

# Bradford College Future Technology Centre Flood Risk Assessment

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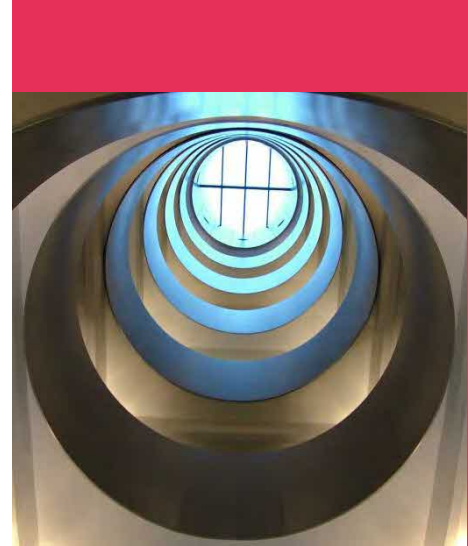
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Proposals contained or forming part of this report represent the outline design intent and may be subject to alteration or adjustment in completing the detailed design for this project. Where such adjustments are undertaken as part of the detailed design and are deemed a material derivation from the intent contained in this document, prior approval shall be obtained from the relevant authority in advance of commencing such works.

Where the proposed works, to which this report refers, are undertaken more than twelve months following the issue of this report Curtins shall reserve the right to re-validate the findings and conclusions by undertaking appropriate further investigations at no cost to Curtins.

This report is prepared following the standard section format and order of the Planning Practice Guidance GOV.UK - Flood risk and coastal change site specific flood risk assessment: Checklist.



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## References

Updated National Planning Policy Framework (NPPF) 2019 – Section 14

National Planning Guidance (NPG) GOV.UK – Guidance - Flood Risk and Coastal Change Site Specific Flood Risk Assessment

Government Climate Change Guidance - Published 19 February 2016, Last updated 22 July 2020

City of Bradford Metropolitan District Council - 2019 Level 1 Strategic Flood Risk Assessment (SFRA)

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## Appendices

**Appendix A Site Location Plan**

**Appendix B Topography Survey**

**Appendix C Proposed Site Plan**

**Appendix D Modelled Fluvial Flood Levels for a 100 year + 30% Climate Change Event**

**Appendix E Official Copy of Title Plan**

**Appendix F Flood Map for Planning**

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**Appendix I Proposed Drainage Layout**

**Appendix J Yorkshire Water Correspondence**

**Appendix K Hydraulic Modelling Calculation Summary**

## 1.0 Development Site and Location

### 1.1 Site Location

The site is located in Bradford just to the west of the city centre. The mill building is located to the south of the B6145 Thornton Road and west of Westholme Street and can be accessed from Thornton Road.

The mill building is directly adjacent to Bradford Beck. The beck is in culvert both upstream and downstream of the mill but is in open channel on its southern boundary.

The postcode of Junction Mill is BD1 2EP and the approximate Ordnance Survey grid reference of the site is SE1584233039.

An Ordnance Survey map extract showing the location of the two mills follows in Figure 1-1.

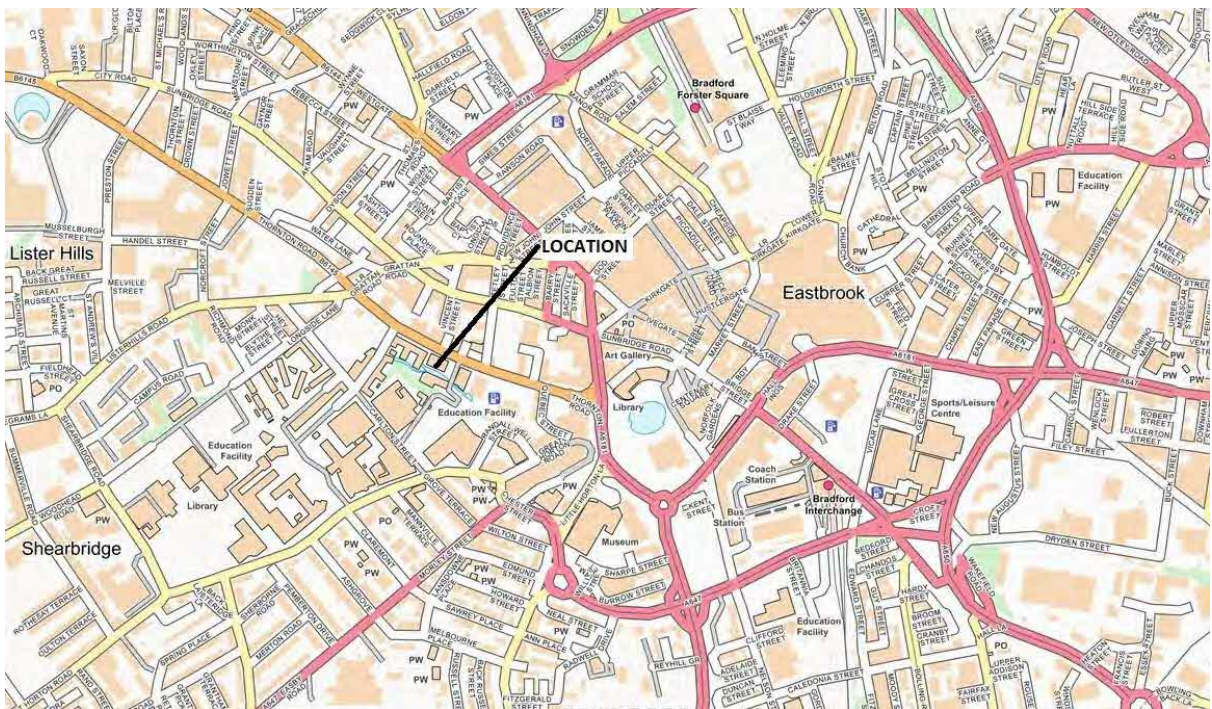


Figure 1-1 – Location Plan

### 1.2 Current Use

The sites currently consist of an abandoned historic mill building which is in poor condition and has structural issues.

A GoogleEarth extract is shown in Figure 1-2 with both mill buildings identified.





Figure 1-2 –Google Earth Extract

The site can be seen in its current state. A planning location/redline plan is provided in **Appendix A**.

From the topography survey attached within **Appendix B**, it can be seen that the threshold level to the front access of the building is at 102.6m AOD, therefore it is assumed that the floor levels of the building is at 102.6m AOD.

### 1.3 Flood Zone

Initial observation of the Environment Agency's Flood Map for Planning shows Junction Mill is located within Flood Zone 2, medium probability of flooding.

National Planning Policy Guidance Table 1: Flood Zones advises that Flood Zone 2 Medium Probability comprises land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map)

The Bradford Beck to which the Flood Zone 2 relates is not designated Main River so falls under the governance of Bradford Metropolitan Borough Council as an Ordinary Watercourse.

Detailed river modelling including predicted flood levels and extents with climate change impacts has been acquired from the Council and is reviewed further in Section 5 Site Specific Flood Risk.

## 2.0 Development Proposals

### 2.1 Proposals

This Flood Risk Assessment has been prepared on behalf of the Bradford College ('the Applicant') in support of a full planning application for demolish and rebuild of Junction Mills Building.

The proposals are to build a four-storey new Future Technologies Centre (FTC), in place of the existing Junction Mill building. The proposed building is to include a sustainable technologies workshop to the ground floor along with a welcome space, a flexible employer engagement suite overlooking the workshop on the first floor, and standardised rooms on the second floor that could be easily adapted to meet changing needs. The building roof is to accommodate skylights, solar panels and other M&E equipment. The Proposed Site Plan has been provided within **Appendix C**.

### 2.2 Vulnerability

With reference to the National Planning Policy Guidance Chapter on Flood Risk and Coastal Change Table 2, the development proposals can be regarded as **More Vulnerable**, e.g. :-

**Non-residential uses for health services, nurseries, and educational establishments.**

Table 2: Flood risk vulnerability and flood zone 'incompatibility' shows that More Vulnerable Development in Flood Zones 1 & 2 is considered appropriate development for the assessed flood risk.

Therefore, there is no requirement for Exception Testing.

### 2.3 Estimated Lifecycle of Development

As the planning application is for full planning approval and that the educational use is considered commercial development, it is assumed that the overall lifecycle will be 75 years. This will be factored in consideration of the impact of climate change on any assessed flood risk throughout this flood risk assessment.

### 2.4 Consultation with Flood Risk and Drainage Consultees

In order to inform this flood risk assessment and outline drainage strategy to meet the specific planning requirements for development, Curtins, have carried out consultation with Bradford Metropolitan District Council's Lead Local Flood Authority (LLFA) team to inform on modelled flood levels for the beck and the level of flood risk study required to support the planning application. A copy of the modelled flood levels has been presented within **Appendix D** of report.

### 3.0 Sequential Test

Below is a statement from the National Planning Policy Guidance Chapter on Flood Risk and Coastal Change on the sequential approach to the location of development.

*“The approach is designed to ensure that areas at little or no risk of flooding from any source are developed in preference to areas at higher risk. This means avoiding, so far as possible, development in current and future medium and high flood risk areas considering all sources of flooding including areas at risk of surface water flooding. Avoiding flood risk through the sequential test is the most effective way of addressing flood risk because it places the least reliance on measures like flood defences, flood warnings and property level resilience features. Even where a flood risk assessment shows the development can be made safe throughout its lifetime without increasing risk elsewhere, the sequential test still needs to be satisfied.”*

It is to be noted that the development in question is part of the wider Bradford college site and is located within land owned by the Bradford college within close proximity of other college buildings as discussed in the submitted Design and Access Statement. An official copy of the title plan has been presented within **Appendix E**. It can be seen from the aerial view of the Bradford college site, that the only other suitable space available for a new Future Technology Centre within the Bradford College site is to west of Westbrook Street to the rear of the main college building. However, locating the FTC centre there would mean compromising existing parking spaces/ the only green space available in the wider college site. This contradicts with the NPPF objective of fostering well-designed, beautiful, and safe places, with accessible services and open spaces.

It is also to be noted that the proposal is for a demolish and rebuild of a derelict building and not for a new building on an existing greenfield area. This in itself, shows good use of previous waste land.

Therefore, it is deemed that no further input is required on the Sequential Test.

### 4.0 Climate Change

The impacts of climate change will be considered within each of the following report sections on site specific flood risk assessment.

This will take into consideration current national climate change guidance published by the Government in February 2016 and last updated May 2022.

#### **Climate Change allowance for Peak River Flow**

The DEFRA Climate Change Allowances map shows the central, higher and upper allowances for peak river flow up to the 2080s for the Aire and Calder Management Catchments. These allowances stand at 23%, 31%, and 51% respectively.

As per the guidance on using peak river flow allowances for flood risk assessments, the central allowance is to be applied for more vulnerable development type in Flood Zone 2. Therefore, the climate change allowance for peak river flow is 23%. The modelled flood levels provided by LLFA are included in **Appendix D**. These modelled levels show the river levels for a 1% annual exceedance flood event with a 30% climate change allowance. This 30% allowance surpassed the 23% requirement; therefore, the modelled levels can be used as a basis for setting floor level of proposed building, to ensure protection against flooding.

#### **Climate Change Allowance for Peak Rainfall Intensity**

The Climate Change Allowance for Peak Rainfall in England map by DEFRA shows the Aire and Calder Management catchment, central and upper end allowances for the 3.3% and 1% annual exceedance rainfall event.

The 2070s epoch is to be used for the site as this corresponds with a development lifetime of 2061-2125. The central allowance is applicable for this site which is 30% in a 1 in 100 year event for the area according to the map. The central allowance for the 1 in 30 year event is 25%.

## 5.0 Site Specific Flood Risk

### 5.1 River (Fluvial Flooding)

#### 5.1.1 Environment Agency Flood Map for Planning

The Environment Agency Flood Map for Planning has been presented within **Appendix F** of report.

It can be seen that the mapped flood risk related to the Bradford Beck is Flood Zone 2 Medium probability and that the Junction Mill building is located within this flood zone 2 area.

National Planning Policy Guidance Table 1: Flood Zones advises that Flood Zone 2 Medium Probability comprises land having between a 1% and 0.1% annual probability of river flooding; or land having between a 0.5% and 0.1% annual probability of sea flooding. (Land shown in light blue on the Flood Map). The Beck is not Main River so falls under the jurisdiction of Bradford Council as an Ordinary Watercourse.

However, it is generally the case the Environment Agency flood maps do not include climate change, and this needs considering in a planning application supporting Flood Risk Assessment.

Liaison with Bradford Council has determined that updated flood data they have commissioned to update their own Strategic Flood Risk Assessment (SFRA) is publicly available to use within site specific Flood Risk Assessments (FRA's).

The data supplied is in the form of a GIS overlay. This GIS data has been overlaid onto the site plans using Civils3D to give flood extents, top water levels of these flood extents, and underlying ground



levels (LiDAR) used in the model. The 1 in 100-year data did not give any flooding outside of the beck channel. The 1 in 100 year plus 30% climate change extents are shown on drawing contained within the **Appendix D** of FRA.

### 5.1.2 SFRA Flood Mapping Review

The City of Bradford Metropolitan District Council - 2019 Level 1 Strategic Flood Risk Assessment (SFRA) SFRA Flood Zone map correlates with the Environment Agency Flood Map for Planning Flood Zone 2 outlines.

The SFRA Historic Flooding map does not show any recorded EA flood outlines. However, the LLFA incidents is mapped as between 51-100 which could indicate other sources of flooding which are reviewed in subsequent chapters of this report.

### 5.1.3 Flood Modelling Data Supplied by LLFA

The LLFA team have provided a link to the flood modelling data used to inform the latest update to the Bradford Metropolitan District Council Strategic Flood Risk Assessment.

Within this data pack is a set of GIS overlays which when overlaid onto mapping, topographical surveys or proposed site plans gives flood outlines and interrogable triangulated grids from which top of flood water levels can be extracted.

These overlays are provided in 1 in 100 year, 1 in 100 year + 30% Climate change, and 1 in 1000 year event levels.

The 1 in 100-year overlay did not indicate any flooding at this location. However, as expected from observation of Environment Agency and SFRA mapping the 1 in 100 year plus 30% climate change scenario did present flood outlines in this location so this has been presented on drawing contained in **Appendix D**. The 1 in 100 year plus 30% climate change model is considered appropriate as discussed in Section 4.0 of report.

#### **1 in 100 Year plus 30% Climate Change Design Flood Level**

The Flood Zone Outlines and Levels Plan in **Appendix D** shows the overlaid 1 in 100 year plus 30% climate change modelled flood outlines and levels from the data supplied by the LLFA. The shading shows the extent of the flood outlines whilst the triangulated grid of flood water top levels shown in blue (+ m) and the existing ground spot levels taken from the LiDAR data within the model are shown in red (+ m).

Observation of the overall flood outlines suggest the flood routing of the mapped extents is complex. The flood water levels which are approximately 0.5 m higher (circa **102.7 m**) on Thornton Road compared to those in the open channel section of watercourse to the rear of Junction mill building (circa **102.17 m**) suggest the primary flood risk relates to secondary flood flows along Thornton Road from upstream spill out routing eastwards towards the city centre. It is assumed that the levels flood levels

to the front of the Junction Mill building can be viewed as a separate flooding mechanism to that modelled to the back of the Junction Mill building in the actual watercourse.

Also, it must be noted on the flood modelling data in **Appendix D** the existing levels on Thornton Road adjacent to the mill building are shown to be around 102.7m, whereas the actual levels of Thornton Road shown in the Topographical Survey within **Appendix B** range from 102.43 to the west to 102.34 mAOD to the east. The actual existing levels are approximately 300mm lower compared to the existing levels in the flood modelling, therefore it is possible that the modelled flood levels are also to be lower by around 300mm.

Mitigation measures have been provided in section 5.5 of report.

## 5.2 Environment Agency Surface Water Flood Risk Mapping

Extracts of the Environment Agency 'Flood Risk from Surface Water' maps follow with the Junction Mill location shown.

Figure 5-1 shows the high risk 1 in 30-year chance of flooding i.e. generally more regular flash summer storms. The deepest (>900 mm) surface water flood depth is contained to the beck channel with some shallow (<300 mm) depth flooding on Thornton Road. This is contained within Thornton Road and no flooding can be seen within the building footprint.

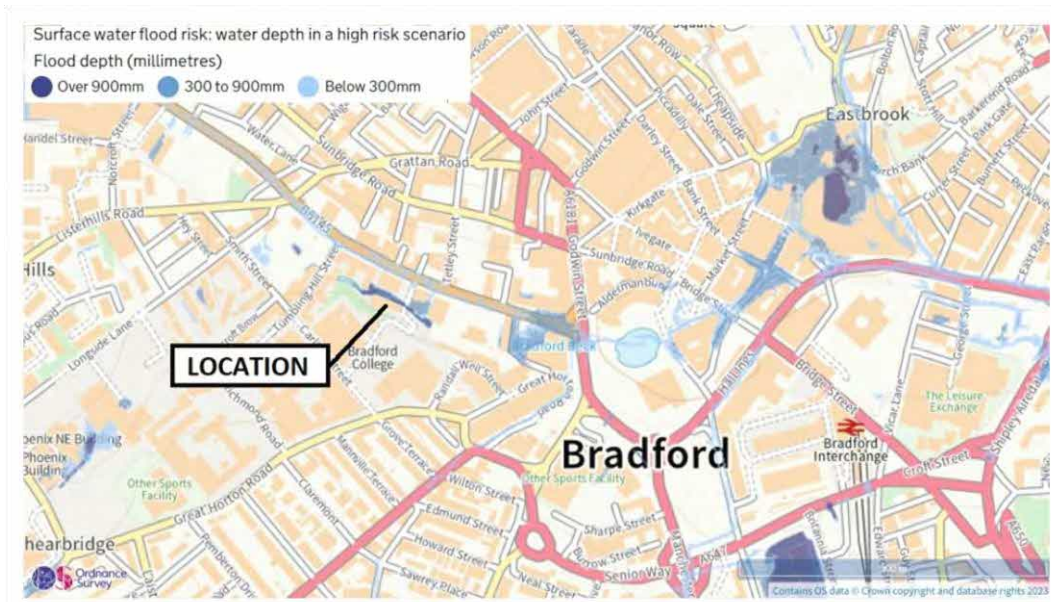


Figure 5-1 – Environment Agency Flood Risk from Surface Water – High Risk (1 in 30 Year)

Figure 5-2 shows the medium risk 1 in 100-year chance of flooding i.e. the typical design event for surface water flood risk. The depths and extent are very similar to the high-risk scenario (1 in 30 year).

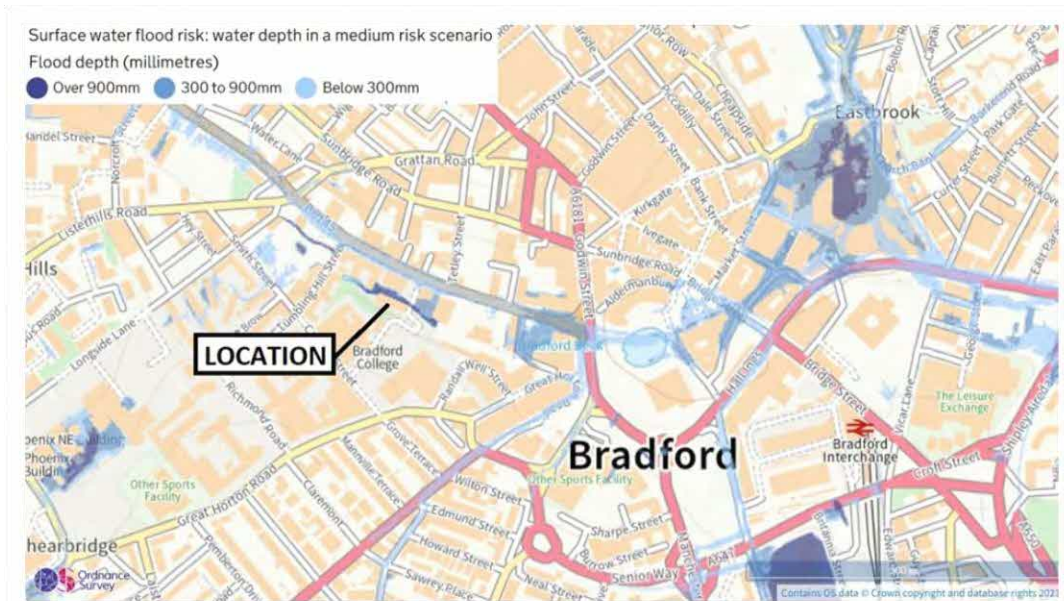


Figure 5-2 – Environment Agency Flood Risk from Surface Water – Medium Risk (1 in 100 Year)

Figure 5-3 shows the low risk 1 in 1,000-year chance of flooding i.e. the most extreme surface water flood risk event. As with the high and medium risk maps, the extent and depth of flooding to the beck remains relatively constant. However, a greater depth (300 -900 mm) and extent now arise on Thornton Road with the carriageway routing flows eastward into the city centre.

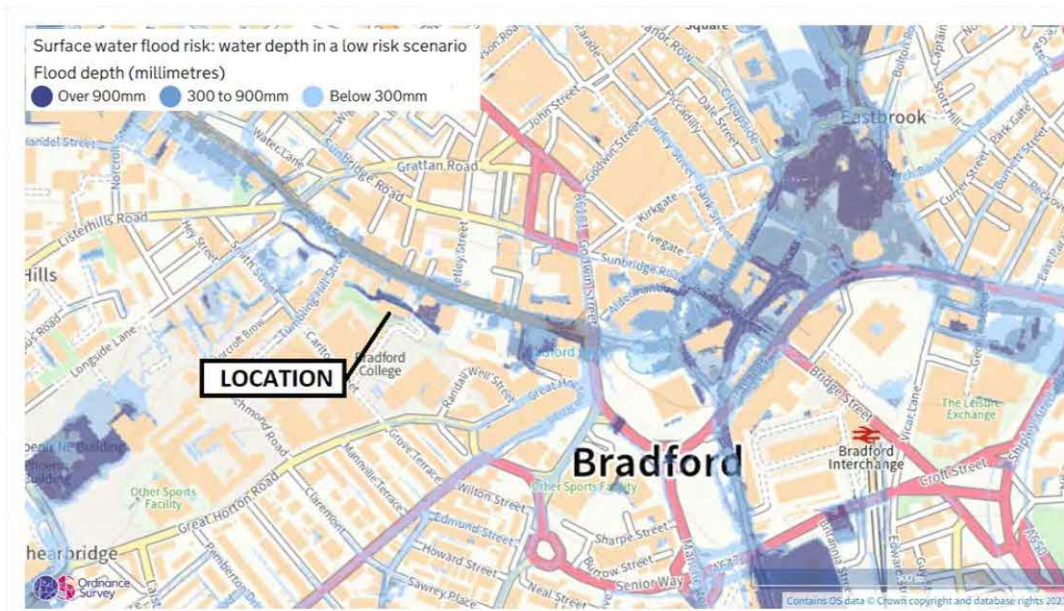


Figure 5-3 – Environment Agency Flood Risk from Surface Water Low Risk (1 in 1,000 year)



### 5.3 City of Bradford Metropolitan District Council Flood Risk Information

The SFRA Risk of Flooding from Surface Water map correlates with the same risks shown upon the Environment Agency mapping.

The Flood Risk Management map shows that Junction Mill falls within areas at risk from reservoir failure flooding (see later Environment Agency mapping extract) and it falls within an area where flood warnings are given (see Section 7).

The SFRA Working with Natural Processes map does not show any relevant information for the site.

The SFRA Risk of Flooding from rivers and Sea correlates with the Environment Agency mapping showing the Flood Zone 2 extents as low risk.

The SFRA Groundwater Flooding map shows high risk in direct adjacency to the beck channel (greens shading) but very low risk elsewhere (red shading). It can therefore be considered that groundwater risk is not an issue unless basements are built directly adjacent to, and at a similar level to the invert of the becks. Otherwise, the risk of flooding to ground level buildings can be considered very low.

### 5.4 Flooding from Other Sources

The Environment Agency produce mapping showing areas at risk should catastrophic failure of reservoirs occur. The outlines do not include an extra layer (red hatching) showing risk extent if failure happened during a major river flood event. An extract is shown in Figure 5-4 below.

