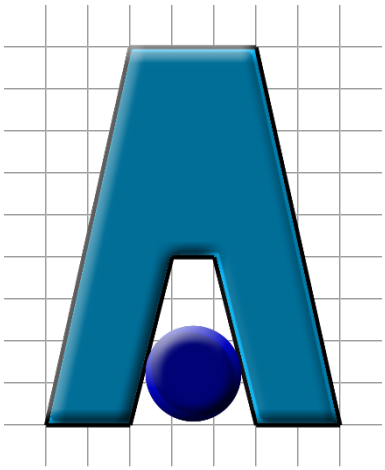


ADVANT ENGINEERS LTD

Civil & Structural Engineering Consultancy

Conversion of Jessops Mill to Apartments & Wine Bar Station Road Batley

Flood Risk Assessment

30th April 2021

Issue Sheet.

Prepared	Date		Checked	Date
M M	15-04-19		M M	15-04-19
Revisions.				Date
A	Initial Issue			15-04-19
B	Updated to EA Comments			30-10-19
C	Updated to EA Comments			06-04-20
D	Updated to include EA flood defence data			04-12-20
E	Survey plans updated			26-01-21
F	Culvert Survey, Micro Drainage Calcs and (FWEP) added			30-04-21

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Introduction.

Advant Engineers Ltd has been commissioned by DK Architects, to undertake a Flood Risk Assessment (FRA) in connection with the proposed conversion of the former Jessops mill building into 20 apartments and a wine bar located off Station road in Batley.

This FRA has been produced to demonstrate how risk from all sources of flooding, to the site itself and risk to others will be managed, in order to satisfy the requirements set out in the NPPF – National Planning Policy Framework.

Site Description.

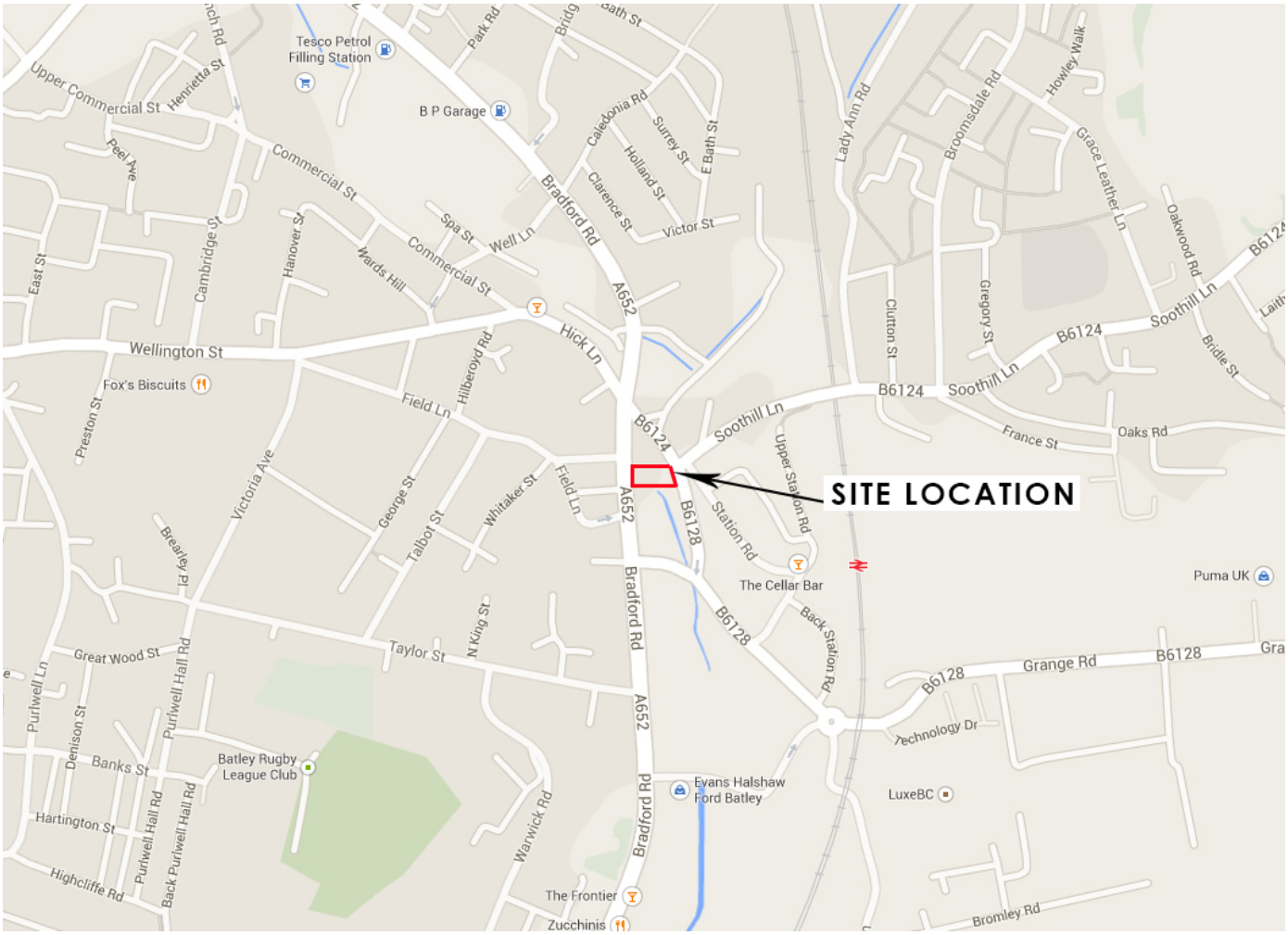
The site is located between Bradford Road and Station Road in Batley at co-ordinates 424810E 423836N and the nearest postcode is WF17 5SU.
The site has Bradford Road to the West and Station Road to the East, it has existing building to the North and South. Access to the building is provided from both Station Road and Bradford Road, currently the building has a nightclub on the lower ground floor, which has ceased trading, this is fronted onto Bradford Road, the upper floors and remains of the building where a former mill but have been abandoned for some time now (see photographs in appendix). The site area is 602m² (0.06 ha).

Site Levels.

A topographical survey of the existing site has been carried out, co-ordinates and levels are to Ordnance Survey GPS Network. This is shown in Appendix 1.

The site is flat but split over two levels, the existing lower ground floor which is accessible from Bradford road is set at a level of 52.51m and then steps up twice to 53.00m at the rear, the existing upper ground floor level which is accessible from Station Road is set at a level of 56.84m and then the First floor is set at a level of 60.60m. These are shown in Appendix A on the Elevation drawings.

Site Location Plan.



Aerial Photograph.



Existing Flood Risk.

National Planning Policy Framework (NPPF) Paragraphs 155-165 refers to the risk based Sequential Test aiming to steer new development to areas at the lowest probability of flooding (Zone 1).

Paragraph's 158 & 159 of the NPPF states that

> *"158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding."*

> *"159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance."*

Environment Agency Consultation

Consultation with the Environment Agency, and inspection of the Environment Agency Flood Map, has shown the site to fall within Tidal Flood Zone 1, 2 & 3.

The response from the EA is as follows, and is shown in Appendix 2:

"Finished Floor Levels

We advise that finished floor levels for development should be set no lower than 600mm above the 1% (1 in 100 year) modelled flood level plus climate change. Due to the date our modelling work was completed in this area you will need to add the new climate change allowance found at the following link to the 1 in 100 year levels we provide climate change allowances.

We advise that overland flow paths are considered in the assessment of the finished floor levels required along with blockage of the culvert.

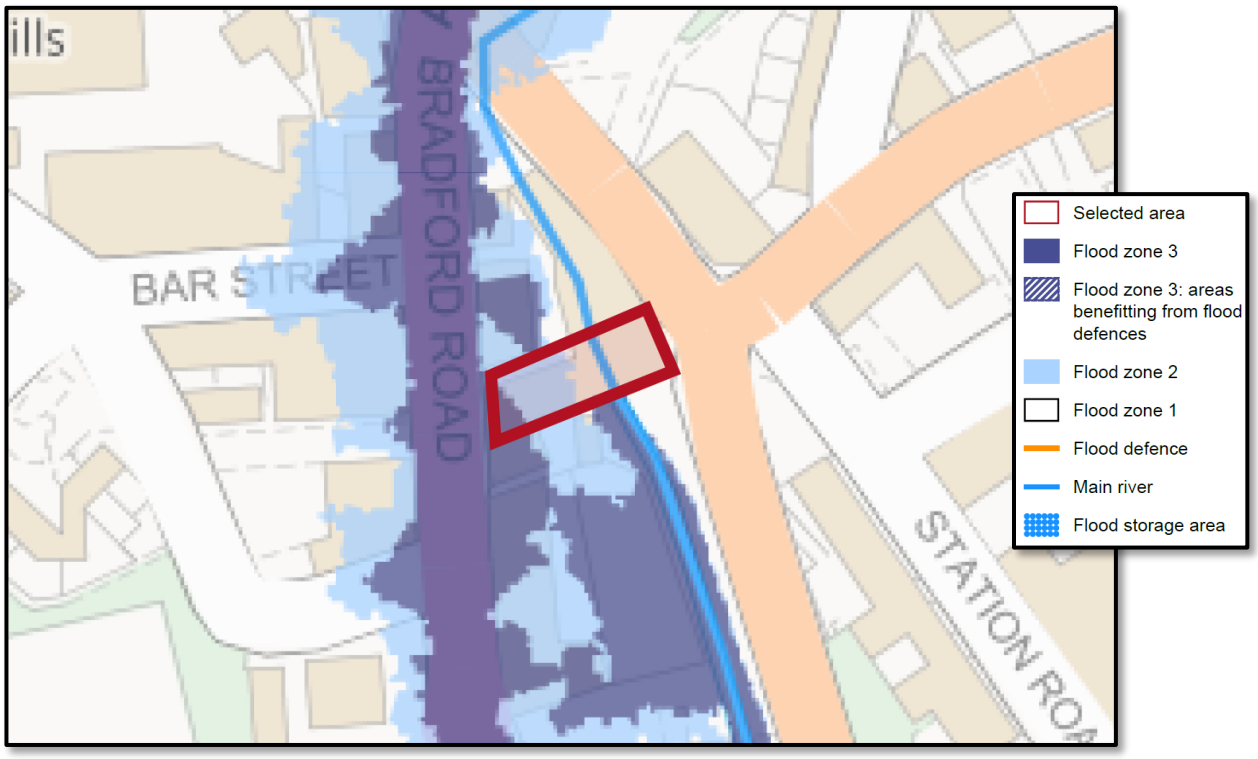
It is not clear form the elevations provided what the layout plan for the site is, if this can be provided showing the existing and proposed buildings.

The FRA needs to compare the existing and proposed site ground levels, road levels, existing and proposed finished floor levels of the ground and first floors to the 100 year modelled level plus climate change plus 600mm to determine the level of flood risk mitigation required.

You may also need to tank the basement to make it watertight see details below under the basement section The FRA does not propose flood resilience measures we would expect to see resilience measures used such as raising electrical sockets and other flood sensitive equipment above flood levels."

Environment Agency Flood Map

The Flood Map below shows that part of the site is located in Flood zones 1 & 2 with a small area in Flood zone 3 and is located over the top of Batley Beck which is culverted from the North and exposed from the South of the building.



Sewerage Undertaker Consultation.

Yorkshire Water is the sewerage undertaker in this location and has been contacted in addition to Environment Agency consultation.

Existing Drainage Records.

Existing drainage records have been obtained showing the adopted public sewer network. Although the Yorkshire Water records show the location of the adopted sewers, they offer no information as to the depths therefore an assumed depth of 1.2m will be taken.

The YW records show sewers on both sides of the building in Station Road and in Bradford Road. On station road on the high side there is a surface water sewer that discharges into the beck and a surface water sewer that runs Station road into Rouse mIll Lane, and there is also a foul sewer that runs parallel to this.
On the low side in Bradford Road there are two combined sewers and a surface water, within the boundary of the property there is also a combined sewer that discharges to the one in Bradford Road.

There will be no need for any diversionary or abandonment work.

Response from Yorkshire Water.

The full response from Yorkshire Water can be found in Appendix 3, extracts of which are as follows:

"As the proposal is a change of use from a mill to 20 apartments, Yorkshire Water would expect the existing arrangements to be maintained on site if there is no change to the existing building footprint and car park.

Any increases to the building footprint or carpark would require the prior consent of Yorkshire Water."

Existing Runoff Rate.

The site is currently industrial use and is 100% impermeable area.

Using the Modified rational method of calculating existing runoff then the existing development has an existing runoff rate of:

$$2.78 \times 0.06 \times 50 = 8.4 \text{ l/s}$$

Conclusion of Existing Flood Risk.

Investigations relating to the existing site confirm that the site falls into the Environment Agency Tidal Flood Zones 1, 2 & 3

Flood Zone 3 (dark blue area on the enclosed map): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences

- For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year;
- For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year.

Flood Zone 2 (light blue area): natural flood plain area that could be affected by flooding from rivers and/or the sea

– not taking into account the presence of any flood defences. Flood Zone 2:

- indicates the extent of a flood with a 0.1% (1 in 1000) chance of happening each year.
- and/or indicates the greatest recorded historic flood, whichever is greater.

The development is currently an unused mill, the surface water drainage from the building discharges to the sewer in Bradford Road, this is remaining unchanged, no works are been proposed to alter the roof in any way.

As the footprint of the building is not changing then Yorkshire water have no concerns over any potential flood risk issues, consultation with the local authority drainage department have voice no opposition or concerns, but stated that the Environment Agency would have to comment on the water course running beneath the site.

Based on the data provided by the EA (See Appendix 2) they have no historic records of this site flooding, but back in 2015 a model was produced for Batley Beck which runs beneath the building. They have also specified to set the minimum FFL 600mm above the above the 1 in 100 year plus climate change flood level or provide flood mitigation treatments.

The 2015 Batley Beck modelling data provided by the (EA) consists of a 'defended' and an 'undefended' scenario, we have utilised the modelling data from node 'EA1231295BAT2974' which is the closest upstream node of the building as requested in the EA correspondence.

From the (EA) modelling data we have extracted the following information for both scenarios', although in the latest (EA) correspondence it is only referred to the 'undefended' model (full data is found in Appendix 2).

upstream

downstream

	Return Period					
	75		100		101	
Node Point	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow
EA1231295HOW0065	54.403	4.304	54.43	4.385	54.489	4.565
EA1231295HOW0055	53.575	4.324	53.812	4.392	54.099	4.57
EA1231295HOW0031	53.474	4.535	53.741	4.64	54.041	4.903
EA1231295HOW0000	53.448	5.348	53.717	5.543	54.006	6.057
EA1231295BAT2997	53.59	13.705	53.865	14.302	54.125	14.632
EA1231295BAT2978	53.455	15.079	53.724	16.035	54.056	16.385
EA1231295BAT2974	53.448	15.213	53.717	16.193	54.006	16.77
EA1231295BAT2809	51.303	20.087	51.341	21.224	51.413	22.51
EA1231295BAT2756	51.238	20.084	51.275	21.222	51.352	22.499
EA1231295BAT2709	51.143	20.081	51.168	21.221	51.232	22.487
EA1231295BAT2678	51.097	20.078	51.118	21.219	51.178	22.471
EA1231295BAT2641	50.993	19.847	51.002	20.949	51.061	22.067
EA1231295BAT2632	50.945	19.935	50.946	21.175	50.948	23.265

2015 Batley Beck Undefended Model

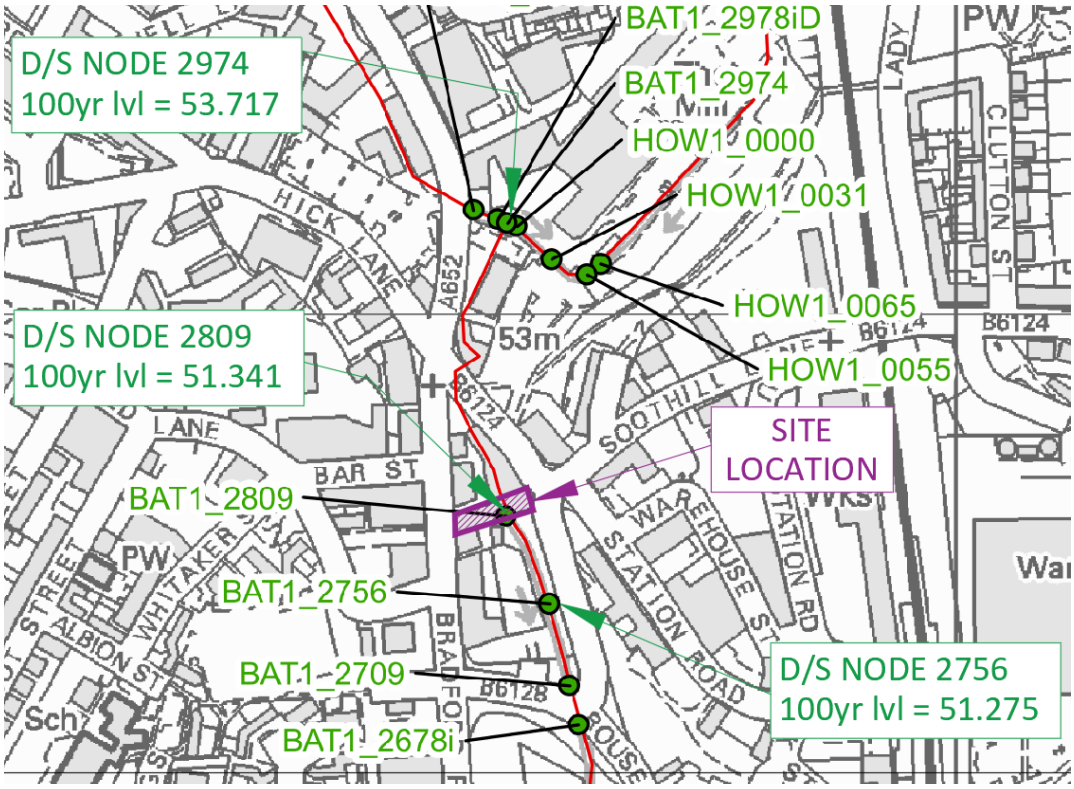
upstream

downstream

	Return Period									
	75		100		101		200		1000	
Node Point	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow
EA1231295HOW0065	54.63	5.01	54.664	5.119	54.728	5.327	54.727	5.32	54.878	5.602
EA1231295HOW0055	53.464	5.02	53.563	5.121	53.698	5.329	53.693	5.32	54.486	5.6
EA1231295HOW0031	53.304	5.16	53.428	5.257	53.587	5.457	53.581	5.45	54.453	5.588
EA1231295HOW0000	53.285	5.44	53.411	5.524	53.566	5.718	53.56	5.71	54.428	5.912
EA1231295BAT2997	53.359	14.29	53.482	14.688	53.634	15.185	53.629	15.1	54.534	15.385
EA1231295BAT2978	53.285	14.2	53.411	14.687	53.566	15.185	53.561	15.1	54.449	17.405
EA1231295BAT2974	53.285	14.2	53.411	14.687	53.566	15.185	53.56	15.1	54.428	17.662
EA1231295BAT2809	51.647	19.	51.675	19.681	51.705	20.521	51.705	20.47	51.821	23.322
EA1231295BAT2756	51.634	19.19	51.662	19.696	51.692	21	51.691	20.97	51.788	23.789
EA1231295BAT2709	51.559	19.20	51.582	19.71	51.601	21.095	51.6	21.07	51.67	23.835
EA1231295BAT2678	51.533	19.20	51.555	19.715	51.566	21.222	51.566	21.19	51.633	23.856
EA1231295BAT2641	51.513	18.04	51.517	19.014	51.582	19.438	51.582	19.41	51.652	21.624
EA1231295BAT2632	51.526	16.80	51.543	17.269	51.591	17.453	51.59	17.42	51.709	18.534

2015 Batley Beck Defended Model

The undefended 1 in 100 year rainfall event for the upstream water level is shown as 53.717m, the downstream water level of the beck is shown as 51.341m, looking at the next node down as well the 100 year level is 51.275m.



