Flood Risk Assessment

For the Proposed Demolition of the Existing Petrol Station and Associated Retail Unit and Replacement with a Convenience Store at Vintage Court, Cambridge Road, Puckeridge, Ware, SG11 1SA

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1448 – FRA – Oct 2022

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Flood Risk Assessment
For the Proposed Demolition of the Existing Petrol Station
and Associated Retail Unit and Replacement with a Convenience Store
at Vintage Court, Cambridge Road, Puckeridge, Ware, SG11 1SA

1 Introduction

1.1 MTC Engineering (Cambridge) Limited has been asked to provide a Flood Risk Assessment in relation to the proposed demolition of the existing petrol filling station and associated retail unit at Vintage Court, Cambridge Road, Puckeridge, Ware, SG11 1SA, and replacement with a new convenience store on behalf of Messers S T Blake, J Blake and M G T Blake.

1.2 This Flood Risk Assessment is based on the following information:-

1.2.1 Topographical Site Survey undertaken by Kempston Surveys.

1.2.2 Environment Agency (EA) modelled and historical flood data.

1.2.3 East Hertfordshire District Council Strategic Flood Risk Assessment (SFRA).

1.2.4 British Geological Survey information.

1.2.5 Site layout by DPE Architecture Limited.

1.3 All the comments and opinions contained in this report including any conclusions are based on the information available to MTC Engineering (Cambridge) Limited during our investigations. The conclusions drawn could therefore differ if the information is found to be inaccurate, incomplete or misleading. MTC Engineering (Cambridge) Limited accept no liability should this prove to be the case, nor if additional information exists or becomes available with respect to this site.

1.4 MTC Engineering (Cambridge) Limited makes no representation whatsoever concerning the legal significance of its findings or any other matters referred to in the following report. Except as otherwise requested by the client, MTC Engineering (Cambridge) Limited are not obliged and disclaim any obligation to update the report for events taking place after the Assessment was undertaken.

1.5 This report is a Flood Risk Assessment of flooding issues associated with the proposed development. The information presented and conclusions drawn are based on statistical data and are for guidance purposes only. This report provides no guarantee against flooding of the study site or elsewhere, nor as to the absolute accuracy of water levels, flow rates and associated probabilities quoted.

2 Site Description

2.1 The site is located to the southwest of the main body of Puckeridge on the eastern side of Cambridge Road, to the northeast of the junction of the A10 and A120 as shown on the Location Plan provided in Appendix 1.

2.2 To the northeast the site is bound by Cambridge Court and past this residential development on the southeastern side of Cambridge Road.

2.3 To the southwest the site is bound by the residential block of flats at Vintage Court, past which a small Puckeridge Tributary of the River Rib runs in a northeasterly direction approximately 45m southeast of the site.

2.4 To the southwest the site is bound by a substation site, past which is Standon Hill, an area of undeveloped land through which a shared footway/cycleway runs, then the A120.

2.5 To the northwest the site is bound by Cambridge Road, past which lies The Chestnuts and the associated residential development off this road.

2.6 The site itself is currently occupied by a petrol filling station forecourt at the frontage to Cambridge Road, with a retail unit to the rear, and is currently entirely impermeable.

2.7 A copy of the site survey is provided in Appendix 2, which shows levels along the Cambridge Road channel line at the site frontage to be about 80.6m above Ordnance Datum (AOD) in the south and 80.2m AOD in the north. The forecourt then falls in a southeasterly direction to levels of about 79.5m in the vicinity of the gully channel along the front of the existing retail unit which has a finished floor level of 79.51m AOD and which forms the majority of the rear part of the site, together with some hardstanding and plant to the northeast which is again positively drained by a gully as shown on the site survey.

2.8 Aside from the tributary of the River Rib to the east of the site noted above, a second small tributary enters a box culvert beneath Cambridge Road approximately 20m north of the site, with thus culvert believed to then run northeast along the southeastern side of Cambridge Road before then turning to flow southeast to the northeast of the residential development on Shenleys to join the watercourse that runs northeast to the rear of the site.

2.9 There are no further significant surface water features in the vicinity of the site.

2.10 British Geological Survey Mapping indicates that the underlying geology of the site is the Lewes Nodular Chalk Formation and Seaford Chalk Formation, although this is overlain by a superficial geology of Head Deposits of clay, silt, sand and gravel.

3 Sources of Potential Flood Risk

3.1 In accordance with The National Planning Policy Framework all forms of flood risk need to be considered in relation to any development.

3.2 The first form of flood risk to be considered in respect of The National Planning Policy Framework is fluvial flooding.

3.3 The EA Flood Map for Planning (Appendix 3) indicates that the site lies entirely or almost entirely within Flood Zone 1, with the Flood Zone 2 extent associated with the watercourse system to the north extending to approximately the northeastern boundary of the site.

3.4 The SFRA Addendum flood zone maps appear to show the same classification as the EA mapping in the area, whilst the SFRA mapping does not indicate any historically recorded flood events have occurred at or in close proximity to the site.

3.5 To ensure that the flood risk to the site from the adjacent watercourses is fully assessed, modelled flood data has also been obtained from the Environment Agency, with a copy provided in Appendix 4.

3.6 This shows in a 1 in 100 year event, no significant out of bank flow is anticipated from either of the Puckeridge Tributaries in the vicinity of the site, and as such the site clearly remains outside of Flood Zone 3.

3.7 In this area and for this development vulnerability classification (less vulnerable) a central 10% climate change allowance through to the 2080's also requires consideration on a 1 in 100 year event. This has not been modelled by the Environment Agency, however a more conservative 20% allowance has been modelled, and shows the site to remain completely dry in such an event, with any flows occurring southeast across Cambridge Road associated with the culvert capacity being exceeded to the north of the site remaining to the northeast of the site.

3.8 As such it is not considered that the site is at any significant risk of flooding in a 1 in 100 year plus climate change event, and that safe, dry access would remain possible in a southwesterly direction from the site along Cambridge Road.

3.9 In the most extreme 1 in 1000 year event, water levels on Cambridge Road in the vicinity of the site/to the north of the site would be approximately 80.17m AOD, thus water would not reach a high enough level to come along Cambridge Road and onto the site.

3.10 Southeast of Cambridge Road, 2D node levels indicate a water level of 79.88m AOD about a third of the way along the northeastern boundary of the site, which is similar to or slightly below site levels at this point (approximately 79.9m AOD), however there is a brick wall along this section of the site which would prevent water coming southwest onto the site along this part of the boundary.

3.11 At the northern corner of the existing retail unit at the site a water level of 79.25m AOD is shown, however the site survey shows all ground levels at the site to be above this level thus it is thought that water would infact remain on the opposite side of the site boundary fence, with the site remaining dry even in a 1 in 1000 year event.

3.12 As such the overall fluvial flood risk to the site from the Puckeridge Tributaries in the vicinity of the site is considered to be low and it is likely that the site would remain completely dry even in the most extreme 1 in 1000 year fluvial flood event.

3.13 The second form of flood risk to be considered in respect of The National Planning Policy Framework is flooding from the sea.

3.14 The site is located well inland, and with levels in the vicinity of 80m AOD it is not considered that the site is at any significant risk of flooding from the sea.

3.15 The third form of flood risk to be considered in respect of The National Planning Policy Framework is flooding from land.

3.16 Intense rainfall, often of short duration, that is unable to soak into the ground or enter drainage systems can quickly run off land and result in local flooding. In developed areas, this flood water can be polluted with domestic sewage with foul sewer surcharge and overflow. Local topography and built form can have a strong influence on the direction and depth of flow. The design of development down to a micro level can influence or exacerbate this. Overland flow paths need to be taken into account in development to minimise the risk of flooding from overland flow.

3.17 In this instance the site is at a relatively upstream location, with the watercourses noted above and assessed in relation to fluvial flood risk having small catchments where any surface flows occurring in an extreme rainfall event would tend to make their way quickly into these channels then largely follow the routes of these channels in much the way that fluvial flooding would occur in this area.

3.18 This is confirmed by the EA surface water flood map for the area (Appendix 5), which shows essentially the same pattern of flooding as shown on the Flood Map for Planning and hydraulic modelling of fluvial flooding in the area.

3.19 The surface water flood map is however produced in a slightly different way to hydraulic models, and is unlikely to have the same level of detail on structures such as culverts that is incorporated in the hydraulic modelling, and therefore in this instance the modelling already considered in relation to fluvial flood risks in this area is considered to also provide the most accurate assessment of risks associated with surface water flooding.

3.20 The overall risk of flooding from surface water to the site is therefore also considered to be low.

3.21 The fourth form of flood risk to be considered in accordance with The National Planning Policy Framework is flooding from rising groundwater.

3.22 Groundwater flooding occurs when water levels in the ground rise above surface elevations. It is most likely to occur in low lying areas underlain by permeable rocks (aquifers). These may be extensive, regional aquifers, such as chalk or sandstone, or may be localised sands and river gravels in valley bottoms underlain by less permeable rocks. Water levels below the ground rise during wet winter months, and fall again in the summer as water flows out into rivers. In very wet winters, rising water levels may lead to the flooding of normally dry land.

3.23 British Geological Survey Mapping indicates that the underlying geology of the site is the Lewes Nodular Chalk Formation and Seaford Chalk Formation, although this is overlain by a superficial geology of Head Deposits of clay, silt, sand and gravel.

3.24 Whilst the underlying chalk would have a water table, the overlying head deposits would likely act as a capping layer, whilst in any case any outflow of any groundwater would be expected to occur directly to the adjacent watercourses to the northeast and southeast of the site rather than at the site itself.

3.25 The overall risk of flooding due to groundwater at the site is therefore considered to be low.

3.26 The fifth form of flood risk to be considered in accordance with the National Planning Policy Framework is the risk of flooding from blocked, overloaded, or burst sewers and water mains.

3.27 Should any sewer or water main in the vicinity of the site on Cambridge Road become blocked or overloaded or burst water could potentially flow across the site in a southwesterly direction however this would either be picked up by the site drainage systems or continue to flow southeast past the existing retail unit building at the site and towards the watercourse to the southeast without having any significant impact upon the site itself.

3.28 The last form of flood risk to be considered in accordance with the National Planning Policy Framework is flooding from reservoirs, canals or other artificial sources.

3.29 There are no reservoirs, canals or other artificial structures in the vicinity of the site whose failure would be likely to cause flooding at the Site, and Environment Agency mapping does not indicate that the site is at any risk of flooding from artificial sources.

4 The Proposal

4.1 The proposal involves the demolition of the existing petrol filling station and associated retail unit, and replacement with a new convenience store with associated parking, plant room, and access as shown on the proposed layout (Appendix 6).

4.2 As detailed in Section 3 the site is considered to be at a low risk of flooding by any means, and the site is anticipated to remain dry during all fluvial events up to and including both a 1 in 100 year plus climate change event and a 1 in 1000 year event, with the maximum level in either event in the vicinity of the site to the southeast of Cambridge Road being 79.88m AOD.

4.3 The finished floor level of the proposed retail unit will therefore be set above this at a minimum of 79.9m AOD. This will ensure that the proposed retail unit is adequately protected against flooding and no further flood resistant or resilient construction is required at the proposed development in this instance.

4.4 External levels will be designed to ensure that there are continuous falls away from access points to the building to ensure that water does not pond in the vicinity of access points or enter the building under any circumstances.

4.5 As the site will not be subject to any flooding in a 1 in 100 year plus climate change event no compensatory flood storage is required, and there are no safe access issues.

4.6 Surface water will continue to be positively discharged as at present, but with a new drainage system to be installed as part of the proposed development, and which will be designed in accordance with all relevant local and national policy.

