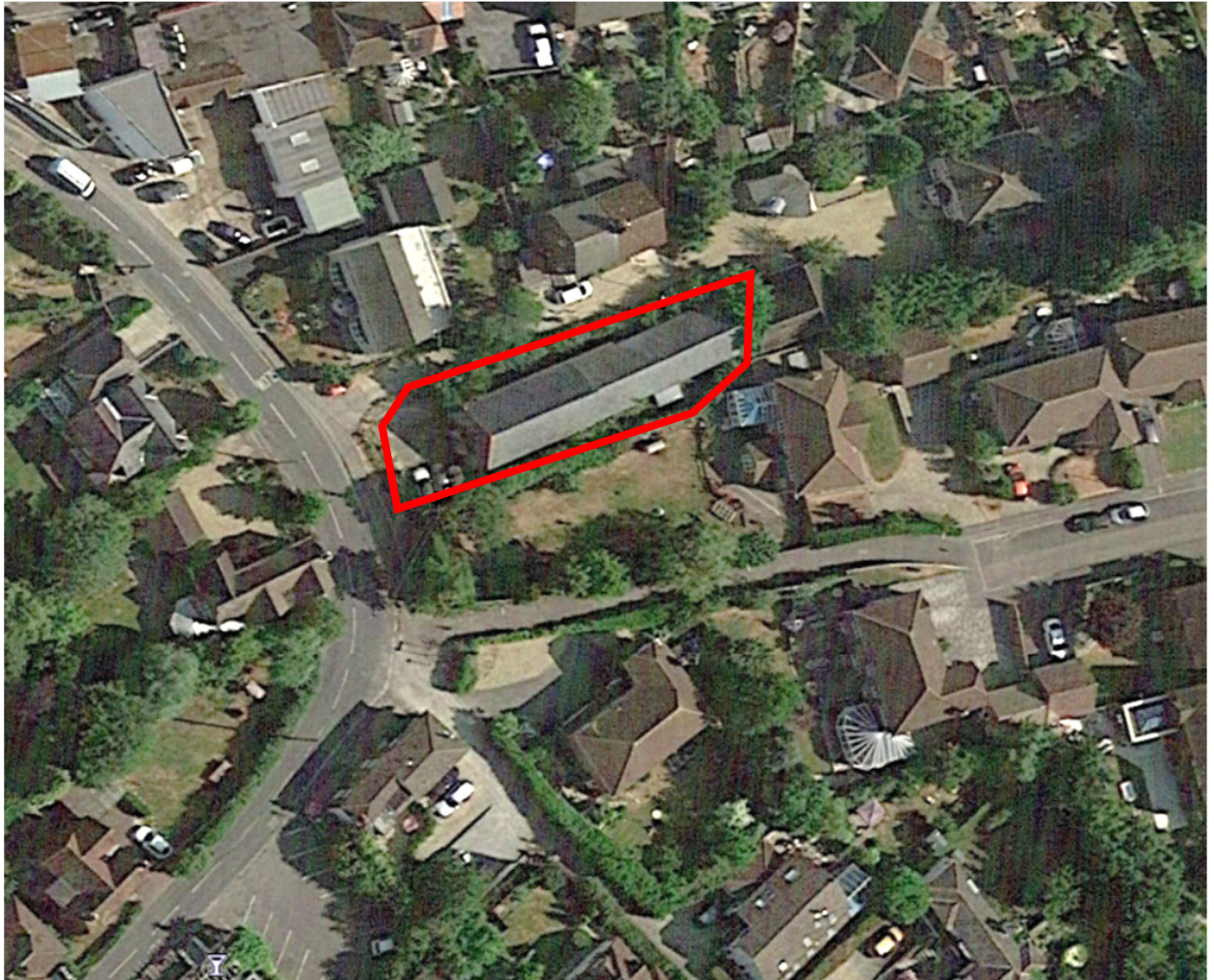
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B	24.02.21	Ex. fences & boundary notes added
A	9.08.21	Section B added
rev:	date:	note:

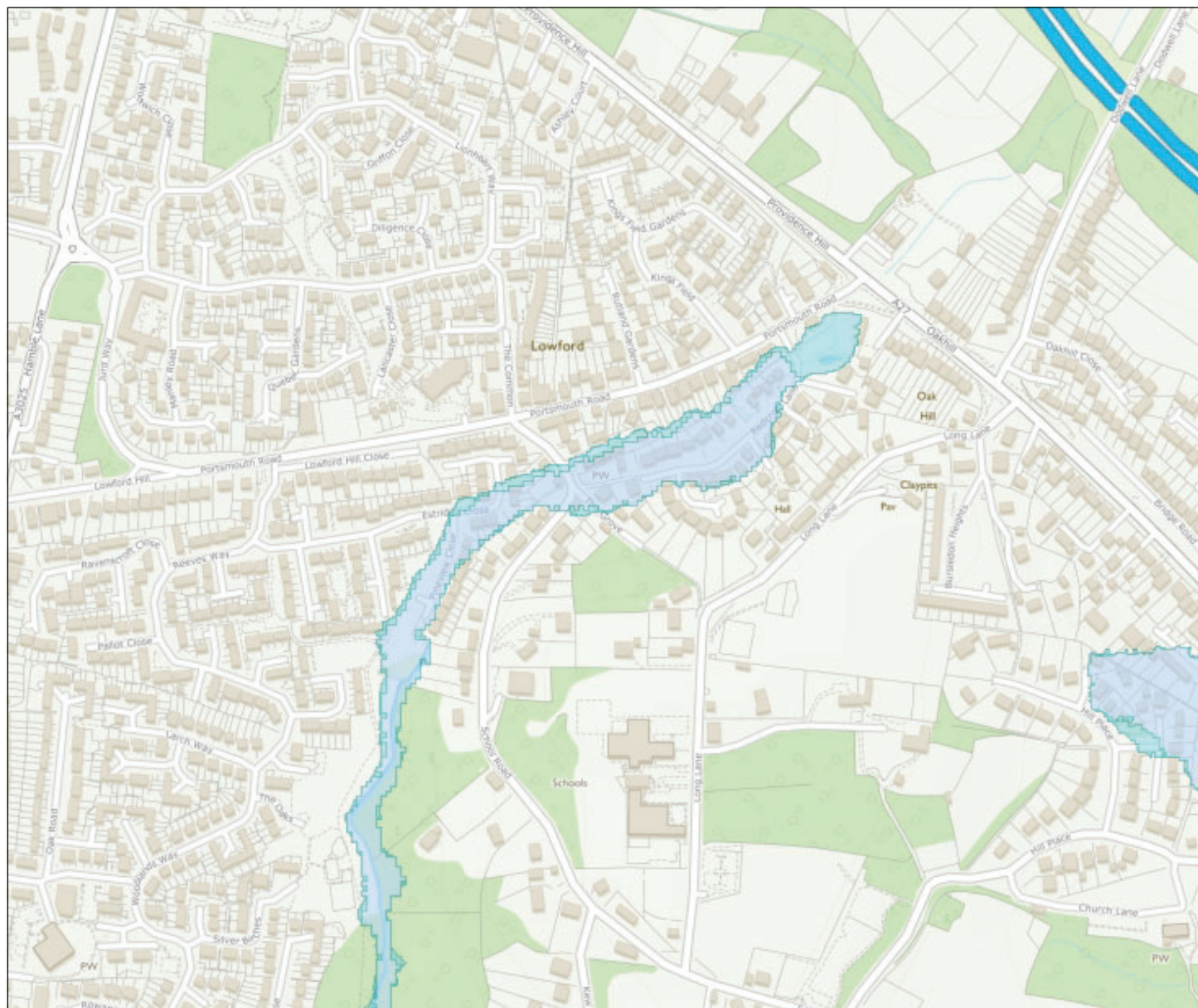




Site location

Appendix B

Flood Map for Planning (Rivers and Sea) Centred on School Road - created 12/03/2019



Scale 1: 6,250



Flood Map for Planning (Rivers & Sea)

- Defences
- Flood Storage Areas
- Areas benefiting from flood defences
- Flood Zone 3
- Flood Zone 2

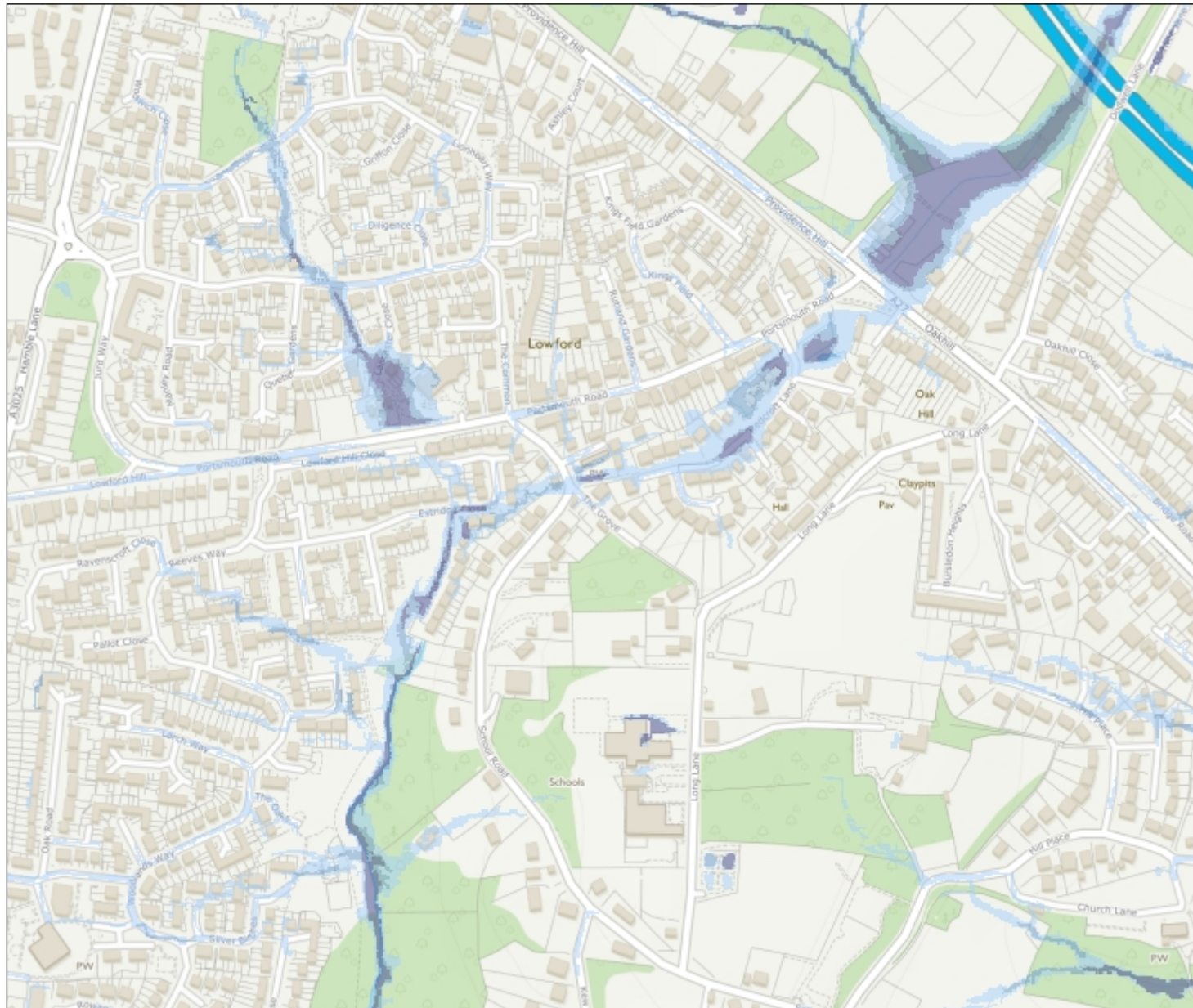
Flood Map Areas (assuming no defences)

Flood Zone 3 shows the area that could be affected by flooding:

- from the sea with a 1 in 200 or greater chance of happening each year
- or from a river with a 1 in 100 or greater chance of happening each year.

