Civic Engineers

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**Our Ref:** - 1926 – North Bierly – Letter to EA

**Planning Ref:** 2021/94208

**Your Ref:** RA/2021/143881/01-L01

2nd March 2022

Mrs Bev Lambert
Sustainable Places - Planning Advisor

Dear Mrs Lambert,

**OUTLINE APPLICATION FOR RE-DEVELOPMENT OF FORMER WASTEWATER TREATMENT WORKS, INCLUDING DEMOLITION OF EXISTING STRUCTURES TO PROVIDE EMPLOYMENT USES (USE CLASSES E(G)(II); E(G)(III); B2 AND B8). FORMER NORTH BIERLEY WASTEWATER TREATMENT WORKS, CLIFF HOLLINS LANE, OAKENSHAW, BD12 7ET**

This letter provides response to the Environment Agency's consultee comments.

With regard to the comments – we would comment as follows.

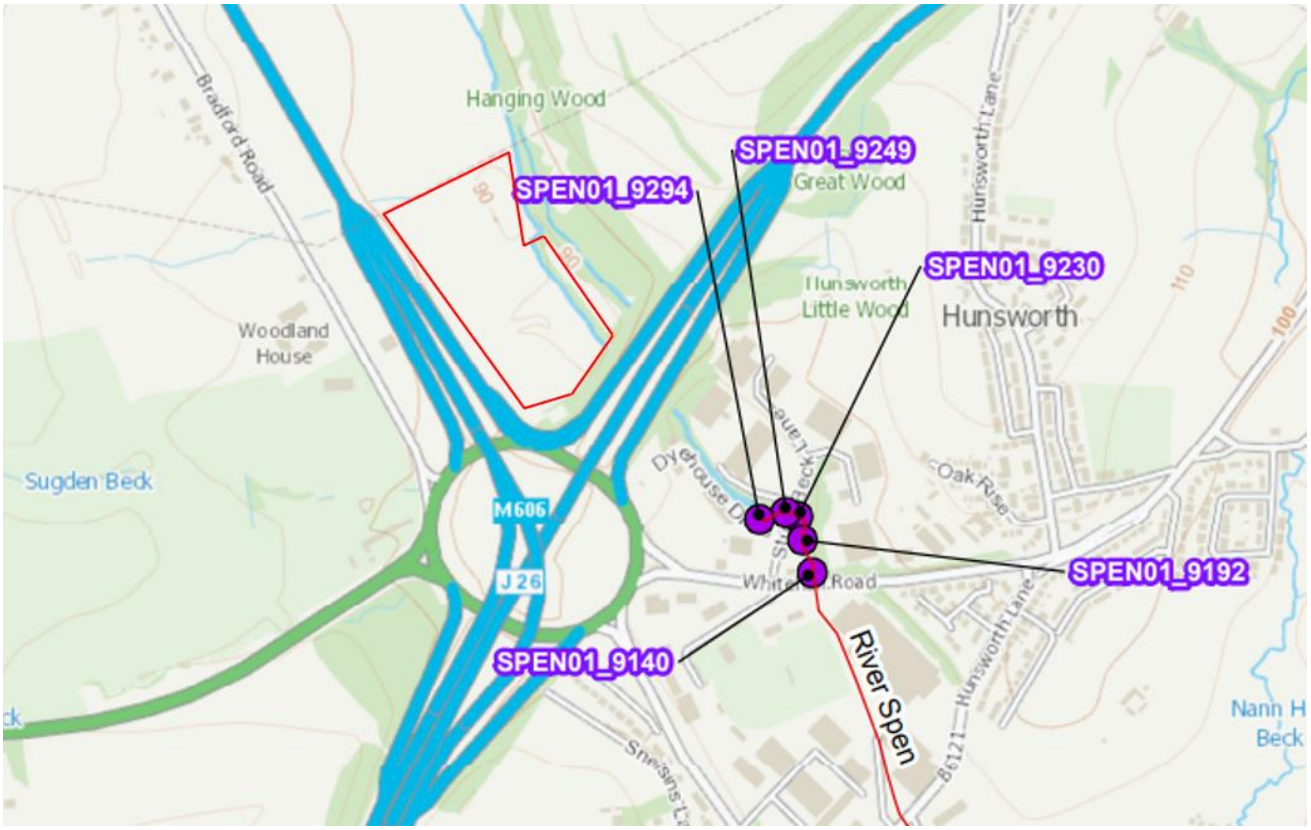
1) **The majority of the site lies in Flood Zone 1, however, there is an area of Flood Zones 2 and 3 within the red line boundary and close to the development.**