4.7 Surface water drainage design falls outside the scope of this report, however given that the entire site is currently impermeable, it is clear that a new system can be designed that reduces discharge rates from the site below existing as required for brownfield sites.

4.8 It is envisaged that this will be achieved using permeable paving on car parking spaces with attenuation provided beneath, and a flow control provided on the outfall to the system. Full detailed design of the system can be secured by planning condition.

5 Assessment

5.1 The proposal involves the redevelopment of the existing petrol filling station at Vintage Court, Puckeridge and redevelopment with a new convenience store.

5.2 The site is shown on the EA Flood Map for Planning as lying in Flood Zone 1, and as detailed in Section 3 based upon modelled flood levels it is considered that this is an accurate assessment and that the site would remain dry during a 1 in 1000 year event.

5.3 In Flood Zone 1 there is no need for an Exception Test, whilst the Sequential Test is automatically passed.

5.4 The finished floor level of the proposed retail unit will be at a minimum of 79.9m AOD, which will ensure that it is above the highest 1 in 1000 year modelled water level to the southeast of Cambridge Road in the vicinity of the site and thereby ensure that it is adequately protected against flooding.

5.5 No further flood resilient or resistant construction is required.

5.6 No compensatory flood storage is required as the site would remain dry in a 1 in 100 year plus climate change event.

5.7 Safe access will remain possible in a southwesterly direction from the site in a 1 in 100 year plus climate change event.

5.8 As the site is currently completely impermeable discharge rates will not be increased by the proposed redevelopment, and the surface water drainage system will seek to reduce these to ensure a beneficial impact upon the downstream risk of flooding in line with current local and national requirements. Full detailed surface water drainage design falls outside of the scope of this report, and full details can be secured by imposing an appropriate planning condition upon any planning permission granted.

6 Conclusion

6.1 There are no flood risk related grounds under The National Planning Policy Framework on which to object to the proposed redevelopment of the existing petrol filling station and associated retail unit at Vintage Court, Cambridge Road, Puckeridge with a new convenience store.

APPENDIX 1

SITE LOCATION PLAN

N

0 25m 50m 75m 100m

Project

Convenience Store

Vintage Court, Puckeridge, Ware. SG11 1SA

Drg Title

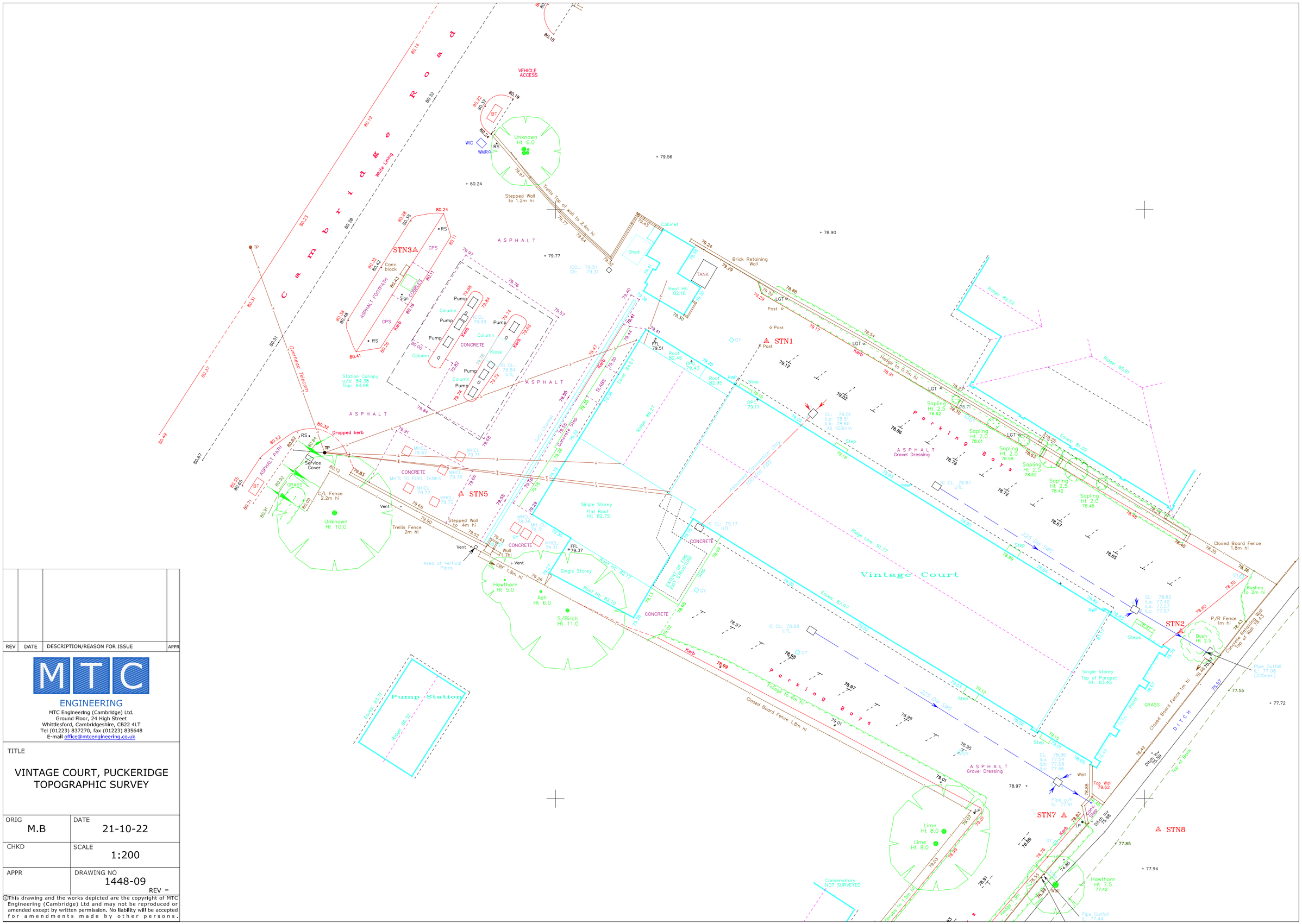
Location Plan

Date	Scale	Drg Status.
Aug 2020	1:1250 @ A4	PLANNING

Drg No.	Revision
1010VC-00	-

APPENDIX 2

TOPOGRAPHIC SURVEY



REV	DATE	DESCRIPTION/REASON FOR ISSUE	APPR

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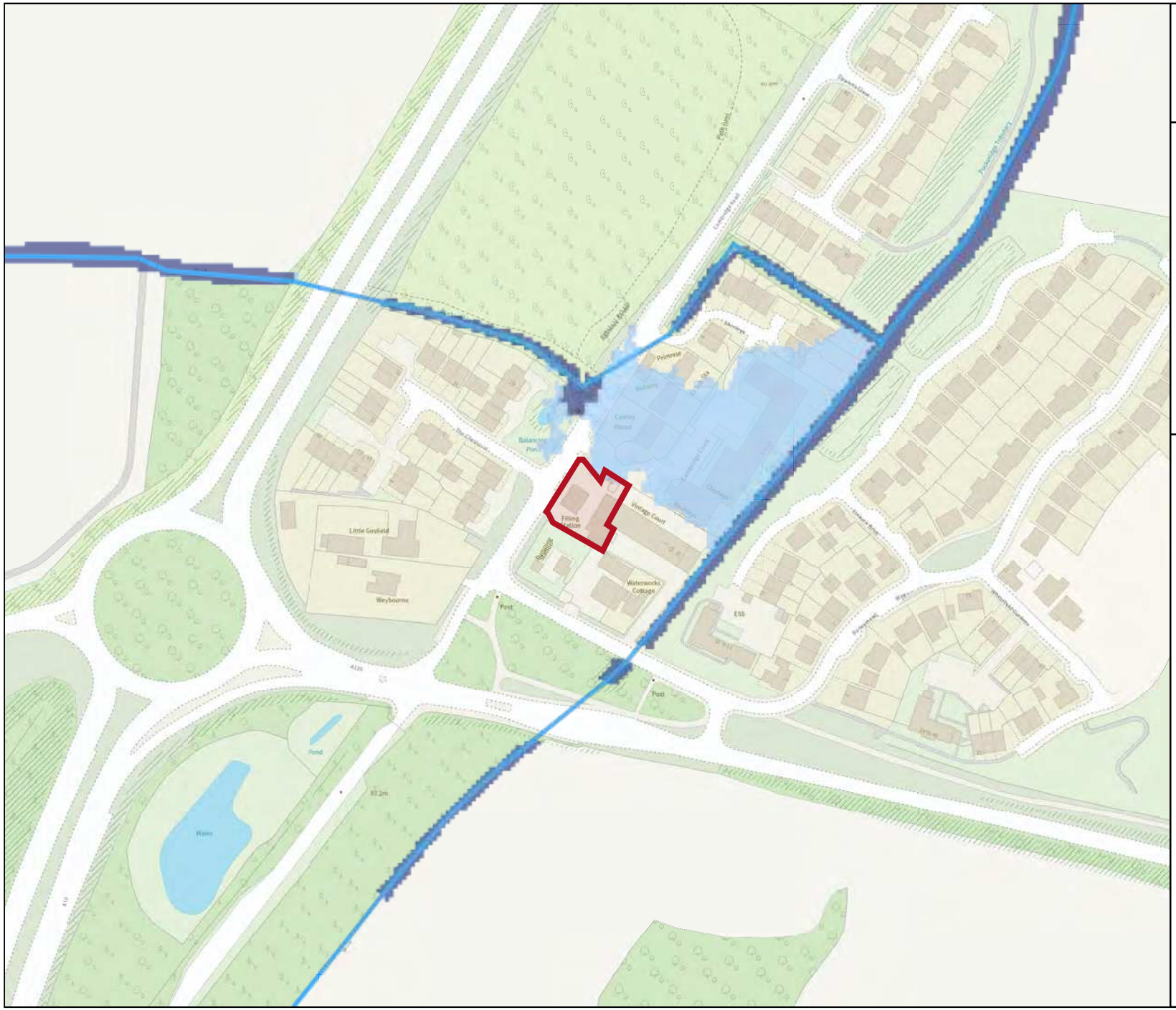
TITLE