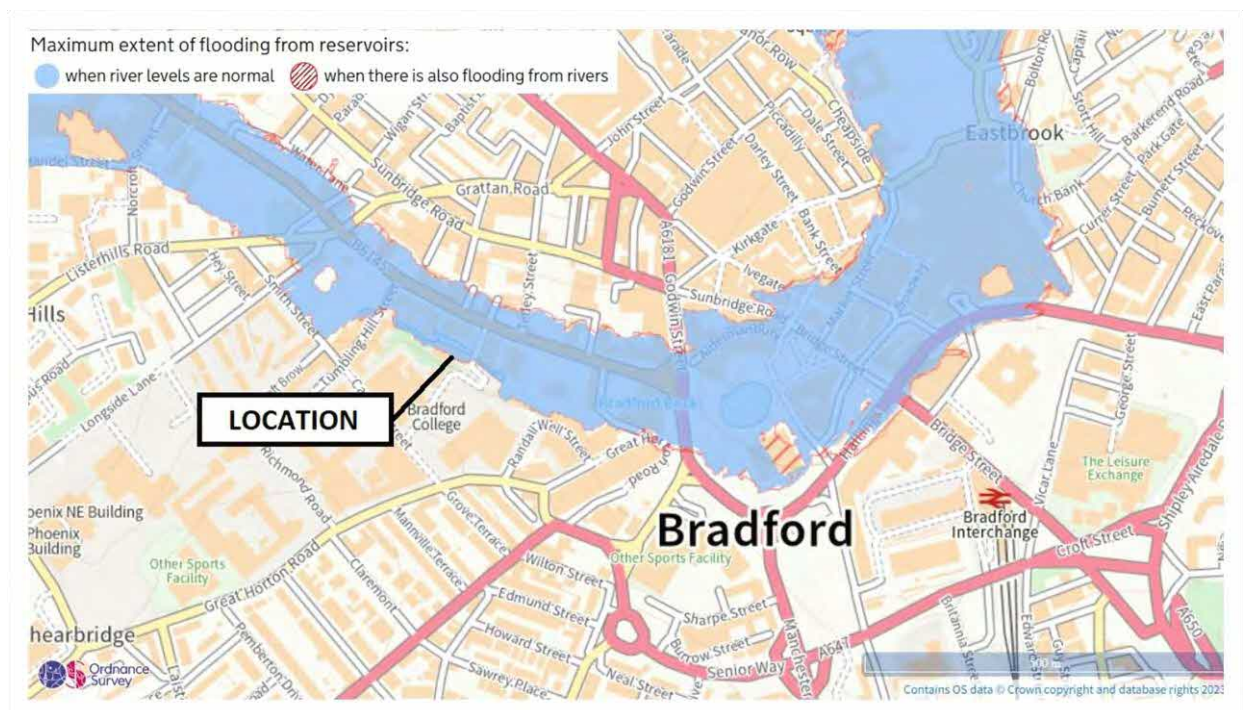


Figure 5-4 – Environment Agency Flood Risk from Reservoirs



The risk extents can be seen to roughly mimic that of the Flood Zone 2 extents so risk could be assessed as high. However, the Environment Agency mapping advises that the risk is associated with Challow Heights East and West Reservoirs owned by Yorkshire Water, and Lower and Upper Chellow Reservoirs owned by Bradford Council. The constant maintenance and close scrutiny reservoirs have from the 'Authorities' (Yorkshire Water and Bradford Council in this case), means the risk associated with catastrophic failure and increase in risk as a result of climate change is actually considered low.

Flooding from existing sewers and drains can present a flood risk which will generally relate to surface water flooding during extreme rainfall rather than foul sewer flooding. On this basis the risk of flooding from existing drains and sewers is therefore considered medium in line with the primary flood risks .

Flooding from new drainage can present a risk of flooding. New drainage will have to be designed to modern British Standard, Building Regulation, Sewers for Adoption and SuDS legislation standards in full liaison with the Lead Local Flood Authority team and Yorkshire Water. This is considered in more detail in Section 6 Surface Water management. On this basis the risk of flooding from the new drainage is therefore considered low.

There are no canals or other artificial waterbodies in the vicinity of the site so flood risk from such features is considered low.

## **5.5 Flood Risk Mitigation**

Flood risk mitigation is primarily provided by the elevated ground and floor levels. The proposed FFL of the building is to be set at 102.75m. This is approximately 580mm above the 1 in 100 year + 30% climate change modelled flood levels in Bradford Beck. This is also 150mm above the existing FFL and approximately 320mm above the bottom of kerb level on the Thornton Road. This will ensure protection against flooding on Thornton Road.

## 5.6 Flood Risk Summary

Following the review of available flood information, the following can therefore be summarised in terms of flood risk:-

|   |            |
|---|------------|
| Primary River (Beck) Flood Risk                   | <b>LOW</b> |
| Surface Water Flood Risk                          | <b>LOW</b> |
| Groundwater Flood Risk                            | <b>LOW</b> |
| Reservoir Flood Risk                              | <b>LOW</b> |
| Existing Drainage Flood Risk                      | <b>LOW</b> |
| New Drainage Flood Risk                           | <b>LOW</b> |
| Risk from Canals and other artificial waterbodies | <b>LOW</b> |
| Risk from Climate Change                          | <b>LOW</b> |
| Residual (Lifecycle) Primary River Flood Risk     | <b>LOW</b> |

## 6.0 Drainage Strategy and Surface Water Management

### 6.1 Existing Drainage

A CCTV drainage survey has been undertaken with results presented in **Appendix G**.

In addition to the drainage survey it should be noted that multiple invert levels are marked on the topographical survey suggesting multiple connections into the river. Access for the drainage survey was not possible owing to existing vegetation as shown in Figure 6-1 but downpipes can be seen in this area.

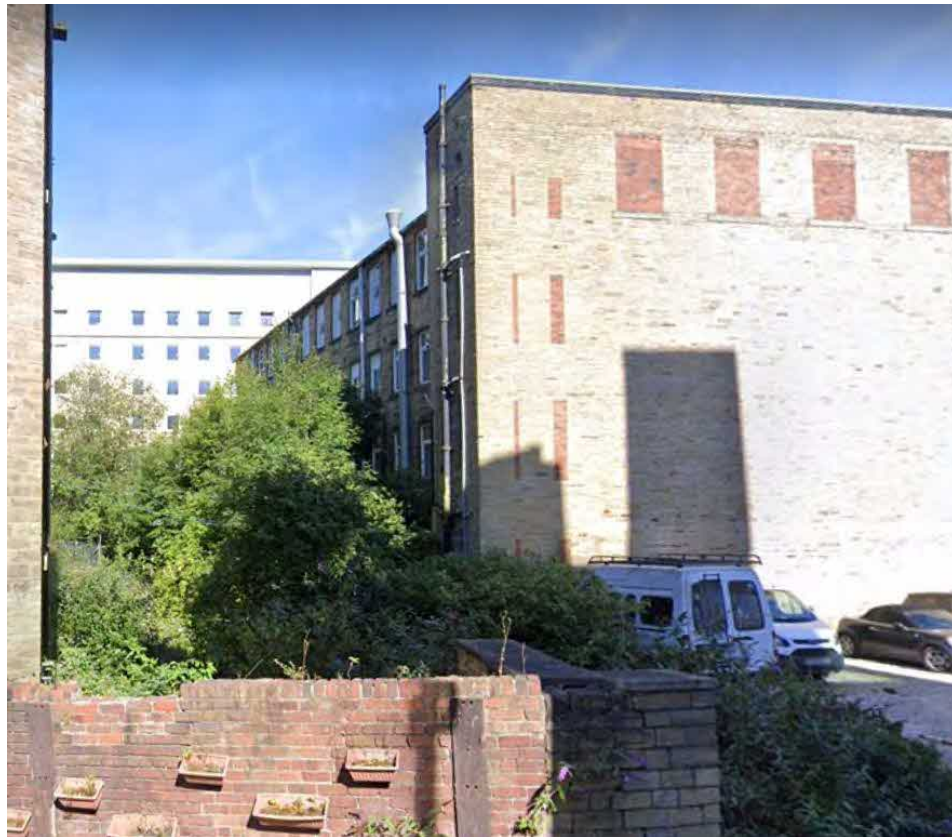


Figure 6-1 Image of Junction Mill building with Bradford Beck under vegetation to left of view

It should also be noted that rainwater pipes are present on the Junction Mill building at the frontage with Thornton Road, it is expected that connections from this side of the building connect into the Yorkshire Water network.

A copy of the public sewer records from Yorkshire Water has been presented within **Appendix H** Appendix G. This shows a 450-brick combined sewer flowing northwards within Westholme Street. This sewer then merges into 1700 brick combined within Thornton Road. It is anticipated that the foul drainage from site discharges into the 450 combined sewer within Westholme Street, potentially through

an existing combined pipe on site crossing the beck. The sewer crossing the beck is under private ownership. Connections were partially confirmed via CCTV survey in **Appendix G**.

## 6.2 Proposed Drainage

### 6.2.1 Foul Water Drainage

The proposal for the foul drainage is to make amendments to the existing foul water system to accommodate new below ground connections from the proposed building. The point of connection into the public sewers is to remain unchanged. The existing drains foul drains must be repaired/ replaced as required. This is to be confirmed based on CCTV survey information once missing information is resolved. Repairs will be required based on the survey information received to date.

A potential foul water drainage route has been shown on the Proposed Drainage Layout in **Appendix I**.

Yorkshire Water have confirmed in initial correspondence (**Appendix J**) that a trade effluent licence is not required for the proposals. Yorkshire Water will need to confirm approval to the flow rates entering the public sewer network.

### 6.2.2 Surface Water Drainage

The LandIS Soilsmap map indicates impeded drainage characteristics in the site vicinity. Additionally, due to the presence of made ground, proximity to watercourse and existing drainage arrangement it is assessed that soakaways will not be feasible for the site.

Surface water should discharge to Bradford Beck which is likely to be the existing arrangement for the rear downpipes but must be proven. The pre-application response from the LLFA stated that the status quo must be maintained. It is considered more sustainable to disconnect flows from the combined sewer and reconnect to a watercourse. On that basis the existing discharge rate from the site will be maintained and the figures from all roof areas will be combined for an outfall into Bradford Beck.

The existing Junction Mill roof area measured from the topographical survey is 830m<sup>2</sup>. It is unlikely that any existing external areas are positively drained. Using the modified rational method an existing flow rate for a number of return period events has been obtained.

| Event    | Flow Rate (l/s) |
|----------|-----------------|
| 1 in 1   | 12.1            |
| 1 in 30  | 28.0            |
| 1 in 100 | 35.1            |



There is a requirement to consider the impacts of 30% increase in peak rainfall due to climate change as discussed in Section 4.

The proposed roof area is 860 m<sup>2</sup> and is to be drained via roof outlets that combine into one below ground drainage outlet. The surfacing of the external areas is likely to be impermeable. A channel drain is provided under the entrance area from Thornton Road to prevent runoff entering the highway but this area has not been double counted in the calculations as there is a high level roof above. The levels in the external area adjacent to the river are to be confirmed but the likely catchment is ~190m<sup>2</sup>.

Therefore, there is a net increase in contributing area. Hydraulic modelling has been undertaken to determine the attenuation volume required to achieve the allowable discharge rates. The modelling results included in **Appendix K** indicate that the proposed chambers of the drainage layout in **Appendix I** are sufficient volume to allow for surface water discharge to be attenuated below the existing flow rate for the 1 in 1 year, 1 in 30 year plus 25% climate and 1 in 100 year plus 30% climate change events.

It should be noted that there are proposals to alter the existing footpaths to improve access to the building. These will be agreed with the Bradford Metropolitan District Council. It is proposed that the drainage of the altered areas will be drain to the highway drains to replicate the existing arrangement.

## 7.0 Occupants and Users of the Development (Access & Egress)

It is an important consideration of a Flood Risk Assessment to consider the occupants and users of the development should flooding occur.

With the low risk to the Future Technology Centre occupants due to the elevated ground floor level and availability of refuge on the upper levels it is considered that a flood warning, management and evacuation plan could be developed by the building operator.

## 8.0 Exception Test

With reference to NPPF Table 1 Flood Zones, according to Environment Agency mapping, the site area is in Flood Zone 2 Medium Probability.

With reference to NPPF Annex 3 Flood Risk Vulnerability Classification, the proposed usage would be More Vulnerable classification.

With the site being located within a Flood Zone 2 Medium Probability and being of More Vulnerable classification, reference to NPPF Table 2 Flood Risk Vulnerability and Flood Zone Compatibility, shows that 'Development is Appropriate'.

| Essential Infrastructure |   | Essential infrastructure  | Highly vulnerable       | More vulnerable         | Less vulnerable | Water compatible |
|--------------------------|---|---------------------------|-------------------------|-------------------------|-----------------|------------------|
| Flood Zone               | Zone 1  | ✓                         | ✓                       | ✓                       | ✓               | ✓                |
|                          | Zone 2  | ✓                         | Exception Test required | ✓                       | ✓               | ✓                |
|                          | Zone 3a †   | Exception Test required † | X                       | Exception Test required | ✓               | ✓                |
|                          | Zone 3b *   | Exception Test required * | X                       | X                       | X               | ✓*               |
| <b>Key:</b>              | ✓ Exception test is not required<br>X Development should not be permitted   |                           |                         |                         |                 |                  |
| <b>Notes to Table 2</b>  | <ul style="list-style-type: none"> <li>• This table does not show the application of the Sequential Test which should be applied first to guide development to the lowest flood risk areas; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;</li> <li>• The Sequential and Exception Tests do not need to be applied to those developments set out in National Planning Policy Framework footnote 56. The Sequential and Exception Tests should be applied to 'major' and 'non major' development;</li> <li>• Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.</li> </ul> <p>“†” In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.</p> <p>“*” In Flood Zone 3b (functional floodplain) essential infrastructure that has passed the Exception Test, and water-compatible uses, should be designed and constructed to:</p> <ul style="list-style-type: none"> <li>• remain operational and safe for users in times of flood;</li> <li>• result in no net loss of floodplain storage;</li> <li>• not impede water flows and not increase flood risk elsewhere.</li> </ul> |                           |                         |                         |                 |                  |

On this basis, it is considered no further input with regards to Exception Testing is required.

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## 9.0 Flood Risk Assessment Credentials

This Flood Risk Assessment has been carried for the proposed development by Curtins civil engineering team who have extensive combined experience of civil engineering and flood risk assessment preparation.

This Flood Risk Assessment has been carried out following the general requirements of the NPPF (2022) and the City of Bradford Metropolitan District Council Strategic Flood Risk Assessment requirements.

## 10.0 Conclusion

This Flood Risk Assessment has been conducted to assess flood risk to support the planning application for demolish and rebuild of Junction Mill for Bradford College educational use.

This Flood Risk Assessment has been conducted in general accordance with the requirements of the NPPF (2022) and LLFA requirements to provide a sufficient level of detail on flood risk for the application.

The Environment Agency Flood Map for Planning shows Junction Mill to be a Flood Zone 2 Medium Risk site with direct adjacency to the Bradford Beck. A sequential approach has been considered which justifies the use of this land for the development. With the development proposals being educational commercial More Vulnerable usage, NPPF table 2 shows the development type of as appropriate development.

Flood data provided by Bradford Council shows that the deign flood level ( 1 in 100 year plus climate change) does not present a flood risk to the educational use ground floor level of the building occupants owing to the mitigation measures proposed.

Surface water flood risk has been assessed and the risk is also identified as low.

Other secondary flood risks including groundwater and reservoir flooding have also been assessed and the site is considered to be at low risk from these sources.

Risk from the provision of new surface water drainage is considered low.

Foul water will discharge from the development via the existing point of connection to be proven by survey.

Surface water will discharge from the development into Bradford Beck at a maximum rate of 35.1 l/s.

---

## 11.0 Appendices

**Appendix A Site Location Plan**

**Appendix B Topography Survey**

**Appendix C Proposed Site Plan**

**Appendix D Modelled Fluvial Flood Levels for a 100 year + 30% Climate Change Event**

**Appendix E Official Copy of Title Plan**

**Appendix F Flood Map for Planning**

**Appendix G CCTV Survey**

**Appendix H Yorkshire Water Public Sewer Records**

**Appendix I Proposed Drainage Layout**

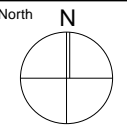
**Appendix J Yorkshire Water Correspondence**

**Appendix K Hydraulic Modelling Calculation Summary**

## Appendix A Site Location Plan



This document is © Bond Bryan Architects Ltd.  
 If in doubt ASK. Drawing measurements shall not be obtained by scaling. Verify all dimensions prior to construction.  
 Immediately report any discrepancies on this document to the Originator. This document shall be read in conjunction with associated models, specifications and related consultants' documents.



Notes: To be read in conjunction with all other information.  
 Data provided by: Ordnance Survey.  
 Data Provider Copyright: Crown Copyright 2011 All Rights Reserved. License Number 100047514.  
 Co-ordinate reference system: British National Grid (OSGB36/E).  
 OS Plan data extracted from FIND maps, www.findmaps.co.uk 11.05.11.  
 Bradford College land updated to show David Hockney building and associated site landscaping, as shown on Ares Illustrative Landscape Masterplan drawing ALA025L03 Rev A, approved as part of City of Bradford Metropolitan Council Planning Application 12/00714/MAF.  
 Bradford College land updated to show ATC building and associated site landscaping, as shown on Bond Bryan record drawing BCS-BBA-XX-XX-DR-A-01003-R0-R-Proposed Site Plan.

Land Boundaries:  
 o Land boundaries from City of Bradford Metropolitan Council plans. Information provided to Bond Bryan 01.2023  
 - Plan No.1, G/8/25 B, dated 1997 - for site bordering Carlton Street / Great Horton Road / Randell Well Street / Bradford Beck / Thornton Road / West Brook.  
 Land bordering Carlton Street / Great Horton Road (corner) is no longer in College ownership (not shown). **College to confirm Carlton Road boundary.**  
 o Information provided to Bond Bryan 08.10.07.  
 - Plan No.7 - for sites bordering Smith Street / Tumbling Hill Street and Thornton Road / Soho Street.

**ALL BOUNDARIES TO BE CONFIRMED BY BRADFORD COLLEGE**

|     |   |    |    |            |
|-----|---|----|----|------------|
| P03 | Updated, with College information.                                    | KR | RN | 01/03/2023 |
| P02 | Updated, with latest ownership information and DHB and ATC buildings. | KR | RN | 17/02/2023 |
| P01 | First issue   | JB | RN | 18/08/2021 |

| rev | description | drawn | checked | date |
|-----|-------------|-------|---------|------|
|-----|-------------|-------|---------|------|



BOND BRYAN

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 w www.bondbryan.co.uk

**Bradford College**

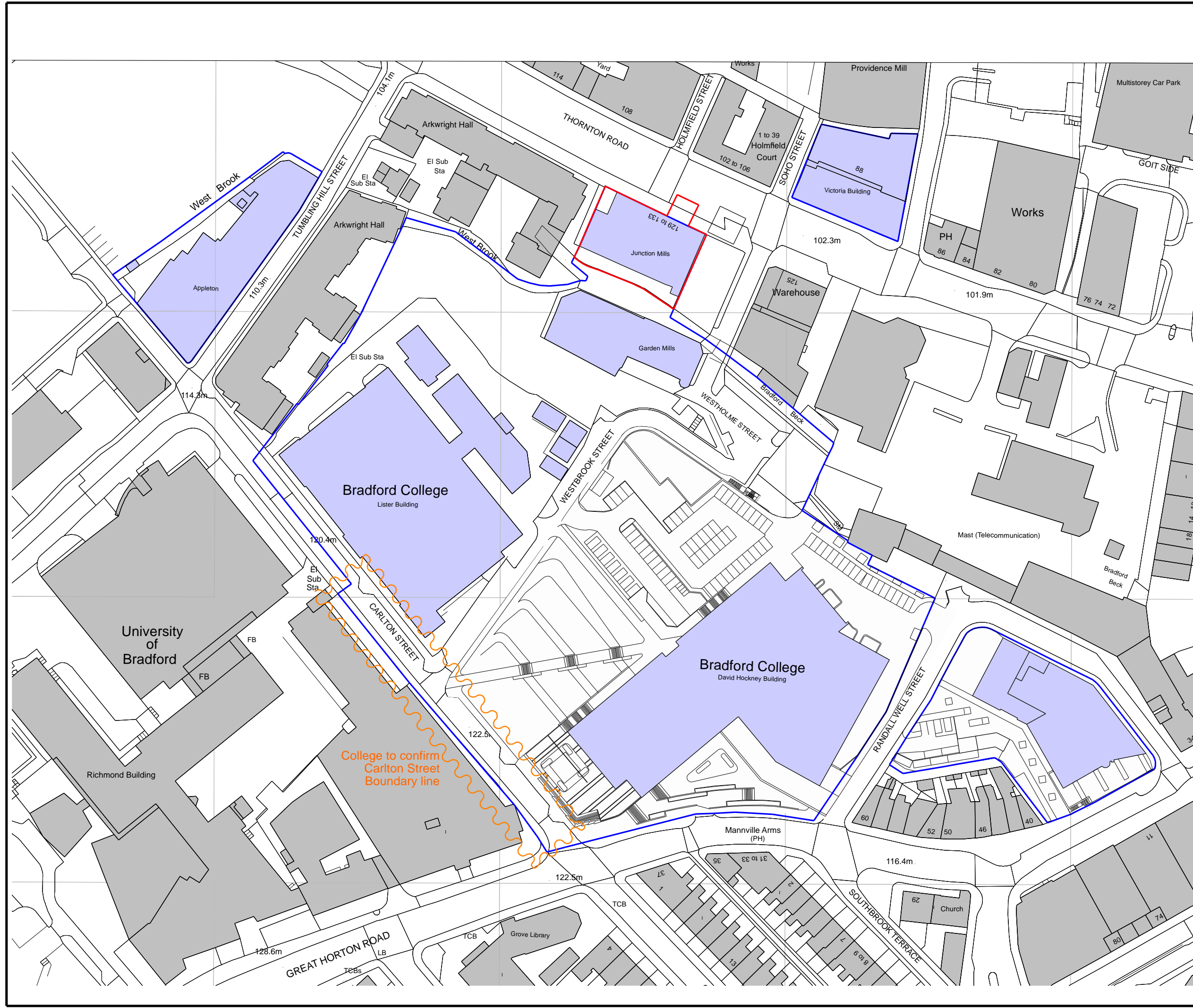
**Bradford College CTF  
 Thornton Road Site (JM)  
 Future Technologies Centre (FTC)**

