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9 February 2023

Chris Williams
Moonraker (Melksham) Ltd
By email

Ref: 227166/FRA/NB

Dear Chris,

Avonside, Melksham - Flood Risk Appraisal

Vectos were instructed by Moonraker (Melksham) Ltd to undertake a flood risk appraisal for Avonside, Melksham, SN12 8BT.

Site Location

Avonside is located adjacent to Melksham Town Centre, on the north bank of River Avon. New Broughton Road is located to the north, and Bath Road to the east, which crosses River Avon. A site location plan is provided in Figure 1.

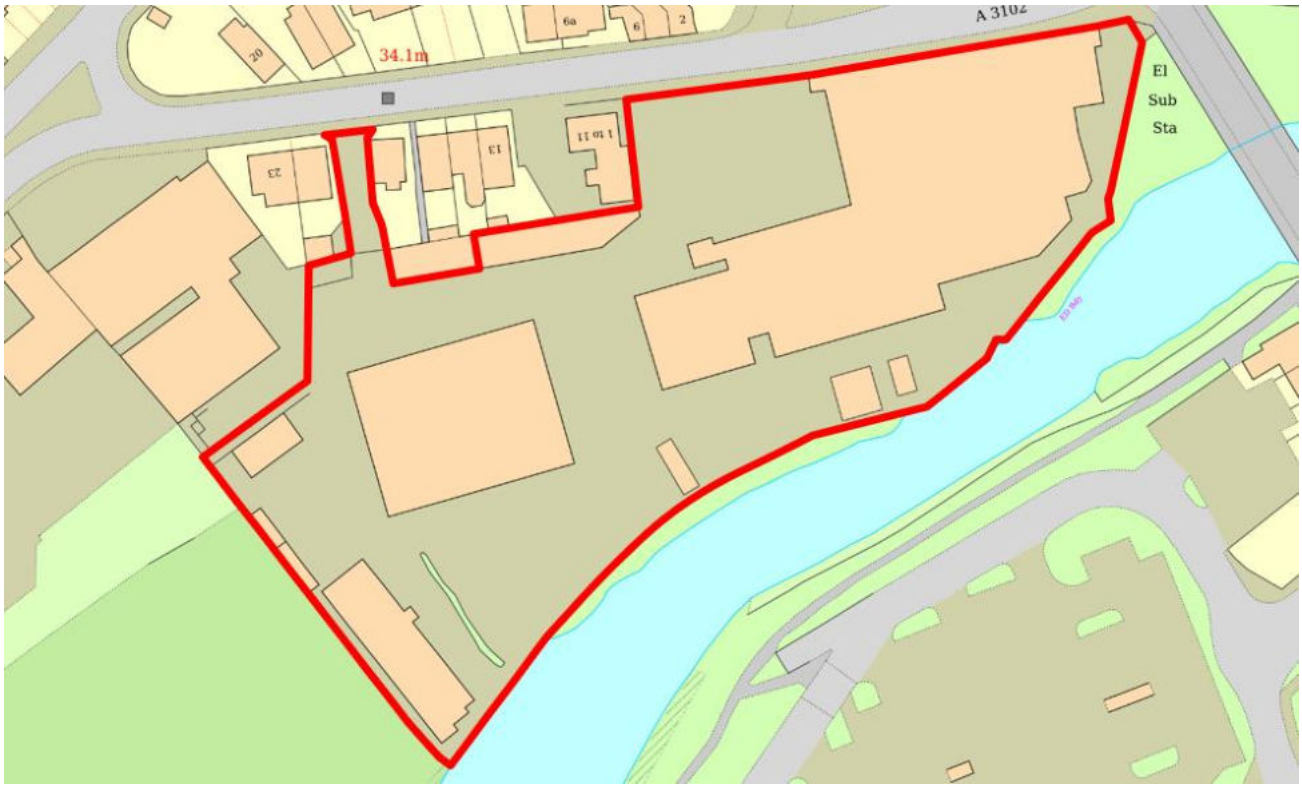


Figure 1: Site Location

Site Description and Surrounding Area
Avonside consists of a range of commercial buildings, surrounded by paved parking areas. Some buildings are detached and single storey, but the majority are over more than one level. It is understood that approximately half of the tenure is located above ground floor level. A concrete, flood defence wall aligns River Avon, which offers some protection from flooding. A series of photographs are enclosed in Appendix A, which provide further site context.

To the west of the site, is a vacant, detached single storey building known as Unit 5 building appears in poor condition, and it is understood to have been considered for demolition.