The upstream water level is higher than the downstream level and it is expected as from a visual inspection on site the land is higher at that point and so would be modelled as being higher than the downstream where the site is located as the land falls away there.

In addition to the above data we are also aware of flood defence that is present located at the nodes BAT1_2974 and BAT1_2997 which are the upstream nodes from the site, following discussions with the (EA) we were presented with survey data of the watercourse with flood defence heights recorded, from this survey data it is noted that there are flood defence walls upstream of the site at recorded levels of 54.310m.

Taking into account the height of the flood defence at 54.310m and the modelled flood water height of 53.717m for the 1 in 100 year rainfall event then it is considered that the water would not overtop at this point and in effect the site is defended at this location and would not be at risk of flooding.

However, we must also consider the effects of climate change, as the (EA) data provided didn't include nay modelling for climate change events we have produced our own model to be able to simulate the effect of climate change. Using the culvert and watercourse survey provided by the (EA) we modelled the size and level of the watercourse and culvert and then by adding in areas simulated the rainfall event for the 1 in 100 year until we got near to the water levels shown in the above table, these are within 75mm of the (EA) data (see appendix for existing model) then by rerunning the model with 40% climate change added we have been able to simulate what that water level would be (see Appendix for existing model plus 40% cc).

The result of the micro drainage model with the 40% climate change added to the system therefore gives us the new water levels of :

EA1231295BAT2974 = 55.337m
EA1231295BAT2809 = 52.583m

The existing lower ground floor level is 53.00m on the Bradford Road level and the Upper Ground floor level is 56.84m which is accessible from the Station Road level, this shows that the lower ground floor would be at risk of flooding against the downstream node.

As water level changes with the ground level it would be prudent to interpolate between the two water levels, taking a third would give us a revised water level of (55.337 – 52.583)/3 = 0.918m added back to the lower level of 52.583 equates to 53.501 plus the 600mm above flood level that is required by the (EA) means we have a minimum floor level of **54.101m.**

As the existing ground floor level off Bradford Road is at risk then it has been raised by 1.0m to above the lower flood level plus climate change plus 600mm, it is proposed that the void beneath the suspended floor be allowed to flood to provide flood compensation storage and allow to for the premises to be evacuated in the event of a severe flood event, this provides a new floor level of 54.00m which is 100mm below the desired level but is the most we can achieve to provide the required clearance in the dwelling.

It is also necessary to consider the implications of the culvert suffering a blockage and the flow paths that would be undertaken by the beck, and looking at the levels of the surrounding area then it is anticipated that the flow would mimic the (EA) flood map and flow along Broadford Road in both direction from the point it breached, this again would impact on the Lower Ground Floor level of the building but due to the elevated position of the Upper Ground Floor in relation to the surrounding area then it would not reach this level.

There is also a risk of Surface Water flooding to the Upper Ground floor from flows down Soothill Road as the building is positioned facing the bottom of this hill and heavy flows will be directed towards the building first before flowing off in either direction around the building.

Flood Risk Mitigation

The predominant part of the building is in flood zone 1, and the residential units on the upper round floor upwards are located in flood zone 1, to the lower ground floor, or ground floor if entering from Bradford Road there is an area to the front that is flood zones 2 and 3 which have been allocated as being the wine bar.

The proposed FFL for the upper ground floor remains unchanged from the Existing FFL but it is proposed to raise the lower ground floor by 1.0m, we have calculated that the existing FFL to the upper ground Floor is above the highest flood level and in order to mitigate any future risk to the lower ground floor it has been raised to 54.000m, this level is 1.417m higher than the downstream 1 in 100 plus 40% climate change rainfall event, but we also have to take into account the predominant amount of water is retained behind flood defences and the land falls away from the upstream level.

Also the Upper ground floor level is at risk of overland Surface Water flows from Soothill Lane, therefore it will be necessary to incorporate some flood risk mitigation during the renovations, these should include the following and would be prudent to include these on both the upper and lower ground floor levels.

- Raised kerbs to the frontage of the building to direct extreme flood flows away from the building access.
- Electrical wiring: lighting and power rings shall be at first floor level with concealed plastic conduit drops to ground floor outlets. Meter to be located on first floor.
- Internal finishes to walls and service entry points to be sealed at interface with external wall and floor construction with gaskets or waterproof packing with mastic pointing
- Air vents should be relocated above the expected flood level
- None return valve to prevent water backflow into the property
- Kitchens: Avoid fittings made with materials like MDF; plastic or stainless steel are preferable
- Electrical sockets and appliances should be installed high as possible and built in ovens must be at eye level

- Proposed utilities servicing the units will enter the proposed units at an elevated level to avoid impact from potential flood waters
- Proposed utilities servicing the units will enter the proposed units at an elevated level to avoid impact from potential flood waters
- All proposed units where the ground floor finished level is below the agreed minimum finished floor level will incorporate a ground floor construction which will avoid the need for under floor ventilation using air bricks
- Proposed units will incorporate emergency escape windows at an elevated level for use in the event of critical flood conditions.
- Gas Boiler located on first floor.
- Any meters or gas or electricity boxes raised up.
- Keeping telecoms and wiring out of the lower ground floor construction.
- Using low permeability construction materials where possible.

There is a communities and local government document that is directed to new build dwellings but can offer guidance on existing buildings as well, and this states as per the table below that flood levels up to 0.3m should be excluded from the building, between 0.3m and 0.6m the water should be excluded from the building subject to a structural assessment and then above 0.6m then a water entry strategy should be adopted where water is allowed a path to enter and then leave the building.

There are however exceptions as our building is existing that flood waters can exceed the 0.6m subject to a structural review of the building to ensure its stability in such conditions, which could be considered an option.

Figure 4.1 **Rationale for design strategies**

	Design water depth*	Approach	Mitigation measures
Resistance/Resilience**	Design water depth above 0.6m	Allow water through property to avoid risk of structural damage. Attempt to keep water out for low depths of flooding *'Water Entry Strategy'***	• Materials with low permeability up to 0.3m • Accept water passage through building at higher water depths • Design to drain water away after flooding • Access to all spaces to permit drying and cleaning
	Design water depth from 0.3m to 0.6m	Attempt to keep water out, in full or in part, depending on structural assessment. If structural concerns exist follow approach above***	• Materials with low permeability to at least 0.3m • Flood resilient materials and designs • Access to all spaces to permit drying and cleaning
	Design water depth up to 0.3m	Attempt to keep water out *'Water Exclusion Strategy'*	• Materials and constructions with low permeability
Avoidance		Remove building/development from flood hazard	• Land raising, landscaping, raised thresholds

Notes:
* Design water depth should be based on assessment of all flood types that can impact on the building
** Resistance/resilience measures can be used in conjunction with Avoidance measures to minimise overall flood risk
*** In all cases the 'water exclusion strategy' can be followed for flood water depths up to 0.3m

There is a risk of high levels of surface water runoff down Soothill Lane which creates a risk of Surface Water entering the building at the upper ground floor level, although there are kerbs in front of the building it is possible that high flows down the steep hill could overtop these and flow towards the building, therefore to remove this risk the brickwork to the front of the building should be tanked to provide a waterproof barrier and the door should be a Flood door to PAS 1188-1:2014, and as the flood levels to the upper ground floor would flow away in either direction they would not exceed 0.3m so it is also recommended the installation of a flood gate that can be installed if necessary, this allows the door to be opened should it be required and still prevent the ingress of water in a flooding event.

For the lower ground floor as there is a risk of the flood level surpassing 600mm above existing then in accordance with the above table then a water entry strategy would be most suitable, therefore taking into account the residential flats ground floor it is recommended that these be raised by 1.0m so as to move them above the flood level and allow safe egress through the main building.

The new building must be placed on the Environment Agency's emergency flood line which would advise occupants of potential flood events. A flood procedure plan has been produced by the management in consultation with the Flood Risk and Emergency planners at Kirklees Council to ensure that all occupants are aware of the evacuation plan / safe egress and refuge routes should flooding occur and can be found in the Appendix.

Proposed Development.

Our client proposes to redevelop the site for residential and commercial use the proposed development consists of 20 apartments across all floors, with a wine bar on the Lower Ground floor accessible from Bradford Road and separate from the residential units. It has been calculated that the proposed impermeable area for the site is 0.06 ha, this makes 100% of the site that is impermeable.

NPPF states that development should be steered to land with lower risks of flooding where and when possible, otherwise an exception test should be undertaken as to the viability of utilising land not in flood zone 1.

Table 2 of the NPPF states that buildings used for dwelling houses are classed as *More Vulnerable.*

Table 3 of the NPPF states that 'more vulnerable' uses are permitted for FZ2 and should only be permitted in FZ3 if the exception test is passed.

The Exception Test

The existing building has always been in this flood zone and, the proposed conversion to flats will not have any impact as the footprint and externals are remaining the same, there is no evidence of this building ever flooding.

We have received modelled flood data from the EA and the existing upper ground floor level is greater than 600mm above the highest flood level, the lower ground floor level is not higher than this flood level so has been raised by 1.0m and flood mitigation measures installed in the building as part of the renovations.

Drainage Solution.

The surface water drainage from this building is to remain unaffected, the roof and guttering are not been changed in any way and as they are currently connected to the public sewer and draining away without issue then there is no need to change anything.

Also, as per the surface water this building currently has existing connections to the combined public sewer, we will utilise existing connections within the building to connect to, the sewer records it appears to be 150mm dia pipes connecting into a 1000mm pipe in Bradford road.

The existing foul has yet to be surveyed to establish a gradient, but taking a worse case of 150mm @ 1:120 then we should be able to achieve flows of 14.25 l/s down that pipe, we have calculated the Minimum required to provide adequate discharge for the proposed 20 flats would be 4.4 l/s, therefore we believe the existing sewer should be more than adequate to sustain the proposed development.

Recommendations.

The Flood Risk Assessment has determined that the development is affected by the proposals, and that flood risk mitigations need to be implemented so as to remove these flood risks.

From the EA data it has been determined that the building can be considered as ‘defended’ due to the upstream flood defences.

The existing building is to remain as it is in terms of drainage for the surface water and we have calculated that the existing combined system should be adequate for the foul drainage.

Following the consultations from the local authority, Yorkshire water and the Environment Agency and then subject to the flood mitigations required been implemented fully then the building isn’t foreseen to be at risk from flooding.

During the structural design work then, consideration must be given of the water pressures that might be exerted on the building should the area flood and water enter the building at the lower ground floor.

It is also required that during the design work a structural assessment of the culvert be provided to ensure it is structural safe with the proposed redevelopment above.

Appendix 1
Layout Plan & Topographical Survey.

NO CONSTRUCTION WORK SHOULD COMMENCE UNTIL PLANNING PERMISSION, BUILDING REGULATION APPROVAL, YORKSHIRE WATER H4 CONSULTATION (WHERE APPLICABLE) APPROVALS HAVE BEEN OBTAINED IN WRITING.

ALL PLANS ISSUED MARKED PRELIMINARY DO NOT CONSTITUTE INSTRUCTION TO PROCEED WITH WORKS ONSITE AND ARE PROVIDED FOR DESIGN CONSIDERATION. ALL WORKS CARRIED OUT ONSITE SHOULD FOLLOW THE PLANNING APPROVAL DRAWINGS AND CONDITIONS ATTACHED AND THE BUILDING REGULATION APPROVED PLANS, STRUCTURAL ENGINEERS REPORT/CALCULATIONS AND ANY CONDITIONS ATTACHED.

CLIENT TO ENSURE ALL INFORMATION/ STATUTORY PERMISSIONS /APPROVAL DOCUMENT ARE PROVIDED TO THE CONTRACTOR EXECUTING THE SITE WORKS. ALL WORKS TO BE INSPECTED AND TO THE APPROVAL OF THE BUILDING INSPECTOR. ENSURE YORKSHIRE WATER INSPECTOR APPROVAL/SITE VISIT FOR ALL WORKS CARRIED OUT TO OR NEAR PUBLIC DRAINS OR DRAINS IN RESPECT TO YWA DESIGNATED INTEREST.

CLIENT TO ENSURE ALL PROPOSED WORKS ARE BUILT ON AND OVER OWN LAND, ENSURE FOUNDATION SPREAD AND EAVES OVERHANG DO NOT PROJECT OVER ADJACENT LAND OWNERSHIP. IF IN DOUBT CONSULT NEIGHBOUR AND OBTAIN LEGAL ADVICE.

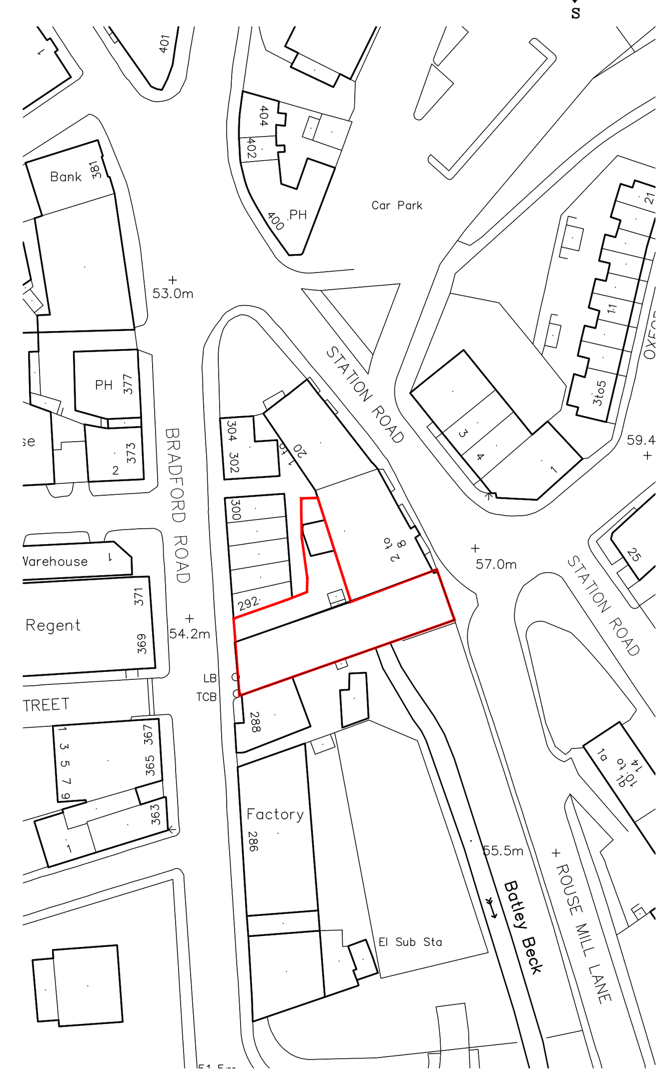
ALL DETAILS SHOWN ON THE DRAWINGS ARE INDICATIVE DUE TO NATURE OF WORKING WITH EXISTING BUILDINGS, SUBJECT TO SITE OPENING UP AND SETTING OUT. CONFIRM ALL SIZES AND DIMENSION TO DKA, ALL DIFFERENCE, UNUSUAL OR DIFFERING DETAILS TO BE REPORTED TO DKA FOR FURTHER GUIDANCE.

CDM REGULATIONS – THE CLIENT & CONTRACTOR MUST ABIDE BY THE CONSTRUCTION DESIGN AND MANAGEMENT REGULATIONS 2015 WHICH RELATE TO ANY BUILDING WORKS WHICH: (A) LASTS LONGER THAN 30 WORKING DAYS AND HAS MORE THAN 20 WORKERS WORKING SIMULTANEOUSLY AT ANY POINT IN THE PROJECT. OR:(B) EXCEEDS 500 PERSON DAYS. PLEASE REFER TO HTTP://WWW.HSE.GOV.UK/PUBNS/INDG411.HTM FOR GUIDANCE AND COMPLIANCE. FOR THE CDM REGULATION THE CLIENT WILL BE EMPLOYING ONE CONTRACTOR AND DKA RESPONSIBILITY FOR THE PROJECT WILL BE FOR THE DESIGN ONLY AND DOES NOT INCLUDE ANY PROJECT MANAGEMENT.

THE CLIENT & THE CONTRACTOR IS REMINDED OF THE PARTY WALL ACT 1996 AND TO APPOINT / OBTAIN SEPARATE LEGAL ADVICE FROM A PARTY WALL SURVEYOR TO ENSURE COMPLIANCE WITH THE LAW, NOTICES MAY REQUIRE SERVING ON THE ADJACENT OWNER/S PRIOR TO COMMENCEMENT. ENSURE NEIGHBOURS CONSENT IS OBTAINED WHERE WORKS ARE CARRIED OUT TO PARTY WALLS, PARTY FENCE WALLS, EXCAVATIONS ETC. APPOINTED PARTY WALL SURVEYOR TO FULLY ADVISE.



EXISTING SITE PLAN / ROOF PLAN



LOCATION PLAN 1:1250

DO NOT USE THIS DRAWING FOR CONSTRUCTION OR TENDER, DETAILED BUILDING REGULATION DRAWINGS AND STRUCTURAL DESIGN CALCULATIONS TO FOLLOW, USING APPROVED BUILDING INSPECTORS.