Flood Zone 2 shows the extent of an extreme flood from rivers or the sea with up to a 1 in 1000 chance of occurring each year.

Risk of flooding from Surface Water Centred on School Road - Created 12/03/2019



Scale 1:6,250



Likelihood of flooding from Surface Water

- High ($\geq 3.3\%$)
- Medium (3.3% - 1%)
- Low (1% - 0.1%)
- Very Low

Likelihood of flooding from Surface Water

- High:** Greater than or equal to 3.3% (1 in 30) chance in any given year
- Medium:** Less than 3.3% (1 in 30) but greater than or equal to 1% (1 in 100) chance in any given year
- Low:** Less than 1% (1 in 100) but greater than or equal to 0.1% (1 in 1,000) chance in any given year
- Very Low:** Less than 0.1% (1 in 1,000) chance in any given year

This information is shown on the Risk of Flooding from Surface Water map on our website.

CCTV SURVEY – EXECUTIVE SUMMARY



Client:	Environment Agency	NFCDD Ref:	0713052700201L05
Site Address:	Redcroft Lane, Lowford	Contact:	Ian Miller
Date of Report:	24/01/2011	Job No:	0111027

Objective

A CCTV survey was undertaken by Aquajet (GB) Ltd using CCTV remote techniques. This was conducted on behalf of Environment Agency.

The purpose of the survey was to determine the route of the culvert and to visually ascertain the condition of the culvert/headwalls, cleaning activities were carried out on the re visit.

Location and Description

Pedestrian and vehicle access to the culvert is gained via Redcroft Lane for both the Inlet and the Outlet.

The culvert flows in a South Westerly direction from its Inlet located in the grounds of The Old Bakehouse to MH01 located but buried in the garden of No.6 Redcroft Lane, from here the culvert flows to MH02 located in front of No.8 Redcroft Lane then continues on to the Outlet in the grounds of the Bursledon Congregational Church.

The Inlet headwall is of Masonry construction and appears to be in good condition.
The Outlet headwall is of Concrete & Brick construction and appears to be in good condition.

The following information should be viewed in conjunction with the CCTV report.

The culvert is made up of the following:

1. Inlet downstream to MH01 – Date of Survey: 24th January 2011 Weather: Dry, Flow Level: Low

- The culvert is a 1200mm concrete construction.
- At 22.4m there is a connection which intrudes by 50mm.
- At 33.6m there is a connection which intrudes by 100mm.
- The survey was completed at 55.7m.

Observations & Anomalies

Service and Constructional defects have been recorded on this length. Our engineers were unable to obtain any GPS for MH01 due to it being buried in the garden of No. 6 Redcroft Lane.

2. MH01 downstream to MH02 – Date of Survey: 24th January 2011 Weather: Dry, Flow Level: Low

- The culvert is a 1200mm concrete construction.
- The survey was completed at 55.7m.

Observations & Anomalies

Service and constructional defects have been recorded on this length. Our engineers were unable to obtain any GPS for MH01 due to it being buried in the garden of No. 6 Redcroft Lane.

CCTV SURVEY – EXECUTIVE SUMMARY



Client:	Environment Agency	NFCDD Ref:	0713052700201L05
Site Address:	Redcroft Lane, Lowford	Contact:	Ian Miller
Date of Report:	24/01/2011	Job No:	0111027

3. MH02 downstream to Outlet (Pre Cleansing) – Date of Survey: 24th January 2011 Weather: Dry, Flow Level: Low

- The culvert is a 1200mm concrete construction.
- At 29.3m there is a defective connection.
- At 48.7m there is a defective live connection.
- The survey was completed at 62.3m.

Observations & Anomalies

Service and constructional defects have been recorded on this length. No anomalies were noted.

4. MH02 downstream to Outlet (after Cleansing) – Date of Survey: 26th March 2011 Weather: Dry, Flow Level: Low

- The culvert is a 1200mm concrete construction.
- At 29.8m there is a defective connection.
- At 48.6m there is a defective connection.
- The survey was completed at 62.3m.

Observations & Anomalies

Service, structural and constructional defects have been recorded on this length. No anomalies were noted.

Recommendations:

Our survey has highlighted that culvert has defective connections all of which will require remedial works. Although section 4 was cleansed we were unable to get the section totally silt free as we need to be able to cleanse from the Outlet but by doing this it would cause damage to the homeowners property, we would recommend that this is monitored over the next 12 months.

There are intruding connections within the culvert all of which are not having any impact on the culvert so no recommendations are required.

Health & Safety:

There are no Health and Safety issues to report for the Inlet and Outlet.

Remaining Life:

Headwall - Inlet - Visually assessed in excess of 5 years.

Headwall – Outlet - Visually assessed in excess of 5 years.

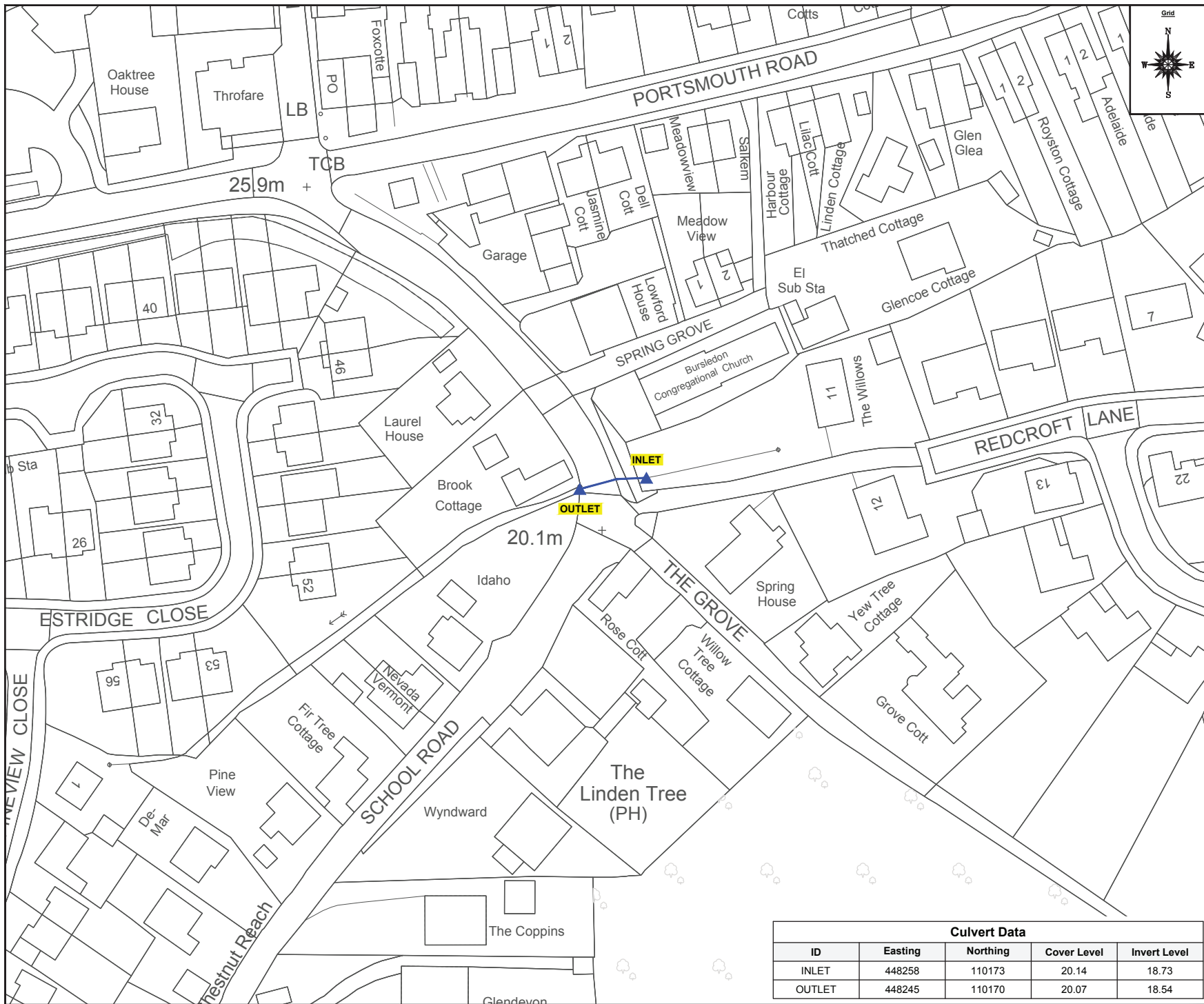
Culvert – Visually assessed in excess of 5 years, subject to our recommendations.

Note:

This report is compiled from information provided by our trained and certified CCTV operators.

Thank you for using AquaJet (GB) Ltd

Executive Summary produced by Tabbi Franklin Lester



- LEGEND**
- ▲ INLET / OUTLET (Located accurately)
 - ▲ INLET / OUTLET (Approximate location only)
 - MANHOLE (Located accurately)
 - MANHOLE (Approximate location only)

- CULVERT ALIGNMENT (surveyed)
- CULVERT ALIGNMENT (assumed)

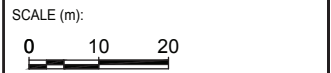


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Environment Agency, 100026380, (2009).

SITE NAME: SCHOOL ROAD, LOWFORD

Line of culvert survey
NFCDD / AIMS ID: 07130S2700201R03 / 140191
GPS was taken from a previous survey

SURVEYED BY: OnSite Central Ltd.
SURVEY DATE: 24th February 2017
WATERCOURSE: Hungerford Stream DRN: PW CHKD: TR
DATE: MAR 2017 DATE: MAR 2017



Culvert Data				
ID	Easting	Northing	Cover Level	Invert Level
INLET	448258	110173	20.14	18.73
OUTLET	448245	110170	20.07	18.54

Executive Summary

Watercourse: Hungerford Stream
Site: School Road, Lowford
Survey Date: 24/02/2017

National Grid Ref: SU 48259 10174
NFCDD / AIMS ID: 07130S2700201R03 / 140191

Summary

A survey of NFCDD / AIMS ID: 07130S2700201R03 / 140191 was undertaken on Friday, 24 February 2017 for the Environment Agency to ascertain the structural integrity, service condition and route of the culvert.

The weather conditions were dry and the flow rate was slow at a depth of approximately 40mm

This asset consists of a 825mm circular concrete pipe leaving the Inlet located within the rear garden of No.11 The Willows on Redcroft Lane. It runs downstream for 6.7m where the material changes to brick and then continues on in this form to the Outlet located on the West side of School Road next to Brook Cottage. We arrived on site and gained access to the Inlet and set up here to perform a crawler survey downstream to the Outlet. Within this Culvert we observed a missing bricks at 6.7m, 7.5m, 9.3m and 14m along with a displaced brick at 9.3m. There was missing mortar at various points and clock references throughout the brick section at a depth of between 5 and 15mm. This asset was completed in full and appears to be in a decent structural condition throughout. The missing mortar and bricks present should not cause any problems in the immediate future but should be monitored and replaced if a problem should arise in the future.