Ground levels across the site are fairly consistent, and range between approximately 33.8 m Above Ordnance Datum (AOD) and 35.0 m AOD, refer to the topographic survey enclosed in Appendix B. The lowest part of the site is to the west, in the proximity of Unit 5. Most, but not all, of the ground floor units have floor levels that are elevated above external ground levels.

The topographic survey does not identify finished floor levels (FFLs). However, a series of floor heights above external ground levels have been provided across the site, details of which are enclosed in Appendix B. This has been used to estimate an approximate FFL.

Bath Road crosses River Avon immediately upstream of the site, which consists of a four arch stone bridge. South Brook, a tributary of River Avon, is located 500 m to the west of the site.

Flooding from the Sea
Given that ground levels are at least 33.8 m AOD, the site is not susceptible to flooding from the sea.

Flooding from the Rivers
According to the Environment Agency long term flood risk maps, the site is at a medium and high risk of flooding from rivers (Figure 2). The Main Building, which we understand contains over 75% of the site's accommodation, is a medium risk. Flood data was obtained from the Environment Agency to better understand this source of flood risk. This data is enclosed in Appendix C.

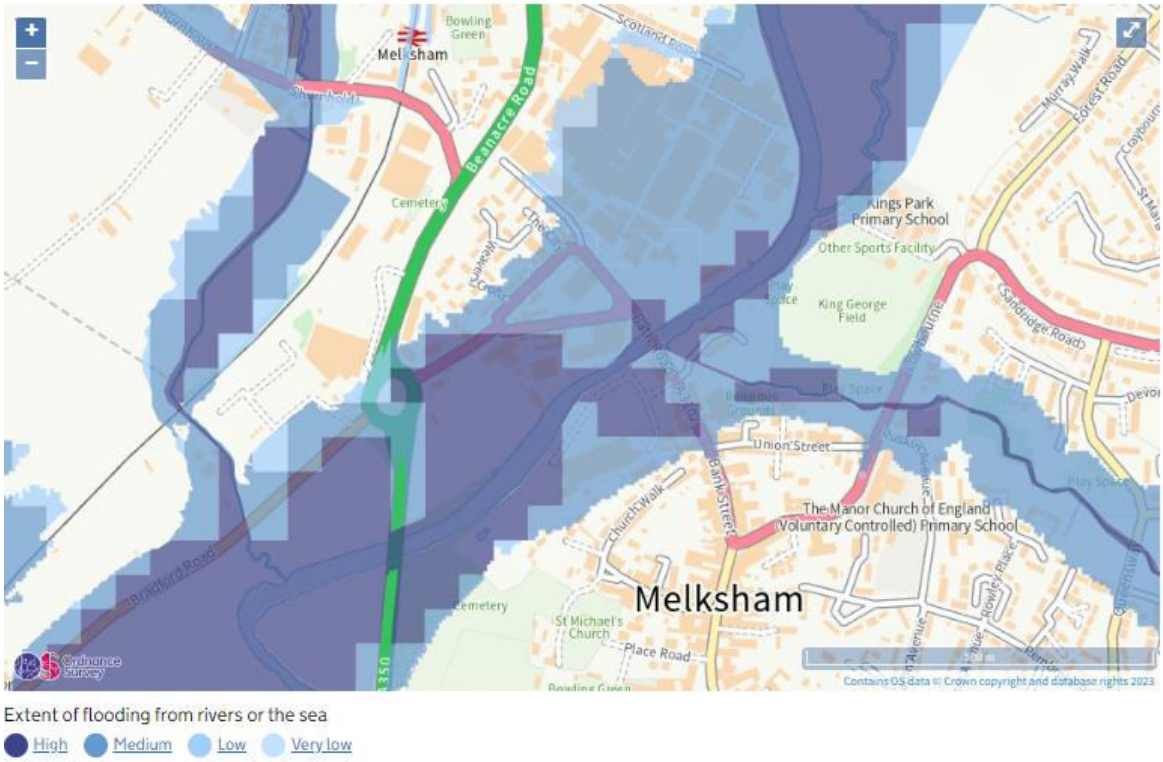


Figure 2: Extent of Flooding from Rivers and the Sea

The Environment Agency data identifies that hydraulic modelling of River Avon in Melksham was undertaken in 2013. A series of flood levels were provided for River Avon adjacent to the site. The method used to establish the flood level was a 1D hydraulic model. Whilst this method can be crude, it is understood to represent the best information available.