PRELIMINARY

RIBA Royal Institute of British Architects
Chartered Architects

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DK Architects, Suite 4, Batley Business Park, Technology Drive, Batley, WF17 6ER

PROJECT:
CONVERSION OF MILL TO APARTMENTS

ADDRESS:
FORMER JESSOPS MILL, STATION ROAD, BATLEY, WF17 5SU

DRG:
EXISTING SITE PLAN / ROOF PLAN

STATUS:
PLANNING APPLICATION
SUBJECT TO APPROVAL

DATE: 18.06.18 DRAWN: AHD
SCALE: 1:100 CHECKED: ANK
SIZE: A1 DRG NO: 18.2030.01B

INDICATIVE PLAN FOR DESIGN CONSIDERATION PURPOSES ONLY, SUBJECT TO APPROVALS, DETAILED DESIGN AND STRUCTURAL CALCULATIONS, DO NOT USE FOR CONSTRUCTION

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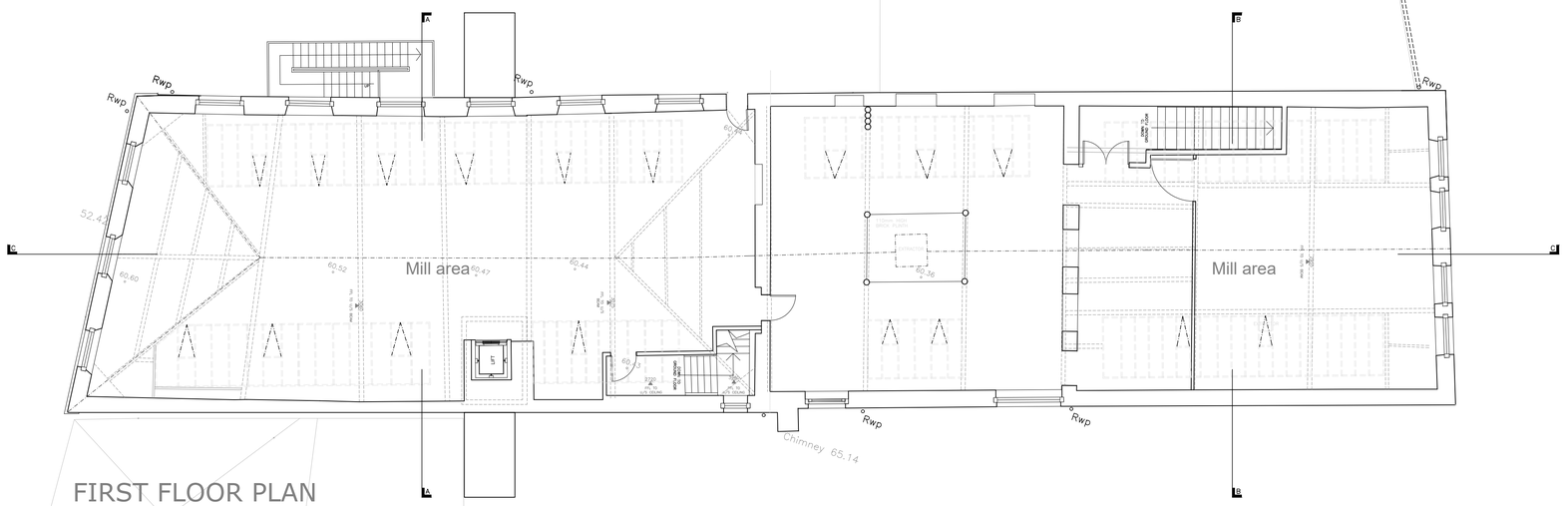
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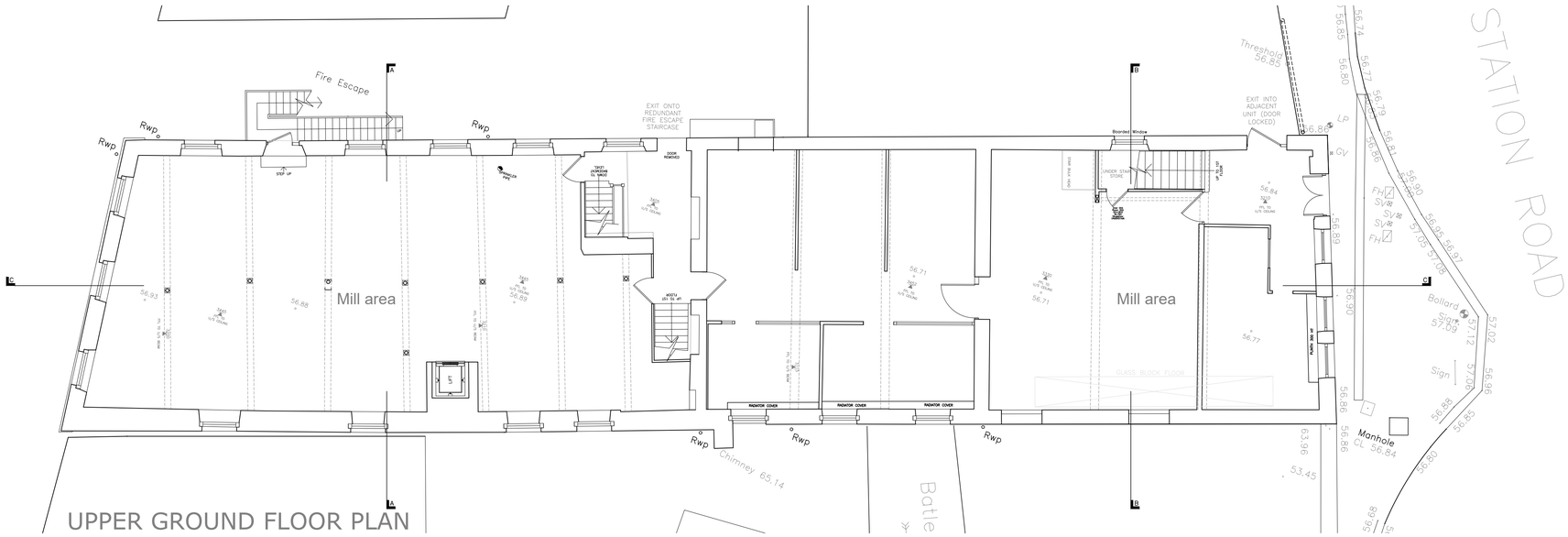
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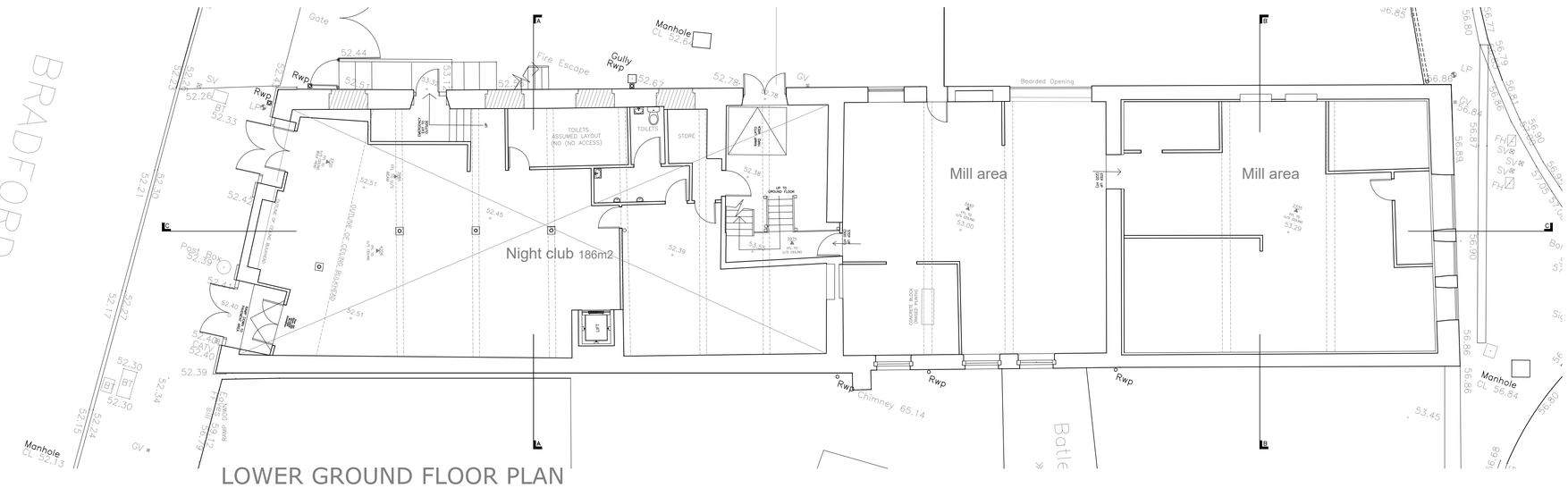
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FIRST FLOOR PLAN



UPPER GROUND FLOOR PLAN



LOWER GROUND FLOOR PLAN

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EAST FACING ELEVATION
STATION ROAD



WEST FACING ELEVATION
BRADFORD ROAD



SOUTH FACING ELEVATION



NORTH FACING ELEVATION

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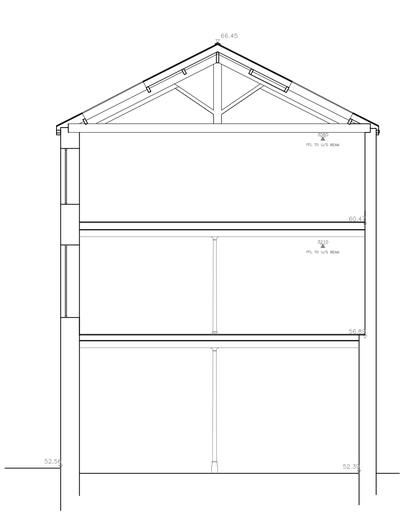
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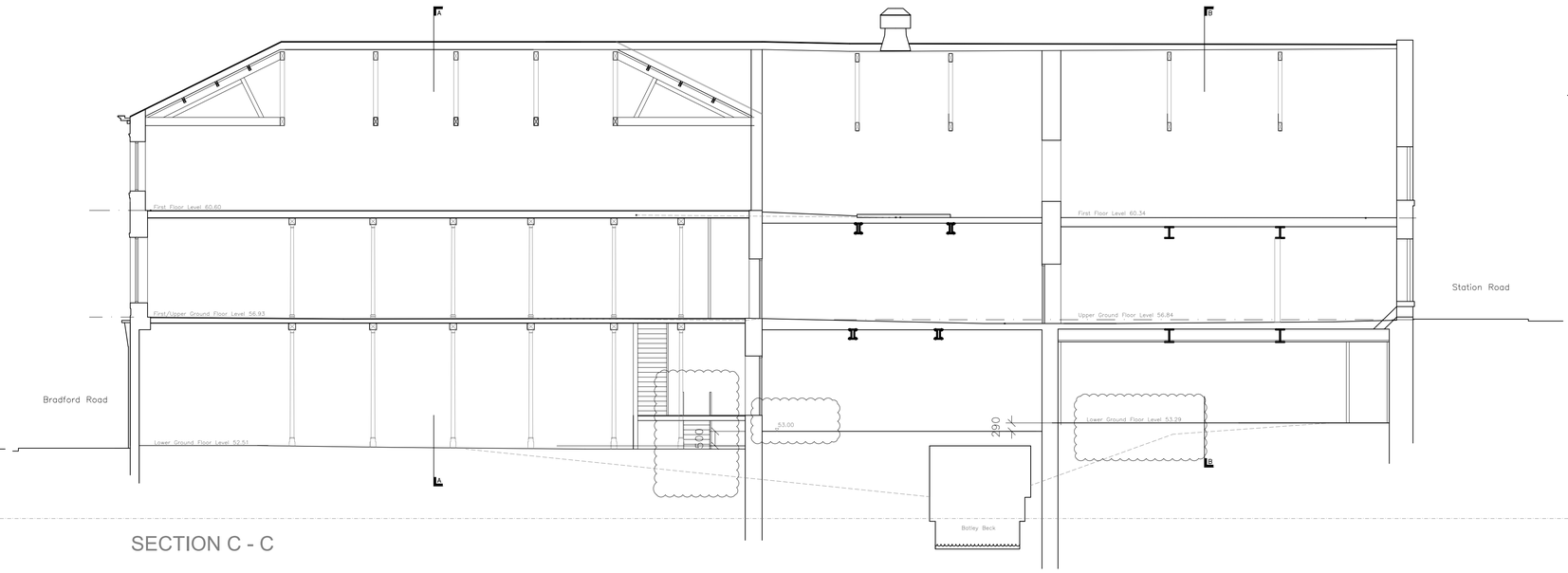
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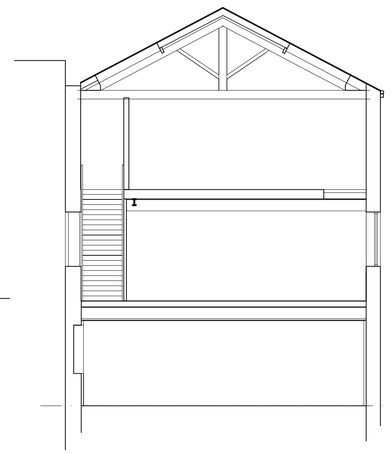
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SECTION A - A



SECTION C - C



SECTION B - B

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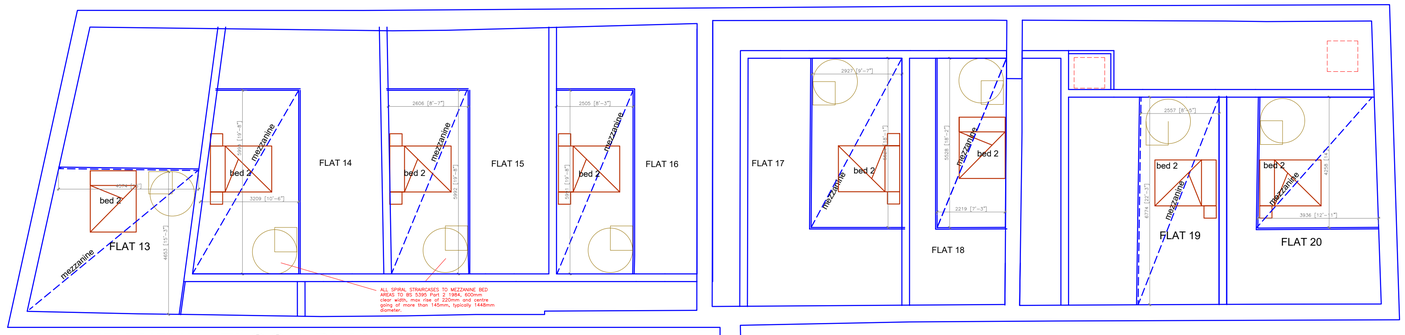
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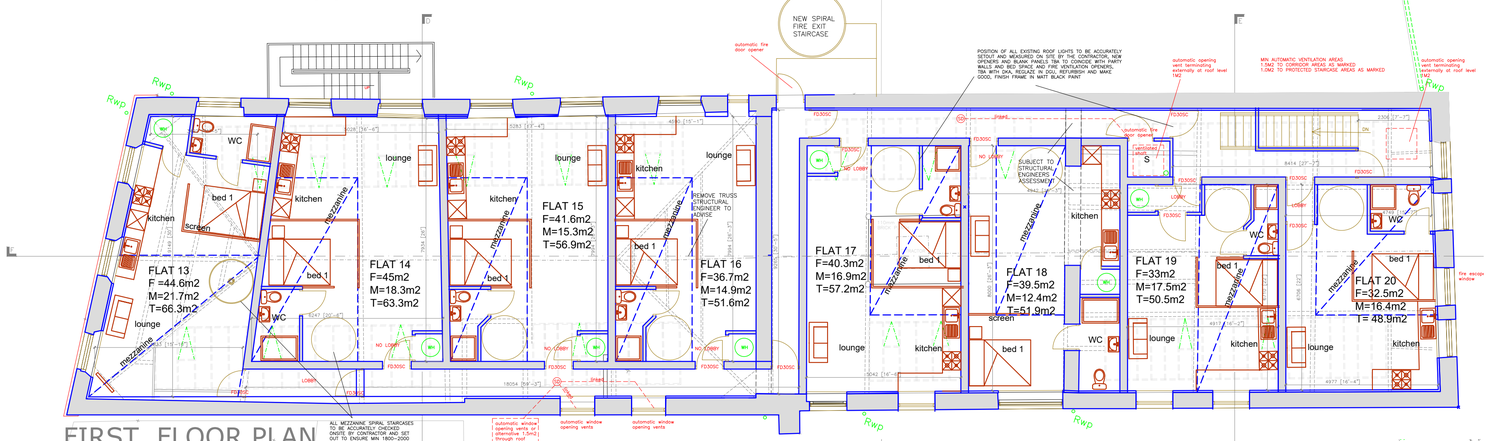
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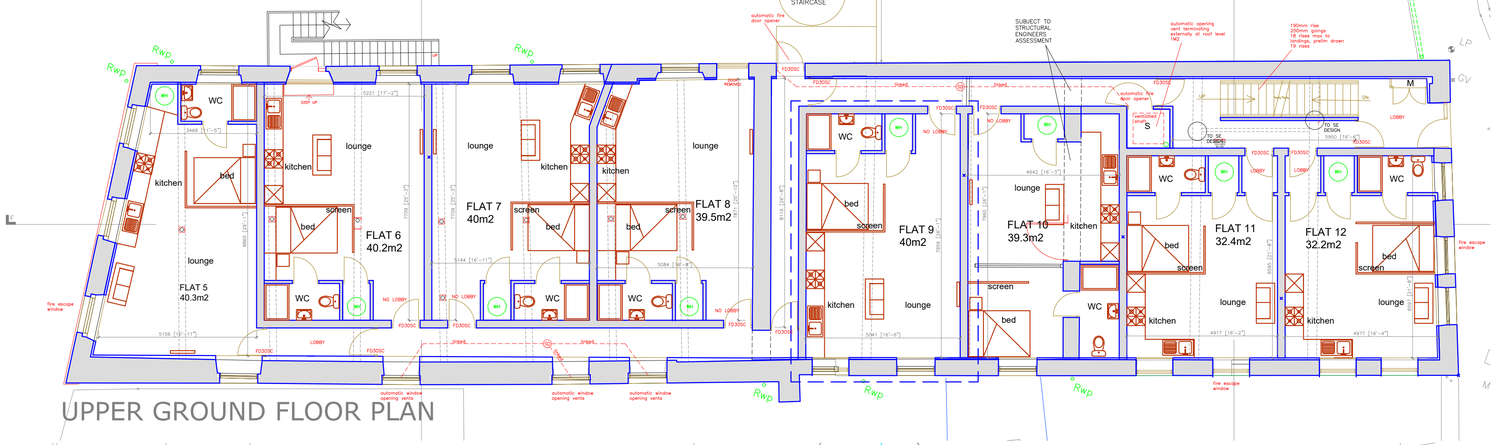
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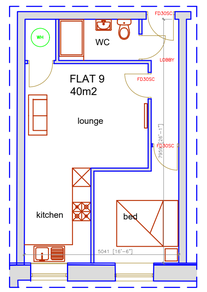
MEZZANINE FLOOR PLAN



