



# PENISTONE ROAD, FENAY BRIDGE

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## FLOOD RISK ASSESSMENT

AUGUST 2022

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## FLOOD RISK ASSESSMENT

Newett Homes

Flood Risk Assessment

CONFIDENTIAL

Project no: 21312-FRA-001

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## Q U A L I T Y   M A N A G E M E N T

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## 2 INTRODUCTION

2.1.1 This Flood Risk Assessment (FRA) has been provided at the request of Newett Homes, hereafter referred to as “the client”, to assess the flood risks associated with the proposed development of land off Penistone Road, Fenay Bridge, hereafter referred to as “the site”.

2.1.2 The purpose of this FRA is to:

- ▶ Identify the possible hazards posed from all major sources of flooding (fluvial, surface water, groundwater, infrastructural and coastal sources);
- ▶ Provide a qualitative assessment of the probability of each potential flood hazard representing a constraint on the proposed development, based on the proposed land use type for the development and likelihood of flood occurrence;
- ▶ Investigate and define any potential drainage impacts associated with the site;
- ▶ Recommend appropriate and necessary mitigation measures and additional assessments that may be required to progress the sustainable development of the site.

2.1.3 The FRA comprises the following:

- ▶ A desktop review of publicly available information, including information from the Environment Agency (EA) and Kirklees Council (KC) who are the Lead Local Flood Authority (LLFA) for the proposed development area; and
- ▶ An assessment and outline design of hydraulic controls and drainage requirements and drainage elements required to support the development of the site.

2.1.4 This report further details the methodologies employed within this study and provides recommendations as to any further work or investigations required to support the development of the site through the planning application process.

## 2.2 REGULATORY POLICY AND LEGISLATION

2.2.1 This assessment has been carried out in line with the current Government legislation, the National Planning Policy Framework (NPPF) 2021.

2.2.2 It has been assessed with reference to the following documents and legislative guidelines:

- ▶ CIRIA 753 The SUDS Manual V6 (2016);
- ▶ DEFRA “Flood Risk Assessment Guidance for New Developments” (2006);
- ▶ DEFRA “Surface Water Management Plan Technical Guidance” (2010);
- ▶ BS 8533 2011 Assessing & Managing Flood Risk in Development Code of Practice (2011);
- ▶ BS 8582:2013 Code of practice for surface water management for development Sites (2013);
- ▶ National Planning Practice Guidance (2012 – updated 2016);
- ▶ C624 Development and Flood Risk – Guidance for the Construction Industry’ (2004);
- ▶ Design and Construction Guidance for Sewage Sector (DCGSS) (2020);
- ▶ Planning Policy Guidance – Flood Risk and Climate Change (2014 and as amended).

2.2.3 In addition to the above, this report has also been informed by the following documents:

- ▶ KC Local Plan
- ▶ KC Level 1 Strategic Flood Risk Assessment (SFRA)

## 2.3 SCOPE OF FLOOD RISK ASSESSMENT

- 2.3.1 The objective of this analysis and report is to provide an FRA in accordance with local and national guidance.
- 2.3.2 The detail and complexity of the FRA will reflect the level of risk to the site and consider the appropriateness of the proposed development type. This will also include assessment of potential risk to property and livelihoods, consideration of climate change, and the definition of appropriate flood risk mitigations required to satisfy the planning process.
- 2.3.3 Based on the assessment of requirements for a site-specific FRA as defined within NPPF 2021 technical guidance, the site is indicated as being located within Flood Zone 1, however the site is over 1ha and therefore it is necessary to provide a site-specific FRA. Flood Zone 1 refers to an area assessed as having less than 1 in 1,000 annual probability (<0.1%) of river or sea flooding in any one year.
- 2.3.4 Similarly, as the site is indicatively located in an area that may be subject to other assessable sources of flooding, such as pluvial (surface water) flooding, it is necessary to undertake a further site-specific assessment to verify the proposals for development.
- 2.3.5 Policy LP27 of the Kirklees Council Local Plan states that all future development must ensure that:
- 2.3.6 Proposals for development which require a Sequential Test in accordance with national planning guidance will need to demonstrate that development has been directed to areas at the lowest probability of flooding, following a sequential risk-based approach. The whole Kirklees district should be the starting point for the sequential test with applicants required to provide justification where a smaller area of search is proposed. If following application of the sequential test, there are no reasonably available sites which could accommodate the development in zones with a lower probability of flooding, it should also be demonstrated that a sequential approach has been applied within sites. This is to ensure that highly vulnerable and more vulnerable uses are directed towards the areas of lowest flood risk within the site. Proposals will also need to demonstrate that the exception test is passed, where applicable, as set out in national planning policy.
- 2.3.7 Proposals within flood zone 3ai will be assessed in accordance with national policies relating to flood zone 3a but with all of the following additional restrictions:
- ▶ no new highly vulnerable or more vulnerable uses will be permitted;
  - ▶ less vulnerable uses may only be permitted provided that the sequential test has been passed and;
    - where extensions are linked operationally to an existing business or,
    - where redevelopment of a site provides buildings with the same or a smaller footprint;
  - ▶ all proposals will be expected to include flood mitigation measures such as compensatory storage which should be identified and considered through a site specific Flood Risk Assessment;
  - ▶ development will not be permitted on any part of the site identified through a site specific Flood Risk Assessment as performing a functional floodplain role.
- 2.3.8 Proposals must be supported by an appropriate site specific Flood Risk Assessment in line with national planning policy. This must take account of all sources of flooding set out in the Strategic

Flood Risk Assessment and demonstrate that the proposal will be safe throughout the lifetime of the development (taking account of climate change). The proposal must also not increase flood risk elsewhere and where possible should reduce flood risk. Mitigation measures, where necessary, should be proposed.

- 2.3.9 Proposals involving building over existing culverts or the culverting or canalisation of water courses will not be permitted unless it can be demonstrated to be in the interests of public safety or to provide essential infrastructure and that there will be no detrimental effect on flood risk and biodiversity. Where feasible, development proposals should incorporate re-opening of culverts, modification of canalised water courses and consideration of mitigation measures to achieve a more natural and maintainable state.
- 2.3.10 Proposals for natural management such as targeted vegetation planting in upper catchments and along river banks will be supported in appropriate locations where consistent with national and local plan policies and relevant water catchment management plans to reduce flood risk and improve water quality.
- 2.3.11 Potential flood risk at the site has been assessed against the site plan, which has been provided as **Appendix A** to this report. Significant changes to the site's developable area may necessitate a further review of this document to ensure that risk of flooding is not exacerbated and has been satisfactorily addressed within the development proposal.

## 3 METHODOLOGY

### 3.1 INTRODUCTION

- 3.1.1 This report aims to demonstrate that the proposed development is sustainable and will not be impacted by or exacerbate flood risk elsewhere through the development of the site. This assessment will account for the effects of climate change, as well as identifying further opportunities to reduce the probability and consequences of flooding within the site locality.
- 3.1.2 This report aims to identify constraints and opportunities for the site based on the development proposals provided by the client (**Appendix A**) and provide recommendations for the sustainable provision of drainage and mitigation of any potential flood risk for the site.
- 3.1.3 The assessment methodology is as follows:
- ▶ Desktop review of the geology, hydrology and other pertinent environmental characteristics of the site, and how these affect flood risk of the proposed development and site drainage.
  - ▶ Obtain and review existing baseline flood risk and drainage guidance information from relevant environmental authorities (EA, LLFA, etc.) as to site specific flood risk from all applicable sources
  - ▶ Produce indicative design calculations for the Outline DS to determine the requirements for developing the site's surface water drainage and providing adequate storage in line with local planning policy and guidance. This will include the presentation of drawings with an indicative layout for any additional drainage and attenuation infrastructure located on the site.
  - ▶ Review the findings from the above and advise on the suitability of developing the site for the proposed development in consideration of the applicable flood risk and drainage and comment on limitations and opportunities for the site, with recommendations of further mitigation where applicable and appropriate

## 4 PROJECT BACKGROUND

### 4.1 DEVELOPMENT DESCRIPTION AND LOCATION

- 4.1.1 Andrew Moseley Associates (AMA) was appointed by Newett Homes to provide a Flood Risk Assessment in support of a residential development located off Penistone Road, Fenay Bridge, West Yorkshire, England, HD8 0BW. The site also includes the area of land to the west of Penistone Road
- 4.1.2 The proposed development is located in the area of Fenay Bridge which is approximately 2 miles south east of the centre of Huddersfield. Proposals for the site are for 68 residential dwellings with associated infrastructure and landscaping. A site layout plan can be found in **Appendix A**.
- 4.1.3 The Local Planning Authority for this development is KC who are also the Lead Local Flood Authority for the area.
- 4.1.4 This report has been prepared in accordance with the National Planning Policy Framework (NPPF) and the accompanying technical guidance to assess all forms of flooding including the management of surface water on-site.
- 4.1.5 The site is referenced in Table 3-1 and Figure 1 below.

Table 4-1. Site context

|                            |                                                                                                                                                                                                                                                                                                                                                                                              |
|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Site Name                  | Land off Penistone Road                                                                                                                                                                                                                                                                                                                                                                      |
| Location                   | Huddersfield                                                                                                                                                                                                                                                                                                                                                                                 |
| NGR (approx.)              | SE 18615 14843                                                                                                                                                                                                                                                                                                                                                                               |
| Application Site Area (ha) | 3.0                                                                                                                                                                                                                                                                                                                                                                                          |
| General Locality           | The site is located on undeveloped Greenfield land and borders Whitegates Grove to the north and north east with Penistone Road running along the western perimeter of the site. To the sites south east if Clough Lane with further residential dwellings located to the south of the site.<br>Pedestrian and vehicular access to the site is provided via Penistone Road to the sites west |
| Development Type           | Residential                                                                                                                                                                                                                                                                                                                                                                                  |
| EA Flood Zone              | Flood Zone 1                                                                                                                                                                                                                                                                                                                                                                                 |
| EA Office                  | Yorkshire                                                                                                                                                                                                                                                                                                                                                                                    |
| Local Planning Authority   | KC                                                                                                                                                                                                                                                                                                                                                                                           |

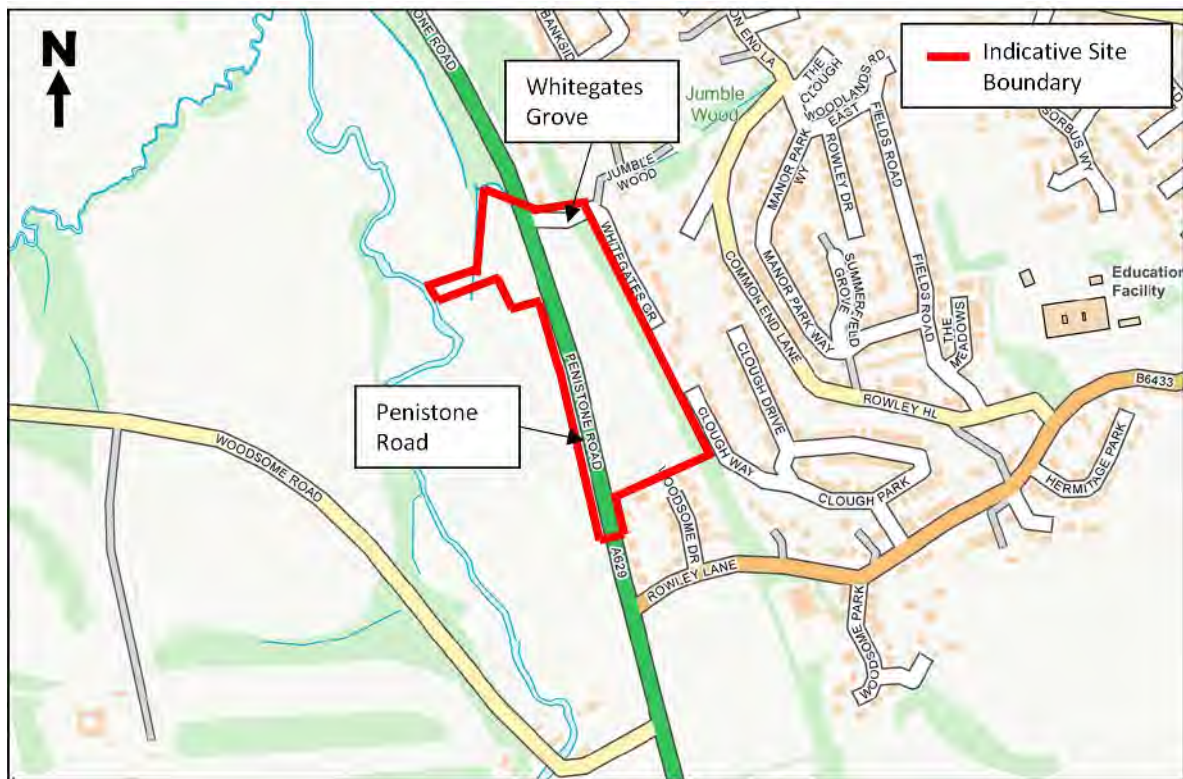


Figure 1. Site location

## 4.2 CURRENT SITE CONDITIONS

### Ground cover and topography

- 4.2.1 A topographic survey provided by Newett Homes shows ground levels at the site are shown to be in the region of 84.50m to 98.45m Above Ordnance Datum (m AOD).
- 4.2.2 Further review of topographical data shows site levels to be lowest towards the north and south east corners with the greatest elevations found towards the south west of the site. A general fall in gradient from west to east is observed across the site.