Through comparison of the flood levels and the topographic survey the data suggests that external areas in the west part of the site (i.e. in the proximity of Unit 5, and Building Three) is most likely to flood, in an event with a return period of between 1 in 20 and 1 in 50 years. The remainder of the site is estimated to flood in an event with a return period of between 1 in 50 and 1 in 75 years.

The FFL information provided indicates that many of the ground floor units will benefit additional protection due to the elevated level. Estimated FFL range from 34.206 m AOD to 34.792 m AOD. These FFLs are above the 1 in 100 year flood level. Therefore, based on the FFL information provided, internal flooding is likely to occur in an event with a return period of between 1 in 100 and 1 in 200 years.

There is a 2% chance that a 1 in 100 year flood will occur over the next 2 years.

Flooding from Surface Water
According to the Environment Agency long term flood risk maps, almost the entire site is at a very low risk of surface water flooding (defined as an area with less than 1 in 1000 chance of flooding each year).

Figure 3: Extent of Flooding from Surface Water

Flooding from Groundwater
The 1 in 50,000 scale British Geological Survey (BGS) online mapping indicates that the bedrock underlaying the site is the Oxford Clay Formation. This is defined as unproductive, with low permeability and negligible significance for water supply or river base flow. This does not represent a significant source of flood risk.

Flooding from Reservoirs

According to the Environment Agency long term flood risk maps, the site is shown to be at flood risk from reservoirs. Reservoir flooding is extremely unlikely to happen; the Reservoirs Act 1975 (England), ensures that reservoirs are inspected regularly, and essential safety work is carried out.

Figure 4: Extent of Flooding from Reservoirs

Limitations

The general limitations of this assessment are that:

- A number of sources have been used to compile this document, whilst we believe them to be trustworthy; Vectos is unable to guarantee the accuracy of the information that has been provided by others.
- This report is based on information available at the time of preparation. Consequently, there is potential for further information to become available or variations to the development proposals to be made. These changes may lead to future alteration to the conclusions or calculations in this document.

Summary

The only likely significant source of flood risk at the site is from the River Avon. Based on data available from the Environment Agency, the lowest-lying external areas in the west part of the site are likely to flood in event with a return period of between 1 in 20 and 1 in 50 years. The east external parts of the site is likely to flood in event with a return period of between 1 in 50 and 1 in 75 years. Internal flooding is likely to occur in an event with a return period of between 1 in 100 and 1 in 200 years.

Yours sincerely

[redacted]

Nick Bosanko
Associate Director

[redacted]

Appendix A – Site Photos

Avonside Business Park
East Entrance
RAINBOW
KOI
Avonside Business Park
Central
Entrance