**Bradford College**

**Location Plan**

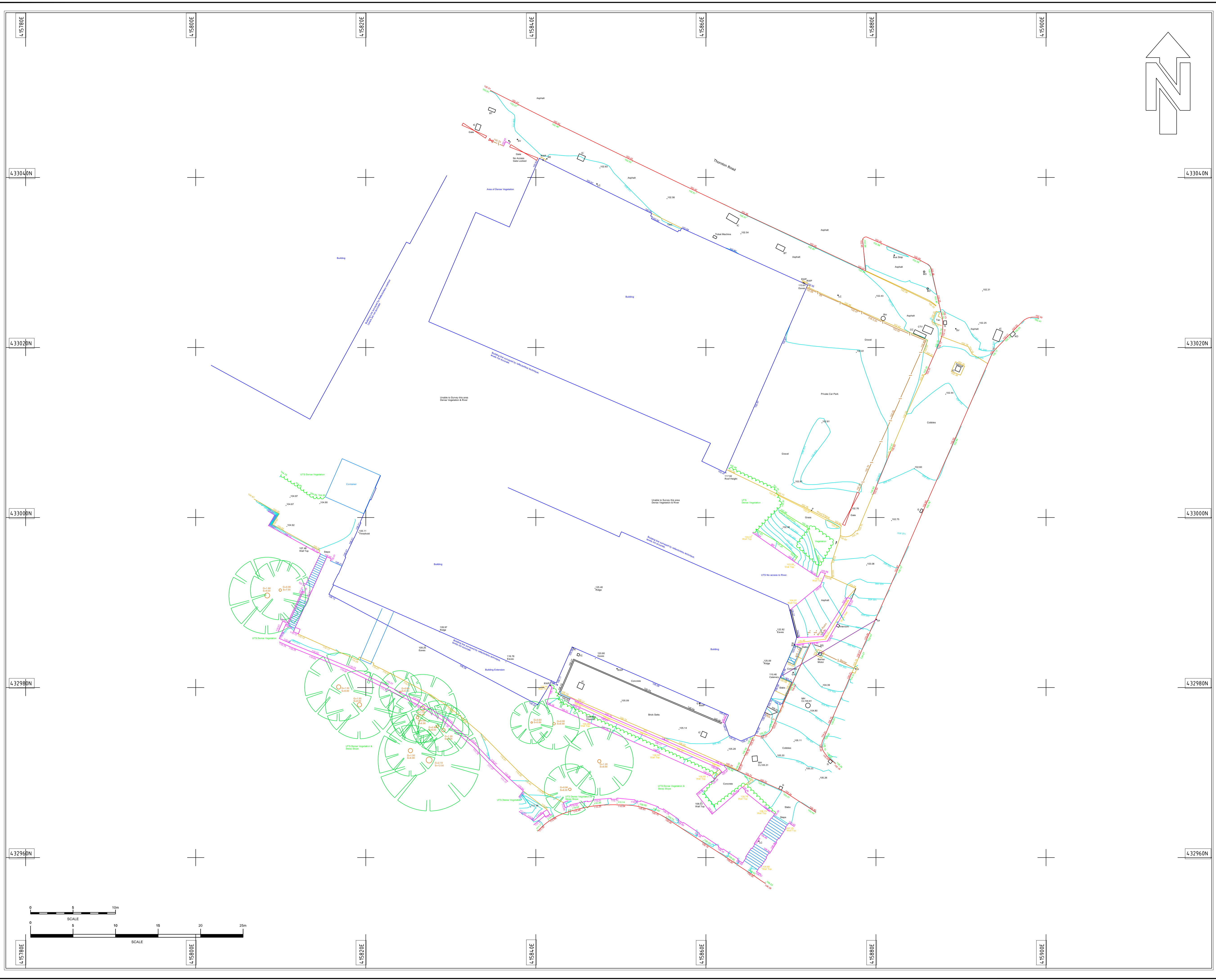
|  |   |
|--|---|
| Originator project ref<br><b>21030</b> | Purpose of Issue<br><b>Design</b>             |
| Scale(s)<br><b>1:1250</b>              | Status<br><b>S1 Suitable for Coordination</b> |
| Paper size<br><b>A3</b>                | Revision<br><b>P03 Preliminary</b>            |

|         |            |        |       |      |      |        |        |          |
|---------|------------|--------|-------|------|------|--------|--------|----------|
| project | originator | volume | level | type | role | number | status | revision |
| BCCTF   | BBA        | JM     | ZZ    | DR   | A    | 1001   | S1     | P03      |



## Appendix B Topography Survey



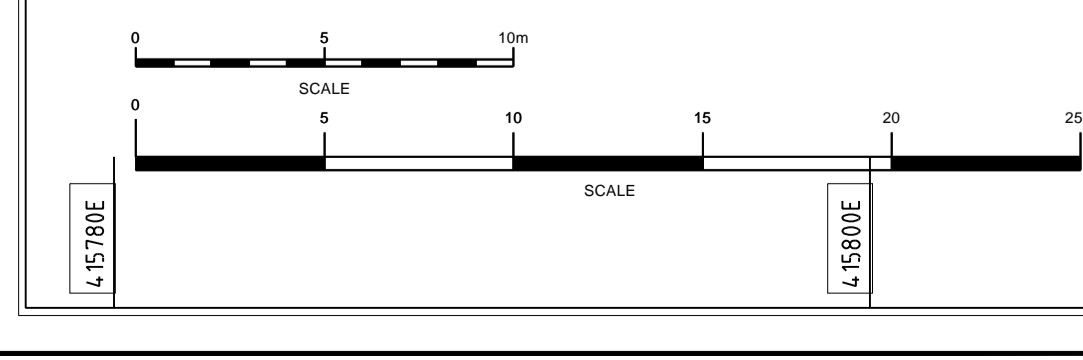


**TOPOGRAPHICAL LEGEND**

|  |                    |
|--|--------------------|
|  | Building           |
|  | Surface Edge       |
|  | Road Kerb Channel  |
|  | Road Edge          |
|  | Banking            |
|  | Fence              |
|  | Wall               |
|  | Wall Top           |
|  | Structure          |
|  | Structure Overhead |
|  | Vegetation Extents |
|  | Drainage Channel   |
|  | Overhead Telecom   |
|  | Contour Line       |

**ABBREVIATIONS**

|      |                       |     |                        |     |                       |
|------|-----------------------|-----|------------------------|-----|-----------------------|
| AC   | Asbestos Cement       | FM  | Fire Hydrant           | RW  | Retaining Wall        |
| ACU  | Air Conditioning Unit | FS  | Flag Staff             | S   | Stump                 |
| AR   | Asphalt               | G   | Gully                  | SA  | Sidewalk              |
| AV   | Air Valve             | GRN | GRN Accidental         | SC  | Sheet Concrete        |
| BB   | Belted Bascon         | GV  | Gas Valve              | SF  | Safety Fence          |
| BD   | Block Drop            | HR  | Head Rail              | SI  | Sign Iron             |
| BdL  | Bed Level             | IC  | Inspection Cover       | SL  | Soft Level            |
| BH   | Borehole              | IL  | Invert Level           | SP  | Spot Post             |
| Bk   | Block                 | IR  | Iron Rail Fence        | SR  | Steel Railing         |
| BL   | Basement Light        | KD  | Kerb Drip              | SR  | Structure Support     |
| BO   | Bolton                | LB  | Letter Box             | ST  | Stop Top              |
| BR   | Block                 | LC  | Lighting Column        | SV  | Stop Valve            |
| BS   | Bus Stop              | LH  | Landing                | SW  | Survey Station        |
| BT   | British Telecom Cover | LOR | Loss Of Reflection     | SVP | Survey Point          |
| BW   | Barbed Wire Fence     | LOS | Loss Of Signal         | SW  | Survey Wall           |
| Can  | Canister              | MCC | Multiple Callbox       | Tac | Traffic Pavement      |
| CAT  | Canalway Level        | MK  | Manhole Cover          | TBS | Telephone Call Box    |
| CB   | Close Boarded Fence   | MW  | Manhole Post           | TFR | Taken From Records    |
| CC   | Control Cabinet       | MP  | Manhole Position       | TH  | Top of Hole           |
| CI   | Cable Ion             | NFI | No Further Information | TOW | Top Of Wall           |
| CL   | Compacted Iron Fence  | NP  | Non Pipes Visible      | TS  | Topographic Pole      |
| CL   | Cover Level           | NPV | No Pipes Visible       | TS  | Traffic Signal        |
| CL   | Chain Link Fence      | OSA | Off Survey Area        | TS  | Unable to Gain Access |
| CL   | Concrete              | P   | Pipe                   | UTL | Unable to Locate      |
| CL   | Concrete              | PE  | Polystyrene            | UTL | Unable to Survey      |
| CL   | Concrete Level        | PL  | Pole                   | UTL | Unable to Survey      |
| CTV  | Cable TV              | PL  | Pathside Fence         | UTL | Unable to Trace       |
| CM   | Concrete Wall         | PM  | Paving Meter           | VC  | Verified Cap          |
| DI   | Ductile Iron          | PR  | Post and Rail Fence    | VDP | Vehicle Detector Pads |
| DI   | Displacement          | PWC | Polystyrene            | VP  | Vertical Pole         |
| DSW  | Dry Stone Wall        | PW  | Post and Wire Fence    | VTP | Vertical Pipe         |
| EB   | Electric Base         | RE  | Rodding Eye            | WL  | Water Level           |
| E.F. | Electric Fence        | R   | Rail                   | WM  | Water Meter           |
| EOT  | End of Top            | RR  | Rail Level             | WM  | Water Meter           |
| EP   | Electric Pole         | RP  | Reflector Post         | WO  | Water Wash Out        |
| ER   | Earth Road            | RS  | Road Sign              | WO  | Water Wash Out        |
| FFL  | Finished Floor Level  | RWP | Rain Water Pipe        | WS  | Waste Sample          |
|      |                       |     |                        | WV  | Waste Valve           |



|     |         |    |      |
|-----|---------|----|------|
| REV | DETAILS | BY | DATE |
|-----|---------|----|------|

|      |  |       |   |
|------|--|-------|---|
| GRID | ORDNANCE SURVEY<br>Related to OS Network<br>Reference Stations by<br>VRS (RTK) observations. | DATUM | ORDNANCE SURVEY<br>Related to OS Network Reference Stations by VRS (RTK)<br>observations. |
|------|--|-------|---|

**CENTRAL ALLIANCE SURVEY**

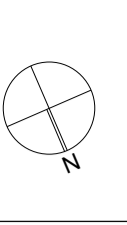
Tel: 01924 229889  
Email: info@central-alliance.co.uk  
Web: www.central-alliance.co.uk

ALLIANCE HOUSE, SOUTH PARK WAY,  
WAKEFIELD WF2 0XJ

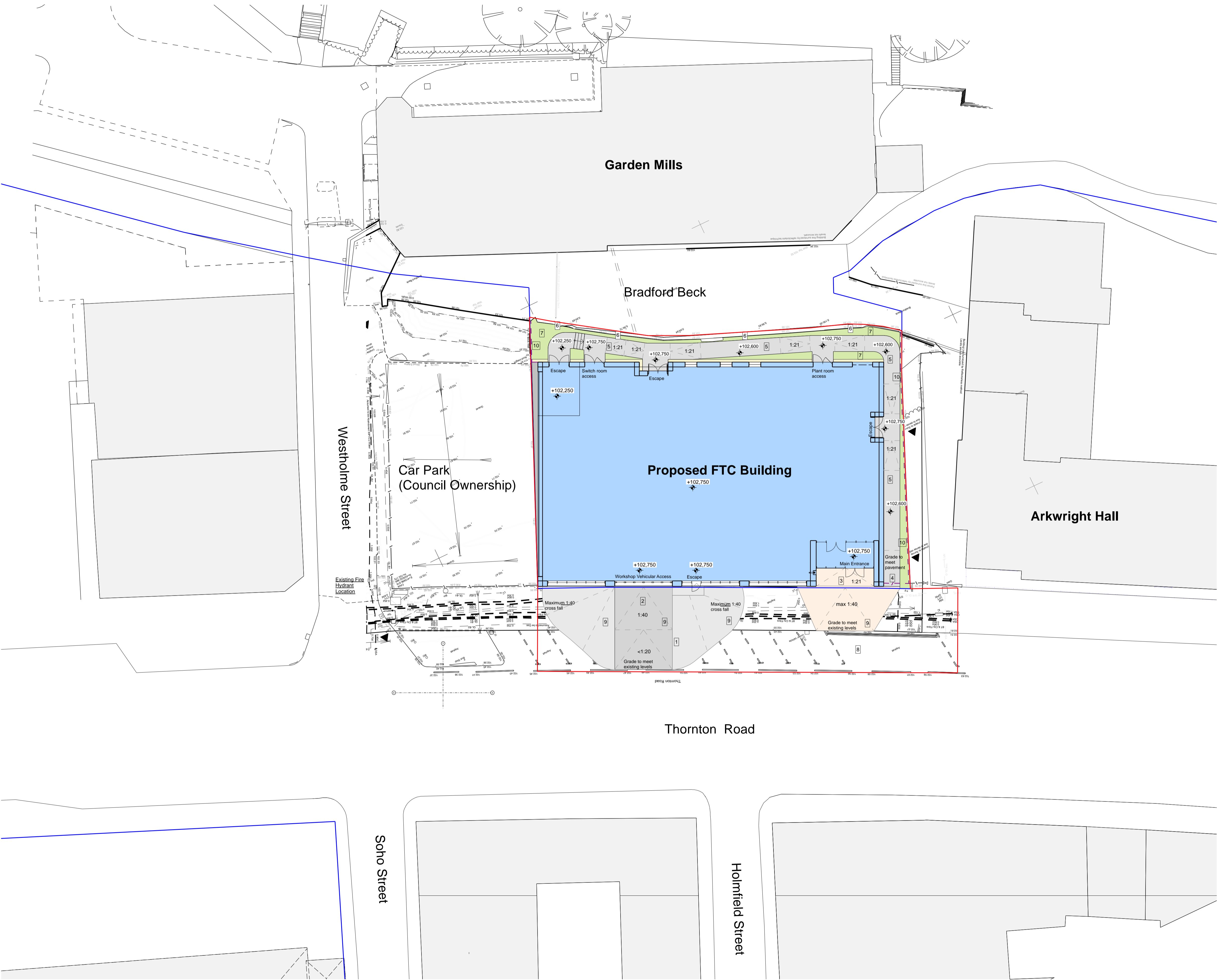
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|----------------|--|-------|----------|-----------------|------------|------|--|
| CLIENT:        | RSK Geosciences<br>Humber Road<br>Abbey Park<br>Coventry |       |          |                 |            |      |  |
| SITE LOCATION: | Bradford College<br>Thornton Road, Bradford              |       |          |                 |            |      |  |
| SURVEY TITLE:  | Topographical Survey                                     |       |          |                 |            |      |  |
| SURVEYED BY:   | MN / RC  | DATE: | Sep 2021 | DRAWING NUMBER: | 2381534_P  |      |  |
| DRAWN BY:      | MN / TR  | DATE: | Sep 2021 | SCALE:          | 1:200 @ A1 |      |  |
| APPROVED BY:   | TR / NT  | DATE: | Sep 2021 | SHEET NUMBER:   | 1 of 1 A1  | REV: |  |

## Appendix C Proposed Site Plan





OS Plan  
 Data provided by: Ordnance Survey  
 Data Provider Copyright: Crown Copyright 2011 All Rights Reserved. License Number 100047514  
 Approximate last update of dataset: 29.03.11  
 Co-ordinate reference system: British National Grid (OSGB36/E)  
 OS Plan data extracted from FND maps www.findmaps.co.uk 11.05.11  
 To be read in conjunction with all other information.  
 Land Boundaries  
 Land boundaries produced from City of Bradford Metropolitan Council plans. Information provided to Bond Bryan 08.10.07.  
 - Plan No.3 - for site bordering Great Horton Road / Marville Terrace / Grove Terrace  
 - Plan No.7 - for site bordering Smith Street / Tumbling Hill Street and Thornton Road / Soho Street  
 - Plan No.8 (G/B25 B) - for site bordering Carlton Street / Great Horton Road  
 All boundaries to be confirmed by Bradford College.  
 Topographical Survey  
 Proposed site is overlaid over topographical survey of existing conditions.  
 Data provided by: Central Alliance Ground Engineering Technical Services RSK  
 Drawing number: 2382184\_P-Rev.B Jun 2023



This drawing is based on some third party information, which may be inaccurate. Verification shall be obtained by independent professional survey.

**General Notes:**

- 4 no existing pay on street parking bays removed.
- New vehicle entrance ramp. Use - typically once a month.  
 Plus - 4-5 vehicle delivered via vehicle transporter / truck 2-3 times a year including non-runners.
- Processed main entrance.
- New 2.4m high security gate, LPS 1175 SR2 rated.
- Hard Landscape escape route minimum 1700mm wide to Landscape Architects details.
- 1100mm high balustrading to escape route adjacent Bradford Beck.
- Soft landscaping to Landscape Architects details.
- Potential for 2 additional on street parking bays to mitigate reduction.
- Pavement to be regraded to suit vehicle ramp, escape doors, and new pedestrian entrance, with maximum 1:40 cross falls.
- New 2.4m high security fencing, LPS 1175 SR2 rated. Line of fence shown in purple.

|     |   |    |    |            |
|-----|---|----|----|------------|
| P04 | First issue revised 2023 scheme             | KR | RN | 14/07/2023 |
| P03 | GA plan updated, building position adjusted | JB | JB | 25/06/2021 |
| P02 | GA plan updated                             | JB | JB | 25/06/2021 |
| P01 | First issue                                 | JB | JB | 09/06/2021 |

| rev | description | drawn | checked | date |
|-----|-------------|-------|---------|------|
|-----|-------------|-------|---------|------|



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 w www.bondbryan.co.uk

**Bradford College**  
**Bradford College CTF**  
**Thornton Road Site (JM)**  
**Future Technologies Centre (FTC)**

**Bradford College**

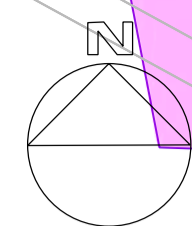
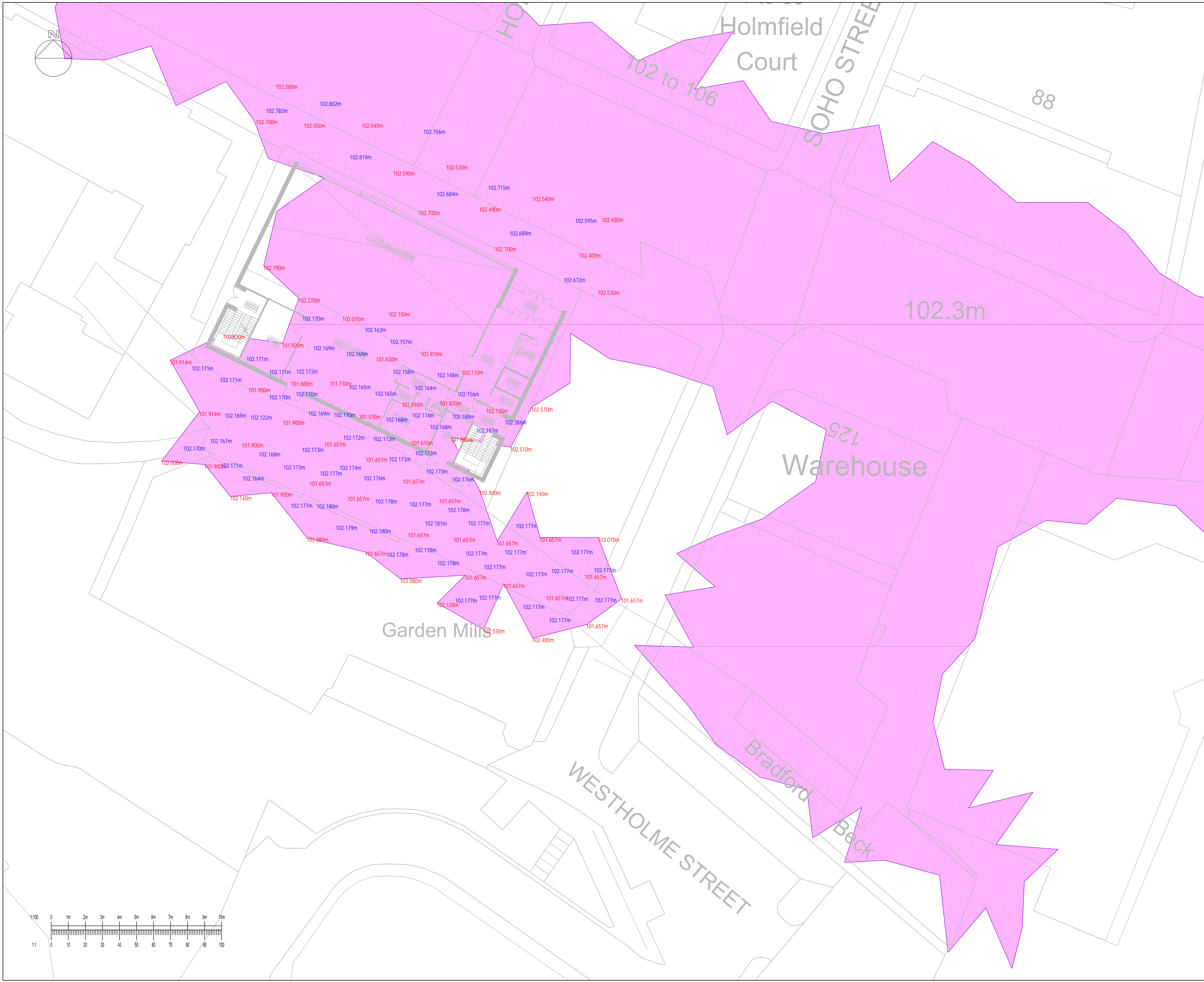
**Proposed Site Plan**

|                        |                                    |
|------------------------|------------------------------------|
| Originator project ref | Purpose of Issue                   |
| <b>21030</b>           | <b>Design</b>                      |
| Scale(s)               | Status                             |
| <b>1:200</b>           | <b>S2 Suitable for Information</b> |
| Paper size             | Revision                           |
| <b>A1</b>              | <b>P04 Preliminary</b>             |

|         |            |        |       |      |      |        |        |          |
|---------|------------|--------|-------|------|------|--------|--------|----------|
| project | originator | volume | level | type | role | number | status | revision |
| BCCTF   | BBA        | JM     | XX    | DR   | A    | 1004   | S2     | P04      |

## **Appendix D Modelled Fluvial Flood Levels for a 100 year + 30% Climate Change Event**

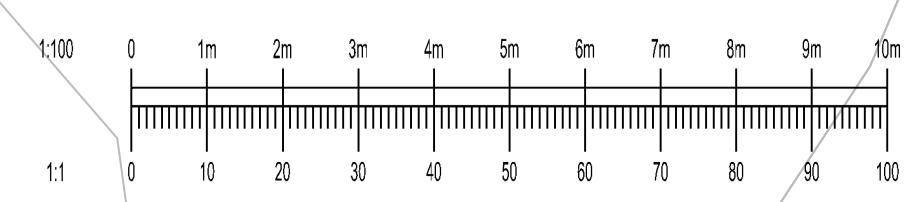




**GENERAL NOTES:**

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS AND ENGINEERS DRAWINGS AND SPECIFICATIONS.
2. DO NOT SCALE THIS DRAWING. ANY AMBIGUITIES, OMISSIONS AND ERRORS ON DRAWINGS SHALL BE BROUGHT TO THE ENGINEERS ATTENTION IMMEDIATELY. ALL DIMENSIONS MUST BE CHECKED / VERIFIED ON SITE.
3. ALL DIMENSIONS ARE IN METRES UNLESS NOTED OTHERWISE.
4. FOR GENERAL NOTES REFER TO DRAWING.

| KEY:  |                                    |
|---|------------------------------------|
| <span style="background-color: #FFB6C1; border: 1px solid black; display: inline-block; width: 10px; height: 10px;"></span> | FLOOD ZONE OUTLINE (100YR + 30%CC) |
| 00.000m   | EXISTING GROUND LEVEL              |
| 00.000m   | FLOOD ZONE OUTLINE (100YR + 30%CC) |



|      |               |          |     |       |
|------|---------------|----------|-----|-------|
| P01  | INITIAL ISSUE | 15/02/23 | AJR | LB    |
| Rev: | Description:  | Date:    | By: | Chkd: |



Civil & Structural - Transport Planning - Environmental - Infrastructure - Geotechnical - Conservation & Heritage - Principal Designer  
Birmingham - Bristol - Cambridge - Cardiff - Douglas - Dublin - Edinburgh - Glasgow - Kendal - Leeds - Liverpool - London - Manchester - Nottingham

Status: **SUITABLE FOR INFORMATION** S2

Project: **BRADFORD COLLEGE GARDEN MILLS & FTC**

Dig Title: **FLOOD ZONE OUTLINE & LEVELS SHEET 1 (100 YEAR + 30% CC)**

|          |             |             |
|----------|-------------|-------------|
| Drawn By | Designed By | Checked By  |
| AJR      | AJR         | LB          |
| Date     | 07/02/23    | Scales @ A1 |
|          |             | 1:100       |

|   |          |
|---|----------|
| Project No - Originator - Function - Spatial - Form - Discipline - Number | Revision |
| 079306 - CUR - XX - XX - D - C - 92401                                    | P01      |

W:\S2\Projects\079306 Bradford College Garden Mills & FTC\4-Plauder\Arch\Drawings\CA0702

## **Appendix E Official Copy of Title Plan**



**These are the notes referred to on the following official copy**

The electronic official copy of the title plan follows this message.

Please note that this is the only official copy we will issue. We will not issue a paper official copy.

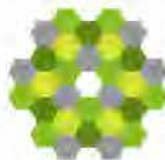
This official copy was delivered electronically and when printed will not be to scale. You can obtain a paper official copy by ordering one from HM Land Registry.