## 4.3 GEOLOGY

- 4.3.1 British Geological Survey (BGS) Open Geoscience website<sup>1</sup> indicates that the entire site is underlain by Grenoside Sandstone – Sandstone with no overlying superficial deposits.
- 4.3.2 The BGS website information indicates that there is no borehole record within close proximity to the site

<sup>1</sup> Available at: <http://mapapps.bgs.ac.uk/geologyofbritain/home.html> accessed on 24/06/2022

## 4.4 HYDROGEOLOGY

- 4.4.1 According to the Department for Environment, Food and Rural Affairs (DEFRA) MAGIC map<sup>2</sup>, the site is indicated as not being located in a Groundwater Source Protection Zone (SPZ), as defined by the Environment Agency (EA) for the protection of a potable groundwater supply.
- 4.4.2 The site is located as being in an area of high ground water vulnerability and located above a Secondary A bedrock aquifer.
- 4.4.3 Information obtained from the Cranfield University's Soilscape website<sup>3</sup> indicates that the site is located in an area classified as being Soilscape 6, which is defined as having freely draining slightly acid loamy soils

## 4.5 HYDROLOGY

- 4.5.1 As depicted in Figure 2 there is one watercourse in close proximity to the site, the River Fenay. This watercourse is located to the west of the site and flows in a southerly direction away from the site. The Fenay is categorised as a main river by the EA and therefore falls under their jurisdiction.
- 4.5.2 The EA's Catchment Data Explorer website<sup>4</sup> indicates that the site resides within the Colne and Holme Operational Catchment.

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<sup>2</sup> Available at: <https://magic.defra.gov.uk/MagicMap.aspx?startTopic>, accessed on 24/06/2022

<sup>3</sup> Available at: <http://www.landis.org.uk/soilscales/>, accessed on 24/06/2022

<sup>4</sup> Available at: <https://environment.data.gov.uk/catchment-planning/>, accessed on 24/06/2022

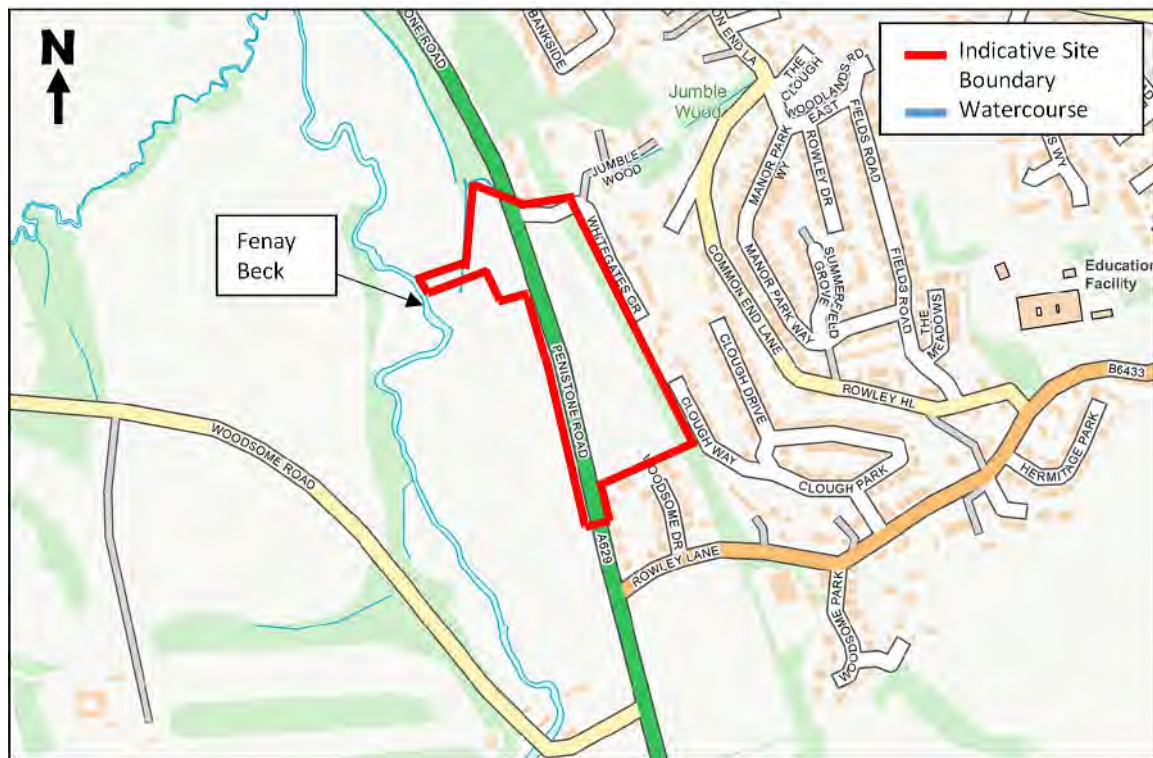


Figure 2. Watercourse location

## 5 POTENTIAL FLOOD RISK

### 5.1 SOURCES OF FLOODING

- 5.1.1 This report is to consider flood risk from all potential sources. Section 5 then discusses in further detail the probability of flooding, any potential impacts and necessary mitigation, where required.
- 5.1.2 The NPPF (2021) also requires site developers to consider the impact of additional runoff generated by the proposed development on the receiving downstream catchment, and to assess the risk of runoff from the surrounding. This is further discussed in Section 6.

### 5.2 ENVIRONMENT AGENCY FLOOD ZONES

- 5.2.1 The EA Flood Map for Planning shows the site is located within Flood Zones 1, 2 and 3. Flood Zone 1 is described as land assessed as having less than 1 in 1,000 annual probability (<0.1%) of river or sea flooding in any one year. While Flood Zone 2 is defined as land assessed as having between a 1 in 100 and 1 in 1,000 annual probability (1% - 0.1%) of river flooding, or between a 1 in 200 and 1 in 1,000 annual probability (0.5% - 0.1%) of sea flooding in any one year. Finally Flood Zone 3 is land assessed as having a 1 in 100 greater annual probability (>1%) of river flooding, or a 1 in 200 or greater annual probability (>0.5%) of sea flooding in any one year. This potential fluvial / coastal flood risk to the site has been illustrated in **Figure 3**.

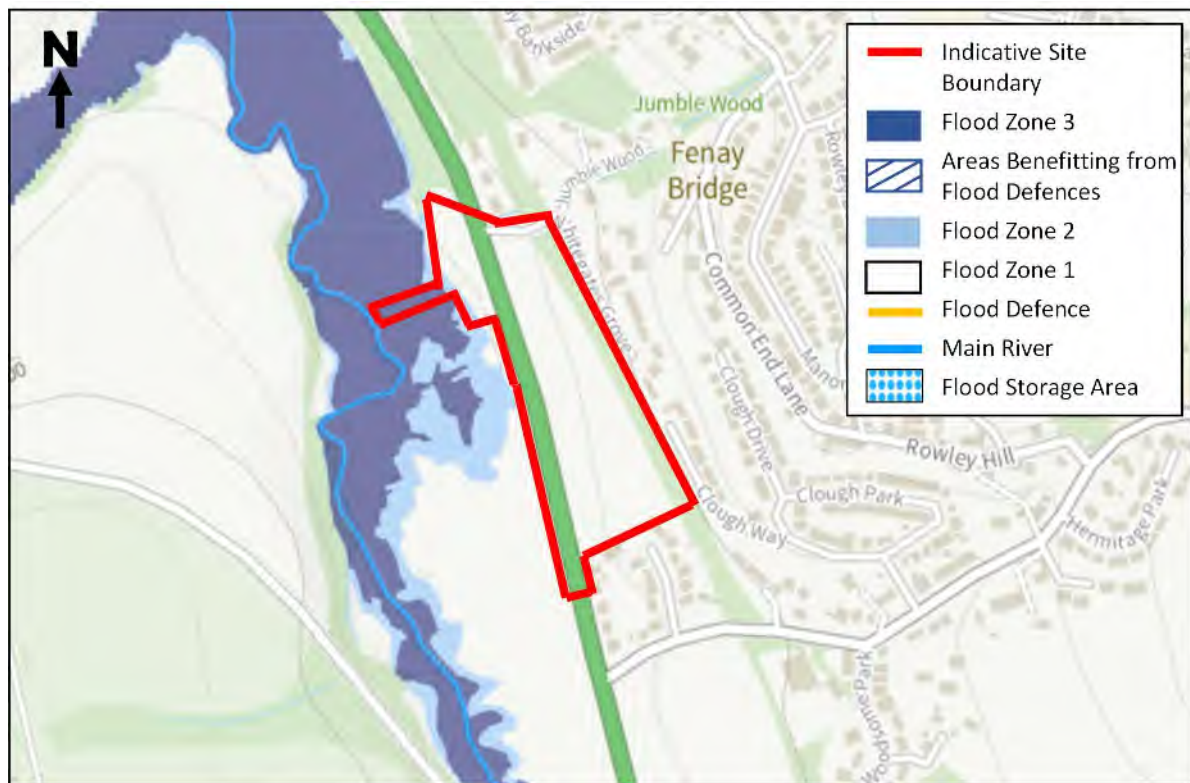


Figure 3. Environment Agency long term flood map for planning - rivers and seas

### 5.3 FLUVIAL AND COASTAL FLOODING

- 5.3.1 The EA Long Term Flood Risk Map for fluvial and coastal flooding shown in **Figure 4** indicates that the majority of the site is at very low risk of fluvial flooding. However there is a small section of the site located in an area with medium to high risk of fluvial flooding. As the site is situated 45 miles from the nearest coastline the site is also considered to not be at risk from coastal flooding.
- 5.3.2 As the attenuation used for surface water drainage is situated in the land to the west of Penistone Road, it must be noted that the attenuation tank will be located wholly within Flood Zone 1 with only the supporting pipework etc taking place in Flood Zone 2/3.
- 5.3.3 The risk of flooding posed to the proposed development is classed as very low.

