

# FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY

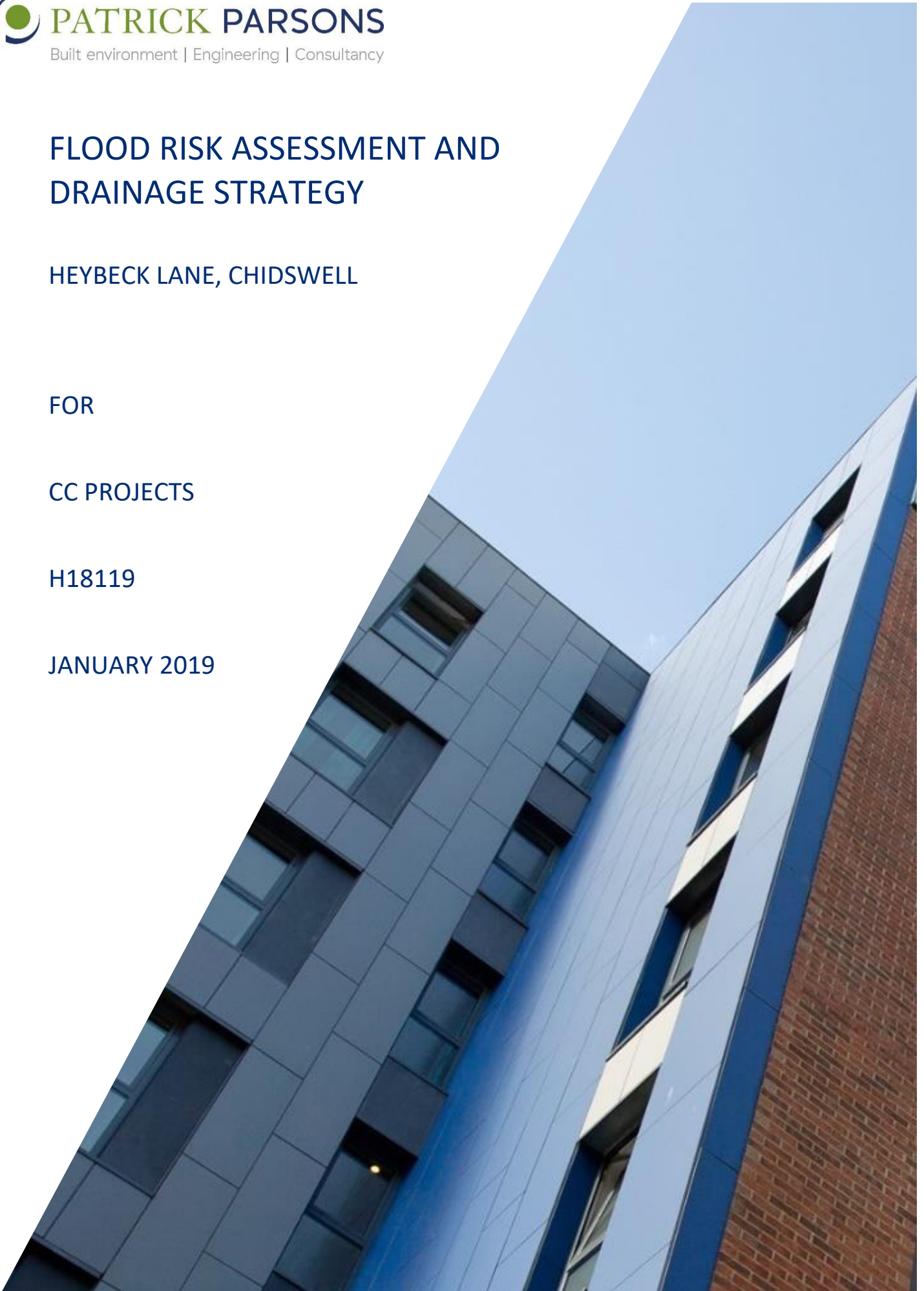
HEYBECK LANE, CHIDSWELL

FOR

CC PROJECTS

H18119

JANUARY 2019



**FLOOD RISK ASSESSMENT AND DRAINAGE STRATEGY**  
**HEYBECK LANE, CHIDSWELL**  
**FOR**  
**CC PROJECTS**

| Revision | Date of issue | Comments                        | Prepared By | Checked By |
|----------|---------------|---------------------------------|-------------|------------|
| 0        | 25.01.19      | Initial Issue                   | TE          | MJM        |
| 1        | 11.12.19      | Revised to suit client comments | TE          | MJM        |
|          |               |                                 |             |            |
|          |               |                                 |             |            |
|          |               |                                 |             |            |

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## Executive Summary

| Description                                                                                                                                                                                                                                                                                                                     |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Patrick Parsons Limited (PPL) were commissioned by CC Projects to undertake a Flood Risk Assessment (FRA) and Drainage Strategy for the proposed development of Heybeck Lane, Chidswell.                                                                                                                                        |
| Site Parameters                                                                                                                                                                                                                                                                                                                 |
| <u>Total Area:</u> Approximately (7.16 Ha)<br><u>Land use:</u> The Proposed Development will consist of up to 181 no. residential dwellings with associated roads and hard standing areas, it is expected that the roads and drainage will be offered for adoption.                                                             |
| Flood Risk Assessment                                                                                                                                                                                                                                                                                                           |
| <u>Rivers and Sea:</u> Flood Zone 1<br><u>Fluvial:</u> Low<br><u>Groundwater:</u> Low                                                                                                                                                                                                                                           |
| Conclusions                                                                                                                                                                                                                                                                                                                     |
| The proposed development lies within flood doze 1 (low risk) and therefore assessed as having 0.1 per cent (1 in 1000) chance of flooding occurring each year. This Flood Risk Assessment has confirmed that the proposed development is appropriate and sustainable with the correct measures in the terms as set out in NPPF. |

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## 1.0 Introduction

- 1.1 The purpose of this study is to assess the flood risk and drainage strategy in regards to the proposed residential development of circa 181 dwellings situated on a greenfield site, located in Chidswell, Dewsbury (the Site). The Flood Risk Assessment and Drainage Strategy will be provided off Heybeck Lane as supporting documentation as part of an outline planning application.
- 1.2 The objective of the Flood Risk Assessment and Drainage Strategy is to identify flooding or surface water management issues relating to the proposed residential development of the Site. The assessment will be based upon existing available information and will aim to identify if the Site is affected by current or future flooding and whether the development will increase flood risk elsewhere.

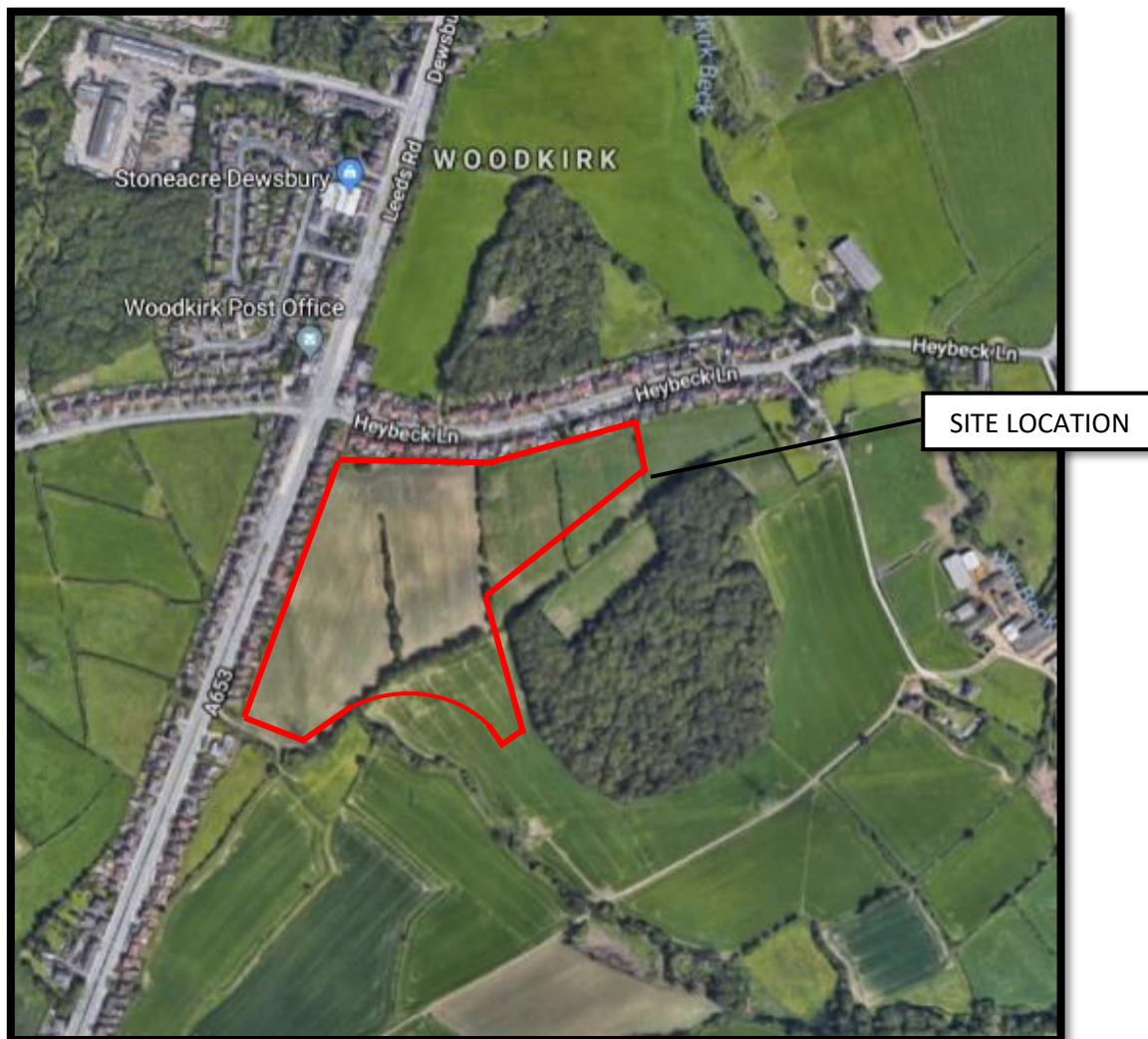
**The report will:**

- (i) **Identify existing site topography and existing site drainage characteristics**
- (ii) **Describe and assess the proposed development**
- (iii) **Assess the flood risk in accordance with the Department of Communities and Local Government (DCLG) Technical Guidance and the National Planning Policy Framework (NPPF March 2012)**
- (iv) **Consider existing information provided through discussions with the Lead Local Flood Authority (LLFA) and Yorkshire Water (YWL) to develop a drainage strategy for the proposed development and identify any mitigation measures required.**

## 2.0 Existing Site Information

### Site Location

- 2.1 The proposed residential development site is situated to the south of Heybeck Lane, in Chidswell, approximately 11km west of Wakefield, 14km east of Huddersfield and 22km south of Leeds.