Method of Survey: CCTV crawler survey
Debris: Nil

Locations and Route

Inlet Location: Within the rear garden of No.11 The Willows on Redcroft Lane
Outlet Location: On the West side of School Road next to Brook Cottage

The route is as shown on the attached plan

The culvert runs from the inlet to the outlet in a Westerly direction, running under School Road

Inlet / Headwall Details

Size(mm): 3880(w) x 1410(h)
Construction Material: Brick
Pipe Shape/Size: Circular - 825mm
Location Details: In gardens
Grid Reference: 448258 110173
Access Restrictions: Private land
Construction Features: Headwall with wing walls
Condition: Good


Outlet / Headwall Details

Size(mm): 1200(w) x 1520(h)
Construction Material: Concrete
Pipe Shape/Size: Circular - 825mm
Location Details: Next to a road
Grid Reference: 448245 110170
Access Restrictions: Located next to a blind bend in the road
Construction Features: Headwall
Condition: Good



GPS was taken from a previous survey

Section 1**INLET downstream to the OUTLET**

- This Section is a 825mm circular concrete pipe
- At 3.4m there is a 150mm connection intruding into the pipe by 15% at 1 o'clock
- At 4.5m there is a 150mm connection intruding into the pipe by 10% at 3 o'clock
- At 4.5m there is a 100mm connection intruding into the pipe by 10% at 9 o'clock
- At 6.7m the material of the pipe changes to brick
- At 6.7m there are missing bricks between 2 and 3 o'clock
- There is missing mortar between 3 and 5 o'clock at a depth of between 5 and 15mm running from 6.7m to 8.1m and 9.3m to 11.7m
- At 7.5m there is a missing brick at 7 o'clock
- At 9.3m there is a displaced brick at 4 o'clock and a missing brick at 5 o'clock
- There is missing mortar between 7 and 9 o'clock at a depth of between 5 and 15mm running from 9.7m to 11.7m
- There is missing mortar between 4 and 9 o'clock at a depth of between 5 and 15mm running from 11.7m to 14.1m
- At 12.4m there is a 150mm connection intruding into the pipe by 5% at 3 o'clock
- At 13.1m there is a cast iron service pipe with a girder above protruding through the pipe between 9 and 3 o'clock causing a 40% cross-sectional area loss
- At 13.1m there is infiltration dripping from the cast iron service pipe at 9 o'clock
- At 13.1m there is a twig hanging from the cast iron service pipe
- At 14m there are missing bricks at 6 o'clock
- This section was completed in full and is 14.1m in length

2009 JFLOW Levels for The Methodist Hall - Created 14 March 2019



Legend

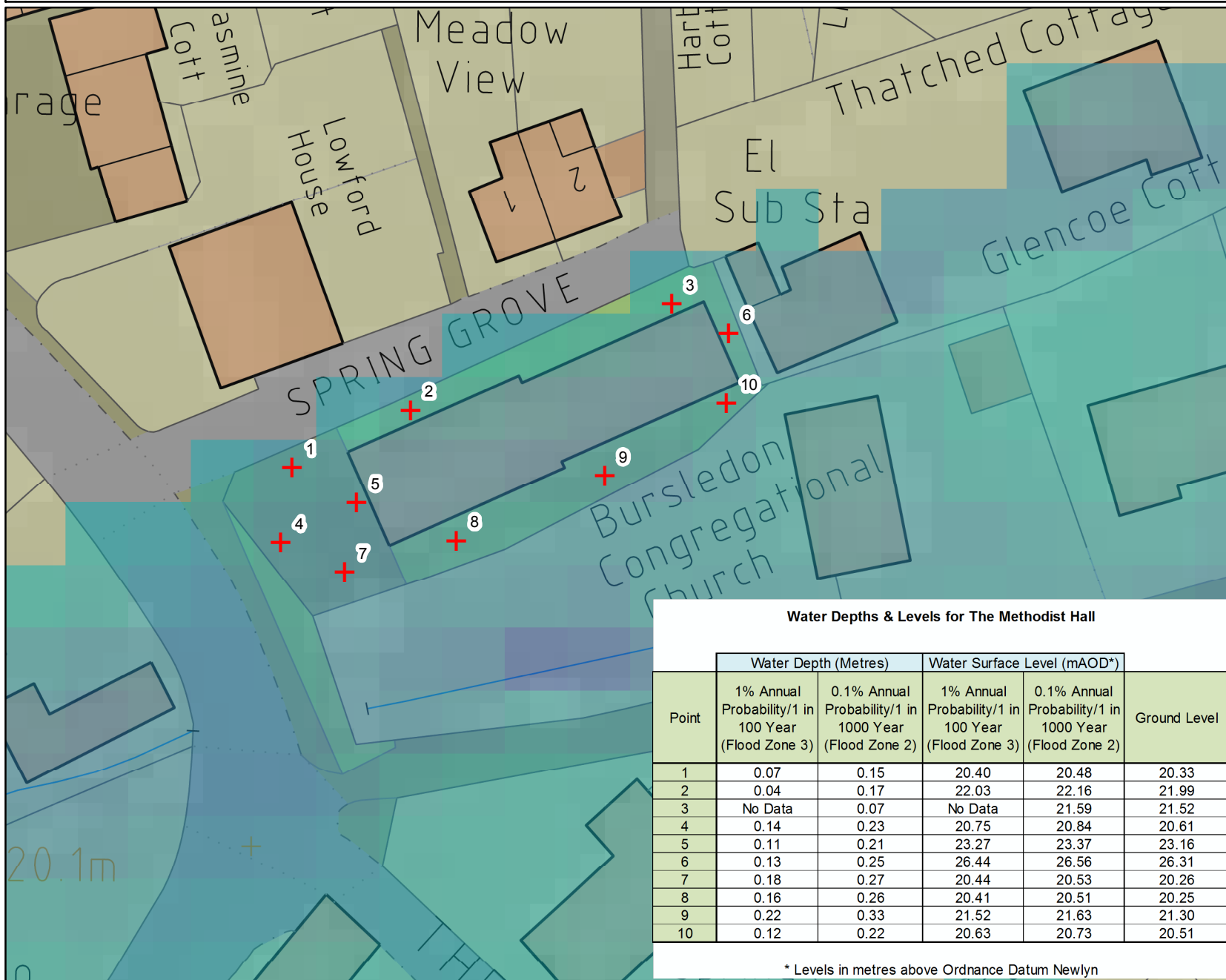
+ Location Points

Ground Level

Value
 High
 Low

Depth

Value
 High
 Low



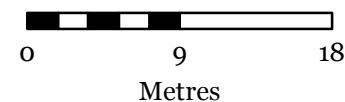
Water Depths & Levels for The Methodist Hall

Point	Water Depth (Metres)		Water Surface Level (mAOD*)		Ground Level
	1% Annual Probability/1 in 100 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year (Flood Zone 2)	1% Annual Probability/1 in 100 Year (Flood Zone 3)	0.1% Annual Probability/1 in 1000 Year (Flood Zone 2)	
1	0.07	0.15	20.40	20.48	20.33
2	0.04	0.17	22.03	22.16	21.99
3	No Data	0.07	No Data	21.59	21.52
4	0.14	0.23	20.75	20.84	20.61
5	0.11	0.21	23.27	23.37	23.16
6	0.13	0.25	26.44	26.56	26.31
7	0.18	0.27	20.44	20.53	20.26
8	0.16	0.26	20.41	20.51	20.25
9	0.22	0.33	21.52	21.63	21.30
10	0.12	0.22	20.63	20.73	20.51

* Levels in metres above Ordnance Datum Newlyn

1:447

*when printed at A4.



2009 JFLOW Levels for The Methodist Hall - Created 14 March 2019



Legend

+ Location Points

— Main River

Ground Level

Value
— High
— Low

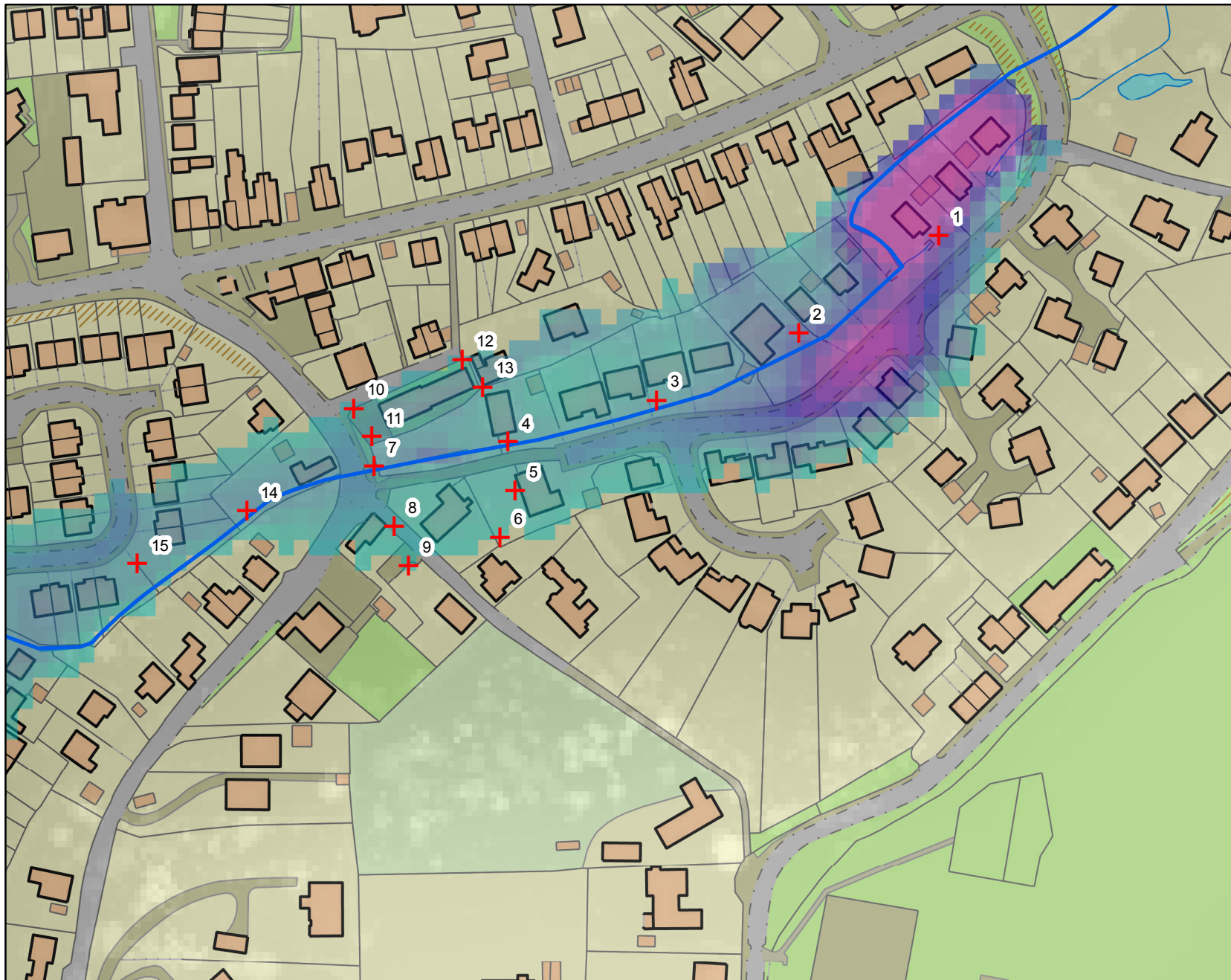
Depth

Value
— High
— Low

1:1,831 *

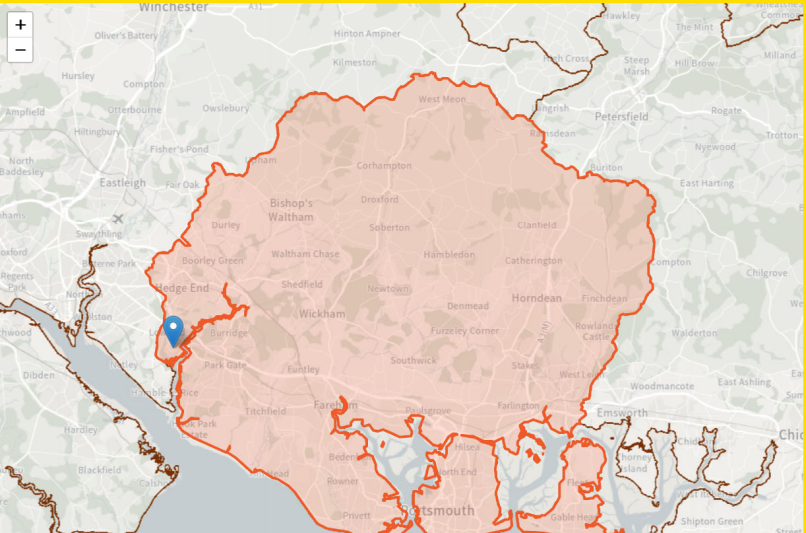
*when printed at A4.

