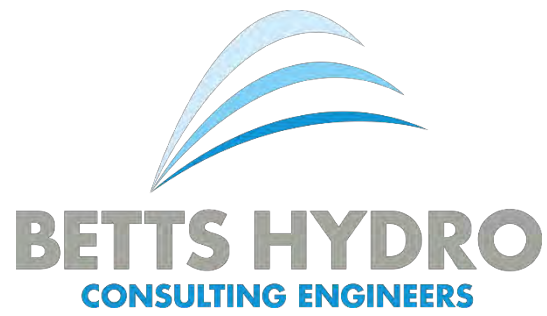




LAND OFF BROWNHILLS CLOSE
BURY

DRAINAGE MANAGEMENT STRATEGY



For

Barnaby Properties Ltd and
Dial-a-Skip UK Ltd

JULY 2021

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LAND OFF BROWNHILLS CLOSE
BURY

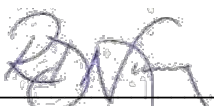
FLOOD RISK ASSESSMENT AND
DRAINAGE MANAGEMENT STRATEGY

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EXECUTIVE SUMMARY

This Flood Risk Assessment and Drainage Management Strategy was commissioned by Barnaby Properties Ltd and Dial-a-Skip UK Ltd referred to hereafter as 'the client'. This report has been prepared to support a planning application for land located off Brownhills Close in Bury.

Due to the relatively low flood risks identified, the principle focus of this assessment is on the sustainable management of surface water run-off to ensure no increased flood risk results from the development. The surface water discharge options have been assessed in accordance with the sustainable drainage hierarchy.

There are three methods that have been reviewed for the management and discharge of surface water. These may be applied individually or collectively to form a complete strategy and should be applied in the order of priority, discharge via infiltration, discharge to watercourse, discharge to public sewerage system.

Based on the ground conditions identified by the published online datasets, infiltration would not be considered a feasible option for managing surface water run-off generated by future development. To confirm the specific infiltration rates, as these can vary on a site-by-site basis, Soakaway Testing (to BRE365) may need to be commissioned in due course.

As infiltration is not likely to be feasible, this assessment has also considered the alternative options for managing surface water run-off generated. The next method in the sustainable drainage hierarchy is discharge surface water run-off generated by the proposals to a nearby watercourse. The nearest watercourse is the Ordinary Watercourse, which flows within the wider site extent from the western to the eastern boundary.

The proposals for surface water management at the site will be to mimic the pre-development situation where at all feasible and continue to discharge surface water run-off (at a restricted rate) to the Ordinary Watercourse network. Given that there are two distinct development areas within the wider site there will be a requirement to have two generate surface water systems serving each area.

Where levels and engineering constraints allow the proposals will be to form new formal surface water connections to the Ordinary Watercourse network. Where there are further constraints and two new direct outfalls to the watercourse are not practical, then the proposals would be to utilise the short lengths of existing public surface water sewers which currently cross the site and outfall to the watercourse for conveyance. Consultations with United Utilities has confirmed they would consider split surface water connection into the public surface water sewer (300mm dia.) located within the site boundary at a rate not exceeding 5 l/s at each respective connection point, should a direction connection into the watercourse not be feasible.

In accordance with the SuDS Manual (CIRIA) and the Non-Technical Standards for SuDS (March 2015) all sites should endeavour to achieve as close to pre-development greenfield rates as is viable. Based on the development area the pre-development greenfield rate (QBar) is calculated to be 6.1l/s. This discharge rate will need to be split between two outfalls given the development proposals. Where outfall to the public surface water sewer is required,

confirmation from UU of their requirement for discharge rates should be sought as these may be more restrictive. Detailed design will confirm at a later stage the feasibility and will determine with accuracy the discharge rates of run-off for each connection.

Restricting the rate of discharge will generate a requirement to provide onsite stormwater storage for the extreme rainfall events. It would be beneficial to implement SuDS where at all feasible, to provide water quality benefits and assist with the required onsite attenuation, subject to ground investigation and a detailed levels review. SuDS features such as permeable surfaces on private driveways will still allow the first 5mm of rainfall to be dealt with at source as identified in the SuDS Manual (CIRIA 753).

This Drainage Management Strategy has been prepared in consultation with the relevant interested parties and incorporates their comments where possible. The report is commensurate with the scale and nature of the development proposals and in summary, the development can be considered appropriate in accordance with the Planning Practice Guidance.

CONTENTS

Document Tracking Sheet	iii
EXECUTIVE SUMMARY	v
Figures & Tables	vii
Specialist Software	viii
Abbreviations & Acronyms	viii
1.0 INTRODUCTION	11
1.1 Planning Policy Context	11
1.2 Site Context	11
1.3 Consultation	11
2.0 EXISTING SITE LOCATION	12
2.1 Location	12
2.2 Existing and Historical Land Use	12
2.3 Topography	12
3.0 DEVELOPMENT PROPOSALS	13
3.1 Nature of the development	13
4.0 SURFACE WATER MANAGEMENT.....	15
4.1 Pre-Development Surface Water Run-off	15
4.2 Post Development Surface Water Run-Off	15
4.3 Methods of Surface Water Management	15
4.4 Discharge via Infiltration	16
4.5 Discharge to Watercourse/Waterbody via a Public Sewer	16
<i>Proposed Discharge Rates</i>	17
4.6 Climate Change	18
5.0 FOUL WATER MANAGEMENT	19
6.0 SUMMARY AND CONCLUSIONS.....	20
7.0 RECOMMENDATIONS.....	22
BIBLIOGRAPHY & REFERENCES	23
Web-based References	23

Figures & Tables

Figure 1: Existing Features Plan (Bing Maps, 2021)	12
Figure 2: Illustrative Masterplan (Yd ² , 2021)	13
Table 1: Pre-Development Surface Water Run-Off Rates (Betts Hydro, 2021).....	15
Table 2: Post-Development Un-Restricted Run-Off Rates (Betts Hydro, 2021)	15
Figure 3: Preliminary Proposed Drainage Plan (Betts Hydro, 2021)	17

Table 3: Estimated Stormwater Storage Requirements (Betts Hydro, 2021) 18

Table 4: Change to Extreme Rainfall Intensity (Environment Agency, 2016) 18

APPENDIX A:	NPPF & PPG EXTRACTS	
APPENDIX B:	EA INFORMATION & CORRESPONDENCE	
APPENDIX C:	UU CORRESPONDENCE.....	
APPENDIX D:	LPA/LLFA CORRESPONDENCE	
APPENDIX E:	LOCATION PLAN	
APPENDIX F:	TOPOGRAPHIC SURVEY	
APPENDIX G:	PROPOSED PLANNING LAYOUT	
APPENDIX H:	PFRA/SFRA PLANNING EXTRACTS.....	
APPENDIX I:	SURFACE WATER RUN-OFF CALCULATIONS	
APPENDIX J:	PRE/POST DRAINAGE PLANS	
APPENDIX K:	STORMWATER STORAGE ESTIMATES	
APPENDIX L:	NOTES OF LIMITATIONS.....	

Specialist Software

- MicroDrainage WinDES (v.14.1) – Calculation of Greenfield run-off rates IH124/ICP-SUDS, Greenfield run-off volumes, rates of rainfall and stormwater storage estimates.
- Flood Estimation Handbook FEH– Determination of Catchment Descriptors and depths of rainfall.

Abbreviations & Acronyms

AEP	Annual Exceedance Probability
BGS	British Geological Survey
BMBC	Bury Metropolitan Borough Council
CC	Climate Change
CRT	Canals and Rivers Trust
CSAI	Cranfield Soil and Agrifood Institute
EA	Environment Agency
FEH	Flood Estimation Handbook
FRA	Flood Risk Assessment
LLFA	Lead Local Flood Authority
LPA	Local Planning Authority
mAOD	Metres Above Ordnance Datum
NGR	National Grid Reference

NPPF	National Planning Policy Framework
OS	Ordnance Survey
PFRA	Preliminary Flood Risk Assessment
PPG	Planning Practice Guidance
QSE	Quick Storage Estimate
QBAR	Mean Annual Flood
SfA	Sewers for Adoption
SFRA	Strategic Flood Risk Assessment
SuDS	Sustainable Drainage Systems
TWL	Top Water Level
UU	United Utilities

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1.0 INTRODUCTION

1.1 Planning Policy Context

- 1.1.1 All forms of flooding and their impact on the natural and built environment are material planning considerations. The revised National Planning Policy Framework (NPPF) sets out the Government's objectives for the planning system, and how planning should facilitate and promote sustainable patterns of development, avoiding flood risk and accommodating the impacts of climate change. Government policy with respect to development in flood risk areas is contained within the revised NPPF and the supporting Planning Practice Guidance (PPG) (refer to extracts in Appendix A).
- 1.1.2 A Drainage Management Strategy (DMS) has been completed to ensure that no increased flood risk because of the development would occur. This report considers the most appropriate drainage management options to manage the surface water run-off generated by the proposals including the implementation of Sustainable Drainage Systems (SuDS) in line with national policy.

1.2 Site Context

- 1.2.1 This Drainage Management Strategy has been prepared to support a planning application for residential development on land located off Brownhill Close in Bury. The proposals will be complete with, access, car parking, boundary fencing and drainage. The site is currently undeveloped and used for agricultural purposes.

1.3 Consultation

- 1.3.1 The NPPF advises that Bury Metropolitan Borough Council (BMBC) as the Local Planning Authority (LPA) should consult with the EA who will provide advice and guidance on flood issues at a strategic level and in relation to planning applications. The preparation of this report has been undertaken in consultation with the Environment Agency (EA), Bury Metropolitan Borough Council (BMBC) and United Utilities (UU). Consultation responses can be seen in Appendix B, C, and D respectively.

2.0 EXISTING SITE LOCATION

2.1 Location

- 2.1.1 The site is located on land on land off Brownhills Close in Tottington, Bury. The nearest Ordnance Survey National Grid Reference (OS NGR) is E: 378443, N: 412379 and the nearest postcode is BL8 3GG (see Location Plan in Appendix E). The site is surrounded by residential development to the north, south and west. To the east of site lies undeveloped recreational land and there is an existing Ordinary Watercourse crossing the site from the western to the eastern boundary. This Ordinary Watercourse eventually outfalls into the Main River (Kirklees Brook) located further east, as illustrated in Figure 1.