The boundaries of the Site are adjacent to the following:

North – Residential dwellings and Heybeck Lane beyond

East – Agricultural land

West – Residential dwellings and Leeds Road (A653) beyond

South – Agricultural land and woodlands south east of the proposed development

## Site Description

- 2.2 The Site at present currently forms several agricultural fields.
- 2.3 The subject site is an irregular shaped parcel of land with an approximate area of 7.16ha centred on National Grid Reference at 427065E 424318N, and the nearest postcode is WF12 7QT. This also forms the northern part of the mixed-use allocations MX57 within the adopted local plan.

Please refer to the Site Location Plan in **Appendix A**.

## Existing Geology

- 2.4 The Site comprises a mixture of arable and pastoral agricultural land that is divided by hedgerows into several fields. Most of the site has been arable and pasture since at least the mid-19th century.
- 2.5 Solid strata comprise undifferentiated sandstone, mudstone and siltstone of the Carboniferous Middle Coal Measures with a number of outcropping coal seams and faults indicated.
- 2.6 Locally, superficial deposits of alluvium associated with the Hey Beck are present along the eastern site boundary. Elsewhere, drift deposits absent. There are several discrete areas of potentially infilled ground.

Please refer to PPL Phase 1 Geoenvironmental Desk Study Report.

## Hydrology

- 2.7 There is an unnamed watercourse running along the Southern boundary and down to the south-east corner.

### 3.0 Proposed Development

- 3.1 The Proposed Development will consist of up to 181 No. residential dwellings with associated roads and hard standing areas, it is expected that the roads and drainage will be offered for adoption.
- 3.2 Planning permission for the Proposed Development is being sought in outline with all matters, except for access, reserved for consideration as part of any future reserved matters submissions.
- 3.3 An indicative Site Layout Plan (**Appendix B**), which is underpinned by the principles of the submitted Proposed Parameter Plan (**Appendix C**) demonstrates how development at the Site could be brought forward.

## 4.0 Flood Risk Assessment

### National Planning Policy Framework

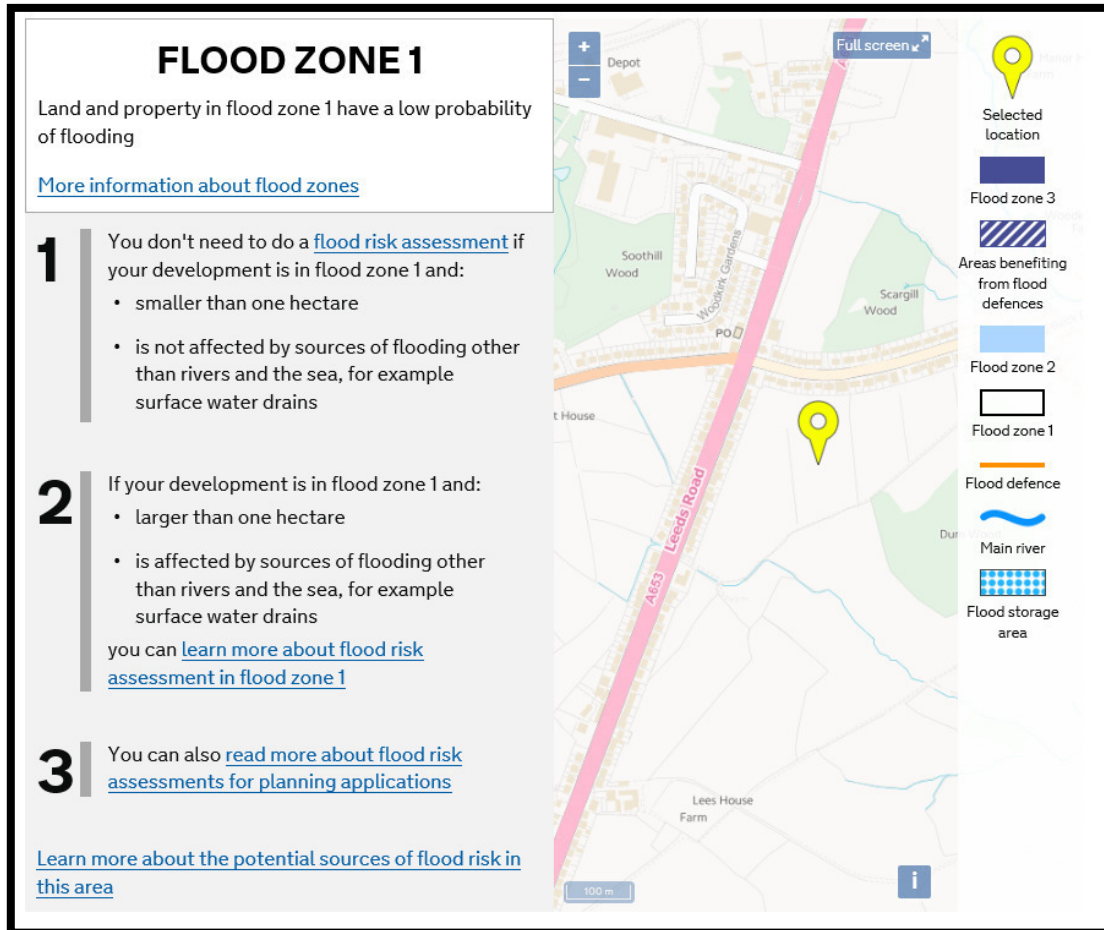
- 4.1 The National Planning Policy Framework (NPPF) aims to avoid inappropriate development in areas at risk of flooding, directing development away from high risk areas and avoiding increasing or reducing the risk of flooding elsewhere.

### Local Policy (LP 27) – Flood Risk

- 4.2 The Local Planning Policy (LP27) insights into consequences of climate change, it is predicted that the risk of flooding will increase. As such, the council will apply a sequential approach to the location of development in accordance with national planning guidance to avoid, where possible, flood risk to people and property. Local Plan allocations were subject to a flood risk sequential test during the plan preparation process so proposals in accordance with the allocated land use would not require a further sequential test during the plan period. The Kirklees district should be the starting point for the sequential test search area although smaller areas of search may be justified in certain circumstances. It is the responsibility of the applicant to provide evidence where a smaller area of search is proposed.
- 4.3 **The flood risk assessment will use a sequential approach to assess the site to avoid development in flood risk areas and to manage the residual risks and take into account the effect of climate change. The ‘Sequential Test’ will start with consideration of the Flood Zones in the vicinity of the site. Where development is proposed within a flood zone an ‘Exception Test’ may also be necessary in accordance with the National Planning Policy Framework guidance.**
- 4.4 The “Flood Zone Map – Rivers and Sea” enclosed in **Appendix E** shows the most appropriate information from the Environment Agency (EA) on the extent of the extreme flood from rivers or the sea that would occur without the presence of flood defences.
- “Where there is no blue shading, this shows the area where flooding from rivers and the sea is very unlikely. There is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year. The majority of England and Wales falls within this area. (For planning and development purposes, this is the same as Flood Zone 1, in England only.)”**
- 4.5 The Flood Maps are based upon the approximate extent of floods with a Flood Zone 3 having a 0.5% annual probability boundary for flooding from the sea and tidal waters, and 1% annual probability boundary for flooding from rivers under present expectations, or where this is greater, the extent of the highest known flood. It should be noted that the flood map area assumes no defences and does not consider the likelihood that flood risk will be increased by climatic change. It is important to recognise that a 1% flood has a 26% probability of being equalled or exceeded at least once in 30 years (the duration of a typical mortgage) and a 49% probability of being equalled or exceeded at least once in 70 years (a typical human lifetime). The attached plan represents the best available current information on the extent of flood risk. However, it should be noted, that these maps are indicative only, and are to be used as a basis of consultation and not as the sole basis for decisions on where planning policies apply. Therefore, due to such local variability and uncertainties, it is difficult to be prescriptive about the levels of risk. It is to be recognised that there is a continuum from virtually no to high risk. The DEFRA Paper ‘Flood and Coastal Defence Project Appraisal Guidance (1999)’ gives indicative standards of protection for existing development against river flooding of 1.0 – 4.0% annual

probability of failure for typically less intensively developed urban areas i.e. they defend against a flood with that probability of occurring.

- 4.6 The plan shown below and in **Appendix F**, is based upon the EA's "Flood Zone Map – Rivers & Sea" demonstrating the entire Site is located within Flood Zone 1 (where there is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year).



- 4.7 The Flood Risk Vulnerability Classification for this development is “More Vulnerable – Buildings used for dwelling houses”.
- 4.8 The Site lies within Flood Zone 1 incorporating a “More Vulnerable” development, therefore development is appropriate without the need for an Exception Test. Please refer to the Table 3 below.