0 30 60
Metres



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Contact Us: National Customer Contact Centre, PO BOX 544, Rotherham, S60 1BY. Tel: 08708 506 506 (Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

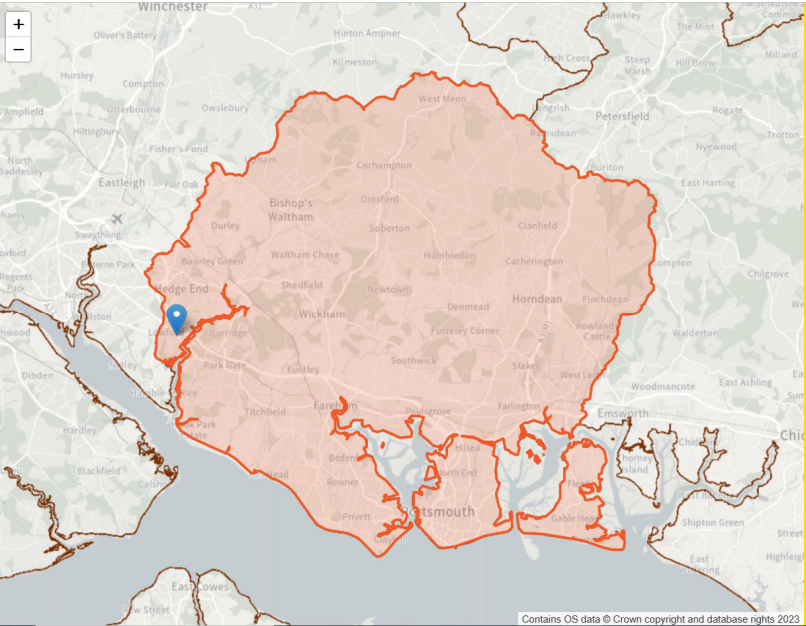


East Hampshire Management Catchment peak river flow allowances

	Central	Higher	Upper
2020s	19%	24%	37%
2050s	22%	30%	51%
2080s	37%	51%	88%

This map contains information generated by [UK Centre for Ecology and Hydrology](#) using UK Climate projections.

Current peak river flow climate change allowances



East Hampshire Management Catchment peak rainfall allowances

3.3% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	35%
2070s	25%	40%

1% annual exceedance rainfall event

Epoch	Central allowance	Upper end allowance
2050s	20%	40%
2070s	25%	45%

*Use '2050s' for development with a lifetime up 2060 and use the 2070s epoch for development with a lifetime between 2061 and 2125.

Current peak rainfall climate change allowances



19 April 2023

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SO31 1BA

✉ 54 Common Lane
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☎ 07717 759149
🌐 www.aquacallidus.co.uk

FAO Phil Laurenson

Ref: 1917

Methodist Hall, School Lane, Lowford

Dear Sirs

Further to your email of 15th December 2022 containing the EA consultation response of 30 September 2021 (copy attached) we reviewed the response and were unable to substantiate the EA position with respect to FZ3b against NPPF and therefore made enquiry to the EA 15th December 2021 for clarification. A copy of this enquiry along with the EA response dated 12th January 2023 is attached. In their response the EA confirm in paragraph 2 that the 2007 and 2016 SFRA do suggest the 5% AEP flood risk as a reasonable basis for the definition of FZ3b. In paragraph 3 the EA confirm that they consider the use of the 5% AEP flow in combination with complete blockage of the culvert would be appropriate to define FZ3b extents for the site. In paragraph 5 the EA confirm that they are satisfied with the approach using flow over School Lane to define the critical flood extents but note the current topographical survey would need to be extended. Additionally the EA sought examination of the 5%AEP +105%CC with blocked culvert on an extended topographical survey in order to make a final decision.

We contacted the applicant who put the extension of the topographic survey in place to address the EA request. An annotated copy of this extended survey is attached.

Whilst we were preparing the extended flow analysis on the extended geometry, on 21st February 2023 Eastleigh BC refused the application for a number of reasons. We verbally advised the applicant that the further hydraulic analysis indicated the 5%AEP +105%CC and the 1% AEP +105% CC were lower than previously calculated as consideration of the additional topographic survey area had a significant beneficial impact on the previous assumption. The applicant has now considered these reasons and the additional flow analysis requested by the EA is attached.

Figure 1 (attached) shows a copy of the extended topographic survey with contours shown in green and walls opposite the site hatched in black. The critical section (AA) controlling flow leaving the site with the culvert under School Lane blocked is indicated. This has a section surface low point of 20.15m AOD. On the opposite side of School Lane although the road gully is at 19.76m AOD the verge to the rear is slightly higher with a low point of 19.87 and to the north the extents of the hydraulic flow section B1B1 are limited by the masonry wall until a water level of 20.33m AOD at which point some water could additionally pass through sections B3B3 and B2B2.

Upstream of section AA flow will pass through the culvert below the Redcroft Lane estate. Were that culvert to block then upstream flow would pool east of Redcroft Lane until it eventually overcomes the fill level to which Redcroft Lane estate was constructed when that section of the watercourse was culverted. Surface

flow would pass westwards along the highway surface and pass down the alleyway linking Recroft Lane with School Lane. The alleyway is tarmac surfaced and on a steep straight gradient. The attached calculations demonstrate that at just over 400mm flow depth the alleyway could support the whole of 1%AEP+105% CC flow. The alleyway alignment directly points towards the channel and headwall downstream of the culvert beneath School Lane and it is apparent that in this scenario water within the development site would be static deadpool corresponding to the flow level over School Lane.

In the alternate scenario with the culvert beneath Redcroft Lane estate unblocked but the culvert beneath School Lane blocked flow would pool on the site upstream of school Lane up to the level of flow over School Lane on section AA. In both scenarios it is the flow over section AA that dictates the pooling level in the site.

The critical flows at the site are

1% AEP + 105%CC	6.53m ³ /sec (Refer to FRA)
5%AEP + 105%CC	4.47m ³ /sec (refer to our letter 10/8/21 and EA email 12/1/23)

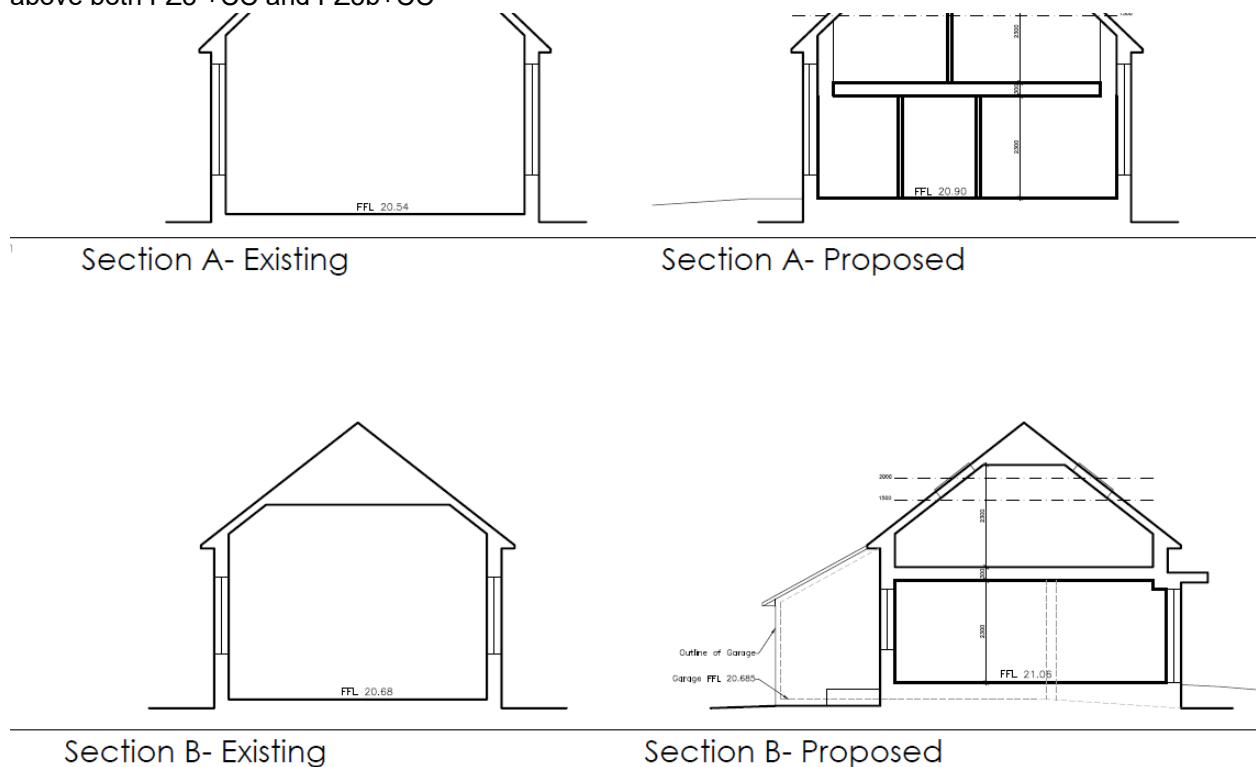
The calculations for the hydraulic sections are attached. For section AA the critical governing section for discharge of flow over School Lane:

- For 1%AEP +105%CC = 6.53m³/sec water level is just over 20.3m AOD, say 20.35m AOD
- For 5%AEP +105%CC = 4.47m³/sec water level is 20.30m AOD

FZ3+CC is therefore defined by the 20.35mAOD contour

FZ3b+CC is therefore defined by the 20.30m AOD contour

The existing floor level of the building is 20.54 and 20.68m AOD. The existing building FFL is therefore above both FZ3 +CC and FZ3b+CC



It is proposed to raise the FFL to 20.90 and 21.06m AOB further increasing the FZ3 and FZ3b freeboard.

The access to unit 1 is 20.36mAOD and above (dry)

The access to units 2 and 3 is higher

There is safe dry access to all units for the design flood

At 1%AEP+105%CC flow would just reach section B3B3 threshold with a depth of 0-20mm over a width of about 300mm so only a nominal part of the flow rate could be expected to pass through B3B3 with almost all the flow on B1B1.

With respect to Eastleigh BC reason for refusal No 1:

The additional assessment requested by the EA demonstrates the proposed change of use building does not lie in FZ3b and demonstrates the development to be safe from flooding.

Yours Sincerely,

Aqua Callidus Consulting Ltd

Andy Traves

Enc. Letter 10/8/2021
EA consultation response 30/9/2021
EA clarification response 12/1/2023
Annotated extended topographic survey
EBC decision notice 21/2/2023
Hydraulic calculations



10 August 2021

ADP Architects
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94 Botley Road
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SO31 1BA

✉ 52 Common Lane
Titchfield, Hants,
PO14 4BU

☎ 07717 759149
🌐 www.aquacallidus.co.uk

FAO: Phil Laurenson

Ref: 1917

Re: Methodist Hall, School Lane, Lowford

Dear Sirs

Further to your email of 4th August 2021 we have reviewed the EA response of 29th March 2021 from the planning portal.

Flood Zone 3b is defined in the NPPG as land where water has to be stored at times of flood. Before the NPPG came into being PPS25 defined FZ3b as a 1 in 20 year, 5%AEP flood risk.