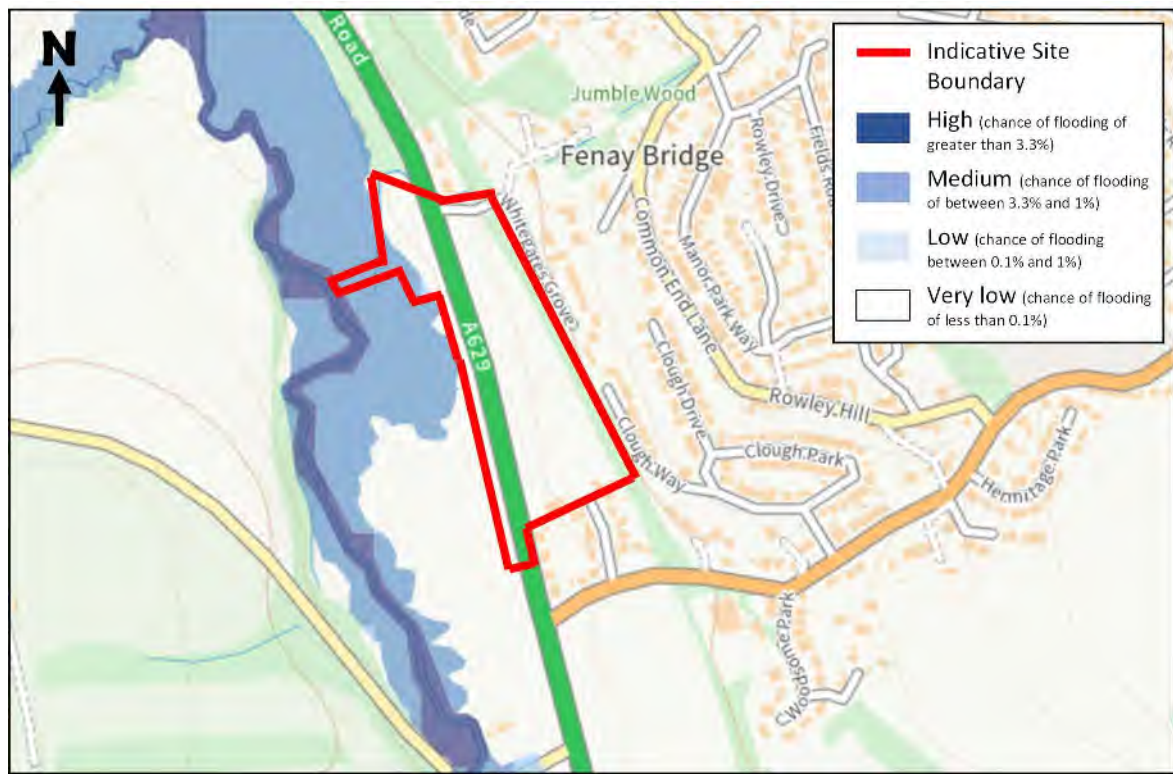


Figure 4. Environment Agency long term flood map – rivers and sea

## 5.4 PLUVIAL (SURFACE WATER) FLOODING

- 5.4.1 The EA Long Term Flood Risk Map (**Figure 5**) shows the majority of the site is located in an area at very low risk of surface water flooding, with the remainder being located in an area at low to high risk of surface water flooding.
- 5.4.2 The area of the site located at low risk of surface water flooding is found towards the central eastern boundary as well as the north of the site. Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. This area can expect flood depths of less than 0.3m and flow velocities of less than 0.25m/s.
- 5.4.3 The areas of the site mainly at medium risk of surface water flooding are found towards the north west of the site as shown in figure 5. Medium risk means that this area has a chance of flooding of between 1% and 3.3% each year. These areas can expect flood depths of between 0.3 and 0.6m with flow velocities of less than 0.25m/s.
- 5.4.4 There is only one small section of the site at high risk of pluvial flooding. This area is located on the western boundary of the site. High risk means that this area has a chance of flooding of greater than 3.3% each year. This area can expect flood depths of between 0.3m and 0.6m with velocities reaching 0.25m/s.
- 5.4.5 As the proposed development of the site may potentially reduce the overall site permeability and potentially increase surface water runoff rates and volumes, the surface water discharge controls must ensure that any proposal for drainage, or discharge, does not adversely impact upon downstream drainage infrastructure or offsite receptors.

5.4.6 The site is therefore considered to have very low potential risk of flooding from pluvial sources.

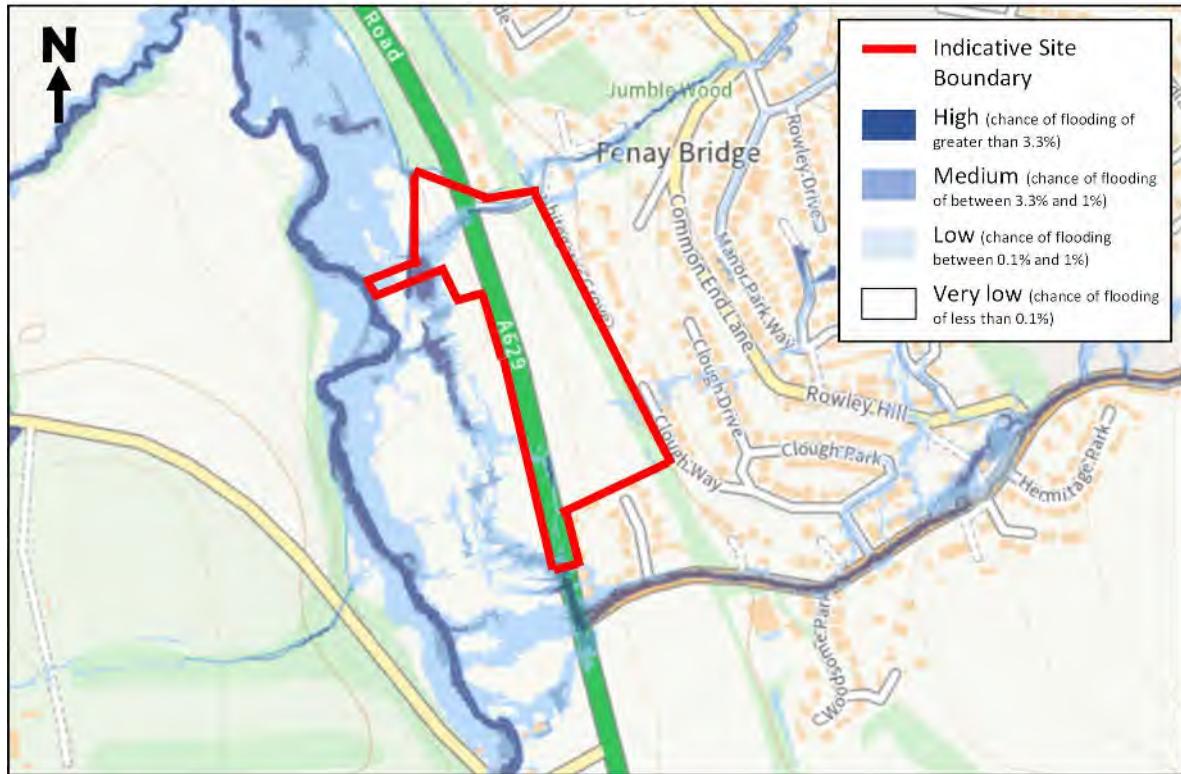


Figure 5. Environment Agency long term flood risk map – pluvial (surface water) flooding

## 5.5 GROUNDWATER FLOODING

- 5.5.1 Ground conditions at the site consist of freely draining slightly acidic loamy soils, therefore the propensity for ground water emergence at the site is considered to be medium.
- 5.5.2 During long periods of heavy rainfall, the water table within an area can rise above the natural ground level, resulting in groundwater flooding. The site is located above a principal bedrock aquifer. This signifies permeable layers which would allow infiltration of water up through the soil.
- 5.5.3 According to the KC Level 1 SFRA groundwater vulnerability flood map shown in **Appendix C**, the site is situated in an area of between 50% and 75% vulnerability to groundwater flooding. The second highest risk rating.
- 5.5.4 However, given the impermeable nature of the proposed site's hardstanding areas subsequent to development, potential elevation of groundwater or groundwater emergence within the superficial geology causing flooding within the site post-development will be largely eliminated.
- 5.5.5 Site specific investigations should be able to prove the presence of ground water and propose remedial mitigation where required. Flood risk to the proposed development due to groundwater emergence is therefore considered to be low.

- 5.5.6 Flood risk to the proposed development due to groundwater emergence is considered to be low provided that all reasonable and practicable mitigation measures for any subsurface construction associated with the development are adhered to.

## 5.6 FLOODING FROM ARTIFICIAL SOURCES

- 5.6.1 The EA Long Term Flood Risk Map of flood risk from reservoir and canal failure indicates that the site and its surroundings, are not affected by potential flood waters from artificial sources such as dam or canal failure. The figures provided within the EA mapping principally indicate the worst-case flooding extents. Therefore, the potential risk of flooding from reservoir and/or canal failure is considered to be negligible.
- 5.6.2 In addition to the above reservoirs and canals are regularly maintained by relevant local authorities and failure is extremely unlikely. The site is therefore considered to have very low potential risk of flooding from artificial sources.

## 5.7 FLOODING FROM SEWERS

- 5.7.1 The site has got two drains within its site boundary, a combined sewer located to the north of the site as well as a highways drain running along Penistone Road. According to both the client and the KC Level 1 SFRA the site is shown to not have experienced any sewer flooding events.

## 5.8 HISTORIC FLOODING

- 5.8.1 The EA historic flood map shows the site to not have experienced historic flooding. A review of the KC Level 1 SFRA historic flood map shown in **Appendix D** confirms the EA historic flood mapping and indicates that the site has not experienced any historic flooding.

## 6 FLOOD RISK ASSESSMENT

### 6.1 FLOOD RISK PLANNING POLICY

#### National planning policy framework

- 6.1.1 The NPPF sets out the Government's national policies on different aspects of land use planning in England in relation to flood risk. Planning Practice Guidance is also available online.
- 6.1.2 The Planning Practice Guidance sets out the vulnerability to flooding of different land uses. It encourages development to be located in areas of lower flood risk where possible and stresses the importance of preventing increases in flood risk off site to the wider catchment area.
- 6.1.3 The Planning Practice Guidance also states that alternative sources of flooding, other than fluvial (river flooding), should also be considered when preparing a Flood Risk Assessment.
- 6.1.4 This Flood Risk Assessment is written in accordance with the NPPF and the Planning Practice Guidance.
- 6.1.5 The EA Flood Map for Planning shows the site is located within Flood Zones 1, 2 and 3. Flood Zone 1 is described as land assessed as having less than 1 in 1,000 annual probability (<0.1%) of river or sea flooding in any one year. While Flood Zone 2 is defined as land assessed as having between a 1 in 100 and 1 in 1,000 annual probability (1% - 0.1%) of river flooding, or between a 1 in 200 and 1 in 1,000 annual probability (0.5% - 0.1%) of sea flooding in any one year. Finally Flood Zone 3 is land assessed as having a 1 in 100 greater annual probability (>1%) of river flooding, or a 1 in 200 or greater annual probability (>0.5%) of sea flooding in any one year
- 6.1.6 The flood map extents indicated on this map show the potential for flooding from fluvial and coastal sources, and although they are indicative, they are a key tool in defining the appropriateness of a development type or the requirement for further assessment.
- 6.1.7 As only the developable area of the site is located within Flood Zone 1, the site will therefore be assessed as being located in Flood Zone 1.
- 6.1.8 Under the NPPF (2021), Flood Zone 1 is defined as having a low probability flood risk. The proposed development includes the development and construction of 68 residential dwellings with associated infrastructure and landscaping, which are defined within Table 2 of the NPPF technical guidance as being 'More Vulnerable'. Therefore, according to the criteria in Table 3 of the NPPF Technical Guidance (Flood Risk Vulnerability and Flood Zone 'Compatibility'), the proposed development may be deemed as 'Appropriate'.

### 6.2 SEQUENTIAL AND EXCEPTION TEST

- 6.2.1 Both the NPPG and the SFRA require the 'sequential test' to be applied to ensure that proposed developments are carried out in area that are at the least risk of flooding, before considering development in areas that are at risk of flooding. The proposed site falls within flood zone 1 and is considered to come under the 'more vulnerable' category as a residential development.

- 6.2.2 Based on Table 3 in the National Planning Practice Guidance for Flood Risk and Coastal Change, the proposed use of the site is acceptable due to it being located in Flood zone 1 and an exception test is not required.

Table 6-1. Development appropriateness based on vulnerability and flood zone

| Flood Risk Vulnerability Classification | Essential Infrastructure | Water Compatible | Highly Vulnerable       | More Vulnerable         | Less Vulnerable |
|-----------------------------------------|--------------------------|------------------|-------------------------|-------------------------|-----------------|
| Flood Zone 1                            | ✓                        | ✓                | ✓                       | ✓                       | ✓               |
| Flood Zone 2                            | ✓                        | ✓                | Exception test required | ✓                       | ✓               |
| Flood Zone 3a                           | Exception test required  | ✓                | x                       | Exception test required | ✓               |
| Flood Zone 3b                           | Exception test required  | ✓                | x                       | x                       | x               |

## 6.3 CONCLUSION

- 6.3.1 In light of this assessment against the sites applicable flood zone (Flood Zone 1), further assessment against the sequential or exception test is not required.
- 6.3.2 Table 5-2 summarises the pre mitigation flood risk associated with the site as well as the impacts of the flood risk on the wider catchment prior to mitigation. The mitigation measures proposed to address flood risk issues and ensure the development is appropriate for its location are discussed within Section 3.0.