This official copy is issued on 24 August 2018 shows the state of this title plan on 24 August 2018 at 16:47:05. It is admissible in evidence to the same extent as the original (s.67 Land Registration Act 2002). This title plan shows the general position, not the exact line, of the boundaries. It may be subject to distortions in scale. Measurements scaled from this plan may not match measurements between the same points on the ground. This title is dealt with by the HM Land Registry, Nottingham Office .



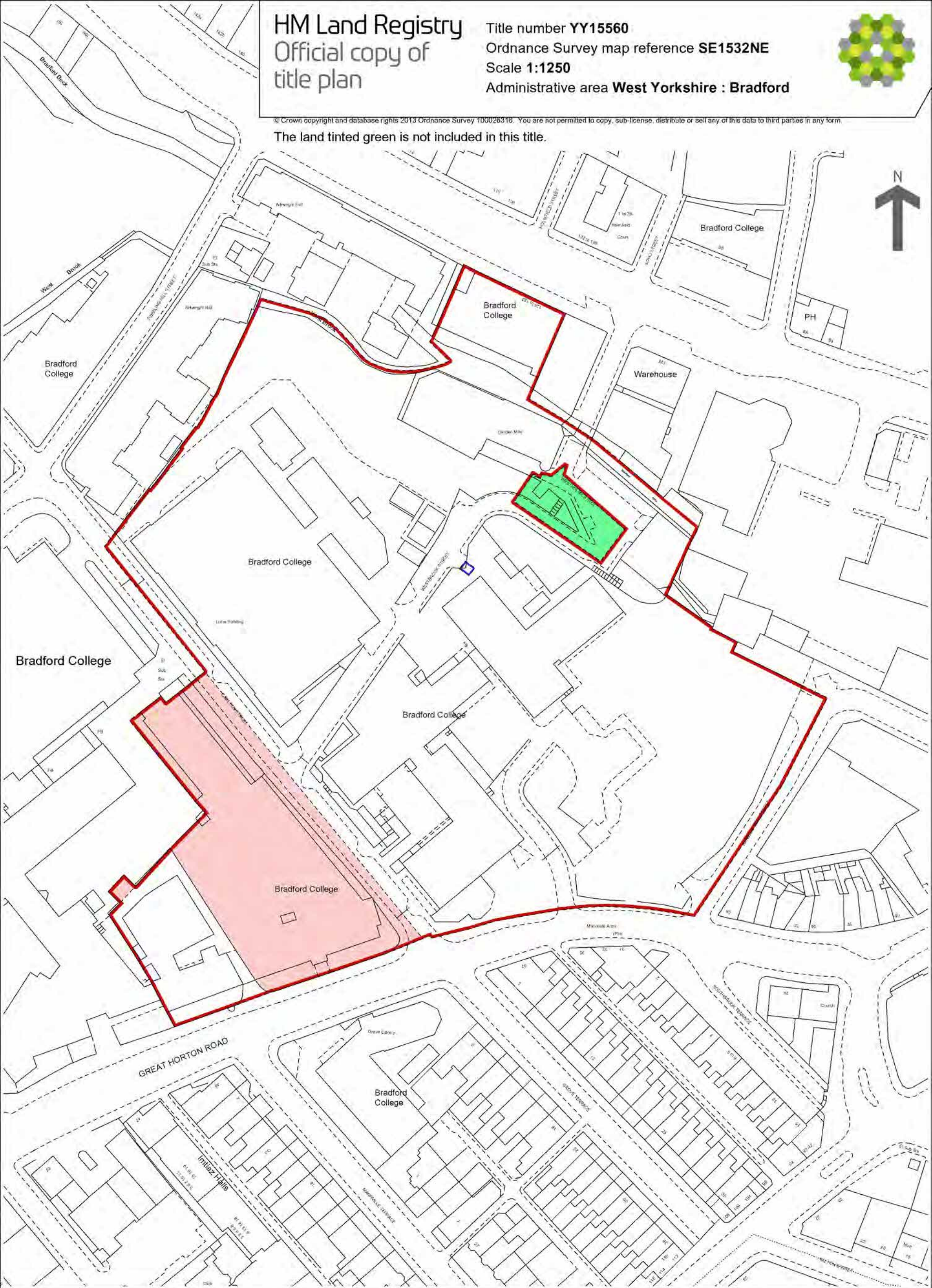
# HM Land Registry Official copy of title plan

Title number **YY15560**  
Ordnance Survey map reference **SE1532NE**  
Scale **1:1250**  
Administrative area **West Yorkshire : Bradford**



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The land tinted green is not included in this title.





## Appendix F Flood Map for Planning

# Flood map for planning

Your reference  
<Unspecified>

Location (easting/northing)  
415849/433026

Created  
19 Apr 2023 12:00

**Your selected location is in flood zone 2, an area with a medium probability of flooding.**

## This means:

- you must complete a flood risk assessment for development in this area
- you should follow the Environment Agency's standing advice for carrying out a flood risk assessment (see [www.gov.uk/guidance/flood-risk-assessment-standing-advice](http://www.gov.uk/guidance/flood-risk-assessment-standing-advice))

## Notes

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

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

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

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



## Flood map for planning

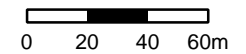
Your reference  
**<Unspecified>**

Location (easting/northing)  
**415849/433026**

Scale  
**1:2500**

Created  
**19 Apr 2023 12:00**

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



## Appendix G CCTV Survey



NOTES

GENERAL NOTES:
THIS DRAWING HAS BEEN PRODUCED WITH A PLAN SCALE ACCURACY OF 1:200
GENERAL NOTES INDICATED WHERE SURVEY DATA WAS OBTAINED FROM SURFACE INSPECTION DATA. GENERAL DAMAGE TO PROPERTY AND CONSTRUCTION WITHIN THE SURVEY AREA WILL NOT BE LEFT TO THE SURVEYOR'S DISCRETION.

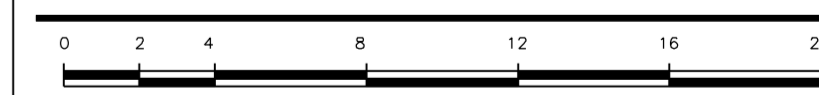
TOPOGRAPHICAL SURVEY/UTILITY KEY
Table listing symbols for various features like spot heights, contours, structures, and vegetation.

UTILITY SURVEY KEY
Table listing symbols for utility services such as electric cables, gas pipes, water mains, and drainage.

DISCLAIMER:
Electronic techniques have been used in the location of underground services. The results are not infallible and true positions should be confirmed by other means. The responsibility of the underground services information remains with the client.

UTILITY NOTES

ALL UTILITIES SHOWN ON THIS DRAWING HAVE BEEN LOCATED BY THE SURVEYOR. IT IS ASSUMED THAT THE MAIN SERVICE OFF THE SURVEY AREA REQUIRES EXTENSIVE LETTING WORKS TO ALLOW SURFACE SERVICES TO BE CARRIED OUT.



MIDLAND SURVEY LTD

HEAD OFFICE:
Cranshaw House, Westfield Road, Southam, Warwickshire, CV47 0AH
Tel: 01506 810811 Fax: 01506 810812
E-Mail: mid@southamsurvey.co.uk
www.midlandsurvey.co.uk

Client: RICK LEVETT BUDDNALL
Project: BRADFORD COLLEGE GARDEN MILLS, THORNTON ROAD, BRADFORD, BD1 2DW
Title: CCTV DRAINAGE SURVEY
Date: JUNE 2023
Scale: 1:200000
Dwg No: 43152A/1
Surveyor: A.B.
Checked: R.P.

TOPOGRAPHICAL (LAND) SURVEYORS / UTILITY SURVEYORS
BUILDING MEASUREMENT SURVEYORS / 3D LASER SCANNING
Logos for NIS, ACCREDITED, and THE SURVEY ASSOCIATION.



# Drainage Report

Prepared For

**Rider Levett Bucknall  
11A Platform New Station Street  
Leeds**

**LS1 4JB**

Site

**Bradford College Garden Mills  
Thornton Road  
Bradford**

**BD1 2DW**

**MIDLAND SURVEY**

**Andy Ball**

**cctv@midlandsurvey.co.uk**

**01926 810811**

Total Defects for Project



Total DRB Grades for Project



---

**43152A Bradford College - CCTV Survey Report : 27/06/23**

---

|                          |                                |
|--------------------------|--------------------------------|
| Name :                   | MIDLAND SURVEY                 |
| Contact :                | Ryan Pearson                   |
| Location :               | Cromwell House, Westfield Road |
| Town :                   | Southam                        |
| Region :                 | Warwickshire                   |
| Postcode :               | CV47 0JH                       |
| Email :                  | cctv@midlandsurvey.co.uk       |
| Contact Number :         | 01926 810811                   |
| Surveyor :               | Andy Ball                      |
| Valid Certification No : |                                |

**Client Information**

|            |                                 |
|------------|---------------------------------|
| Name :     | Rider Levett Bucknall           |
| Contact :  | Matthew Robertshaw              |
| Location : | 11A Platform New Station Street |
| Town :     | Leeds                           |
| Region :   |                                 |
| Postcode : | LS1 4JB                         |
| Tel :      |                                 |
| Mobile :   | 07388376691                     |
| Email :    | matthew.robertshaw@uk.rlb.com   |
| Fax :      |                                 |

**Site Information**

|            |                               |
|------------|-------------------------------|
| Name :     | Bradford College Garden Mills |
| Contact :  | Graham Thornton               |
| Location : | Thornton Road                 |
| Town :     | Bradford                      |
| Region :   |                               |
| Postcode : | BD1 2DW                       |
| Tel :      |                               |
| Mobile :   | 07734979551                   |
| Email :    |                               |
| Fax :      |                               |

Total Defects for Project



Total DRB Grades for Project





Report interpretation.

Overview:

Each section of the drainage system is allocated a score indicating areas that require attention. These areas are detailed in the overview section on the following page and also at the bottom right of the first few pages. We use colour coding as an indicator of severity. Additional information concerning rehabilitation options/recommendations is included in the overview page, which can also be used as an "at a glance" indication of system condition. More in depth information for each section, including images can be found later in the report. Grade conditions are as follows:

**Grade A: Drain is serviceable no recommendations are required.**

**Grade B: There is an issue that might require remedial works but is not imperative.**

**Grade C: There is a defect that require immediate remedial works, the drain is not serviceable.**

Observations:

Each section of drainage reported on (manhole to manhole for example), contains detailed information about that drain and any observations made concerning condition are detailed below the header section. The observations are colour coded and given a score, with the more significant defects being given a higher score, using a scale of 1 to 5 as detailed below:

**Grades 1 to 2: These defects may require remedial monitoring.**

**Grades 3 to 4: These defects may require some form of remedial works**

**Grade 5: These are defects that will require remedial repair or replacement.**

Observations that Require immediate attention are also noted on the accompanying CAD a PDF files Relating to the site.

General:

The information provided is relevant at the time of survey. The coding system in this report is based on the Manual sewer condition classification, 5th edition (MSCC5) domestic codes (BS EN 13508-1:2003). This is the official standard for the water industry.

The grading system is based on the drain repair book 4th edition recommendations as provided by the WRC and the 1-5 grades represent the severity of individual defects.

Total Defects for Project



Total DRB Grades for Project



## Overview

|   |             |  |
|---|-------------|--|
| <b>Section: 1</b><br><br>From: mh01 us<br>To: mh06          | DRB Grade B | Structural Grade: 1<br>Service Grade: 3<br>DRB Grade: <b>B</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 2</b><br><br>From: mh02 ds<br>To: mh03          | DRB Grade A | Structural Grade: 2<br>Service Grade: 2<br>DRB Grade: <b>A</b><br>Pipe Size: 150<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Combined      |
| <b>Section: 3</b><br><br>From: mh02 us<br>To: mh08          | DRB Grade C | Structural Grade: 2<br>Service Grade: 4<br>DRB Grade: <b>C</b><br>Pipe Size: 150<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Foul          |
| <b>Section: 4</b><br><br>From: mh02 br1<br>To: capped       | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 5</b><br><br>From: mh02 br2<br>To: aco          | DRB Grade C | Structural Grade: 4<br>Service Grade: 3<br>DRB Grade: <b>C</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 6</b><br><br>From: mh02 br3<br>To: sa           | DRB Grade C | Structural Grade: 4<br>Service Grade: 4<br>DRB Grade: <b>C</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 7</b><br><br>From: mh03 ds<br>To: mh04          | DRB Grade B | Structural Grade: 3<br>Service Grade: 2<br>DRB Grade: <b>B</b><br>Pipe Size: 150<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Combined      |
| <b>Section: 8</b><br><br>From: mh04 photo<br>To: mh04 photo | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 150<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Combined      |

Total Defects for Project



Total DRB Grades for Project



|  |             |  |
|--|-------------|--|
| <b>Section: 9</b><br><br>From: mh04 ds<br>To: sa             | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 525<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Combined      |
| <b>Section: 10</b><br><br>From: mh04 us<br>To: sa            | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 525<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Combined      |
| <b>Section: 11</b><br><br>From: mh05 photo<br>To: mh05 photo | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 525<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Combined      |
| <b>Section: 12</b><br><br>From: mh06 us<br>To: gully         | DRB Grade C | Structural Grade: 0<br>Service Grade: 5<br>DRB Grade: <b>C</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 13</b><br><br>From: mh07 ds<br>To: sa            | DRB Grade C | Structural Grade: 0<br>Service Grade: 4<br>DRB Grade: <b>C</b><br>Pipe Size: 100<br>Material: Polyvinyl Chloride<br>Use: Surface Water                 |
| <b>Section: 14</b><br><br>From: mh07 us<br>To: downpipe      | DRB Grade B | Structural Grade: 3<br>Service Grade: 2<br>DRB Grade: <b>B</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 15</b><br><br>From: mh07 br1<br>To: Capped       | DRB Grade B | Structural Grade: 1<br>Service Grade: 3<br>DRB Grade: <b>B</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 16</b><br><br>From: mh08<br>To: mh09             | DRB Grade C | Structural Grade: 4<br>Service Grade: 3<br>DRB Grade: <b>C</b><br>Pipe Size: 150<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Foul          |

Total Defects for Project



Total DRB Grades for Project



|  |             |  |
|--|-------------|--|
| <b>Section: 17</b><br><br>From: mh09 us<br>To: mh10          | DRB Grade B | Structural Grade: 1<br>Service Grade: 3<br>DRB Grade: <b>B</b><br>Pipe Size: 100<br>Material: Polyvinyl Chloride<br>Use: Foul                          |
| <b>Section: 18</b><br><br>From: mh09 br1<br>To: sa           | DRB Grade C | Structural Grade: 0<br>Service Grade: 5<br>DRB Grade: <b>C</b><br>Pipe Size: 100<br>Material: Polyvinyl Chloride<br>Use: Foul                          |
| <b>Section: 19</b><br><br>From: mh10 us<br>To: sa            | DRB Grade C | Structural Grade: 0<br>Service Grade: 5<br>DRB Grade: <b>C</b><br>Pipe Size: 100<br>Material: Polyvinyl Chloride<br>Use: Foul                          |
| <b>Section: 20</b><br><br>From: mh10 br1<br>To: Capped       | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 100<br>Material: Polyvinyl Chloride<br>Use: Foul                          |
| <b>Section: 21</b><br><br>From: mh11 photo<br>To: mh11 photo | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 100<br>Material: Polyvinyl Chloride<br>Use: Foul                          |
| <b>Section: 22</b><br><br>From: re01 ds<br>To: mh07          | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 23</b><br><br>From: gy01 photo<br>To: gy01 photo | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |
| <b>Section: 24</b><br><br>From: gy02 photo<br>To: gy02 photo | DRB Grade A | Structural Grade: 0<br>Service Grade: 0<br>DRB Grade: <b>A</b><br>Pipe Size: 100<br>Material: Vitrified Clay (i.e. all clayware)<br>Use: Surface Water |

Total Defects for Project



Total DRB Grades for Project



|  |                    |  |
|--|--------------------|--|
| <p><b>Section: 25</b></p> <p>From: gy03 ds<br/>To: Backdrop</p>      | <p>DRB Grade B</p> | <p>Structural Grade: 1<br/>Service Grade: 3<br/>DRB Grade: <b>B</b><br/>Pipe Size: 100<br/>Material: Vitrified Clay (i.e. all clayware)<br/>Use: Surface Water</p> |
| <p><b>Section: 26</b></p> <p>From: gy04 ds<br/>To: connection</p>    | <p>DRB Grade A</p> | <p>Structural Grade: 1<br/>Service Grade: 0<br/>DRB Grade: <b>A</b><br/>Pipe Size: 150<br/>Material: Vitrified Clay (i.e. all clayware)<br/>Use: Surface Water</p> |
| <p><b>Section: 27</b></p> <p>From: gy05 photo<br/>To: gy05 photo</p> | <p>DRB Grade A</p> | <p>Structural Grade: 0<br/>Service Grade: 0<br/>DRB Grade: <b>A</b><br/>Pipe Size: 150<br/>Material: Vitrified Clay (i.e. all clayware)<br/>Use: Surface Water</p> |
| <p><b>Section: 28</b></p> <p>From: gy06 photo<br/>To: gy06 photo</p> | <p>DRB Grade A</p> | <p>Structural Grade: 0<br/>Service Grade: 0<br/>DRB Grade: <b>A</b><br/>Pipe Size: 150<br/>Material: Vitrified Clay (i.e. all clayware)<br/>Use: Surface Water</p> |

Total Defects for Project



Total DRB Grades for Project





**Scores**

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh01 us   | mh06    | 100  | Vitrified Clay (i.e. all clayware) | 1                     | 3                      | 0.86                   | 2                      | 1                     |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh02 ds   | mh03    | 150  | Vitrified Clay (i.e. all clayware) | 2                     | 2                      | 0.31                   | 1                      | 10                    |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh02 us   | mh08    | 150  | Vitrified Clay (i.e. all clayware) | 2                     | 4                      | 0.41                   | 5                      | 10                    |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh02 br1  | capped  | 100  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh02 br2  | aco     | 100  | Vitrified Clay (i.e. all clayware) | 4                     | 3                      | 0.57                   | 2                      | 80                    |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh02 br3  | sa      | 100  | Vitrified Clay (i.e. all clayware) | 4                     | 4                      | 4.5                    | 5                      | 80                    |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh03 ds   | mh04    | 150  | Vitrified Clay (i.e. all clayware) | 3                     | 2                      | 0.22                   | 1                      | 40                    |

| Start Ref  | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh04 photo | mh04 photo | 150  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh04 ds   | sa      | 525  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

Total Defects for Project



Total DRB Grades for Project



| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh04 us   | sa      | 525  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref  | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh05 photo | mh05 photo | 525  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh06 us   | gully   | 100  | Vitrified Clay (i.e. all clayware) | 0                     | 3                      | 10                     | 2                      | 0                     |

| Start Ref | End Ref | Dia. | Material           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|--------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh07 ds   | sa      | 100  | Polyvinyl Chloride | 0                     | 4                      | 0.36                   | 5                      | 0                     |

| Start Ref | End Ref  | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|----------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh07 us   | downpipe | 100  | Vitrified Clay (i.e. all clayware) | 3                     | 2                      | 0.28                   | 1                      | 40                    |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh07 br1  | Capped  | 100  | Vitrified Clay (i.e. all clayware) | 1                     | 3                      | 1.77                   | 2                      | 1                     |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh08      | mh09    | 150  | Vitrified Clay (i.e. all clayware) | 4                     | 3                      | 0.77                   | 2                      | 80                    |

| Start Ref | End Ref | Dia. | Material           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|--------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh09 us   | mh10    | 100  | Polyvinyl Chloride | 1                     | 3                      | 1.82                   | 2                      | 1                     |

| Start Ref | End Ref | Dia. | Material           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|--------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh09 br1  | sa      | 100  | Polyvinyl Chloride | 0                     | 4                      | 70                     | 5                      | 0                     |

Total Defects for Project



Total DRB Grades for Project



| Start Ref | End Ref | Dia. | Material           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|--------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh10 us   | sa      | 100  | Polyvinyl Chloride | 0                     | 4                      | 35                     | 5                      | 0                     |

| Start Ref | End Ref | Dia. | Material           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|--------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh10 br1  | Capped  | 100  | Polyvinyl Chloride | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref  | End Ref    | Dia. | Material           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|--------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| mh11 photo | mh11 photo | 100  | Polyvinyl Chloride | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref | End Ref | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|---------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| re01 ds   | mh07    | 100  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref  | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| gy01 photo | gy01 photo | 100  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref  | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| gy02 photo | gy02 photo | 100  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

| Start Ref | End Ref  | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|----------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| gy03 ds   | Backdrop | 100  | Vitrified Clay (i.e. all clayware) | 1                     | 3                      | 0.9                    | 2                      | 1                     |

| Start Ref | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|-----------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| gy04 ds   | connection | 150  | Vitrified Clay (i.e. all clayware) | 1                     | 0                      | 0                      | 0                      | 1                     |

| Start Ref  | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| gy05 photo | gy05 photo | 150  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

Total Defects for Project



Total DRB Grades for Project



| Start Ref  | End Ref    | Dia. | Material                           | Peak Structural Grade | Peak Operational Grade | Mean Operational Score | Peak Operational Score | Peak Structural Score |
|------------|------------|------|------------------------------------|-----------------------|------------------------|------------------------|------------------------|-----------------------|
| gy06 photo | gy06 photo | 150  | Vitrified Clay (i.e. all clayware) | 0                     | 0                      | 0                      | 0                      | 0                     |

Total Defects for Project



Total DRB Grades for Project





**Site: Thornton Road, Bradford**

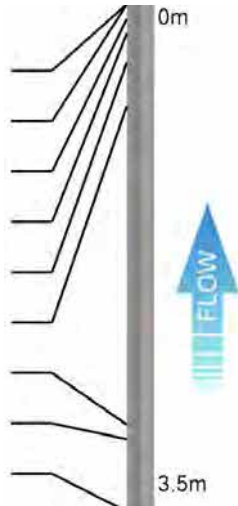
**Section 1**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh01 us | Finish Node Ref: mh06   | Direction: U | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: S       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 3.5    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 1 | Operational Grade | 3 | DRB Grade | B |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                       | CD | Pic | Video Ref |  |
|----------|------|-----------------------------------|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole          |    | 0_0 | 0:00:00   |  |
| 00.0     | WL   | Water level 10%                   |    | 0_1 | 0:00:00   |  |
| 00.1     | RFJ  | Roots fine at joint               |    | 0_2 | 0:00:07   |  |
| 00.2     | OJM  | Open joint medium                 |    | 0_3 | 0:00:07   |  |
| 00.4     | DES  | Settled deposits fine 5%          |    | 0_4 | 0:00:12   |  |
| 00.7     | OJM  | Open joint medium                 |    | 0_5 | 0:00:14   |  |
| 02.9     | LL   | Line of drain/sewer deviates left |    | 0_6 | 0:00:25   |  |
| 03.0     | LU   | Line of drain/sewer deviates up   |    | 0_7 | 0:00:25   |  |
| 03.5     | MHF  | Finish node type, manhole         |    | 0_9 |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 1**





| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh01 us mh01 us              | Image Provided - Ref: 0_0<br>   |
| 00.0m | 0:00:00   | WL   |       | Water level: 10% Height/Diameter                                 | Image Provided - Ref: 0_1<br>  |
| 00.1m | 0:00:07   | RF   |       | Roots fine at joint - Severity 1                                 | Image Provided - Ref: 0_2<br> |
| 00.2m | 0:00:07   | OJM  |       | Open joint medium - Severity 2                                   | Image Provided - Ref: 0_3<br> |
| 00.4m | 0:00:12   | DES  |       | Settled deposits fine: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 0_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description                                    | Image  |
|-------|-----------|------|-------|--|--|
| 00.7m | 0:00:14   | OJM  |       | Open joint medium - Severity 2                 | Image Provided - Ref: 0_5<br>      |
| 02.9m | 0:00:25   | LL   |       | Line of drain/sewer deviates left              | Image Provided - Ref: 0_6<br>      |
| 03.0m | 0:00:25   | LU   |       | Line of drain/sewer deviates up                | Image Provided - Ref: 0_7<br>     |
| 03.5m |           | MHF  |       | Finish node type, manhole, reference mh06 mh06 | Image Provided - Ref: 0_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 2**