More detailed flood modelling information is available for the watercourse from the modelling informing JBA Consulting Hampshire and Isle of Wight Flood Zone Improvements. Model node 196 lies adjacent the site and as set out in the FRA generates the following flow rates:

Q₁₀₀₀ 5.78 m³/sec

Q₁₀₀ 3.18 m³/sec

The associated Q₃₀ and Q₁₀ flow rates are

Q₃₀ 2.34 m³/sec

Q₁₀ 1.77 m³/sec

The Q₂₀ flow rate can therefore be determined as 2.18 m³/sec and

Q_{20 +45%CC} 3.16 m³/sec

Q_{20 +105%CC} 4.47 m³/sec

Conservatively assuming total blockage of the culvert and that the whole flow passes overland across the low point on School Lane at some 19.80m AOD then the hydraulic overland channel analysis contained in the FRA indicates a maximum depth of 0.42-0.46m depending on the CC value adopted, hence FZ3b +CC flood level of 19.80+ (0.42/0.46m) =20.26m AOD as compared to Existing FLs of 20.54 to 20.68m AODm so the existing FFL is well above FZ3b +CC level. Notwithstanding this it is proposed to raise the FFLs anyway. The existing building is not therefore in FZ3b

Yours Sincerely,
Aqua Callidus Consulting Ltd

Andy Traves

Enc. Q₂₀ derivation

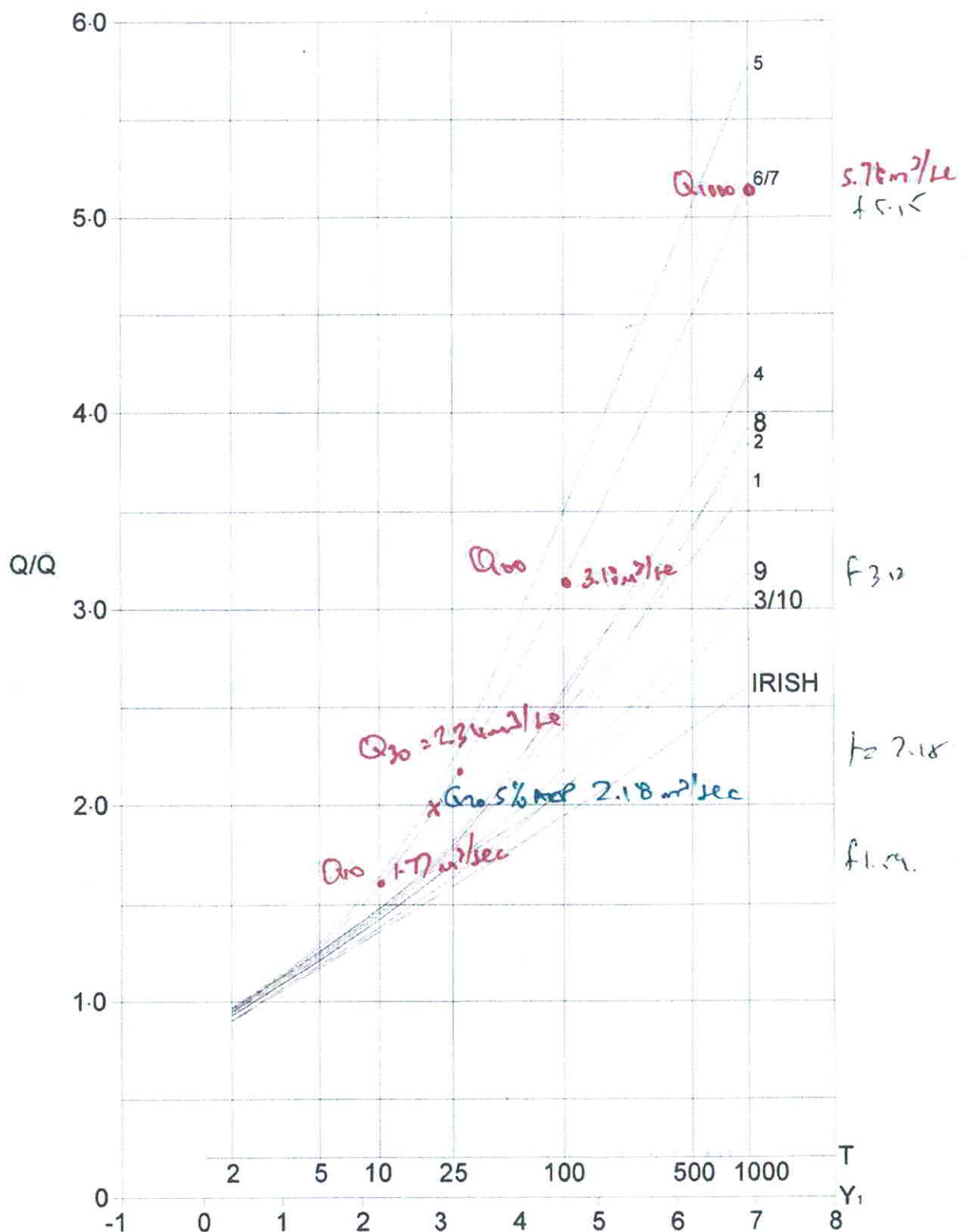


Figure A1.2 Peak flow growth curves of UK (from FSSR 14)

$$\begin{aligned}
 Q_{20} + 45\% &\rightarrow 3.16 \text{ m}^3/\text{sec} \quad 0.42 \text{ m} \\
 Q_{20} + 105\% &\rightarrow 4.47 \text{ m}^3/\text{sec} \quad 0.46 \text{ m}
 \end{aligned}$$

Eastleigh Borough Council
Planning Policy & Design Team
Eastleigh House Upper Market Street
EASTLEIGH
Hampshire
SO50 9YN

Our ref: HA/2021/123031/02-L01
Your ref: F/21/89869
Date: 30 September 2021

Dear Sir/Madam

RECONSULTATION - CONVERSION OF FORMER METHODIST CHURCH HALL TO 2NO. 2/3 BEDROOM DWELLINGS AND 1NO. 2 BEDROOM DWELLING, WITH ASSOCIATED PARKING AND CONSTRUCTION OF GARAGE, AMENITY SPACE, ELEVATIONAL ALTERATIONS INCLUDING INSERTION OF ROOFLIGHTS, AND PROVISION OF RAISED DECKED AREAS.

BURSLEDON CONGREGATIONAL CHURCH, SCHOOL ROAD, BURSLEDON, SOUTHAMPTON, SO31 8BU

Thank you for the consultation on the above application, please quote our reference number on all correspondence.

Environment Agency position

We **object** to the proposed development as it falls within a flood risk vulnerability category that is inappropriate to the Flood Zone in which the application site is located. The application is therefore contrary to the National Planning Policy Framework and its associated planning practice guidance. We recommend that planning permission is refused on this basis.

Reason

The PPG classifies development types according to their vulnerability to flood risk and provides guidance on which developments are appropriate within each Flood Zone. This site lies within Flood Zone 3b functional floodplain, which is land defined by the PPG and your Strategic Flood Risk Assessment as having a high probability of flooding.

The development is classed as more vulnerable in accordance with table 2 of the Flood Zones and flood risk tables of the PPG. Tables 1 and 3 make it clear that this type of development is not compatible with this Flood Zone and therefore should not be permitted.

Environment Agency
Canal Walk, ROMSEY, Hampshire, SO51 7LP.
Customer services line: 03708 506 506
www.gov.uk/environment-agency

Cont/d..

Overcoming our objection

Whilst additional information has been submitted we are currently not satisfied that the information provided indicates that this site is outside of Flood Zone 3b. As defined by Eastleigh Borough Council in their SFRA "Flood Zone 3b is defined as the entire of Flood Zone 3" Flood Zone 3 is land defined as having a high probability of flooding, (1% AEP). The additional information assessed the risk of flooding to the site, up to 5% AEP and therefore did not provide information to suggest the site is not situated within the 1% AEP (Flood Zone 3).

In order to overcome our objection the applicant will need to demonstrate through an FRA, or additional information, that the existing building is not located within an area of flood zone 3b defined as flood zone 3 by Eastleigh Borough Council. Should the applicant wish to provide a more detailed analysis, either through a site survey of topographical data in comparison with the ground data and JFlow information, or through their own detailed modelling or any other method then any assessment should take account of the culverts, their capacities and include a blockage analysis, given the close proximity of the culverts to the site and the potential flood risk this could cause.

If it cannot be shown that the building lies outside of the flood zone 3b we are likely to maintain our objection to this development on flood risk terms.

If you are minded to approve the application contrary to our objection, we would be grateful if you could re-notify the Environment Agency to explain why material considerations outweigh our objection, and to give us the opportunity to make further representations. Should our objection detailed above be removed, it is likely we will recommend planning conditions to be included on any subsequent approval.

Yours faithfully

Miss Suz Greenwood
Planning Advisor, Environment Agency

Direct dial 02084745098

Direct fax

Direct e-mail suz.greenwood@environment-agency.gov.uk

aquacallidus

From: Greenwood, Suz <Suz.Greenwood@environment-agency.gov.uk>
Sent: 12 January 2023 10:31
To: aquacallidus
Subject: RE: Methodist Hall, Lowford

Dear Mr Traves,

Thank you for your enquiry. The Environment Agency response ref: HA/2021/123031/02 took account of additional information provided by Aqua Callidus Consulting (Ref: 1917, dated 10/08/2021), specifically relating to the definition of Flood Zone 3b as the 5% AEP flood extent.

Our response does make reference to the Eastleigh SFRA, which as you point out is the PUSH SFRA 2007. This SFRA has subsequently been updated in 2016 and has a further addition titled: PUSH SFRA 2016 Update - Guidance Document: Eastleigh. This guidance document specifies that where detailed evidence (modelling) is not available FZ3b shall be defined as the entire extent of FZ3. The guidance document does not set out the parameters for defining FZ3b, but the 2007 and updated 2016 SFRAs do suggest the 5% AEP flood risk as a reasonable basis for this definition.

I can confirm that in terms of defining FZ3a and 3b the PUSH SFRA 2016 update should be used, I also believe it is reasonable to use a 5% AEP flood risk as a means to approximate the extent of FZ3b for this site. As stated in our previous response I think it is appropriate to assess the 5% AEP flood risk in conjunction with a complete culvert blockage given its relatively small size and proximity to the building.

The hydraulic over land channel analysis provided for a 5% AEP event (Q20 105%cc = 4.47m³/sec), together with a complete culvert blockage indicates a flood depth of 0.46m. This depth has been applied to the low point on School Lane (19.80mAOD), acting as the control level for flooding, to give an on site flood level of 20.26mAOD for the FZ3b extent.

I'm satisfied with this approach, however the controlling low point on School Lane needs to be confirmed. The topographical survey submitted shows the upstream levels on School Road to be about 150 - 200mm higher than those on the downstream side but unfortunately the survey doesn't seem to provide a spot value on the upstream side of the road corresponding to the downstream value of 19.80mAOD. This should be provided so that the 5% 105%cc AEP flood level can be confirmed and then assessed against both the building platform levels and proposed FFLs.

The same analysis should also be undertaken for the 1% AEP 105%cc level, together with a full culvert blockage to assess the safety of the building and whether the proposed FFLs are suitable.

Yours faithfully

Miss Suz Greenwood
Planning Advisor, Environment Agency

Direct dial 02084745098

Direct fax

Direct e-mail suz.greenwood@environment-agency.gov.uk

From: aquacallidus <andy@aquacallidus.co.uk>

Sent: 15 December 2022 16:31

To: Greenwood, Suz <Suz.Greenwood@environment-agency.gov.uk>

Subject: Methodist Hall, Lowford

You don't often get email from andy@aquacallidus.co.uk. [Learn why this is important](#)

Warning: The sender of this message could not be validated. Please use caution when opening any message content such as attachments or links

Suz

Over a year after last working on the above site the Architect has sent me your response attached out the blue and asked me to comment. I have said I will need to look at it before answering him.

To my knowledge Eastleigh BC don't have their own SFRA and rely on the PfSH SFRA as shown in their Local Plan evidence base ENV005b: (I just called them this afternoon and all they point to is ENV005b and cannot find or point me to an SFRA of their own)

Eastleigh Borough Local Plan 2016-36: Revised Core Documents list and information

Retail and Town Centre

Core Doc No.	Study	Author	Date of study	Date published on Local Plan website
RTC001	Shopping Occupancy Survey	Eastleigh Borough Council	September 2017	June 2018
RTC002	Retail Floorspace Provision background paper	Eastleigh Borough Council	June 2018	June 2018
RTC003	Retail and Leisure Needs	Carter Jonas	July 2017	June 2018

Natural and Historic Environment

Core Doc No.	Study	Author	Date of study	Date published on Local Plan website	Reference of updated/new study	Author
ENV001	Environmental capacity	Eastleigh Borough Council	June 2018	June 2018		
ENV002	Countryside Gaps Background Paper	Eastleigh Borough Council	June 2018	June 2018		
ENV003	Open spaces study	Eastleigh Borough Council	February 2017	June 2018		
ENV004a	Playing pitches study	Eastleigh Borough Council	March 2017	June 2018		
ENV004b	Playing pitches study – Appendices A-G	Eastleigh Borough Council	March 2017	May 2019		
ENV005a	PUSH SFRA	Partnership for Urban South Hampshire	December 2007	June 2018		
ENV005b	PUSH SFRA – Update	Partnership for Urban South Hampshire	February 2016	June 2018		
ENV006a	Southern Damselfly survey	Arcadian Ecology	April 2018	June 2018	ENV012	Arcadian Ecology
ENV006b	Southern Damselfly mitigation strategy	Arcadian Ecology	April 2018	June 2018	ENV012	Arcadian Ecology

Page 43 of that discusses FZ3b and paragraph 1 states on average this is 5% AEP. The tacit implication of the wording is that in some places could be more than 5% and in some less than 5%. Minded however that to hit a 5% average, for each area at 4% there must be another at 6% and each area at 1% there must be some at 9% to hit the 5% average

In the following paragraph it states that [FZ3b] represents the area (meaning portion) of fluvial Flood Zone 3 that is at highest probability of flooding (ie implicitly not all of it).... So inherently it does not represent the portions of FZ3 at low, medium and moderately high risk of flooding, only the portion at the highest. I can see 5% average fitting that bill and I can see some local variation of between 0 and 10% such that it still gives 5% average. I cannot see in any way how this could mean everything within 1%AEP as it clearly does not fit with the explicit language or the implicit intent of the definitions given and clearly could not arrive at a 5% average.