Figure 1: Existing Features Plan (Bing Maps, 2021)

2.2 Existing and Historical Land Use

- 2.2.1 The development site currently composes of undeveloped land. The surrounding area currently comprises of high-density vegetation with some larger trees and shrubs located along the natural field boundaries. No other historical land-uses have been identified during the preparation of this report.

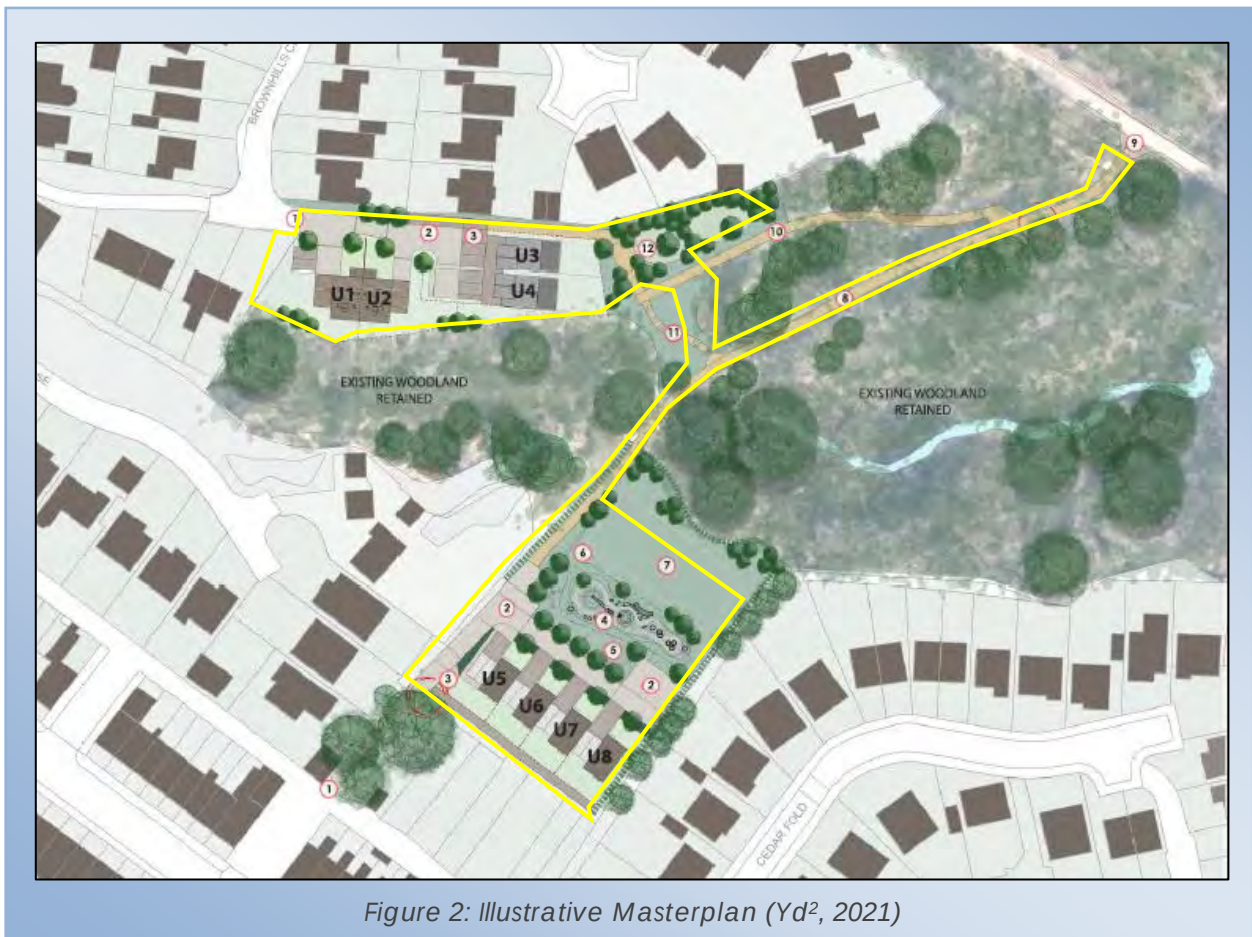
2.3 Topography

- 2.3.1 A full topographical survey has been undertaken and included within Appendix F. The topographic survey has identified ground levels are shown to vary from 122.4mAOD along the northern, southern, and western boundaries of site down to a level of 102.6mAOD into the centre of site where the Ordinary Watercourse is located.

3.0 DEVELOPMENT PROPOSALS

3.1 Nature of the development

- 3.1.1 This assessment is to support to support a planning application for residential development on land located off Brownhills Close in Bury. The proposals will complete with access, car parking, boundary fencing and drainage. A full planning layout is included in Appendix G, see snippet in Figure 2 below.



- 3.1.2 The total site covers 1.77ha however the development area will cover a smaller 0.43ha. The development area (outlined in yellow in Figure 2) excludes areas onsite which will be left for landscaping or public open space. The site is currently undeveloped and considered to be 100% permeable, but due to the nature of the development the post-development impermeable areas will likely increase to 55% of the development area (which equates to 0.236ha).
- 3.1.3 An unnamed Ordinary Watercourse is currently present within the centre of site, flowing from the western to the eastern boundary. The Lead Local Flood Authority (LLFA) will likely require a maintenance easement/offset to be applied from this Ordinary Watercourse into the sites development areas the typical requirement is for a 6-8m no build offset to be included into any future planning proposals. The offset should provide clear, unimpeded access meaning no building, fence line, boundary walls or privately owner areas can be located within the 6-8m of the top of bank (on either side) into the

site. The LLFA also recommended that any culverting of watercourses should be kept to a minimum and where practical de-culverting is preferred.

- 3.1.4 Review of the United Utilities sewer records has identified multiple sewers networks to be present within the site boundary. These will need to be accounted for within any planning layout in the form of a no-build offset. A diversion in some cases may be possible subject to early discussion with UU. Where diversion is not practical then any proposed planning layout will need to allow for the required offset from the centreline of the sewer(s) on both sides. Early discussion with UU is recommended as the offset/easement can vary depending on an asset depth and size.
- 3.1.5 National and local policy identifies that Sustainable Drainage Systems (SuDS) should be incorporated into new development where at all feasible. It is highly recommended that permeable surfacing be utilised where at all feasible, to minimise the surface water run-off generated. Given the scale and nature of the proposals it is not likely there to be scope to incorporate SuDS features onsite such as ponds and basins. Detailed design will be required to confirm what SuDS can be included, subject to ground investigations and detailed levels review.

4.0 SURFACE WATER MANAGEMENT

4.1 Pre-Development Surface Water Run-off

- 4.1.1 The total site covers 1.77ha however the development area will cover a smaller 0.43ha. The development area excludes areas onsite which will be left for landscaping or public open space. At present the site is undeveloped and the pluvial run-off generated would typically discharge to the Ordinary Watercourse that crosses the wider site given the existing ground levels. Review of UU's sewer records, has identified that the surrounding residential development also discharges surface water into the unnamed Ordinary watercourse that flows through site via formal surface water sewers crossing the development areas.
- 4.1.2 The peak rates and volumes of run-off generated by the development area have been calculated for the key storm events using the FEH Statistical Method. Details of the pre-development rates and volumes are included in Table 1 (full details can be found in Appendix J) based on the site area.

Development Area	Run-Off Rates				Run-Off Volumes	
	1 In 1 Year	1 In 30 Year	1 In 100 Year	QBar	1 In 1 Year	1 In 100 Year
0.43ha	5.3l/s	10.3l/s	12.6l/s	6.1l/s	50.2cu.m	153.7cu.m

Table 1: Pre-Development Surface Water Run-Off Rates (Betts Hydro, 2021)

4.2 Post Development Surface Water Run-Off

- 4.2.1 As previously discussed due to the nature of the development the impermeable areas of the site post-development will likely increase. We have therefore assumed the development area will be 55% impermeable post development which equates to 0.236ha. The unrestricted post-development run-off rates generated by this impermeable area has been detailed in Table 2.

Impermeable Areas	Run-Off Rates		
	1 In 1 Yr	1 In 30 Yr	1 In 100 Yr +CC
0.236ha	11.8l/s	21.9l/s	38.9l/s

Table 2: Post-Development Un-Restricted Run-Off Rates (Betts Hydro, 2021)

- 4.2.2 In accordance with national and local planning policies it is, however, necessary to restrict surface water run-off rates where at all practical to mimic a pre-development greenfield equivalent situation. The proposals will be to discharge surface water run-off from the new development to mimic the pre-development greenfield situation (Table 1). Further details can be found in Section 5.6.

4.3 Methods of Surface Water Management

- 4.3.1 There are three methods that have been reviewed for the management and discharge of surface water. These may be applied individually or collectively to form a complete strategy and should be applied in the order of priority listed below:

 Discharge via infiltration

-  Discharge to watercourse
-  Discharge to public sewerage system

4.4 Discharge via Infiltration

- 4.4.1 Any impermeable areas that can drain to soakaway or an alternative method of infiltration would significantly improve the sustainability of any surface water system onsite. The ground conditions have been identified based on the online datasets given there has been no onsite infiltration testing at this time to support this assessment.
- 4.4.2 The online published geology data identifies the soils in the region to be made up of slowly permeable, seasonally wet loamy and clayey soils. The underlying bedrock is made up of sandstones with Devensian tills at superficial level. This is further supported by the recorded BGS borehole logs which identify firm to stiff clay being present adjacent to the eastern boundary of the site. The soil factor for the area has also been identified to be 0.5 (based on the FEH catchment data), which suggest the soils in the region are not porous (based on a scale of 0.1 to 0.5, with 0.5 being impermeable).
- 4.4.3 Based on the ground conditions identified by the published online datasets, infiltration would not be considered a feasible option for managing surface water run-off generated by future development, based on impermeable nature of the underlying strata. To confirm the specific infiltration rates, as these can vary on a site-by-site basis, Soakaway Testing (to BRE365) may need to be commissioned in due course.