**Table 3: Flood risk vulnerability and flood zone ‘compatibility’**

| Flood risk vulnerability classification (see table 2) |                               | Essential infrastructure | Water compatible | Highly vulnerable       | More vulnerable         | Less vulnerable |
|-------------------------------------------------------|-------------------------------|--------------------------|------------------|-------------------------|-------------------------|-----------------|
| Flood zone (see table 1)                              | Zone 1                        | ✓                        | ✓                | ✓                       | ✓                       | ✓               |
|                                                       | Zone 2                        | ✓                        | ✓                | Exception Test required | ✓                       | ✓               |
|                                                       | Zone 3a                       | Exception Test required  | ✓                | ✗                       | Exception Test required | ✓               |
|                                                       | Zone 3b functional floodplain | Exception Test required  | ✓                | ✗                       | ✗                       | ✗               |

**Key:**      ✓ Development is appropriate.  
                  ✗ Development should not be permitted.

## Existing Flood Alleviation Measures

- 4.9 Based on information provided by the EA, there appears to be no flood defences in close vicinity of the development site. Please refer to the EA Flood Zone Map in **Appendix F**.
- 4.10 Patrick Parsons are not aware of any plans to improve the existing flood defences or construction of any further flood defence measures in the foreseeable future.

## Sources of Potential Flooding

4.11 The table below identifies the potential sources of flood risk to the development. Where necessary, the significance of these sources is investigated further.

| Flood Source               | Potential Risk |        |     |      | Description                                                                   |
|----------------------------|----------------|--------|-----|------|-------------------------------------------------------------------------------|
|                            | High           | Medium | Low | None |                                                                               |
| Fluvial                    |                |        | X   |      | Refer to Appendix E                                                           |
| Tidal                      |                |        |     | X    | No tidal sea or estuaries located in close proximity of the development site. |
| Canals                     |                |        |     | X    | No canals located in close proximity of the development site.                 |
| Groundwater                |                |        | X   |      | Refer to 4.12                                                                 |
| Reservoirs and waterbodies |                |        | X   |      | Refer to Appendix G                                                           |
| Sewers                     |                |        | X   |      | Refer to 4.13                                                                 |
| Pluvial                    |                |        | X   |      | Refer to 4.14                                                                 |
| Development Drainage       |                |        | X   |      | Design process will minimise risks                                            |

4.12 The Site does not lie within a groundwater source protection zone and no groundwater abstraction licenses are present within 1km of the Site. There are no known current or historic wells within the site boundary, several wells are recorded in historical maps within the wider area with the closest recorded being 25m to the west (Bank Top Cottage).

4.13 At the time of writing this report no sewer flooding plans were available. PPL are not aware of the Site being listed as one which is prone to sewer flooding.

4.14 The Flood Maps enclosed in **Appendix H** show the most appropriate information on the extent of the flood risk from surface water from EA. Due to the topography of the existing Site there is a slight area located south-west of the site marking 'low' risk of surface water flooding. Surface water flooding in this area will be reduced or eliminated post development as site levels will be regraded to direct surface water away from buildings and towards landscaped areas or impermeable areas which will be positively drained.

### **Previous Flood Events**

4.15 Patrick Parsons are not aware of any historic flooding events affecting the Site.

### **Existing Structures Affecting Flooding**

4.16 There are no known existing structures which may affect flooding of the Site.

## 5.0 Drainage Strategy

### Surface Water

- 5.1 Infrastructure protocol states that a designer should consider the following in order of preference before finalising a surface water design statement for the development.
1. Discharge to SuDS devices, e.g. an adequate soakaway or some other adequate infiltration system or where this is not reasonably practicable,
  2. Discharge to a watercourse or where this is not reasonably practicable,
  3. Discharge to a public sewer network.
- 5.2 Method 1 – Discharge to a SUDS device – The development of circa 181 dwellings are proposed to be constructed on a greenfield site.
- 5.3 The Site comprises a mixture of arable and pastoral agricultural land that is divided by hedgerows into several fields. Most of the site has been arable and pasture since at least the mid-19th century.
- 5.4 The possibility of infiltration will depend on the connectivity of the pore space. Permeable rocks include sandstone and fractured igneous and metamorphic rocks and karst limestone. Impermeable rocks include shales and unfractured igneous and metamorphic rocks. Soakaway testing as part of an intrusive site investigation would be required to confirm this.
- 5.5 Method 2 – Discharge to watercourse. In terms of surface water, discharging to watercourse may be a viable option pending the outcome of a phase 2 site investigation. Mapping indicates the location of an existing watercourses located outside the site boundary to the southern boundary.
- 5.6 Method 3 – Discharge to a public sewer network. YWS public network will not be a viable option as YWS state in their pre-planning enquiry “The local sewer network does not have capacity to accept any surface water from the proposed site.” Please refer to **Appendix J**.

## **Method 2 - Discharge to watercourse.**

- 5.7 It is considered that Method 2 will be the most appropriate option of surface water management for the Proposed Development.
- 5.8 A drainage feasibility study has been carried out by Patrick Parsons which includes details of proposed connections to the two existing watercourses.
- 5.9 Due to site levels, three separate surface water connections may be a viable option, two to the north and one to the south. The watercourse to the south appears to be located just outside the site boundary to the south-east corner but is within land which is under the Applicant's control. Please refer to **Appendix I** for further details.
- 5.10 It is anticipated that the surface water drainage should be able to achieve gravity outfalls to each of the three locations. The lowest point on the Northern area is approx. 96.00 and the ditch is estimated to be at 94.50m, for the southern side the lowest point of the site is approx. 90.50m and the ditch is estimated to be 88.50m. We are proposing below ground tank storage for the areas 2 and 3 and a pond for area 1. Please refer to **Appendix I** for further details.
- 5.11 Total Surface water discharge rates are to be restricted to 32.4l/s which is based on greenfield runoff rates.
- 5.12 The approximate total volume of surface water storage required will be 3,573m<sup>3</sup>. This is based on 65% impermeable area (4.65ha) of the approximate total site area of 7.16ha, the 32.4l/s discharge rate and the 1 in 100-year +40% climate change storm event.
- 5.13 It is anticipated that surface water from the impermeable areas of the development will be collected via gullies, linear drainage channels and guttering systems and transferred to underground oversized storage system before discharging to the watercourse.
- 5.14 All public surface water drainage should be designed in accordance with the current Sewers for Adoption.
- 5.15 All private surface water drainage should be designed in accordance with the current Building Regulations.
- 5.16 Patrick Parsons Limited considers this to be the most appropriate solution.
- 5.17 All drainage calculations including discharge rates, pipe sizes and attenuation volumes are subject to detailed design and LLFA approval
- 5.18 A more detailed surface water strategy plan will be produced at the reserved matters stage once the layout has been fixed.

## **Foul Water**

- 5.19 YW advise discharging foul water to the Ø300 public combined sewer recorded crossing the Site to the south of the development. Please refer to **Appendix J** for YWS Pre-Planning Enquiry response.
- 5.20 YW advise that foul water flows should be kept separate from surface water flows, in accordance with Part H of the Building Regulations.
- 5.21 All public foul water drainage should be designed in accordance with the current Sewers for Adoption.
- 5.22 All private foul water drainage should be designed in accordance with the current Building Regulations Part H.
- 5.23 A more detailed foul water strategy plan strategy plan will be produced at the reserved matters stage once the layout has been fixed.

## 6.0 Conclusions

- 6.1 Patrick Parsons Limited has been instructed to produce a Flood Risk Assessment and Drainage Strategy under National Planning Policy Framework (NPPF) to support an outline Planning Application for the proposed residential development of circa 181 dwellings and supporting infrastructure.
- 6.2 The EA's "Flood Zone Map – Rivers and Sea" shows that the site is entirely located within Flood Zone 1, where there is less than a 0.1 per cent (1 in 1000) chance of flooding occurring each year.
- 6.3 The Site lies within Flood Zone 1 incorporating a "More Vulnerable" development, therefore development is appropriate without the need for an Exception Test.
- 6.4 The Site falls into Flood Zone 1 incorporating "More Vulnerable" development, therefore development is appropriate without the need for an Exception Test.
- 6.5 It has been demonstrated that the Proposed Development will have a low to very low risk of flooding from surrounding watercourse, surface water and sewers.
- 6.6 Patrick Parsons consider discharging to watercourse will be the most appropriate method of surface water management for the Proposed Development, pending the results of a Phase 2 Site Investigation Report.
- 6.7 The foul drainage should discharge to the public combined sewer that crosses the Site south of the proposed development.
- 6.8 The surface water should discharge to the watercourse that crosses the Site; this is proposed to be at a restricted flow rate shared over three outfalls.
- 6.9 The approximate total volume of surface water storage required will be 3,573m<sup>3</sup>. This is based on 65% impermeable area (4.65ha) of the approximate total site area of 7.16ha, a 32.4 l/s discharge rate based on existing greenfield runoff rates and the 1 in 100-year +40% climate change storm event.
- 6.10 All public foul water drainage should be designed in accordance with the current Sewers for Adoption.
- 6.11 All private surface water and foul water drainage should be designed in accordance with the current Building Regulations.
- 6.12 This Flood Risk Assessment and Drainage Strategy has confirmed that the proposed development is appropriate and sustainable in the terms as set out in NPPF and LP27 of the adopted local plan.

## 7.0 Report Conditions

- 7.1 The report is based on the information that has been acquired and / or made available to us via the various searches and consultations undertaken as part of the Flood Risk Assessment. In some cases, anecdotal information has been relied upon, where documented evidence has been lacking.
- 7.2 The conclusions drawn in the above report are considered correct although any subsequent additional information may allow refinement of the conclusions.
- 7.3 All work carried out in preparing this report has utilised and is based upon Patrick Parsons Limited current professional knowledge and understanding of current UK standards and codes, technology and legislation. Changes in this legislation and guidance may occur at any time in the future and cause any conclusions to become inappropriate or incorrect.
- 7.4 This report has been prepared using information contained in maps and documents prepared by others. Patrick Parsons Limited can accept no responsibility for the accuracy of such information.

## 8.0 References Not Included

- 8.1 Department for Communities and Local Government (DCLG) Technical Guidance and the National Planning Policy Framework (NPPF Feb 2019) which replaces Planning Policy Statement 25 (PPS25) Development and Flood Risk – published December 2006, however retaining key elements of the aforementioned document.