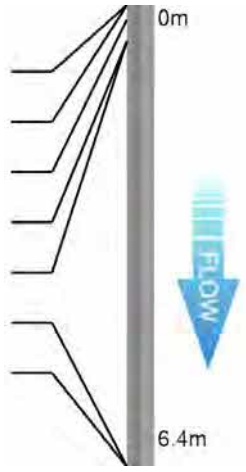
|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh02 ds | Finish Node Ref: mh03   | Direction: D | Height/Dia: 150 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: C       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 6.4    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 2 | Operational Grade | 2 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                        | CD | Pic | Video Ref |
|----------|------|------------------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole           |    | 1_0 | 0:00:00   |
| 00.0     | WL   | S1 Water level 5%                  | S1 | 1_1 | 0:00:00   |
| 00.2     | CL   | Crack, longitudinal 10             |    | 1_2 | 0:00:03   |
| 00.5     | LR   | Line of drain/sewer deviates right |    | 1_3 | 0:00:04   |
| 00.5     | CLJ  | Crack, longitudinal 09 at joint    |    | 1_4 | 0:00:04   |
| 06.4     | WL   | F1 Water level 5%                  | F1 | 1_- | 0:00:00   |
| 06.4     | MHF  | Finish node type, manhole          |    | 1_9 |           |



Total Defects for section



DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 2**

| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh02 ds<br>mh02 ds     | Image Provided - Ref: 1_0<br>   |
| 00.0m | 0:00:00   | WL   | S1    | Water level 0m - 6.4m: 5%<br>Height/Diameter               | Image Provided - Ref: 1_1<br>  |
| 00.2m | 0:00:03   | CL   |       | Crack, longitudinal at 10 o'clock<br>- Severity 2          | Image Provided - Ref: 1_2<br> |
| 00.5m | 0:00:04   | LR   |       | Line of drain/sewer deviates<br>right                      | Image Provided - Ref: 1_3<br> |
| 00.5m | 0:00:04   | CL   |       | Crack, longitudinal at 09 o'clock<br>at joint - Severity 2 | Image Provided - Ref: 1_4<br> |


Total Defects for section



DRB Grade for Section





| Pos   | Video Ref | Code | Cont. | Description                                    | Image  |
|-------|-----------|------|-------|--|--|
| 06.4m | 0:00:00   | WL   | F1    | Water level Defect End: 5% Height/Diameter     |  |
| 06.4m |           | MHF  |       | Finish node type, manhole, reference mh03 mh03 | <p>Image Provided - Ref: 1_9999</p>  |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

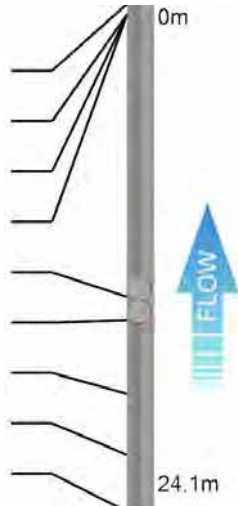
**Section 3**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh02 us | Finish Node Ref: mh08   | Direction: U | Height/Dia: 150 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: F       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 24.1   |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 2 | Operational Grade | 4 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                                  | CD | Pic | Video Ref |  |
|----------|------|--|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole                     |    | 2_0 | 0:00:00   |  |
| 00.5     | JDM  | Joint displaced medium                       |    | 2_1 | 0:00:00   |  |
| 00.5     | LR   | Line of drain/sewer deviates right           |    | 2_2 | 0:00:03   |  |
| 00.5     | WL   | Water level 5%                               |    | 2_3 | 0:00:04   |  |
| 13.9     | CXI  | Connection intruding 12 20% : 100mm Diameter |    | 2_4 | 0:00:50   |  |
| 15.0     | JN   | Junction 12 : 100mm Diameter                 |    | 2_5 | 0:00:55   |  |
| 18.5     | CC   | Crack, circumferential 12-06                 |    | 2_6 | 0:01:08   |  |
| 21.4     | DEX  | Other settled deposits 5%                    |    | 2_7 | 0:01:17   |  |
| 24.1     | MHF  | Finish node type, manhole                    |    | 2_9 |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 3**





| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh02 us mh02 us                             | Image Provided - Ref: 2_0<br>   |
| 00.5m | 0:00:00   | JDM  |       | Joint displaced medium - Severity 2   | Image Provided - Ref: 2_1<br>  |
| 00.5m | 0:00:03   | LR   |       | Line of drain/sewer deviates right  | Image Provided - Ref: 2_2<br> |
| 00.5m | 0:00:04   | WL   |       | Water level: 5% Height/Diameter   | Image Provided - Ref: 2_3<br> |
| 13.9m | 0:00:50   | CXI  |       | Connection intruding at 12 o'clock: 20% Intrusion : 100mm Diameter - Severity 2 | Image Provided - Ref: 2_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 15.0m | 0:00:55   | JN   |       | Junction at 12 o'clock: 100mm Diameter                                       | Image Provided - Ref: 2_5<br>      |
| 18.5m | 0:01:08   | CC   |       | Crack, circumferential from 12 o'clock to 06 o'clock - Severity 2            | Image Provided - Ref: 2_6<br>      |
| 21.4m | 0:01:17   | DEX  |       | Other settled deposits: 5% cross-sectional area loss - Severity 3<br>Fouling | Image Provided - Ref: 2_7<br>    |
| 24.1m |           | MHF  |       | Finish node type, manhole, reference mh08<br>mh08                            | Image Provided - Ref: 2_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 4**

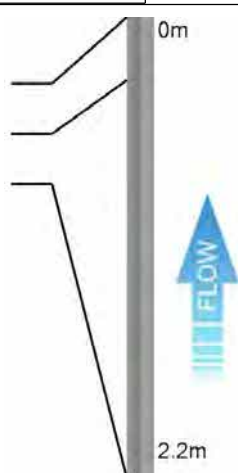
|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                             |                            |                 |                    |
|-----------------------------|----------------------------|-----------------|--------------------|
| Start Node Ref:<br>mh02 br1 | Finish Node Ref:<br>capped | Direction:<br>U | Height/Dia:<br>100 |
| Start Node Depth:<br>0.00   | Finish Node Depth:<br>0.00 | Use:<br>S       | Shape:<br>C        |
| Start Node Coordinate:      | Finish Node Coordinate:    | Material:<br>VC | Cleaned<br>N       |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 2.2    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                     | CD | Pic | Video Ref |
|----------|------|---------------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole        |    | 3_0 | 0:00:00   |
| 00.3     | LU   | Line of drain/sewer deviates up |    | 3_1 | 0:00:00   |
| 02.2     | SA   | Survey abandoned                |    | 3_9 |           |



Total Defects for section






DRB Grade for Section





**Descriptive Report with Remarks and Observation Images**

**Section 4**

| Pos   | Video Ref | Code | Cont. | Description                                  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh02 br1 | Image Provided - Ref: 3_0<br>      |
| 00.3m | 0:00:00   | LU   |       | Line of drain/sewer deviates up              | Image Provided - Ref: 3_1<br>     |
| 02.2m |           | SA   |       | Survey abandoned<br>Capped Off               | Image Provided - Ref: 3_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 5**

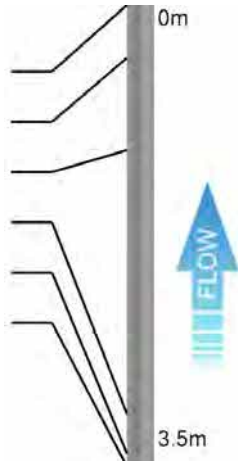
|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                          |                         |              |                 |
|--------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh02 br2 | Finish Node Ref: aco    | Direction: U | Height/Dia: 100 |
| Start Node Depth: 0.00   | Finish Node Depth: 0.00 | Use: S       | Shape: C        |
| Start Node Coordinate:   | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 3.5    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 4 | Operational Grade | 3 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                        | CD | Pic | Video Ref |
|----------|------|------------------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole           |    | 4_0 | 0:00:00   |
| 00.4     | DES  | Settled deposits fine 5%           |    | 4_1 | 0:00:00   |
| 01.1     | LR   | Line of drain/sewer deviates right |    | 4_2 | 0:00:04   |
| 03.1     | OJM  | Open joint medium                  |    | 4_3 | 0:00:14   |
| 03.4     | H    | Hole in drain/sewer 12-01          |    | 4_4 | 0:00:15   |
| 03.5     | GYF  | Finish node type Gully             |    | 4_9 |           |



Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 5**


| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh02 br2                     | Image Provided - Ref: 4_0<br>   |
| 00.4m | 0:00:00   | DES  |       | Settled deposits fine: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 4_1<br>  |
| 01.1m | 0:00:04   | LR   |       | Line of drain/sewer deviates right                               | Image Provided - Ref: 4_2<br> |
| 03.1m | 0:00:14   | OJM  |       | Open joint medium - Severity 2                                   | Image Provided - Ref: 4_3<br> |
| 03.4m | 0:00:15   | H    |       | Hole in drain/sewer from 12 o'clock to 01 o'clock - Severity 3   | Image Provided - Ref: 4_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description                               | Image  |
|-------|-----------|------|-------|---|--|
| 03.5m |           | GYF  |       | Finish node type Gully, reference aco aco | <p>Image Provided - Ref: 4_9999</p>  |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

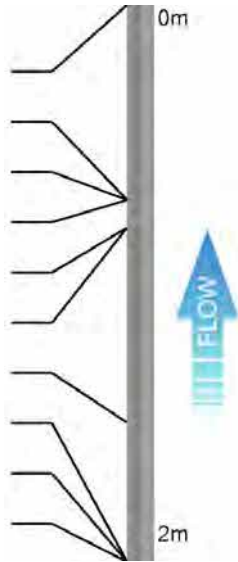
**Section 6**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                          |                         |              |                 |
|--------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh02 br3 | Finish Node Ref: sa     | Direction: U | Height/Dia: 100 |
| Start Node Depth: 0.00   | Finish Node Depth: 0.00 | Use: S       | Shape: C        |
| Start Node Coordinate:   | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 2      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 4 | Operational Grade | 4 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                        | CD | Pic | Video Ref |  |
|----------|------|------------------------------------|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole           |    | 5_0 | 0:00:00   |  |
| 00.7     | OJL  | Open joint large                   |    | 5_1 | 0:00:00   |  |
| 00.7     | LR   | Line of drain/sewer deviates right |    | 5_2 | 0:00:05   |  |
| 00.7     | DES  | Settled deposits fine 5%           |    | 5_3 | 0:00:06   |  |
| 00.8     | FM   | Fracture multiple 12-12            |    | 5_4 | 0:00:06   |  |
| 00.8     | H    | Hole in drain/sewer 09-11          |    | 5_5 | 0:00:06   |  |
| 01.5     | FL   | Fracture longitudinal 11           |    | 5_6 | 0:00:13   |  |
| 02.0     | B    | Broken pipe 12-01                  |    | 5_7 | 0:00:17   |  |
| 02.0     | DES  | Settled deposits fine 80%          |    | 5_8 | 0:00:17   |  |
| 02.0     | SA   | Survey abandoned                   |    | 5_9 |           |  |

Total Defects for section








DRB Grade for Section





**Descriptive Report with Remarks and Observation Images**

**Section 6**

| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh02 br3<br>mh02 br3         | Image Provided - Ref: 5_0<br>   |
| 00.7m | 0:00:00   | OJL  |       | Open joint large - Severity 3                                    | Image Provided - Ref: 5_1<br>  |
| 00.7m | 0:00:05   | LR   |       | Line of drain/sewer deviates right                               | Image Provided - Ref: 5_2<br> |
| 00.7m | 0:00:06   | DES  |       | Settled deposits fine: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 5_3<br> |
| 00.8m | 0:00:06   | FM   |       | Fracture multiple from 12 o'clock to 12 o'clock - Severity 4     | Image Provided - Ref: 5_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 00.8m | 0:00:06   | H    |       | Hole in drain/sewer from 09 o'clock to 11 o'clock - Severity 3              | Image Provided - Ref: 5_5<br>      |
| 01.5m | 0:00:13   | FL   |       | Fracture longitudinal at 11 o'clock - Severity 3                            | Image Provided - Ref: 5_6<br>      |
| 02.0m | 0:00:17   | B    |       | Broken pipe from 12 o'clock to 01 o'clock - Severity 4                      | Image Provided - Ref: 5_7<br>    |
| 02.0m | 0:00:17   | DES  |       | Settled deposits fine: 80% cross-sectional area loss - Severity 2           | Image Provided - Ref: 5_8<br>    |
| 02.0m |           | SA   |       | Survey abandoned<br>Survey Abandoned - Unable To Pass Silt From Broken Pipe | Image Provided - Ref: 5_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

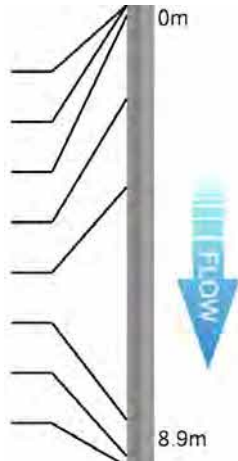
**Section 7**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh03 ds | Finish Node Ref: mh04   | Direction: D | Height/Dia: 150 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: C       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 8.9    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 3 | Operational Grade | 2 | DRB Grade | B |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                       | CD  | Pic     | Video Ref |  |
|----------|------|-----------------------------------|-----|---------|-----------|--|
| 00.0     | MH   | Start node type, manhole          | 6_0 | 0:00:00 |           |  |
| 00.0     | WL   | Water level 5%                    | 6_2 | 0:00:01 |           |  |
| 00.2     | LL   | Line of drain/sewer deviates left | 6_1 | 0:00:00 |           |  |
| 01.8     | FL   | Fracture longitudinal 03          | 6_3 | 0:00:11 |           |  |
| 03.5     | OJM  | Open joint medium                 | 6_4 | 0:00:16 |           |  |
| 08.0     | REM  | General remark                    | 6_5 | 0:00:32 |           |  |
| 08.7     | FC   | Fracture circumferential 12-12    | 6_6 | 0:00:36 |           |  |
| 08.9     | MHF  | Finish node type, manhole         | 6_9 |         |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 7**




| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh03 ds<br>mh03 ds | Image Provided - Ref: 6_0<br>   |
| 00.0m | 0:00:01   | WL   |       | Water level: 5% Height/Diameter                        | Image Provided - Ref: 6_2<br>  |
| 00.2m | 0:00:00   | LL   |       | Line of drain/sewer deviates left                      | Image Provided - Ref: 6_1<br> |
| 01.8m | 0:00:11   | FL   |       | Fracture longitudinal at 03 o'clock - Severity 3       | Image Provided - Ref: 6_3<br> |
| 03.5m | 0:00:16   | OJM  |       | Open joint medium - Severity 2                         | Image Provided - Ref: 6_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 08.0m | 0:00:32   | REM  |       | General remark<br>Internal Backdrop                                 | Image Provided - Ref: 6_5<br>     |
| 08.7m | 0:00:36   | FC   |       | Fracture circumferential from 12 o'clock to 12 o'clock - Severity 3 | Image Provided - Ref: 6_6<br>     |
| 08.9m |           | MHF  |       | Finish node type, manhole,<br>reference mh04<br>mh04                | Image Provided - Ref: 6_9999<br> |

Total Defects for section



DRB Grade for Section





**Site: Thornton Road, Bradford**

**Section 8**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                            |                             |              |                 |
|----------------------------|-----------------------------|--------------|-----------------|
| Start Node Ref: mh04 photo | Finish Node Ref: mh04 photo | Direction: Z | Height/Dia: 150 |
| Start Node Depth: 0.00     | Finish Node Depth: 0.00     | Use: C       | Shape: C        |
| Start Node Coordinate:     | Finish Node Coordinate:     | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description               | CD | Pic | Video Ref |   |
|----------|------|---------------------------|----|-----|-----------|---|
| 00.0     | MH   | Start node type, manhole  |    | 7_0 | 0:00:00   | — |
| 00.0     | MHF  | Finish node type, manhole |    | 7_9 |           | — |



Total Defects for section





DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 8**

| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh04 photo mh04 photo  | <p>Image Provided - Ref: 7_0</p>      |
| 00.0m |           | MHF  |       | Finish node type, manhole, reference mh04 photo mh04 photo | <p>Image Provided - Ref: 7_9999</p>  |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 9**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh04 ds | Finish Node Ref: sa     | Direction: D | Height/Dia: 525 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: C       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                        | CD | Pic | Video Ref |
|----------|------|------------------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole           |    | 8_0 | 0:00:00   |
| 00.0     | WL   | Water level 50%                    |    | 8_1 | 0:00:00   |
| 00.0     | CU   | Loss of vision, camera under water |    | 8_2 | 0:00:01   |
| 00.0     | SA   | Survey abandoned                   |    | 8_9 |           |



Total Defects for section






DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 9**


| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh04 ds mh04 ds | Image Provided - Ref: 8_0<br>   |
| 00.0m | 0:00:00   | WL   |       | Water level: 50% Height/Diameter                    | Image Provided - Ref: 8_1<br>  |
| 00.0m | 0:00:01   | CU W |       | Loss of vision, camera under water                  | Image Provided - Ref: 8_2<br> |

Total Defects for section

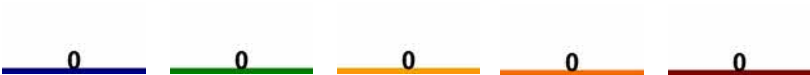


DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m |           | SA   |       | Survey abandoned<br>Survey Abandoned - Unable To<br>Camera Due To Heavy Flow | <p>Image Provided - Ref: 8_9999</p>  |

Total Defects for section



DRB Grade for Section





**Site: Thornton Road, Bradford**

**Section 10**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh04 us | Finish Node Ref: sa     | Direction: U | Height/Dia: 525 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: C       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0.1    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description              | CD | Pic | Video Ref |
|----------|------|--------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole |    | 9_0 | 0:00:00   |
| 00.1     | REM  | General remark           |    | 9_1 | 0:00:00   |
| 00.1     | SA   | Survey abandoned         |    | 9_9 |           |



Total Defects for section






DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 10**

| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh04 us<br>mh04 us  | Image Provided - Ref: 9_0<br>      |
| 00.1m | 0:00:00   | REM  |       | General remark<br>Flow Coming From Internal<br>Backdrop - Assumed To Be<br>Surface Gully Line | Image Provided - Ref: 9_1<br>     |
| 00.1m |           | SA   |       | Survey abandoned<br>Capped Off  | Image Provided - Ref: 9_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 11**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                            |                             |              |                 |
|----------------------------|-----------------------------|--------------|-----------------|
| Start Node Ref: mh05 photo | Finish Node Ref: mh05 photo | Direction: Z | Height/Dia: 525 |
| Start Node Depth: 0.00     | Finish Node Depth: 0.00     | Use: C       | Shape: C        |
| Start Node Coordinate:     | Finish Node Coordinate:     | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description               | CD | Pic         | Video Ref |
|----------|------|---------------------------|----|-------------|-----------|
| 00.0     | MH   | Start node type, manhole  |    | 10_ 0:00:00 | —         |
| 00.0     | REM  | General remark            |    | 10_ 0:00:00 | —         |
| 00.0     | MHF  | Finish node type, manhole |    | 10_         | —         |



Total Defects for section




DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 11**

| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh05 photo mh05 photo  | <p>Image Provided - Ref: 10_0</p>       |
| 00.0m | 0:00:00   | REM  |       | General remark Unable To Jet Clear Main Line               | <p>Image Provided - Ref: 10_1</p>      |
| 00.0m |           | MHF  |       | Finish node type, manhole, reference mh05 photo mh05 photo | <p>Image Provided - Ref: 10_9999</p>  |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 12**

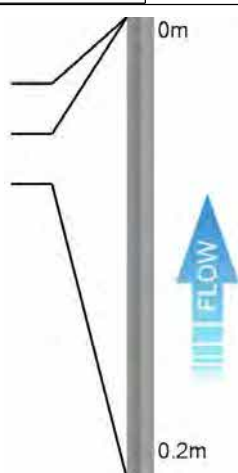
|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh06 us | Finish Node Ref: gully  | Direction: U | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: S       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0.2    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 5 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description               | CD | Pic | Video Ref |
|----------|------|---------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole  |    | 11_ | 0:00:00   |
| 00.0     | DES  | Settled deposits fine 10% |    | 11_ | 0:00:00   |
| 00.2     | GYF  | Finish node type Gully    |    | 11_ |           |



Total Defects for section






DRB Grade for Section





**Descriptive Report with Remarks and Observation Images**

**Section 12**

| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh06 us mh06 us               | Image Provided - Ref: 11_0<br>      |
| 00.0m | 0:00:00   | DES  |       | Settled deposits fine: 10% cross-sectional area loss - Severity 2 | Image Provided - Ref: 11_1<br>     |
| 00.2m |           | GYF  |       | Finish node type Gully, reference gully gully                     | Image Provided - Ref: 11_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

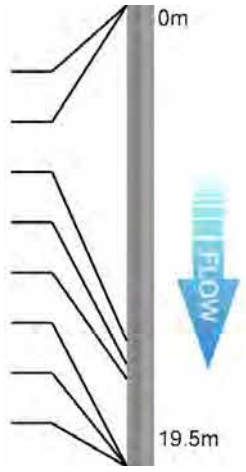
**Section 13**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |               |                 |
|-------------------------|-------------------------|---------------|-----------------|
| Start Node Ref: mh07 ds | Finish Node Ref: sa     | Direction: D  | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: S        | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: PVC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 19.5   |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 4 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                | CD | Pic | Video Ref |  |
|----------|------|----------------------------|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole   |    | 12_ | 0:00:00   |  |
| 00.0     | WL   | S1 Water level 5%          | S1 | 12_ | 0:00:00   |  |
| 14.2     | WL   | F1 Water level 5%          | F1 | 12_ | 0:00:00   |  |
| 15.2     | WL   | S2 Water level 10%         | S2 | 12_ | 0:01:04   |  |
| 15.8     | DES  | Settled deposits fine 5%   |    | 12_ | 0:01:06   |  |
| 19.5     | WL   | F2 Water level 10%         | F2 | 12_ | 0:01:04   |  |
| 19.5     | DES  | Settled deposits fine 100% |    | 12_ | 0:01:26   |  |
| 19.5     | SA   | Survey abandoned           |    | 12_ |           |  |

Total Defects for section







DRB Grade for Section



Descriptive Report with Remarks and Observation Images

Section 13



| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh07 ds<br>mh07 ds           | Image Provided - Ref: 12_0<br>   |
| 00.0m | 0:00:00   | WL   | S1    | Water level 0m - 14.2m: 5% Height/Diameter                       | Image Provided - Ref: 12_1<br>  |
| 14.2m | 0:00:00   | WL   | F1    | Water level Defect End: 5% Height/Diameter                       |  |
| 15.2m | 0:01:04   | WL   | S2    | Water level 15.2m - 19.5m: 10% Height/Diameter                   | Image Provided - Ref: 12_2<br> |
| 15.8m | 0:01:06   | DES  |       | Settled deposits fine: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 12_3<br> |
| 19.5m | 0:01:04   | WL   | F2    | Water level Defect End: 10% Height/Diameter                      |  |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 19.5m | 0:01:26   | DES  |       | Settled deposits fine: 100% cross-sectional area loss - Severity 2 | Image Provided - Ref: 12_4<br>    |
| 19.5m |           | SA   |       | Survey abandoned<br>Survey Abandoned - Unable To Pass Silt         | Image Provided - Ref: 12_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**