VINTAGE COURT, PUCKERIDGE TOPOGRAPHIC SURVEY

ORIG	DATE
M.B	21-10-22
CHKD	SCALE 1:200
APPR	DRAWING NO 1448-09 REV -

APPENDIX 3

ENVIRONMENT AGENCY FLOOD MAP FOR PLANNING



Environment Agency

Flood map for planning

Your reference
1448

Location (easting/northing)
538249/222685

Scale
1:2500

Created
21 Oct 2022 14:49

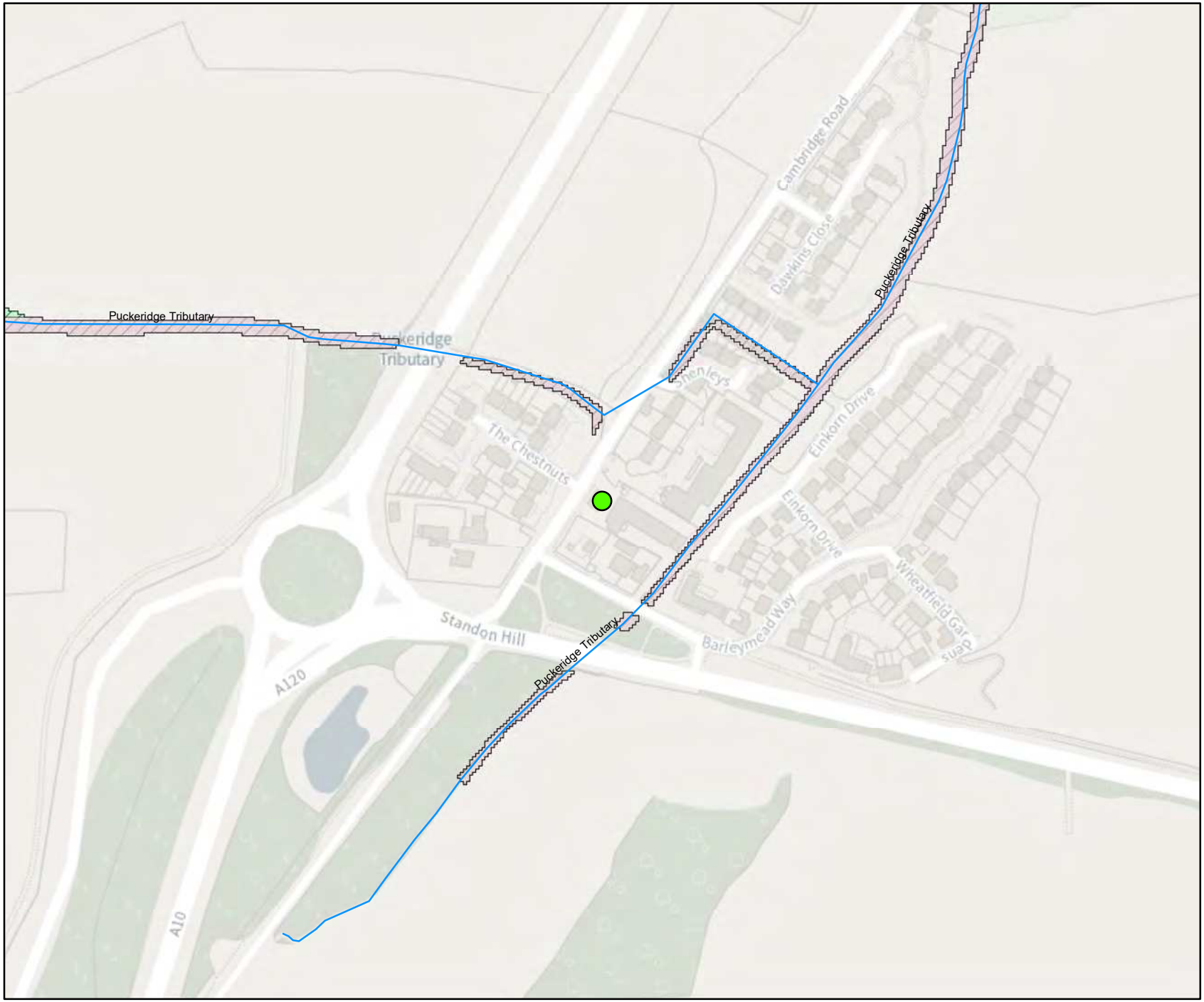
- Selected area
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Water storage area

0 20 40 60m

APPENDIX 4

ENVIRONMENT AGENCY MODELLED FLOOD DATA

Detailed FRA centred on: Vintage Court, Cambridge Road, Puckeridge, SG11 1SA - 20/09/2022 - HNL 279668 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200

Metres

Legend

- Main Rivers
- Site location

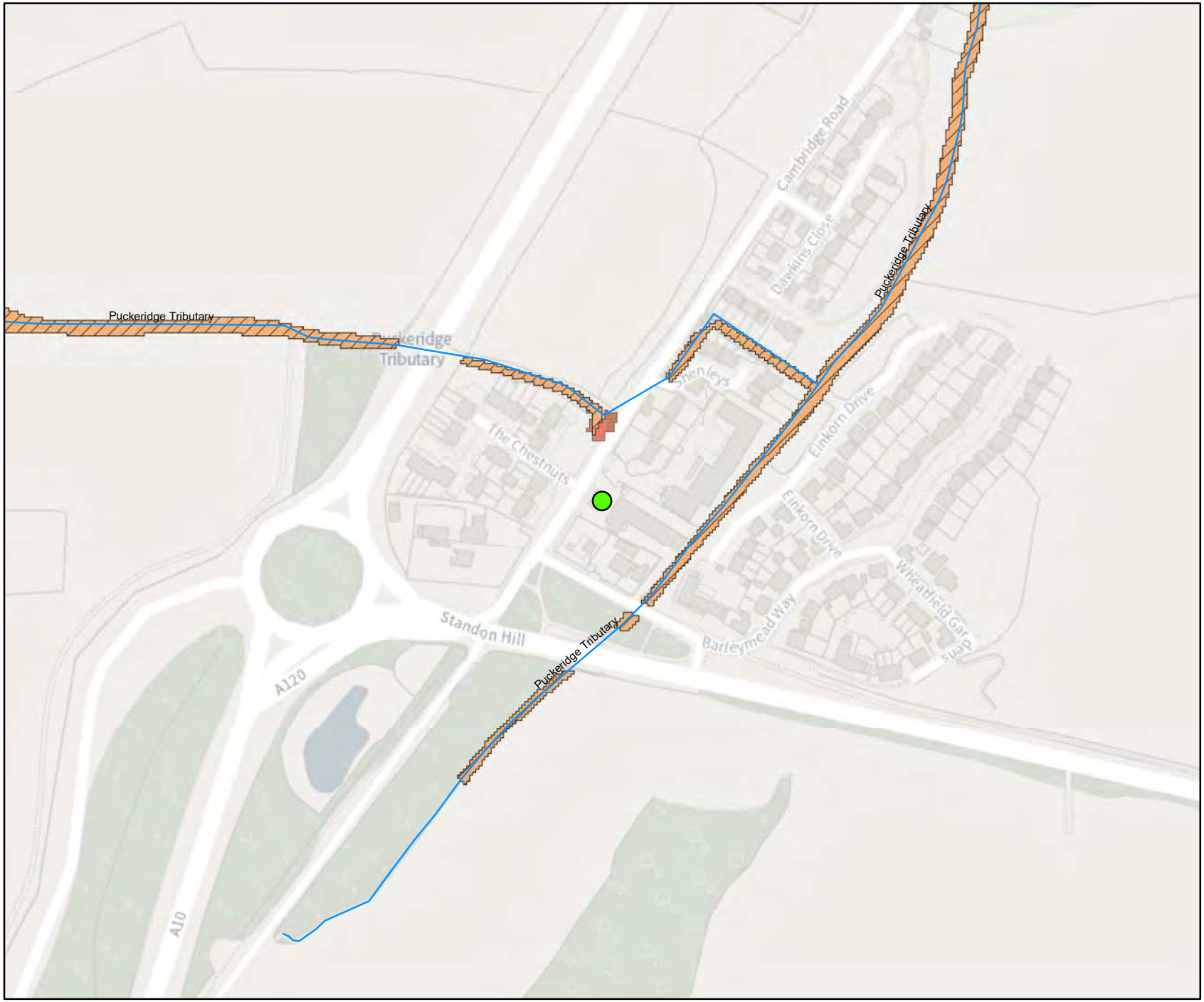
Defended Flood Outlines

- 1 in 2 (50%) Defended
- 1 in 5 (20%) Defended
- 1 in 10 (10%) Defended
- 1 in 20 (5%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
This model has been designed for catchment wide flood riskmapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.
Modelled outlines take into account catchment wide defences.
Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Detailed FRA centred on: Vintage Court, Cambridge Road, Puckeridge, SG11 1SA - 20/09/2022 - HNL 279668 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200

Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 30 (3.33%) Defended
- 1 in 50 (2%) Defended
- 1 in 75 (1.33%) Defended
- 1 in 100 (1%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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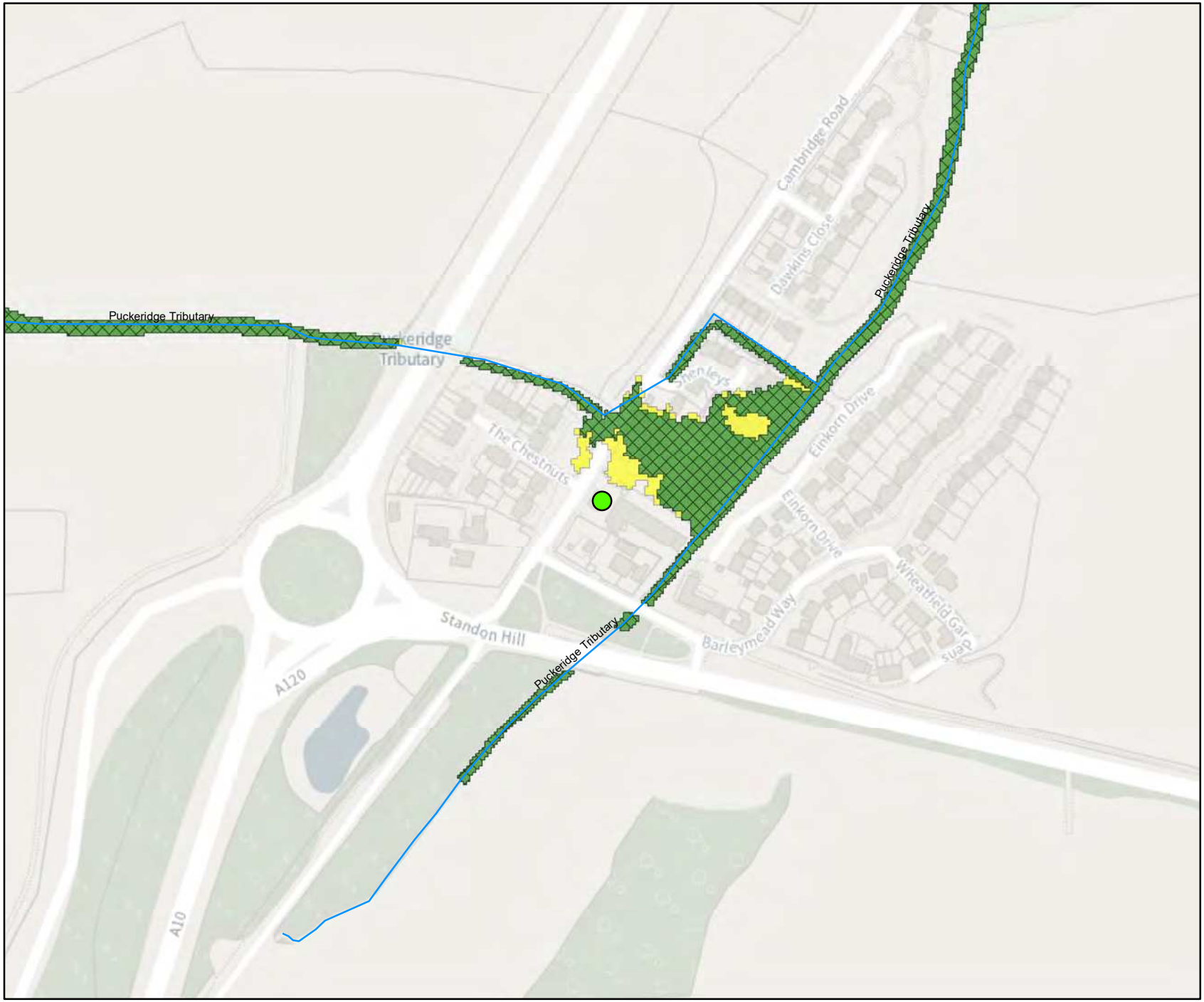