## **Appendix A**

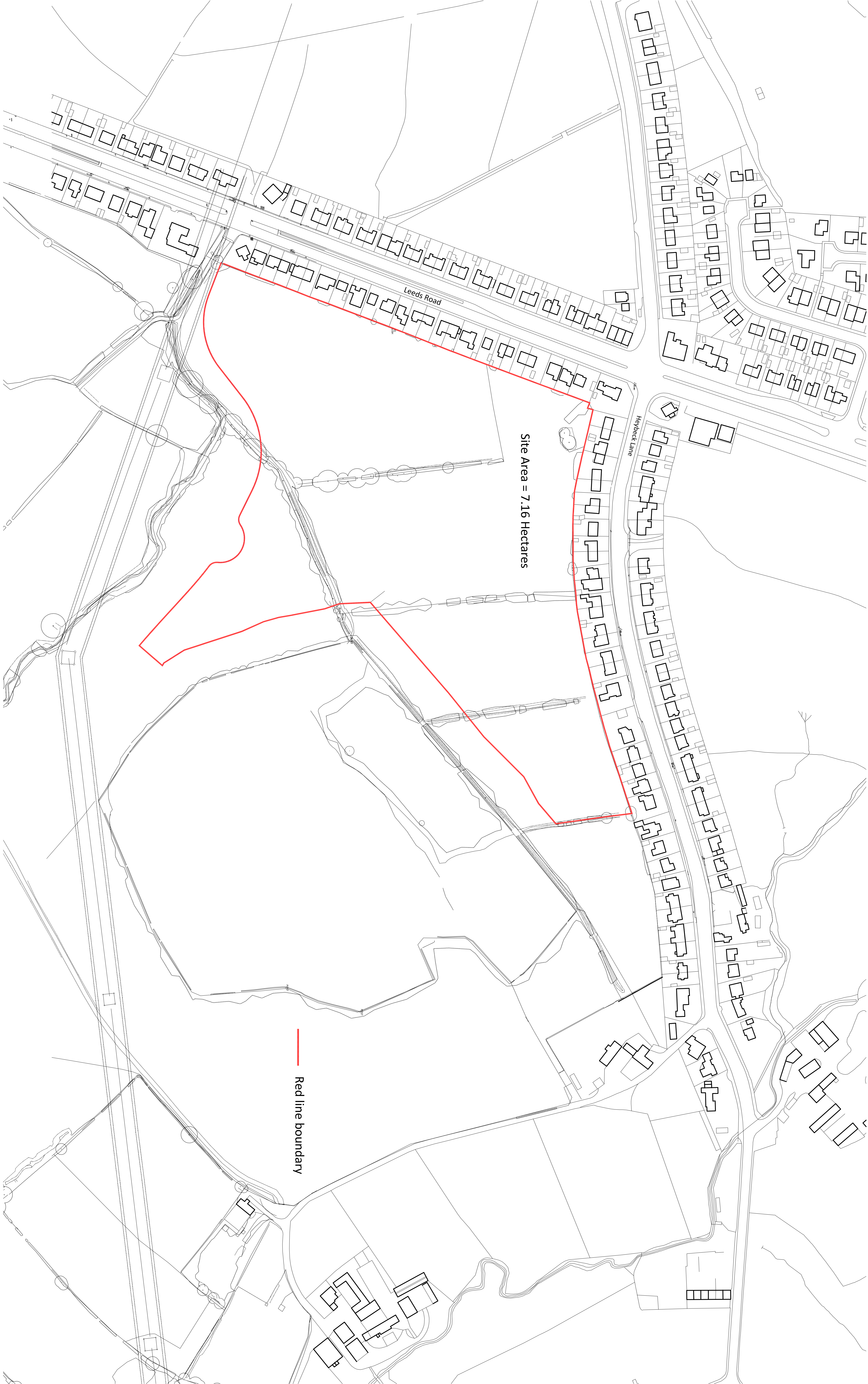
### **Site Location Plan**



SITE LOCATION  
NATIONAL GRID REFERENCE  
E 427065  
N 424318

SITE ADDRESS:  
HEYBECK LANE,  
LAND AT CHIDSWELL, DEWSBURY  
(NEAR) WF12 7QT

|                                                                                                                                                                                                                                                                      |                                        |                          |                          |                       |            |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|--------------------------|--------------------------|-----------------------|------------|
| <div><p>5 Waverley Road<br/>Huddersfield<br/>West Yorkshire<br/>HD1 5NA UK</p><p>T. +44 (0)1484 516 977<br/>E. info@patrickparsons.co.uk<br/>W. www.patrikparsons.co.uk</p></div> | Client FA - REAL ESTATE DELOITTE LLP   | Drawing<br>LOCATION PLAN | Scales 1:2500            | Drawn TE<br>JULY 2018 | Checked TB |
|                                                                                                                                                                                                                                                                      | Project<br>LAND AT CHIDSWELL, DEWSBURY |                          | Drawing No. N18119-SK000 |                       | Rev. P1    |

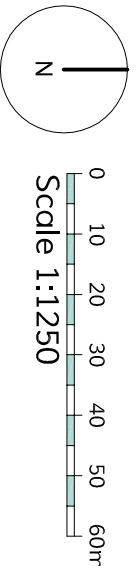


Site Area = 7.16 Hectares

Leeds Road

Heybeck Lane

Red line boundary



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Notes:

|      |   |                                  |    |    |      |          |    |        |
|------|---|----------------------------------|----|----|------|----------|----|--------|
| Rev. | A | minor revision to south boundary | By | RG | Date | 16/02/18 | RG | Status |
|------|---|----------------------------------|----|----|------|----------|----|--------|

|                                                              |          |           |           |
|--------------------------------------------------------------|----------|-----------|-----------|
| Client                                                       |          | Job No.   |           |
| The Church Commissioners                                     |          | 18-006    |           |
| Residential Development on land off Heybeck Lane, Christwell |          |           |           |
| Title:                                                       |          |           |           |
| Location Plan                                                |          |           |           |
| Date:                                                        | 14/02/18 | Scale:    | 1:1250@A1 |
| Drawing No:                                                  | 00-001   | Drawn By: | RG        |
| Checked By:                                                  |          | Revision: | A         |

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## **Appendix B**

### **Site Layout Plan**



- Legend
- Indicative greenspace
  - Existing ancient woodland, trees and hedgerows
  - Ancient woodland buffer zone
  - Indicative tree planting
  - Indicative residential gardens
  - Existing TPO to be removed
  - Proposed application boundary
  - Land under applicants ownership
  - Existing Right of Way route
  - Indicative cycle route
  - Indicative estate road

Total indicative plots = 181

Heybeck Lane - Plot Layout  
1 : 750

N

1 : 750

0153045m

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2. Any structural, services or fit out detail shown is for coordination only, refer to relevant Consultants/Clients information for details.

3. Refer to Enjoy NBS for full outline performance specification of Architectural Elements.

4. THE CONTENT OF THIS DRAWING IS FOR DESIGN INTENT AND REQUIRES FURTHER DESIGN DEVELOPMENT AND COORDINATION WITH ALL RELEVANT CONSULTANTS, SUB-CONTRACTORS, SPECIALIST DESIGNERS AND STATUTORY AUTHORITIES.

C

Legend updated;

Rev.

B

Red line boundary updated;

Des.

A

General design update in line with latest proposals;

DH

01/11/19

RG

DH

09/10/19

RG

DH

04/09/19

RG

By

Date

Ch.

Status:

PLANNING

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Client:  
The Church Commissioners  
Project:  
Chidswell Masterplan  
Title:  
Heybeck Lane, Indicative Site Layout Plan  
Date:  
11/08/18  
Drawing No:  
00-101