   Attached to this letter is Civic Engineers' drawing 1926-CIV-XX-XX-GA-C-00001 (Appendix A) which presents the proposed development overlaid with the current flood zone 3 extents. This drawing confirms that the flood zone 3 extents protrude into the site's redline boundary, however the proposed development sits outside of the extents.

2) **In particular, the FRA fails to take the future impacts of climate change on flood risk from rivers into account for the lifetime of the development.**

   On the 4th June 2021 a product 4 request for the site was submitted to the EA and the outputs were received on 17th August 2021. On review, it was noticed that the model node outputs provided did not correspond with the model node locations close to the site and looked to be considerably downstream of the site. A second request was submitted 6th January 2022 and the corrected outputs were received on 19th January 2022 and are presented within Appendix B.

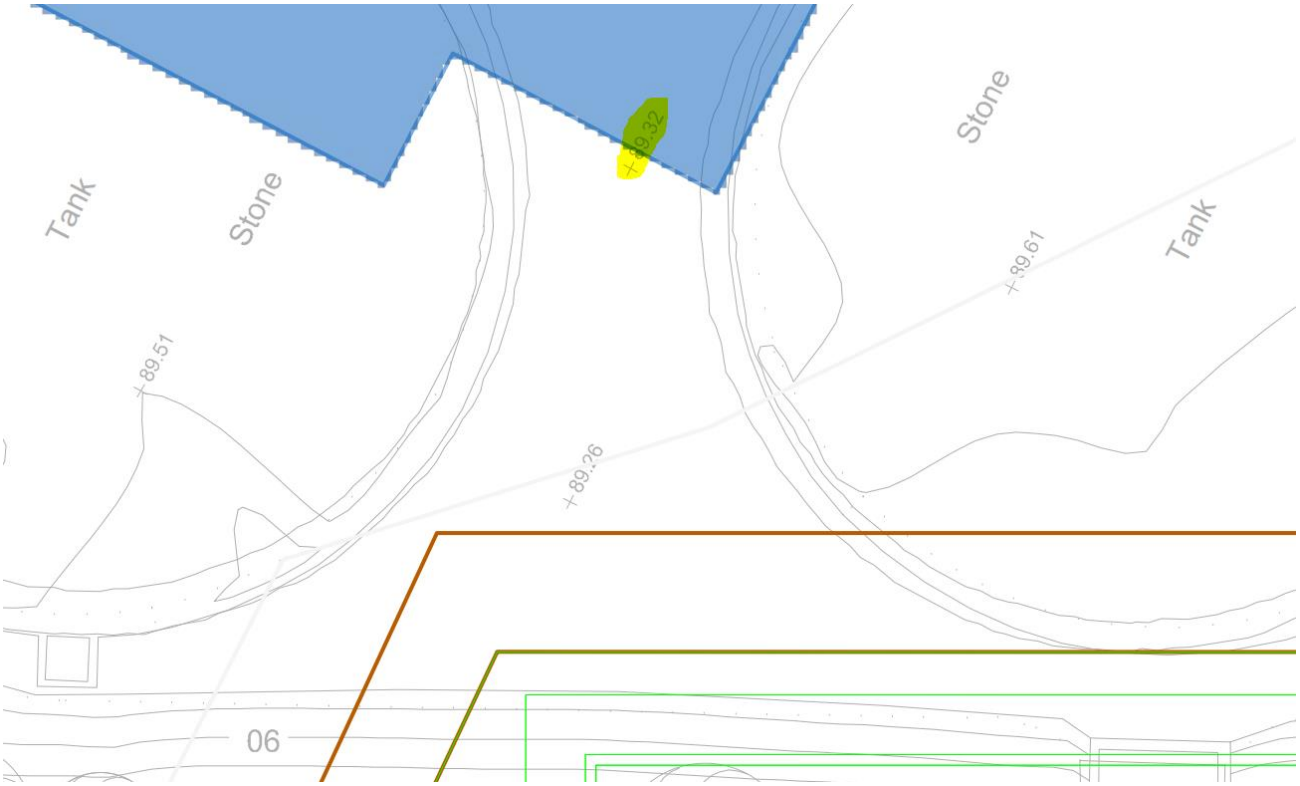
   The model node locations on the River Spen are located downstream of the M62 (as is presented in the image below) and the most upstream is node 'SPEN01_9294' which has a 1% AEP + 20% CC flood level of 85.471mAOD. Since this node is too far downstream of the development (which has a lowest site level point of approximately 87.87mAOD), it is clear that the model outputs nodes provided cannot be used to inform the development.