4.5 Discharge to Watercourse/Waterbody via a Public Sewer

- 4.5.1 As infiltration is not likely to be feasible, this assessment has also considered the alternative options for managing surface water run-off generated. The next method in the sustainable drainage hierarchy is discharge surface water run-off generated by the proposals to a nearby watercourse. The nearest watercourse is the Ordinary Watercourse, which flows within the wider site extent from the western to the eastern boundary. The Ordinary Watercourse is both open channel and culverted through the wider site and ultimately outfalls into Kirklees Brook less than 200m from the site.
- 4.5.2 The proposals for surface water management at the site will be to mimic the pre-development situation where at all feasible and continue to discharge surface water run-off (at a restricted rate) to the Ordinary Watercourse network, as illustrated within Figure 3. Given that there are two distinct development areas within the wider site there will be a requirement to have two generate surface water systems serving each area.
- 4.5.3 Where levels and engineering constraints allow the proposals will be to form new formal surface water connections to the Ordinary Watercourse network. Where there are further constraints and two new direct outfalls to the watercourse are not practical, then the proposals would be to utilise the short lengths of existing public surface water sewers which currently cross the site and outfall to the watercourse for conveyance.
- 4.5.4 Consultations with United Utilities has confirmed they would consider split surface water connection into the public surface water sewer (300mm dia.) located within the site boundary at a rate not exceeding 5 l/s at each respective connection point, should a

direction connection into the watercourse not be feasible. Furthermore, discussion is advised with UU to confirm their requirements for diverting of the current surface water sewers which cross the site (see Appendix C for correspondence).

- 4.5.5 Detailed design will need to refine the drainage strategy, based on any agreed sewer diversion works, design engineering constraints and final planning layouts. Given the existing ground levels a gravity solution is anticipated to be practical although this will again need to be confirmed following full review of design levels.
- 4.5.6 Consent and formal agreement will be required from BMBC (who are the Lead Local Flood Authority) for any works to the Ordinary Watercourse network, including formal agreements on the proposed rates of discharge. Where works are proposed to the public surface water sewer network consent and formal agreements will be required from UU at an early stage.



Figure 3: Preliminary Proposed Drainage Plan (Betts Hydro, 2021)

* This drawing is not a drainage 'design' it is a preliminary drainage plan showing existing key sewer location.

Proposed Discharge Rates

- 4.5.7 In accordance with the SuDS Manual (CIRIA) and the Non-Technical Standards for SuDS (March 2015) all sites should endeavour to achieve as close to pre-development greenfield rates as is viable. Based on the development area the pre-development greenfield rate (QBar) is calculated to be 6.1l/s. This discharge rate will need to be split between two outfalls given the development proposals. Where outfall to the public

surface water sewer is required, UU require a more restrictive discharge rate of 5.0l/s per connection. Detailed design will confirm at a later stage the feasibility and will determine with accuracy the discharge rates of run-off for each connection.

- 4.5.8 Restricting the rate of discharge will generate a requirement to provide onsite stormwater storage for the extreme rainfall events. The stormwater storage figures quoted in Table 3 (Appendix K) are estimates only. Detailed design will determine with accuracy the attenuation requirements.

Impermeable Area (0.23ha)	1 In 1 Year	1 In 30 Year	1 In 100 Year + 40% CC
Restricted Run-Off Rate	6.1l/s	6.1l/s	6.1l/s
Estimated Stormwater Storage Volume	10cu.m-24cu.m	43cu.m-66cu.m	97cu.m-141cu.m

Table 3: Estimated Stormwater Storage Requirements (Betts Hydro, 2021)

- 4.5.9 It would be beneficial to implement SuDS where at all feasible, to provide water quality benefits and assist with the required onsite attenuation, subject to ground investigation and a detailed levels review. SuDS features such as permeable surfaces on private driveways will also allow the first 5mm of rainfall to be dealt with at source as identified in the SuDS Manual (CIRIA 753).

4.6 Climate Change

- 4.6.1 There are indications that the climate in the UK is changing significantly, and it is widely believed that the nature of climate change will vary greatly by region. Current opinion indicates the likelihood that future climate change would produce more frequent short duration and high intensity rainfall events with the addition of more frequent periods of long duration rainfall. It is believed that the impact of climate change means there is likely to be a long-term increase in the average sea levels, with an expectation that sea levels will rise gradually. An increase in flood water levels means that future flooding events will occur more frequently and will have a greater impact.
- 4.6.2 In light of the future uncertainties Climate Change should be accounted for within the design of all new developments. The recently published Environment Agency document 'Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities' supersedes Defra's policy statement on Flood Risk and Coastal Erosion Risk Management (2009) and should be used for future proposals. Climate change factors have been considered and any increase in the level of flood risk (to the site) from climate change is likely to be related to the increase in rainfall intensity and duration and its impact upon the surface water drainage system. In accordance with the updated Climate Change projections provides estimated changes to rainfall intensity (Table 4) and based on the design life of the development (100yrs) the "total potential change figures for the 2080's" has been utilised.

PROJECTIONS	TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE 2080'S
UPPER END ESTIMATE	40%
CENTRAL CHANGE FACTOR	20%

Table 4: Change to Extreme Rainfall Intensity Compared to 1961-1990 Baseline (Environment Agency, 2016)

5.0 FOUL WATER MANAGEMENT

- 5.1 Review of the UU sewer records identify there to be public sewer infrastructure located onsite. The nearest foul water compatible public sewer is a public combined sewer (825mm dia.) which crosses the wider site (refer to sewer records within Appendix C). As the site is undeveloped there are currently no foul water flows entering the public sewer network.
- 5.2 Given the location of the public sewer assets and the split development proposals, it is recommended that the site has two foul water connections. The development located adjacent to the northern boundary is proposed to connect into the onsite public combined sewer and the development area to located adjacent to the southern boundary is proposed to connect into the public combined sewer located within the B6213 located to the south of site. Early discussion is recommended with UU to establish any further restrictions.
- 5.3 Based on the proposals for the construction of 8no. residential units the approximate peak foul water flows generated by the site has been calculated to be 0.37l/s. This rate is calculated based on 4000 litres per dwelling per 24 hours; the guidance contained within Sewers for Adoption. Detailed design will be required to confirm feasibility of the strategy and to confirm whether a full gravity connection can be achieved. A pre-development enquiry has been sent to UU for an agreement in principle and response was provided outlining UU have no objections to the proposed foul drainage connection point(s) in principle (see Appendix C for correspondence).

6.0 SUMMARY AND CONCLUSIONS

- 6.1 This report has been prepared to support a planning application for land located off Brownhills Close in Bury. Due to the relatively low flood risks identified, the principle focus of this assessment is on the sustainable management of surface water run-off to ensure no increased flood risk results from the development. The surface water discharge options have been assessed in accordance with the sustainable drainage hierarchy.
- 6.2 There are three methods that have been reviewed for the management and discharge of surface water. These may be applied individually or collectively to form a complete strategy and should be applied in the order of priority, discharge via infiltration, discharge to watercourse, discharge to public sewerage system.
- 6.3 Based on the ground conditions identified by the published online datasets, infiltration would not be considered a feasible option for managing surface water run-off generated by future development. To confirm the specific infiltration rates, as these can vary on a site-by-site basis, Soakaway Testing (to BRE365) may need to be commissioned in due course.
- 6.4 As infiltration is not likely to be feasible, this assessment has also considered the alternative options for managing surface water run-off generated. The next method in the sustainable drainage hierarchy is discharge surface water run-off generated by the proposals to a nearby watercourse. The nearest watercourse is the Ordinary Watercourse, which flows within the wider site extent from the western to the eastern boundary. The Ordinary Watercourse is both open channel and culverted through the wider site and ultimately outfalls into Kirklees Brook less than 200m from the site.
- 6.5 The proposals for surface water management at the site will be to mimic the pre-development situation where at all feasible and continue to discharge surface water run-off (at a restricted rate) to the Ordinary Watercourse network. Given that there are two distinct development areas within the wider site there will be a requirement to have two generate surface water systems serving each area.
- 6.6 Where levels and engineering constraints allow the proposals will be to form new formal surface water connections to the Ordinary Watercourse network. Where there are further constraints and two new direct outfalls to the watercourse are not practical, then the proposals would be to utilise the short lengths of existing public surface water sewers which currently cross the site and outfall to the watercourse for conveyance. Consultations with United Utilities has confirmed they would consider split surface water connection into the public surface water sewer (300mm dia.) located within the site boundary at a rate not exceeding 5 l/s at each respective connection point, should a direction connection into the watercourse not be feasible.
- 6.7 Detailed design will need to refine the drainage strategy, based on any agreed sewer diversion works, design engineering constraints and final planning layouts. Given the existing ground levels a gravity solution is anticipated to be practical although this will again need to be confirmed following full review of design levels.

- 6.8 Consent and formal agreement will be required from the Lead Local Flood Authority for any works to the Ordinary Watercourse network, including formal agreements on the proposed rates of discharge. Where works are proposed to the public surface water sewer network consent and formal agreements will be required from UU at an early stage. A pre-development enquiry has been submitted but a response is currently outstanding.
- 6.9 In accordance with the SuDS Manual (CIRIA) and the Non-Technical Standards for SuDS (March 2015) all sites should endeavour to achieve as close to pre-development greenfield rates as is viable. Based on the development area the pre-development greenfield rate (QBar) is calculated to be 6.1l/s. This discharge rate will need to be split between two outfalls given the development proposals. Where outfall to the public surface water sewer is required, confirmation from UU of their requirement for discharge rates should be sought as these may be more restrictive. Detailed design will confirm at a later stage the feasibility and will determine with accuracy the discharge rates of run-off for each connection.
- 6.10 Restricting the rate of discharge will generate a requirement to provide onsite stormwater storage for the extreme rainfall events. It would be beneficial to implement SuDS where at all feasible, to provide water quality benefits and assist with the required onsite attenuation, subject to ground investigation and a detailed levels review. SuDS features such as permeable surfaces on private driveways will still allow the first 5mm of rainfall to be dealt with at source as identified in the SuDS Manual (CIRIA 753).
- 6.11 This Drainage Management Strategy has been prepared in consultation with the relevant interested parties and incorporates their comments where possible. The report is commensurate with the scale and nature of the development proposals and in summary, the development can be considered appropriate in accordance with the Planning Practice Guidance.