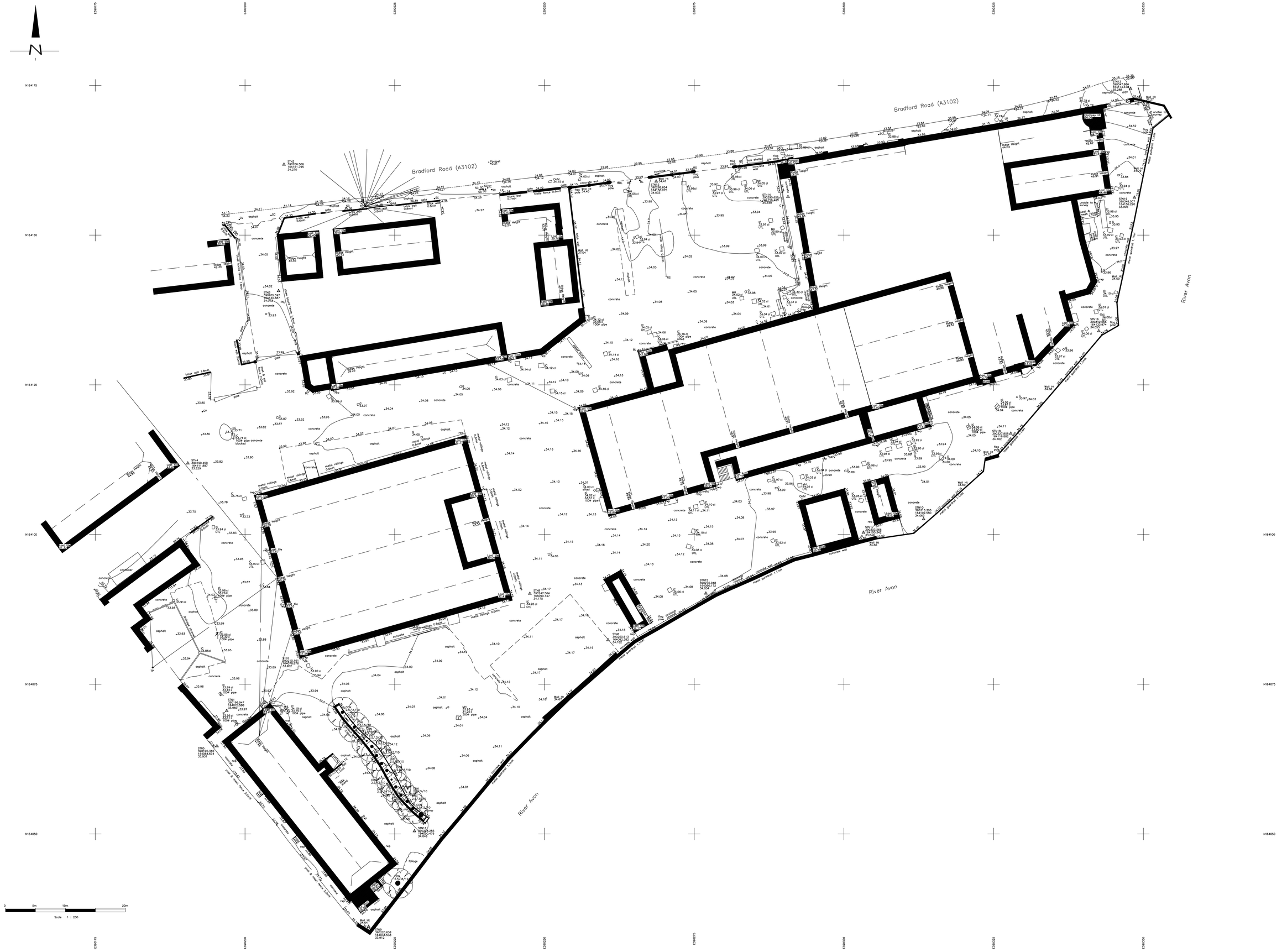
COVID-Secure Premises
Do not enter if:
You have a temperature above 37.5 degrees
You have a fever or chills
You have a sore throat
You have a new and continuous dry cough
Muscle aches and a sense of fatigue
A new loss of smell or taste
Please go home now
No dogs
except guide dogs

Danger
Do not enter

NO
PARKING

UNIT
10/11
01225 6111112

Appendix B – Topographic Survey



Trees/Tree Abbreviations

ASH	Ash	LP	London Plane
BAY	Bay	MAP	Maple
BEE	Beech	OAK	Oak
CB	Copper Beech	POP	Poplar
CED	Cedar	RM	Red Maple
CHE	Cherry	RW	Redwood
CON	Conifer	SB	Silver Birch
EUC	Eucalyptus	SER	Service Tree
FR	Fruit	SP	Scots Pine
HAW	Hawthorn	SYC	Sycamore
HAZ	Hazel	WAL	Walnut
HC	Horse Chestnut	WILL	Willow
HOL	Holly	WP	Weeping Willow
LAB	Laburnum	YEW	Yew
LAU	Laurel	**MB	Multiple stems/trunks Overall dia. shown
LI	Lime		

Tree Dimensions (average) Spread/Trunk Dia/Height

Trees denoted with "approx" have been surveyed by remote methods and therefore their positions & dimensions cannot be guaranteed.

Abbreviations

AV	Air Valve	LP	Lamp Post
BL	Bollard	M	Meter
BM	Bench Mark	MH	Manhole Cover
BP	Boundary Point	MK	Marker
BT	BT Cover	MS	Milestone
CATV	Cable Television Cover	RG	Ridge Level
CAB	Cabinet	RS	Road Sign
CL	Cover Level	rwp	Rain Water Pipe
EP	Electric Power Pole	SC	Stop Cock
EV	Eaves Level	Str	Strainer
FH	Fire Hydrant	SV	Stop Valve
FL	Floor Level	svp	Soil Vent Pipe
FP	Fence Post	TH	Threshold Level
G	Gully	TL	Traffic Light
GP	Gate Post	TP	Telephone Pole
GV	Gas Valve	UTL	Unable To Lift
IC	Inspection Chamber	VP	Vent Pipe
IL	Invert Level	WM	Water Meter
KO	Kerb Outlet	WO	Wash Out