Table 6-2 Pre-mitigation flood risk summary

| Sources                 | Probability of Flood Risk | Impacts | Description                                                                                            |
|-------------------------|---------------------------|---------|--------------------------------------------------------------------------------------------------------|
| Tidal                   | N/A/                      | N/A     | Site located inland and not tidally influenced.                                                        |
| Fluvial                 | Low                       | Low     | Site is not shown to be located in an area susceptible to fluvial flooding.                            |
| Surface Water (Pluvial) | Low                       | Low     | The majority of the site is shown to be located in an area at very low risk of surface water flooding. |

|                                          |        |     |                                                                                                                                                                                                |
|------------------------------------------|--------|-----|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Groundwater                              | Medium | Low | The site is shown to be at medium risk of groundwater flooding. However, given the hard standing nature of the Site following development, ground water emergence at the site will be limited. |
| Artificial Sources                       | Low    | Low | Review of information from multiple sources (EA, LLFA) reveals no risk of flooding from reservoirs or canals.                                                                                  |
| Sewers                                   | Low    | Low | The risk of flooding from the surcharging of sewers is considered to be low as the site is greenfield                                                                                          |
| Effect of development on wider catchment | Medium | Low | The impermeable area of the site is being altered.                                                                                                                                             |

6.3.3 Based on the assessable information presented, the site is considered to meet the requirements of the NPPF, given the assessed potential flood risk posed from all applicable sources, the means of adopting suitable mitigation measures to prevent increase in the potential for flood risk and based on the vulnerability of the development type. Further consideration of necessary surface water runoff mitigation measures will be provided, so as to address the potential for increase of surface water arising from the proposed development of the site.

## 7 FLOOD RISK MITIGATION

### 7.1 FLOOD RISK MITIGATION

- 7.1.1 Section 4 has identified the sources of flooding which could potentially pose a risk to the site and the proposed development. This section of the FRA sets out the mitigation measures which are to be considered within the proposed development detail design to address and reduce the risk of flooding to within acceptable levels.

### 7.2 EFFECT OF DEVELOPMENT ON WIDER CATCHMENT

#### Development drainage

- 7.2.1 The current site is considered to be greenfield. The amount of impermeable area will be altered. Therefore, the existing drainage systems will not be suitable to discharge the surface water from the site alongside the additional run off from the proposed development. A sufficient Drainage strategy has been provided by Dudleys Ltd as shown in **Appendix E**.

### 7.3 SITE ARRANGEMENTS

#### Sequential arrangement

- 7.3.1 The Flood Zone mapping shows the site to be located within Flood Zone 1.

#### Finished levels

- 7.3.2 Given the site's location within Flood Zone 1, there are no specific requirements for finished floor levels with regard to flood risk. However, a finished floor level of 150mm above ground level is recommended.

## 8 SUMMARY & CONCLUSION

- 8.1.1 Based on assessment of the available information and data regarding potential sources of flood risk, the site is assessed to have very low flood risk from fluvial, coastal, artificial sources, surface water, sewers and low flood risk from groundwater flooding, respectively.
- 8.1.2 As the development proposals are for a residential dwellings and associated infrastructure and landscaping, therefore the proposals would fall under the categorised as more vulnerable as per Table 2 - Flood risk vulnerability classification of the NPPF Technical Guidance. The proposals therefore have met the requirements and do not require a sequential or exception test
- 8.1.3 The proposed development is considered to be appropriate based on our assessment against local development policies, national flood management guidance, and the NPPF.

## 9 LIMITATIONS

### 9.1 LIMITATIONS

- 9.1.1 This report has been prepared for exclusive use by Newett Homes for the purpose of assisting them in evaluating the potential constraints imposed by flood risk and drainage in making a Planning Application.
- 9.1.2 AMA accepts no liability for any use of this document other than by its client and only for the purposes, stated in the document, for which it was prepared and provided. No person other than the client may copy (in whole or in part) use or rely on the contents of this document, without the prior written permission of AMA. Any advice, opinions or recommendations within this document should be read and relied upon only in the context of the document as a whole.
- 9.1.3 AMA has endeavoured to assess all information provided to them during this appraisal. The report summarises from several external sources and cannot offer any guarantees or warranties for the completeness or accuracy of information relied upon.
- 9.1.4 This report has been undertaken with the assumption that the site will be developed in accordance with the above proposals without significant change. The conclusions resulting from this study are not necessarily indicative of future conditions or operating practices at or adjacent to the site.
- 9.1.5 A topographic survey has been completed for the site and was supplied to AMA by the client. AMA accepts no liability for the accuracy of this survey, and it is recommended that it is verified on-site prior to the commencement of any construction work.
- 9.1.6 Existing drainage information is based on third party survey data and record information which is considered to be incomplete. It is therefore recommended that a full drainage investigation survey is commissioned to establish the precise alignment, level, and condition of ALL existing drainage within the development site to inform the masterplan and future detailed design proposals.

## APPENDICES

APPENDIX A – PROPOSED SITE LAYOUT

APPENDIX B – TOPOGRAPHIC SURVEY

APPENDIX C – KC GROUNDWATER VULNERABILITY FLOOD MAP

APPENDIX D – KC HISTORIC FLOOD MAP

APPENDIX E – DRAINAGE STRATEGY

# Appendix A

## PROPOSED SITE LAYOUT



| ACCOMMODATION SCHEDULE |           |      |                   |               |        |         |
|------------------------|-----------|------|-------------------|---------------|--------|---------|
| Market Units           |           |      |                   |               |        |         |
| Colour Code            | Housetype | Beds |                   | Storey Height | Number | 2 Bed % |
|                        | N201      | 2    | Semi              | 2             | 11     |         |
|                        | T3        | 3    | Semi              | 2             | 4      |         |
|                        | Total     |      |                   |               | 15     | 22%     |
|                        |           |      |                   |               |        |         |
|                        | Housetype | Beds |                   | Storey Height | Number | 3 Bed % |
|                        | N302      | 3    | Detached          | 2             | 10     |         |
|                        | N303A     | 3    | Semi              | 2             | 4      |         |
|                        | SL03      | 3    | Semi              | 3             | 10     |         |
|                        | SL04      | 3    | Semi              | 3             | 6      |         |
|                        | N313      | 3    | Semi              | 2.5           | 4      |         |
|                        | Total     |      |                   |               | 34     | 50%     |
|                        |           |      |                   |               |        |         |
|                        | Housetype | Beds |                   | Storey Height | Number | 4 Bed % |
|                        | N402      | 4    | Detached Integral | 2             | 1      |         |
|                        | N403A     | 4    | Detached          | 2             | 1      |         |
|                        | N403B(s)  | 4    | Detached          | 2             | 5      |         |
|                        | N405      | 4    | Detached Integral | 2             | 3      |         |
|                        | N407      | 4    | Detached          | 2             | 1      |         |
|                        | SL02      | 4    | Detached          | 3             | 8      |         |
|                        | Total     |      |                   |               | 19     | 28%     |
| GRAND TOTAL:           |           |      |                   |               | Number |         |
|                        |           |      |                   |               | 68     |         |