Job No:  
18,006

Scale:  
As indicated@A1

Checked by:  
RG

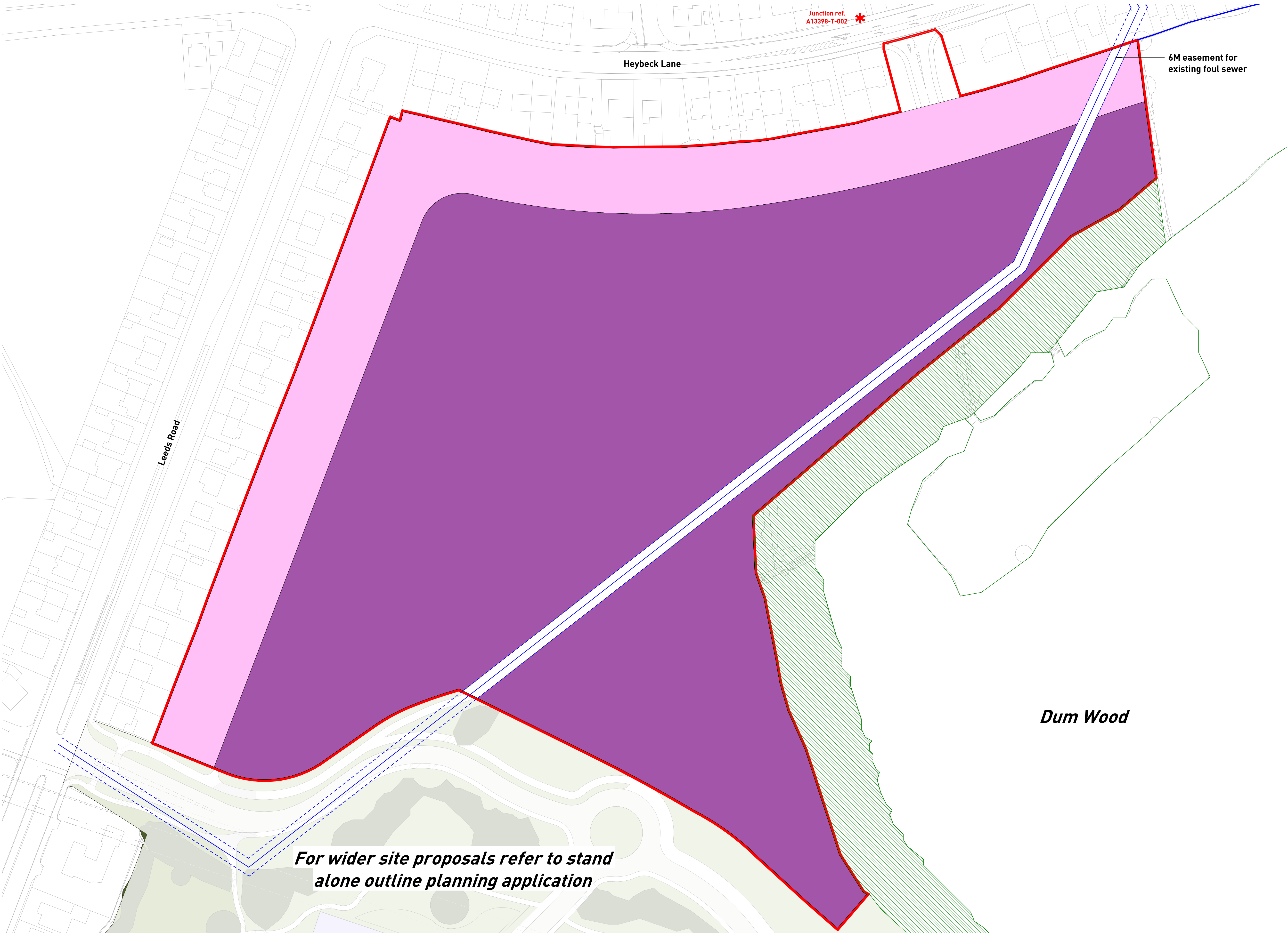
Drawn By:  
DH

Revision:  
C

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## **Appendix C**

### **Proposed Parameter Plan**



Parameter Plan Legend

- Ancient woodland buffer zone (20m)
- Proposed vehicular access point
- 10m maximum building height
- 12m maximum building height
- Application boundary

Residential building heights:

10m maximum residential dwelling height = ridge line above ground level or equivalent to 2 full storeys + roof

12m maximum residential dwelling height = ridge line above ground level or equivalent to 3 full storeys + roof

Heybeck Lane - Parameter Plan

1 : 750

1 : 750

0 15 30 45m

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2. Any structural, services or fit out detail shown is for coordination only, refer to relevant Consultants/Clients information for details.

3. Refer to Enjoy NBS for full outline performance specification of Architectural Elements.

4. THE CONTENT OF THIS DRAWING IS FOR DESIGN INTENT AND REQUIRES FURTHER DESIGN DEVELOPMENT AND COORDINATION WITH ALL RELEVANT CONSULTANTS, SUB-CONTRACTORS, SPECIALIST DESIGNERS AND STATUTORY AUTHORITIES.

|      |                                |    |          |     |
|------|--------------------------------|----|----------|-----|
| B    | Woodland offset hatch amended; | DH | 11/09/19 | RG  |
| A    | Drawing legend updated;        | DH | 09/09/19 | RG  |
| Rev. | Des.                           | By | Date     | Ch. |

PLANNING

STATUS

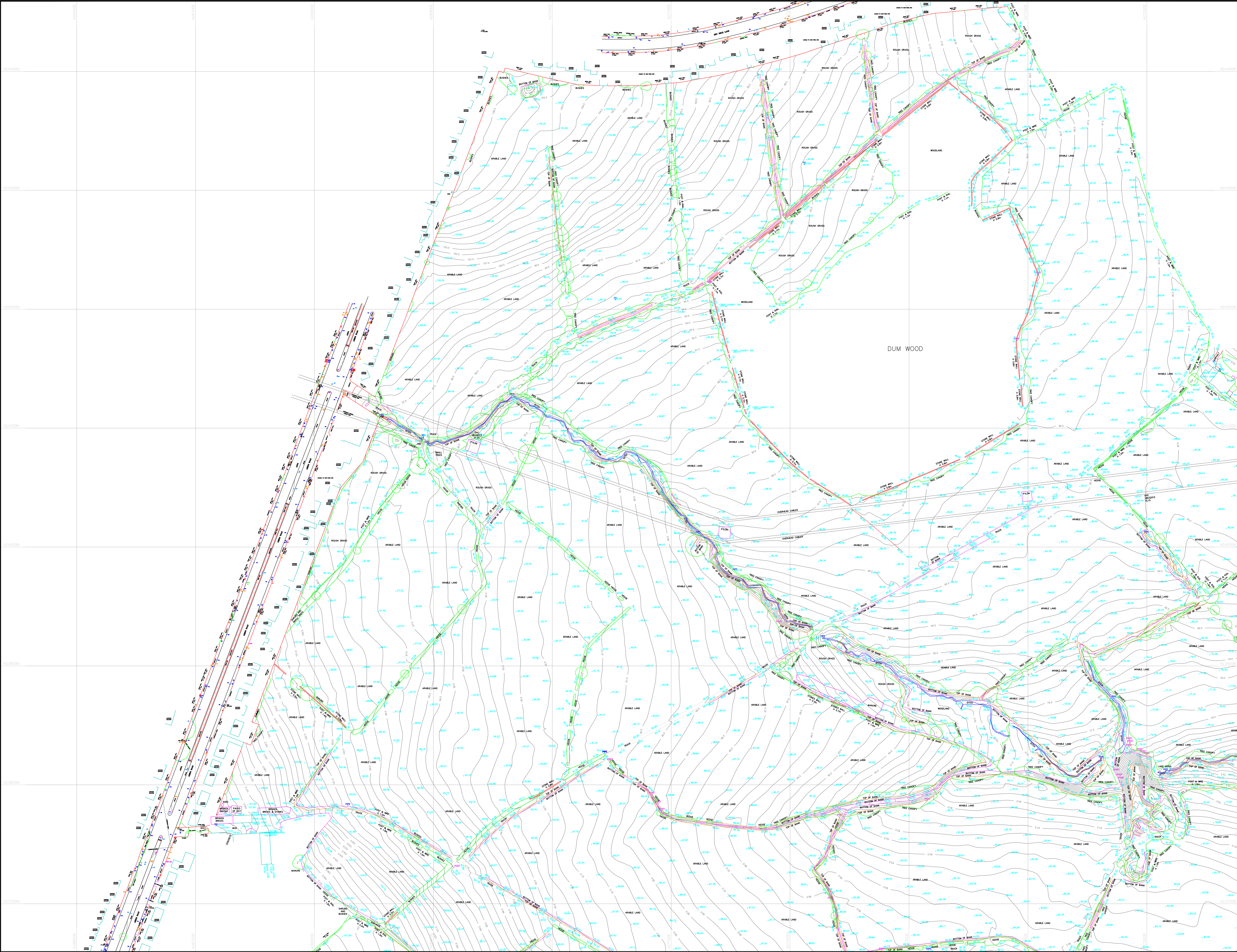
The Old Brewery  
High Court  
Leeds  
LS2 7ES  
Tel: 0113 242 3622  
www.enjoy-design.co.uk

|                                                  |              |             |  |
|--------------------------------------------------|--------------|-------------|--|
| Client:                                          |              | Job No:     |  |
| The Church Commissioners                         |              | 18,006      |  |
| Project:<br>Chidswell Masterplan                 |              |             |  |
| Title:<br>Proposed Parameter Plan - Heybeck Lane |              |             |  |
| Date:                                            | Scale:       | Checked by: |  |
| 09/09/19                                         | As indicated | RG          |  |
| Drawing No:                                      | Drawn By:    | Revision:   |  |
| 00-211                                           | DH           | B           |  |

ENJOY  
DESIGN

## **Appendix D**

### **Topographic Survey**



Notes

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Grid : OS National Grid.  
Using the OS GPS Network and applying OSTN02 transformation and then removing the scale factor for true distances with a one-step transformation centred on "Centre"

Datum : OS Level Datum.  
Using the OS GPS Network and applying OSGM02 National Geoid Model to obtain local area corrections.

Station Listing

| Station | Easting    | Northing   | Level   |
|---------|------------|------------|---------|
| JM1     | 426636.673 | 423214.029 | 124.841 |
| S1      | 426502.603 | 423365.550 | 111.785 |
| S2      | 426586.500 | 423505.940 | 110.535 |
| S3      | 426625.058 | 423664.476 | 111.967 |
| S4      | 426691.248 | 423836.663 | 109.327 |
| S5      | 426785.062 | 424029.968 | 101.415 |
| S6      | 426841.814 | 424179.510 | 101.000 |
| S7      | 426940.931 | 424434.062 | 107.951 |
| S8      | 427123.897 | 424423.478 | 100.066 |
| S9      | 427225.226 | 424462.848 | 94.765  |
| S1A     | 426598.708 | 423309.606 | 117.178 |
| S1B     | 426613.837 | 423228.317 | 124.070 |
| S1C     | 426652.398 | 423139.718 | 127.008 |
| S3A     | 426685.751 | 423763.234 | 111.155 |
| S3B     | 426602.545 | 423575.909 | 110.589 |
| S3C     | 426724.236 | 423766.501 | 108.795 |
| S4A     | 426558.919 | 423697.019 | 111.679 |
| S4B     | 426734.266 | 423950.093 | 104.924 |
| S5A     | 426753.452 | 423947.196 | 103.745 |
| S5B     | 426724.206 | 423967.040 | 107.245 |
| S6A     | 426805.109 | 424136.090 | 100.858 |
| S6B     | 426778.701 | 424070.283 | 101.198 |
| S6C     | 426795.225 | 424056.998 | 101.080 |

Layout Key

(5)