Linetypes

Bank (exclusion)
Building
Drop kerb
Electric
Fence
Foliage
FWS (Estimated line From Surface)
Hedge
Kerb
Pipe
SWS (Estimated line From Surface)
Telephone
Track/Path
Tree Canopy
Verge
Water line
Wall

Bore Hole
Trial Pit
Station Control
Double Gates
Single Gate
Manhole

Tree Dimensions (average) Spread/Trunk Dia/Height

SWS
SouthWestSurveys
Tel: 01454 501583
Mobile: 07519596495
www.southwestsurveys.co.uk
info@southwestsurveys.co.uk
28 Rudgeway Park
Rudgeway
Bristol
South Glos
BS35 3RU

Drawing Title:
Topographical Survey

Project Name:
Avonside Enterprise Park
Melksham, SN12 8BT

Client:
Create Real Estate
Agent:
n/a

Site Level Datum	Grid Orientation		
On GPS	North GPS		
Date: 30th September 2019		Scale: 1:200 @ A0	
Surveyed By: RP	Drawn By: RP	Sheet ID: SWS01/1X2/Topo	Rev: n/a

N
Bradford Road (A3102)
Bradford Road (A3102)
River Avon
River Avon
River Avon
1 301mm
2 252mm
3 672mm
4 658mm
5 135mm
6 248mm
7 207mm
8 200mm
9 211mm
10 366mm
11 186mm
12 316mm
Trees/Tree Abbreviations
Abbreviations
Linetypes
SWS
SouthWestSurveys
Drawing Title:
Topographical Survey
Project Name:
Avonside Enterprise Park
Melksham, SN12 8BT
Client:
Greene Real Estate
Agent:
n/a
Site Level Datum
Grid Orientation
Date:
Scale:
Surveyed By
Drawn By
Sheet 02
Rev:

Appendix C – Environment Agency Data

Nick Bosanko

From: Wessex Enquiries <WessexEnquiries@environment-agency.gov.uk>
Sent: 13 May 2019 12:32
To: Nick Bosanko
Subject: 123922-WX : Ref 190413/RM23 Avonside Enterprise Park, Melksham SN12 8BT
Attachments: UKCP18 and FRA CC Allowances briefing Final.pdf; Use of Environment Agency Information for Flood Risk Assessments.pdf; 123922-WX - node location map.pdf; 123922-WX 30 April 2019 - Flood Map for Planning (Rivers and Sea).pdf; 123922-WX 30 April 2019 - Risk of flooding from Surface Water.pdf; 123922-WX node data.pdf

Mr Bosanko, thank you for your enquiry, which we received on 10 April 2019

RE: Request for information under the Freedom of Information Act 2000 (FOIA) / Environmental Information Regulations 2004 (EIR)

Abstract

Name	Product 4
Description	**Detailed Flood Risk Assessment Map for land at Avonside Enterprise Park, Melksham SN12 8BT**
Licence	Open Government Licence
Information Warnings	*The mapping of features provided as a background in this product is © Ordnance Survey. It is provided to give context to this product. The Open Government Licence does not apply.*
Attribution	Contains Environment Agency information © Environment Agency and/or database rights. Contains Ordnance Survey data © Crown copyright 2019 Ordnance Survey 100024198.

Flood Map for Planning
A Flood Map for Planning (Rivers and the Sea) is attached for spatial planning purposes. This map contains Flood Zones that show the areas of the natural floodplain. This mapping does not take into account the presence of any flood defences. Please be aware that this information is also available for download on the Open Data link below.

You can also access the Flood Map for Planning here: https://flood-map-for-planning.service.gov.uk/

Risk of Flooding from Surface Water
Please find attached a map showing the Risk of Flooding from Surface Water centred on the development area. Please note that this information is not suitable to be used to identify the risk to individual properties or sites. It is useful to raise awareness in areas which may be at risk and may require additional investigation.