Drawing Title  
Planning Layout

Site  
Penistone Road, Fenay Bridge

Scale @ A2  
1:1000

Date  
14/06/22

Drawn  
MC

Checked  
WN

Drawing No.  
Z078-001

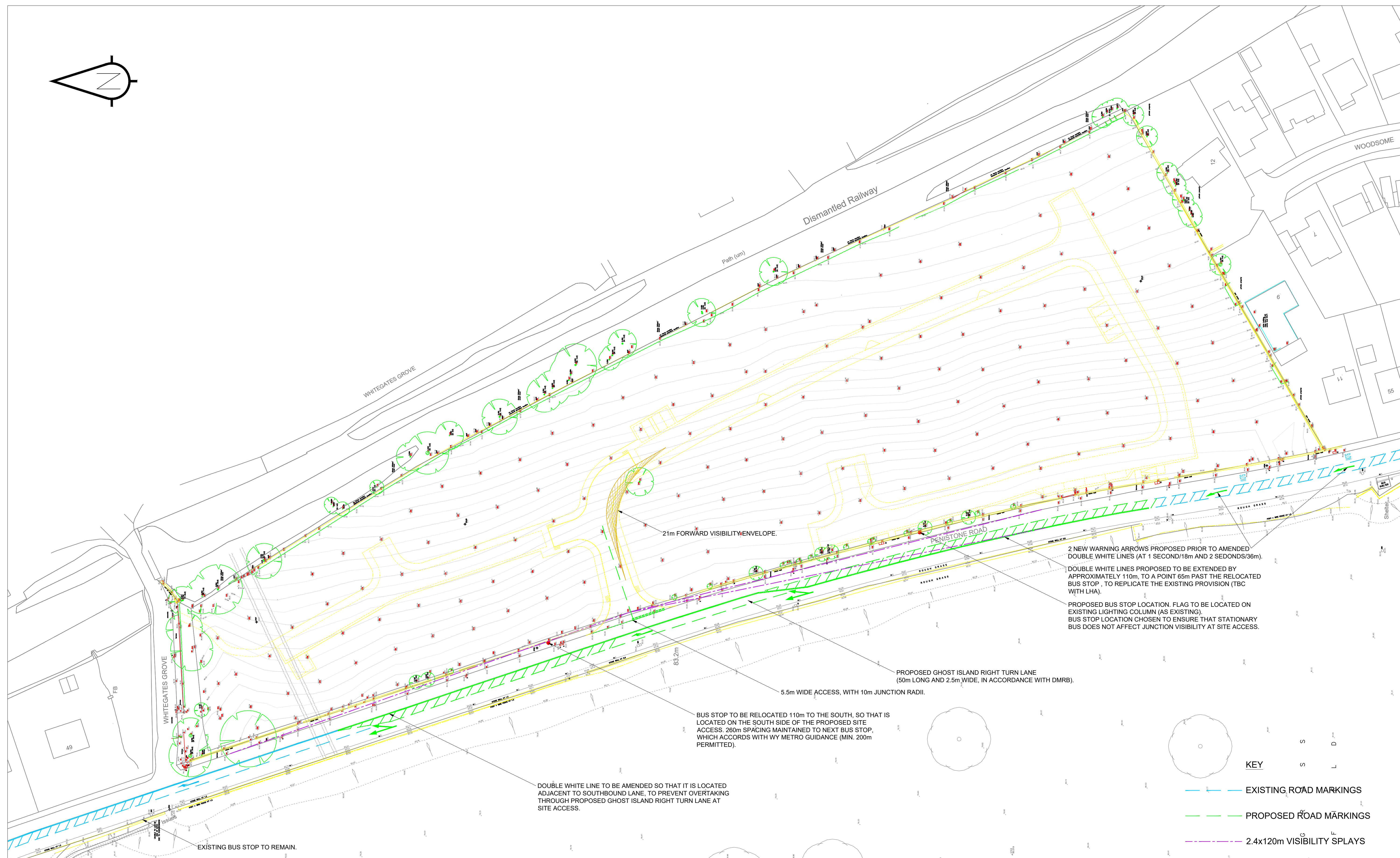
Rev.  
C

Thorpe Arch Grange  
Walton Road  
Thorp Arch  
LS23 7BA

01937 543599  
www.newetthomes.co.uk

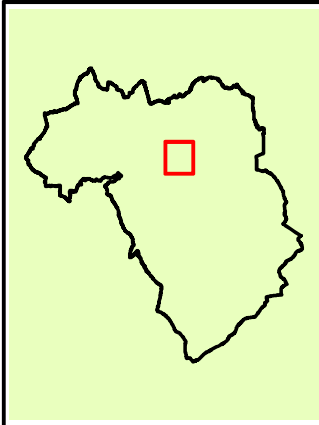
# Appendix B

## TOPOGRAPHIC SURVEY



# Appendix C

**KC GROUNDWATER VULLNRABILITY FLOOD MAP**



LEGEND

Choose Option Areas Susceptible to Ground water Flooding

- Council boundary
- Main River
- Detailed River Network

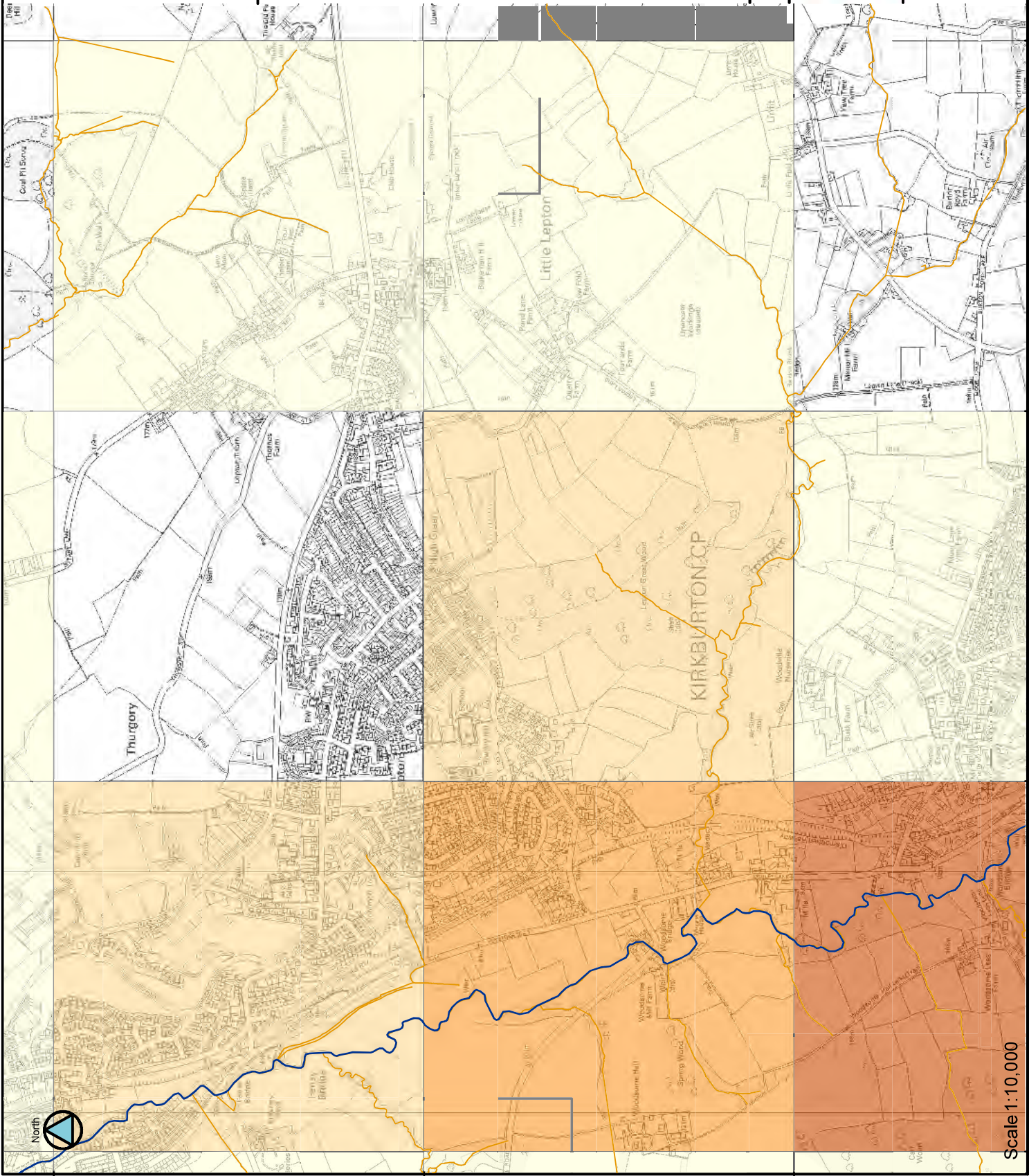
Areas Susceptible to Ground Water Flooding  
Risk of Groundwater Emergence

- $\geq 75\%$
- $\geq 50\%$  < 75%
- $\geq 25\%$  < 50%
- < 25%

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100019241

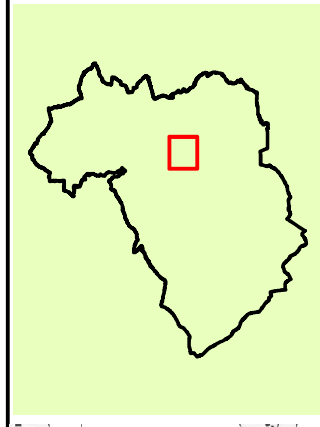


STRATEGIC FLOOD RISK ASSESSMENT  
For  
KIRKLEES COUNCIL  
MAP\_U



# Appendix D

## KC HISTORIC FLOOD MAP



# LEGEND

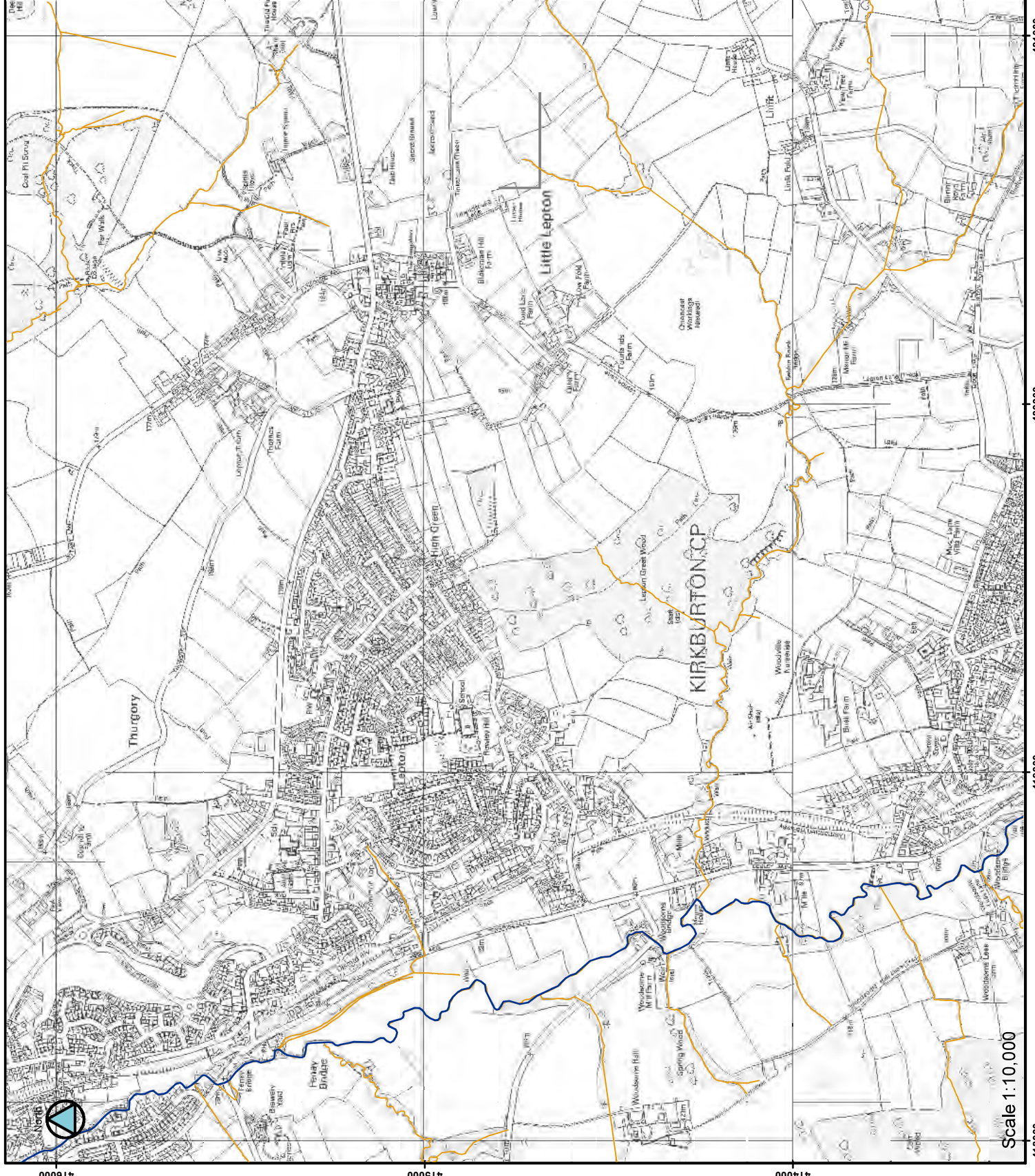
Choose Option Historic

- Council boundary
- Main River
- Detailed River Network
- Historic Flooding
- Historic Flood Map (EA)
- DGS Register incident (YWS)
- Breach (GRT)
- Overtopping (GRT)

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STRATEGIC FLOOD RISK ASSESSMENT  
For  
KIRKLEES COUNCIL  
MAP\_U



Scale 1:10,000

416000 415000 414000 419000 420000 421000

# Appendix E

## **DRAINAGE STRATEGY**

## DRAINAGE CALCULATIONS

Client: **Newett Homes**

Site Address: **Fenay Bridge, Penistone Road,  
HD8 0AW**

Project Number: **20257**

Reference (Revision): **CAL01 (B)**

Date: **08.08.2021**

Author: M. Johnston Date: August 2022

Checker: P. Dixon Date: August 2022

|           |       |           |            |
|-----------|-------|-----------|------------|
| Job No.   | 20257 | Sheet No. | i          |
| Calcs By: | MDJ   | Date      | 27.07.2022 |

CLIENT: Newett Homes

PROJECT TITLE: Fenay Bridge

ARCHITECT: N/A

#### DESIGN PHILOSOPHY:

The proposed residential development comprising of 68 dwellings with associated infrastructure is to be situated on an existing greenfield site, the northern boundary abuts an existing road (Whitegates Grove). The eastern and southern boundaries back onto existing residential areas. The western boundary runs parallel with Penistone Road.

The main development area is located within an area which has a low flood risk from the sea and from rivers and surface water. However, a parcel of land to the west of Penistone Road is being utilised for proposed drainage only (i.e not dwellings), which does have flood zone 2 encroaching into it. The proposed surface water attenuation tank/ flow control device is situated outside of this area to mitigate risk of inundation to proposed infrastructure and avoiding any changes to the existing flood plain. In terms of groundwater flooding the site is indicated to be at limited risk potential for groundwater flooding.

The ground investigation results have demonstrated clay soils and shallow mudstone bedrock across the site. These materials have low permeability, so infiltration is not a viable means of surface water discharge for the development. Discharge to watercourse is feasible with Fenay Beck situated to the west of Penistone Road. This option has been discussed/agreed with the LLFA (consultation included in appendices). On the basis of 10 l/s as the design restriction rate in the 1 in 100 year + 40% climate change event. Drainage Strategy drawings 100 & 101 in the appendices indicate this proposal in greater detail.

In terms of the foul water discharge there is an existing Yorkshire Water combined sewer located to the west of Penistone Road (YW records included in appendices). Further investigation is required to determine existing details at discharge point (survey etc.) But a gravity connection for the development should be feasible based on assessment of the existing topography.

|           |       |           |            |
|-----------|-------|-----------|------------|
| Job No.   | 20257 | Sheet No. | ii         |
| Calcs By: | MDJ   | Date      | 27.07.2022 |

## CODES OF PRACTICE

|                               |                                                                                                                                                                               |                                                                             |
|-------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|
| SW Drainage Outfall           | Agreed Discharge Outfall Point                                                                                                                                                | Fenay Beck - Watercourse                                                    |
|                               | Soakaways Viable / Rate                                                                                                                                                       | Not viable due to low permeability soils.                                   |
|                               | Watercourse Discharge Available                                                                                                                                               | Yes – Fenay Beck                                                            |
|                               | Surface Water Sewer                                                                                                                                                           | N/A                                                                         |
|                               | Combined Sewer                                                                                                                                                                | Yes – 225mm & 750mm to the east of Pennistone Road                          |
|                               | Invert Level of Outfall                                                                                                                                                       | Unknown, TBC by further investigation                                       |
| Drainage Assessment Constants | Scenarios to be Tested                                                                                                                                                        | 1:2, 1:30, 1:100 + 40% CC                                                   |
|                               | FFL                                                                                                                                                                           | Varies 86m – 95m                                                            |
|                               | Existing Impermeable / Permeable Area                                                                                                                                         | 0m <sup>2</sup> / 0 m <sup>2</sup>                                          |
|                               | Proposed Impermeable Area                                                                                                                                                     | 9990m <sup>2</sup>                                                          |
|                               | Proposed Attenuation Storage Volume                                                                                                                                           | Single tank providing 612m <sup>3</sup> storage volume.                     |
|                               | Attenuation Storage Method                                                                                                                                                    | Pre-cast concrete adoptable attenuation tank                                |
|                               | Flow Control Unit                                                                                                                                                             | Vortex Flow Control Device<br>Peak Flow Rate 10l/s IL 78.049m.<br>Head = 2m |
| Microdrainage Assessment      | M5-60 / R                                                                                                                                                                     | 17 / 0.3                                                                    |
|                               | MADD                                                                                                                                                                          | 0                                                                           |
|                               | Global Time of Entry                                                                                                                                                          | 4 mins                                                                      |
|                               | Summer / Winter Coeffs                                                                                                                                                        | 0.75 / 0.84                                                                 |
| SUDS                          | Water Quality Methods Used                                                                                                                                                    | Gully and Sumps, Catchpit, Channel Drainage, Attenuation Tank               |
|                               | Hydrocarbon Interception                                                                                                                                                      | None used                                                                   |
|                               | Silt Capture                                                                                                                                                                  | Yes                                                                         |
|                               | Ponds / Swales                                                                                                                                                                | None used                                                                   |
|                               | Permeable Pavement                                                                                                                                                            | None used                                                                   |
| Information Provided          | Hydraulic Modelling<br>20257-100 (P4) Drainage Strategy<br>20257-101 (P3) Attenuation Tank Area Plan<br>20257-102 (P2) Impermeable Area Plan<br>LLFA consultation, YW records |                                                                             |