7.0 RECOMMENDATIONS

- 7.1 An unnamed Ordinary Watercourse is currently present within the centre of site, flowing from the western to the eastern boundary. The Lead Local Flood Authority (LLFA) will likely require a maintenance easement/offset to be applied from this Ordinary Watercourse into the sites development areas the typical requirement is for a 6-8m no build offset to be included into any future planning proposals. The offset should provide clear, unimpeded access meaning no building, fence line, boundary walls or privately owner areas can be located within the 6-8m of the top of bank (on either side) into the site. The LLFA also recommended that any culverting of watercourses should be kept to a minimum and where practical de-culverting is preferred.
- 7.2 Review of the United Utilities sewer records has identified multiple sewers networks to be present within the site boundary. These will need to be accounted for within any planning layout in the form of a no-build offset. A diversion in some cases may be possible subject to early discussion with UU. Where diversion is not practical then any proposed planning layout will need to allow for the required offset from the centreline of the sewer(s) on both sides. Early discussion with UU is recommended as the offset/easement can vary depending on an asset depth and size.
- 7.3 Any overland flows generated by the development must be carefully controlled. Safe avenues directing overland flow way from any existing and proposed buildings are advised.
- 7.4 To minimise the flood risk to the neighbouring properties it is recommended that the surface water run-off generated by the proposals be managed effectively with the peak rates of run-off being restricted to the equivalent of the pre-development situation (with betterment where required).
- 7.5 Consent and formal agreement will be required from BMBC (who are the Lead Local Flood Authority) for any works to the Ordinary Watercourse network including any Riparian Owners. Consent, formal agreements and the proposed rates of discharge will also be required to be confirmed by UU at an early stage. Consultations with United Utilities has confirmed they would consider split surface water connection into the public surface water sewer (300mm dia.) located within the site boundary at a rate not exceeding 5 l/s at each respective connection point, should a direction connection into the watercourse not be feasible.
- 7.6 The proposed onsite surface water drainage system will need to be sized to contain the 1 in 30yr return period event below ground with exceedance from storm events up to and including the 1 in 100yr return period storm event with an allowance for climate change being contained onsite.
- 7.7 As with any drainage system blockages within either the foul or surface water system have the potential to cause flooding or disruption. It is important that should any drainage systems not be offered for adoption to either UU or BMBC then an appropriate maintenance regime should be scheduled with a suitably qualified management company for these private drainage systems.

BIBLIOGRAPHY & REFERENCES

Adapting to Climate Change: Advice for Flood and Coastal Erosion Risk Management Authorities – Environment Agency/DEFRA 2016

CIRIA 522: Sustainable urban drainage systems – design manual for England and Wales (2000).

CIRIA 523: Sustainable urban drainage systems – best practice manual (2001).

CIRIA 609: Sustainable drainage systems. Hydraulic, structural and water quality advice (2004).

CIRIA 624: Development and flood risk – guidance for the construction industry (2004).

CIRIA 635: Designing for Exceedance in urban drainage: Good practice (2006).

CIRIA 644: Building Greener (2007).

CIRIA 753: The SUDS manual (2015).

Flood Risk to People – Phase 2 (FD2321/TR2), DEFRA and the Environment Agency (2006).

Flood estimation for small catchments: Institute of Hydrology Report No.124, NERC (1994).

Flood Estimation Handbook, Centre for Ecology and Hydrology (1999).

Planning Policy Statement 25: Development and Flood Risk (2006).

Sewers for Adoption 7th Edition, WRc (2012).

National Planning Policy Framework, Ministry of Housing, Communities and Local Government (2018).

Web-based References

Bingmaps – <http://www.bing.com/Maps/>

British Geological Survey – <http://www.bgs.ac.uk/opengeoscience/home.html>

Chronology of British Hydrological Events – www.dundee.ac.uk/

CIRIA – <http://www.ciria.org/>

Cranfield University – <http://www.landis.org.uk/soilscapes/>

Environment Agency – www.environment-agency.gov.uk/

FloodProBE – <http://www.floodprobe.eu/>

Flood Forum – <http://www.floodforum.org.uk/>

Flood London – <http://www.floodlondon.com/>

Google Maps – <http://maps.google.co.uk/>

Streetmap – <http://www.streetmap.co.uk/>

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APPENDIX A: NPPF & PPG EXTRACTS

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14. Meeting the challenge of climate change, flooding and coastal change

148. The planning system should support the transition to a low carbon future in a changing climate, taking full account of flood risk and coastal change. It should help to: shape places in ways that contribute to radical reductions in greenhouse gas emissions, minimise vulnerability and improve resilience; encourage the reuse of existing resources, including the conversion of existing buildings; and support renewable and low carbon energy and associated infrastructure.

Planning for climate change

149. Plans should take a proactive approach to mitigating and adapting to climate change, taking into account the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures⁴⁸. Policies should support appropriate measures to ensure the future resilience of communities and infrastructure to climate change impacts, such as providing space for physical protection measures, or making provision for the possible future relocation of vulnerable development and infrastructure.
150. New development should be planned for in ways that:
- a) avoid increased vulnerability to the range of impacts arising from climate change. When new development is brought forward in areas which are vulnerable, care should be taken to ensure that risks can be managed through suitable adaptation measures, including through the planning of green infrastructure; and
 - b) can help to reduce greenhouse gas emissions, such as through its location, orientation and design. Any local requirements for the sustainability of buildings should reflect the Government's policy for national technical standards.
151. To help increase the use and supply of renewable and low carbon energy and heat, plans should:
- a) provide a positive strategy for energy from these sources, that maximises the potential for suitable development, while ensuring that adverse impacts are addressed satisfactorily (including cumulative landscape and visual impacts);
 - b) consider identifying suitable areas for renewable and low carbon energy sources, and supporting infrastructure, where this would help secure their development; and
 - c) identify opportunities for development to draw its energy supply from decentralised, renewable or low carbon energy supply systems and for co-locating potential heat customers and suppliers.

⁴⁸ In line with the objectives and provisions of the Climate Change Act 2008.

152. Local planning authorities should support community-led initiatives for renewable and low carbon energy, including developments outside areas identified in local plans or other strategic policies that are being taken forward through neighbourhood planning.
153. In determining planning applications, local planning authorities should expect new development to:
- a) comply with any development plan policies on local requirements for decentralised energy supply unless it can be demonstrated by the applicant, having regard to the type of development involved and its design, that this is not feasible or viable; and
 - b) take account of landform, layout, building orientation, massing and landscaping to minimise energy consumption.
154. When determining planning applications for renewable and low carbon development, local planning authorities should:
- a) not require applicants to demonstrate the overall need for renewable or low carbon energy, and recognise that even small-scale projects provide a valuable contribution to cutting greenhouse gas emissions; and
 - b) approve the application if its impacts are (or can be made) acceptable⁴⁹. Once suitable areas for renewable and low carbon energy have been identified in plans, local planning authorities should expect subsequent applications for commercial scale projects outside these areas to demonstrate that the proposed location meets the criteria used in identifying suitable areas.

Planning and flood risk

155. Inappropriate development in areas at risk of flooding should be avoided by directing development away from areas at highest risk (whether existing or future). Where development is necessary in such areas, the development should be made safe for its lifetime without increasing flood risk elsewhere.
156. Strategic policies should be informed by a strategic flood risk assessment, and should manage flood risk from all sources. They should consider cumulative impacts in, or affecting, local areas susceptible to flooding, and take account of advice from the Environment Agency and other relevant flood risk management authorities, such as lead local flood authorities and internal drainage boards.
157. All plans should apply a sequential, risk-based approach to the location of development – taking into account the current and future impacts of climate change

⁴⁹ Except for applications for the repowering of existing wind turbines, a proposed wind energy development involving one or more turbines should not be considered acceptable unless it is in an area identified as suitable for wind energy development in the development plan; and, following consultation, it can be demonstrated that the planning impacts identified by the affected local community have been fully addressed and the proposal has their backing.

– so as to avoid, where possible, flood risk to people and property. They should do this, and manage any residual risk, by:

- a) applying the sequential test and then, if necessary, the exception test as set out below;
- b) safeguarding land from development that is required, or likely to be required, for current or future flood management;
- c) using opportunities provided by new development to reduce the causes and impacts of flooding (where appropriate through the use of natural flood management techniques); and
- d) where climate change is expected to increase flood risk so that some existing development may not be sustainable in the long-term, seeking opportunities to relocate development, including housing, to more sustainable locations.

158. The aim of the sequential test is to steer new development to areas with the lowest risk of flooding. Development should not be allocated or permitted if there are reasonably available sites appropriate for the proposed development in areas with a lower risk of flooding. The strategic flood risk assessment will provide the basis for applying this test. The sequential approach should be used in areas known to be at risk now or in the future from any form of flooding.
159. If it is not possible for development to be located in zones with a lower risk of flooding (taking into account wider sustainable development objectives), the exception test may have to be applied. The need for the exception test will depend on the potential vulnerability of the site and of the development proposed, in line with the Flood Risk Vulnerability Classification set out in national planning guidance.
160. The application of the exception test should be informed by a strategic or site-specific flood risk assessment, depending on whether it is being applied during plan production or at the application stage. For the exception test to be passed it should be demonstrated that:
- a) the development would provide wider sustainability benefits to the community that outweigh the flood risk; and
 - b) the development will be safe for its lifetime taking account of the vulnerability of its users, without increasing flood risk elsewhere, and, where possible, will reduce flood risk overall.
161. Both elements of the exception test should be satisfied for development to be allocated or permitted.
162. Where planning applications come forward on sites allocated in the development plan through the sequential test, applicants need not apply the sequential test again. However, the exception test may need to be reapplied if relevant aspects of the proposal had not been considered when the test was applied at the plan-making stage, or if more recent information about existing or potential flood risk should be taken into account.

163. When determining any planning applications, local planning authorities should ensure that flood risk is not increased elsewhere. Where appropriate, applications should be supported by a site-specific flood-risk assessment⁵⁰. Development should only be allowed in areas at risk of flooding where, in the light of this assessment (and the sequential and exception tests, as applicable) it can be demonstrated that:
- a) within the site, the most vulnerable development is located in areas of lowest flood risk, unless there are overriding reasons to prefer a different location;
 - b) the development is appropriately flood resistant and resilient;
 - c) it incorporates sustainable drainage systems, unless there is clear evidence that this would be inappropriate;
 - d) any residual risk can be safely managed; and
 - e) safe access and escape routes are included where appropriate, as part of an agreed emergency plan.
164. Applications for some minor development and changes of use⁵¹ should not be subject to the sequential or exception tests but should still meet the requirements for site-specific flood risk assessments set out in footnote 50.
165. Major developments should incorporate sustainable drainage systems unless there is clear evidence that this would be inappropriate. The systems used should:
- a) take account of advice from the lead local flood authority;
 - b) have appropriate proposed minimum operational standards;
 - c) have maintenance arrangements in place to ensure an acceptable standard of operation for the lifetime of the development; and
 - d) where possible, provide multifunctional benefits.