KEY

|                                |     |                        |     |
|--------------------------------|-----|------------------------|-----|
| AIR VALVE                      | AV  | KEYS OUTLET            | KO  |
| BENCH MARK                     | BM  | LAMP POST              | LP  |
| BOLLARD                        | B   | MANHOLE (CIRCULAR)     | MC  |
| BORE HOLE                      | BH  | MANHOLE (RECTANGULAR)  | MR  |
| BRITISH TELECOM COVER          | BT  | MANHOLE (TRIANGULAR)   | MT  |
| BUS STOP                       | BS  | WATER POST             | WP  |
| CABLE TV COVER                 | CTV | ROAD GULLY             | RG  |
| CABLE TV SUPPLY                | CTS | ROOFING EYE            | RE  |
| COLUMN                         | C   | SON POST               | SP  |
| EARTHING POINT                 | EP  | TELEPHONE COVER        | TC  |
| ELECTRICITY COVER              | EC  | TELEPHONE POLE         | TP  |
| ELECTRICITY COVER              | EC  | THRESHOLD LEVEL        | TL  |
| FIRE HYDRANT                   | FH  | TRAFFIC LIGHT          | TR  |
| GAS VALVE                      | GV  | TRAIL PIT              | TP  |
| GATE                           | G   | WATER OUT              | WO  |
| INSPECTION COVER (CIRCULAR)    | IC  | WATER METER            | WM  |
| INSPECTION COVER (RECTANGULAR) | IR  | WATER STOP COCK        | WSC |
| INVERT LEVEL                   | IL  | WATER STOP VALVE       | WSV |
| INVERT LEVEL                   | IL  | CHAMBER BASE LEVEL     | CSL |
| INVERT LEVEL                   | IL  | WATER SURFACE LEVEL    | WSL |
| INVERT TO MEASURE              | IM  | WATER TO MEASURE       | WTM |
| IRTH OF TREE TRUNK             | GT  | DIAMETER OF TREE TRUNK | DT  |
| HEIGHT TO TOP OF TREE CANOPY   | HT  | MULTI BOLT TREE        | MB  |

Rev

| Rev | Date | Drawn | Description | Check |
|-----|------|-------|-------------|-------|
| 1   |      |       |             |       |

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Client

WYG GROUP

Site

CHIDSWELL  
LEEDS ROAD, DEWSBURY, WF12 7QT

Title

TOPOGRAPHICAL SURVEY  
3D

Surveyed

| Chk. | TK, AB, CC, RW, KZ | Drawn | TK, KZ |
|------|--------------------|-------|--------|
| DA   |                    |       |        |

Scale

1/1000

Job No

12304-169

Rev

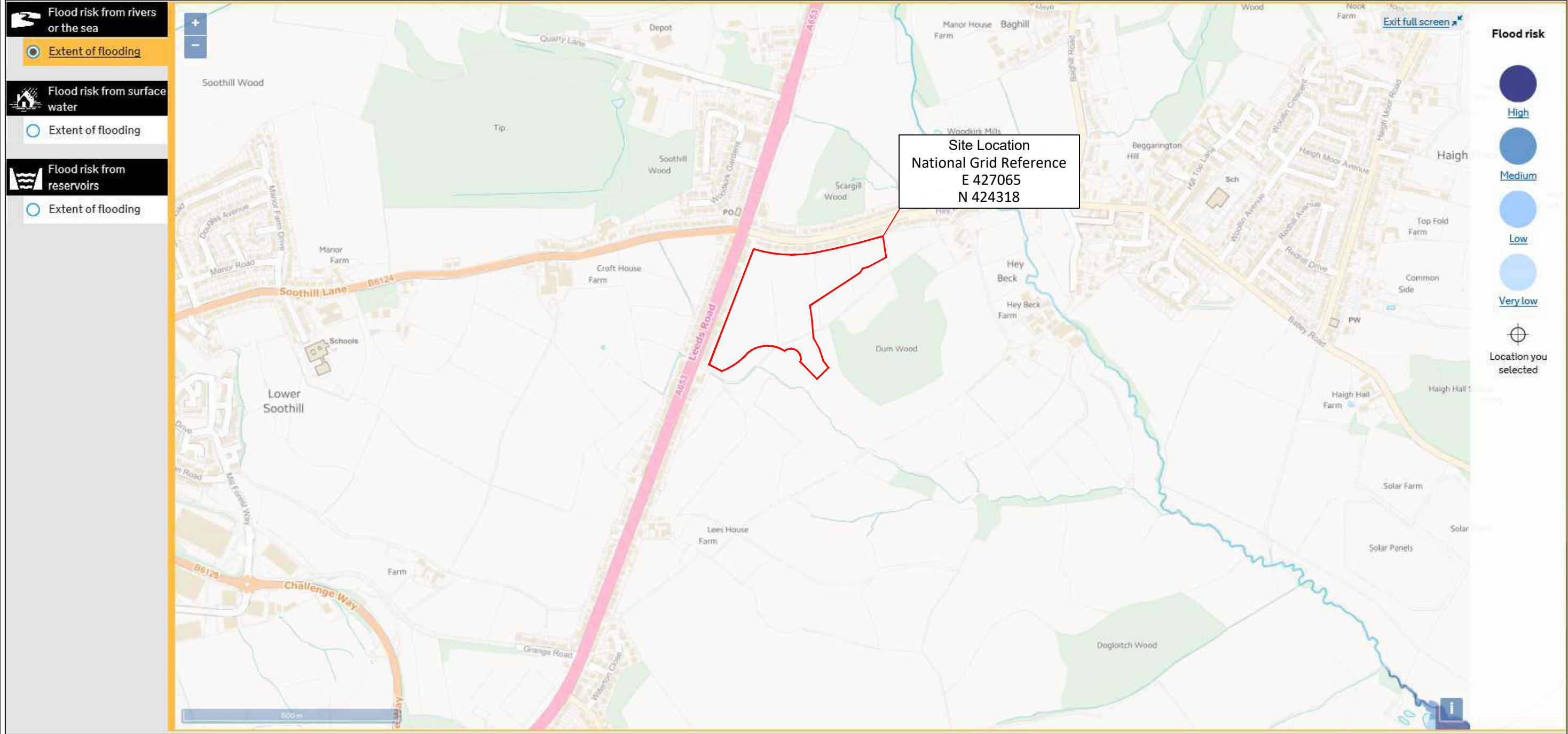
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06/02/2012

12304-169\_2DT (5)

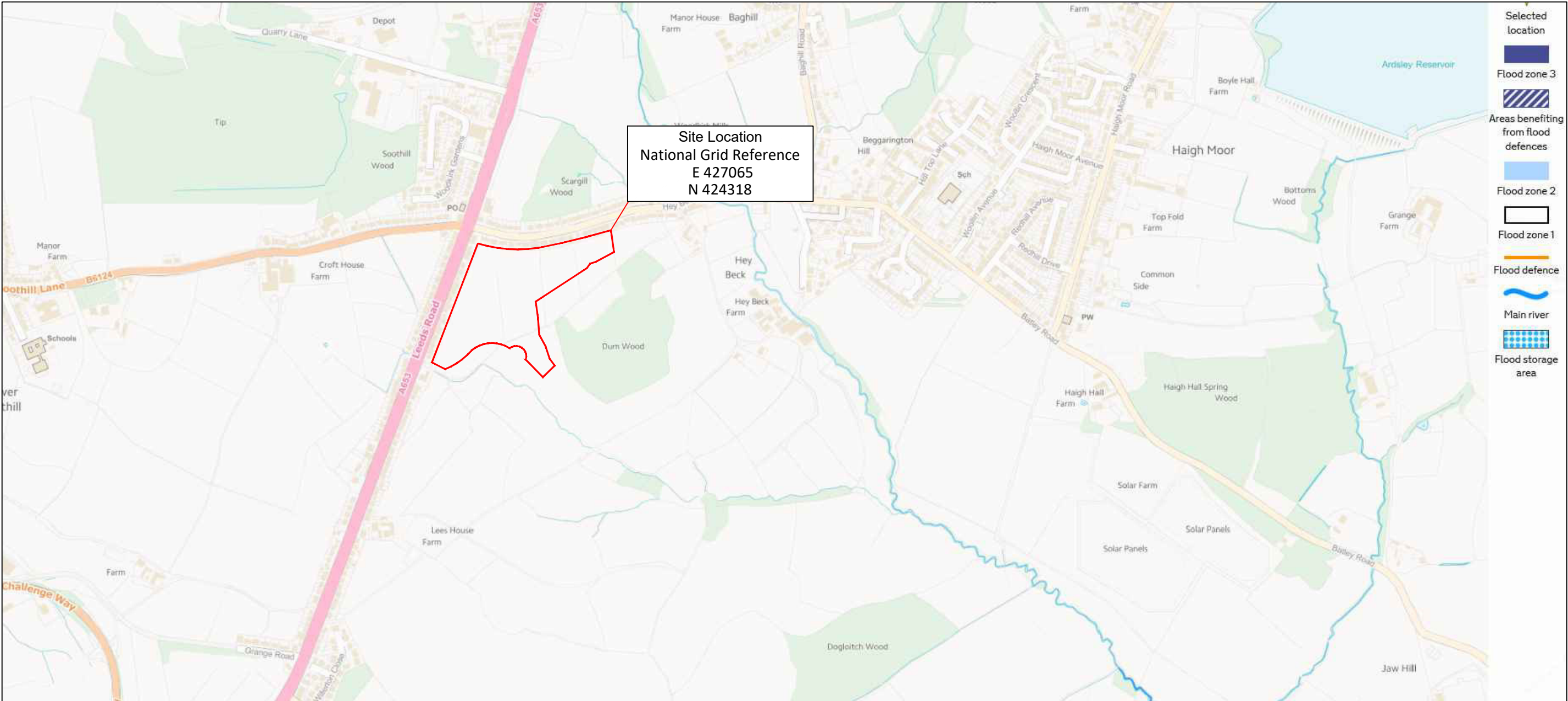
FINAL

**Appendix E**  
**Environment Agency Flood Map – Rivers & Sea**



|                                                                                                                                                                                                                                                |                                        |                                                            |                          |                       |            |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------|--------------------------|-----------------------|------------|
| <br>5 Waverley Road<br>Huddersfield<br>West Yorkshire<br>HD1 5NA UK<br>T. +44 (0)1484 516 977<br>E. info@patrickparsons.co.uk<br>W. www.patrikparsons.co.uk | Client FA - REAL ESTATE DELOITTE LLP   | Drawing<br>EA FLOOD MAP - FLOOD RISK<br>FROM RIVERS OR SEA | Scales 1:5000            | Drawn TE<br>JULY 2018 | Checked TB |
|                                                                                                                                                                                                                                                | Project<br>LAND AT CHIDSWELL, DEWSBURY |                                                            | Drawing No. N18119-SK001 |                       | Rev. P1    |