You can also access surface water depth and velocity information via the detailed view here: https://flood-warning-information.service.gov.uk/long-term-flood-risk/map

Open data
The following Environment Agency published datasets are now available on the weblink below as part of the Government's 'Open Data' project and are available for you to download free of charge.
Environment Agency published datasets; https://data.gov.uk/data/search?publisher=environment-agency&unpublished=false

You will need to search and select the name of the following datasets to take you directly to the weblink to enable you to download the data:

- Flood Map for Planning (Rivers and the Sea) – Flood Zones 2 and 3
- Flood Map for Planning (Rives and Sea) – Areas Benefiting from Defences
- Flood Map for Planning (Rivers and Sea) Spatial Flood Defences
- Flood Map for Planning (Rivers and Sea) Flood Storage Areas
- Recorded Flood Outlines
- Historic Flood Map
- Risk of Flooding from Surface Water Extent for:
  → 3 percent annual chance

→ 1 percent annual chance
→ 0.1 percent annual chance

Flooding history
We no longer produce pdf copies of the Historic Flood Map. This information is available to search select, and download free of charge as part of the Government's 'open data' as

- Recorded Flood Outlines
- the Historic Flood Map

Modelled Fluvial Water Levels

The attached map contains a set of modelled (within the river channel) fluvial flood level node locations/unique identifiers, for the River Avon. The modelled data is taken from the Melksham SoP Study 2013 model. A sheet is also attached providing the associated flood levels, flood flows if available and NGRs relating to each of these nodes.

Please note: Modelled water levels and flows are in channel values only. There may be a variation in water levels and flows across the flood plain in the 2D domain.

Environmental Permit for Flood Risk Activities
In addition to any other permission(s) that you may have already obtained e.g. planning permission, you may need an environmental permit for flood risk activities (formerly known as Flood Defence Consent prior to 06 April 2016) if you want to do work:

- in, under, over or near a main river (including where the river is in a culvert)
- on or near a flood defence on a main river
- in the flood plain of a main river
- on or near a sea defence

For further information and to check whether a permit is required please visit: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits.

For any further advice, please email Blandford.frap@environment-agency.gov.uk

Planning
If you have questions regarding the planning nature of your enquiry, or require advice on floor levels, please contact our Sustainable Places team on SWX.SP@environment-agency.gov.uk. Please be aware that we now charge for planning advice when consulted on pre-application enquiries. This new approach provides advice to developers in two ways. Firstly there is the provision of 'free' advice available to everyone where we give a preliminary opinion on a proposed development. This sets out the environmental constraints together with any issues this raises for us. Should you wish us to review in detail any of these issues then we can do this through a chargeable scheme aimed at recovering our costs.

Climate Change Guidance
We have included a briefing note that refers to the 2018 Climate Change projections. Our Sustainable places team would be happy to discuss the issues around Climate Change and how this should be used.

Further Information
We advise that you also contact the drainage engineer/ flood risk management team at Wiltshire Council as they may be able to provide further advice with respect to localised flooding and drainage issues.

Further details about the Environment Agency information supplied can be found on our website;
https://www.gov.uk/browse/environment-countryside/flooding-extreme-weather

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I hope that we have correctly interpreted your request. Please refer to the Open Government Licence which explains the permitted use of this information.

We respond to requests for recorded information that we hold under the Freedom of Information Act 2000 (FOIA) and the associated Environmental Information Regulations 2004 (EIR).

If you are not satisfied with our response to your request for information you can contact us within two calendar months to ask for our decision to be reviewed.

Yours sincerely

Chris Doyle
Customer & Engagement, Wessex Area
Rivers House, East Quay, Bridgwater, Somerset, TA6 4YS
Direct Dial: 020 3025 0376
Email: wessexenquiries@environment-agency.gov.uk

From: Enquiries, Unit
Sent: 13 April 2019 10:44
To: 'Nick Bosanko' [redacted]
Subject: 123922 WX: Ref 190413/RM23 Avonside Enterprise Park, Melksham SN12 8BT - Product 4