Environment Agency

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

Defended Flood Outlines

- 1 in 100+20% (*CC) Defended
- 1 in 200 (0.5%) Defended
- 1 in 1000 (0.1%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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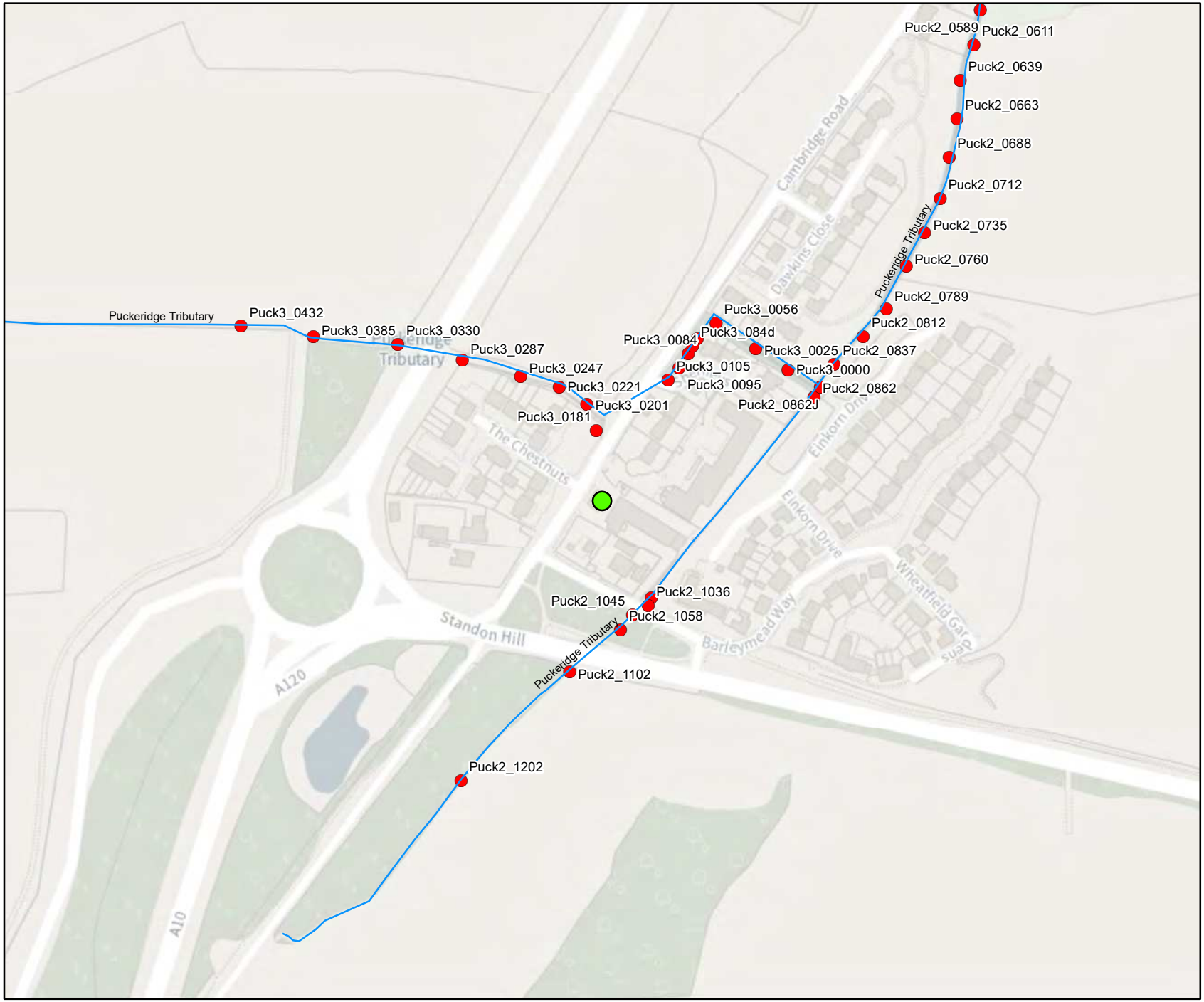

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 50 100 200
Metres

Legend

- Main Rivers
- Site location

1D Node Results

- 1D Nodes

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Produced by:
Partnerships & Strategic Overview,
Hertfordshire & North London

Environment Agency ref: HNL 279668 JH

The following information has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).

Caution:

Flood risk data requests including an allowance for climate change will be based on the 1 in 100 flood plus 20% allowance for climate change, unless otherwise stated. You should refer to 'Flood risk assessments: climate change allowances' to check if this allowance is still appropriate for the type of development you are proposing and its location. You may need to undertake further assessment of future flood risk using different allowances to ensure your assessment of future flood risk is based on best available evidence.

https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

All flood levels are given in metres Above Ordnance Datum (mAOD)
All flows are given in cubic metres per second (cumecs)

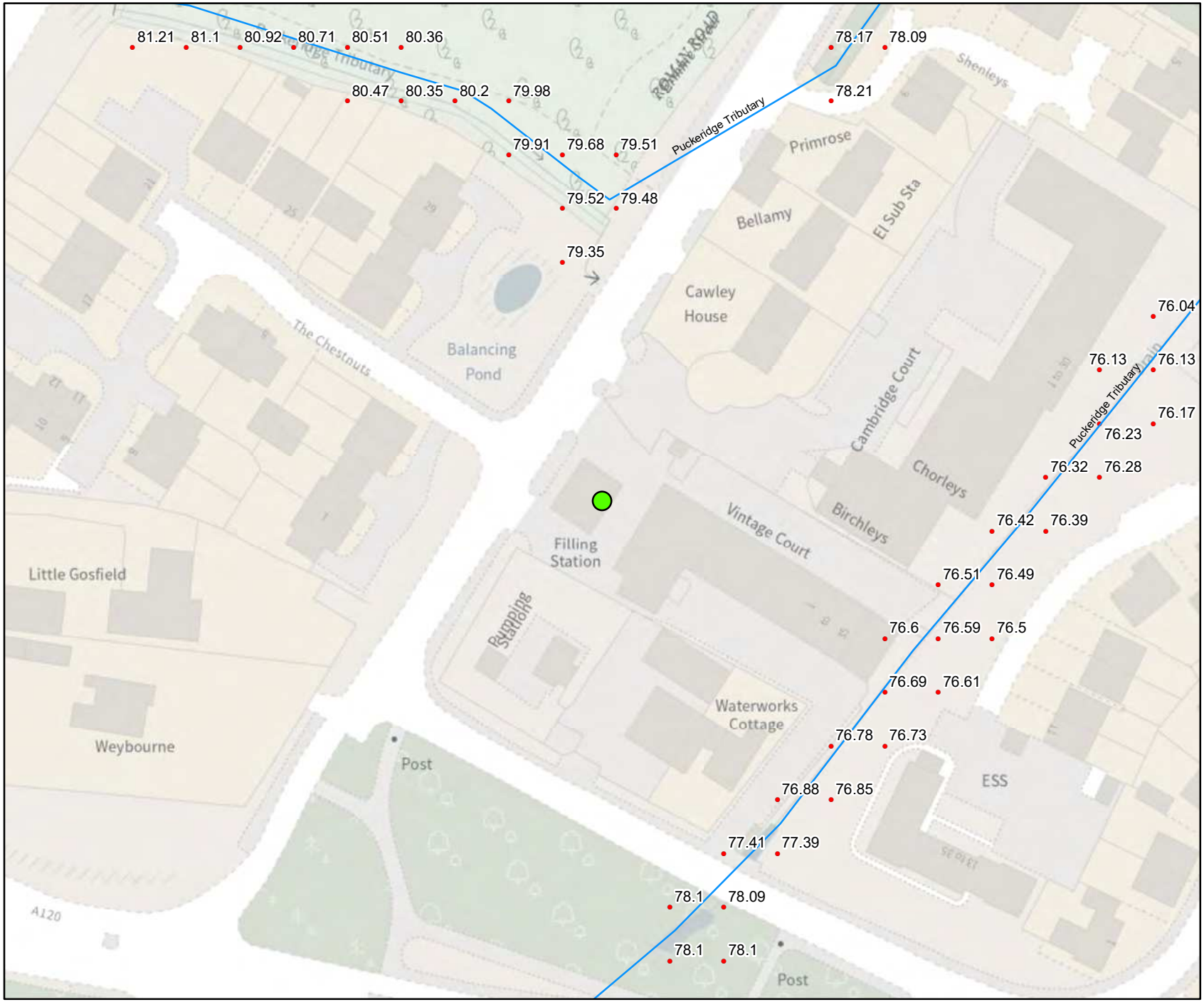
MODELLED FLOOD LEVEL

					Return Period		
Node Label	**Easting**	**Northing**	**5 yr**	**20yr**	**100yr**	**100yr+20%**	**1000yr**
Puck2_0589	538492	223007	72.2999	72.4269	72.5922	72.6725	72.903
Puck2_0611	538488	222984	72.5228	72.6439	72.8041	72.8831	73.1127
Puck2_0639	538479	222961	72.77	72.8875	73.0428	73.1202	73.3501
Puck2_0663	538477	222936	73.0184	73.1367	73.2926	73.3704	73.6041
Puck2_0688	538472	222911	73.3137	73.4357	73.593	73.6699	73.9028
Puck2_0712	538466	222884	73.6049	73.7398	73.9047	73.9844	74.2203
Puck2_0735	538456	222862	73.7714	73.917	74.0962	74.1823	74.4318
Puck2_0760	538444	222840	73.9193	74.0646	74.2483	74.3371	74.5946
Puck2_0789	538431	222812	74.1676	74.2994	74.471	74.5563	74.811
Puck2_0812	538416	222794	74.4173	74.5427	74.7059	74.7865	75.0317
Puck2_0837	538397	222776	74.6547	74.7866	74.9566	75.0392	75.2818
Puck2_0862	538384	222755	75.7403	75.8238	75.9292	75.9833	76.1587
Puck2_0862J	538388	222761	75.6353	75.7101	75.8083	75.8564	75.9997
Puck2_1030	538278	222624	76.9809	77.0929	77.2402	77.3175	77.5384
Puck2_1036	538276	222619	77.4785	77.5255	77.5828	77.6117	77.7001
Puck2_1045	538266	222613	78.18	78.322	78.5197	78.6279	78.9661
Puck2_1058	538258	222603	78.1957	78.3348	78.5301	78.6372	78.9726
Puck2_1102	538225	222576	78.7146	78.8377	79.0091	79.1029	79.3961
Puck2_1202	538154	222505	80.1148	80.2071	80.3203	80.3777	80.5397
Puck3_0000	538367	222772	75.6548	75.7373	75.8473	75.8984	76.0256
Puck3_0025	538346	222786	76.0367	76.0964	76.176	76.2139	76.2894
Puck3_0056	538320	222803	77.1872	77.2733	77.3623	77.3954	77.4006
Puck3_0072	538308	222793	77.5474	77.6281	77.7294	77.7608	77.7787
Puck3_0084	538302	222783	77.8967	78.0874	78.5588	78.6908	78.7528
Puck3_084d	538305	222788	77.7443	77.8191	77.912	77.9414	77.955
Puck3_0095	538296	222774	78.0418	78.1802	78.583	78.7094	78.7692
Puck3_0105	538289	222766	78.2558	78.3122	78.6099	78.7284	78.7854
Puck3_0181	538242	222733	79.3849	79.5512	79.9844	80.1114	80.1639
Puck3_0201	538236	222750	79.6421	79.7024	80.0051	80.1283	80.1959
Puck3_0221	538218	222761	80.1904	80.27	80.3218	80.3558	80.4886
Puck3_0247	538193	222768	80.5918	80.6774	80.7954	80.8403	80.9865
Puck3_0287	538155	222779	81.3607	81.4381	81.5098	81.5424	81.6538
Puck3_0330	538113	222789	82.2946	82.3891	82.5101	82.5705	82.7555
Puck3_0385	538058	222794	83.1749	83.2353	83.3087	83.341	83.4524
Puck3_0432	538011	222801	84.356	84.3913	84.4348	84.4531	84.5731