Coastal change

166. In coastal areas, planning policies and decisions should take account of the UK Marine Policy Statement and marine plans. Integrated Coastal Zone Management should be pursued across local authority and land/sea boundaries, to ensure effective alignment of the terrestrial and marine planning regimes.

⁵⁰ A site-specific flood risk assessment should be provided for all development in Flood Zones 2 and 3. In Flood Zone 1, an assessment should accompany all proposals involving: sites of 1 hectare or more; land which has been identified by the Environment Agency as having critical drainage problems; land identified in a strategic flood risk assessment as being at increased flood risk in future; or land that may be subject to other sources of flooding, where its development would introduce a more vulnerable use.

⁵¹ This includes householder development, small non-residential extensions (with a footprint of less than 250m²) and changes of use; except for changes of use to a caravan, camping or chalet site, or to a mobile home or park home site, where the sequential and exception tests should be applied as appropriate.

167. Plans should reduce risk from coastal change by avoiding inappropriate development in vulnerable areas and not exacerbating the impacts of physical changes to the coast. They should identify as a Coastal Change Management Area any area likely to be affected by physical changes to the coast, and:
- a) be clear as to what development will be appropriate in such areas and in what circumstances; and
 - b) make provision for development and infrastructure that needs to be relocated away from Coastal Change Management Areas.
168. Development in a Coastal Change Management Area will be appropriate only where it is demonstrated that:
- a) it will be safe over its planned lifetime and not have an unacceptable impact on coastal change;
 - b) the character of the coast including designations is not compromised;
 - c) the development provides wider sustainability benefits; and
 - d) the development does not hinder the creation and maintenance of a continuous signed and managed route around the coast⁵².
169. Local planning authorities should limit the planned lifetime of development in a Coastal Change Management Area through temporary permission and restoration conditions, where this is necessary to reduce a potentially unacceptable level of future risk to people and the development.

⁵² As required by the Marine and Coastal Access Act 2009.

Revision date: 06 03 2014

What should be considered if bringing forward a Neighbourhood Development Order/Community Right to Build Order in an area at risk of flooding?

The general approach and requirements for site-specific flood risk assessments should be applied to developments in areas at risk of flooding to be permitted by Neighbourhood Development/ Community Right to Build Orders. This means that for any development proposals:

- in Flood Zone 2 or 3;
- or of at least 1 hectare;
- or in an area that has critical drainage problems (as notified to the local planning authority by the Environment Agency);
- or that may be subject to other sources of flood risk;

a site-specific flood risk assessment should support the draft Order. The flood risk assessment checklist may be helpful in this respect.

Where the neighbourhood planning area is in Flood Zone 2 or 3, or is in an area with critical drainage problems, advice on the scope of the flood risk assessment required should be sought from the Environment Agency. Where the area may be subject to other sources of flooding, it may be helpful to consult other bodies involved in flood risk management, as appropriate.

Where a Neighbourhood Development/Community Right to Build Order is under consideration for a site/area in Flood Zone 2 or 3, which has not been allocated in the development plan through the Sequential Test, and if necessary the Exception Test, it will be necessary for those proposing the development, in having regard to the National Planning Policy Framework's policies on flood risk, to demonstrate why the development cannot reasonably be located in areas of lower flood risk.

In all cases where new development is proposed, the sequential approach to locating development in areas of lower flood risk should still be applied within a neighbourhood planning area.

Neighbourhood Development/Community Right to Build Orders that propose new development that would be;

- contrary to the flood risk vulnerability and flood zone compatibility table (Table 3), or;
- within areas at risk of flooding where sequential testing shows there to be places at lower flood risk which are suitable and reasonably available for the development proposed,

should not be considered appropriate, having regard to the national policies on development and flood risk.

Paragraph: 064 Reference ID: 7-064-20140306

Revision date: 06 03 2014

Flood Zone and flood risk tables

- Table 1: Flood Zones
- Table 2: Flood risk vulnerability classification
- Table 3: Flood risk vulnerability and flood zone 'compatibility'

Table 1: Flood Zones

These Flood Zones refer to the probability of river and sea flooding, ignoring the presence of defences. They are shown on the Environment Agency's Flood Map for Planning (Rivers and Sea (<https://flood-map-for-planning.service.gov.uk/>)), available on the Environment Agency's web site, as indicated in the table below.

Flood Zone	Definition
Zone 1 Low Probability	Land having a less than 1 in 1,000 annual probability of river or sea flooding. (Shown as 'clear' on the Flood Map – all land outside Zones 2 and 3)
Zone 2 Medium Probability	Land having between a 1 in 100 and 1 in 1,000 annual probability of river flooding; or land having between a 1 in 200 and 1 in 1,000 annual probability of sea flooding. (Land shown in light blue on the Flood Map)
Zone 3a High Probability	Land having a 1 in 100 or greater annual probability of river flooding; or Land having a 1 in 200 or greater annual probability of sea flooding. (Land shown in dark blue on the Flood Map)
Zone 3b The Functional Floodplain	This zone comprises land where water has to flow or be stored in times of flood. Local planning authorities should identify in their Strategic Flood Risk Assessments areas of functional floodplain and its boundaries accordingly, in agreement with the Environment Agency. (Not separately distinguished from Zone 3a on the Flood Map)

Note: The Flood Zones shown on the Environment Agency's Flood Map for Planning (Rivers and Sea) do not take account of the possible impacts of climate change and consequent changes in the future probability of flooding. Reference should therefore also be made to the Strategic Flood Risk Assessment when considering location and potential future flood risks to developments and land uses.

Paragraph: 065 Reference ID: 7-065-20140306

Revision date: 06 03 2014

Table 2: Flood risk vulnerability classification

Essential infrastructure

- Essential transport infrastructure (including mass evacuation routes) which has to cross the area at risk.
- Essential utility infrastructure which has to be located in a flood risk area for operational reasons, including electricity generating power stations and grid and primary substations; and water treatment works that need to remain operational in times of flood.
- Wind turbines.

Highly vulnerable

- Police and ambulance stations; fire stations and command centres; telecommunications installations required to be operational during flooding.
- Emergency dispersal points.
- Basement dwellings.
- Caravans, mobile homes and park homes intended for permanent residential use.
- Installations requiring hazardous substances consent. (Where there is a demonstrable need to locate such installations for bulk storage of materials with port or other similar facilities, or such installations with energy infrastructure or carbon capture and storage installations, that require coastal or water-side locations, or need to be located in other high flood risk areas, in these instances the facilities should be classified as 'Essential Infrastructure').

More vulnerable

- Hospitals
- Residential institutions such as residential care homes, children's homes, social services homes, prisons and hostels.
- Buildings used for dwelling houses, student halls of residence, drinking establishments, nightclubs and hotels.
- Non-residential uses for health services, nurseries and educational establishments.
- Landfill* and sites used for waste management facilities for hazardous waste.
- Sites used for holiday or short-let caravans and camping, subject to a specific warning and evacuation plan.

Less vulnerable

- Police, ambulance and fire stations which are not required to be operational during flooding.
- Buildings used for shops; financial, professional and other services; restaurants, cafes and hot food takeaways; offices; general industry, storage and distribution; non-residential institutions not included in the 'more vulnerable' class; and assembly and leisure.
- Land and buildings used for agriculture and forestry.
- Waste treatment (except landfill* and hazardous waste facilities).
- Minerals working and processing (except for sand and gravel working).
- Water treatment works which do not need to remain operational during times of flood.
- Sewage treatment works, if adequate measures to control pollution and manage sewage during flooding events are in place.

Water-compatible development

- Flood control infrastructure.
- Water transmission infrastructure and pumping stations.
- Sewage transmission infrastructure and pumping stations.
- Sand and gravel working.
- Docks, marinas and wharves.
- Navigation facilities.
- Ministry of Defence defence installations.
- Ship building, repairing and dismantling, dockside fish processing and refrigeration and compatible activities requiring a waterside location.
- Water-based recreation (excluding sleeping accommodation).
- Lifeguard and coastguard stations.
- Amenity open space, nature conservation and biodiversity, outdoor sports and recreation and essential facilities such as changing rooms.
- Essential ancillary sleeping or residential accommodation for staff required by uses in this category, subject to a specific warning and evacuation plan.

* " " Landfill is as defined in Schedule 10 of the Environmental Permitting (England and Wales) Regulations 2010 (<http://www.legislation.gov.uk/ukxi/2010/675/schedule/10/made>).

Paragraph: 066 Reference ID: 7-066-20140306

Revision date: 06 03 2014

Table 3: Flood risk vulnerability and flood zone 'compatibility'

Table 3: flood risk vulnerability and flood zone 'compatibility'

(https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/575184/Table_3_-_Flood_risk_vulnerability_and_flood_zone__compatibility_.pdf) (PDF, 58.1KB, 1 page)

Key:

✓ Development is appropriate

✗ Development should not be permitted.

Notes to table 3:

- This table does not show the application of the Sequential Test which should be applied first to guide development to Flood Zone 1, then Zone 2, and then Zone 3; nor does it reflect the need to avoid flood risk from sources other than rivers and the sea;
- The Sequential and Exception Tests do not need to be applied to minor developments and changes of use, except for a change of use to a caravan, camping or chalet site, or to a mobile home or park home site;
- Some developments may contain different elements of vulnerability and the highest vulnerability category should be used, unless the development is considered in its component parts.

† In Flood Zone 3a essential infrastructure should be designed and constructed to remain operational and safe in times of flood.

* * * In Flood Zone 3b (functional floodplain) essential infrastructure that has to be there and has passed the Exception Test, and water-compatible uses, should be designed and constructed to:

- remain operational and safe for users in times of flood;
- result in no net loss of floodplain storage;
- not impede water flows and not increase flood risk elsewhere.

Paragraph: 067 Reference ID: 7-067-20140306

Revision date: 06 03 2014

Site-specific flood risk assessment: Checklist**1 - Development site and location**

You can use this section to describe the site you are proposing to develop. It would be helpful to include, or make reference to, a location map which clearly indicates the development site.