Whilst overleaf on page 44 it discusses H/M/L hazard rating mappings the site is not in an area containing H/M/L hazard ratings:

PfSH WebMaps

OS Place Name Search



SHOW LAYERS

☐ EA Flood Mapping +

☒ Flood Hazard Map -

☒ FZ2 Undefended Hazards

☒ Low Risk

☒ Moderate Risk

☒ High Risk

☒ Very High Risk

☒ FZ3 Undefended Hazards

☒ Low Risk

☒ Moderate Risk

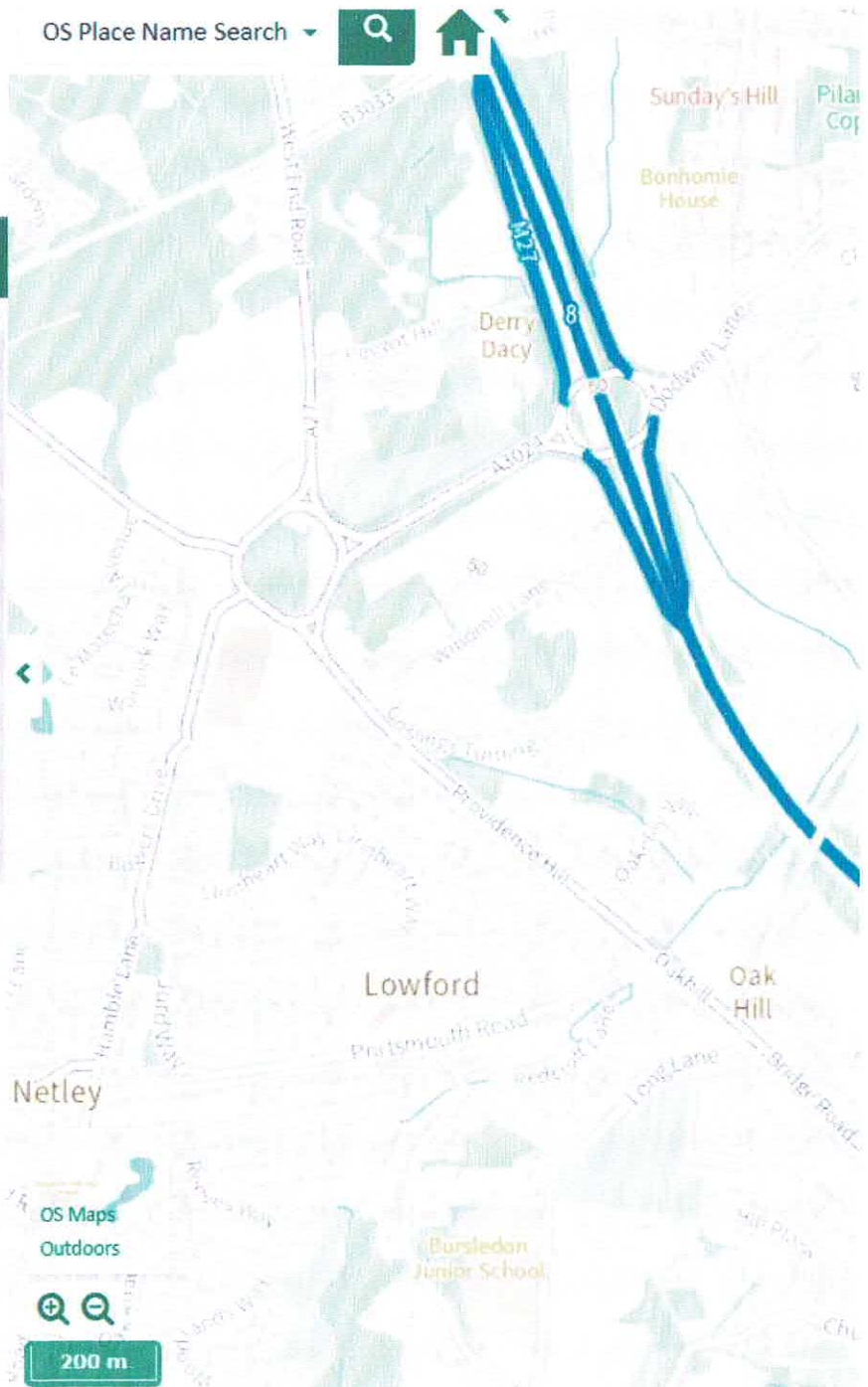
☒ High Risk

☒ Very High Risk

☐ Flooding (other sources) +

☐ Groundwater Flooding +

☐ Impact of land use change +



In short I cannot find anything on the public domain of EBC website to substantiate your, overcoming our objection paragraph 1 assertion that "As defined by EBC in their SFRA "Flood Zone 3b is defined as the entire of Flood Zone 3"". What I can find is as above. I have just called EBC and they couldn't find or point me to their own SFRA they only point to the PfSH update 2016 as cited in their evidence base to their Local Plan. If they have some sort of non public behind the scenes secret SFRA that only you know about I would be grateful for a copy of it as it is news to me.

Can you give me a call as I have been asked for my view and as it stands I would rely on the PfSH SFRA that EBC's Local Plan replies upon as I can't find the quote you attribute to EBC SFRA as I cannot even find an EBC SFRA. I would like to bottom out with you before I give any official response to the client's Architect or make formal submission of anything to yourselves.

Kind Regards

Andy Traves



Tel: 07717759149

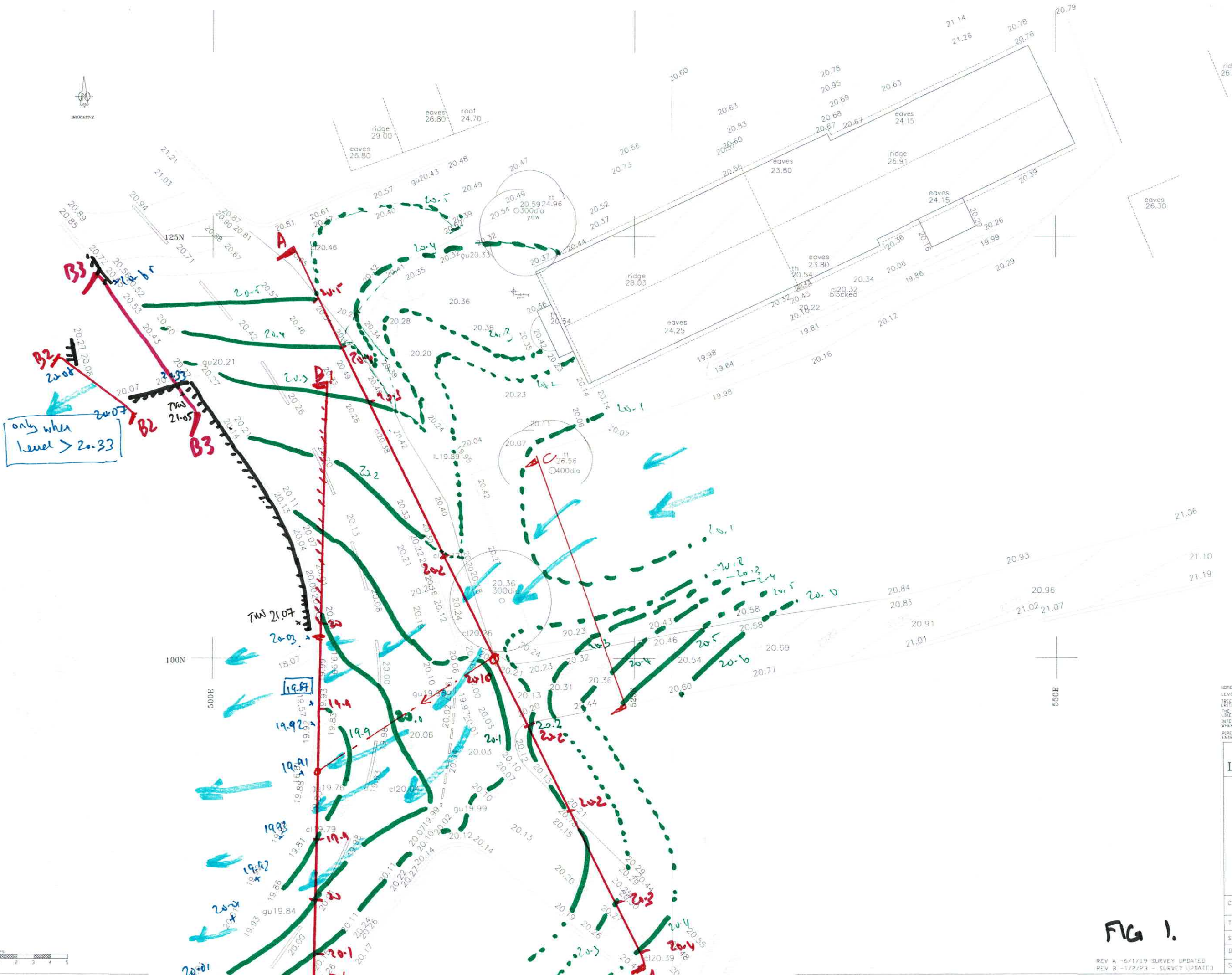
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- bt British Telecom
- cb Control Box
- cl Cover Level
- ctv Cable Television
- dk Drop Kiosk
- el Electric
- ep Electricity Pole
- fh Fire Hydrant
- gv Gully
- gsv Gas Stop Valve
- ht Height
- ic Inspection Cover
- il Invert Level
- lp Lamp Post
- map Marker
- o/h Overhead
- pb Post Box
- pcg Bus Crossing
- rp None Plotted
- rs Road Sign
- sv Stop Valve
- tb Telephone Box
- tl Traffic Light
- tt Top of Tree
- th Threshold
- tw Top of Wall
- u/l Unable to Lift
- vp Vent pipe
- vm Water Meter
- wsv Water Stop Valve



NOTES:
 LEVELS RELATE TO OS DATUM
 TREE SPECIES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE
 THE ARCHITECT SHOULD SATISFY HIMSELF THAT ALL TREES LIKELY TO AFFECT HIS DESIGN HAVE BEEN SHOWN
 INTER CONNECTION OF MANHOLES SHOULD BE VERIFIED WHERE OF CRITICAL IMPORTANCE USING CCTV
 PIPE SIZES & INVERTS DETERMINED WITHOUT ENTRY INTO MANHOLE

P STUBBINGTON LAND SURVEYS LTD	
THE MEAD BURLEY BROOK ROAD BURLEY SOUTHAMPTON HAMPSHIRE SO32 2AR	
TEL - 023 8060 1876	
MOBILE - 07973 348165	
EMAIL - PAUL@PSTLANDSURVEYS.COM	
CONTRACT -	METHODIST CHURCH LDWFORD
TITLE -	TOPOGRAPHIC SURVEY
SCALE -	1:100 (RAI)
DATE -	JANUARY 2016
SURVEYOR -	PS

FIG 1.