**Section 14**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                           |              |                 |
|-------------------------|---------------------------|--------------|-----------------|
| Start Node Ref: mh07 us | Finish Node Ref: downpipe | Direction: U | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00   | Use: S       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate:   | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 3.6    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 3 | Operational Grade | 2 | DRB Grade | B |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description  | CD | Pic | Video Ref |  |
|----------|------|--|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole                           |    | 13_ | 0:00:00   |  |
| 00.0     | FC   | Fracture circumferential 07-09                     |    | 13_ | 0:00:00   |  |
| 00.3     | LR   | Line of drain/sewer deviates right                 |    | 13_ | 0:00:02   |  |
| 00.9     | OJM  | Open joint medium                                  |    | 13_ | 0:00:03   |  |
| 01.2     | LR   | Line of drain/sewer deviates right                 |    | 13_ | 0:00:05   |  |
| 01.2     | LU   | Line of drain/sewer deviates up                    |    | 13_ | 0:00:05   |  |
| 02.5     | LR   | Line of drain/sewer deviates right                 |    | 13_ | 0:00:20   |  |
| 03.0     | LR   | Line of drain/sewer deviates right                 |    | 13_ | 0:00:23   |  |
| 03.4     | LU   | Line of drain/sewer deviates up                    |    | 13_ | 0:00:26   |  |
| 03.6     | BRF  | Finish node type, major connection without manhole |    | 13_ |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 14**

| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh07 us mh07 us                 | Image Provided - Ref: 13_0<br>   |
| 00.0m | 0:00:00   | FC   |       | Fracture circumferential from 07 o'clock to 09 o'clock - Severity 3 | Image Provided - Ref: 13_1<br>  |
| 00.3m | 0:00:02   | LR   |       | Line of drain/sewer deviates right                                  | Image Provided - Ref: 13_2<br> |
| 00.9m | 0:00:03   | OJM  |       | Open joint medium - Severity 2                                      | Image Provided - Ref: 13_3<br> |
| 01.2m | 0:00:05   | LR   |       | Line of drain/sewer deviates right                                  | Image Provided - Ref: 13_4<br> |






Total Defects for section



DRB Grade for Section





| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 01.2m | 0:00:05   | LU   |       | Line of drain/sewer deviates up   | Image Provided - Ref: 13_5<br>      |
| 02.5m | 0:00:20   | LR   |       | Line of drain/sewer deviates right  | Image Provided - Ref: 13_6<br>      |
| 03.0m | 0:00:23   | LR   |       | Line of drain/sewer deviates right  | Image Provided - Ref: 13_7<br>     |
| 03.4m | 0:00:26   | LU   |       | Line of drain/sewer deviates up   | Image Provided - Ref: 13_8<br>    |
| 03.6m |           | BRF  |       | Finish node type, major connection without manhole, reference downpipe downpipe | Image Provided - Ref: 13_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

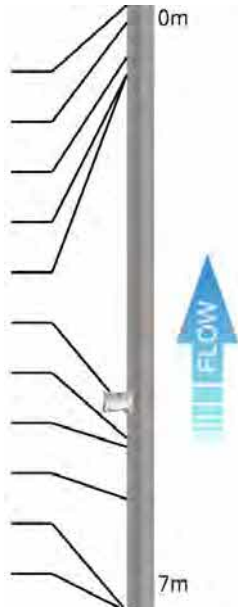
**Section 15**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                          |                         |              |                 |
|--------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh07 br1 | Finish Node Ref: Capped | Direction: U | Height/Dia: 100 |
| Start Node Depth: 0.00   | Finish Node Depth: 0.00 | Use: S       | Shape: C        |
| Start Node Coordinate:   | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 7      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 1 | Operational Grade | 3 | DRB Grade | B |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                        | CD | Pic | Video Ref |  |
|----------|------|------------------------------------|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole           |    | 14_ | 0:00:00   |  |
| 00.2     | LR   | Line of drain/sewer deviates right |    | 14_ | 0:00:00   |  |
| 00.6     | OJM  | Open joint medium                  |    | 14_ | 0:00:10   |  |
| 00.8     | DES  | S1 Settled deposits fine 5%        | S1 | 14_ | 0:00:14   |  |
| 00.8     | LL   | Line of drain/sewer deviates left  |    | 14_ | 0:00:14   |  |
| 04.7     | JN   | Junction 03 : 100mm Diameter       |    | 14_ | 0:00:35   |  |
| 05.0     | OJM  | Open joint medium                  |    | 14_ | 0:00:38   |  |
| 05.1     | LL   | Line of drain/sewer deviates left  |    | 14_ | 0:00:38   |  |
| 05.7     | OJM  | Open joint medium                  |    | 14_ | 0:00:42   |  |
| 07.0     | DES  | F1 Settled deposits fine 5%        | F1 | 14_ | 0:00:14   |  |
| 07.0     | SA   | Survey abandoned                   |    | 14_ |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 15**





| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh07 br1                               | Image Provided - Ref: 14_0<br>   |
| 00.2m | 0:00:00   | LR   |       | Line of drain/sewer deviates right   | Image Provided - Ref: 14_1<br>  |
| 00.6m | 0:00:10   | OJM  |       | Open joint medium - Severity 2   | Image Provided - Ref: 14_2<br> |
| 00.8m | 0:00:14   | DES  | S1    | Settled deposits fine 0.8m - 7m: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 14_3<br> |
| 00.8m | 0:00:14   | LL   |       | Line of drain/sewer deviates left  | Image Provided - Ref: 14_4<br> |

Total Defects for section



DRB Grade for Section




| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 04.7m | 0:00:35   | JN   |       | Junction at 03 o'clock: 100mm Diameter                                      | Image Provided - Ref: 14_5<br>   |
| 05.0m | 0:00:38   | OJM  |       | Open joint medium - Severity 2  | Image Provided - Ref: 14_6<br>   |
| 05.1m | 0:00:38   | LL   |       | Line of drain/sewer deviates left   | Image Provided - Ref: 14_7<br>  |
| 05.7m | 0:00:42   | OJM  |       | Open joint medium - Severity 2  | Image Provided - Ref: 14_8<br> |
| 07.0m | 0:00:14   | DES  | F1    | Settled deposits fine Defect End: 5% cross-sectional area loss - Severity 2 |  |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description                    | Image   |
|-------|-----------|------|-------|--------------------------------|---|
| 07.0m |           | SA   |       | Survey abandoned<br>Capped Off | <p>Image Provided - Ref: 14_9999</p>  |

Total Defects for section



DRB Grade for Section





**Site: Thornton Road, Bradford**

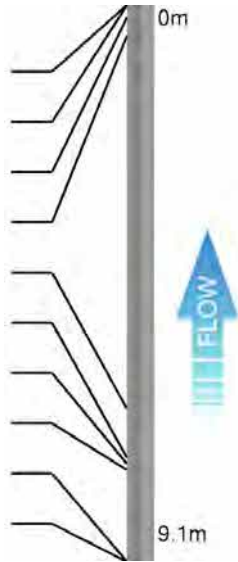
**Section 16**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                        |                         |              |                 |
|------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: mh08   | Finish Node Ref: mh09   | Direction: U | Height/Dia: 150 |
| Start Node Depth: 0.00 | Finish Node Depth: 0.00 | Use: F       | Shape: C        |
| Start Node Coordinate: | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 9.1    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 4 | Operational Grade | 3 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                            | CD | Pic | Video Ref |  |
|----------|------|--|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole               |    | 15_ | 0:00:00   |  |
| 00.0     | DES  | Settled deposits fine 5%               |    | 15_ | 0:00:00   |  |
| 00.2     | OJM  | Open joint medium                      |    | 15_ | 0:00:00   |  |
| 00.5     | OJM  | Open joint medium                      |    | 15_ | 0:00:04   |  |
| 06.6     | FL   | Fracture longitudinal 02               |    | 15_ | 0:00:30   |  |
| 07.4     | B    | Broken pipe 12-12                      |    | 15_ | 0:00:33   |  |
| 07.5     | FL   | Fracture longitudinal 09               |    | 15_ | 0:00:40   |  |
| 07.6     | DEF  | S1 Attached deposits, fouling 05-07 5% | S1 | 15_ | 0:00:41   |  |
| 09.1     | DEF  | F1 Attached deposits, fouling 05-07 5% | F1 | 15_ | 0:00:41   |  |
| 09.1     | MHF  | Finish node type, manhole              |    | 15_ |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 16**





| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh08                         | Image Provided - Ref: 15_0<br>   |
| 00.0m | 0:00:00   | DES  |       | Settled deposits fine: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 15_1<br>  |
| 00.2m | 0:00:00   | OJM  |       | Open joint medium - Severity 2                                   | Image Provided - Ref: 15_2<br> |
| 00.5m | 0:00:04   | OJM  |       | Open joint medium - Severity 2                                   | Image Provided - Ref: 15_3<br> |
| 06.6m | 0:00:30   | FL   |       | Fracture longitudinal at 02 o'clock - Severity 3                 | Image Provided - Ref: 15_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 07.4m | 0:00:33   | B    |       | Broken pipe from 12 o'clock to 12 o'clock - Severity 4  | Image Provided - Ref: 15_5<br>      |
| 07.5m | 0:00:40   | FL   |       | Fracture longitudinal at 09 o'clock - Severity 3  | Image Provided - Ref: 15_7<br>      |
| 07.6m | 0:00:41   | DEF  | S1    | Attached deposits, fouling 7.6m - 9.1m from 05 o'clock to 07 o'clock: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 15_6<br>     |
| 09.1m | 0:00:41   | DEF  | F1    | Attached deposits, fouling Defect End from 05 o'clock to 07 o'clock: 5% cross-sectional area loss - Severity 2  |   |
| 09.1m |           | MHF  |       | Finish node type, manhole, reference mh09 mh09  | Image Provided - Ref: 15_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

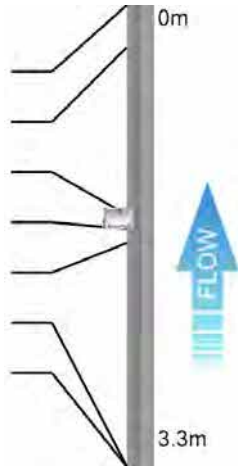
**Section 17**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |               |                 |
|-------------------------|-------------------------|---------------|-----------------|
| Start Node Ref: mh09 us | Finish Node Ref: mh10   | Direction: U  | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: F        | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: PVC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 3.3    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 1 | Operational Grade | 3 | DRB Grade | B |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                            | CD | Pic | Video Ref |  |
|----------|------|--|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole               |    | 16_ | 0:00:00   |  |
| 00.3     | DEF  | S1 Attached deposits, fouling 05-07 5% | S1 | 16_ | 0:00:00   |  |
| 01.5     | OJM  | Open joint medium                      |    | 16_ | 0:00:10   |  |
| 01.6     | JN   | Junction 03 : 100mm Diameter           |    | 16_ | 0:00:10   |  |
| 01.7     | WL   | Water level 5%                         |    | 16_ | 0:00:12   |  |
| 03.3     | DEF  | F1 Attached deposits, fouling 05-07 5% | F1 | 16_ | 0:00:00   |  |
| 03.3     | MHF  | Finish node type, manhole              |    | 16_ |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 17**

| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh09 us mh09 us   | Image Provided - Ref: 16_0<br>   |
| 00.3m | 0:00:00   | DEF  | S1    | Attached deposits, fouling 0.3m - 3.3m from 05 o'clock to 07 o'clock: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 16_1<br>  |
| 01.5m | 0:00:10   | OJM  |       | Open joint medium - Severity 2  | Image Provided - Ref: 16_3<br> |
| 01.6m | 0:00:10   | JN   |       | Junction at 03 o'clock: 100mm Diameter  | Image Provided - Ref: 16_2<br> |
| 01.7m | 0:00:12   | WL   |       | Water level: 5% Height/Diameter   | Image Provided - Ref: 16_4<br> |


Total Defects for section



DRB Grade for Section





| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 03.3m | 0:00:00   | DEF  | F1    | Attached deposits, fouling<br>Defect End from 05 o'clock to 07 o'clock: 5% cross-sectional area loss - Severity 2 |   |
| 03.3m |           | MHF  |       | Finish node type, manhole, reference mh10<br>mh10   | <p>Image Provided - Ref: 16_9999</p>  |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

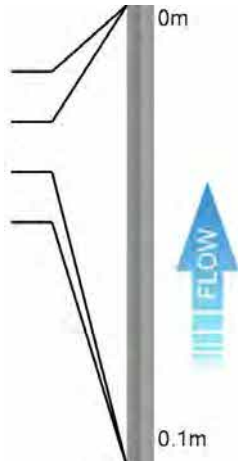
**Section 18**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                          |                         |               |                 |
|--------------------------|-------------------------|---------------|-----------------|
| Start Node Ref: mh09 br1 | Finish Node Ref: sa     | Direction: U  | Height/Dia: 100 |
| Start Node Depth: 0.00   | Finish Node Depth: 0.00 | Use: F        | Shape: C        |
| Start Node Coordinate:   | Finish Node Coordinate: | Material: PVC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0.1    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 5 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                 | CD | Pic | Video Ref |  |
|----------|------|-----------------------------|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole    |    | 17_ | 0:00:00   |  |
| 00.0     | DEX  | Other settled deposits 5%   |    | 17_ | 0:00:00   |  |
| 00.1     | DEX  | Other settled deposits 100% |    | 17_ | 0:00:00   |  |
| 00.1     | SA   | Survey abandoned            |    | 17_ |           |  |

Total Defects for section







DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 18**

| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh09 br1<br>mh09 br1                       | Image Provided - Ref: 17_0<br>      |
| 00.0m | 0:00:00   | DEX  |       | Other settled deposits: 5% cross-sectional area loss - Severity 3<br>Fouling   | Image Provided - Ref: 17_1<br>     |
| 00.1m | 0:00:00   | DEX  |       | Other settled deposits: 100% cross-sectional area loss - Severity 3<br>Fouling | Image Provided - Ref: 17_2<br>    |
| 00.1m |           | SA   |       | Survey abandoned<br>Survey Abandoned - Unable To Pass Fouling                  | Image Provided - Ref: 17_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

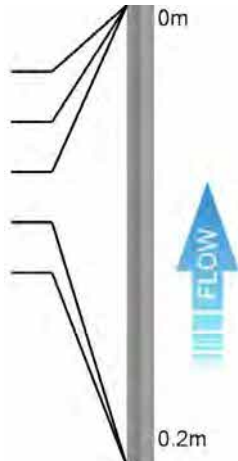
**Section 19**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |               |                 |
|-------------------------|-------------------------|---------------|-----------------|
| Start Node Ref: mh10 us | Finish Node Ref: sa     | Direction: U  | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: F        | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: PVC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0.2    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 5 | DRB Grade | C |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                 | CD | Pic | Video Ref |  |
|----------|------|-----------------------------|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole    |    | 18_ | 0:00:00   |  |
| 00.0     | WL   | Water level 5%              |    | 18_ | 0:00:00   |  |
| 00.0     | DEX  | Other settled deposits 10%  |    | 18_ | 0:00:00   |  |
| 00.2     | DEX  | Other settled deposits 100% |    | 18_ | 0:00:00   |  |
| 00.2     | SA   | Survey abandoned            |    | 18_ |           |  |

Total Defects for section







DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 19**

| Pos   | Video Ref | Code | Cont. | Description  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh10 us<br>mh10 us                               | Image Provided - Ref: 18_0<br>      |
| 00.0m | 0:00:00   | WL   |       | Water level: 5%<br>Height/Diameter   | Image Provided - Ref: 18_1<br>     |
| 00.0m | 0:00:00   | DEX  |       | Other settled deposits: 10%<br>cross-sectional area loss -<br>Severity 3<br>Fouling  | Image Provided - Ref: 18_2<br>    |
| 00.2m | 0:00:00   | DEX  |       | Other settled deposits: 100%<br>cross-sectional area loss -<br>Severity 3<br>Fouling | Image Provided - Ref: 18_3<br>    |
| 00.2m |           | SA   |       | Survey abandoned<br>Survey Abandoned - Unable To<br>Pass Fouling                     | Image Provided - Ref: 18_9999<br> |

Total Defects for section



DRB Grade for Section





**Site: Thornton Road, Bradford**

**Section 20**

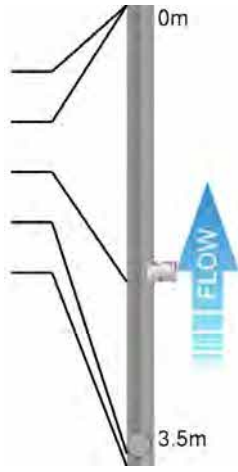
|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                          |                         |               |                 |
|--------------------------|-------------------------|---------------|-----------------|
| Start Node Ref: mh10 br1 | Finish Node Ref: Capped | Direction: U  | Height/Dia: 100 |
| Start Node Depth: 0.00   | Finish Node Depth: 0.00 | Use: F        | Shape: C        |
| Start Node Coordinate:   | Finish Node Coordinate: | Material: PVC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 3.5    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                  | CD | Pic | Video Ref |
|----------|------|------------------------------|----|-----|-----------|
| 00.0     | MH   | Start node type, manhole     |    | 19_ | 0:00:00   |
| 00.0     | WL   | Water level 5%               |    | 19_ | 0:00:00   |
| 02.1     | JN   | Junction 09 : 100mm Diameter |    | 19_ | 0:00:20   |
| 03.4     | JN   | Junction 12 : 100mm Diameter |    | 19_ | 0:00:30   |
| 03.5     | SA   | Survey abandoned             |    | 19_ |           |



Total Defects for section


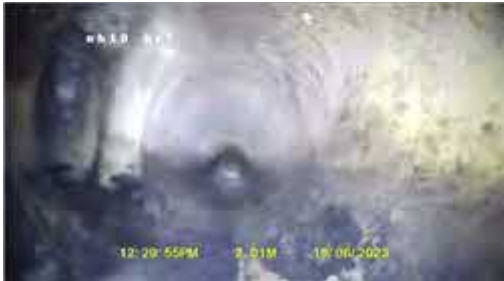




DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 20**

| Pos   | Video Ref | Code | Cont. | Description                                  | Image   |
|-------|-----------|------|-------|--|---|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh10 br1 | Image Provided - Ref: 19_0<br>      |
| 00.0m | 0:00:00   | WL   |       | Water level: 5% Height/Diameter              | Image Provided - Ref: 19_1<br>     |
| 02.1m | 0:00:20   | JN   |       | Junction at 09 o'clock: 100mm Diameter       | Image Provided - Ref: 19_2<br>    |
| 03.4m | 0:00:30   | JN   |       | Junction at 12 o'clock: 100mm Diameter       | Image Provided - Ref: 19_3<br>    |
| 03.5m |           | SA   |       | Survey abandoned Capped Off                  | Image Provided - Ref: 19_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 21**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                            |                             |               |                 |
|----------------------------|-----------------------------|---------------|-----------------|
| Start Node Ref: mh11 photo | Finish Node Ref: mh11 photo | Direction: Z  | Height/Dia: 100 |
| Start Node Depth: 0.00     | Finish Node Depth: 0.00     | Use: F        | Shape: C        |
| Start Node Coordinate:     | Finish Node Coordinate:     | Material: PVC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description               | CD | Pic | Video Ref |   |
|----------|------|---------------------------|----|-----|-----------|---|
| 00.0     | MH   | Start node type, manhole  |    | 20_ | 0:00:00   | — |
| 00.0     | MHF  | Finish node type, manhole |    | 20_ |           | — |



Total Defects for section





DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 21**

| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference mh11 photo<br>mh11 photo  | Image Provided - Ref: 20_0<br>     |
| 00.0m |           | MHF  |       | Finish node type, manhole, reference mh11 photo<br>mh11 photo | Image Provided - Ref: 20_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

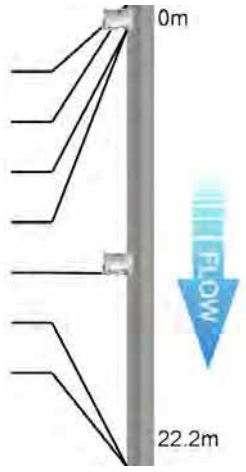
**Section 22**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |              |                 |
|-------------------------|-------------------------|--------------|-----------------|
| Start Node Ref: re01 ds | Finish Node Ref: mh07   | Direction: D | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 | Use: S       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 22.2   |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description                       | CD | Pic | Video Ref |  |
|----------|------|-----------------------------------|----|-----|-----------|--|
| 00.0     | RE   | Start node type, rodding eye      |    | 21_ | 0:00:00   |  |
| 00.0     | LD   | Line of drain/sewer deviates down |    | 21_ | 0:00:00   |  |
| 01.2     | JN   | Junction 03 : 100mm Diameter      |    | 21_ | 0:00:06   |  |
| 01.2     | WL   | S1 Water level 5%                 | S1 | 21_ | 0:00:07   |  |
| 12.9     | JN   | Junction 03 : 100mm Diameter      |    | 21_ | 0:00:47   |  |
| 22.2     | WL   | F1 Water level 5%                 | F1 | 21_ | 0:00:07   |  |
| 22.2     | MHF  | Finish node type, manhole         |    | 21_ |           |  |

Total Defects for section








DRB Grade for Section





**Descriptive Report with Remarks and Observation Images**

**Section 22**


| Pos   | Video Ref | Code | Cont. | Description                                     | Image  |
|-------|-----------|------|-------|---|--|
| 00.0m | 0:00:00   | RE   |       | Start node type, rodding eye, reference re01 ds | Image Provided - Ref: 21_0<br>   |
| 00.0m | 0:00:00   | LD   |       | Line of drain/sewer deviates down               | Image Provided - Ref: 21_1<br>  |
| 01.2m | 0:00:06   | JN   |       | Junction at 03 o'clock: 100mm Diameter          | Image Provided - Ref: 21_2<br> |
| 01.2m | 0:00:07   | WL   | S1    | Water level 1.2m - 22.2m: 5% Height/Diameter    | Image Provided - Ref: 21_4<br> |
| 12.9m | 0:00:47   | JN   |       | Junction at 03 o'clock: 100mm Diameter          | Image Provided - Ref: 21_3<br> |

Total Defects for section

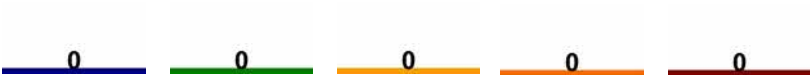


DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description                                | Image   |
|-------|-----------|------|-------|--|---|
| 22.2m | 0:00:07   | WL   | F1    | Water level Defect End: 5% Height/Diameter |   |
| 22.2m |           | MHF  |       | Finish node type, manhole, reference mh07  | <p>Image Provided - Ref: 21_9999</p>  |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 23**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                            |                             |              |                 |
|----------------------------|-----------------------------|--------------|-----------------|
| Start Node Ref: gy01 photo | Finish Node Ref: gy01 photo | Direction: Z | Height/Dia: 100 |
| Start Node Depth: 0.00     | Finish Node Depth: 0.00     | Use: S       | Shape: C        |
| Start Node Coordinate:     | Finish Node Coordinate:     | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description            | CD | Pic | Video Ref |   |
|----------|------|------------------------|----|-----|-----------|---|
| 00.0     | GY   | Start node type Gully  |    | 22_ | 0:00:00   | — |
| 00.0     | GYF  | Finish node type Gully |    | 22_ |           | — |



Total Defects for section





DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 23**

| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | GY   |       | Start node type Gully, reference gy01 photo<br>gy01 photo  | Image Provided - Ref: 22_0<br>     |
| 00.0m |           | GYF  |       | Finish node type Gully, reference gy01 photo<br>gy01 photo | Image Provided - Ref: 22_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 24**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                               |                                |                 |                    |
|-------------------------------|--------------------------------|-----------------|--------------------|
| Start Node Ref:<br>gy02 photo | Finish Node Ref:<br>gy02 photo | Direction:<br>Z | Height/Dia:<br>100 |
| Start Node Depth:<br>0.00     | Finish Node Depth:<br>0.00     | Use:<br>S       | Shape:<br>C        |
| Start Node Coordinate:        | Finish Node Coordinate:        | Material:<br>VC | Cleaned<br>N       |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description            | CD | Pic | Video Ref |   |
|----------|------|------------------------|----|-----|-----------|---|
| 00.0     | GY   | Start node type Gully  |    | 23_ | 0:00:00   | — |
| 00.0     | GYF  | Finish node type Gully |    | 23_ |           | — |



Total Defects for section





DRB Grade for Section





**Descriptive Report with Remarks and Observation Images**

**Section 24**

| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | GY   |       | Start node type Gully, reference gy02 photo<br>gy02 photo  | Image Provided - Ref: 23_0<br>     |
| 00.0m |           | GYF  |       | Finish node type Gully, reference gy02 photo<br>gy02 photo | Image Provided - Ref: 23_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