### Design Settings

|                       |                   |                                      |               |
|-----------------------|-------------------|--------------------------------------|---------------|
| Rainfall Methodology  | FSR               | Maximum Time of Concentration (mins) | 30.00         |
| Return Period (years) | 2                 | Maximum Rainfall (mm/hr)             | 50.0          |
| Additional Flow (%)   | 0                 | Minimum Velocity (m/s)               | 1.00          |
| FSR Region            | England and Wales | Connection Type                      | Level Soffits |
| M5-60 (mm)            | 17.000            | Minimum Backdrop Height (m)          | 0.200         |
| Ratio-R               | 0.300             | Preferred Cover Depth (m)            | 1.200         |
| CV                    | 1.000             | Include Intermediate Ground          | ✓             |
| Time of Entry (mins)  | 4.00              | Enforce best practice design rules   | x             |

### Pipeline Schedule

| Link  | Length (m) | Slope (1:X) | Dia (mm) | Link Type | US CL (m) | US IL (m) | US Depth (m) | DS CL (m) | DS IL (m) | DS Depth (m) |
|-------|------------|-------------|----------|-----------|-----------|-----------|--------------|-----------|-----------|--------------|
| 1.000 | 10.000     | 100.0       | 225      | Circular  | 80.000    | 78.045    | 1.730        | 80.000    | 77.945    | 1.830        |

| Link  | US Node      | Node Type | DS Node | Dia (mm) | Node Type | MH Type   |
|-------|--------------|-----------|---------|----------|-----------|-----------|
| 1.000 | Depth/Area 1 | Junction  | 1       | 1200     | Manhole   | Adoptable |

### Manhole Schedule

| Node         | Easting (m) | Northing (m) | CL (m) | Depth (m) | Dia (mm) | Node Type | MH Type   | Connections                                                                           | Link | IL (m) | Dia (mm) | Link Type |          |
|--------------|-------------|--------------|--------|-----------|----------|-----------|-----------|---------------------------------------------------------------------------------------|------|--------|----------|-----------|----------|
| Depth/Area 1 | 24.395      | 54.364       | 80.000 | 1.955     |          | Junction  |           |  |      |        |          |           |          |
| 1            | 81.423      | 47.568       | 80.000 | 2.055     | 1200     | Manhole   | Adoptable |   | 0    | 1.000  | 78.045   | 225       | Circular |
|              |             |              |        |           |          |           |           |                                                                                       | 1    | 1.000  | 77.945   | 225       | Circular |

### Simulation Settings

|                      |                   |                            |          |
|----------------------|-------------------|----------------------------|----------|
| Rainfall Methodology | FSR               | Analysis Speed             | Detailed |
| FSR Region           | England and Wales | Skip Steady State          | x        |
| M5-60 (mm)           | 17.000            | Drain Down Time (mins)     | 240      |
| Ratio-R              | 0.300             | Additional Storage (m³/ha) | 0.0      |
| Summer CV            | 0.750             | Check Discharge Rate(s)    | x        |
| Winter CV            | 0.840             | Check Discharge Volume     | x        |

### Storm Durations

|    |    |    |     |     |     |     |     |     |     |     |      |
|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|
| 15 | 30 | 60 | 120 | 180 | 240 | 360 | 480 | 600 | 720 | 960 | 1440 |
|----|----|----|-----|-----|-----|-----|-----|-----|-----|-----|------|

| Return Period (years) | Climate Change (CC %) | Additional Area (A %) | Additional Flow (Q %) |
|-----------------------|-----------------------|-----------------------|-----------------------|
| 2                     | 0                     | 0                     | 0                     |
| 30                    | 0                     | 0                     | 0                     |
| 100                   | 40                    | 0                     | 0                     |

**Node Depth/Area 1 Online StormBrake™ Control**

|                          |        |                         |                          |
|--------------------------|--------|-------------------------|--------------------------|
| Flap Valve               | x      | Design Flow (l/s)       | 10.0                     |
| Downstream Link          | 1.000  | Product Code            | FPM-SB1-02000-01000-1100 |
| Replaces Downstream Link | ✓      | Min Outlet Diameter (m) | 0.225                    |
| Invert Level (m)         | 78.049 | Min Node Diameter (mm)  | 1200                     |
| Design Depth (m)         | 2.000  |                         |                          |

**Node Depth/Area 1 Depth/Area Storage Structure**

|                             |         |               |      |                           |        |
|-----------------------------|---------|---------------|------|---------------------------|--------|
| Base Inf Coefficient (m/hr) | 0.00000 | Safety Factor | 2.0  | Invert Level (m)          | 78.099 |
| Side Inf Coefficient (m/hr) | 0.00000 | Porosity      | 1.00 | Time to half empty (mins) |        |

| Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) | Depth<br>(m) | Area<br>(m²) | Inf Area<br>(m²) |
|--------------|--------------|------------------|--------------|--------------|------------------|--------------|--------------|------------------|
| 0.000        | 453.5        | 0.0              | 1.350        | 453.5        | 0.0              | 1.351        | 0.0          | 0.0              |

**Results for 2 year Critical Storm Duration. Lowest mass balance: 98.89%**

| Node Event        | US Node      | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|--------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 240 minute winter | Depth/Area 1 | 180         | 78.337    | 0.292     | 32.8         | 108.2871      | 0.0000     | SURCHARGED |
| 15 minute summer  | 1            | 1           | 77.945    | 0.000     | 7.2          | 0.0000        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node      | Link        | DS Node | Outflow (l/s) | Discharge Vol (m³) |
|-----------------------------|--------------|-------------|---------|---------------|--------------------|
| 240 minute winter           | Depth/Area 1 | StormBrake™ | 1       | 9.2           | 180.5              |

**Results for 30 year Critical Storm Duration. Lowest mass balance: 98.89%**

| Node Event        | US Node      | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|--------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 240 minute winter | Depth/Area 1 | 224         | 78.634    | 0.589     | 60.9         | 242.8211      | 0.0000     | SURCHARGED |
| 15 minute summer  | 1            | 1           | 77.945    | 0.000     | 9.0          | 0.0000        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node      | Link        | DS Node | Outflow (l/s) | Discharge Vol (m³) |
|-----------------------------|--------------|-------------|---------|---------------|--------------------|
| 240 minute winter           | Depth/Area 1 | StormBrake™ | 1       | 10.0          | 249.6              |

**Results for 100 year +40% CC Critical Storm Duration. Lowest mass balance: 98.89%**

| Node Event        | US Node      | Peak (mins) | Level (m) | Depth (m) | Inflow (l/s) | Node Vol (m³) | Flood (m³) | Status     |
|-------------------|--------------|-------------|-----------|-----------|--------------|---------------|------------|------------|
| 480 minute winter | Depth/Area 1 | 464         | 79.338    | 1.293     | 67.6         | 562.2406      | 0.0000     | SURCHARGED |
| 15 minute summer  | 1            | 1           | 77.945    | 0.000     | 10.0         | 0.0000        | 0.0000     | OK         |

| Link Event (Upstream Depth) | US Node      | Link        | DS Node | Outflow (l/s) | Discharge Vol (m³) |
|-----------------------------|--------------|-------------|---------|---------------|--------------------|
| 480 minute winter           | Depth/Area 1 | StormBrake™ | 1       | 10.0          | 327.9              |

# StormBrake™

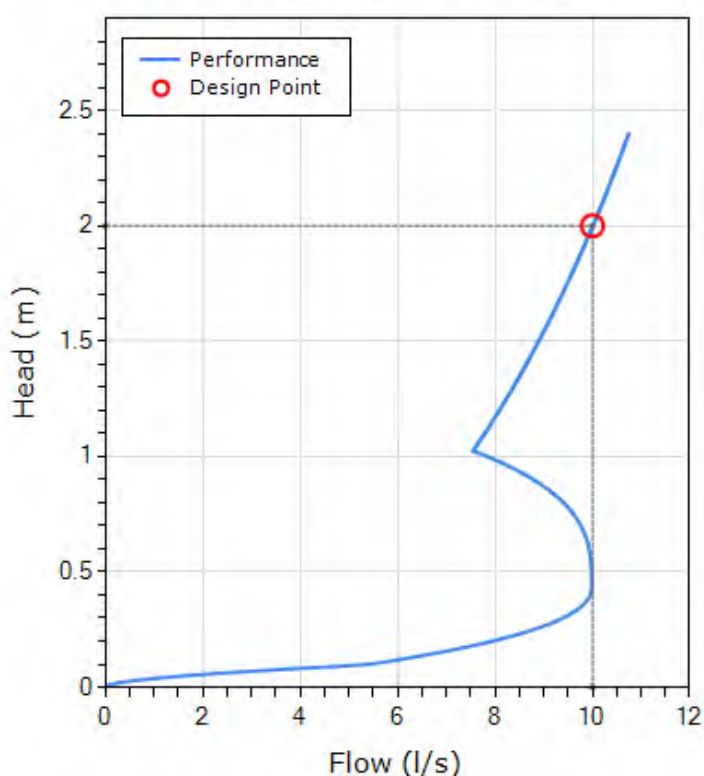
## Performance Report



Contractor: Dudleys  
Site: Fenay Bridge  
Date: 27/07/2022  
Created By: Matthew Johnston  
Device Ref: FPM-SB1-02000-01000-0100

Head(m): 2  
Flow(l/s): 10  
Chamber Ref:  
Mounting Style: LUGS (Default)

### StormBrake™ Performance



|              | Head (m) | Flow (l/s) |
|--------------|----------|------------|
| Design Point | 2.00     | 10.01      |
| Flush Flow   | 0.43     | 9.99       |
| Kick Back    | 1.02     | 7.55       |