REV A - 6/1/19 SURVEY UPDATED
 REV B - 1/2/23 - SURVEY UPDATED

BY EMAIL

PHILIP LAURENSEN
ADP CHARTERED ARCHITECTS LTD
RICHMOND COURT
94 BOTLEY ROAD
PARK GATE
SOUTHAMPTON
SO31 1BA

Application	F/21/89869
Please ask for	Clare Martin
Direct dial	023 8068 8256
Working hours	Mon to Fri 8:30am to 5pm
Email	clare.martin@eastleigh.gov.uk

Tuesday 21 February 2023

Town and Country Planning Act 1990
The Town and Country Planning (Development Management Procedure) (England)
Order 2015

Application No. F/21/89869

In pursuance of their powers under the above Act and in accordance with your application received on Friday 19 February 2021 the Council, as Local Planning Authority hereby **Refuse Planning Permission** For the following :

Description:	Conversion of former Methodist church hall to 3no. 2 bedroom dwellings, with associated parking and construction of garage, amenity space, elevational alterations including insertion of rooflights, and provision of raised decked areas.
Site:	BURSLEDON CONGREGATIONAL CHURCH, SCHOOL ROAD, BURSLEDON, SOUTHAMPTON, SO31 8BU

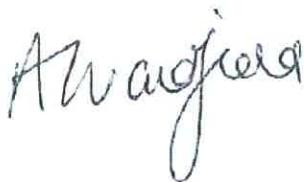
For the following reasons:

- 1 Insufficient information has been provided to demonstrate that the existing building could not be used for an alternative less vulnerable flood risk use or community use. Furthermore, the flood risk assessment fails to demonstrate that the development will be safe from flooding. As such the development is contrary to Policies DM5 & DM36 and provisions within the National Planning Policy Framework.
- 2 The proposed development fails to provide suitable and accessible on site car parking spaces, which would encourage the parking of vehicles on the public highway and so interrupt the free flow of traffic and cause a hazard to road users. As such the proposal is contrary to Policy DM14 of the Eastleigh Borough Local Plan, Provisions within The National Planning Policy Framework and the Council's Residential Parking Standards Supplementary Planning Document.

- 3 Insufficient information has been provided to demonstrate that the proposed development will not have an adverse effect on bats. The proposal is therefore contrary to The Conservation of Habitats and Species Regulations 2017 (as amended), Policy DM11 of the Eastleigh Borough Local Plan and provisions within The National Planning Policy Framework.
- 4 The application fails to provide for the required mitigation to offset the impacts of the development on the European protected sites (i.e. Solent and Southampton Water Special Protection Area & Ramsar Site, Solent Maritime Special Area of Conservation & New Forest Special Protection Area, Ramsar & Special Area of Conservation) from nutrient loading and recreational disturbance generated by the population increase resulting from the development. The application is therefore contrary to The Conservation of Habitats and Species Regulations 2017 (as amended); policies S1, DM10 and DM11 of the Eastleigh Borough Local Plan (2016-2036) and provisions within the National Planning Policy Framework.

Note to Applicant: The application was refused following the assessment of the following plans: 1802-10c, 1802-11c, 1802-12a, 1802-13b, 1802-14b, 1802-B01b, 1802-L01a, 5400/01/A & NJC-001. In accordance with paragraph 38 of the National Planning Policy Framework (February 2019), Eastleigh Borough Council takes a positive approach to the handling of development proposals so as to achieve, whenever possible, a positive outcome and to ensure all proposals are dealt with in a timely manner. It is noted that a number of technical issues have been raised throughout the assessment of the planning application which parties have been unable to resolve satisfactorily resulting in the decision to refuse planning permission.

Yours faithfully

A handwritten signature in black ink, appearing to read "Andy Grandfield", written in a cursive style.

Andy Grandfield
Executive Head for Planning and Economy

N.B. See Attached Notes

section AA										
segment	1	2	3	4	5	6	7	8	9	10
length XY	2.71	3.21	7.91	5.35	2.37	6.73	6.64	6.61	5.29	1.27
AOD1	20.4	20.3	20.2	20.2	20.1	20.2	20.3	20.4	20.5	20.6
AOD2	20.3	20.2	20.2	20.1	20.2	20.3	20.4	20.5	20.6	20.7
H av	0.05	0.05	0.00	0.05	0.05	0.05	0.05	0.05	0.05	0.05
length XYZ (P)	2.71	3.21	7.91	5.35	2.37	6.73	6.64	6.61	5.29	1.27
area under AOD2 (Ab)	0.136	0.161	0.000	0.267	0.118	0.337	0.332	0.331	0.265	0.063
area addition for +0.1 *(A incr)	0.271	0.321	0.791	0.535	0.237	0.673	0.664	0.661	0.529	0.127
stage	S=		0.0172	n=		0.015	asphalt			
20.2 (P)						5.35	2.37			
20.2 (A)						0.267	0.118			
20.3 (P)			3.21	7.91	5.35	2.37	6.73			
20.3(A)			0.161	0.791	0.802	0.355	0.337			
20.4 (P)			2.71	3.21	7.91	5.35	2.37	6.73	6.64	
20.4 (A)			0.136	0.482	1.582	1.337	0.592	1.010	0.332	
20.5 (P)			2.81	3.21	7.91	5.35	2.37	6.73	6.64	6.61
20.5 (A)			0.407	0.803	2.373	1.872	0.829	1.683	0.996	0.331
20.6 (P)			2.91	3.21	7.91	5.35	2.37	6.73	6.64	6.61
20.6 (A)			0.678	1.124	3.164	2.407	1.066	2.356	1.660	0.992
						TOTALS	1/n	A^5/3	P^2/3	S^1/2
						7.723	66.67	0.205	3.907	0.131
						0.386				
							Q (m3/sec)			
							0.46			

section bb														
segment	1	2	3	4	5	6	7							
length XY	1.51	0.61	0.88	3.29	3.71	7.13	5.35							
AOD1	20.31	20.27	20.2	20.1	20.0	19.9	19.9							
AOD2	20.27	20.20	20.1	20.0	19.9	19.9	20.0							
H av	0.02	0.04	0.05	0.05	0.05	0.00	0.05							
length XYZ (P)	1.51	0.61	0.89	3.29	3.71	7.13	5.35							
area under AOD2 (Ab)	0.030	0.021	0.044	0.165	0.186	0.000	0.268							
area addition for +0.1 *(A incr)	0.151	0.061	0.088	0.329	0.371	0.713	0.535							
stage	S=		0.0172	n=		0.015	asphalt	TOTALS	1/n	A^5/3	P^ 2/3	S^1/2	Q (m3/sec)	
20.0 (P)						3.71	7.13	5.35	16.192	66.67	1.292	6.400	0.131	1.76
20.0 (A)						0.186	0.713	0.268	1.166					
20.1 (P)				3.29	3.71	7.13	5.45	19.584	66.67	6.066	7.265	0.131	7.30	
20.1(A)				0.165	0.557	1.426	0.803	2.950						
20.2 (P)			0.89	3.29	3.71	7.13	5.55	20.569	66.67	14.336	7.507	0.131	16.70	
20.2 (A)			0.044	0.494	0.928	2.139	1.338	4.942						
20.3 (P)	1.13	0.61	0.89	3.29	3.71	7.13	5.65	22.416	66.67	25.823	7.950	0.131	28.40	
20.3 (A)	0.017	0.040	0.132	0.823	1.299	2.852	1.873	7.034						
20.4 (P)	1.60	0.61	0.89	3.29	3.71	7.13	5.75	22.984	66.67	40.996	8.084	0.131	44.34	
20.4 (A)	0.168	0.101	0.220	1.152	1.670	3.565	2.408	9.282						

section cc													
segment	1	2	3	4	5	6	7	8	9	10	11		
length XY	3.47	0.68	0.34	5.12	1.96	1.96	0.85	1.71	garden #11	2.18	1.94		
AOD1	20.50	20.50	20.40	20.35	20.35	20.30	20.25	20.2		20.2	20.3		
AOD2	20.50	20.40	20.35	20.35	20.30	20.25	20.20	20.1	20.1	20.3	20.4		
H av	0.00	0.05	0.02	0.00	0.03	0.02	0.03	0.05		0.05	0.05		
length XYZ (P)	3.47	0.69	0.34	5.12	1.96	1.96	0.85	1.71	12.61	2.18	1.94		
area under AOD2 (Ab)	0.000	0.034	0.008	0.000	0.049	0.049	0.021	0.085	6.02	0.109	0.097		
area addition for +0.1 *(A incr)	0.347	0.068	0.034	0.512	0.196	0.196	0.085	0.171	1.286	0.218	0.194		
stage	S=		0.0058	n=		0.03	floodplain short grass pasture (garden)						
20.2 (P)							1.71	12.71					
20.2 (A)							0.085	7.306					
20.3 (P)						1.96	0.85	1.71	12.71	2.18			
20.3 (A)						0.049	0.064	0.256	8.592	0.109			
20.4 (P)			0.34	5.12	1.96	1.96	0.85	1.71	12.71	2.18	1.94		
20.4 (A)			0.008	0.256	0.147	0.245	0.149	0.427	9.878	0.327	0.097		
						TOTALS	1/n	A^5/3	P^2/3	S^1/2	Q (m3/sec)		
						14.423	33.33	28.047	5.925	0.076	12.02		
						7.391							
						19.417	33.33	39.448	7.224	0.076	13.86		
						9.070							
						28.784	33.33	58.885	9.392	0.076	15.92		
						11.535							

Mleywang w=3.5
 S₀ = 0.0177
 n = 0.015.

e 100 dp A=0.35 P=3.7 Q=0.64 m³/s
 e 200 dp A=0.70 P=3.9 Q=1.98 m³/s
 e 300 dp A=1.05 P=4.1 Q=3.76 m³/s
 e 400 dp A=1.40 P=4.3 Q=5.88 m³/s
 e 500 dp A=1.75 P=4.5 Q=8.27 m³/s
 e 600 dp A=2.10 P=4.7 Q=10.89 m³/s

Appendix C

Date: 21/06/2023

Site Ref

Methodist Hall

SuDS Water Quality Management CIRIA C753 Ch26

Simple Index Approach

Catchment

roof

Is discharge to: SPZ1? ☐ N Drinking Water Protection Area? ☐ N
Is site in close proximity to an area with sensitive environmental designation? ☐ Y
if so how close? 1700 m
Is an additional treatment component required due to sensitivity? ☐ Y

Land Use

roofs-residential

Hazard

very low

TSS index	Metals index	HydroCar index
0.2	0.2	0.05

*2 residential roofs remove gross solids and sediments

Treatments

To surface water discharge ☐ Y

Component

- 1 Permeable pavement
 - 2 N/A
 - 3 N/A
- mitigation index
- X1 Swale
- Enhanced mitigation index
- Residual pollution index

TSS MIndex	Metals MIndex	HydroCa MIndex	factor
0.7	0.6	0.7	1.00
0	0	0	0.50
0	0	0	0.50
0.7	0.6	0.7	
0.5	0.6	0.6	0.50
0.95	0.9	1	
0	0	0	

Land Use

roofs-residential

Hazard

very low

TSS index	Metals index	HydroCar index	residual
0	0	0	

*2 residential roofs remove gross solids and sediments

Treatments

To groundwater discharge ☐ N

Infiltration surface

- 1 N/A
 - 2 N/A
- Final residual pollution index

TSS MIndex	Metals MIndex	HydroCa MIndex	factor
0	0	0	1.00
0	0	0	0.50
0	0	0	

Is a groundwater risk screening required?