During the request on the 6th January, the EA were asked to confirm that there weren't any model nodes adjacent to the site and that the nodes shown in 'Node Point Map 221873.pdf' are the closest to the site. In response, the EA stated "*The watercourse adjacent to your site does not have any detailed modelling therefore we cannot provide any node points and/or data".* Therefore, the only data available to undertake the assessment is the flood zone extents.

The typical design level to be used for this assessment is the 1% AEP plus climate change, but since the Flood Map for Planning Flood Zone extent does not include an allowance for climate change, and there aren't any model nodes that sit adjacent to the site, considering the future impacts of climate change is difficult.

On comparing the Flood Zone 3 extent against the topographical survey data, as is presented in 1926-CIV-XX-XX-GA-C-00001 (Appendix A), the site level at the point of the closest Flood Zone 3 (1% AEP) extent to the proposed development is circa 89.32mAOD (as presented in the image below). The proposed development plateau for the site is 92mAOD.




On reviewing the product 4 data which is downstream from the site, an exercise has been undertaken to understand a rough estimate on how the climate change allowance increases the 1% AEP flood level. A comparison table is presented below:

| Model Node | 1% AEP Max Stage (mAOD) | 1% AEP +20% CC Max Stage (mAOD) | Difference (m) | Difference (+%) |
|---|---|---|---|---|
| SPEN01_9230 | 83.846 | 84.877 | 1.031 | 1.23% |
| SPEN01_9140 | 83.36 | 84.884 | 1.524 | 1.83% |
| SPEN01_9249 | 84.655 | 85.15 | 0.495 | 0.58% |
| SPEN01_9192 | 83.503 | 84.91 | 1.407 | 1.68% |
| SPEN01_9294 | 85.089 | 85.471 | 0.382 | 0.45% |

The largest difference observed between the 1% AEP and 1% AEP + CC is at node 'SPEN01_9140' which sees a difference of 1.524m and 1.83%. The difference between the point of the closest Flood Zone 3 (1%AEP) extent to the proposed development (circa 89.32mAOD) and the proposed development plateau for the site (92.00mAOD) is approximately 2.68m and 3.00% - since these values are significantly higher than the differences presented at 'SPEN01_9140', it is believed that the development platform is high enough to avoid the impacts of climate change.

3) **We expect to see finished floor levels set a minimum of 600mm above whichever is greater of existing ground level or design flood level, or 300mm if the design flood level already takes into account Climate Change.**

The existing ground level over the extent of the development varies significantly and therefore cannot be used to define the finished floor levels (by adding on 600mm).