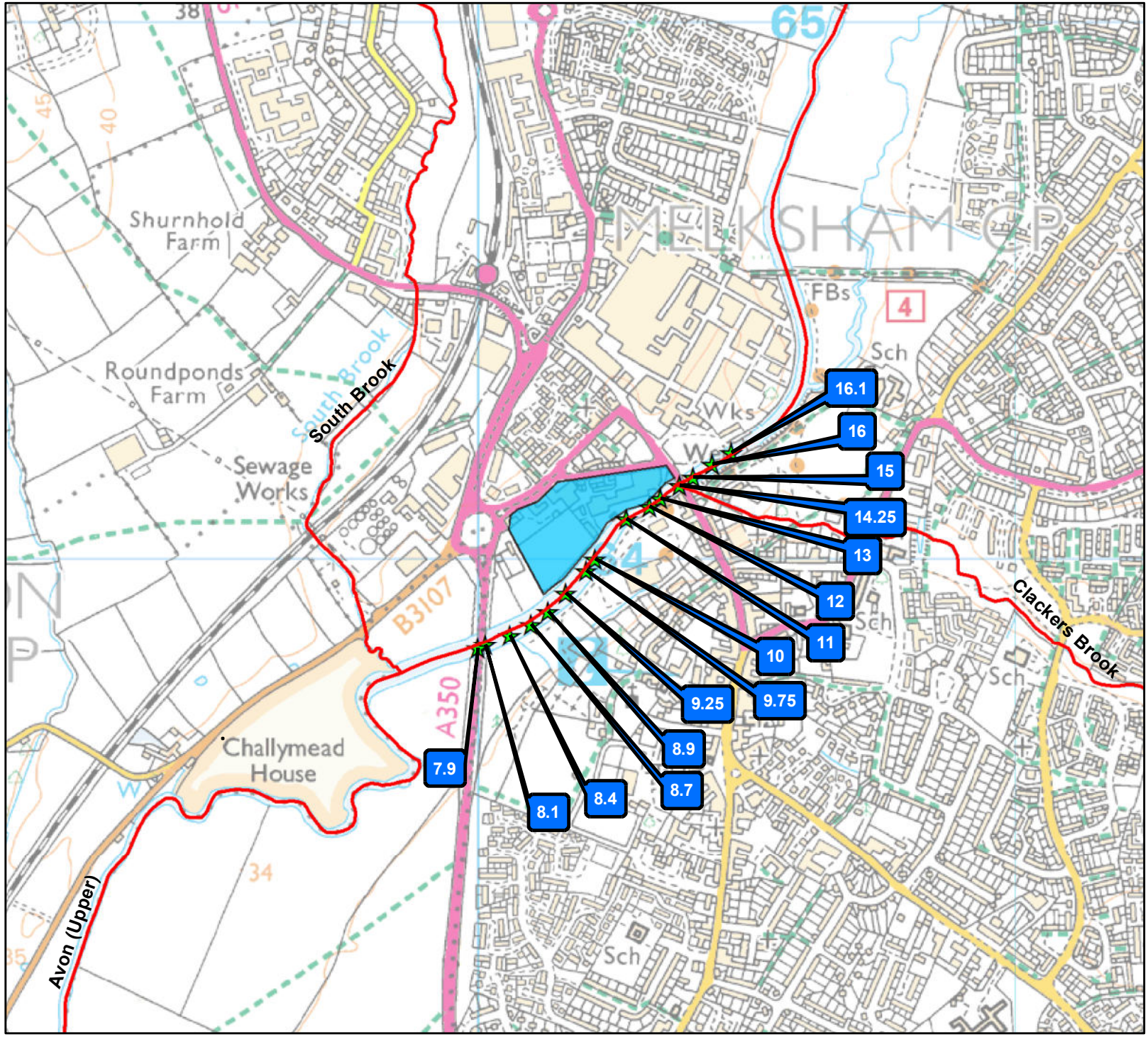
From: Nick Bosanko [redacted]
Sent: 10 April 2019 07:38
To: Enquiries, Unit <enquiries@environment-agency.gov.uk>
Subject: Avonside Enterprise Park, Melksham SN12 8BT - Product 4

Dear EA

I'd like to request a Product 4 for the this site please.

Regards, Nick

Node location map centred on ST 90180 64075 - created 16/04/2019 [Ref: 123922-WX]



Environment Agency

Scale at A4: 1:10,000

Meters

0 50 100 200 300 400 500 600

N

Legend

123922-WX_site_boundary

Main River

123922-WX_selected_nodes

NODE_TYPE

- 1D_RiverSection
- 2D_RiverSection
- Interpolate
- Replicate
- Reservoir

Modelled Flood Level Nodes

A table that references the node locations/unique identifiers is also attached, giving associated flood levels, NGRs and further information for the river channel and model.

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TITLE Melksham SoP Study 2013
MODEL DATE 01/07/2013
SOFTWARE HEC-RAS