**Appendix F**  
**Environment Agency Flood Zone Map**



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Client FA - REAL ESTATE DELOITTE LLP

Project  
LAND AT CHIDSWELL, DEWSBURY

Drawing  
EA FLOOD ZONE MAP

Scales 1:5000

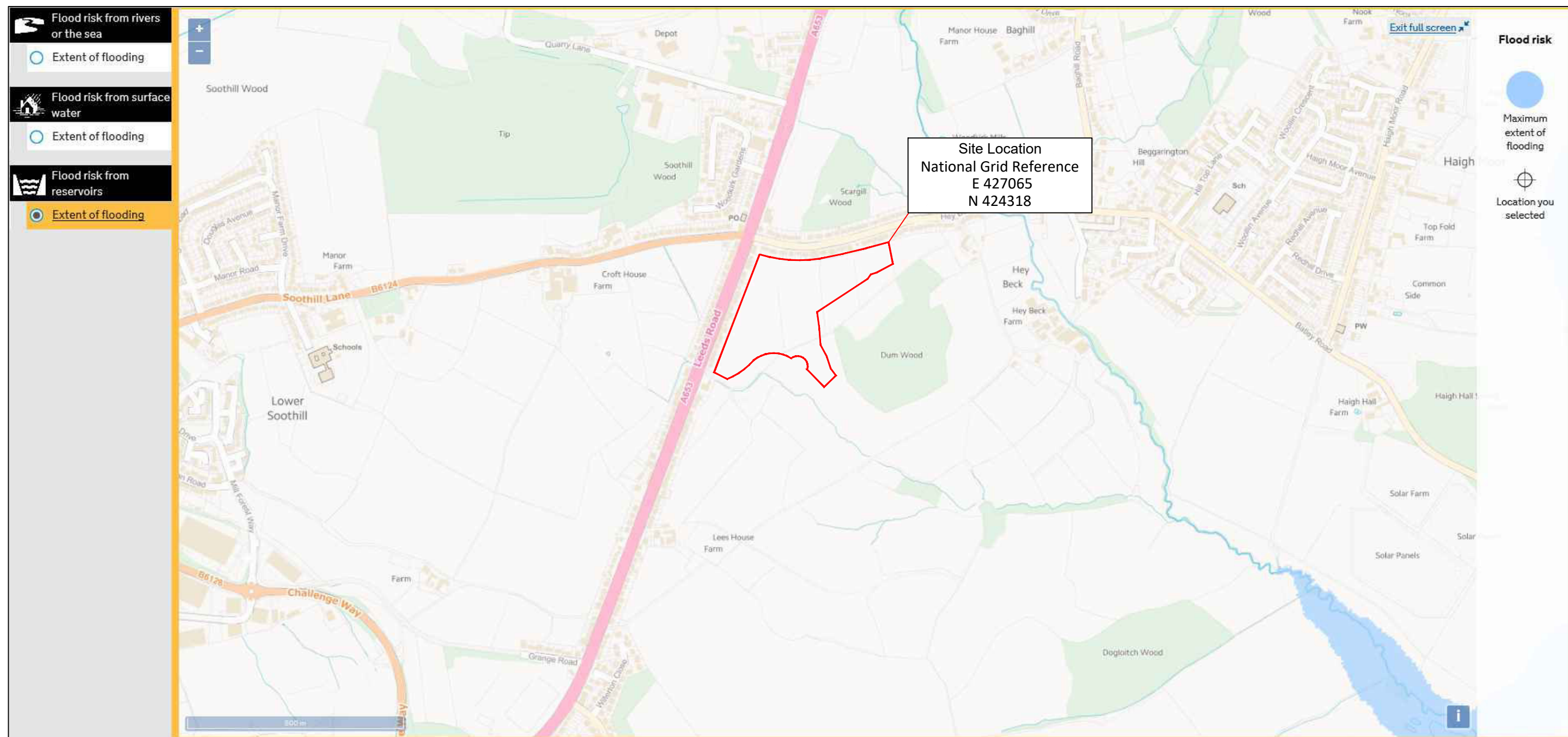
Drawn TE  
JULY 2018

Checked TB

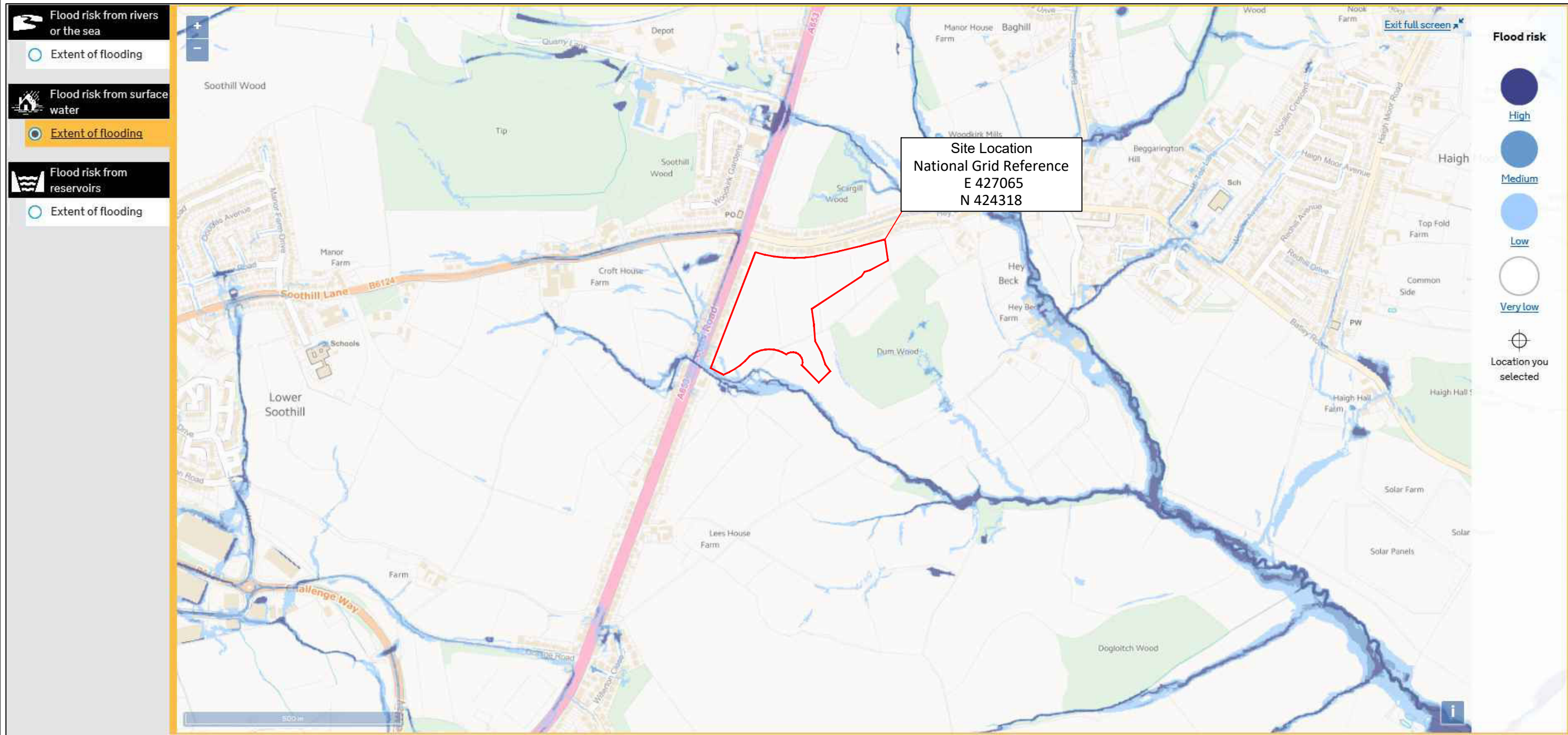
Drawing No. N18119-SK002

Rev. P1

**Appendix G**  
**Environment Agency Flood Map – Reservoir Flooding**



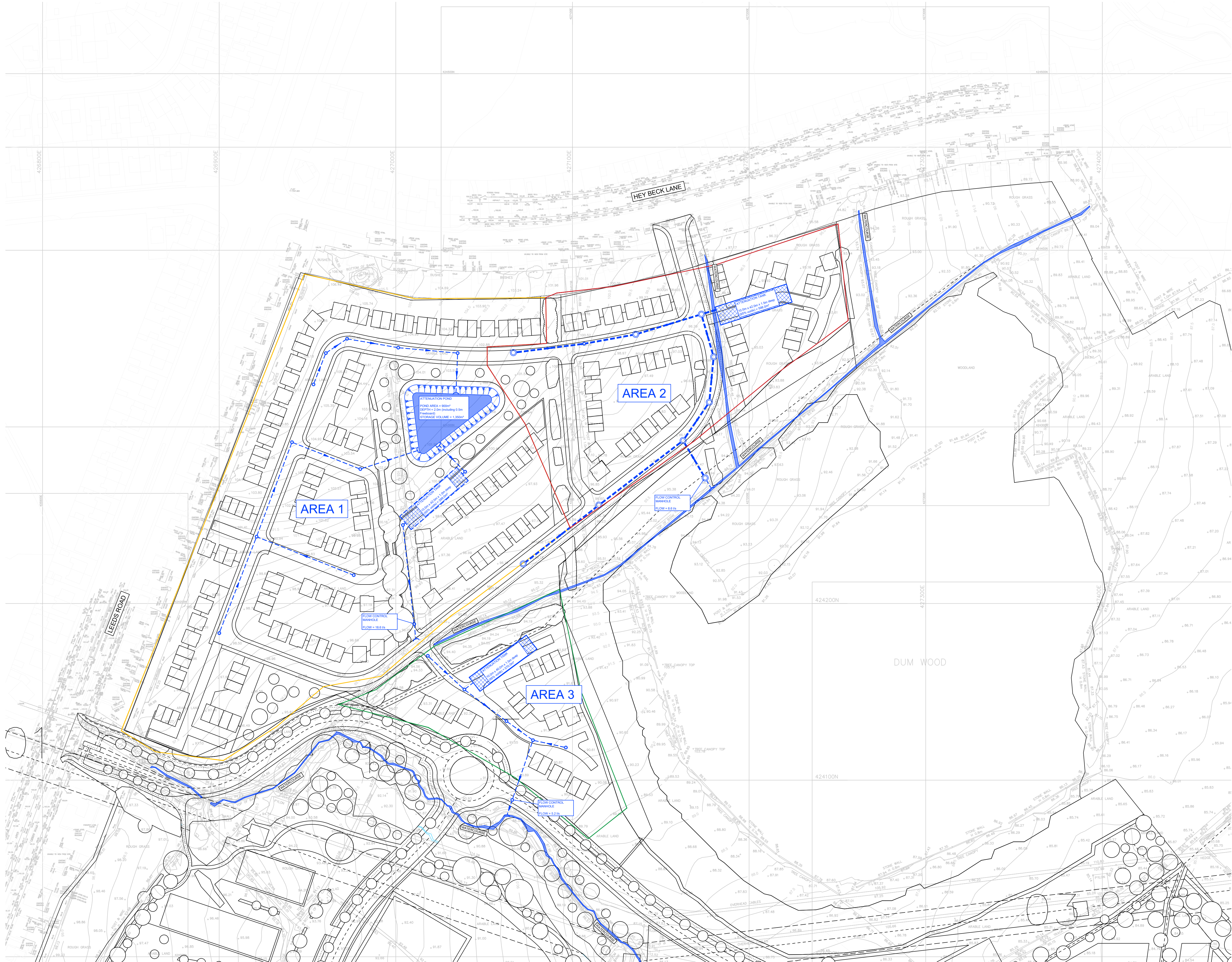
**Appendix H**  
**Environment Agency Flood Map – Surface Water**



|                                                                                                                                                                                                                                                 |                                        |                                                            |                          |                       |            |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------|------------------------------------------------------------|--------------------------|-----------------------|------------|
| <br>5 Waverley Road<br>Huddersfield<br>West Yorkshire<br>HD1 5NA UK<br>T. +44 (0)1484 516 977<br>E. info@patrickparsons.co.uk<br>W. www.patrickparsons.co.uk | Client FA - REAL ESTATE DELOITTE LLP   | Drawing<br>EA FLOOD MAP - FLOOD RISK<br>FROM SURFACE WATER | Scales 1:5000            | Drawn TE<br>JULY 2018 | Checked TB |
|                                                                                                                                                                                                                                                 | Project<br>LAND AT CHIDSWELL, DEWSBURY |                                                            | Drawing No. N18119-SK004 |                       | Rev. P1    |

## **Appendix I**

### **Drainage Strategy**



**GENERAL NOTES**  
1.1. THIS DRAWING IS COPYRIGHT AND SHOULD NOT BE REPRODUCED IN WHOLE OR PART WITHOUT THE WRITTEN CONSENT OF PATRICK PARSONS LTD.  
1.2. DO NOT SCALE FROM THIS DRAWING.  
1.3. LOCATIONS OF ALL EXISTING SERVICES ON-SITE TO BE CONFIRMED & PROVIDED TO THE ENGINEER PRIOR TO COMMENCEMENT OF WORKS.  
1.4. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT PATRICK PARSONS LTD DRAWINGS & SPECIFICATIONS.

**DRAINAGE STRATEGY**

**Surface Water**

The overall site area is approx 7.16ha, therefore assuming 65% impermeability of the site then we have a contributing area of **4.65ha**.

Calculating the Greenfield Runoff for the development based on the contributing area of 4.65ha we then get a QBar value of **32.4 l/s**

Therefore the surface water storage requirements for the development based on a contributing area of 4.65ha and a restricted flow of 32.4 l/s we would be:

- 1 in 1 year = 577m³
- 1 in 30 year = 1675 m³
- 1 in 100 year + 40%cc = 3573 m³

It is anticipated that the ground is not suitable for soakaways, there is however a watercourse that runs along the southern boundary, it is therefore proposed to form 3 outfalls into this watercourse with the the discharge rate pro-rata as follows:

- AREA 1 = 18.6 l/s (2.67ha)
- AREA 2 = 8.6 l/s (1.23ha)
- AREA 3 = 5.2 l/s (0.75ha)

**Foul Drainage**

The foul is expected to discharge into the Ø300mm public combined sewer that crosses the site from the north-east to the south-west.

|                   |              |
|-------------------|--------------|
| P1 INITIAL ISSUE. | 24.01.19 MJM |
| Rev. Amendments   | Date By      |

Revisions



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Client  
**DELOITTE LLP**

Project  
**LAND AT CHILDSWELL  
SITE A  
DEWSBURY**

Drawing  
**DRAINAGE STRATEGY**

Scales 1:250 At original size A1

|               |             |
|---------------|-------------|
| Drawn MJM     | Checked MJM |
| Date 24.01.19 |             |

Status **PRELIMINARY**

Drawing No. **H18119-200** Rev. **P1**

**Appendix J**  
**YWS Pre-Planning Enquiry**



YorkshireWater

**Talha Esmail  
Patrick Parsons  
5 Waverley Road  
Huddersfield  
HD1 5NA**

**Yorkshire Water Services  
Developer Services  
Sewerage Technical Team  
PO BOX 52  
Bradford  
BD3 7AY**

**Your Ref:  
Our Ref: U014199**

**Tel: 0345 120 8482  
Fax: (01274) 372 834**

**Email:  
Technical.Sewerage@yorkshirewater.co.uk**

**For telephone enquiries ring:  
Chris Roberts on 0345 120 8482**

**16th September 2018**

Dear Talha Esmail,