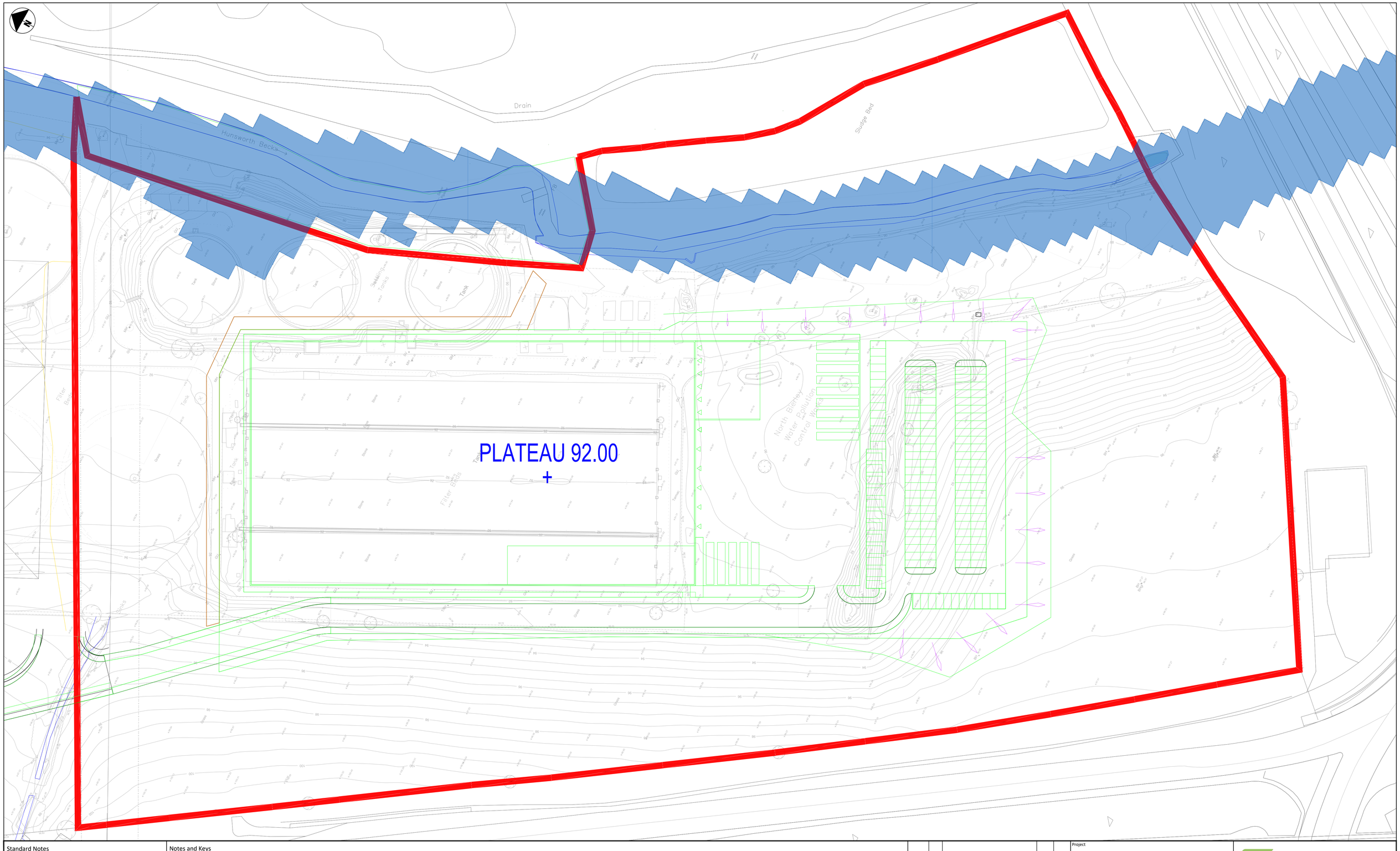
As above in item 2, the design level (which excludes climate change) is the point of the closest Flood Zone 3 (1%AEP) extent to the proposed development (circa 89.32mAOD). The proposed finished floor levels are to be set to the development plateau level (92.00mAOD) and therefore this is set higher than 600mm above the design flood level.

We trust this letter will bring clarity and provide the additional evidence required.

Yours sincerely,

**Robert Webster**
For Civic Engineers

## Appendix A – 1926-CIV-XX-XX-GA-C-00001




Standard Notes

1. This drawing is to be read in conjunction with all relevant Architect's and Engineer's drawings and the specification.
2. This drawing should not be scaled.
3. All dimensions are to be verified by the contractor on site.