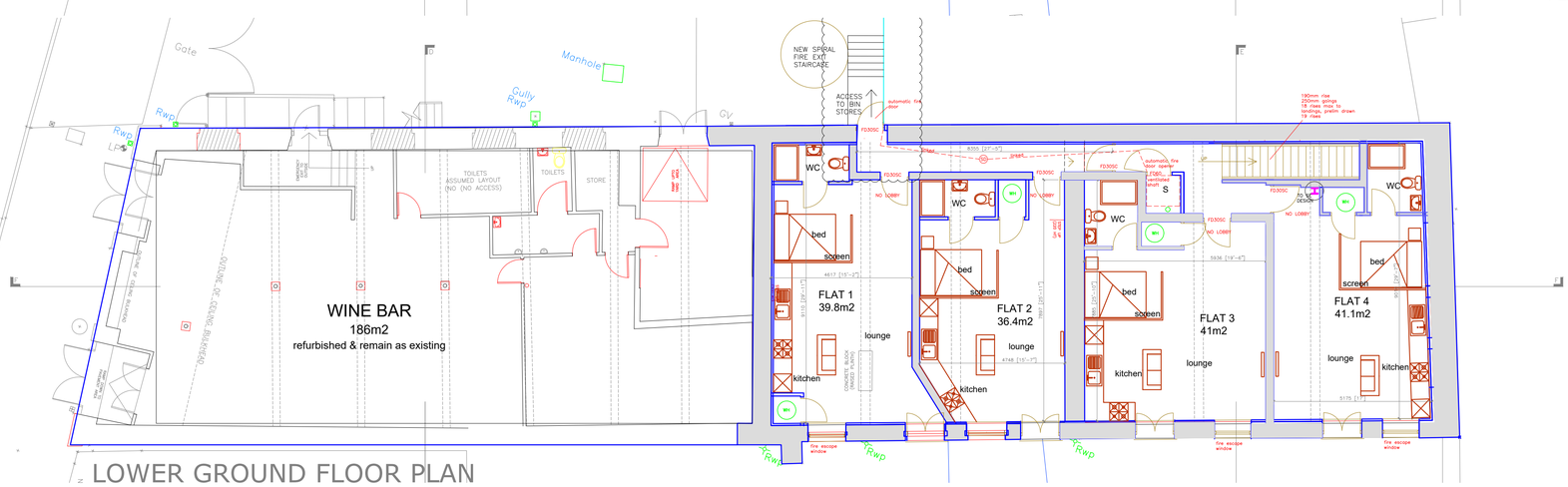
FIRST FLOOR PLAN



UPPER GROUND FLOOR PLAN



TYPICAL ALTERNATIVE FLAT LAYOUT



LOWER GROUND FLOOR PLAN

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TYPICAL EXISTING INTERNAL FLOOR AREAS

LOWER GROUND FLOOR WINE BAR	186M2
LOWER GROUND FLOOR REAR AREA	191M2
UPPER GROUND FLOOR AREA	387M2
FIRST FLOOR AREA	387M2
TOTAL INCLUDING WINE BAR	1157M2
TOTAL FLAT DEVELOPMENT AREA	965M2

PROPOSED FLAT FLOOR AREAS

FLAT 1	39.8m2
FLAT 2	36.4m2
FLAT 3	41m2
FLAT 4	41.1m2
FLAT 5	40.3m2
FLAT 6	40.2m2
FLAT 7	40m2
FLAT 8	39.5m2
FLAT 9	40m2
FLAT 10	39.3m2
FLAT 11	32.4m2
FLAT 12	32.2m2
FLAT 13	F =44.6m2 M=21.7m2 T=66.3m2
FLAT 14	F=45m2 M=18.3m2 T=63.3m2
FLAT 15	F=41.6m2 M=15.3m2 T=56.9m2
FLAT 16	F=36.7m2 M=14.9m2 T=51.6m2
FLAT 17	F=40.3m2 M=16.9m2 T=57.2m2
FLAT 18	F=39.5m2 M=12.4m2 T=51.9m2
FLAT 19	F=33m2 M=17.5m2 T=50.5m2
FLAT 20	F=32.5m2 M=16.4m2 T= 48.9m2

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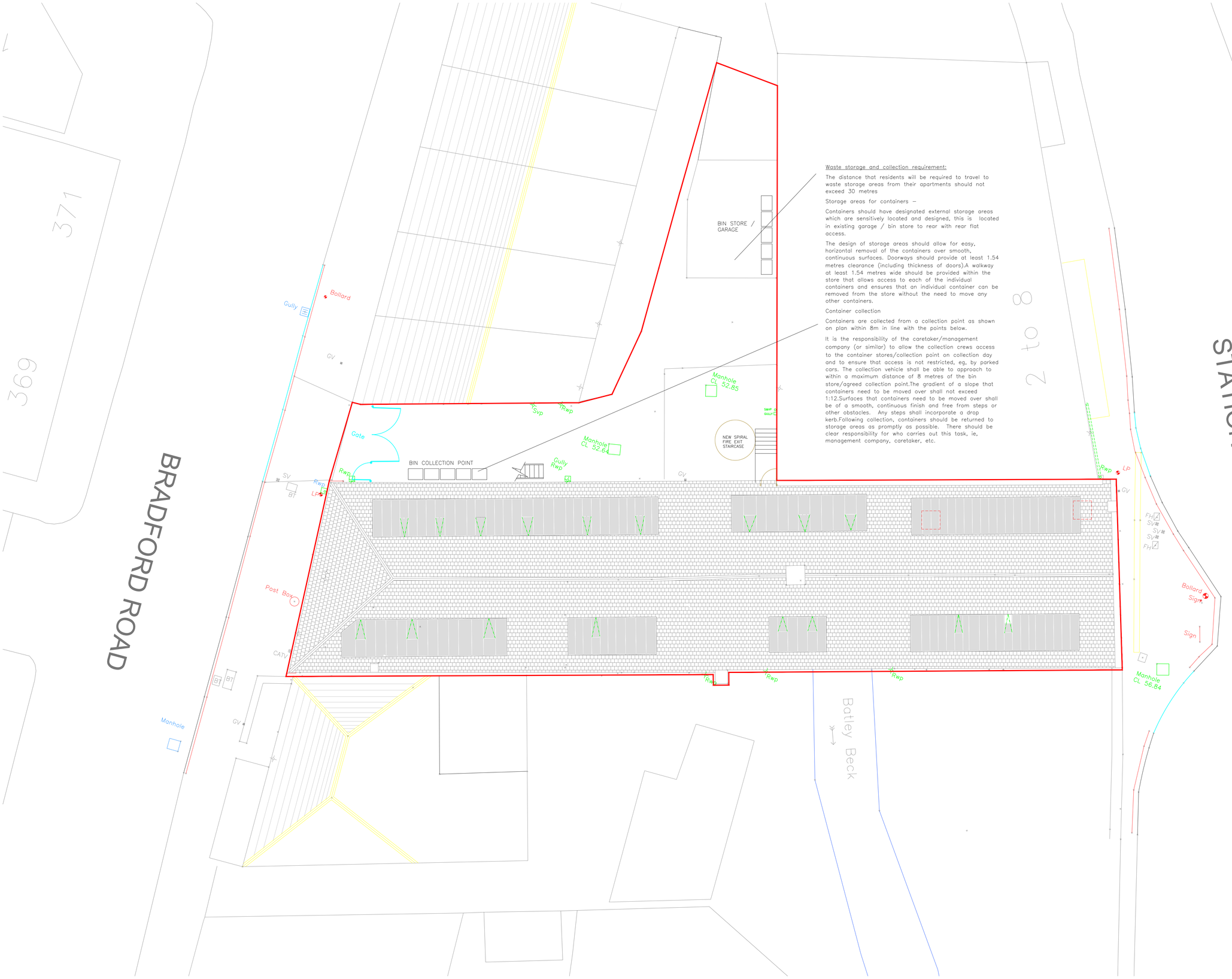
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PROJECT:
CONVERSION OF MILL TO APARTMENTS

ADDRESS:
FORMER JESSOPS MILL, STATION ROAD, BATLEY, WF17 5SU

DRG:
PROPOSED SITE PLAN

STATUS:
PLANNING APPLICATION
SUBJECT TO APPROVAL

DATE: 18.06.18
SCALE: 1:100
SIZE: A1
DRAWN: AHD
CHECKED: ANK
DRG NO: 18.2030.14C

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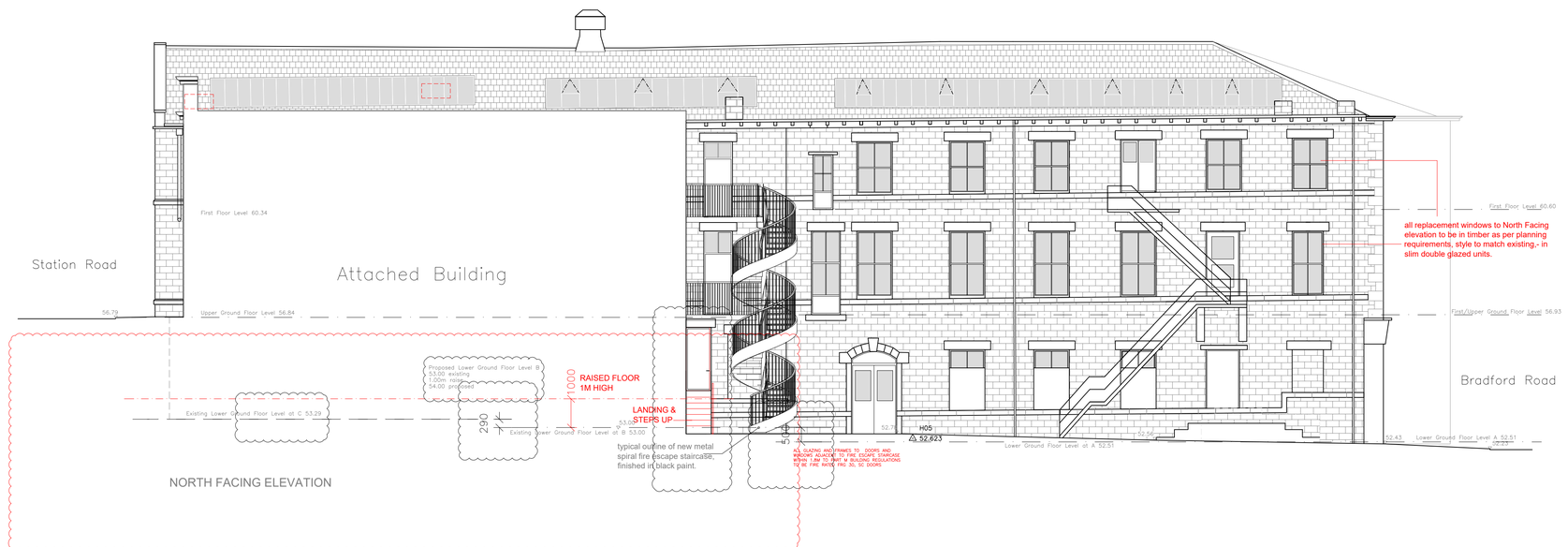
EAST FACING ELEVATION
STATION ROAD



WEST FACING ELEVATION
BRADFORD ROAD



SOUTH FACING ELEVATION



NORTH FACING ELEVATION

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PROJECT:
CONVERSION OF MILL TO APARTMENTS

ADDRESS:
FORMER JESSOPS MILL, STATION ROAD, BATLEY, WF17 5SU

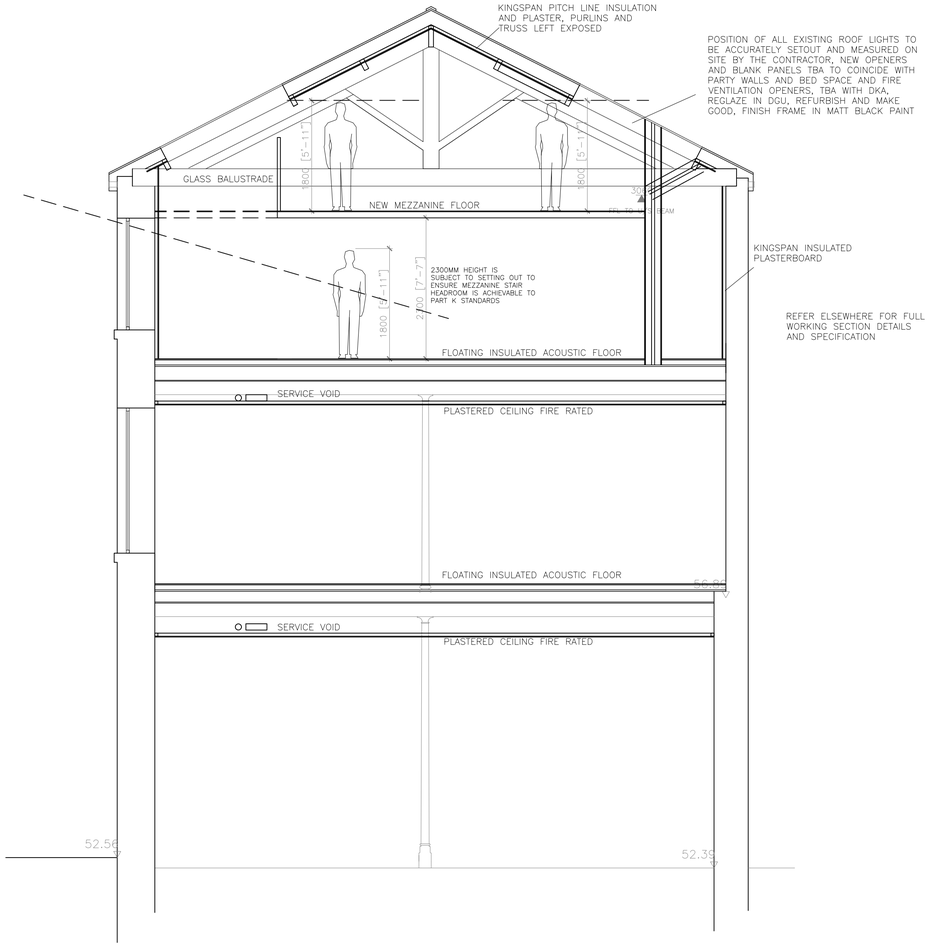
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PROPOSED ELEVATIONS

STATUS:
PLANNING APPLICATION
SUBJECT TO APPROVAL

DATE: 30.04.21
SCALE: 1:100
SIZE: A1
DRAWN: AHD
CHECKED: ANK
DRG NO: 18.2030.11G

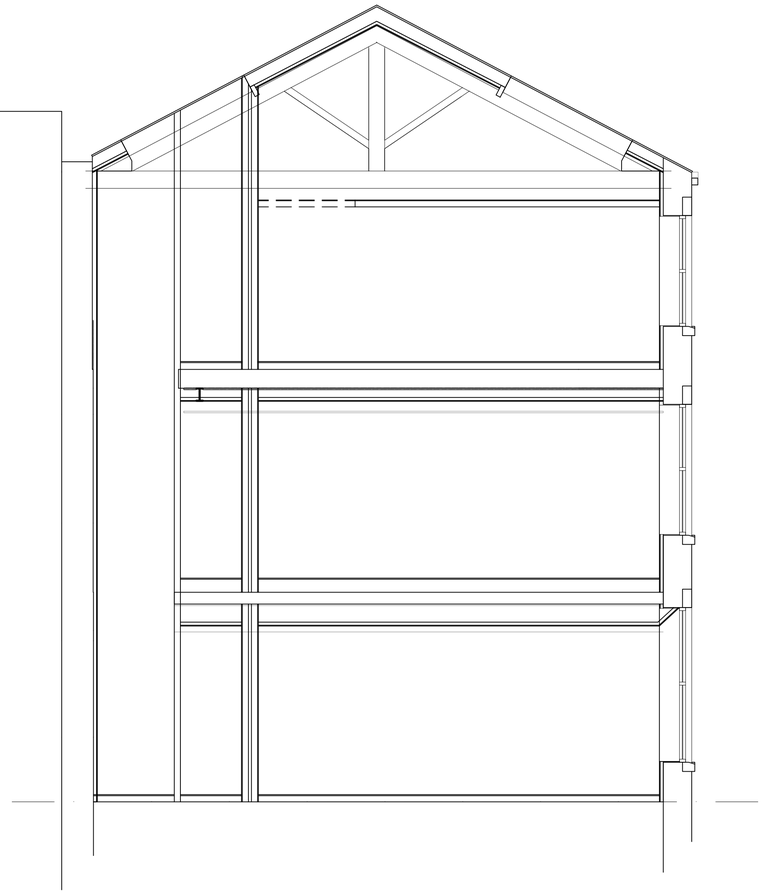
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DATUM 52.00

SECTION D - D



SECTION E - E

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PROJECT:
CONVERSION OF MILL TO APARTMENTS

ADDRESS:
FORMER JESSOPS MILL, STATION ROAD, BATLEY, WF17 5SU

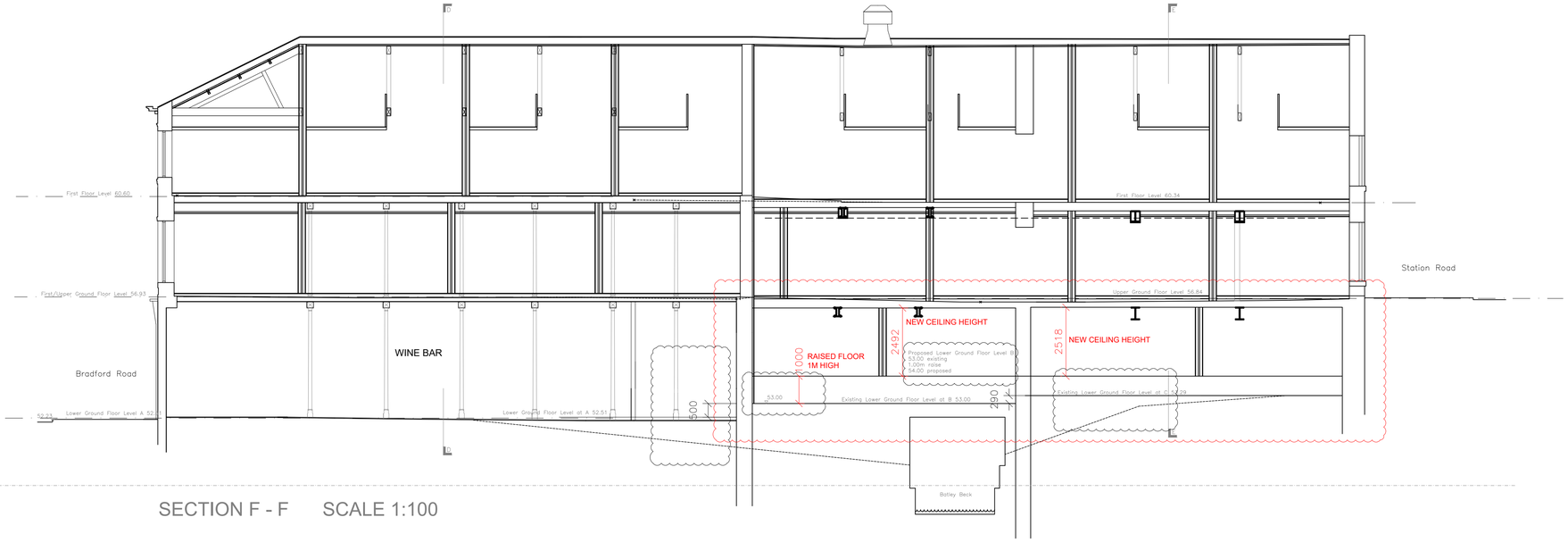
DRG:
PROPOSED SECTIONS

STATUS:
PLANNING APPLICATION
SUBJECT TO APPROVAL

DATE: 18.06.18 DRAWN: AHD
SCALE: 1:100 CHECKED: ANK
SIZE: A1 DRG NO: 18.2030.12B

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SECTION F - F SCALE 1:100

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PROJECT:
CONVERSION OF MILL TO APARTMENTS

ADDRESS:
FORMER JESSOPS MILL, STATION ROAD, BATLEY, WF17 5SU

DRG:
PROPOSED SECTION

STATUS:
PLANNING APPLICATION
SUBJECT TO APPROVAL

DATE: 30.04.21
SCALE: 1:100
SIZE: A1
DRAWN: AHD
CHECKED: ANK
DRG NO: 18.2030.13D

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Appendix 2
Environment Agency Correspondence.