MODELLED FLOWS

					Return Period		
Node Label	**Easting**	**Northing**	**5 yr**	**20yr**	**100yr**	**100yr+20%**	**1000yr**
Puck2_0589	538492	223007	1.435	2.075	3.104	3.691	5.795
Puck2_0611	538488	222984	1.435	2.075	3.104	3.692	5.795
Puck2_0639	538479	222961	1.434	2.075	3.104	3.692	5.796
Puck2_0663	538477	222936	1.434	2.075	3.104	3.692	5.796
Puck2_0688	538472	222911	1.434	2.075	3.104	3.693	5.796
Puck2_0712	538466	222884	1.37	1.982	2.966	3.528	5.529
Puck2_0735	538456	222862	1.369	1.982	2.966	3.528	5.53
Puck2_0760	538444	222840	1.369	1.981	2.966	3.528	5.53
Puck2_0789	538431	222812	1.369	1.981	2.966	3.529	5.531
Puck2_0812	538416	222794	1.368	1.981	2.966	3.529	5.531
Puck2_0837	538397	222776	1.369	1.981	2.966	3.53	5.532
Puck2_0862	538384	222755	1.025	1.5	2.255	2.711	4.652
Puck2_0862J	538388	222761	1.369	1.98	2.966	3.531	5.532
Puck2_1030	538278	222624	0.989	1.449	2.18	2.62	4.157
Puck2_1036	538276	222619	0.989	1.449	2.18	2.62	4.158
Puck2_1045	538266	222613	0.989	1.449	2.18	2.62	4.158
Puck2_1058	538258	222603	0.989	1.449	2.18	2.62	4.158
Puck2_1102	538225	222576	0.989	1.449	2.18	2.62	4.159
Puck2_1202	538154	222505	0.989	1.449	2.18	2.62	4.16
Puck3_0000	538367	222772	0.381	0.538	0.765	0.853	0.886
Puck3_0025	538346	222786	0.44	0.518	0.819	0.948	1.009
Puck3_0056	538320	222803	0.378	0.537	0.773	0.85	0.888
Puck3_0072	538308	222793	0.377	0.536	0.768	0.849	0.885
Puck3_0084	538302	222783	0.377	0.536	0.768	0.849	0.885
Puck3_084d	538305	222788	0.377	0.536	0.768	0.849	0.885
Puck3_0095	538296	222774	0.377	0.536	0.768	0.849	0.884
Puck3_0105	538289	222766	0.377	0.536	0.768	0.849	0.884
Puck3_0181	538242	222733	0.377	0.536	0.767	0.849	0.884
Puck3_0201	538236	222750	0.377	0.536	0.778	0.902	1.397
Puck3_0221	538218	222761	0.377	0.536	0.778	0.902	1.398
Puck3_0247	538193	222768	0.377	0.536	0.779	0.903	1.398
Puck3_0287	538155	222779	0.382	0.537	0.779	0.903	1.398
Puck3_0330	538113	222789	0.378	0.537	0.779	0.903	1.398
Puck3_0385	538058	222794	0.378	0.537	0.779	0.903	1.399
Puck3_0432	538011	222801	0.378	0.537	0.779	0.903	1.399

Detailed FRA centred on: Vintage Court, Cambridge Road, Puckeridge, SG11 1SA - 20/09/2022 - HNL 279668 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 2 (50%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
This model has been designed for catchment wide flood riskmapping. It should be noted that it was not created to produce flood levels for specific development sites within the catchment.
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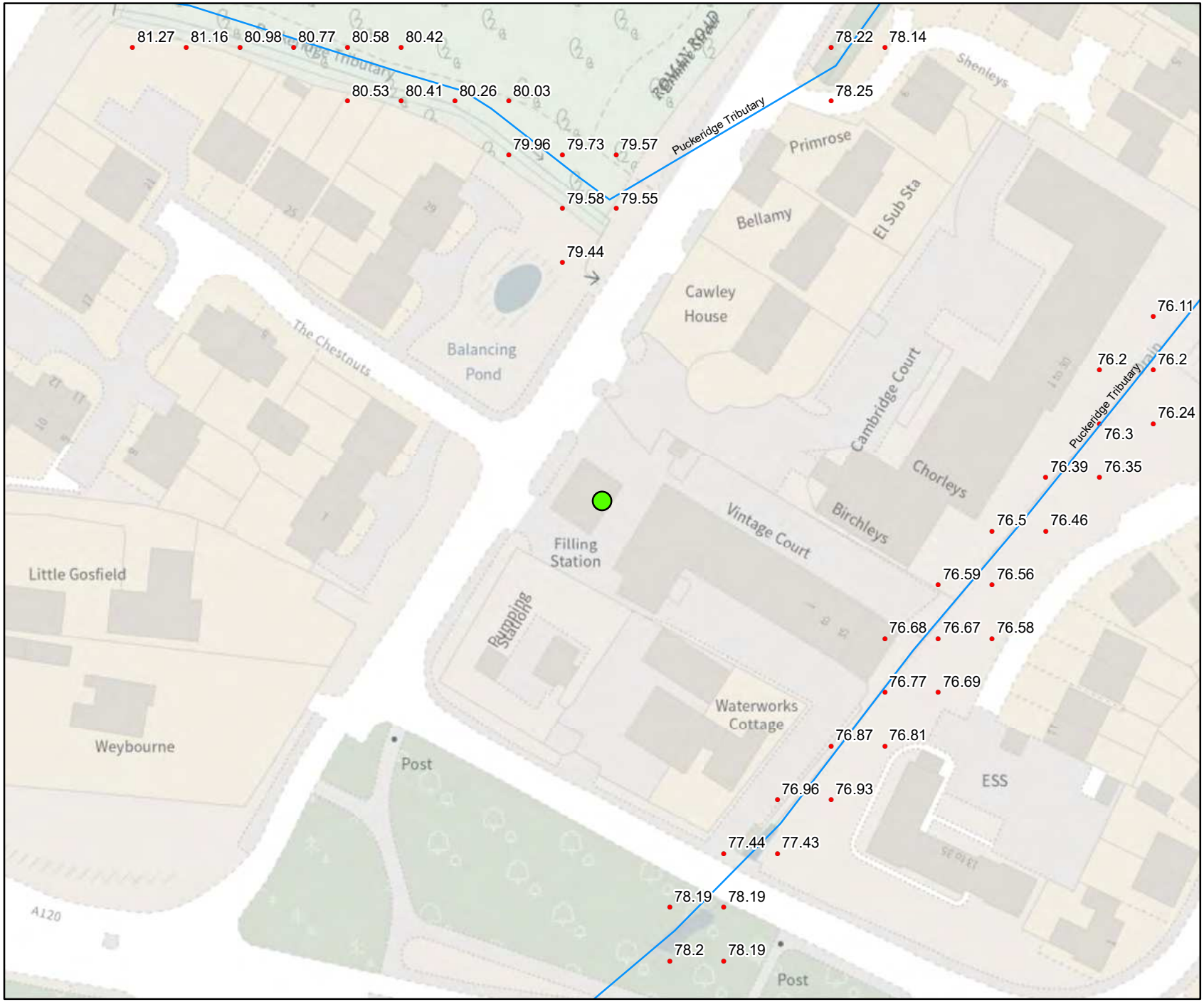

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60

Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 5 (20%) Defended

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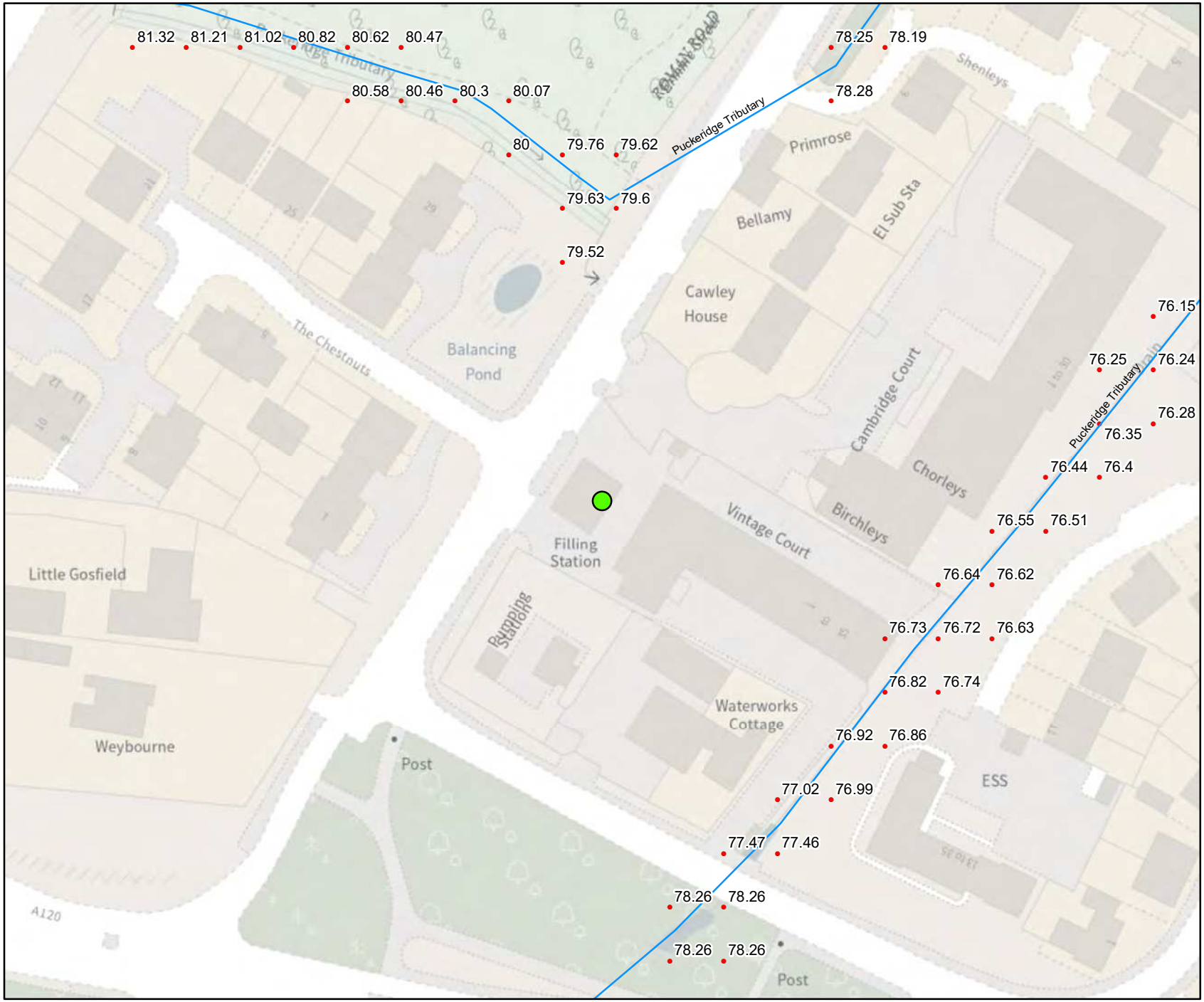