Notes and Keys

TOPOGRAPHICAL SURVEY DATA TAKEN FROM BEACON LICHFIELD DRAWING NO. - NORTH BIERLEY SITE SURVEY 3D - JULY 2015

INDICATIVE MASTERPLAN LAYOUT TAKEN FROM DRG No. 1773-01-220-REV B UNDERTAKEN BY KPP RECEIVED 20.10.2021 FROM KPP

FLOOD ZONE 2&3 EXTENTS DOWNLOADED FROM DEFRA SPATIAL DATA DOWNLOAD SERVICES PLATFORM

- FLOOD ZONE 3 EXTENT
- DEVELOPMENT BOUNDARY

| Date | Rev | Description | Drawn | Chk |
|---|---|---|---|---|
| 02.03.22 | P02 | FLOOD ZONE 2 DATA ADDED | TC | RJW |
| 31.01.22 | P01 | INITIAL ISSUE | TC | RJW |

Project: NORTH BIERLEY

Title: FLOOD ZONE MAPPING LAYOUT

Civic Engineers
MANCHESTER Carver's Warehouse, 77 Dale Street, Manchester, M1 2HG. Tel: 0161 228 6750
LONDON Reeds Wharf, 33 Mill Street, London SE1 2AX. Tel: 020 7253 2977
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Status: PRELIMINARY

| Project Number | Scale @ A1 | Date Created | Drawn | Checked | Suitability |
|---|---|---|---|---|---|
| 1926 | 1:500 | JAN 22' | TC | RJW | S2 |