The Flood Map for Planning

The Environment Agency provides the Flood Map (see enclosed extract).

What is the Flood Map for Planning?

The Flood Map for Planning provides information on flooding from rivers and the sea for England and Wales. The Flood Map also has information on flood defences and the areas benefiting from those flood defences.

The Flood Map for Planning shows the following:

1. Flood Zone 3 (dark blue area on the enclosed map): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences
    - For flooding from rivers the map indicates the extent of a flood with a 1% (1 in 100) chance of happening each year;
    - For flooding from the sea the map shows the extent of a flood with a 0.5% (1 in 200) chance of happening each year.

2. Flood Zone 2 (light blue area): natural flood plain area that could be affected by flooding from rivers and/or the sea – not taking into account the presence of any flood defences. Flood Zone 2:
    - indicates the extent of a flood with a 0.1% (1 in 1000) chance of happening each year.
    - and/or indicates the greatest recorded historic flood, whichever is greater.

3. Flood defences built in the last five years to protect against river floods with a 1% (1 in 100) chance of happening each year, together with some natural or constructed entities which retain, store or channel water and which may protect against smaller floods.

4. Areas benefiting from flood defences - areas that benefit from the flood defences shown, in the event of a river flood with a 1% (1 in 100) chance of happening each year, or a flood from the sea with a 0.5% (1 in 200) chance of happening each year. If the defences were not there, these areas would flood.

Asset Condition Ratings
The performance of a flood defence asset is recorded as the condition of the asset. Our asset inspectors subjectively assess the conditions of assets (during visual inspection site visits) with reference to a national standard template. Each asset is given a rating between one and five with one being very good condition and five being very poor. A condition rating of 3, or 'fair' is the minimal acceptable standard for a critical asset, such as a defence wall that protects properties. We are striving to improve all assets below 'fair' to an acceptable standard.

Asset inspections are done on average every six months, although some critical assets are assessed on a more regular basis. It is possible that adjacent assets are inspected on different dates, which may result in two assets of a similar state of repair having different condition ratings.

Condition ratings of assets may also be affected by the time of year the surveys are conducted, as vegetation may obscure the asset in the summer months, or accessibility may be an issue during winter months. These factors would not usually affect the recorded condition rating of an asset unless the asset is on a borderline between two ratings.

Asset Standard of Protection
Please note that the provided Design Standard of Protection is an estimate and should not be relied on. Please note that where available the defended flood extents provide more reliable information relating to the protection offered by the defence (i.e. at which return period the water levels are likely to overtop the defence). If available and required the defended flood extents can be provided on request.

Modelling

Batley Beck model study 2015
A new study to improve our existing Flood Mapping in the area has been completed in 2015.

Modelled flood levels are available. Please find attached:

- Results for peak water levels and flows for the 0.1% (1 in 1000yr), 0.5% (1 in 200yr), 1% (1 in 100yr), 1.3% (1 in 75yr), 2% (1 in 50yr), 4% (1 in 25yr), 10% (1 in 10yr), 20% (1 in 5yr) and 50% (1 in 2yr) annual chance events, for both the defended and undefended scenarios
- Results for the 1% (1 in 100yr) peak water levels for the Climate Change Scenario (+20% Flow), for both the defended and undefended scenarios
- an associated map showing the location of the model node points.

Flood History

Flood History – None available

To the best of our knowledge there is no known flood history for this site. The extent of flooding, and/or flood level information is only shown for those watercourses surveyed after the flood. Other flooding may have occurred which is not shown. This is the best information currently available. For local drainage information please contact your water utility company and your local council.

Water causing flooding can come from different places, for example from rivers or the sea; surface water (i.e. rainwater flowing over or accumulating on the ground before it is able to enter rivers or the drainage system); overflowing or backing up of sewers or drainage systems which have been overwhelmed or from groundwater rising up from underground aquifers.

Currently the Environment Agency can only supply flood risk data relating to the risk of flooding from rivers or the sea. However you should be aware that in recent years, there has been an increase in flood damage caused by surface water flooding or drainage systems that have been overwhelmed. Local Authorities and/or Water Companies may be able to provide some knowledge on the risk of flooding from sources other than rivers and the sea and we are working with these organisations to improve knowledge and understanding of surface water flooding.

Assets

Asset Location Map
Please find attached asset map(s) showing location of all (Agency and non Agency maintained) flood defences and channels.

Description of Works
See attached table with description of the defences and structures shown on the above drawing, including condition ratings, upstream and downstream crest levels, where available.

Risk of Flooding – Environment Agency Defences
The risk of flooding in this area is now reduced by the presence of flood defences that we maintain, but there still is a residual risk of flooding if these were to breach or be overtopped by a flood greater than that for which they were designed.

Risk of Flooding – Privately Maintained Defences
You will see that the Environment Agency does not maintain any of those defences. However we undertake regular risk based visual inspections. We do not hold design levels and have no height information on these defences or structures.

Please note that the depth, velocity and hazard grids are not currently available as they are being investigated. If you would like to request this information please contact us in two weeks time for an update.

Climate Change

Please note that new guidance on climate change allowances for Flood Risk Assessments has been published in February 2016. The new guidelines are available from:
https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances

Bespoke Flood Risk Assessment (FRA) advice:

If the pre-application advice is required with regards the preparation of a site-specific Flood Risk Assessment, this can be requested via the Yorkshire Sustainable Places team (email: sp-yorkshire@environment-agency.gov.uk). Charges may apply for any advice that is provided, this currently stands at £100 per hour per person. The .gov.uk pages provide a good starting point on what to include within a site-specific Flood Risk Assessment and can be accessed via https://www.gov.uk/guidance/flood-risk-assessment-for-planning-applications. A site-specific Flood Risk Assessment will need to consider flood risks from all sources, including those associated with defence failure (e.g. breach) and accounting for the predicted impacts as a result of climate change. Please contact the Sustainable Places team if you require advice on how to include these within a Flood Risk Assessment.

Other

Surface Water Map

In partnership with Local Authorities, we publish Risk of flooding from surface water maps. These were updated in December 2013. A copy of the map for your site can be viewed online at :
https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2

Surface Water Drainage

The Lead Local Flood Authority is the statutory consultee for planning matters relating to surface water drainage, therefore it is recommended they should be consulted separately regarding this.

Surface water discharge from new development should ideally ‘mimic’ the pre-development situation using a sustainable drainage system so that the flow and volume of water in watercourses is not increased.

A permit may be required, under the Environmental Permitting Regulations 2010 from the Environment Agency for any proposed works or structures in, under, over or within eight metres of a 'main river' (e.g. a new outfall). A permit is separate to and in addition to any planning permission granted. Further details and guidance are available on the GOV.UK website: https://www.gov.uk/guidance/flood-risk-activities-environmental-permits

Risk of Flooding from Reservoirs Map

Outlines and simplified depth and velocity maps can be viewed on our website:

https://flood-warning-information.service.gov.uk/long-term-flood-risk/#x=438988&y=406600&scale=2

Please, zoom into the location of interest, and then click on the inundated location for details. As a result a list of reservoirs will be provided with supporting information and a links to other data, such as estimated depths and speed of flooding, at the bottom of the result page.

A map showing the outlines can also be provided on request.

Flood Warning

The site is not covered by a Flood Warning.

LIDAR Data

Please note that our LiDAR data is now available free of charge (Open Data) from http://environment.data.gov.uk/ds/survey/index.jsp#/survey (once zoomed to the relevant location the available LiDAR products will be listed below the map).

Two LIDAR products are available:

1. Tiled LIDAR data - The full tiled dataset consists of historic LIDAR data which has been gathered since 1998. For some areas we have carried out repeat surveys and data is available in a range of resolutions.
2. Composite LIDAR data - The composite dataset is derived from a combination of our full tiled dataset which has been merged and re-sampled to give the best possible spatial coverage.

Light Detection and Ranging (LIDAR) is an airborne mapping technique, which uses a laser to measure the distance between the aircraft and the ground. This technique results in the production of an accurate, cost-effective terrain model suitable for assessing flood risk and other environmental applications.

The Environment Agency owns two LIDAR systems, which are installed in a survey aircraft along with its other operational remote sensing instruments.

The aircraft is positioned and navigated using Global Positioning System (GPS) corrected to known ground reference points. The aircraft typically flies at a height of about 800 metres above ground level and a scanning mirror allows a swath width of about 600 metres to be surveyed during a flight.

The Rights & Responsibilities of a Riverside Owner

The owner of property adjacent to a watercourse is usually deemed to be the riparian owner and, as such, has both riparian rights and responsibilities with regard to the watercourse within their ownership.

For more information on Rights and Responsibilities of a riverside owner, you can visit our website at:

https://www.gov.uk/guidance/owning-a-watercourse

Ordnance Survey Data
Under the terms of our licence agreement with the Ordnance Survey, we are unable to supply the OS data. Under this agreement we can only supply OS data to consultants/contractors carrying out work on our behalf.

Flood Portal

It's a new 'one-stop shop' web portal providing guidance and information on flood risk management in the UK. Arup have written and designed the site, in conjunction with CIRIA, the Local Government Association, the EA and Defra, primarily as a resource for local authority officers, flood risk management professionals, and others with an interest in flood risk. It's a part of the Capacity Building Strategy.http://www.local.gov.uk/floodportal

Mr Christopher Carroll
Kirklees Metropolitan Borough Council
Development Management
PO Box B93
Huddersfield
West Yorkshire
HD1 2JR

Our ref: RA/2019/139720/01-L01
Your ref: 2018/92593

Date: 18 February 2019

Dear Christopher

PROPOSAL: **ALTERATIONS TO CONVERT FORMER MILL INTO 20 APARTMENTS AND CHANGE OF USE OF NIGHTCLUB (SUI GENERIS) INTO A WINE BAR (A4) (WITHIN A CONSERVATION AREA)**

LOCATION: **JESSOPS MILL, STATION ROAD, BATLEY, WF17 5SU**

Thank you for consulting the Environment Agency regarding the proposed change of use of the night club into a wine bar at Jessops Mill on Station Road in Batley

Environment Agency position

In the absence of an acceptable Flood Risk Assessment (FRA) we object to this application and recommend that planning permission is refused.

Reason(s)

The Flood Risk Assessment (FRA) by Advant Engineers dated July 2014 does not comply with the requirements for site-specific flood risk assessments, as set out in paragraphs 30 to 32 of the Flood Risk and Coastal Change section of the planning practice guidance. The FRA does not therefore adequately assess the development's flood risks. In particular, the FRA fails to:

1. Assess the flood risk to the site from all sources and considering climate change.

2. Provide appropriate site specific flood risk mitigation, given the risks identified.

3. Provide confirmation that the development will not affect the culvert beneath the building

4. Consider the requirement for flood emergency planning including flood warning and evacuation of people for a range of flood events up to and including the extreme event how people will be kept safe from flood hazards

Overcoming our objection

Flood Risk

There are currently four areas of uncertainty regarding this application.

1) The application submitted does not include a red line boundary plan therefore the advice we are providing is not definitive on the flood risk. A clear red line boundary plan must be provided so we can identify the extent of the site and the flood risk as this changes across the site.

2) Although the application has been submitted to us as a full application rather than a change of use it is not clear whether the existing buildings remain.

3) While of the site is within flood zone 1 there are also areas in the south west corner of the site in flood zones 2 & 3. It is not clear whether the site levels are being re profiled to raise finished floor levels, if any changes are made to existing and proposed flood routes through the site you must ensure this does not increase the flood risk within the site, alter existing flow routes or transfer flood risk to others or be allowed to spill into nearby watercourses.

4) We note the FRA is dated 2014 and we would expect to see a more recent FRA submitted, using the most up to date information. The FRA needs to assess the effects of the 2015/16 Floods.

We recommend you request the most up to date flood risk information we hold for this are by contacting our Customers and Engagement teams who can provide any relevant flooding information that we have available. Please email neyorkshire@environment-agency.gov.uk.

Your local planning authority should have undertaken a Strategic Flood Risk Assessment (SFRA) which will also include local flood risk information to inform your FRA. Please contact your local planning authority to determine what information is available. Further advice on what to include in an FRA can be found at https://www.gov.uk/guidance/flood-risk-and-coastal-change#site-specific-flood-risk-assessment-all

Finished Floor Levels

We advise that finished floor levels for development should be set no lower than 600mm above the 1% (1 in 100 year) modelled flood level plus climate change. Due to the date our modelling work was completed in this area you will need to add the new climate change allowance found at the following link to the 1 in 100 year levels we provide climate change allowances.

We advise that overland flow paths are considered in the assessment of the finished floor levels required along with blockage of the culvert.

It is not clear form the elevations provided what the layout plan for the site is, if this can be provided showing the existing and proposed buildings.

The FRA needs to compare the existing and proposed site ground levels, road levels, existing and proposed finished floor levels of the ground and first floors to the 100 year modelled level plus climate change plus 600mm to determine the level of flood risk

Cont/d..

mitigation required.

You may also need to tank the basement to make it watertight see details below under the basement section

The FRA does not propose flood resilience measures we would expect to see resilience measures used such as raising electrical sockets and other flood sensitive equipment above flood levels.

Basement/ Lower Ground Floor Uses

The plans show more vulnerable self-contained residential flats and drinking establishment uses in the lower ground floor.

It is not clear whether the lower ground floor falls within the classification of a basement from Building Regs Approved Document B – "A storey with a floor which at some point is more than 1200mm below the highest level of ground adjacent to the outside walls". Can you please confirm this.

We do not expect to see more vulnerable self-contained flats or drinking establishments within basements or lower ground floor areas. Habitable uses of basements within flood affected areas should not be permitted due to the potential dangers to life during a flood event. The basement must have unimpeded access and be of waterproof construction to avoid seepage during flooding conditions. Habitable uses of basements within flood affected areas should not be permitted due to the potential dangers to life during a flood event".

We would advise however that any room below adjacent ground level would fill up with water first in the event of flooding so should be treated with caution and that an emergency plan is produced for the event of a flood. The Flood Risk Team at Kirklees Council should decide whether this is appropriate.

We would suggest a Sequential approach to basement uses within the site are considered according to those areas within FZ1, 2 and 3 with the greater risk uses being in the lower flood risk areas.

Proximity to Culvert

We normally object to building over a culvert and the FRA provides no indication of the capacity and condition of the culvert over the lifetime of the development. We require further information on this. We need confirmation that there will be no impact on the culvert as a result of development of the site such as no damage to the foundations of the culvert and the development of the site will not cause the culvert to have structural stability issues.

The FRA needs to indicate the distance of any parts of the development from flood defences such as the culvert e.g. building works or structures or altering ground levels as you will need a permit for this (see details below).

Access needs to be maintained to existing EA , LPA and other 3rd party flood defence assets, such as for example for maintenance purposes and operational response

The culvert could have a potential risk of blockage which may result in overland flow across the site. We advise flood resilience measures are built within the design building

proposed to account for this and surface water risk.

Advice to applicant - Environmental permit

The Environmental Permitting (England and Wales) Regulations 2016 require a permit to be obtained for any activities which will take place:-

- Within 8 metres of a main river channel
- Involving quarrying or excavation within 16 metres of any main river, flood defence (including a remote defence) or culvert

For further guidance please visit https://www.gov.uk/guidance/flood-risk-activities-environmental-permits or contact our National Customer Contact Centre on 03702 422 549. The applicant should not assume that a permit will automatically be forthcoming once planning permission has been granted, and we advise them to consult with us at the earliest opportunity.

Chargeable Planning Advice

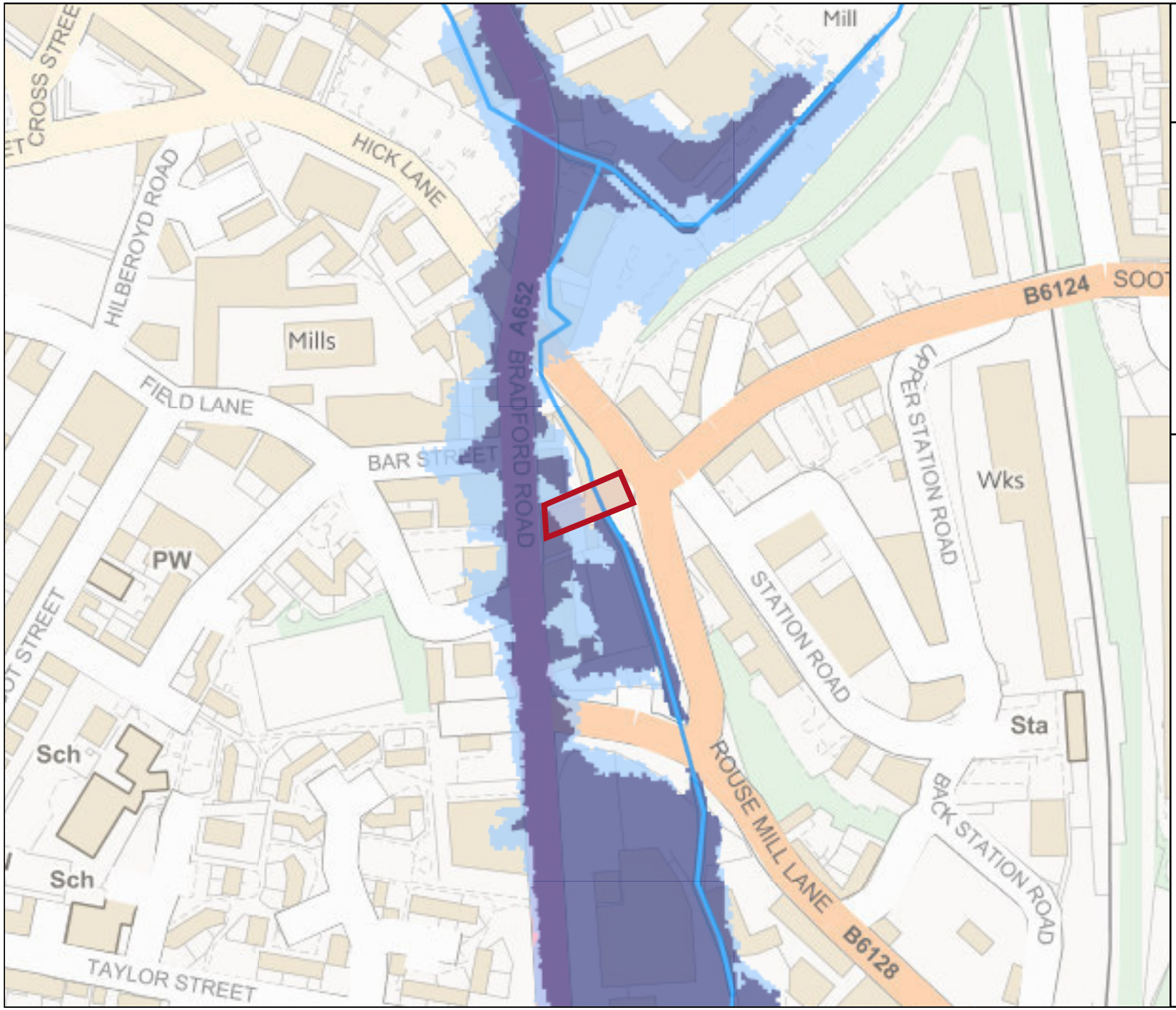
Further advice can be provided, if required, as part of our Planning Advice Service. As we are not funded to undertake this work there is a charge to allow us to recover our costs in providing further advice please contact our Sustainable Places Team if you require further information on this

Advice to LPA - Flood warning and emergency response

We do not normally comment on or approve the adequacy of flood emergency response procedures accompanying development proposals, as we do not carry out these roles during a flood. Our involvement with this development during an emergency will be limited to delivering flood warnings to occupants/users covered by our flood warning network. The planning practice guidance to the National Planning Policy Framework states that, in determining whether a development is safe, the ability of residents and users to safely access and exit a building during a design flood and to evacuate before an extreme flood needs to be considered. One of the key considerations to ensure that any new development is safe is whether adequate flood warnings would be available to people using the development.
In all circumstances where warning and emergency response is fundamental to managing flood risk, we advise local planning authorities to formally consider the emergency planning and rescue implications of new development in making their decisions. As such, we recommend you consult with your emergency planners and the emergency services to determine whether the proposals are safe in accordance with the guiding principles of the Planning Practice Guidance (PPG).