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 10 (10%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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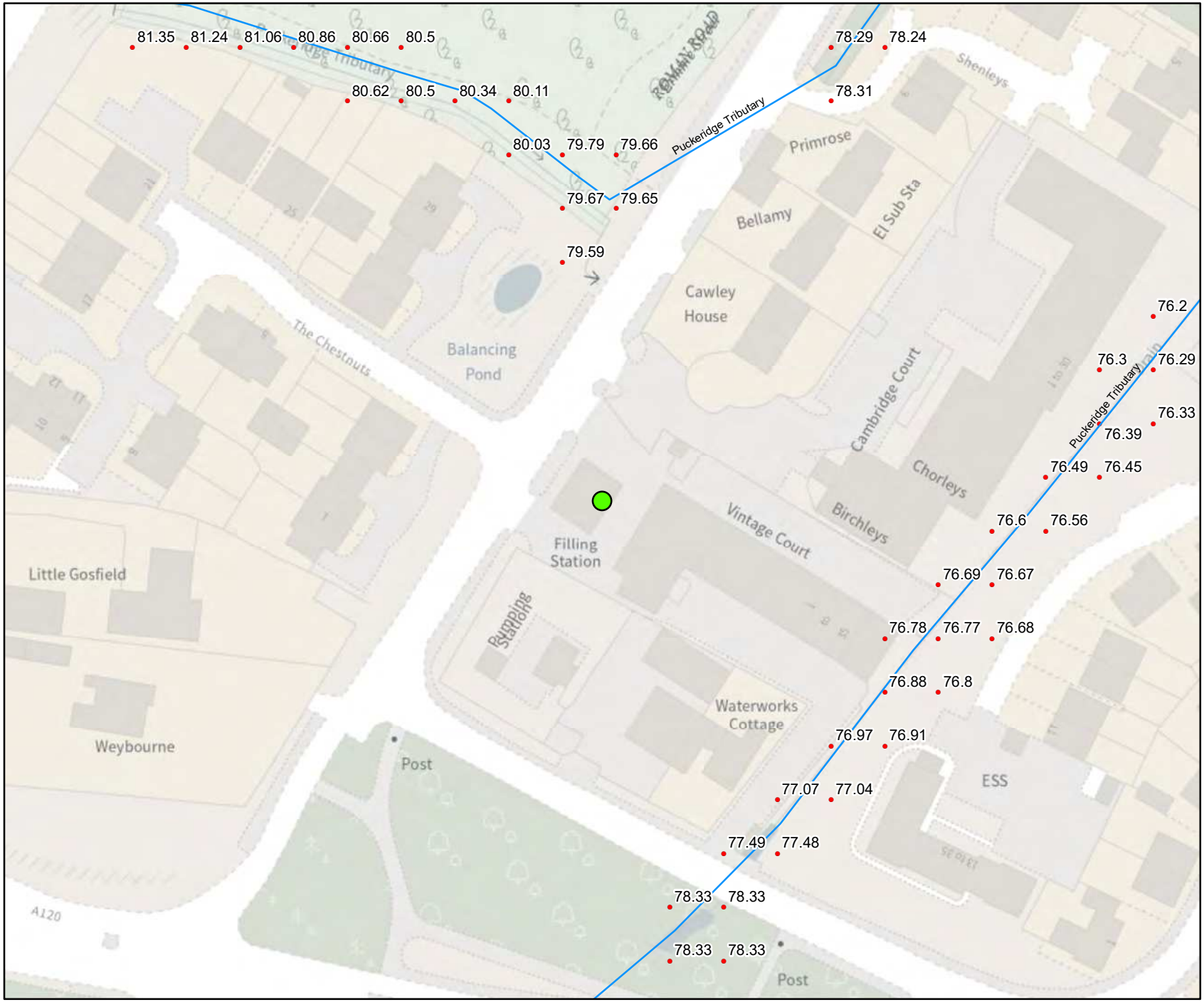

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 20 (5%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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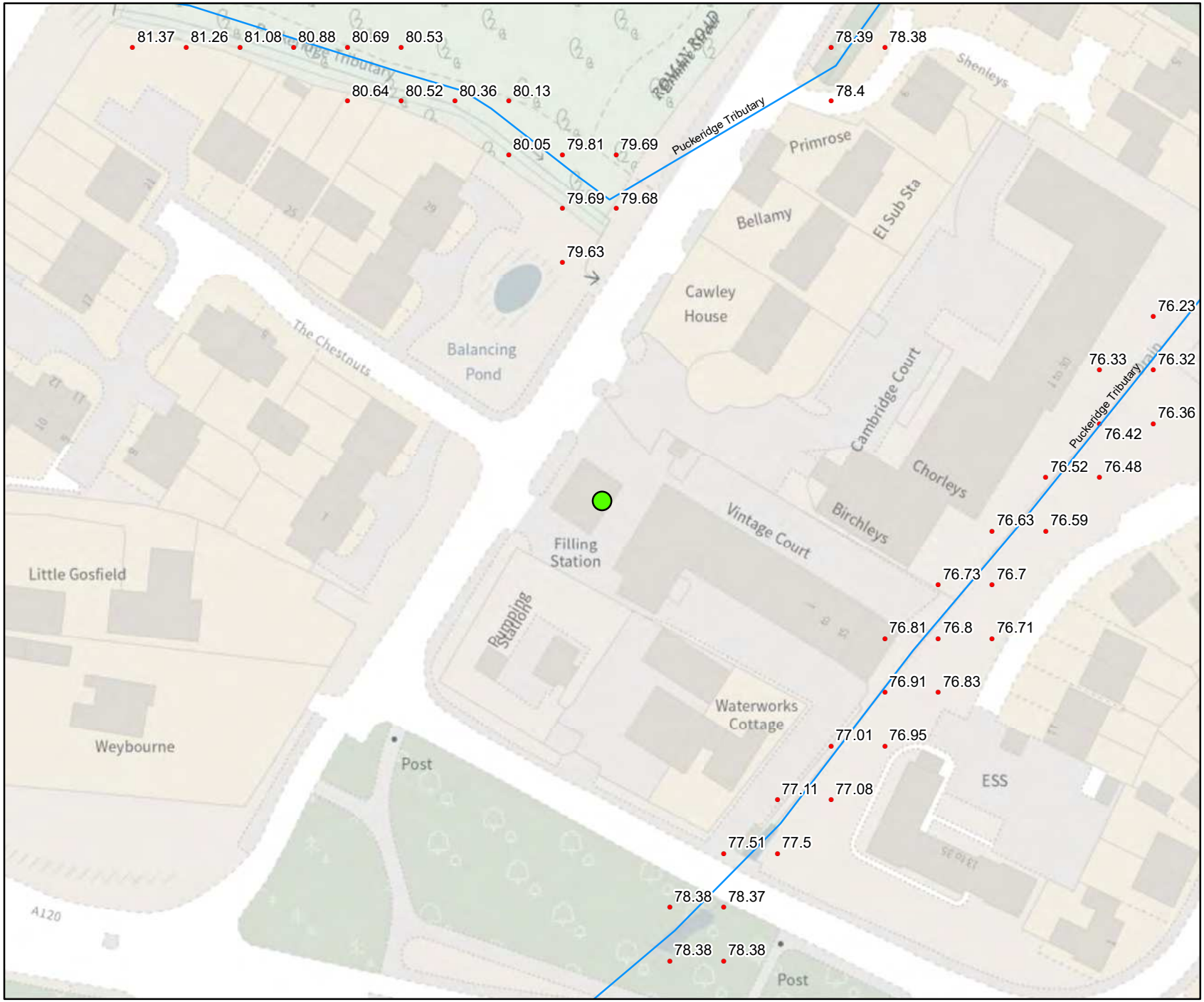

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Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 30 (3.33%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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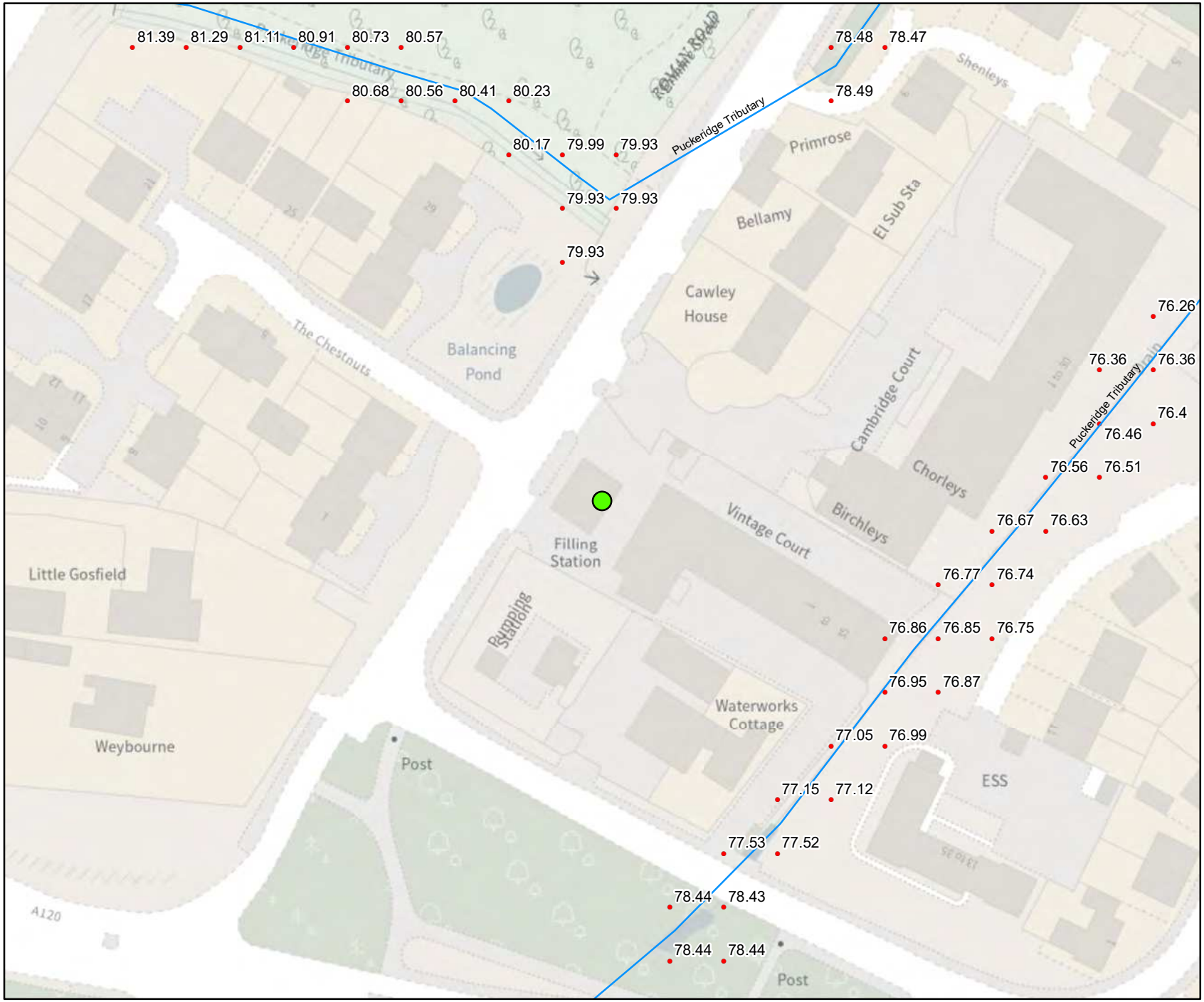