- Where is the development site located? (eg postal address or national grid reference)
- What is the current use of the site? (eg undeveloped land, housing, shops, offices)
- Which Flood Zone (for river or sea flooding) is the site within? (ie Flood Zone 1, Flood Zone 2, Flood Zone 3). As a first step, you should check the Flood Map for Planning (<http://apps.environment-agency.gov.uk/wiyby/37837.aspx>) (Rivers and Sea). It is also a good idea to check the Strategic Flood Risk Assessment for the area available from the local planning authority.

2 - Development proposals

APPENDIX B: EA INFORMATION & CORRESPONDENCE

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Megan Berry

From: GMMC Info Requests <InfoRequests.GMMC@environment-agency.gov.uk>
Sent: 10 September 2020 14:58
To: Megan Berry
Subject: GMMC182889AB Response attached from the Environment Agency
Attachments: GMMC182889AB - DFM.PDF; GMMC182889AB - Table.pdf

Follow Up Flag: Follow up
Flag Status: Flagged

Dear Megan,

Thank you for your enquiry which was received on 27/8/20.

We respond to requests under the Freedom of Information Act 2000 and Environmental Information Regulations 2004.

I enclose the Product 4.

We do not hold 2D data for this model.

Defences - There are no flood defences in the vicinity of the site.

Historic - We have no records of flooding affecting the site. However, this does not mean flooding has not occurred in the past or that it will not flood in future. We recommend that you also contact United Utilities and Bury Council who may hold additional information (the former especially in relation to sewer flooding).

Regarding your request for modelling data, at this time we cannot provide that data due to COVID 19 working restrictions. However we are working on 'restarting' this activity in October with new procedures in place. Your enquiry has been logged and so we will have a record of the request but will not action unless we hear back from you after October 1st 2020. If we don't hear from you after that time we will assume the request can be considered complete. Please only re-request if the data is needed urgently.

Please be aware you can check your risk of flooding on our external website <https://flood-warning-information.service.gov.uk/long-term-flood-risk/>

Here are some useful links below:

<https://www.gov.uk/guidance/flood-risk-assessment-local-planning-authorities>

<https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances>

Please refer to the [Open Government Licence](#) which explains the permitted use of this information.

Please get in touch if you have any further queries or contact us within two months if you'd like us to review the information we have sent.

Kind regards,

Anne Ball
Customer and Engagement Officer
Greater Manchester, Merseyside and Cheshire
External: 020 302 51232

Mobile: 07769285094

Email: InfoRequests.gmmc@environment-agency.gov.uk



From: Megan Berry [<mailto:meganberry@betts-associates.co.uk>]

Sent: 27 August 2020 15:37

To: GMMC Info Requests <InfoRequests.GMMC@environment-agency.gov.uk>

Subject: GMMC182889AB Product 4,5,6 & 7

F.A.O Flood Risk, Drainage and/or Planning department

To whom it may concern,

Brownhills Close, Tottington, Bury

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the site above (see location plan attached), including details of historical sewer/watercourse/surface water flooding; this would be greatly appreciated. If there are any specific requirements that you require in a scope of works for this site please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards

Megan Berry BSc(Hons) GradCIWEM
Graduate Flood Risk Analyst

BETTS HYDRO

Consulting Engineers

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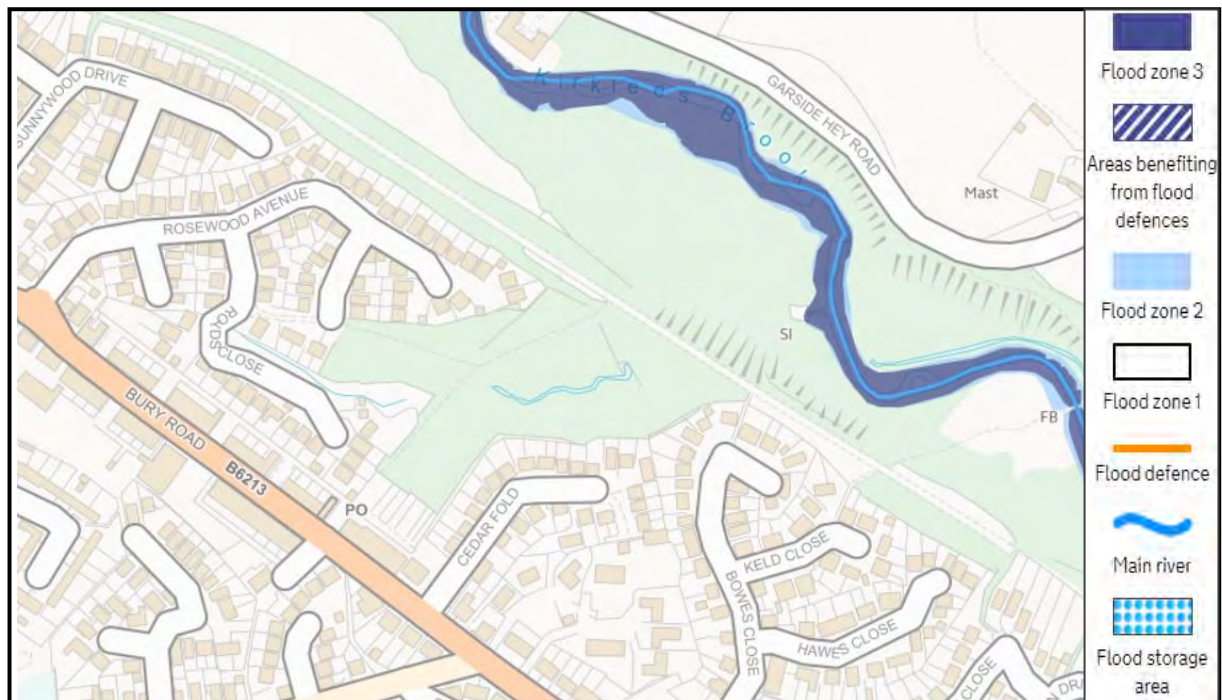
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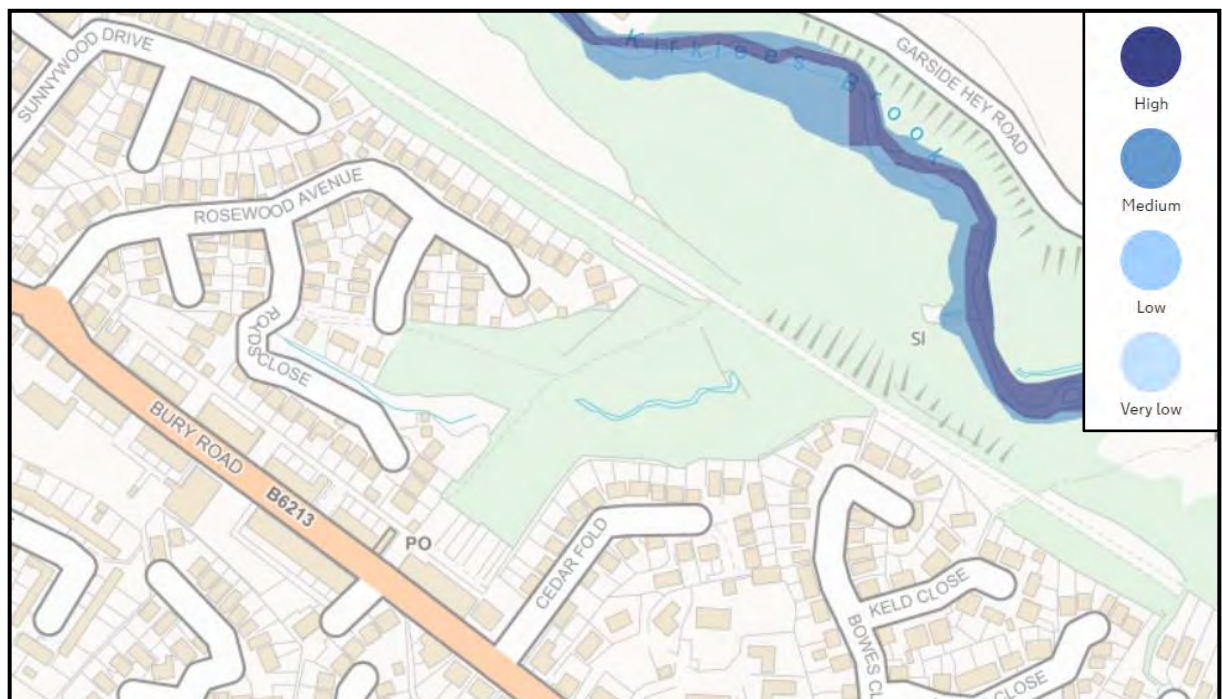
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Flood Map for Planning



Long Term Flood Risk – Rivers or Sea



NATIONAL FLOOD MAPPING

Long Term Flood Risk – Surface Water



Long Term Flood Risk - Reservoirs





DO NOT SCALE

 Site Outline

 Surface Water_Extent_1in30

 Surface Water_Extent_1in100

 Surface Water_Extent_1in1000

Proposed Planning Layout

Google Satellite

REV	DATE	BY	DESCRIPTION	CHK
A	28/8/20	MB	PRELIMINARY FOR ISSUE	

DRAWING STATUS:



BETTS HYDRO
CONSULTING ENGINEERS

Unit 6, Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire CH5 2LY
Tel: 01244 288178 enquiries@betts-associates.co.uk