If you have any queries please contact me

Cont/d..



Environment Agency

Flood map for planning

Your reference
19000

Location (easting/northing)
424745/423892

Scale
1:2500

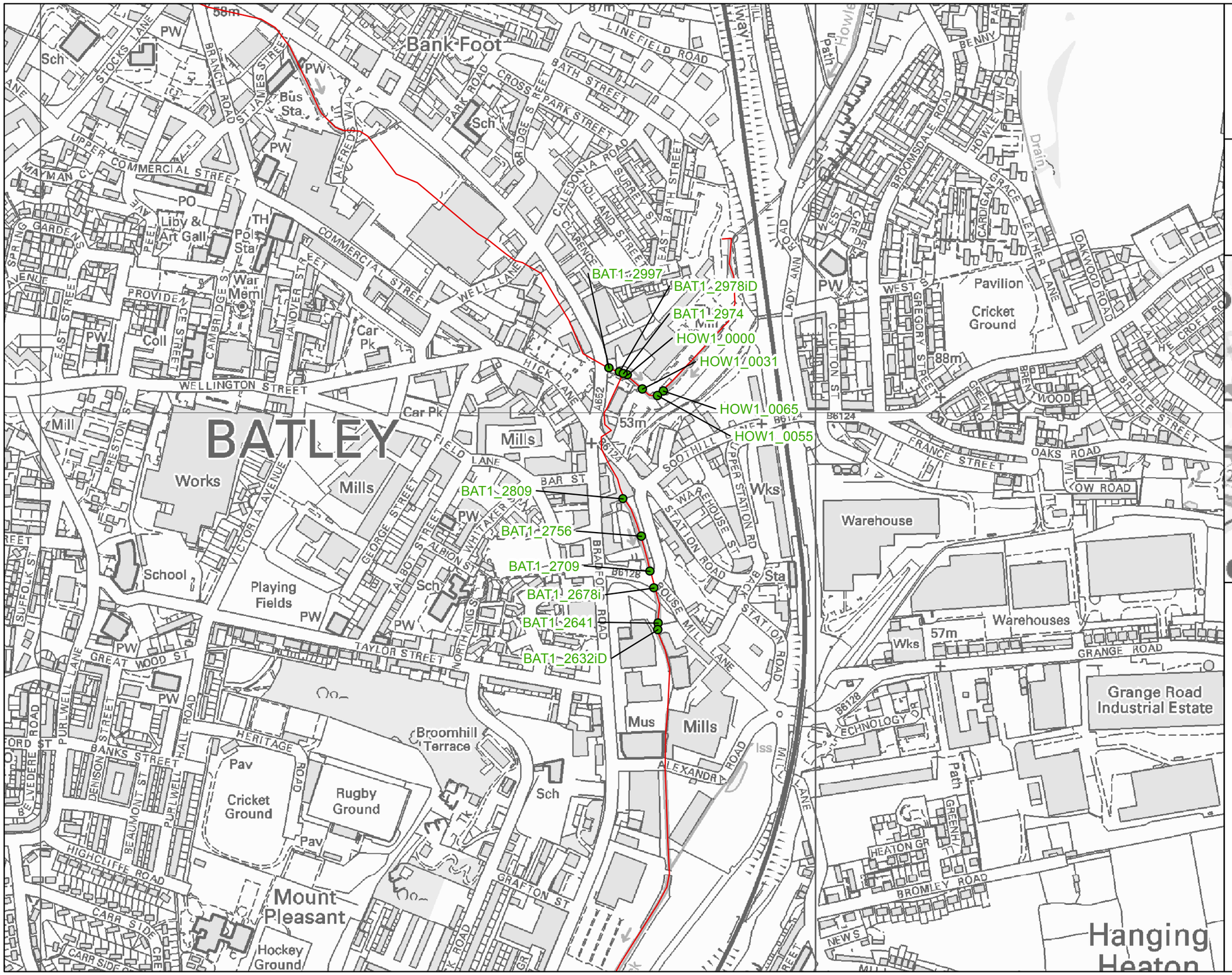
Created
7 Apr 2019 4:58

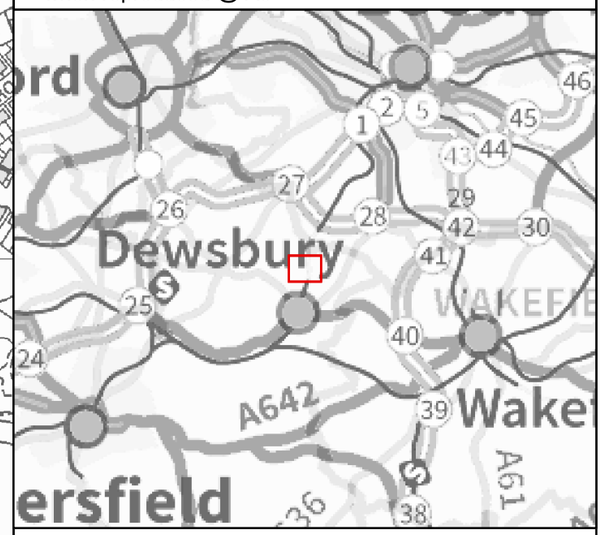
- Selected area
- Flood zone 3
- Flood zone 3: areas benefitting from flood defences
- Flood zone 2
- Flood zone 1
- Flood defence
- Main river
- Flood storage area

0 20 40 60m

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RFI/2019/119946 Node Points Location Map centred on Station Road, Batley, West Yorkshire, WF17 5SU.
Date Created: 03/04/19





Environment Agency

www.environment-agency.gov.uk

Scale: 1:5,000

when reproduced @ A3

N
W E
S

LEGEND

- 2015_Batley_Node points
- Main River

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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

2015 Batley Beck Model - Defended Scenario Results (Level - mAOD, Flow - m^3/s)

	Return Period											
	2		5		10		20		30		50	
Node Point	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow
EA1231295HOW0065	53.493	1.858	53.752	2.485	53.937	2.966	54.268	3.898	54.48	4.539	54.557	4.78
EA1231295HOW0055	52.768	1.858	52.836	2.485	52.879	2.966	53.069	3.899	53.227	4.54	53.305	4.822
EA1231295HOW0031	51.881	1.858	52.197	2.485	52.435	2.966	52.714	3.904	52.892	4.546	53.067	4.968
EA1231295HOW0000	51.863	1.861	52.176	2.491	52.414	2.974	52.694	3.913	52.87	4.558	53.044	5.254
EA1231295BAT2997	51.908	5.785	52.23	7.721	52.476	9.316	52.764	11.367	52.944	12.58	53.121	14.182
EA1231295BAT2978	51.864	5.784	52.176	7.717	52.415	9.311	52.694	11.361	52.87	12.572	53.045	14.059
EA1231295BAT2974	51.863	5.784	52.176	7.716	52.414	9.31	52.694	11.36	52.87	12.571	53.044	14.033
EA1231295BAT2809	50.07	7.39	50.352	9.976	50.613	12.067	51.361	14.601	51.529	16.319	51.599	18.037
EA1231295BAT2756	49.769	7.389	50.121	9.971	50.446	12.062	51.337	14.585	51.513	16.318	51.585	18.038
EA1231295BAT2709	49.686	7.389	50.053	9.966	50.386	12.058	51.292	14.574	51.459	16.319	51.518	18.04
EA1231295BAT2678	49.636	7.388	50.006	9.964	50.346	12.056	51.273	14.57	51.438	16.319	51.495	18.041
EA1231295BAT2641	49.483	7.387	49.874	9.961	50.237	12.054	51.228	14.568	51.419	15.406	51.486	16.597
EA1231295BAT2632	49.437	7.387	49.832	9.961	50.201	12.054	51.21	14.568	51.409	15.249	51.489	15.807

	Return Period									
	75		100		101		200		1000	
Node Point	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow
EA1231295HOW0065	54.63	5.012	54.664	5.119	54.728	5.327	54.727	5.324	54.878	5.602
EA1231295HOW0055	53.464	5.025	53.563	5.121	53.698	5.329	53.693	5.326	54.486	5.6
EA1231295HOW0031	53.304	5.169	53.428	5.257	53.587	5.457	53.581	5.451	54.453	5.588
EA1231295HOW0000	53.285	5.443	53.411	5.524	53.566	5.718	53.56	5.712	54.428	5.912
EA1231295BAT2997	53.359	14.291	53.482	14.688	53.634	15.185	53.629	15.17	54.534	15.385
EA1231295BAT2978	53.285	14.29	53.411	14.687	53.566	15.185	53.561	15.17	54.449	17.405
EA1231295BAT2974	53.285	14.29	53.411	14.687	53.566	15.185	53.56	15.17	54.428	17.662
EA1231295BAT2809	51.647	19.2	51.675	19.681	51.705	20.521	51.705	20.479	51.821	23.322
EA1231295BAT2756	51.634	19.199	51.662	19.696	51.692	21	51.691	20.973	51.788	23.789
EA1231295BAT2709	51.559	19.201	51.582	19.71	51.601	21.095	51.6	21.071	51.67	23.835
EA1231295BAT2678	51.533	19.202	51.555	19.715	51.566	21.222	51.566	21.197	51.633	23.856
EA1231295BAT2641	51.513	18.048	51.517	19.014	51.582	19.438	51.582	19.415	51.652	21.624
EA1231295BAT2632	51.526	16.804	51.543	17.269	51.591	17.453	51.59	17.428	51.709	18.534

2015 Batley Beck Model - Undefended Scenario Results (Level - mAOD, Flow - m^3/s)

	Return Period											
	2		5		10		20		30		50	
Node Point	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow
EA1231295HOW0065	53.493	1.858	53.752	2.484	53.937	2.967	54.227	3.778	54.308	4.017	54.352	4.148
EA1231295HOW0055	52.768	1.857	52.837	2.484	52.88	2.967	53.046	3.778	53.158	4.017	53.248	4.185
EA1231295HOW0031	51.882	1.858	52.196	2.484	52.435	2.967	52.704	3.78	52.857	4.035	53.026	4.325
EA1231295HOW0000	51.864	1.861	52.175	2.49	52.414	2.975	52.686	3.79	52.837	4.21	52.995	4.989
EA1231295BAT2997	51.909	5.793	52.23	7.713	52.477	9.308	52.759	11.358	52.914	12.596	53.104	13.787
EA1231295BAT2978	51.865	5.792	52.176	7.709	52.415	9.303	52.687	11.352	52.838	12.593	53.001	13.722
EA1231295BAT2974	51.864	5.792	52.175	7.708	52.414	9.302	52.686	11.351	52.837	12.592	52.995	13.71
EA1231295BAT2809	50.071	7.399	50.351	9.971	50.611	12.068	51.055	14.534	51.151	15.999	51.216	17.548
EA1231295BAT2756	49.77	7.398	50.12	9.967	50.443	12.063	50.986	14.513	51.086	15.997	51.15	17.546
EA1231295BAT2709	49.687	7.397	50.052	9.962	50.383	12.059	50.938	14.495	51.027	15.995	51.079	17.545
EA1231295BAT2678	49.637	7.396	50.005	9.959	50.342	12.056	50.91	14.484	50.996	15.994	51.042	17.545
EA1231295BAT2641	49.485	7.395	49.873	9.956	50.233	12.054	50.842	14.471	50.922	15.894	50.958	17.396
EA1231295BAT2632	49.438	7.395	49.832	9.956	50.197	12.054	50.817	14.461	50.898	15.772	50.929	17.283

	Return Period					
	75		100		101	
Node Point	Max Level	Max Flow	Max Level	Max Flow	Max Level	Max Flow
EA1231295HOW0065	54.403	4.304	54.43	4.385	54.489	4.565
EA1231295HOW0055	53.575	4.324	53.812	4.392	54.099	4.57
EA1231295HOW0031	53.474	4.535	53.741	4.64	54.041	4.903
EA1231295HOW0000	53.448	5.348	53.717	5.543	54.006	6.057
EA1231295BAT2997	53.59	13.705	53.865	14.302	54.125	14.632
EA1231295BAT2978	53.455	15.079	53.724	16.035	54.056	16.385
EA1231295BAT2974	53.448	15.213	53.717	16.193	54.006	16.77
EA1231295BAT2809	51.303	20.087	51.341	21.224	51.413	22.51
EA1231295BAT2756	51.238	20.084	51.275	21.222	51.352	22.499
EA1231295BAT2709	51.143	20.081	51.168	21.221	51.232	22.487
EA1231295BAT2678	51.097	20.078	51.118	21.219	51.178	22.471
EA1231295BAT2641	50.993	19.847	51.002	20.949	51.061	22.067
EA1231295BAT2632	50.945	19.935	50.946	21.175	50.948	23.265

Appendix 3
Existing Drainage Records and YW Correspondence.

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Public Waste Water Network 24/06/2014 10:15:21 OS Grid Coordinates: 424579 : 423698 Map Name : SE2423NE Websterh

Registered Office, Yorkshire Water Services Limited.
Western House, Halifax Road, Bradford BD6 2SZ. Registered in England and Wales No. 2366682

safe-move
A part of YorkshireWater

Advant Engineers Limited

From: Kashif.Khan@yorkshirewater.co.uk
Sent: 15 August 2014 10:23
To: mail@advantengineers.co.uk
Subject: Fw: Station Road, Batley, WF17 5 - Sewerage enquiry on P507308

FAO MICHAEL MICKLETHWAITE

Please see letter below.

Regards

Kashif.

Sewerage Technical Team
Developer Services
0345 120 8482

----- Forwarded by Kashif Khan/Waste Water/YWS/Yorkshire Water on 15/08/2014 10:22 -----

Yorkshire Water Services
Developer Services
Sewerage Technical Team
mail@advantengineers.co.uk PO BOX 52
Bradford
BD3 7AY

Your Ref: Tel: 0345 120 8482
Our Ref: Q013385 Fax: (01274) 372 834

Email:
Technical.Sewerage@yorkshirewater
.co.uk

For telephone enquiries ring:

Kashif Khan on 0345 120 8482

15th August 2014

Dear Sir,

Station Road, Batley, WF17 5 - Sewerage enquiry on P507308

Further to your email received 1st August 2014, I would like to confirm the

following:

As the proposal is a change of use from a mill to 19 apartments, Yorkshire Water would expect the existing arrangements to be maintained on site if there is no change to the existing building footprint and car park.

Any increases to the building footprint or carpark would require the prior consent of Yorkshire Water.

Yours faithfully

Developer Services Team

Spotted a leak?
If you spot a leak please report it immediately. Call us on 0800 57 3553 or go to http://www.yorkshirewater.com/leaks

Get a free water saving pack
Don't forget to request your free water and energy saving pack, it could save you money on your utility bills and help you conserve water. http://www.yorkshirewater.com/savewater

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Yorkshire Water Services Limited
Registered Office Western House, Halifax Road, Bradford, BD6 2SZ Registered in England and Wales No 2366682

Appendix 4
Local Authority Drainage Department Correspondence.

Advant Engineers Limited

From: Paul Farndale <Paul.Farndale@kirklees.gov.uk>
Sent: 05 August 2014 11:32
To: 'Advant Engineers Limited'
Subject: RE: Station Road, Batley

Hello Michael,

As this is an existing building then surface water drainage will remain the same. The end use will be 'more vulnerable' in terms of classification and will need to be demonstrated safe. The key is finished floor levels. Advice must be taken from the EA on the flood zones in this area as to what is reasonable for a safe finished floor level. The lower ground floor clearly being the area of concern. The zones appear to be away from the river in this area and may therefore be questionable in terms of levels and extent.

Condition of the culvert (already built over) may need to form part of the assessment. It is enmained and therefore policed by the EA. This again is the EA's call.

Regards,

Paul Farndale
Principal Engineer
Flood Management & Drainage
Investment & Regeneration Service
Kirklees Council
01484 225377

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From: Advant Engineers Limited [mailto:mail@advantengineers.co.uk]
Sent: 29 July 2014 12:25
To: Paul Farndale
Subject: FW: Station Road, Batley

Paul,

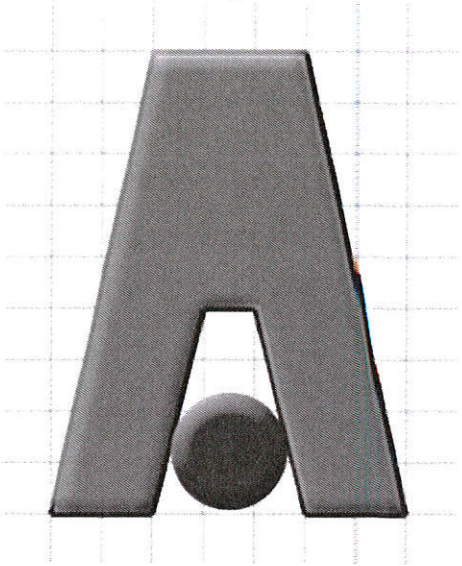
Could you let me know if you have had chance to look at the site below as yet please, and when I could get a response back.

Best Regards

Michael Micklethwaite

Advant Engineers Limited
Tel: (01274) 851325
Email: mail@advantengineers.co.uk
Web: www.advantengineers.co.uk

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From: Advant Engineers Limited [mailto:mail@advantengineers.co.uk]
Sent: 14 July 2014 16:29
To: 'floodmanagement@kirklees.gov.uk'
Subject: Station Road, Batley

To whom it may concern,

Our client is intending to apply for planning to convert an old mill building into 19 apartments and we have been commissioned to produce a Flood Risk Assessment for this development. There is a beck that runs beneath the building that is culverted at one end and then exposed on the other, I have attached a copy of the location plan and the architects proposed layout.