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 50 (2%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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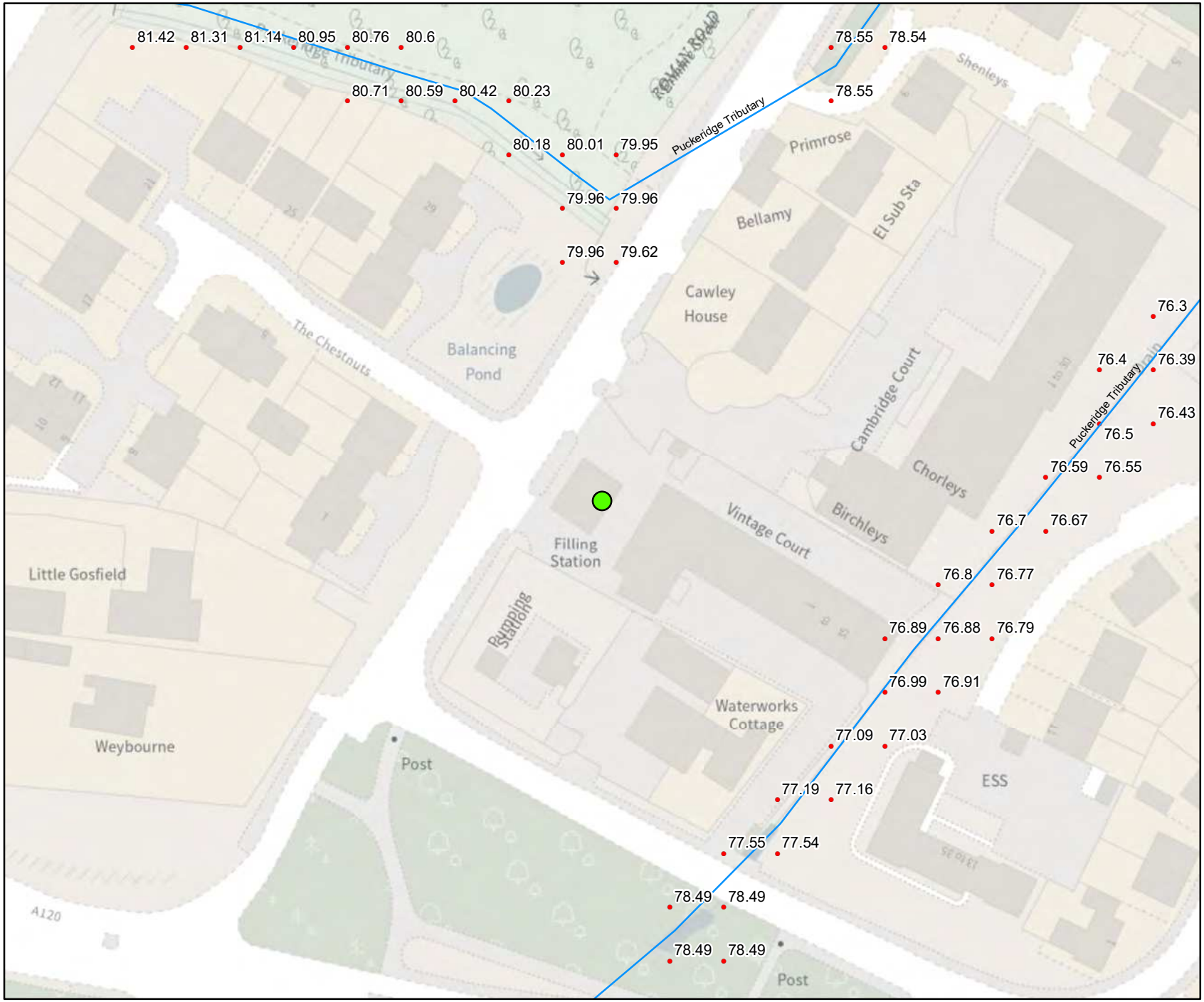

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 75 (1.33%) Defended

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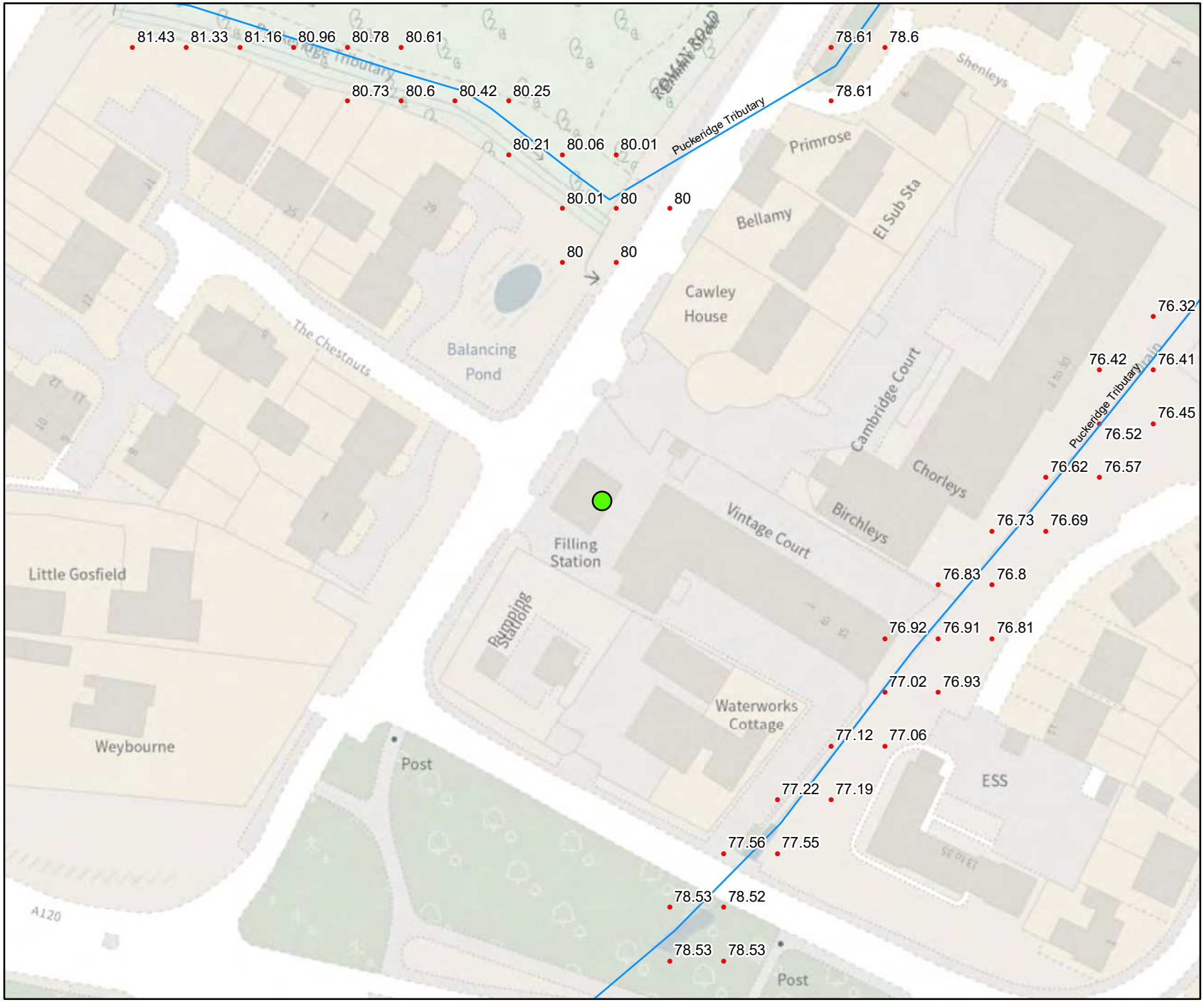

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 100 (1%) Defended

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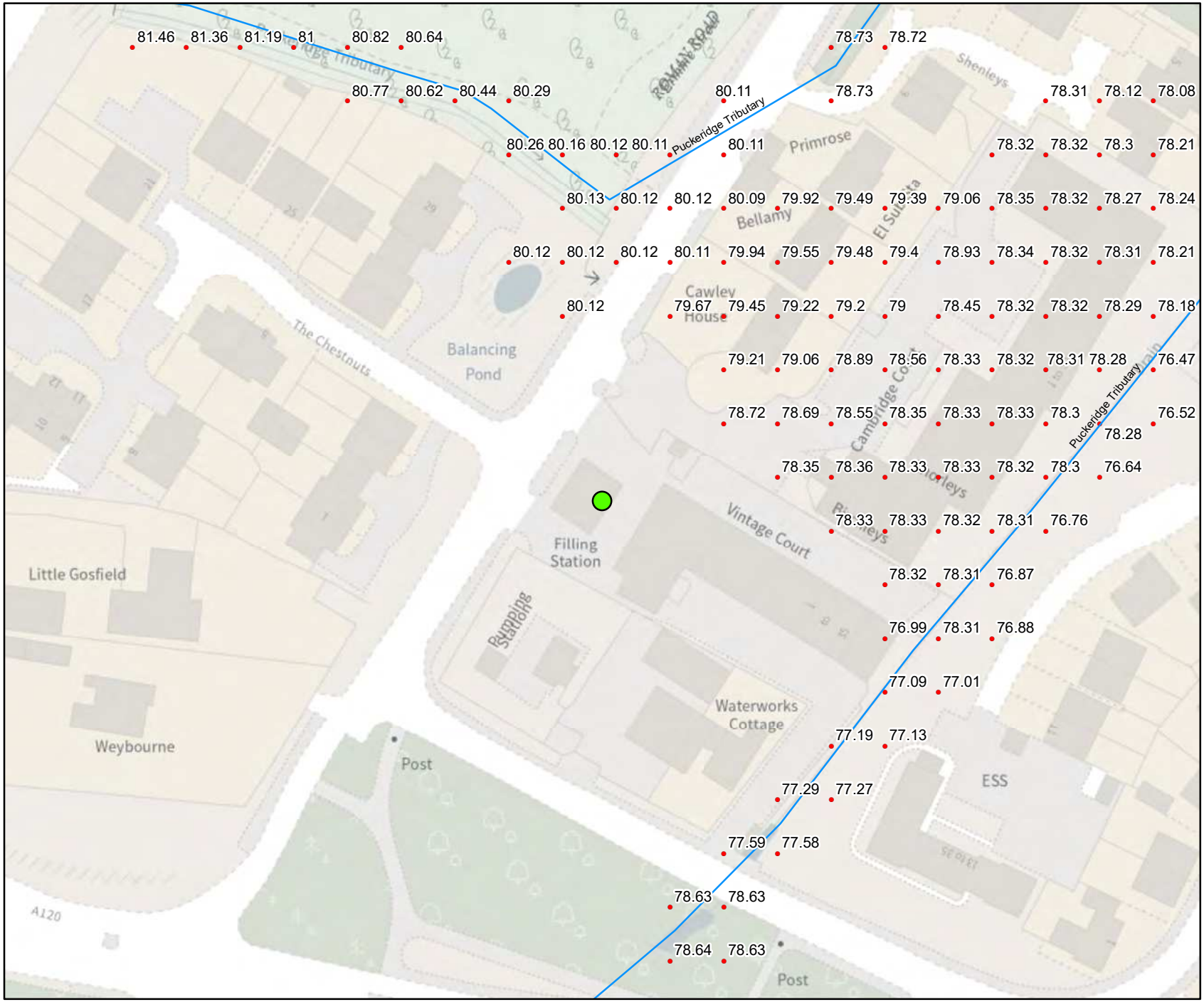

Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 100+20% (*CC) Defended

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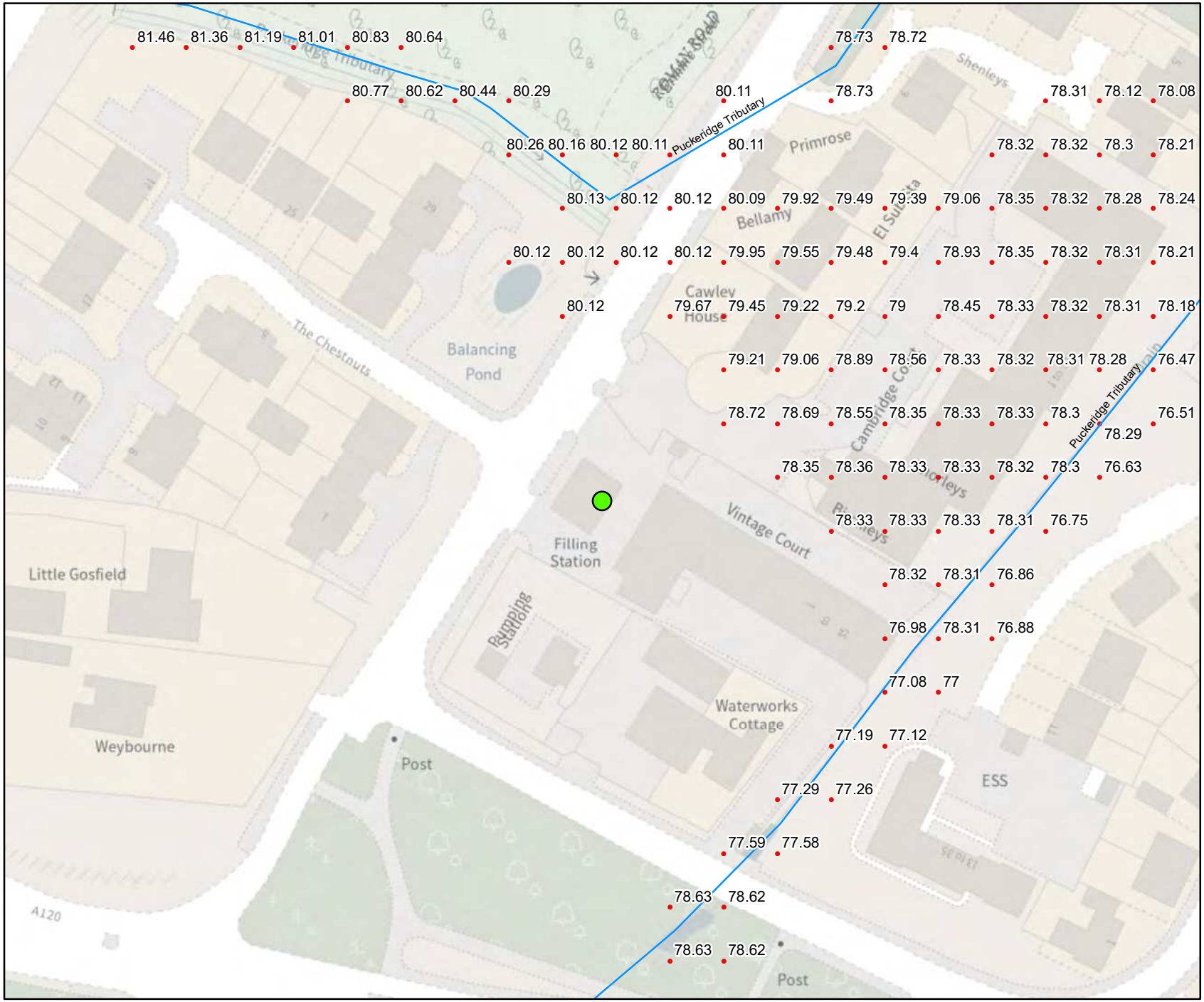
Hertfordshire & North London

Detailed FRA centred on: Vintage Court, Cambridge Road, Puckeridge, SG11 1SA - 20/09/2022 - HNL 279668 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 200 (0.5%) Defended

The data in this map has been extracted from the Puckeridge Tributaries Mapping and Modelling study (JBA, 2015).
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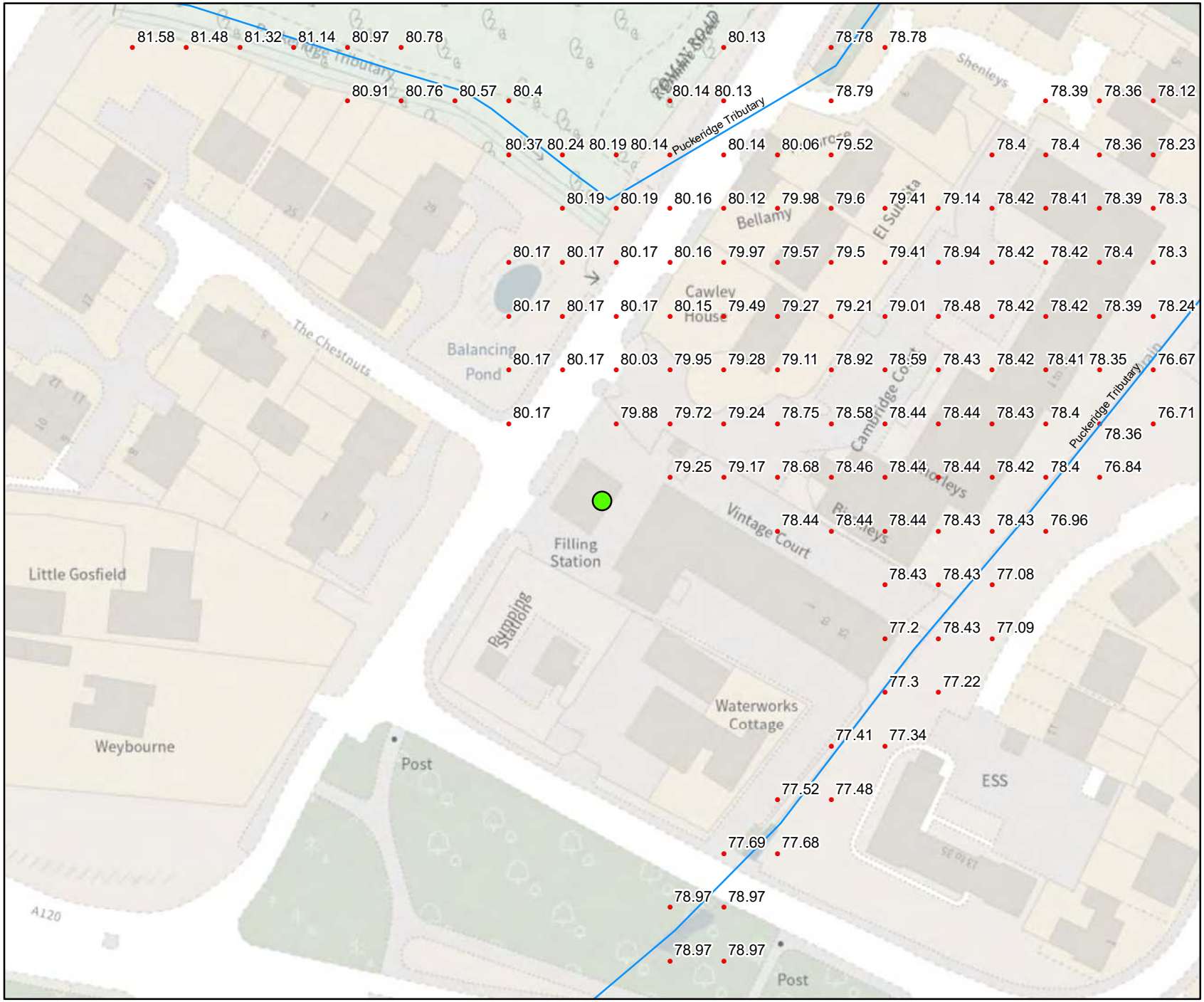
Hertfordshire & North London

Detailed FRA centred on: Vintage Court, Cambridge Road, Puckeridge, SG11 1SA - 20/09/2022 - HNL 279668 JH



Environment Agency
Alchemy,
Bessemer Road,
Welwyn Garden City,
Hertfordshire,
AL7 1HE

N

0 15 30 60
Metres

Legend

- Main Rivers
- Site location

2D Node Results: Heights

- 1 in 1000 (0.1%) Defended

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Hertfordshire & North London

APPENDIX 5

ENVIRONMENT AGENCY SURFACE WATER FLOOD MAP

Flood risk

Extent of flooding

Location

SG11 1SA

Extent of flooding from surface water

High Medium Low Very low Location you selected

APPENDIX 6

PROPOSED SITE LAYOUT

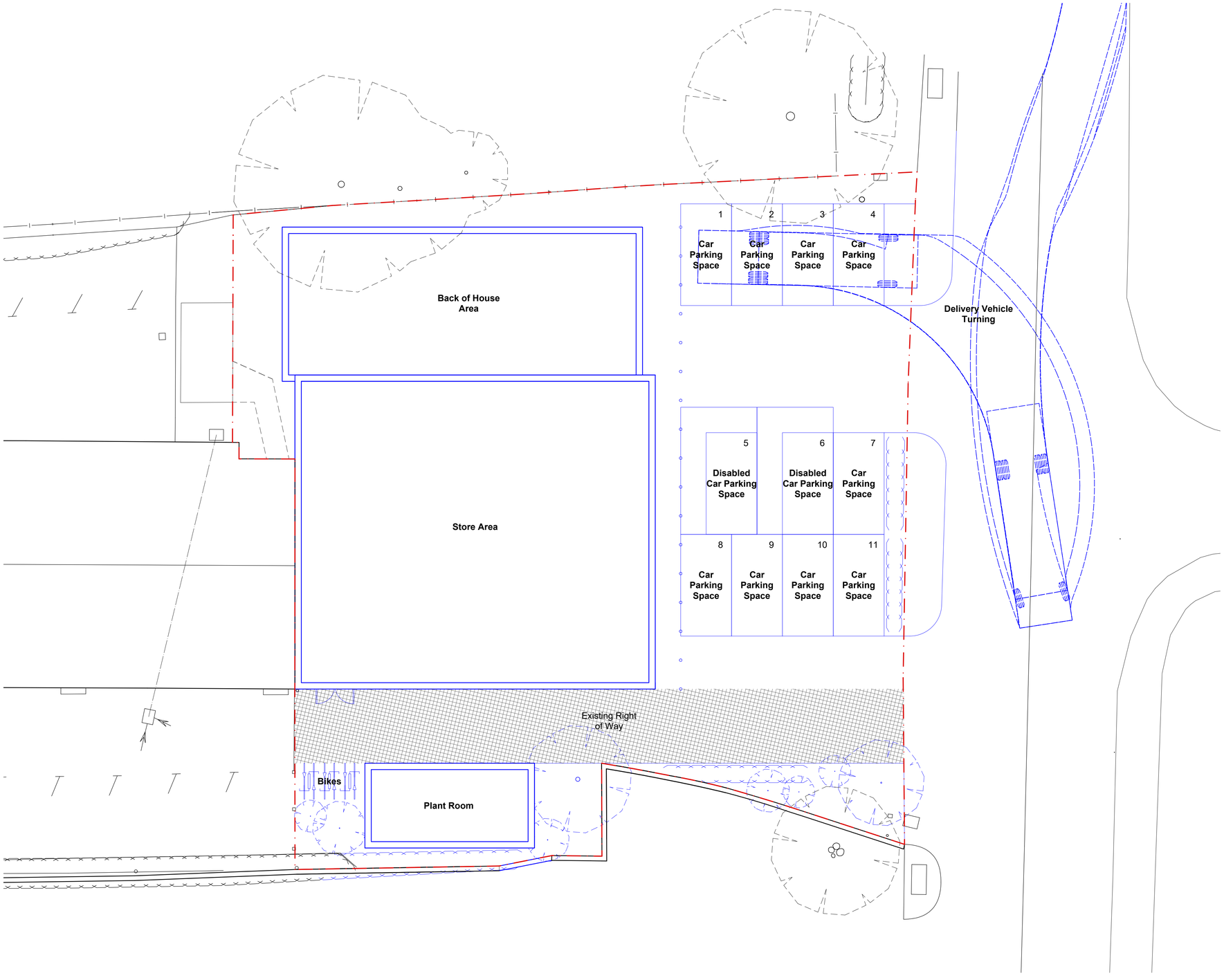
KEY

Existing

Proposed

+55.350 Existing Level

Site Boundary



0 1 2 3 4 5 10m

N

Rev.	Date	Description

Project

Convenience Store

Vintage Court, Puckeridge, Ware. SG11 1SA

Drg Title

Block Plan - Proposed

Date	Scale	Drg Status.
Aug 2021	1:100 @ A1	Planning

Drg No.	Revision
1010VC-110	-