SCENARIO Defended

NODE	10	11	12	13	14.25	15	16	16.1	7.9	8.1	8.4	8.7	8.9	9.25	9.75
WATERCOURSE	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon	Bristol Avon
2YR Level	33.30	33.31	33.31	33.37	33.38	33.42	33.43	33.45	33.27	33.27	33.28	33.28	33.29	33.29	33.30
2YR Flow	76.92	76.91	76.92	76.95	76.95	76.95	76.95	76.95	76.89	76.89	76.90	76.89	76.90	76.90	76.91
5YR Level	33.55	33.55	33.55	33.65	33.66	33.72	33.73	33.75	33.51	33.51	33.52	33.52	33.53	33.54	33.55
5YR Flow	100.91	100.92	100.93	100.93	100.93	100.93	100.94	100.94	100.87	100.88	100.88	100.89	100.90	100.91	100.91
10YR Level	33.70	33.69	33.69	33.81	33.82	33.89	33.90	33.93	33.64	33.65	33.65	33.67	33.67	33.68	33.69
10YR Flow	116.91	116.92	116.92	116.92	116.92	116.92	116.92	116.92	116.87	116.88	116.89	116.89	116.89	116.90	116.91
20YR Level	33.84	33.84	33.83	33.98	33.99	34.08	34.09	34.11	33.78	33.79	33.79	33.81	33.82	33.83	33.84
20YR Flow	134.90	134.90	134.91	134.91	134.91	134.91	134.91	134.91	134.87	134.88	134.89	134.89	134.89	134.89	134.89
20YR 20%CC Level	34.04	34.03	34.01	34.21	34.22	34.34	34.34	34.38	33.97	33.98	33.99	34.01	34.02	34.03	34.04
20YR 20%CC Flow	161.88	161.88	161.89	161.89	161.89	161.89	161.89	161.89	161.86	161.87	161.87	161.87	161.87	161.87	161.88
25YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
25YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
30YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
30YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
50YR Level	34.03	34.02	34.00	34.20	34.22	34.33	34.33	34.37	33.96	33.97	33.98	34.00	34.01	34.02	34.03
50YR Flow	160.88	160.88	160.89	160.89	160.89	160.89	160.89	160.89	160.86	160.86	160.87	160.87	160.87	160.87	160.88
75YR Level	34.12	34.11	34.08	34.30	34.32	34.45	34.45	34.49	34.05	34.06	34.06	34.09	34.10	34.11	34.12
75YR Flow	173.87	173.87	173.88	173.88	173.88	173.88	173.88	173.88	173.85	173.85	173.85	173.86	173.86	173.86	173.87
100YR Level	34.18	34.17	34.14	34.37	34.39	34.53	34.53	34.57	34.10	34.11	34.12	34.15	34.16	34.17	34.18
100YR Flow	182.85	182.87	182.87	182.88	182.88	182.88	182.88	182.88	182.82	182.82	182.83	182.85	182.83	182.85	182.85
100YR 20%CC Level	34.41	34.39	34.36	34.64	34.67	34.86	34.85	34.89	34.31	34.33	34.34	34.38	34.39	34.40	34.41
100YR 20%CC Flow	219.84	219.85	219.85	219.85	219.85	219.86	219.85	219.85	219.81	219.83	219.83	219.84	219.84	219.84	219.84
100YR 30%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 30%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 40%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 40%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 85%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
100YR 85%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR Level	34.34	34.32	34.29	34.55	34.58	34.75	34.75	34.79	34.25	34.26	34.27	34.30	34.32	34.32	34.34
200YR Flow	207.85	207.86	207.86	207.86	207.86	207.86	207.86	207.86	207.82	207.83	207.83	207.83	207.84	207.85	207.85
200YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
200YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
500YR Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
500YR Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR Level	34.75	34.72	34.75	35.03	35.06	35.38	35.36	35.40	34.60	34.64	34.67	34.71	34.72	34.73	34.74
1000YR Flow	278.80	278.80	278.81	278.81	278.81	278.84	278.84	278.85	278.77	278.79	278.79	278.79	278.79	278.79	278.80
1000YR 20%CC Level	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
1000YR 20%CC Flow	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
TIDE 200YR	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
TIDE 1000YR	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD	NMD
Eastings	390218	390276	390320	390340	390375	390401	390437	390472	389999	390014	390059	390099	390131	390164	390201
Northings	163999	164074	164097	164113	164137	164152	164176	164197	163833	163839	163857	163877	163902	163936	163978

Level of confidence	**Moderate**	The model was produced to assess our flood risk management assets and the results are fit for this purpose. We have MODERATE confidence in its input data, and subsequently its results. The reason that we have MODERATE confidence in the model and its results is because the model requires verification against a known flood event. You will need to contact our Partnership and Strategic Overview Team to discuss whether the flood levels from this model are suitable for your FRA or whether they require you to carry out further work to update the modelling.

NMD	No Modelled Data	
UNITS	LEVELS:	mAOD
	FLOW:	cumecs