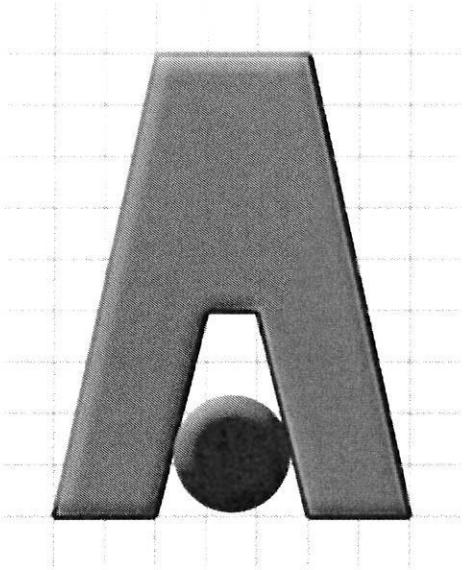
We would appreciate your comments on this proposal to be included in the Flood Risk Assessment as this small localised area does land in Flood Zone 3 as shown on the Environment Agencies flood maps.

Best Regards

Michael Micklethwaite

Advant Engineers Limited
Tel: (01924) 763404
Email: mail@advantengineers.co.uk
Web: www.advantengineers.co.uk

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Appendix 5
Foul Drainage Calculations.

ADVANT ENGINEERS

SITE NAME	Station Road, Batley
PROJECT NUMBER	14006
DATE	30.08.14
REVISION	-
PIPE REF	Existing

FOUL DRAINAGE CALCUATION IN ACCORDANCE WITH BS EN 752-4:1997 ANNEX C

NUMBER OF DWELLINGS	19

TYPE OF APPLIANCE	TYPICAL VALUE OF DISCHARGE UNITS	UNITS PER DWELLING
Wash Basin	0.3	1
Bidet	0.3	
Shower without plug	0.4	1
Shower with plug	1.3	
Urinal with Cistern	0.4	
Bath	1.3	
Kitchen Sink	1.3	1
Dishwasher (household)	0.2	1
Washing Machine (up to 6kg)	0.6	1
Washing Machine (up to 12kg)	1.2	
WC with 4l cistern	1.2	1
WC with 6l cistern	1.5	
WC with 7.5l cistern	1.6	
WC with 9l cistern	1.8	
Floor Gully DN50	0.6	
Floor Gully DN70	0.8	
Floor Gully DN100	1.2	

1. This spreadsheet is to establish the minimum flow required in a particular length of pipe.
2. First count up the number of appliances per dwelling , or total number of appliances on the pipe and input into relevant columns above.
3. Check KDU value is correct.
4. Then check minimum flow required (Q) against the actual flow provided from the flow tables.

TOTAL UNITS PER DWELLING	4

TOTAL UNITS PER SITE	76

$$Q = k_{DU}\sqrt{\sum DU}$$

TYPE OF BUILDING	TYPICAL FREQUENCY
Dwelling, Guesthouse, Office (Intermittent use)	0.5
Hospital, school, restaurant, hotel (frequent use)	0.7
Public toilets / showers (congested use)	1.0
Laboratory buildings (special use)	1.2

EXAMPLE FLOWS @ ks = 1.5

100mm pipe @ 1:80 = 5.8 l/s
100mm pipe @ 1:15 = 13.6 l/s
150mm pipe @ 1:100 = 15.46 l/s
150mm pipe @ 1:15 = 40 l/s

k_{DU} =	0.5

DU =	76

Min Flow Req'd (Q) = 4.359 l/s

PIPE DIA SELECTED	PIPE GRAD SELECTED	VELOCITY (m/s)	DISCHARGE (l/s)
150	120	0.81	14.25

SELF-CLEANSING VELOCITY		
PEAK FLOW RATE	PIPE CAPACITY	PROPORTIONAL DISCHARGE
4.359	14.25	0.306

PEAK VELOCITY (m/s)	PROPORTIONAL VELOCITY	
0.81	0.88	0.7128

0.713 is greater than 0.7 therefore OK

Appendix 6
Existing Micro Drainage Calcs

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Innovyze	Network 2018.1.1

STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	66.250	4-8	69.410

Total Area Contributing (ha) = 135.660

Total Pipe Volume (m³) = 3588.626

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	87.026	0.130	669.4	64.000	5.00	0.0	0.600	|_|	2700	Ditch	
1.001	20.554	0.060	342.6	61.660	0.00	0.0	0.600	|_|	2700	Ditch	
1.002	111.917	1.130	99.0	10.000	0.00	0.0	0.600	[]	-2	Pipe/Conduit	
1.003	54.273	0.545	99.6	0.000	0.00	0.0	0.600	[]	-2	Pipe/Conduit	
1.004	53.597	0.155	345.8	0.000	0.00	0.0	0.600	|_|	2700	Ditch	
1.005	46.951	0.420	111.8	0.000	0.00	0.0	0.600	|_|	2700	Ditch	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	44.49	6.14	50.500	64.000	0.0	0.0	0.0	1.27	1028.9«	7711.8
1.001	43.87	6.33	50.370	125.660	0.0	0.0	0.0	1.78	1442.4«	14930.4
1.002	42.96	6.63	50.310	135.660	0.0	0.0	0.0	6.36	51476.7	15784.6
1.003	42.54	6.77	49.180	135.660	0.0	0.0	0.0	6.34	51336.2	15784.6
1.004	41.11	7.27	48.635	135.660	0.0	0.0	0.0	1.77	1435.6«	15784.6
1.005	40.44	7.52	48.580	135.660	0.0	0.0	0.0	3.13	2532.7«	15784.6

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Conduit Sections for Storm

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m^2)
-2	[]	2700	3000	90.0		2.842	8.100

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
UPSTREAM	54.310	3.810	Junction		1.000	50.500	2700				
BAT01_2997	54.310	3.940	Junction		1.001	50.370	2700	1.000	50.370	2700	
BAT01_2974	54.310	4.000	Junction		1.002	50.310	-2	1.001	50.310	2700	
NODE1	54.000	4.820	Junction		1.003	49.180	-2	1.002	49.180	-2	
BAT01_2809	53.000	4.365	Junction		1.004	48.635	2700	1.003	48.635	-2	
BAT01_2756	52.500	4.020	Junction		1.005	48.580	2700	1.004	48.480	2700	
BAT01_2709	52.000	3.840	Open Manhole	0		OUTFALL		1.005	48.160	2700	

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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	|_|	2700	UPSTREAM	54.310	50.500	3.510	Junction	
1.001	|_|	2700	BAT01_2997	54.310	50.370	3.640	Junction	
1.002	[]	-2	BAT01_2974	54.310	50.310	1.000	Junction	
1.003	[]	-2	NODE1	54.000	49.180	1.820	Junction	
1.004	|_|	2700	BAT01_2809	53.000	48.635	4.065	Junction	
1.005	|_|	2700	BAT01_2756	52.500	48.580	3.620	Junction	

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	87.026	669.4	BAT01_2997	54.310	50.370	3.640	Junction	
1.001	20.554	342.6	BAT01_2974	54.310	50.310	3.700	Junction	
1.002	111.917	99.0	NODE1	54.000	49.180	1.820	Junction	
1.003	54.273	99.6	BAT01_2809	53.000	48.635	1.365	Junction	
1.004	53.597	345.8	BAT01_2756	52.500	48.480	3.720	Junction	
1.005	46.951	111.8	BAT01_2709	52.000	48.160	3.540	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	64.000	64.000	64.000
1.001	-	-	100	61.660	61.660	61.660
1.002	-	-	100	10.000	10.000	10.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				135.660	135.660	135.660

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Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	UPSTREAM	2700	3.510	3.640	Unclassified				Junction
1.001	BAT01_2997	2700	3.640	3.700	Unclassified				Junction
1.002	BAT01_2974	-2	1.000	1.820	Unclassified				Junction
1.003	NODE1	-2	1.365	1.820	Unclassified				Junction
1.004	BAT01_2809	2700	3.720	4.065	Unclassified				Junction
1.005	BAT01_2756	2700	3.540	3.620	Unclassified				Junction

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	BAT01_2709	52.000	48.160	48.160	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	UPSTREAM	0.000
1.001	BAT01_2997	0.000
1.002	BAT01_2974	0.000
1.003	NODE1	0.000
1.004	BAT01_2809	0.000
1.005	BAT01_2756	0.000

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CASDeF Controller for Storm

PN	US/MH Name	Level Not Exceeded	Modify Control	Modify Pipe Size	Max Pipe Diameter	No. Pipe Failures	Add Storage	No. Storage Failures	Use CASDeF
1.000	UPSTREAM	54.310	Yes	No	3660	0	Yes	0	Yes
1.001	BAT01_2997	54.310	Yes	No	3790	0	Yes	0	Yes
1.002	BAT01_2974	54.310	Yes	No	3850	0	Yes	0	Yes
1.003	NODE1	54.000	Yes	No	4200	0	Yes	0	Yes
1.004	BAT01_2809	53.000	Yes	No	3850	0	Yes	0	Yes
1.005	BAT01_2756	52.500	Yes	No	3675	0	Yes	0	Yes

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	UPSTREAM	0.000	895.236	0.000	895.236
1.001	BAT01_2997	0.000	218.653	0.000	218.653
1.002	BAT01_2974	0.000	906.528	0.000	906.528
1.003	NODE1	0.000	439.611	0.000	439.611
1.004	BAT01_2809	0.000	631.667	0.000	631.667
1.005	BAT01_2756	0.000	496.929	0.000	496.929
Total		0.000	3588.626	0.000	3588.626

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	UPSTREAM	0.000	895.236	0.000	895.236
1.001	BAT01_2997	0.000	218.653	0.000	218.653
1.002	BAT01_2974	0.000	906.528	0.000	906.528
1.003	NODE1	0.000	439.611	0.000	439.611
1.004	BAT01_2809	0.000	631.667	0.000	631.667
1.005	BAT01_2756	0.000	496.929	0.000	496.929
Total		0.000	3588.626	0.000	3588.626

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100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm) 19.000	Cv (Summer) 0.750
Region	England and Wales	Ratio R 0.350	Cv (Winter) 0.840

Margin for Flood Risk Warning (mm)	0.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	0

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)	Flooded Volume (m³)
1.000	UPSTREAM	30 Winter	100	+0%					53.748	-0.562	0.000
1.001	BAT01_2997	30 Winter	100	+0%					53.697	-0.613	0.000
1.002	BAT01_2974	30 Winter	100	+0%	100/15 Winter				53.662	0.352	0.000
1.003	NODE1	15 Winter	100	+0%					52.180	0.000	0.000
1.004	BAT01_2809	30 Winter	100	+0%					51.416	-1.584	0.000
1.005	BAT01_2756	30 Winter	100	+0%					50.336	-2.164	0.000

PN	US/MH Name	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	UPSTREAM	0.47		14395.4	OK	
1.001	BAT01_2997	0.83		28192.5	OK	
1.002	BAT01_2974	0.97		29692.9	SURCHARGED*	
1.003	NODE1	1.30		28172.1	SURCHARGED*	
1.004	BAT01_2809	0.78		29589.8	OK	
1.005	BAT01_2756	0.88		29545.8	OK	

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Appendix 7
Existing Micro Drainage Calcs plus 40% CC

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File Drainage Model plus 40 pc CC.MDX	Checked by
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STORM SEWER DESIGN by the Modified Rational Method

Design Criteria for Storm

Pipe Sizes STANDARD Manhole Sizes STANDARD

FSR Rainfall Model - England and Wales

Return Period (years)	1	PIMP (%)	100
M5-60 (mm)	19.000	Add Flow / Climate Change (%)	0
Ratio R	0.350	Minimum Backdrop Height (m)	0.200
Maximum Rainfall (mm/hr)	50	Maximum Backdrop Height (m)	1.500
Maximum Time of Concentration (mins)	30	Min Design Depth for Optimisation (m)	1.200
Foul Sewage (l/s/ha)	0.000	Min Vel for Auto Design only (m/s)	1.00
Volumetric Runoff Coeff.	0.750	Min Slope for Optimisation (1:X)	500

Designed with Level Soffits

Time Area Diagram for Storm

Time (mins)	Area (ha)	Time (mins)	Area (ha)
0-4	66.250	4-8	69.410

Total Area Contributing (ha) = 135.660

Total Pipe Volume (m³) = 3588.626

Network Design Table for Storm

« - Indicates pipe capacity < flow

PN	Length (m)	Fall (m)	Slope (1:X)	I.Area (ha)	T.E. (mins)	Base Flow (l/s)	k (mm)	HYD SECT	DIA (mm)	Section Type	Auto Design
1.000	87.026	0.130	669.4	64.000	5.00	0.0	0.600	|_|	2700	Ditch	
1.001	20.554	0.060	342.6	61.660	0.00	0.0	0.600	|_|	2700	Ditch	
1.002	111.917	1.130	99.0	10.000	0.00	0.0	0.600	[]	-2	Pipe/Conduit	
1.003	54.273	0.545	99.6	0.000	0.00	0.0	0.600	[]	-2	Pipe/Conduit	
1.004	53.597	0.155	345.8	0.000	0.00	0.0	0.600	|_|	2700	Ditch	
1.005	46.951	0.420	111.8	0.000	0.00	0.0	0.600	|_|	2700	Ditch	

Network Results Table

PN	Rain (mm/hr)	T.C. (mins)	US/IL (m)	Σ I.Area (ha)	Σ Base Flow (l/s)	Foul (l/s)	Add Flow (l/s)	Vel (m/s)	Cap (l/s)	Flow (l/s)
1.000	44.49	6.14	50.500	64.000	0.0	0.0	0.0	1.27	1028.9«	7711.8
1.001	43.87	6.33	50.370	125.660	0.0	0.0	0.0	1.78	1442.4«	14930.4
1.002	42.96	6.63	50.310	135.660	0.0	0.0	0.0	6.36	51476.7	15784.6
1.003	42.54	6.77	49.180	135.660	0.0	0.0	0.0	6.34	51336.2	15784.6
1.004	41.11	7.27	48.635	135.660	0.0	0.0	0.0	1.77	1435.6«	15784.6
1.005	40.44	7.52	48.580	135.660	0.0	0.0	0.0	3.13	2532.7«	15784.6

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File Drainage Model plus 40 pc CC.MDX	Checked by
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Conduit Sections for Storm

NOTE: Diameters less than 66 refer to section numbers of hydraulic conduits. These conduits are marked by the symbols:- [] box culvert, \/ open channel, oo dual pipe, ooo triple pipe, O egg.

Section numbers < 0 are taken from user conduit table

Section Number	Conduit Type	Major Dimn. (mm)	Minor Dimn. (mm)	Side Slope (Deg)	Corner Splay (mm)	4*Hyd Radius (m)	XSect Area (m^2)
-2	[]	2700	3000	90.0		2.842	8.100

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Manhole Schedules for Storm

MH Name	MH CL (m)	MH Depth (m)	MH Connection	MH Diam.,L*W (mm)	Pipe Out PN	Pipe Out Invert Level (m)	Pipe Out Diameter (mm)	Pipes In PN	Pipes In Invert Level (m)	Pipes In Diameter (mm)	Backdrop (mm)
UPSTREAM	54.310	3.810	Junction		1.000	50.500	2700				
BAT01_2997	54.310	3.940	Junction		1.001	50.370	2700	1.000	50.370	2700	
BAT01_2974	54.310	4.000	Junction		1.002	50.310	-2	1.001	50.310	2700	
NODE1	54.000	4.820	Junction		1.003	49.180	-2	1.002	49.180	-2	
BAT01_2809	53.000	4.365	Junction		1.004	48.635	2700	1.003	48.635	-2	
BAT01_2756	52.500	4.020	Junction		1.005	48.580	2700	1.004	48.480	2700	
BAT01_2709	52.000	3.840	Open Manhole	0		OUTFALL		1.005	48.160	2700	

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File Drainage Model plus 40 pc CC.MDX	Checked by
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PIPELINE SCHEDULES for Storm

Upstream Manhole

PN	Hyd Sect	Diam (mm)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	|_|	2700	UPSTREAM	54.310	50.500	3.510	Junction	
1.001	|_|	2700	BAT01_2997	54.310	50.370	3.640	Junction	
1.002	[]	-2	BAT01_2974	54.310	50.310	1.000	Junction	
1.003	[]	-2	NODE1	54.000	49.180	1.820	Junction	
1.004	|_|	2700	BAT01_2809	53.000	48.635	4.065	Junction	
1.005	|_|	2700	BAT01_2756	52.500	48.580	3.620	Junction	

Downstream Manhole

PN	Length (m)	Slope (1:X)	MH Name	C.Level (m)	I.Level (m)	D.Depth (m)	MH Connection	MH DIAM., L*W (mm)
1.000	87.026	669.4	BAT01_2997	54.310	50.370	3.640	Junction	
1.001	20.554	342.6	BAT01_2974	54.310	50.310	3.700	Junction	
1.002	111.917	99.0	NODE1	54.000	49.180	1.820	Junction	
1.003	54.273	99.6	BAT01_2809	53.000	48.635	1.365	Junction	
1.004	53.597	345.8	BAT01_2756	52.500	48.480	3.720	Junction	
1.005	46.951	111.8	BAT01_2709	52.000	48.160	3.540	Open Manhole	0

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Area Summary for Storm

Pipe Number	PIMP Type	PIMP Name	PIMP (%)	Gross Area (ha)	Imp. Area (ha)	Pipe Total (ha)
1.000	-	-	100	64.000	64.000	64.000
1.001	-	-	100	61.660	61.660	61.660
1.002	-	-	100	10.000	10.000	10.000
1.003	-	-	100	0.000	0.000	0.000
1.004	-	-	100	0.000	0.000	0.000
1.005	-	-	100	0.000	0.000	0.000
				Total	Total	Total
				135.660	135.660	135.660

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File Drainage Model plus 40 pc CC.MDX	Checked by
Innovyze	Network 2018.1.1

Network Classifications for Storm

PN	USMH Name	Pipe Dia (mm)	Min Cover Depth (m)	Max Cover Depth (m)	Pipe Type	MH Dia (mm)	MH Width (mm)	MH Ring Depth (m)	MH Type
1.000	UPSTREAM	2700	3.510	3.640	Unclassified				Junction
1.001	BAT01_2997	2700	3.640	3.700	Unclassified				Junction
1.002	BAT01_2974	-2	1.000	1.820	Unclassified				Junction
1.003	NODE1	-2	1.365	1.820	Unclassified				Junction
1.004	BAT01_2809	2700	3.720	4.065	Unclassified				Junction
1.005	BAT01_2756	2700	3.540	3.620	Unclassified				Junction

Free Flowing Outfall Details for Storm

Outfall Pipe Number	Outfall Name	C. Level (m)	I. Level (m)	Min I. Level (m)	D,L (mm)	W (mm)
1.005	BAT01_2709	52.000	48.160	48.160	0	0