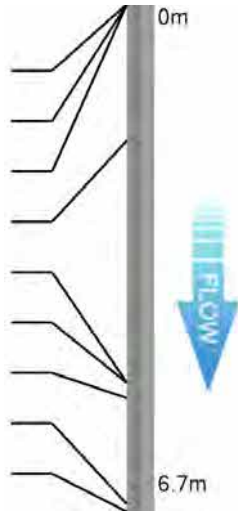
**Section 25**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                         |          |              |                 |
|-------------------------|-------------------------|----------|--------------|-----------------|
| Start Node Ref: gy03 ds | Finish Node Ref:        | Backdrop | Direction: D | Height/Dia: 100 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00 |          | Use: S       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate: |          | Material: VC | Cleaned N       |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 6.7    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 1 | Operational Grade | 3 | DRB Grade | B |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description  | CD | Pic | Video Ref |  |
|----------|------|--|----|-----|-----------|--|
| 00.0     | MH   | Start node type, manhole                           |    | 24_ | 0:00:00   |  |
| 00.0     | WL   | Water level 5%                                     |    | 24_ | 0:00:00   |  |
| 00.0     | DES  | Settled deposits fine 5%                           |    | 24_ | 0:00:00   |  |
| 01.8     | OJM  | Open joint medium                                  |    | 24_ | 0:00:10   |  |
| 05.0     | OJM  | Open joint medium                                  |    | 24_ | 0:00:28   |  |
| 05.0     | DER  | Settled deposits coarse 5%                         |    | 24_ | 0:00:28   |  |
| 05.2     | LR   | Line of drain/sewer deviates right                 |    | 24_ | 0:00:29   |  |
| 06.6     | JDM  | Joint displaced medium                             |    | 24_ | 0:00:41   |  |
| 06.7     | BRF  | Finish node type, major connection without manhole |    | 24_ |           |  |

Total Defects for section








DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 25**





| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference gy03 ds gy03 ds              | Image Provided - Ref: 24_0<br>   |
| 00.0m | 0:00:00   | WL   |       | Water level: 5% Height/Diameter                                  | Image Provided - Ref: 24_1<br>  |
| 00.0m | 0:00:00   | DES  |       | Settled deposits fine: 5% cross-sectional area loss - Severity 2 | Image Provided - Ref: 24_2<br> |
| 01.8m | 0:00:10   | OJM  |       | Open joint medium - Severity 2                                   | Image Provided - Ref: 24_3<br> |
| 05.0m | 0:00:28   | OJM  |       | Open joint medium - Severity 2                                   | Image Provided - Ref: 24_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description   | Image   |
|-------|-----------|------|-------|---|---|
| 05.0m | 0:00:28   | DER  |       | Settled deposits coarse: 5% cross-sectional area loss - Severity 3              | Image Provided - Ref: 24_5<br>      |
| 05.2m | 0:00:29   | LR   |       | Line of drain/sewer deviates right  | Image Provided - Ref: 24_6<br>      |
| 06.6m | 0:00:41   | JDM  |       | Joint displaced medium - Severity 2   | Image Provided - Ref: 24_7<br>     |
| 06.7m |           | BRF  |       | Finish node type, major connection without manhole, reference Backdrop Backdrop | Image Provided - Ref: 24_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

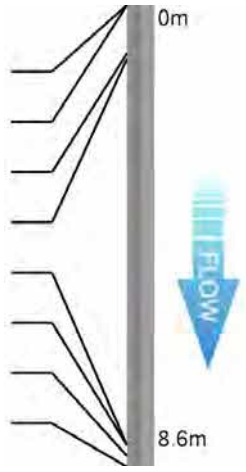
**Section 26**

|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                         |                             |              |                 |
|-------------------------|-----------------------------|--------------|-----------------|
| Start Node Ref: gy04 ds | Finish Node Ref: connection | Direction: D | Height/Dia: 150 |
| Start Node Depth: 0.00  | Finish Node Depth: 0.00     | Use: S       | Shape: C        |
| Start Node Coordinate:  | Finish Node Coordinate:     | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 8.6    |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 1 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description  | CD  | Pic     | Video Ref |  |
|----------|------|--|-----|---------|-----------|--|
| 00.0     | MH   | Start node type, manhole                           | 25_ | 0:00:00 |           |  |
| 00.0     | OJM  | Open joint medium                                  | 25_ | 0:00:00 |           |  |
| 00.9     | LD   | Line of drain/sewer deviates down                  | 25_ | 0:00:05 |           |  |
| 01.0     | OJM  | Open joint medium                                  | 25_ | 0:00:05 |           |  |
| 08.2     | OJM  | Open joint medium                                  | 25_ | 0:00:38 |           |  |
| 08.2     | LD   | Line of drain/sewer deviates down                  | 25_ | 0:00:38 |           |  |
| 08.4     | OJM  | Open joint medium                                  | 25_ | 0:00:39 |           |  |
| 08.6     | BRF  | Finish node type, major connection without manhole | 25_ |         |           |  |

Total Defects for section




DRB Grade for Section





**Descriptive Report with Remarks and Observation Images**

**Section 26**




| Pos   | Video Ref | Code | Cont. | Description                                 | Image  |
|-------|-----------|------|-------|---|--|
| 00.0m | 0:00:00   | MH   |       | Start node type, manhole, reference gy04 ds | Image Provided - Ref: 25_0<br>   |
| 00.0m | 0:00:00   | OJM  |       | Open joint medium - Severity 2              | Image Provided - Ref: 25_1<br>  |
| 00.9m | 0:00:05   | LD   |       | Line of drain/sewer deviates down           | Image Provided - Ref: 25_2<br> |
| 01.0m | 0:00:05   | OJM  |       | Open joint medium - Severity 2              | Image Provided - Ref: 25_3<br> |
| 08.2m | 0:00:38   | OJM  |       | Open joint medium - Severity 2              | Image Provided - Ref: 25_4<br> |

Total Defects for section



DRB Grade for Section



| Pos   | Video Ref | Code | Cont. | Description   | Image  |
|-------|-----------|------|-------|---|--|
| 08.2m | 0:00:38   | LD   |       | Line of drain/sewer deviates down   | Image Provided - Ref: 25_5<br>     |
| 08.4m | 0:00:39   | OJM  |       | Open joint medium - Severity 2  | Image Provided - Ref: 25_6<br>     |
| 08.6m |           | BRF  |       | Finish node type, major connection without manhole, reference connection connection | Image Provided - Ref: 25_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 27**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                               |                                |                 |                    |
|-------------------------------|--------------------------------|-----------------|--------------------|
| Start Node Ref:<br>gy05 photo | Finish Node Ref:<br>gy05 photo | Direction:<br>Z | Height/Dia:<br>150 |
| Start Node Depth:<br>0.00     | Finish Node Depth:<br>0.00     | Use:<br>S       | Shape:<br>C        |
| Start Node Coordinate:        | Finish Node Coordinate:        | Material:<br>VC | Cleaned<br>N       |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description            | CD | Pic | Video Ref |
|----------|------|------------------------|----|-----|-----------|
| 00.0     | GY   | Start node type Gully  |    | 26_ | 0:00:00 — |
| 00.0     | GYF  | Finish node type Gully |    | 26_ | —         |



Total Defects for section





DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 27**

| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | GY   |       | Start node type Gully, reference gy05 photo<br>gy05 photo  | Image Provided - Ref: 26_0<br>     |
| 00.0m |           | GYF  |       | Finish node type Gully, reference gy05 photo<br>gy05 photo | Image Provided - Ref: 26_9999<br> |

Total Defects for section



DRB Grade for Section



**Site: Thornton Road, Bradford**

**Section 28**


|                                  |  |                               |               |                              |                     |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|
| Client:<br>Rider Levett Bucknall | Location (Street Name):<br>Thornton Road | City/Town/Village<br>Bradford | Cust Job Ref. | Surveyors Name:<br>Andy Ball | Date:<br>27/06/2023 |
|----------------------------------|--|-------------------------------|---------------|------------------------------|---------------------|

|                            |                             |              |                 |
|----------------------------|-----------------------------|--------------|-----------------|
| Start Node Ref: gy06 photo | Finish Node Ref: gy06 photo | Direction: Z | Height/Dia: 150 |
| Start Node Depth: 0.00     | Finish Node Depth: 0.00     | Use: S       | Shape: C        |
| Start Node Coordinate:     | Finish Node Coordinate:     | Material: VC | Cleaned: N      |

| Drain Type | Lining Type | Lining Mat. | Year Const. | Weather | Flow Cont. | Length | Remarks |
|------------|-------------|-------------|-------------|---------|------------|--------|---------|
| A          |             |             |             | D       | N          | 0      |         |

|                       |   |                   |   |           |   |
|-----------------------|---|-------------------|---|-----------|---|
| Structural Peak Grade | 0 | Operational Grade | 0 | DRB Grade | A |
|-----------------------|---|-------------------|---|-----------|---|

| Position | Code | Description            | CD | Pic | Video Ref |   |
|----------|------|------------------------|----|-----|-----------|---|
| 00.0     | GY   | Start node type Gully  |    | 27_ | 0:00:00   | — |
| 00.0     | GYF  | Finish node type Gully |    | 27_ |           | — |



Total Defects for section





DRB Grade for Section



**Descriptive Report with Remarks and Observation Images**

**Section 28**

| Pos   | Video Ref | Code | Cont. | Description  | Image  |
|-------|-----------|------|-------|--|--|
| 00.0m | 0:00:00   | GY   |       | Start node type Gully, reference gy06 photo<br>gy06 photo  | <p>Image Provided - Ref: 27_0</p>      |
| 00.0m |           | GYF  |       | Finish node type Gully, reference gy06 photo<br>gy06 photo | <p>Image Provided - Ref: 27_9999</p>  |



## **Appendix H Yorkshire Water Public Sewer Records**

## YORKSHIRE WATER PROTECTION OF MAINS AND SERVICES

1. The position of Yorkshire Water Services Ltd (YWS) apparatus shown on the existing mains record drawing(s) indicates the **general** position and nature of our apparatus and the accuracy of this information cannot be guaranteed. Any damage to YWS apparatus as a result of your works may have serious consequences and you will be held responsible for all costs incurred. Prior to commencing major works, the exact location of apparatus must be determined on site, if necessary by excavating trial holes. The actual position of such apparatus and that of service pipes which have not been indicated must be established on site by contacting the Customer Helpline on 0845 124 24 24 for both water and sewerage.
2. The public sewer and water network is lawfully retained in its existing position and the sewerage and water undertaker is entitled to have it remain so without any disturbance. The provisions of section 159 of the Water Industry Act 1991 provides that the undertaker may "inspect, maintain, adjust, repair or alter" the network. Those rights are given to enable the undertaker to perform its statutory duties. Any development of the land or any other action that unacceptably hindered the exercise of those rights would be unlawful. The provisions contained in Section 185 of the Water Industry Act 1991 state that where it is reasonable to do so, a person may require the water supply undertaker to alter or remove a pipe where it is necessary to enable that person to carry out a proposed change of use of the land. The provisions contained in Section 185 also require the person making the request to pay the full cost of carrying out the necessary works.
3. Ground levels over existing YWS apparatus are to be maintained. Sewers in highways will **generally** be laid to give 1200mm of cover from finished ground level working to kerb races, other permanent identification of the limits of the road or to an agreed line and level. Substantial increases or decreases to this 1200mm depth of cover will result in the sewer being re-laid at your expense. Water mains and services will **generally** be laid with a minimum of 750mm depth of cover however some mains and services usually those installed over 50 years ago may have less ground cover.
4. If surface levels are to be decreased / increased significantly the effects on existing water supply apparatus will be carefully considered and if any alterations are necessary, the costs of the alterations will be recharged to you in full. Outlets on fire hydrants must be no more than 300mm below the new levels and all surface boxes must be adjusted as part of the scheme.
5. To enable future repair works to be carried out without hindrance; any pipe, cable, duct, etc. installed parallel to a water main or service pipe should not be installed directly over or within 300mm of a water main or service pipe or 1000mm of a waste water asset. Where a pipe, cable, duct, etc. crosses a main or service it should preferably cross perpendicular or at an angle of no less than 45° and with a minimum clearance of 150mm. These requirements apply to activities within an existing highway and are relevant to the installation of pipes, cables, ducts, etc. up to and including 250mm in diameter (*see illustration below*). Necessary protection measures for installations greater than 250mm in diameter and/or in private land will need to be agreed on an individual basis. Installations within a new development site must comply with the National Joint Utilities Group publication Volume 2: NJUG Guidelines On The Positioning Of Underground Utilities Apparatus For New Development Sites.
6. All excavation works near to YW apparatus should be by hand digging only.
7. Backfilling with a suitable material to a minimum 300mm above YW apparatus is required.
8. Adequate support must be provided where any works pass under YW apparatus.
9. Jointing chambers, lighting columns and other structures must be installed in such a way that future repair or maintenance works to YW apparatus will not be hindered.
10. Apparatus such as; railings, sign posts, etc. must not be placed in such a way that they prevent access to or full operation of controlling valves, hydrants or similar apparatus. YWS surface boxes must not be covered or buried. Any adjustment, alteration or replacement of manhole covers must be agreed on site prior to the commencement of the works with a YWS Inspector who may be contacted via our Call Centre on 0845 124 24 24.
11. Explosives shall not be used within 100 metres of any Yorkshire Water Services apparatus or installations.
12. Vibrating plant should not be used directly over any apparatus. Movement or operation by vehicles or heavy plant is not to be permitted in the immediate vicinity of YWS plant or apparatus unless there has been prior consultation and, if necessary, adequate protection provided without cost to YWS.
13. **Under no circumstances** should thrust boring or similar trenchless techniques commence until the actual position of the Company's mains/services along the proposed route have been confirmed by trial holes.
14. Any alterations to the highway should be notified following the procedures outlined in the New Road and Street Works Act 1991 Code of Practice; Measures Necessary Where Apparatus Is Affected By Major Works (Diversionary Works).
15. You will be held responsible for any damage or loss to YWS apparatus during and after completion of work, caused by yourselves, your servant or agent. Any damage caused or observed to YWS plant or apparatus should be immediately reported to YWS. Should YW incur any costs as a result of non-compliance with the above, all costs will be rechargeable in full.
16. You should ensure that nothing is done on the site to prejudice the safety or operation of YWS employees, plant or apparatus.
17. In accordance with the New Roads and Street Works Act 1991, Chapter 22, Part 3, Section 80. The location of any identified YW asset "*which is not marked, or is wrongly marked, on the records made available*" should be communicated back to Yorkshire Water. The location of the apparatus should be identified on copies of the supplied plans which should be returned to Yorkshire Water (Asset Records Team) with photographic supporting evidence where possible.
18. The Government has decided that responsibility for private sewers serving two or more properties and lateral drains (the section of pipe beyond the boundary of a single property, connecting it to the public sewer) will be transferred to the water companies on Oct 1 2011.

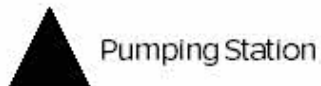
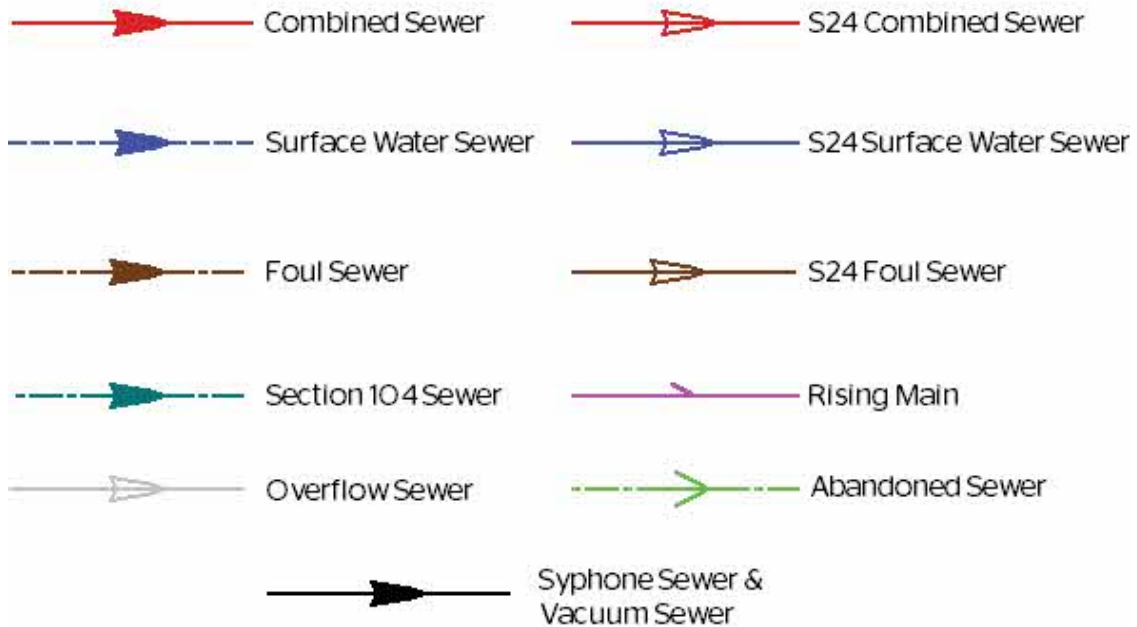
Private pumping stations will also transfer during the period 1 October 2011 – 1 Oct 2016. Records of these assets may not yet be shown on the existing mains record drawing(s). If you encounter any of these assets you must inform Yorkshire Water Services Ltd (YWS).

19. Please note that the information supplied on the enclosed plans is reproduced from Ordnance Survey material with the permission of the Ordnance Survey on behalf of the Controller of Her Majesty's Stationery Office, © Crown Copyright. Unauthorised reproduction infringes Crown Copyright and may lead to prosecution or civil proceedings. Licence Number 1000019559.
20. This information is for guidance only and the position and depth of any YW apparatus is approximate only. Likewise, the nature and condition of any YW apparatus cannot be guaranteed. YW has no responsibility for recording the locations of privately owned apparatus. As of 1 October 2011, there may be some lateral drains and/or public sewers which are not documented on YW records but may still be present. For the avoidance of doubt, this information is not a substitute for appropriate professional and/or legal advice. YW accepts no responsibility for any inaccuracy or omissions in this information. The actual position of YW apparatus must be determined on site by excavating trial holes by hand. YW requires a minimum of two working days' written notice of the intention to excavate any trial holes before any excavation can be undertaken. If there are any queries in this respect please contact Yorkshire Water on 0845 124 24 24.

## Property Identifier



## Sewer Legend



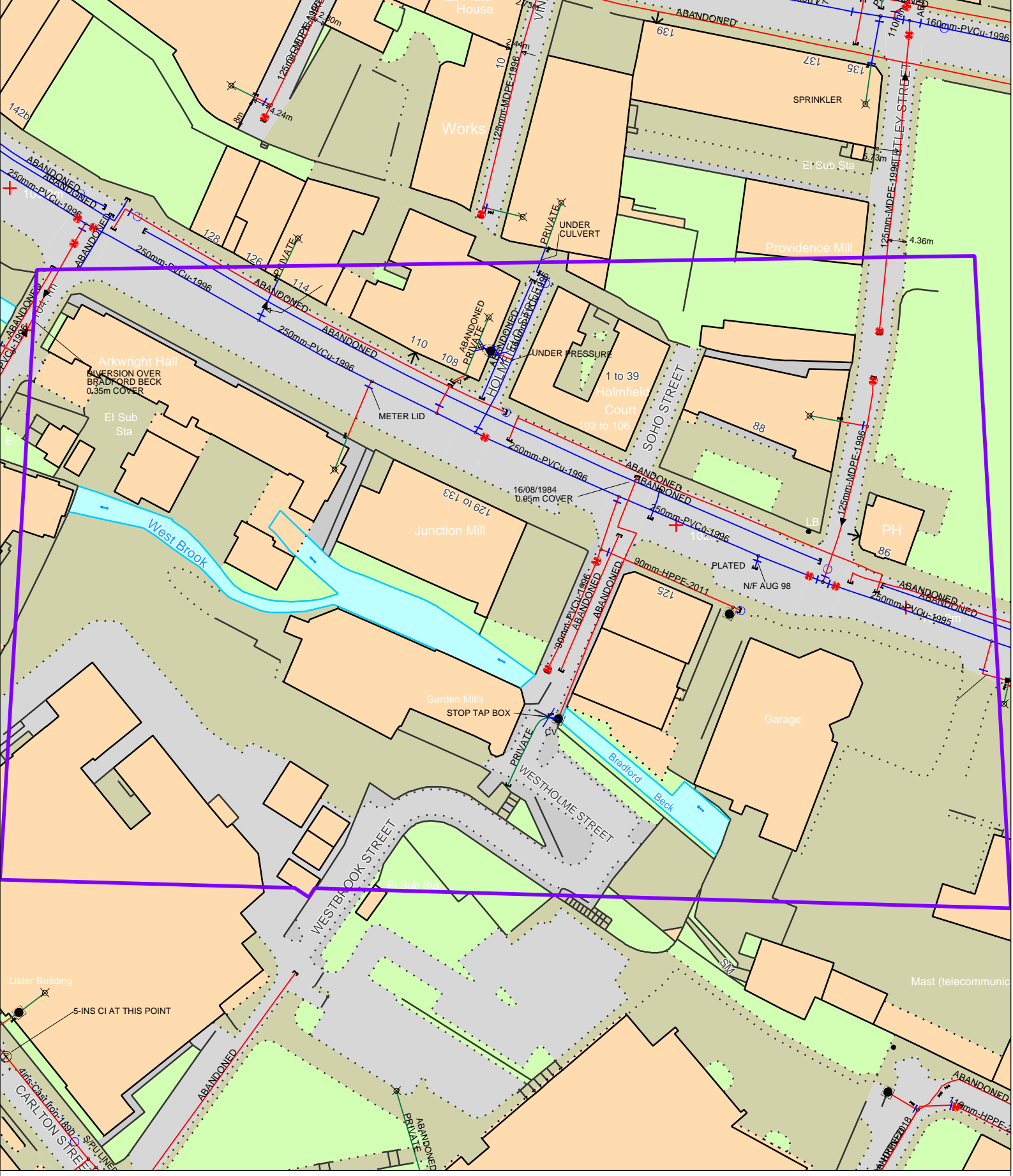
Pumping Station



Public Sewer Treatment Works

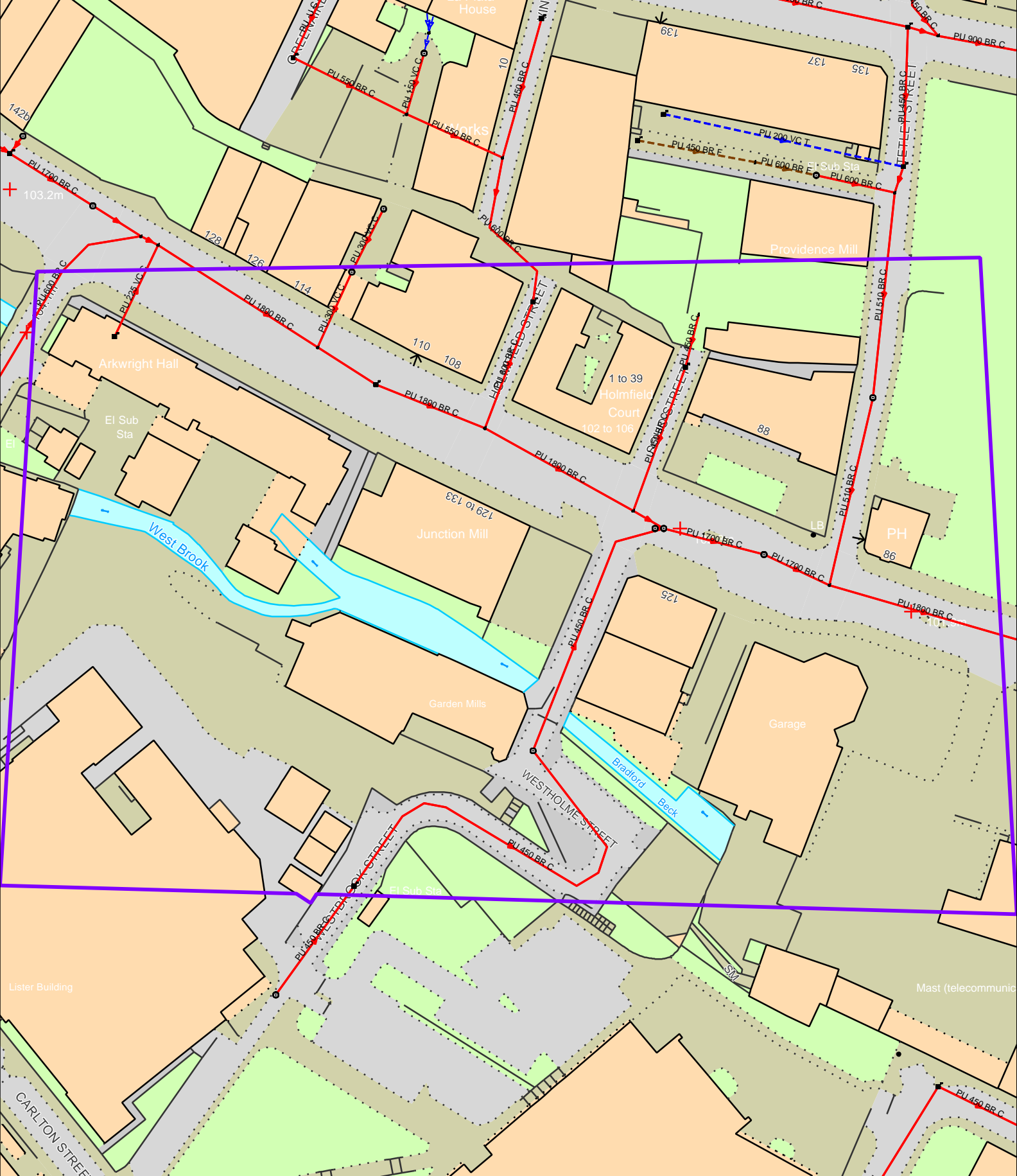
## Water Legend





Public Clean Water Network 30/09/2021 13:39:24 OS Grid Coordinates: 415749 : 432877 Map Name : SE1532NE svcGISSafeMovePD





Public Waste Water Network 30/09/2021 13:39:25 OS Grid Coordinates: 415749 : 432877 Map Name : SE1532NE svcGISSafeMovePD



## Appendix I Proposed Drainage Layout



## **Appendix J Yorkshire Water Correspondence**

**Laura Barlow**

---

**From:** Wholesale Service Desk <wholesaleservicedesk@yorkshirewater.co.uk>  
**Sent:** 21 June 2023 10:02  
**To:** Laura Barlow  
**Subject:** RE: Trade Effluent Query

Hi Laura,

Thanks for your email. I spoke to our Trade Effluent team on this one please see below their response:

‘Schools and colleges on the whole are not considered as trade premises, so small laboratory discharges from sinks would not require a trade effluent consent. The exceptions being at premises such as universities / larger colleges when specific scientific research or experiment is being carried out; however looking at the submitted information this isn’t the case here.