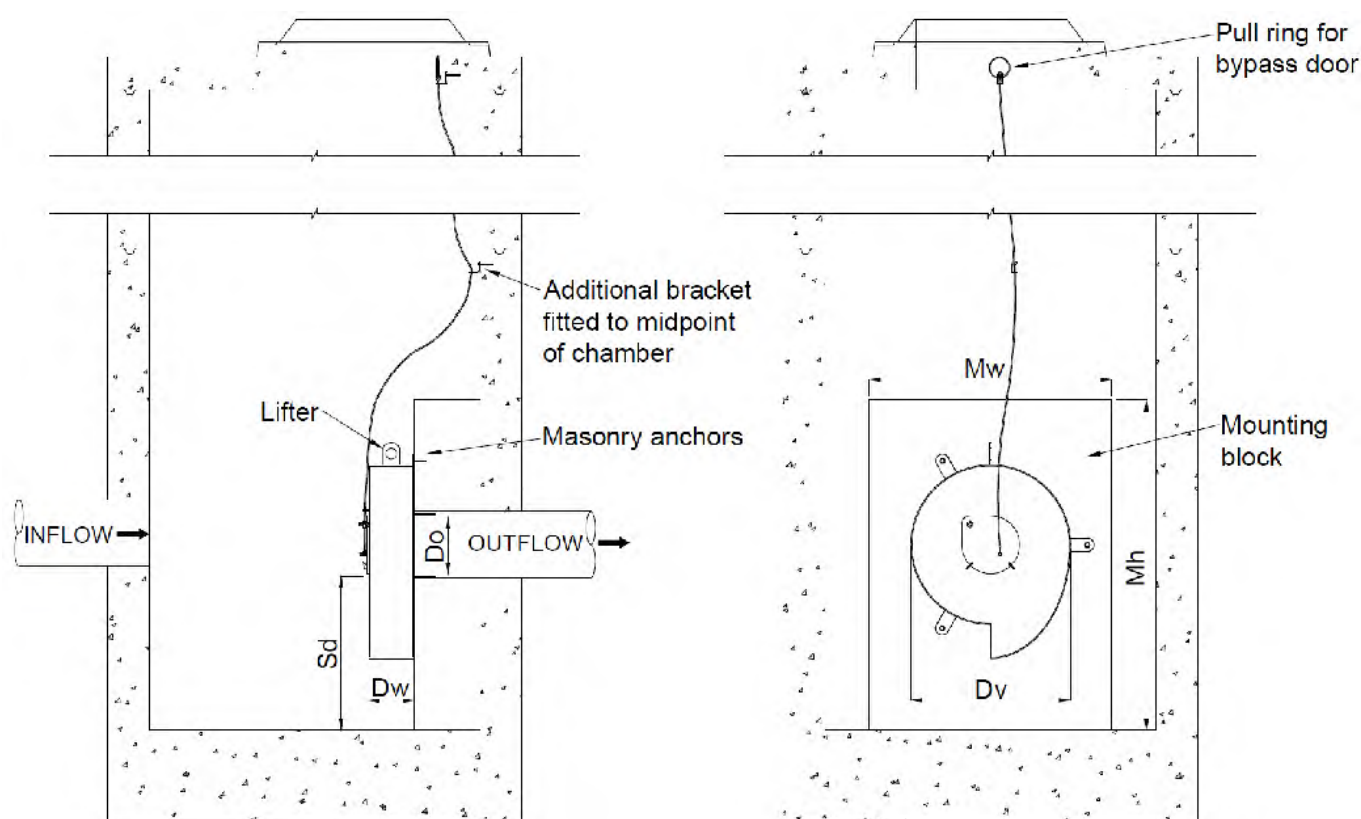
|                           | Dims (mm) |
|---------------------------|-----------|
| Min. Chamber Diameter     | 1200      |
| Min. Outlet Pipe Diameter | 225       |
| Min. Sump Depth           | 360       |

| Head (m) | Flow (l/s) |
|----------|------------|
| 0        | 0.00       |
| 0.08     | 4.05       |
| 0.17     | 7.21       |
| 0.25     | 8.76       |
| 0.33     | 9.65       |
| 0.41     | 9.98       |
| 0.5      | 9.99       |
| 0.58     | 9.95       |
| 0.66     | 9.85       |
| 0.74     | 9.63       |
| 0.83     | 9.26       |
| 0.91     | 8.71       |
| 0.99     | 7.92       |
| 1.08     | 7.71       |
| 1.16     | 7.97       |
| 1.24     | 8.21       |
| 1.32     | 8.44       |
| 1.41     | 8.66       |
| 1.49     | 8.87       |
| 1.57     | 9.08       |
| 1.66     | 9.27       |
| 1.74     | 9.46       |
| 1.82     | 9.64       |
| 1.9      | 9.81       |
| 1.99     | 9.98       |
| 2.07     | 10.15      |
| 2.15     | 10.30      |
| 2.23     | 10.46      |
| 2.32     | 10.60      |
| 2.4      | 10.75      |

*The unique performance characteristics of this StormBrake™ are derived from extensive dynamic modelling using parametric experimental testing and computational fluid dynamics.*

### INSTALLATION INSTRUCTIONS

1. Position the StormBrake™ so that the inlet is at the bottom and the device outlet is in line with the chamber outlet pipe.
2. Mark the locations of the mounting points on the chamber/mounting wall.
3. Using the marked locations, drill holes to the required thickness and depth for the supplied masonry anchors (M10 throughbolts require 11 mm holes). Fit the bolts to the holes.
4. Attach the StormBrake™ to the anchor points, ensuring the neoprene gasket is flush with the chamber wall, and fasten the device by tightening the bolts. This will compress the neoprene gasket to provide a watertight seal between the StormBrake™ and the wall.
5. Fix the stainless steel wire cable from the front bypass door to the underside of the manhole cover, vertically above the device. A secondary bracket is supplied and should be fitted halfway up the chamber to guide the bypass door cable to the top.
6. Adjust the length of the bypass door cable accordingly, so that it reaches the ground level whilst ensuring the bypass door can open if required. Ensure the bypass door is closed for normal operating conditions.



| Geometry                   | Annotation | (mm) |
|----------------------------|------------|------|
| Device Vortex Diameter     | Dv         | 618  |
| Device Width               | Dw         | 136  |
| Device Orifice             | Do         | 130  |
| Sump Depth (outlet Ø225mm) | Sd         | 360  |
| Mounting Block Width       | Mw         | 860  |
| Mounting Block Height      | Mh         | 950  |

Dimensions quoted are minimum values based on the geometry of this unique StormBrake™ unit. These ensure the device can be fitted to the flow control chamber without restriction and meet the performance specification.



DO NOT SCALE

DESIGNERS HAZARD IDENTIFICATION

IT IS ASSUMED THAT ALL WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR WORKING WHERE APPROPRIATE TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS TYPICALLY ASSOCIATED WITH THE TYPES OF CONSTRUCTION DETAILED ON THIS DRAWING, ANY KNOWN ABNORMAL HAZARDS SPECIFIC TO THIS DRAWING HAVE BEEN IDENTIFIED.

ABNORMAL HAZARD REFERENCE

1. DO NOT SCALE FROM DRAWING

2. SW HAS ATTENUATION HAS BEEN ESTIMATED BY 50% CONSIDERED IMPERMEABLE

3. SW PIPE SIZES HAVE BEEN ESTIMATED AND NEED TO BE CONFIRMED AT DETAILED DESIGN BY FULL HYDRAULIC MODELING

4. ASSUME THAT RW PRINCIPLE RUNS CAN BE AT MINIMUM 1.2m UNPROTECTED DEPTH TO SOFFIT LEVEL. 1500 NETWORK SHOULD BE SUFFICIENT IN ADOPTED ROADS BASED OFF SITE GRADIENTS AND NUMBER OF PLOTS.

5. EASEMENTS OUTSIDE OF ADOPTED ROAD AREAS NEED TO BE CONSIDERED IN ACCORDANCE WITH CODED FOR ADOPTION 8TH EDITION.

KEY

PROPOSED ADOPTED SURFACE WATER

PROPOSED ADOPTED FOUL WATER

PROPOSED PRIVATE SURFACE WATER

PROPOSED PRIVATE FOUL WATER

EXISTING FOUL WATER SEWER

RED LINE BOUNDARY

29.06.22 UPDATED TO SUIT NEW LAYOUT

08.02.22 ROUTING UPDATED

16.12.21 ATTENUATION UPDATED

01.12.21 PRELIMINARY ISSUE

Date

Revision

By

Child Ref

dudleys

Structural & Civil Consultants

FENAY BRIDGE

PENISTONE ROAD

NEWETT HOMES

DRAINAGE STRATEGY

1:250

A0

MDJ

PD

DEC 21

PRELIMINARY

20257

100

P4



**TANKER ACCESS NOTES**

- 84.30 THRESHOLD AT EXTG GATE ACCESS. SUBJECT TO TRACKING THIS MAY NEED WIDENING TO FACILITATE FOR A LARGE TANKER
- ASSUMED 3 TO 4 M WIDE ACCESS TRACK WITH BATTERED SIDES DOWN TO EXTG LEVELS I.E LARGER LAND TAKE FOR HIGHER ROAD ELEVATIONS
- APPROX 98m's LENGTH OF ACCESS ROAD TO FACILITATE 1 IN 17 GRADIENT (START TO END OF SKETCH ALIGNMENT - 5.8m ELEVATION CHANGE). FINAL FORM OF CONSTRUCTION USED TBC WITH YW, HOWEVER GRASSCRETE OR SIMILAR WILL LIKELY BE ACCEPTABLE.
- ACCESS ROADWAY TO BE LAID WITHIN 5m OF FLOW CONTROL MH ACCESS COVERS AND TO BE SERVED BY A TURNING HEAD SUITABLE FOR LARGE TANKER ACCESS.

FW EXTG SEWER CONNECTION POINT  
TBC. RECENT TOPO SURVEY DATA OF  
THIS AREA DID NOT IDENTIFY ANY  
MH COVERS (POTENTIALLY BURIED).

EXMH 1  
CL: 78.740  
IL: 77.070  
ESTIMATED FROM  
PAST 3RD PARTY  
DRGS TBC BY  
FURTHER  
INVESTIGATION

FW1.10  
CL: 80.300  
IL: 78.950 1500

SW1.12  
CL: 80.000  
IL: 78.099 4500  
IL: 78.049 1500  
HEAD: 1.35m  
RATE: 10 l/s

SW ATTENUATION TANK  
20.5m x 22.50m x 1.35m  
= 612m³  
1:500 GRADIENT  
MIN COVER 0.80m

FW1.09  
CL: 84.000  
IL: 80.227 1500

EXMH 2  
CL: 78.250  
IL: 76.230  
ESTIMATED FROM  
PAST 3RD PARTY  
DRGS TBC BY  
FURTHER  
INVESTIGATION

FW1.07  
CL: 83.810  
IL: 80.493 1500

FW1.08  
CL: 83.800  
IL: 80.372 1500

SW1.09  
CL: 83.904  
IL: 81.404 3750

SW1.11  
CL: 80.400  
IL: 78.224 3750  
IL: 78.159 4500

SW1.10  
CL: 83.700  
BDIL: 81.353 3750  
IL: 80.016 3750

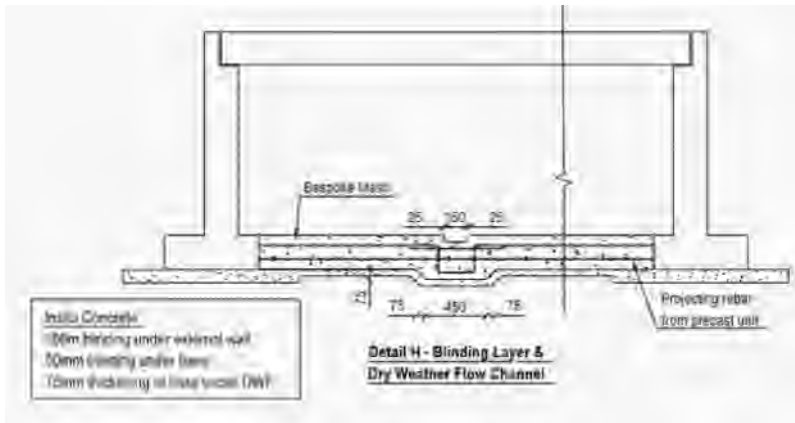
**FLOOD ZONE NOTES**  
DASHED LINE DICTATES  
CURRENT FLOOD ZONE 2 & 3  
EXTENTS BASED OFF EA DATA

SUBJECT TO AGREEMENT WITH  
3RD PARTY LAND OWNER

MAIN SW AND FW SEWERS FROM  
PROPOSED DEVELOPMENT ON  
NORTH EASTERN SIDE OF  
PENNISTONE ROAD TO BE  
TUNNELED UNDER EXTG HIGHWAY  
TO AVOID ROAD CLOSURES.

SW OUTFALL  
IL: ??? 1500 TBC  
PCC HEADWALL  
TO FENAY BECK

ATTENUATION TANK AREA PLAN @1:200



OUTFALL PCC HEADWALL  
INDICATIVE IMAGE

INDICATIVE EXAMPLES OF PROPOSED PCC ATTENUATION TANK. THIS WILL LIKELY BE FORMED OFF EXTG NATURAL CLAY/ROCK GROUND, WITH PLING CONCRETE LAYER OVER TO SUPPORT THE BASE TANK SLAB AND WALLS

**DO NOT SCALE**

**DESIGNERS HAZARD IDENTIFICATION**  
IT IS ASSUMED THAT ALL WORKS WILL BE UNDERTAKEN BY A COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO AN APPROVED METHOD STATEMENT. IN ADDITION TO THE HAZARDS TYPICALLY ASSOCIATED WITH THE TYPES OF CONSTRUCTION DETAILED ON THIS DRAWING, ANY KNOWN ABNORMAL HAZARDS SPECIFIC TO THIS DRAWING HAVE BEEN IDENTIFIED.



**NOTES:**

- DO NOT SCALE FROM DRAWING.