Simulation Criteria for Storm

Volumetric Runoff Coeff	0.750	Additional Flow - % of Total Flow	0.000
Areal Reduction Factor	1.000	MADD Factor * 10m³/ha Storage	2.000
Hot Start (mins)	0	Inlet Coeffiecient	0.800
Hot Start Level (mm)	0	Flow per Person per Day (l/per/day)	0.000
Manhole Headloss Coeff (Global)	0.500	Run Time (mins)	60
Foul Sewage per hectare (l/s)	0.000	Output Interval (mins)	1

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	Profile Type	Summer
Return Period (years)	1	Cv (Summer)	0.750
Region	England and Wales	Cv (Winter)	0.840
M5-60 (mm)	19.000	Storm Duration (mins)	30
Ratio R	0.350		

Manhole Headloss for Storm

PN	US/MH Name	US/MH Headloss
1.000	UPSTREAM	0.000
1.001	BAT01_2997	0.000
1.002	BAT01_2974	0.000
1.003	NODE1	0.000
1.004	BAT01_2809	0.000
1.005	BAT01_2756	0.000

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CASDeF Controller for Storm

PN	US/MH Name	Level Not Exceeded	Modify Control	Modify Pipe Size	Max Pipe Diameter	No. Pipe Failures	Add Storage	No. Storage Failures	Use CASDeF
1.000	UPSTREAM	54.310	Yes	No	3660	0	Yes	0	Yes
1.001	BAT01_2997	54.310	Yes	No	3790	0	Yes	0	Yes
1.002	BAT01_2974	54.310	Yes	No	3850	0	Yes	0	Yes
1.003	NODE1	54.000	Yes	No	4200	0	Yes	0	Yes
1.004	BAT01_2809	53.000	Yes	No	3850	0	Yes	0	Yes
1.005	BAT01_2756	52.500	Yes	No	3675	0	Yes	0	Yes

Volume Summary (Static)

Length Calculations based on Centre-Centre

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	UPSTREAM	0.000	895.236	0.000	895.236
1.001	BAT01_2997	0.000	218.653	0.000	218.653
1.002	BAT01_2974	0.000	906.528	0.000	906.528
1.003	NODE1	0.000	439.611	0.000	439.611
1.004	BAT01_2809	0.000	631.667	0.000	631.667
1.005	BAT01_2756	0.000	496.929	0.000	496.929
Total		0.000	3588.626	0.000	3588.626

Volume Summary (Static)

Length Calculations based on True Length

Pipe Number	USMH Name	Manhole Volume (m³)	Pipe Volume (m³)	Storage Structure Volume (m³)	Total Volume (m³)
1.000	UPSTREAM	0.000	895.236	0.000	895.236
1.001	BAT01_2997	0.000	218.653	0.000	218.653
1.002	BAT01_2974	0.000	906.528	0.000	906.528
1.003	NODE1	0.000	439.611	0.000	439.611
1.004	BAT01_2809	0.000	631.667	0.000	631.667
1.005	BAT01_2756	0.000	496.929	0.000	496.929
Total		0.000	3588.626	0.000	3588.626

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Date 30/04/2021 09:29	Designed by m.micklethwaite
File Drainage Model plus 40 pc CC.MDX	Checked by
Innovyze	Network 2018.1.1

100 year Return Period Summary of Critical Results by Maximum Level (Rank 1) for Storm

Simulation Criteria

Areal Reduction Factor	1.000	Additional Flow - % of Total Flow	0.000
Hot Start (mins)	0	MADD Factor * 10m³/ha Storage	2.000
Hot Start Level (mm)	0	Inlet Coeffiecient	0.800
Manhole Headloss Coeff (Global)	0.500	Flow per Person per Day (l/per/day)	0.000
Foul Sewage per hectare (l/s)	0.000		

Number of Input Hydrographs 0 Number of Offline Controls 0 Number of Time/Area Diagrams 0
Number of Online Controls 0 Number of Storage Structures 0 Number of Real Time Controls 0

Synthetic Rainfall Details

Rainfall Model	FSR	M5-60 (mm)	19.000
Region	England and Wales	Ratio R	0.350
Cv (Summer)	0.750		
Cv (Winter)	0.840		

Margin for Flood Risk Warning (mm)	0.0
Analysis Timestep	2.5 Second Increment (Extended)
DTS Status	ON
DVD Status	OFF
Inertia Status	OFF

Profile(s)	Summer and Winter
Duration(s) (mins)	15, 30, 60, 120, 180, 240, 360, 480, 600, 720, 960, 1440, 2160, 2880, 4320, 5760, 7200, 8640, 10080
Return Period(s) (years)	100
Climate Change (%)	40

PN	US/MH Name	Storm	Return Period	Climate Change	First (X) Surcharge	First (Y) Flood	First (Z) Overflow	Overflow Act.	Water Level (m)	Surcharged Depth (m)
1.000	UPSTREAM	30 Winter	100	+40%	100/15 Summer	100/15 Summer			55.783	1.473
1.001	BAT01_2997	30 Winter	100	+40%	100/15 Summer	100/15 Summer			55.737	1.427
1.002	BAT01_2974	30 Winter	100	+40%	100/15 Summer	100/15 Summer			55.337	2.027
1.003	NODE1	60 Winter	100	+40%					52.180	0.000
1.004	BAT01_2809	30 Winter	100	+40%					52.583	-0.417
1.005	BAT01_2756	30 Winter	100	+40%		100/30 Winter			52.497	-0.003

PN	US/MH Name	Flooded Volume (m³)	Flow / Cap.	Overflow (l/s)	Pipe Flow (l/s)	Status	Level Exceeded
1.000	UPSTREAM	1473.307	0.58		17784.1	FLOOD	6
1.001	BAT01_2997	1427.139	1.00		33813.2	FLOOD	6
1.002	BAT01_2974	1033.964	1.16		35287.7	FLOOD	6
1.003	NODE1	0.000	1.56		33784.8	SURCHARGED*	
1.004	BAT01_2809	0.000	0.92		35052.4	OK	
1.005	BAT01_2756	0.269	1.00		33619.6	FLOOD	

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Appendix 8
Flood Warning & Evacuation Plan



Jessops Mill Apartments
Station Road
Batley

Flood Warning & Evacuation Plan

28th April 2021

Document Control

This plan has been prepared by Advant Engineers to inform residents of Jessops Mill Apartments on the joint responsibilities of the management company and the homeowner to prepare for and respond promptly to flood warnings.

A copy of this plan will be made available to all homeowners:

- On first occupation; and
- In response to lessons learnt

Version Control

Prepared	Date		Checked	Date
M M	28-04-21		M M	28-04-21
Revisions.				Date
A	Initial Issue			28-04-21

This Plan is owned, maintained, and updated by Jessops Mill Management Compoany. All users are asked to advise the management compnay of any changes in circumstances that may materially affect the plan in any way.

The plan will be reviewed at least every three years, as a result of lessons identified after an activation event or exercise, following changes ownership of the property or following any change to the flood risk or warning process that is used by the Environment Agency.

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Introduction

This flood warning & Evacuation Plan (FWEP) has been produced by Advant Engineers in respect of the development known as Jessops Mill Apartments. Jessops Mills management company own the (FWEP), ar responsible for its implementation, dissemination, and annual review.

The (FWEP) captures a summary of the site's flood risk, taking into account flood mitigation measures incorporated in the design of the site and properties, and provides all relevant information, contact details and procedures to prepare for, respond to and recover from a flood event.

Advant Engineers have given due regard to the safety of homeowners, responding organisations, available best practice, relevant legislation, and advice provided by the emergency services, and the Emergency management unit at Kirklees Council.

Objectives

In the production of the (FWEP) Advant Engineers have identified the following key objectives:

- To encourage residents to sign up to Flood Warnings Direct and Weather Warnings;
- To encourage residents to develop household flood plans, which should include;
    - Identifying alternative accommodation
    - Preparing a flood checklist
- To provide for and signpost clear evacuation routes for residents;
- To ensure adequate ingress and egress for emergency services; and
- Reduce the risk to lii and damage to property

Flood Risk

In this section we must identify the different sources of flooding and the impacts that it will have on the property, a full Flood Risk Report has been undertaken and summarised below in Table 1.

The location cover by this plan is at risk from flooding from the watercourse known as 'Batley Beck' and is covered by the Environment Agency (EA) Flood Warning System.

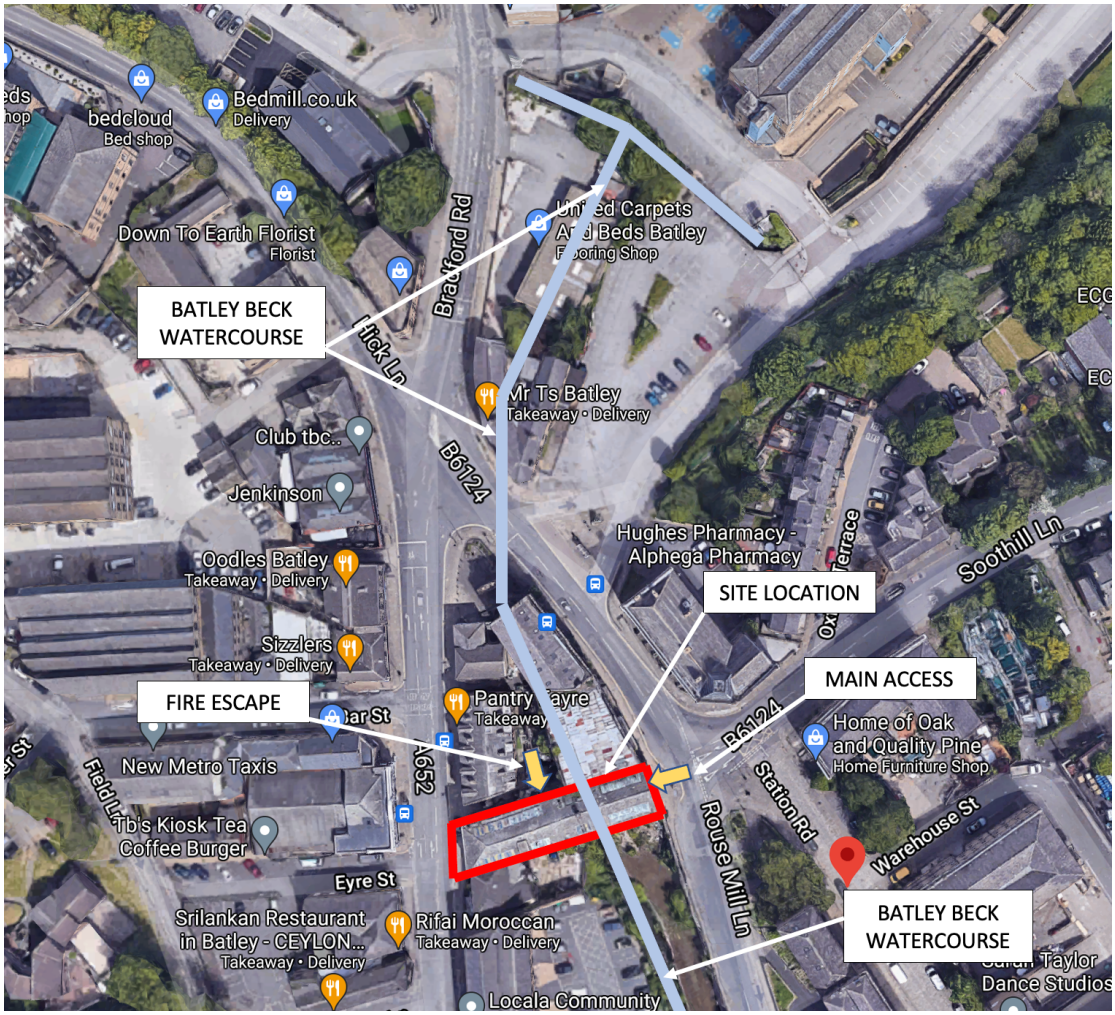


Table 1 - Flood Risk Exposure

Historical Flood Data: No historically recorded flooding in accordance with Yorkshire Water, Kirklees Council, and the Environment Agency				
Flood Risk Source:	**Warning Systems in Place (Flood Warnings Direct etc.)**	**Estimated Flood Depth**	**Frequency / Probability**	**Site and Property Defence Measures**
Fluvial: Risk from Batley Beck on the Lower ground floor flats	1)Kirklees Emergency Alert 2)EA Flood Warning Service	<0.6m	Very Infrequent 0.001%	Flood gate, raised internal floor, raised features internally and water proofing of brickwork.
Tidal: None	N/A	N/A	N/A	N/A
Ground Water: None	N/A	N/A	N/A	N/A
Surface Water: Risk from overland flows down Soothill Road	1)Kirklees Emergency Alert 2)EA Flood Warning Service	<0.3m	Very Infrequent 0.001%	Raised kerbing and flood gate on only door at this level.
Other:	N/A	N/A	N/A	N/A

Flood Warnings

The EA operate a flood forecasting and warning service in areas at risk of flooding from rivers or the sea, which relies on direct measurements of rainfall, river level, tide level, in-house predictive models, rainfall radar data and information from the Met Office. This service operates 24 hours a day, 365 days a year.

If flooding is forecast, warnings are issued using a set of easily recognisable codes. A description of the codes is shown in the Appendix.

Floodline warnings is a free service operated by the EA that provides flood warnings direct to your phone, email or text message. Sign up for flood warnings by calling Floodline on **0345 988 1188** or online by following the link included in the Appendix.

The management company will be registered with Floodline and are responsible for activating the necessary parts of the plan, as well each resident should also be registered with the EA Flood warning

In addition to the EA Floodline service, kirkless Council offer their emergency alert system that the management company will be registered with, links for this service are in the Appendix.

Decision Making

Once a Flood warning has been received then it is each person's responsibility to not neglect the safety and evacuation procedures, ultimalty the decision to evacuate or take shelter rests with the individual but this plan will allow sufficient time before flooding occurs. Flood waters contain hidden dangers and will impede, if not prevent a safe evacuation.

You are advised not to assume that emergency services will be able to assist you with the evacuation; their focus will be directed to those in greatest need.

Where evacuation is no longer a feasible option, or has been delayed, you should move to the upper floors of the property; taking with you any important documents, bottled water, essential medicines, and food sufficient to support you until rescue. (See appendix for Grab bag info).

In addition, the management team as soon as informed will notify the residents in accordance with this document and attend when possible, but the first responsibility is with the tenants.

Evacuation

Upon notification of a flood event then the flood gate to the side fire exit should be engaged and the residents from the ground floor move up to the upper ground floor and either evacuate or take shelter.

Evacuation should be the primary option and the evacuation routes are identified on the plans within the appendix, also signage will be shown with in the building, evacuation will be via the main access at the higher level on Station Road and the residents should congregate further up the hill on the higher ground away from any of the flood flows.

Community & Household Resilience

The successful implementation of any plan is dependent on all occupants being familiar with its content and to have rehearsed, where possible, the procedures contained within it.

Resilience is achieved when individuals and communities cooperate to prepare for, respond to and recovery from emergencies. This begins with engagement with neighbours, understanding your community and culminates in a collective approach to management of risk.

All residents upon occupation will be shown how the flood gates work and the evacuation procedures a part of the buildings induction with annual reviews.

Recovery and Re-occupation

If your home is subjected to flooding, and you have evacuated, you may not be allowed to return to your home until it has been declared safe to do so. The buildings management company will inspect and then declare when it can be re-occupied, the tenants insurance companies should be informed.

In the event that you did not evacuate it is possible that you will now be encouraged to do so, insurance companies may insist upon it in order to ensure your protection and to effect necessary repairs.

Appendix 1 - Environment Agency Warning Codes

Flood Alert 	**Key Message:** Flooding is possible. Be prepared **Timing:** 2 hours to 2 days in advance of flooding **Actions:** Be prepared for flooding Prepare a flood kit of essential items Monitor local water levels and flood forecasts
Flood Alerts are to warn people of the possibility of flooding and encourage them to be alert, stay vigilant and to make early preparations for flooding.	
Flood Warning 	**Key Message:** Flooding is expected. Immediate Action Required **Timing:** Half an hour to 1 day in advance of flooding **Actions:** Act now to protect your property Block doors with flood boards or sandbags and cover airbricks and other ventilation holes Move family, pets and valuables to a safe place Turn off gas, electricity and water supplies if safe to do so Keep a flood kit ready Move cars, pets, food, valuables and important documents to safety
Flood Warnings are to warn people flooding is expected and encourage them to take immediate action to protect themselves and their property.	
Severe Flood Warning 	**Key Message:** Severe flooding. Danger to life **Timing:** When flooding poses a significant threat to life and different actions are required **Actions:** Stay in a safe place with a means of escape Be ready should you need to evacuate from your home Co-operate with the emergency services Call 999 if you are in immediate danger
Severe Flood Warnings are to warn people of a significant risk to life or significant disruption to communities caused by widespread or prolonged flooding, and encourage them to take immediate action to protect themselves and follow the advice of the emergency services.	
Warnings no longer in force (no icon)	**Key Message:** No further flooding is currently expected for your area **Timing:** When river or sea conditions begin to return to normal **Actions:** Be Careful. Flood water may still be around for several days and could be contaminated If you've been flooded, ring your insurance company as soon as possible
Warnings are removed to inform people that the threat has now passed.	

Appendix 2 - Useful Information

Kirklees Emergency Alert
https://www.kirklees.gov.uk/beta/crime-and-safety/emergency-alert.aspx

Environment Agency Flood Warnings
https://www.gov.uk/sign-up-for-flood-warnings
0345 988 1188

MET Office Weather Warnings
https://www.metoffice.gov.uk/weather/warnings-and-advice/uk-warnings#?date=2021-04-30

Environment Agency Helpful Advice
https://www.gov.uk/prepare-for-flooding/future-flooding

https://www.gov.uk/government/publications/preparing-for-emergencies/preparing-for-emergencies

Appendix 3 – Grab Bag Info

An emergency could happen at any time. An Emergency Grab Bag is a useful kit packed with essentials in case you have to evacuate.

It will need to be easily found by all family members, and should be checked every six months. A backpack or a small suitcase with wheels will be suitable, and could include the following items:

- Copy of your Household Emergency Life-Saving Plan (HELP)
- First aid kit and medication
- Copies of important family documents in a waterproof bag
- Prescription medication
- Cash and Credit Cards
- Car Keys
- Toiletries and sanitary supplies
- Mobile phone and charger
- Infant supplies
- Spare clothes
- A battery torch with spare batteries or a wind up torch
- A battery radio with spare batteries or wind up radio
- Bottled water and emergency food, enough for three days
- Childcare supplies or other special care items
- Extra set of house and car keys

Emergency Car Grab Bag

You should also consider keeping a special grab bag in your car, which could be extremely useful during periods of extreme weather.

It might include the following:

- Suitable winter clothes and a blanket or a sleeping bag
- Mobile phone, torch, radio and extra batteries
- Shovel and windscreen scraper
- Tow chain and rope
- Jump leads
- Non-perishable food and water

If you are asked to leave your home by the emergency services, take your complete Household Emergency Life-Saving Plan plus your Emergency Grab Bag and leave as quickly as possible.

Appendix 4 – Evacuation Route