**Heybeck Lane, Land Chidswell, Dewsbury - Pre-Planning Sewerage Enquiry - Residential - T073004**

Thank you for your recent enquiry and remittance. Our official VAT receipt has been sent to you under separate cover. Please find enclosed a complimentary extract from the Statutory Sewer Map which indicates the recorded position of the public sewers. Please note that as of October 2011 and the private to public sewer transfer, there are many uncharted Yorkshire Water assets currently not shown on our records.

The following comments reflect our view, with regard to the public sewer network only, based on a 'desk top' study of the site and are valid for a maximum period of twelve months.

Development of the site should take place with separate systems for foul and surface water drainage. The separate systems should extend to the points of discharge to be agreed.

#### **Foul Water**

Foul water domestic waste should discharge to the 300 mm diameter public combined sewer recorded crossing the site.

#### **Surface Water**

The developer's attention is drawn to Requirement H3 of the Building Regulations 2000. This establishes a preferred hierarchy for surface water disposal. Consideration should firstly be given to discharge to soakaway, infiltration system and watercourse in that priority order.

Sustainable Drainage Systems (SuDS), for example the use of soakaways and/or permeable hardstanding etc, may be a suitable solution for surface water disposal appropriate in this situation. You are advised to seek comments on the suitability of SuDS in this instance from the appropriate authorities.

As the proposal site is currently undeveloped no surface water is known to have previously discharged to the public sewer network

As such, the local public sewer network does not have capacity to accept any surface water from the proposed site. If SuDS are not viable, the developer is advised to contact the Environment Agency/local Land Drainage Authority/Internal Drainage Board with a view to establishing a suitable watercourse for discharge.



YorkshireWater

It is understood that a Hey Beck is located to the north east of the site. This appears to be the obvious place for surface water disposal (if SuDS are not viable).

Please note further restrictions on surface water disposal from the site may be imposed by other parties. You are strongly advised to seek advice/comments from the Environment Agency/Land Drainage Authority/Internal Drainage Board, with regard to surface water disposal from the site.

### **Other Observations**

Any new connection to an existing public sewer will require the prior approval of Yorkshire Water. You may obtain an application form from our website ([www.yorkshirewater.com](http://www.yorkshirewater.com)) or by telephoning 0345 120 84 82.

An off-site foul and surface water sewer may be required which may be provided by the developer and considered for adoption under Section 104 of the Water Industry Act 1991. Please telephone 0345 120 84 82 for advice on sewer adoptions. Alternatively, the developer may in certain circumstances be able to requisition off-site sewers under Section 98 of the Water Industry Act 1991 for which an application must be made in writing. For further information, please telephone 0345 120 84 82.

Prospectively adoptable sewers and pumping stations must be designed and constructed in accordance with the WRc publication "Sewers for Adoption - a design and construction guide for developers" 6th Edition as supplemented by Yorkshire Water's requirements, pursuant to an agreement under Section 104 of the Water Industry Act 1991. An application to enter into a Section 104 agreement must be made in writing prior to any works commencing on site. Please contact our Developer Services Team (telephone 0345 120 84 82) for further information.

The site is within an area that may be affected by river, coastal or estuarine flooding. We would advise you to contact the Environment Agency for details.

All the above comments are based upon the information and records available at the present time. The information contained in this letter together with that shown on any extract from the Statutory Sewer Map that may be enclosed is believed to be correct and is supplied in good faith. Please note that capacity in the public sewer network is not reserved for specific future development. It is used up on a 'first come, first served' basis. You should visit the site and establish the line and level of any public sewers affecting your proposals before the commencement of any design work.

Yours sincerely

Chris Roberts  
Sewerage Technician  
Developer Services

UK locations:

Newcastle upon Tyne

London

Glasgow

**Huddersfield**

Birmingham

Guildford

International locations:

Dubai

Sydney



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