**KEY**

- PROPOSED ADOPTED SURFACE WATER
- PROPOSED ADOPTED FOUL WATER
- ATTENUATION TANK
- TANKER ACCESS INDICATIVE ROUTE
- FLOOD ZONE 2 & 3 EXTENTS

| Date     | Revision                      | By  | Chkd | Ref |
|----------|-------------------------------|-----|------|-----|
| 29.06.22 | UPDATED TO SUIT LLFA COMMENTS | MDJ | PD   | P3  |
| 08.02.22 | FW LEVELS UPDATED             | MDJ | PD   | P2  |
| 17.01.22 | PRELIMINARY ISSUE             | MDJ | PD   | P1  |

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E: info@dudleys.co.uk

Project  
**FENAY BRIDGE  
PENNISTONE ROAD  
NEWETT HOMES**  
Title  
**ATTENUATION TANK AREA  
PLAN**

|         |        |          |             |       |     |       |    |
|---------|--------|----------|-------------|-------|-----|-------|----|
| Scale   | 1:250  | Paper    | A1          | Drawn | MDJ | Check | PD |
| Date    | JAN 22 | Status   | PRELIMINARY |       |     |       |    |
| Job No. | 20257  | Org. No. | 101         | Rev.  | P3  |       |    |

DO NOT SCALE

DESIGNERS HAZARD IDENTIFICATION

COMPETENT CONTRACTOR WORKING, WHERE APPROPRIATE, TO



1. DO NOT SCALE FROM THIS DRAWING.

LEG  
OPEN SPACE - 0.275 ha  
IMPERMEABLE AREA - 0.999 ha  
TOTAL SITE AREA - 2.30 ha

30.06.21 UPDATED TO SUIT NEW LAYOUT  
31.03.22 PRELIMINARY ISSUE

Date Revision By Child Ref

**dudleys**  
Structural & Civil Consultants

FENAY BRIDGE  
PENISTONE ROAD  
NEWETT HOMES  
IMPERMEABLE AREA PLAN

|        |             |     |    |
|--------|-------------|-----|----|
| NTS    | A0          | MDJ | PD |
| MAR 22 | PRELIMINARY |     |    |
| 20257  | 102         | P2  |    |

## Matthew Johnston

---

**From:** Paul Farndale <Paul.Farndale@kirklees.gov.uk>  
**Sent:** 04 May 2022 15:35  
**To:** Peter Dixon; Kevin Atkinson  
**Subject:** RE: 20257 - Fenay Bridge - Site Walkover - planning ref 2020/62/90725/W

Hello Peter,

Yes 10l/s is confirmed.

Kind regards,

Paul Farndale  
Kirklees LLFA

---

**From:** Peter Dixon <Peter.Dixon@dudleys.co.uk>  
**Sent:** 13 April 2022 20:49  
**To:** Paul Farndale <Paul.Farndale@kirklees.gov.uk>; Kevin Atkinson <Kevin@newetthomes.co.uk>  
**Subject:** RE: 20257 - Fenay Bridge - Site Walkover - planning ref 2020/62/90725/W

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Evening Paul

Thanks for this clarification, but trust that this also confirms the 10l/s discharge rate?

Kind Regards

**Peter Dixon**



**E:** [peter.dixon@dudleys.co.uk](mailto:peter.dixon@dudleys.co.uk)  
**T:** 0113 258 3611 **M:** 07788 275718  
**P:** Tithe House 35 Town Street Leeds LS18 5LJ  
**W:** [www.dudleys.co.uk](http://www.dudleys.co.uk)

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---

**From:** Paul Farndale <[Paul.Farndale@kirklees.gov.uk](mailto:Paul.Farndale@kirklees.gov.uk)>  
**Sent:** 13 April 2022 19:11  
**To:** Peter Dixon <[Peter.Dixon@dudleys.co.uk](mailto:Peter.Dixon@dudleys.co.uk)>; Kevin Atkinson <[Kevin@newetthomes.co.uk](mailto:Kevin@newetthomes.co.uk)>  
**Subject:** RE: 20257 - Fenay Bridge - Site Walkover - planning ref 2020/62/90725/W

Hello Peter,

I can confirm that I have no problem with a direct connection beyond the old mill race directly to the watercourse to the west. Any pipework should be under said mill race in case the current or future landowners wish to make changes to the current status quo which I understand is partially abandoned.

Kind regards,

Paul Farndale

---

**From:** Peter Dixon <[Peter.Dixon@dudleys.co.uk](mailto:Peter.Dixon@dudleys.co.uk)>  
**Sent:** 12 April 2022 17:33  
**To:** Kevin Atkinson <[Kevin@newetthomes.co.uk](mailto:Kevin@newetthomes.co.uk)>  
**Cc:** Paul Farndale <[Paul.Farndale@kirklees.gov.uk](mailto:Paul.Farndale@kirklees.gov.uk)>  
**Subject:** RE: 20257 - Fenay Bridge - Site Walkover - planning ref 2020/62/90725/W

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Afternoon Kevin

To confirm, we've spoken with Paul this afternoon and he's agreed that the proposals within the e-mail below are acceptable and will be responding to that effect.

Kind Regards

**Peter Dixon**



E: [peter.dixon@dudleys.co.uk](mailto:peter.dixon@dudleys.co.uk)  
T: 0113 258 3611 M: 07788 275718  
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---

**From:** Peter Dixon  
**Sent:** 18 March 2022 15:08  
**To:** 'Paul Farndale' <[Paul.Farndale@kirklees.gov.uk](mailto:Paul.Farndale@kirklees.gov.uk)>  
**Cc:** Kevin Atkinson <[Kevin@newetthomes.co.uk](mailto:Kevin@newetthomes.co.uk)>; Heinz Jaroszek <[Heinz.Jaroszek@kirklees.gov.uk](mailto:Heinz.Jaroszek@kirklees.gov.uk)>  
**Subject:** RE: 20257 - Fenay Bridge - Site Walkover - planning ref 2020/62/90725/W

Afternoon Paul

Hope you're slowly managing to get back on top of the standard workload since all the flooding issues?

Following on from our meeting with yourself and Newett Homes regarding the Fenay Bridge site (on 14/02/2022), we have attached a mark-up summary of the proposals for drainage connection/outfall points and discharge rate as per our discussions.

The proposed connection points are also informed by a site walkover, where Heinz was also present.

Presumably the above is all in line with our discussions and to that end if you could respond by return with your acceptance that would be appreciated.

Should you have any queries please do not hesitate to contact us to discuss further.

Kind Regards

**Peter Dixon**



E: [peter.dixon@dudleys.co.uk](mailto:peter.dixon@dudleys.co.uk)  
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---

**From:** Paul Farndale <[Paul.Farndale@kirklees.gov.uk](mailto:Paul.Farndale@kirklees.gov.uk)>  
**Sent:** 15 February 2022 15:29  
**To:** Heinz Jaroszek <[Heinz.Jaroszek@kirklees.gov.uk](mailto:Heinz.Jaroszek@kirklees.gov.uk)>  
**Cc:** Peter Dixon <[Peter.Dixon@dudleys.co.uk](mailto:Peter.Dixon@dudleys.co.uk)>  
**Subject:** FW: 20257 - Fenay Bridge - Site Walkover

Hello Heinz,

I need you to do a walkover for the site below, can you let me know when you are free then we can organise and I'll go through it with you. It is an old mill race on Kompass but we think it has been altered over the years and need to know whether the site can make a connection to it or not.

PF

---

**From:** Peter Dixon <[Peter.Dixon@dudleys.co.uk](mailto:Peter.Dixon@dudleys.co.uk)>  
**Sent:** 15 February 2022 14:23  
**To:** Paul Farndale <[Paul.Farndale@kirklees.gov.uk](mailto:Paul.Farndale@kirklees.gov.uk)>  
**Cc:** Kevin Atkinson <[Kevin@newetthomes.co.uk](mailto:Kevin@newetthomes.co.uk)>  
**Subject:** 20257 - Fenay Bridge - Site Walkover

**CAUTION:** External email. Do not click links or open attachments unless you recognize the sender and know the content is safe.

Afternoon Paul

Following on from our Teams call yesterday, Kevin and I are planning a site walkover either Thursday or Friday afternoon next week – is your colleague able to join us on either of these dates?

For reference the purpose will be to have a look at the area where the attenuation tank is to be located, see if we can see the extg FW sewer MHs and also check the form of the SW outfall position and potentially walk the length of the former mill race to check this is a viable outfall.

Any queries let us know.

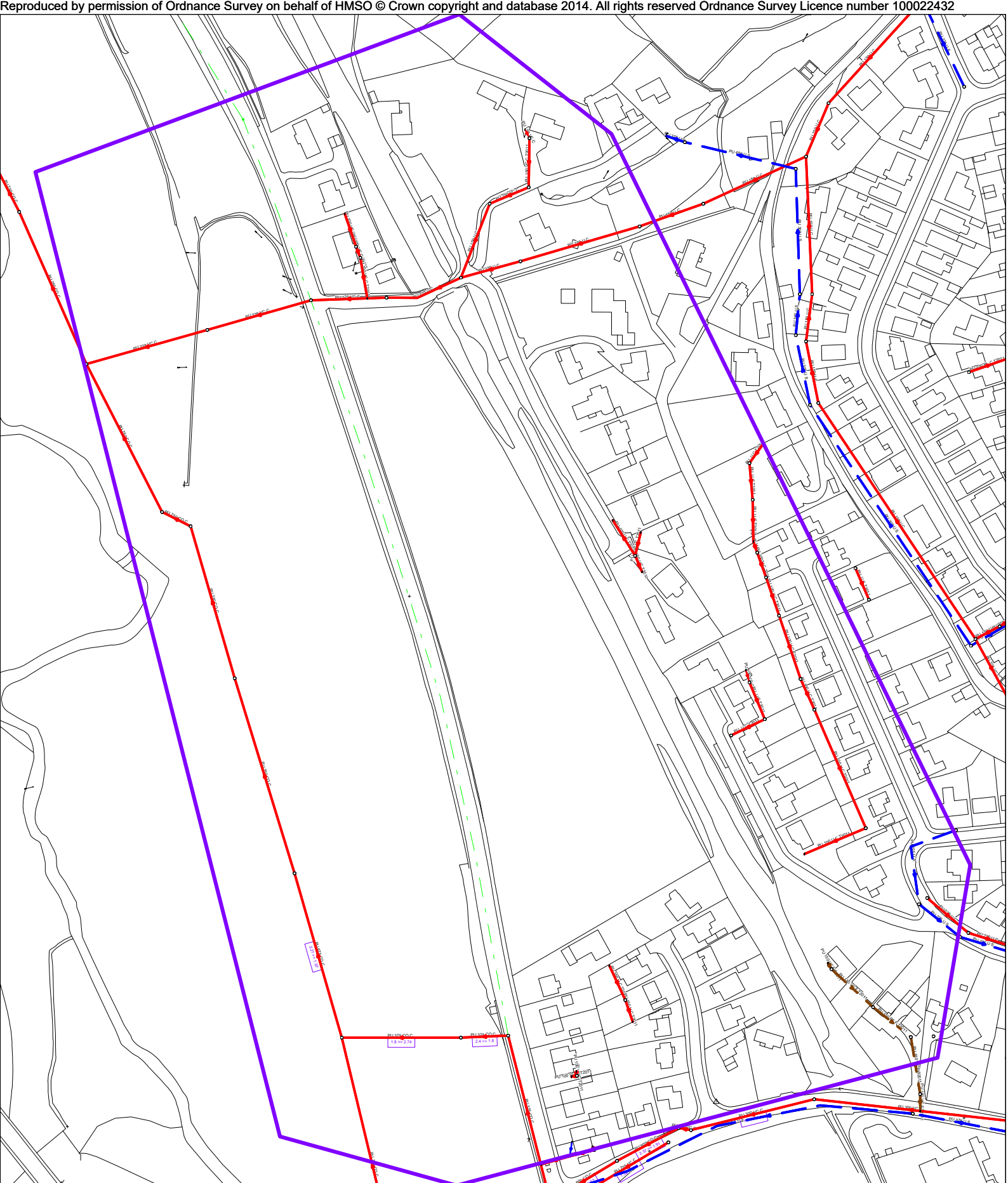
Kind Regards

**Peter Dixon**



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Public Waste Water Network 17/11/2021 09:05:10 OS Grid Coordinates: 418358 : 414564 Map Name : SE1814NW svcGISSafeMovePD



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