☐ N

Notes:

permeable pavement discharges to existing grassy swale

Date: 21/06/2023

Site Ref

Methodist Hall

SuDS Water Quality Management CIRIA C753 Ch26

Simple Index Approach

Catchment

parking

Is discharge to: SPZ1? ☐ N Drinking Water Protection Area ? ☐ N
Is site in close proximity to an area with sensitive environmental designation? ☐ Y
if so how close? 1700 m
Is an additional treatment component required due to sensitivity? ☐ Y

Land Use

driveways (individual)

Hazard

low

TSS index	Metals index	HydroCar index
0.5	0.4	0.4

Treatments

To surface water discharge ☐ Y

Component

- 1 Permeable pavement
 - 2 N/A
 - 3 N/A
- mitigation index
- X1 Swale
- Enhanced mitigation index
- Residual pollution index

TSS MIndex	Metals MIndex	HydroCa MIndex	factor
0.7	0.6	0.7	1.00
0	0	0	0.50
0	0	0	0.50
0.7	0.6	0.7	
0.5	0.6	0.6	0.50
0.95	0.9	1	
0	0	0	

Land Use

driveways (individual)

Hazard

low

TSS index	Metals index	HydroCar index	residual
0	0	0	

Treatments

To groundwater discharge ☐ N

Infiltration surface

- 1 N/A
 - 2 N/A
- Final residual pollution index

TSS MIndex	Metals MIndex	HydroCa MIndex	factor
0	0	0	1.00
0	0	0	0.50
0	0	0	

Is a groundwater risk screening required?

☐ N

Notes:

permeable pavement discharges to existing grassy swale

SUDS operation and maintenance - general

There are three categories on maintenance activities:

Regular maintenance consists of basic tasks done on a frequent and predictable schedule, including vegetation management, litter and debris removal, and inspections.

Occasional maintenance comprises tasks that are likely to be required periodically, but on a much less frequent and predictable basis than the routine tasks (sediment removal is an example). The table below summarises the likely maintenance activities required for each SUDS component and specific maintenance activities is given in the following sections.

Remedial maintenance comprises intermittent tasks that may be required to rectify faults associated with the system. Where remedial work is found to be necessary, it is likely to be due to site-specific characteristics or unforeseen events, and as such timings are difficult to predict. Remedial maintenance items can comprise items such as:

- inlet/outlet repairs
- erosion repairs
- reinstatement or realignment of edgings, barriers, rip-rap or other erosion control
- infiltration surface rehabilitation
- replacement of blocked filter fabrics
- construction stage sediment removal (although this activity should have been undertaken before the maintenance contract)
- system rehabilitation immediately following a pollution event.

O&M activity	SUDS component												
	Pond	Wetland	Detention basin	Infiltration basin	Soakaway	Infiltration trench	Filter trench	Modular storage	Pervious pavements	Swale/bioretention/greenroofs	Filter strip	Sand filter	Pre-treatment systems
Regular maintenance													
Inspection	■	■	■	■	■	■	■	■	■	■	■	■	■
Litter/debris removal	■	■	■	■	□	■	■	□	■	■	■	■	■
Grass cutting	■	■	■	■	□	■	■	□	□	■	■	□	□
Wee/invasive plant control	□	□	□	□		□	□		□	□	□	□	□
Shrub management	□	□	□	□					□	□	□		□
Shoreline vegetation management	■	■	□										□
Aquatic vegetation management	■	■	□										□
Occasional maintenance													
Sediment management *	■	■	■	■	■	■	■	■	■	■	■	■	■
Vegetation/plant replacement	□	□	□	□						□	□		□
Vacuum sweeping and brushing									■				
Remedial maintenance													
Structure rehabilitation/repair	□	□	□	□	□	□	□	□	□	□	□	□	□
Infiltration surface reconditioning				□	□	□	□		□	□	□	□	

■ will be required

□ may be required

* sediment to be collected upstream of the main device

GENERAL MAINTENANCE

Litter/debris removal

This is an integral part of SUDS maintenance and reduces the risks of inlet and outlet blockages, retains amenity value and minimises pollution risks. High litter removal frequencies may be required at high profile commercial/retail parks where aesthetics are a major driver.

Grass cutting

It is recommended that grass cutting be minimised around SUDS facilities, apart from swales and filter strips and structural embankments where a height of 100–150 mm is recommended to prevent the plants falling over, or “lodging”, when water flows across the surface. In general, allowing grass to grow tends to enhance water quality performance. Short grass around a wet system such as pond or wetland provides an ideal habitat for nuisance species such as geese; allowing the grass to grow is an effective means of discouraging them. Grass around wet pond or wetland systems should not be cut to the edge of the permanent water. Grass cutting is an activity undertaken primarily to enhance the perceived aesthetics of the facility. The frequency of cutting will tend to depend on surrounding land uses, and public requirements. Therefore, grass cutting should be done as infrequently as possible, recognising the aesthetic concerns of local residents. However, grass around inlet and outlet infrastructure should be trimmed closely to reduce risks to system performance. If a manicured, parkland effect is required, then cutting will need to be undertaken more regularly than for meadow type grass areas, which aim to maximise habitat and biodiversity potential.

Weed/invasive plant control

Weeds are generally defined as vegetation types that are unwanted in a particular area. For SUDS, weeds are often alien or invasive species, which do not enhance the technical performance or aesthetic value of the system, or non-native species and the spread of which is undesirable. In some places, weeding has to be done by hand to prevent the destruction of surrounding vegetation (hand weeding should generally be required only during the first year, ie during plant establishment). However, over grassed surfaces, mowing can be an effective management measure. The use of herbicides and pesticides should be prohibited since they cause water quality deterioration. The use of fertilisers should also be limited or prohibited to minimise nutrient loadings which are damaging to water bodies.

Shrub management

Shrubs tend to be densely planted and are likely to require weeding at the base, especially during the first year to ensure that they get enough water. Shrubs should be selected so they can grow to their maximum natural height without pruning.

Aquatic/shoreline vegetation management

Aquatic plant aftercare in the first 1–3 years may be required to ensure establishment of planted vegetation and control nuisance weeds/invasive plants. Once established, the build-up of dead vegetation from previous seasons should be removed at convenient intervals to reduce organic silt accumulation (eg every three years and at the end of landscape contract periods).

Emergent vegetation may need to be harvested every 5–10 years to maintain flood attenuation volumes, optimise water quality treatment potential and ensure fresh growth, although this is often not required. Care should be taken to avoid nesting birds during the breeding season and to avoid great crested newt and water vole habitats. The typical window for this activity is towards the end of the growing season (September and October). As vegetation matures, plant height may also become a safety issue in residential areas.

Where emergent vegetation is managed, up to 25 per cent can be removed by cutting at 100 mm above soil level using shearing action machinery. Up to 25 per cent of submerged vegetation can be cut and raked out at any one time, using approved rakes, grabs or other techniques, depending on whether clay or waterproof membranes are present. Aquatic vegetation arisings should be stacked close to the water's edge for 48 hours to de-water and allow wildlife to return to the SUDS feature. They should then be removed to wildlife piles, compost heaps or off site before decomposition, rotting or damage to existing vegetation can occur.

Algae removal may be undertaken for aesthetic purposes during the first 3–5 years of a pond/wetland's life. The growth of algae, which is considered by some to be visually intrusive, is encouraged by nutrients introduced into the water body. This situation should settle down once upstream construction activities are complete.

Management of green waste

Appropriate methods should be implemented to dispose of green waste, including

- The development of wildlife piles
- On- or off-site composting
- Disposal to landfill

REMEDIAL MAINTENANCE

Structure rehabilitation/repair

There will come a time with most SUDS techniques when a major overhaul of the system is required to remove clogged filters, geotextiles, gravel etc. This will typically be between 10 and 25 years, depending on the technique and factors such as the type of catchment and sediment load. For example the use of geotextiles close to the surface in pervious surfaces traps the majority of sediment in a relatively easily accessible location. Reconstruction of the surface layer and bedding layer is all that is required, rather than reconstruction of the whole pavement depth.

Major overhaul is most likely to be required on techniques that rely on filtration through soils or aggregates, such as sand filters and infiltration devices. Other SUDS techniques are unlikely to need major overhaul if routine maintenance is undertaken as required (for example ponds and wetlands).

Rehabilitation activities for each SUDS component are described on the following tables.

Infiltration surface rehabilitation

In the event that grassed surface permeability has reduced, there are a number of landscape techniques that can be used to open the surface to encourage infiltration. Such activities are not commonplace and are likely to be required only in circumstances where silt has not been effectively managed upstream.

1. Scarifying to remove “thatch”. Thatch is a tightly intermingled organic layer of dead and living shoots, stems and roots, developing between the zone of green vegetation and the soil surface. Scarifying with tractor-drawn or self-propelled equipment to a depth of at least 50 mm breaks up silt deposits, removes dead grass and other organic matter and relieves compaction of the soil surface.
2. Spiking or tining the soil, using aerating equipment to encourage water percolation. This is particularly effective if followed by top dressing with a medium to fine sand, and is best undertaken when the soil is moist. Spiking or tining with tractor drawn or self-propelled equipment penetrates and perforates soil layers to a depth of at least 100 mm (at 100 mm centres) and allows the entry of air, water, nutrients and top dressing materials.
3. As a last resort, it may be necessary to remove and replace the grass and topsoil by:
 - removing accumulated silt and (subject to a toxicity test) applying to land or dispose of to landfill
 - removing damaged turf which should be composted
 - cultivating remaining topsoil to required levels
 - re turfing (using turf of a quality and appearance to match existing) or reseeded (to BS 7370: Part 3, Clause 12.6 (BSI, 1991) using seed to match existing turf) area to required levels. It may be necessary to supply and fix fully biodegradable coir blanket to protect seeded soil. Turf and seeded areas should be top dressed with fine sieved topsoil to BS 3882 (BSI, 1994) to achieve final design levels. Watering will be required to promote successful germination and/or establishment.

Water butts operation and maintenance

Maintenance schedule	Required action	Frequency
Regular maintenance	Cleaning of tank, inlets, outlets, gutters, withdrawal devices and roof drain filters of silts and other debris..	Annually (or following poor performance).
Occasional maintenance	Replacement of any filters.	As required
Remedial actions	Repair of erosion damage, or damage to tank.	As required
Monitoring	Inspection of the tank for debris and sediment build up.	Annually (or following poor performance).
	Inspection of inlets, outlets and withdrawal devices.	Annually (or following poor performance).
	Inspection of areas receiving overflow, for evidence of erosion.	After extreme storms.
	Inspection of roof drain filters	Annually (or following poor performance).

Swales operation and maintenance

Maintenance schedule	Required action	Frequency
Regular maintenance	Litter and debris removal.	Monthly (or as required).
	Grass cutting – to retain grass height within specified design range.	Monthly (during growing season), or as required.
	Manage other vegetation and remove nuisance plants.	Monthly (at start then as required).
Occasional maintenance	Check for poor vegetation growth due to lack of sunlight or dropping of leaf litter, and cut back adjacent vegetation where possible.	Annually.
	Re-seed areas of poor vegetation growth. Alter plant types to better suit conditions, if required.	Annually, or if bare soil is exposed over 10% or more of the swale treatment area.
Remedial actions	Repair erosion or other damage by re-turfing or reseeded.	As required
	Re-level uneven surfaces and reinstate design levels.	As required
	Scarify and spike topsoil layer to improve infiltration performance, break up silt deposits and prevent compaction of the soil surface.	As required
	Remove build-up of sediment on upstream gravel trench, flow spreader or at top of filter strip.	As required
	Remove and dispose of oils or petrol residues using safe standard practices.	As required
Monitoring	Inspect inlets, outlets and overflows for blockages, and clear if required.	Monthly.
	Inspect infiltration surfaces for ponding, compaction, silt accumulation. Record areas where water is ponding for > 48 hours.	Monthly, or when required.
	Inspect inlets and facility surface for silt accumulation. Establish appropriate silt removal frequencies.	Half yearly.

Sediment testing may be required before sediment excavation to determine its classification and appropriate disposal methods. For industrial site runoff sediment testing will be essential. In the majority of cases, it will be acceptable to distribute the sediment on-site if there is an appropriate safe and acceptable location to do so.

Appendix D

CONDITIONS AND LIMITATIONS OF FLOOD RISK ASSESSMENT & DRAINAGE STRATEGIES

October 2020

Aqua Callidus Consulting Ltd is constituted as a limited liability company in accordance with the Companies Act 1989 (with registered number 11390910 and with its registered office at Kintyre House, 70 High Street, Fareham, Hants, PO16 7BB).



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