Discharges from schools and colleges would still be controlled under section 111 of the Water industry Act 1991 which makes it a specific criminal offense to interfere with the free flow of the contents of sewer or impact on sewage treatment – usually as a result of waste from cant / kitchens etc. blocking the sewer.’

Hope that helps with this enquiry.

Thanks,

Paige



**Paige Bell**  
Wholesale Service Desk  
Customer Experience (Wholesale Market Services)

L:0344 902 0228  
[yorkshirewater.com](http://yorkshirewater.com)

Operational hours are 8am to 6pm, Mon-Fri (Exc Bank Holidays)

---

**From:** Laura Barlow <Laura.Barlow@curtins.com>  
**Sent:** 18 June 2023 19:08  
**To:** Wholesale Service Desk <wholesaleservicedesk@yorkshirewater.co.uk>  
**Subject:** Trade Effluent Query

EXTERNAL SOURCE - THINK BEFORE YOU CLICK



Good afternoon,

Curtins are provide drainage design services for a proposed college in Bradford.

We have received the attached information on chemicals from the college and want to understand if discharge to the sewer is acceptable and if a trade effluent licence will be required? Following this we can ask the client to apply via the retailer directly as we expect this will be Yorkshire Water.

Kind regards,

**Laura Barlow** (She/her)  
**Principal Civil Engineer**  
T. 0113 274 8509 M. 07971 673 562  
[laura.barlow@curtins.com](mailto:laura.barlow@curtins.com)

Rose Wharf  
East Street  
Leeds LS9 8EE



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Want to know a bit more about Yorkshire Water? Our website is full of useful info, from how to apply for a water meter to planning your next walk at one of our beautiful reservoirs - it's all at [yorkshirewater.com](http://yorkshirewater.com)

Need to talk to us? For the best way to get in touch with us, go to [//yorkshirewater.com/contact](http://yorkshirewater.com/contact)

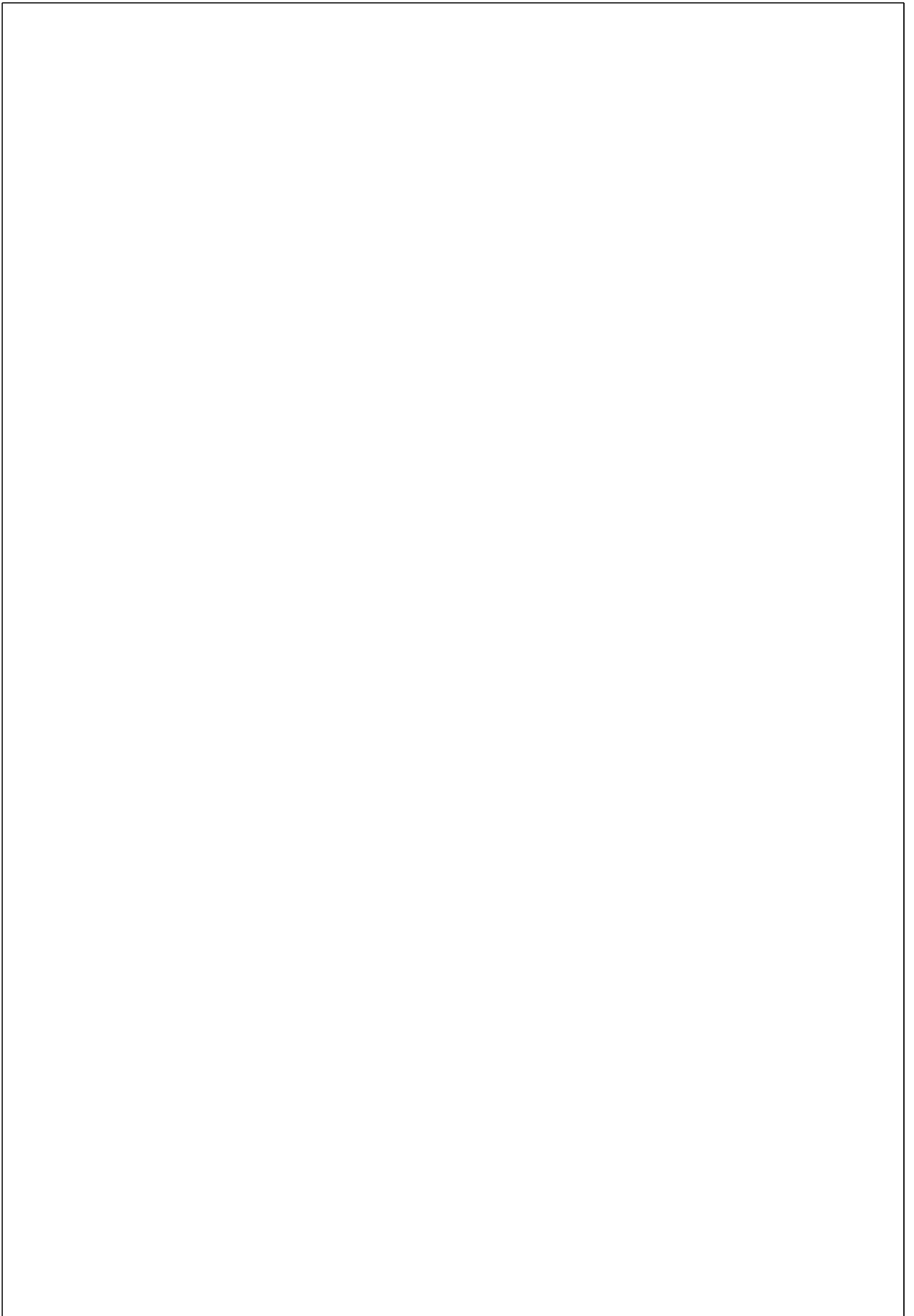
Now the legal stuff! The information and any files sent as part of this email are confidential, possibly legally privileged and for the addressee's attention only. If you've wrongly received this email, please reply to it to let the sender know and delete it from your computer. Just to confirm, this email isn't a binding offer, acceptance, amendment, waiver or any agreement or obligation –unless this is clearly stated in the email.

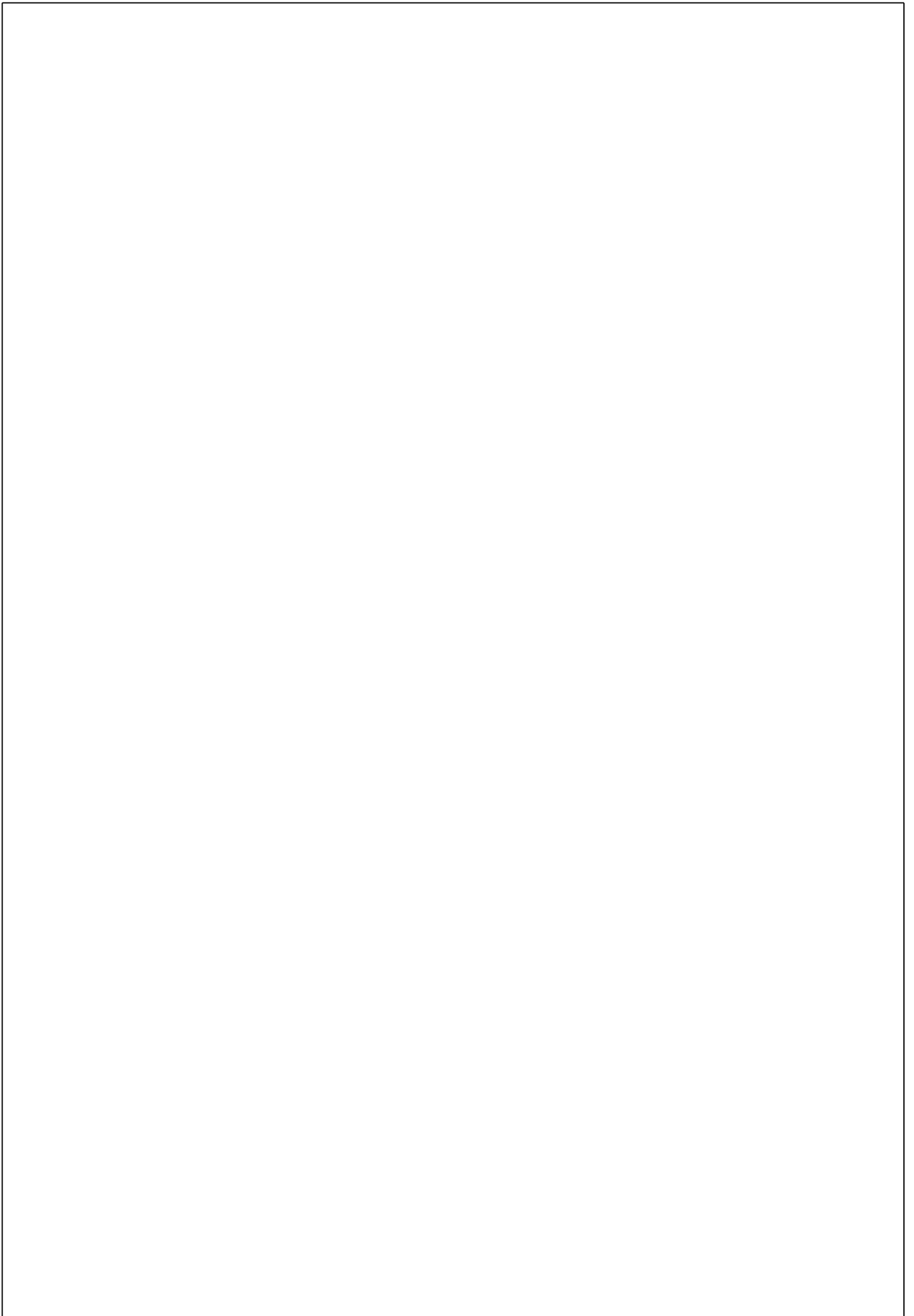
We need to let you know that the content is subject to the legal notice at [//yorkshirewater.com/about-us/our-policies/privacy-policy](http://yorkshirewater.com/about-us/our-policies/privacy-policy). Any disclosure, copying, distribution or action taken based on its contents, is prohibited and may be unlawful.

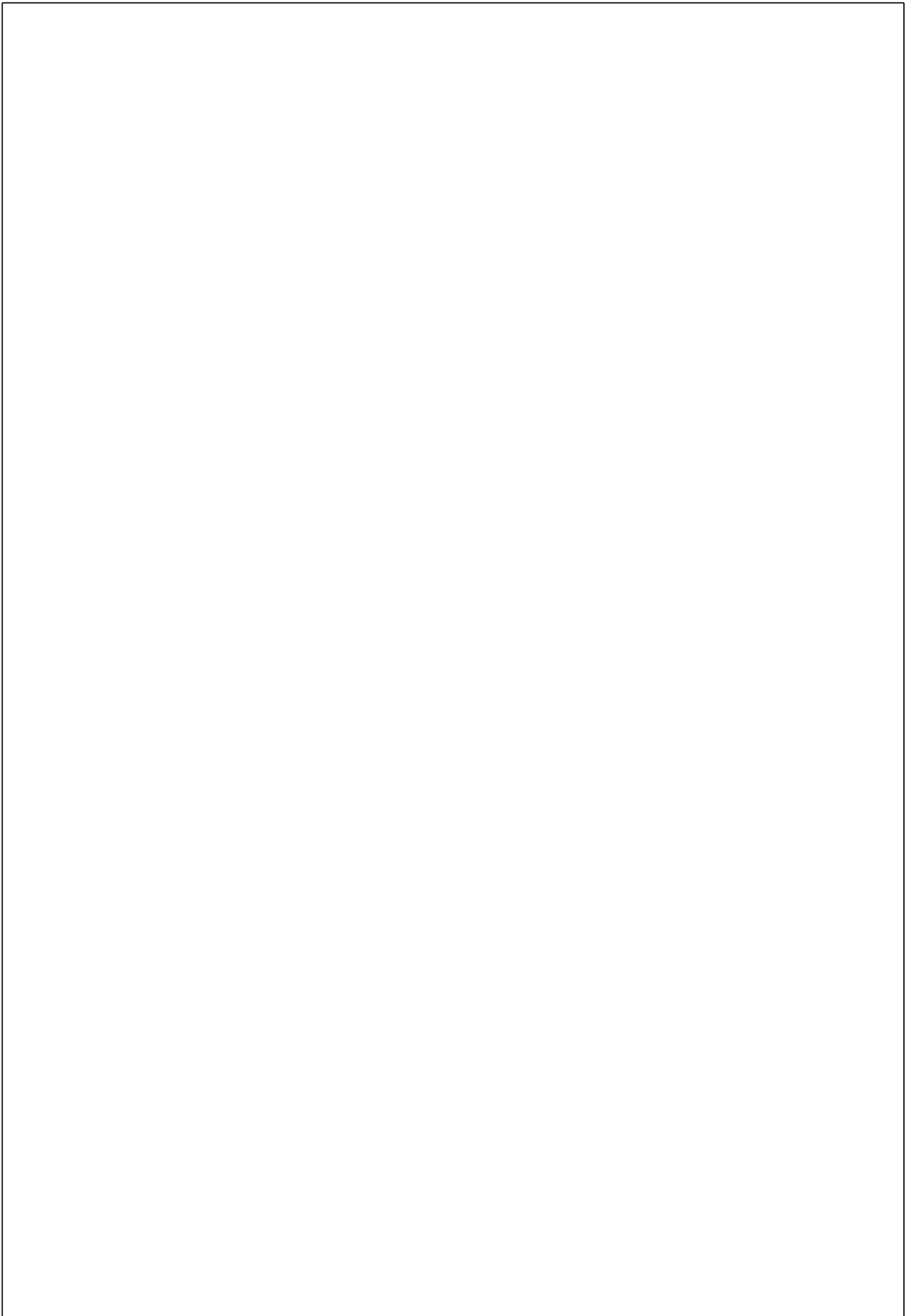
Yorkshire Water Services Limited  
Registered Office Western House, Halifax Road, Bradford, BD6 2SZ  
Registered in England and Wales No 2366682

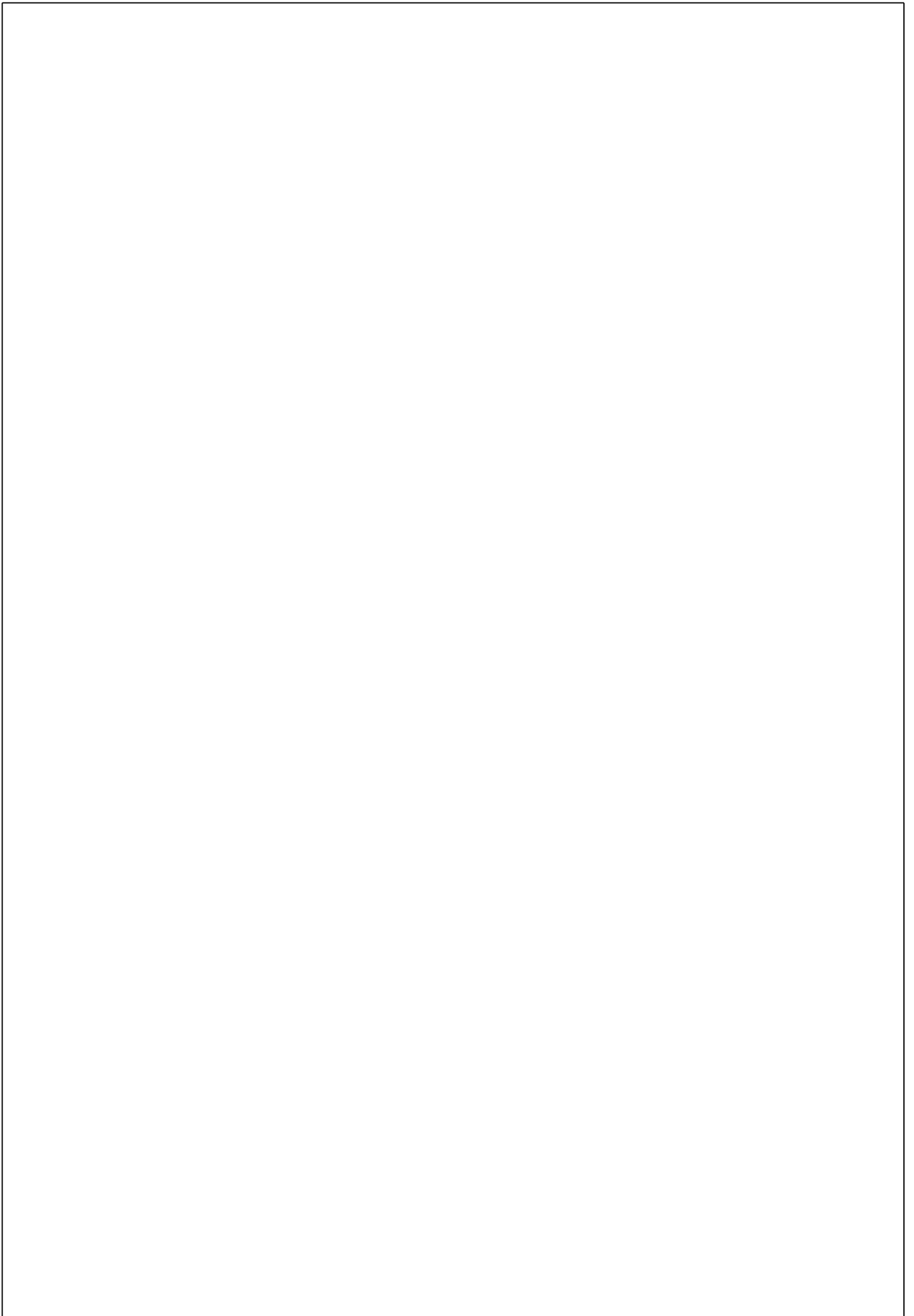
## **Appendix K Hydraulic Modelling Calculation Summary**

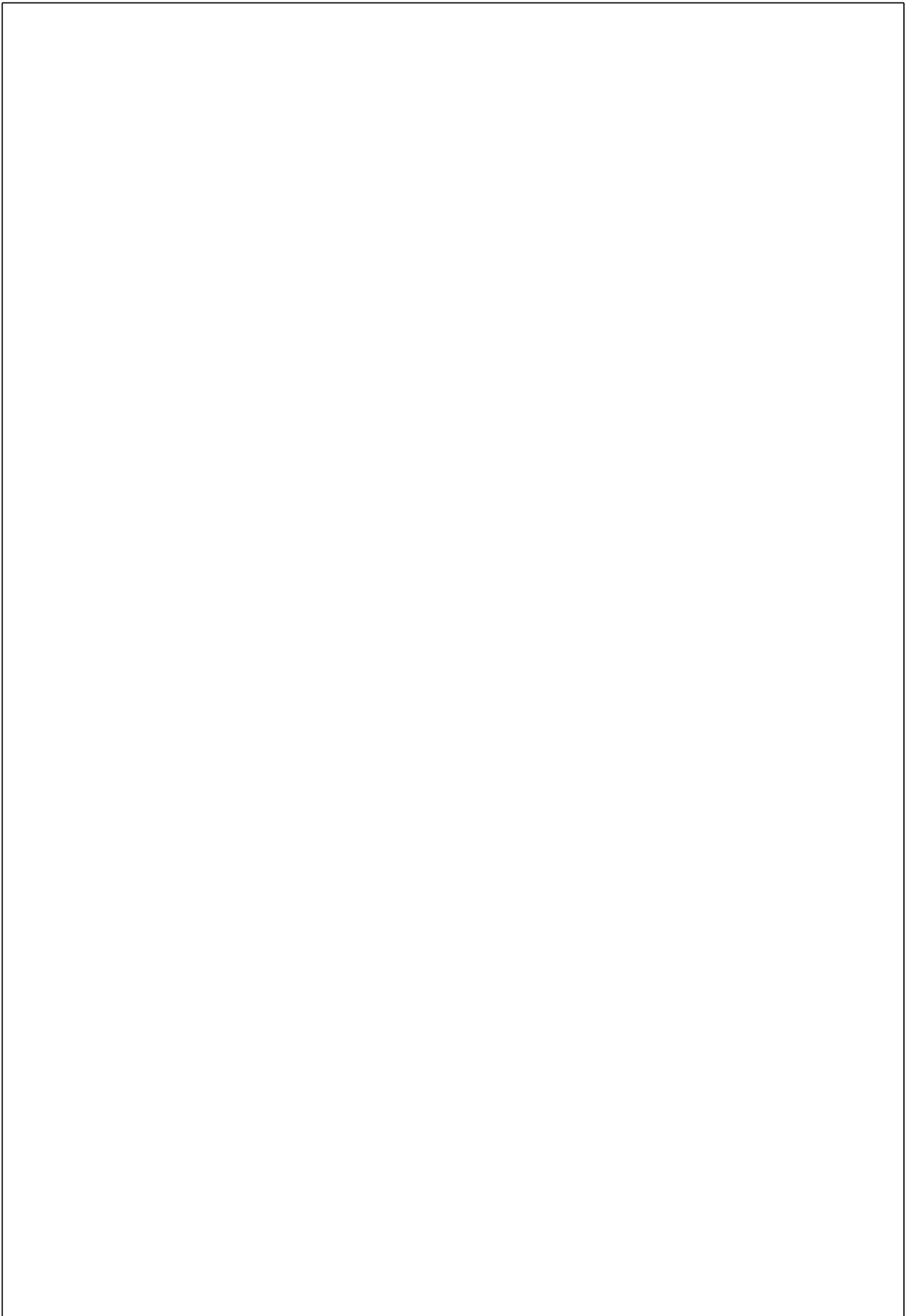












# Our Locations

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nottingham@curtins.com