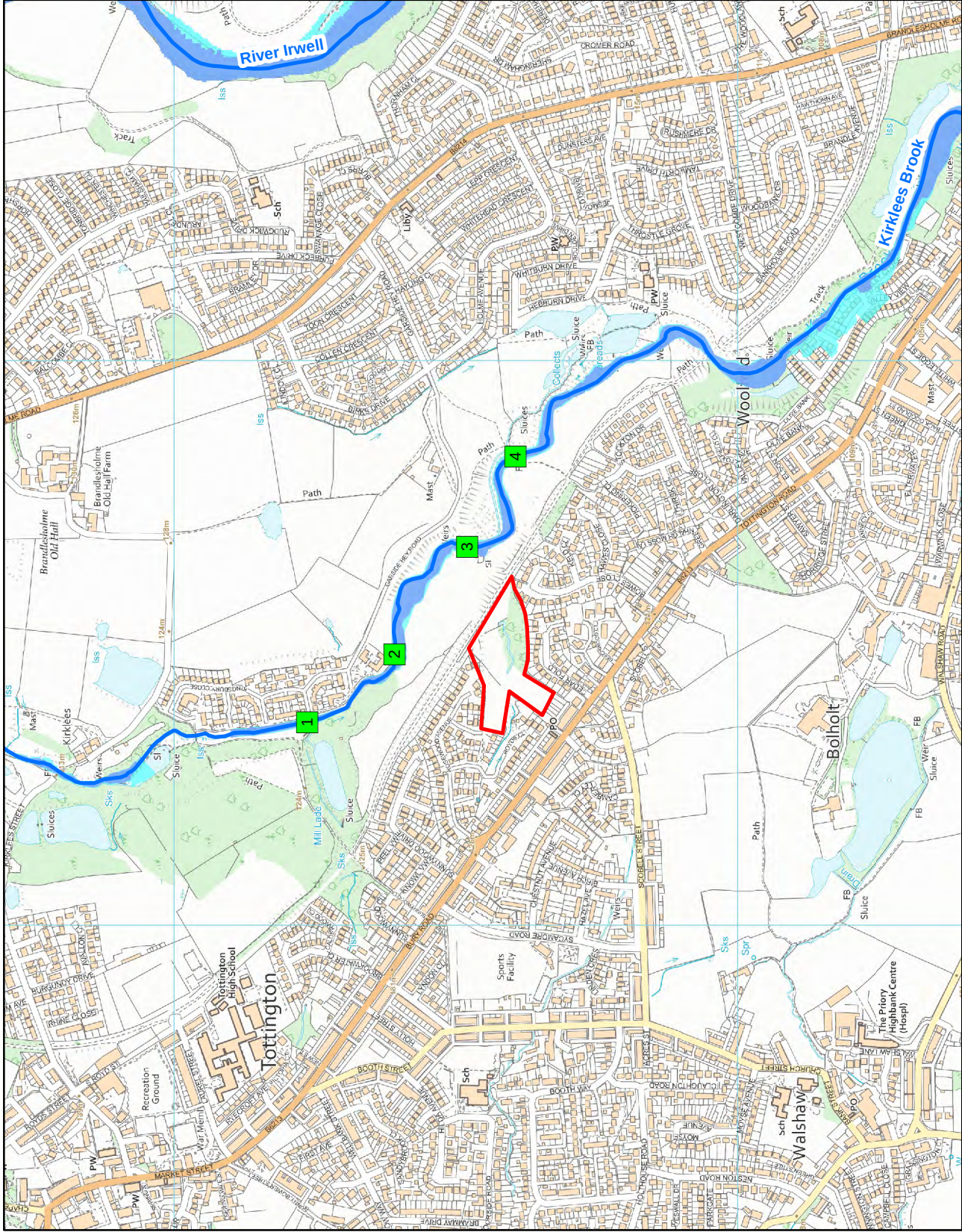


Dickens Property Group

PROJECT:
**BROWNSHILL CLOSE
TOTTINGTON
BURY**

TITLE:
**SURFACE WATER
FLOOD RISK WITH
PLANNING LAYOUT OVERLAY**

DATE: 28/8/20	SCALE @ SIZE: 1:725@A3	DRAWN: MB	CHECKED: KW
PROJECT No: HYD543	DRAWING No: 100	REV: A	



1:10,001

N

Legend

- Site Location
- Model Measurements
- Main River
- Flood Zone 3
- Flood Zone 2

Map Reference	Model Node Reference	Easting	Northing	Data	Undefended		
					1 % AEP (1 in 100 year)	1 % AEP (1 in 100 year) + 35% increase in flow	1 % AEP (1 in 100 year) + 70% increase in flow
1	ea013_Kirklees2008_KIRK01_2604	378361	412766	Modelled Water Level (m aodN) Modelled Flow (cumecs)	105.37 12.50	105.56 16.88	105.73 21.25
2	ea013_Kirklees2008_KIRK01_2400	378488	412596	Modelled Water Level (m aodN) Modelled Flow (cumecs)	102.01 14.20	102.21 19.17	102.38 24.14
3	ea013_Kirklees2008_KIRK01_2140	378663	412479	Modelled Water Level (m aodN) Modelled Flow (cumecs)	98.02 14.20	98.29 19.17	98.51 24.14
4	ea013_Kirklees2008_KIRK01_1884	378828	412396	Modelled Water Level (m aodN) Modelled Flow (cumecs)	95.66 14.20	96.02 19.17	97.52 24.14

Model data taken from Kirklees Brook 2008 Study
AEP - Annual Exceedence Probability
m aodN - metres above ordnance datum Newlyn
cumecs - cubic metres per second

Notes:

*Climate Change Scenario - 35% and 70% increases in flow calculated for the 2080's (2070 - 2115). Please see <https://www.gov.uk/guidance/flood-risk-assessments-climate-change-allowances> for more information regarding the new climate change guidance. The location of the site and the type (vulnerability) of development determine the climate change allowances to consider in any flood risk assessment.

APPENDIX C: UU CORRESPONDENCE

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Kind regards,
Dafydd



Dafydd Bailey
Developer Engineer
Developer Services & Metering
Customer Services
M: 07464907595
unitedutilities.com

From: Megan Berry [mailto:meganberry@betts-associates.co.uk]
Sent: 30 June 2021 09:48
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: RE: Pre-Development Sewer Enquiry - Brownhills Close in Tottington, Bury (4200041028)

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

Good Morning,

Thank you for your response.

The proposals on this site for surface water have changed slightly.

It is proposed that the development site connects into the onsite public surface water sewer (939mm dia), which is shown to outfall into the onsite Ordinary Watercourse. The proposals will be for two separate connections given the planning layout at a restricted rate of 5l/s per connection, as shown within the proposed drainage plan.

Please can UU provide comment on whether they would find this acceptable?

Kind Regards

Megan Berry BSc(Hons) MCIWEM
Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

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CIVIL | STRUCTURAL | GEO-ENVIRONMENTAL | HYDROLOGY | FLOOD RISK MANAGEMENT
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From: Wastewater Developer Services

Sent: 30 June 2021 09:40

To: Megan Berry

Cc: Wastewater Developer Services

Subject: Pre-Development Sewer Enquiry - Brownhills Close in Tottington, Bury (4200041028)

Hi Megan,

Many thanks for the pre-development enquiry. Please find our response below for convenience.

Pre Development Enquiry for: 35 no. dwellings on land off Brownhills Close, Tottington, Bury UU Reference Number: 4200041028

For future reference we now have a new wastewater pre-development enquiry form designed to be easier and more user friendly which is available on our website via the following link:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/wastewater-pre-dev/>

We have carried out an assessment of your application which is based on the information provided. This pre-development advice on your drainage strategy will be valid for 12 months. Your drainage strategy will need to be reviewed by other competent authorities as part of the planning process, and we advise that you carry out the necessary site investigations to confirm the viability of your proposals.

If your investigations require access to our public sewer network, we ask that you contact our network engineers with a request for an access certificate via our main contact telephone number 0345 3723223 or refer to the link below:

<https://www.unitedutilities.com/builders-developers/working-near-our-assets/>

Foul Water

We note foul water flows are proposed to discharge into the 825mm combined public sewer crossing the site, with multiple point of connection possibly being required (subject to detailed design). We have no objection to the proposed foul drainage connection point(s) in principle.

If you are able to identify an alternative, more suitable point of discharge, we request that you contact us at your earliest convenience so that we can assess suitability.

Surface Water

All surface water flow from the proposed development should drain in-line with the drainage hierarchy, as outlined in Paragraph 80, (Reference ID: 7-080-20150323), of the National Planning Practice Guidance. We also recommend you prioritise the use of multi-functional sustainable drainage systems for the management of surface water in accordance with national planning policy.

Generally, the aim should be to discharge surface run off as high up the following hierarchy of drainage options as reasonably practicable.

This is outlined as follows, in order of priority:

- 1. into the ground (infiltration);**
- 2. to a surface waterbody;**
- 3. to a surface water sewer or highway drain;**
- 4. to a combined sewer.**

For guidance, The North West SuDS Pro-Forma provides information on the appropriate evidence required at each stage of the hierarchy, to demonstrate how each level has been discounted.

The Lead Local Flood Authority has responsibility for all surface water drainage concerns and their input to your proposal is critical. You should also consider whether it is necessary to discuss your proposal with the Environment Agency, or Internal Drainage Board (if operating in your area).

The Local Planning Authority are the determining authority for any application for planning permission and the appropriate authority for determining cost viability of a proposed drainage scheme, such assessments are outside of the jurisdiction of United Utilities.

Infiltration

Surface water runoff generated from this development should discharge to the ground via infiltration system where feasible.

A detailed evidence based feasibility assessment must be carried out in line with Chapter 25 of the CIRIA SuDS Manual 2015 to determine whether infiltration is a suitable method of surface water disposal.

Particular attention must be paid to Ground Water Source Protection Zones to ensure that the risk of pollution to these valuable resources is not compromised. Details can be obtained from the government website:

<https://www.gov.uk/guidance/groundwater-source-protection-zones-spzs#find-groundwater-spzs>

If your site is in a Groundwater Source Protection Zone, you should have regard to the Environment Agency's approach to Groundwater Protection. Information on this is available via the link below:

<https://www.gov.uk/government/publications/groundwater-protection-position-statements>

Please note that such a location could have implications for the principle of your development and the need for additional mitigating measures to protect the groundwater environment and public water supply in the detailed design of your site.

Waterbody

If an evidence based assessment has been carried out and confirms that infiltration is not feasible, we recommend that you contact the Lead Local Flood Authority and/ or Environment Agency to discuss a point of discharge to the watercourse located within the site boundary.

We would encourage you to identify and engage with any third party landowner and riparian owner to agree access and discharge rights to the water body if this is not in your ownership.

Highway Drainage

We acknowledge a surface water connection will be sought into the watercourse located within the site boundary should percolation tests fail.

Public Sewer

We acknowledge a surface water connection will be sought into the watercourse located within the site boundary should percolation tests fail.

Levels

For low-lying sites, (where the ground level of the site or the level of a basement is below the ground level at the point where the drainage connects to the public sewer), care should be taken to ensure that the property is not at increased risk of flooding. If these circumstances exist, we recommend that you contact us to discuss further. It could affect the detailed design of your site and result in the need to incorporate appropriate mitigating measures in your drainage scheme.