Drawing Number: 1926-CIV-XX-XX-GA-C-00001

Revision: P02

## Appendix B – Product 4 Outputs (received 19th January 2022)

# RFI/2021/221873 Node Point Map Centred on Your Site at Hunsworth Beck, BD12 7ES

**Date created: 13/01/2022**

Environment Agency

www.environment-agency.gov.uk

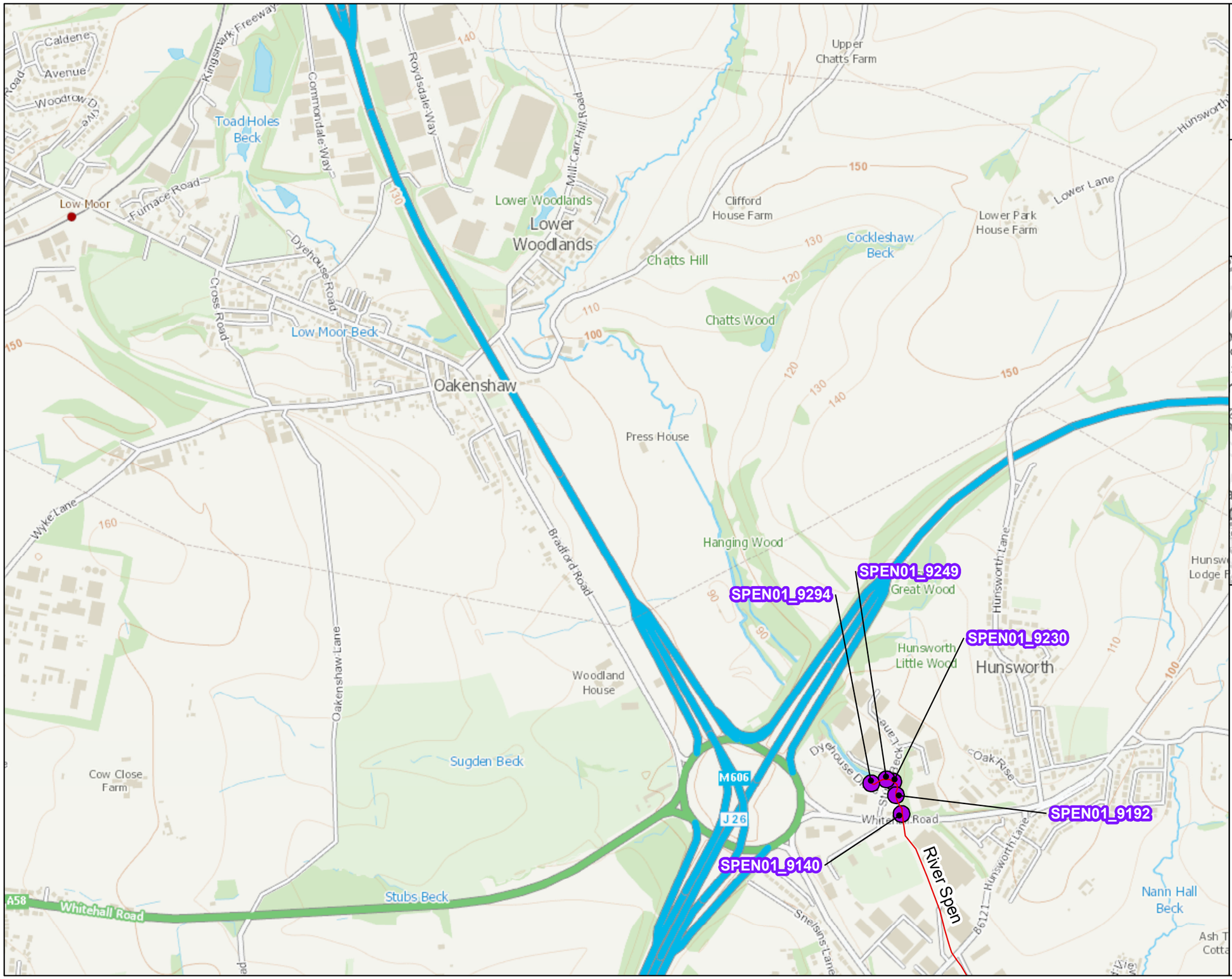
Scale: 1:10,000

when reproduced @ A3

N W E S


**LEGEND**

- Main River
- 2009_River_Spen node points






Contact Us: National Customer Contact Centre, PO Box 544, Rotherham, S60 1BY. Tel: 03708 506 506(Mon-Fri 8-6). Email: enquiries@environment-agency.gov.uk

| 2009 River Spen Model Results (Level - mAOD, Flow - m³s) - RFI/2021/221873 | | | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Node Point | Annual Exceedance Probability (AEP) | | | | | | | | | | | | | | | |
| | 20% AEP (1 in 5) | | 10% AEP (1 in 10) | | 4% AEP (1 in 25) | | 2% AEP (1 in 50) | | 1.33% AEP (1 in 75) | | 1% AEP (1 in 100) | | 1% AEP (1 in 100) +20% CC | | 0.1% AEP (1 in 1000) | |
| | Max Stage | Max Flow | Max Stage | Max Flow | Max Stage | Max Flow | Max Stage | Max Flow | Max Stage | Max Flow | Max Stage | Max Flow | Max Stage | Max Flow | Max Stage | Max Flow |
| SPEN01_9230 | 83.502 | 10.708 | 83.584 | 12.226 | 83.688 | 14.232 | 83.766 | 15.788 | 83.812 | 16.714 | 83.846 | 17.391 | 84.877 | 20.699 | 86.743 | 25.089 |
| SPEN01_9140 | 82.756 | 10.705 | 82.886 | 12.222 | 83.06 | 14.221 | 83.2 | 15.767 | 83.288 | 16.684 | 83.36 | 17.348 | 84.884 | 20.304 | 86.731 | 23.633 |
| SPEN01_9249 | 84.175 | 10.709 | 84.291 | 12.227 | 84.437 | 14.234 | 84.546 | 15.79 | 84.609 | 16.716 | 84.655 | 17.394 | 85.15 | 20.735 | 86.943 | 25.213 |
| SPEN01_9192 | 82.963 | 10.708 | 83.077 | 12.225 | 83.234 | 14.229 | 83.36 | 15.782 | 83.439 | 16.705 | 83.503 | 17.379 | 84.91 | 20.49 | 86.739 | 23.817 |
| SPEN01_9294 | 84.565 | 10.71 | 84.691 | 12.23 | 84.851 | 14.24 | 84.97 | 15.8 | 85.039 | 16.73 | 85.089 | 17.41 | 85.471 | 20.892 | 86.905 | 38.38 |