Land drainage / Overland flows / track drainage

United Utilities have no obligation, and furthermore we do not accept land drainage, overland flows or track drainage into the public sewerage network under any circumstances

Sewer Adoptions

Please see below guidance should you intend to put the sewers forward for adoption (including any SuDS components that can come within the meaning of a sewer).

United Utilities assess adoption applications based on the current Design & Construction Guidance and local practices which have now replaced 'Sewers For Adoption 6th Edition'.

We recommend that you submit a pre design assessment to the sewer adoption mailbox (SewerAdoptions@uuplc.co.uk) stating pre design assessment in the title

Please refer to links below to obtain further guidance:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-adoptions/>

Site drainage must be designed in accordance with Building Regulations, National Planning Policy, and local flood authority guidelines, we would recommend that you speak and make suitable agreements with the relevant statutory bodies.

If you intend to put forward your wastewater assets for adoption by United Utilities, the proposed detail design will be subject to a technical appraisal by an Adoption Engineer as we need to be sure that the proposals meets the requirements set out in the Design & Construction Guidance. The proposed design should give consideration to long term operability and give United Utilities a safe and cost effective proposal for the lifetime of the assets. In these cases, we strongly recommend that no construction commences until the detailed drainage design, submitted as part of the Section 104 application, has been assessed and accepted in writing by United Utilities. Any work carried out prior to the technical assessment being approved is done entirely at the developer's own risk and could be subject to change.

Codes For Adoption

The new Codes for Adoption are outlined on the Water UK Website. The link below takes you to their webpage:

<https://www.water.org.uk/technical-guidance/developers-services/codes-for-adoption/>

A free copy of the new Design & Construction Guidance can be downloaded via the link below:

<https://www.water.org.uk/wp-content/uploads/2020/03/SSG-App-C-Des-Con-Guide-v-2-100320-C.pdf>

Sustainable Drainage Systems (SuDS)

SuDS should be designed in accordance with the CIRIA SuDS manual (C753):

If you need advice on any site proposals which incorporate open SuDS features either that are to be offered for adoption or that interact with a traditional adoptable piped network you can complete the form below and we will be in touch within 2 weeks to discuss the proposals further.

[Pre Design Enquiry.](#)

Existing Wastewater Assets Crossing the Site

We have significant assets crossing this site that cannot realistically be diverted. We would ask that you obtain a copy of our asset data records from your provider and plan your development around them. We will require unrestricted access to the sewer crossings for maintenance purposes, we would ask that you maintain a minimum clearance of 6m which is measured 3m from the centre line of the pipe unless there happens to be a formal easement agreement in place, in which case the specified easement width would apply. If any work is required that may impart vibration into the ground we would ask that you contact us for further advice

Please refer to the link below to obtain full details of the processes involved with sewer diversions:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-diversions/>

Existing Water Assets Crossing the Site

It is the developer responsibility to identify utilities on-site. Where clean water assets are shown on our records, we recommend that you contact our Water Pre-Development Team, via the following email address:

DeveloperServicesWater@uuplc.co.uk. Further information for this service can be found on our website via the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/pre-development/water-pre-dev/>

Connection Application

Although we may discuss and agree discharge points and rates in principle, please be aware that you will have to apply for a formal sewer connection. This is so that we can assess the method of construction, Health & Safety requirements and to ultimately inspect the connection when it is made. Details of the application process and the form itself can be obtained from our website by following the link below:

<https://www.unitedutilities.com/builders-developers/larger-developments/wastewater/sewer-connections/>

We recommend that the detailed design should confirm the locations of all utilities in the area and ensure that any proposed drainage solution considers routing and clash checks where required.

If we can be of any further assistance please don't hesitate to contact us further.

Kind regards,
Dafydd



Dafydd Bailey
Developer Engineer
Developer Services & Metering
Customer Services
M: 07464907595
[unitedutilities.com](https://www.unitedutilities.com)

From: Megan Berry [<mailto:meganberry@betts-associates.co.uk>]
Sent: 22 June 2021 10:57
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Pre-Development Sewer Enquiry - Brownhills Close in Tottington, Bury

EXTERNAL EMAIL This email originated outside of the organisation. Do not click links or open attachments unless you recognise the sender and know the content is safe.

To Whom It May Concern,

We are currently preparing a Drainage Management Strategy to support a planning application on land off Brownhills Close in Tottington, Bury. As part of the preparation, a drainage management strategy has been devised and at this stage we are seeking to begin discussions with UU with regards to the proposed foul water: attached is the pre-application advice form with supporting information as required.

Surface Water:

The sustainable drainage hierarchy notes the primary means of managing surface water is to discharge to ground (infiltrate) where ground conditions allow. The online published soils data suggests infiltration is not likely to provide a feasible drainage solution based on the cohesive nature of the underlying strata. The next method in the drainage hierarchy is discharge surface run-off to the nearest waterbody which is located onsite. There are no proposals to connect surface water into the public sewer network.

Foul Water:

As the development site is currently undeveloped there are no onsite foul water flows generated and therefore no existing foul water connections present. The nearest foul water compatible public sewer is a public combined sewer (825mm dia.) which crosses site.

Given the location of the public sewer asset within the site curtilage, the proposals for foul water management will be to connect foul water flows into the public combined sewer via a new connection, subject to formal consents. It may be that multiple connections are required to serve the proposals to limit the depth on the proposed drainage system.

Based on the proposals for 35 dwellings the approximate peak foul water flows generated by the total development will be 1.62/s. This has been calculated based on 4000 litres per dwelling per 24 hours; the guidance contained within Sewers for Adoption (SfA). Detailed design needs to confirm the specific drainage details. We are ultimately seeking to identify United Utilities preferred point of connection and to confirm any constraints. It is acknowledged that offsite work will likely be required to achieve connection into the public sewer network.

Hopefully the summary above and the attached are of assistance and allow agreement in principle to be given, do not hesitate to contact me on the details below should you require any further assistance.

Kind Regards

Megan Berry BSc(Hons) MCIWEM
Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

Old Marsh Farm Barns, Welsh Road, Sealand, Flintshire, CH5 2LY
Chester +44 (0)1244 289041

meganberry@betts-associates.co.uk

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Megan Berry

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 28 August 2020 10:44
To: Megan Berry
Subject: Sewer Flood Risk - UU Ref. 4200033371

Good Morning Megan,

Thank you for contacting United Utilities.

I can confirm that we do have current records of sewer flooding within the vicinity of the proposed development.

Please note that United Utilities Water Limited (Uuw) can only record and check flooding events which are reported to us and we have to comply with our Regulators instructions on the qualification of flooding events to place on the register.

Our response does not include:

- any sewer flooding events caused by blockages or collapses which are the result of third party actions, natural events or other actions over which Uuw has no control and not a facet of sewer capacity; or
- any historical sewer flooding events that have been removed from the register as a result of investment in our infrastructure.

As with all development sites, we recommend you liaise with our water and wastewater engineers by contacting our Developer Services team so the details of your development proposal can be considered further. Details can be found at the following link.

<https://www.unitedutilities.com/services/builders-developers/>

Should you require any further information please do not hesitate to contact me.

Kind regards,



Louise Dack
Customer Advisor Advanced
Developer Services & Metering
Customer Services
T: 01925 233063 (33063 internal)
[unitedutilities.com](https://www.unitedutilities.com)

Did you know we now have a live chat facility available to you Mon to Friday 8 -5pm. You just click on the orange live chat box on our webpage and one of our advisors will be ready to chat to you and help you with your enquiry <https://www.unitedutilities.com/builders-developers/> or you can email us at WastewaterDeveloperServices@uuplc.co.uk

From: Megan Berry [mailto:meganberry@betts-associates.co.uk]
Sent: 27 August 2020 15:37
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Sewer Flood Risk

F.A.O Flood Risk, Drainage and/or Planning department

To whom it may concern,

Brownhills Close, Tottington, Bury

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the site above (see location plan attached), including details of historical sewer/watercourse/surface water flooding; this would be greatly appreciated. If there are any specific requirements that you require in a scope of works for this site please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards

Megan Berry BSc(Hons) GradCIWEM
Graduate Flood Risk Analyst

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Betts-Associates

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Welsh Road,
Sealand, Flintshire
CH5 2LY**

FAO:

How to contact us:

**United Utilities Water Limited
Property Searches
Haweswater House
Lingley Mere Business Park
Great Sankey
Warrington
WA5 3LP**

Telephone: 0370 7510101

E-mail: propertysearches@uuplc.co.uk

**Your Ref: HYD543
Our Ref: UUPS-ORD-191000
Date: 05/09/2020**

Dear Sirs

Location: 1 CEDAR FOLD, TOTTINGTON, BURY, BL8 3GG

I acknowledge with thanks your request dated 28/08/2020 for information on the location of our services.

Please find enclosed plans showing the approximate position of United Utilities' apparatus known to be in the vicinity of this site.

The enclosed plans are being provided to you subject to the United Utilities terms and conditions for both the wastewater and water distribution plans which are shown attached.

If you are planning works anywhere in the North West, please read United Utilities' access statement before you start work to check how it will affect our network. <http://www.unitedutilities.com/work-near-asset.aspx>.

I trust the above meets with your requirements and look forward to hearing from you should you need anything further.

If you have any queries regarding this matter please [contact us](#).

Yours Faithfully,



Karen McCormack
Property Searches Manager

TERMS AND CONDITIONS - WASTEWATER AND WATER DISTRIBUTION PLANS

These provisions apply to the public sewerage, water distribution and telemetry systems (including sewers which are the subject of an agreement under Section 104 of the Water Industry Act 1991 and mains installed in accordance with the agreement for the self construction of water mains) (UUWL apparatus) of United Utilities Water Limited "(UUWL)".

TERMS AND CONDITIONS:

- This Map and any information supplied with it is issued subject to the provisions contained below, to the exclusion of all others and no party relies upon any representation, warranty, collateral contract or other assurance of any person (whether party to this agreement or not) that is not set out in this agreement or the documents referred to in it.
- This Map and any information supplied with it is provided for general guidance only and no representation, undertaking or warranty as to its accuracy, completeness or being up to date is given or implied.
- In particular, the position and depth of any UUWL apparatus shown on the Map are approximate only. UUWL strongly recommends that a comprehensive survey is undertaken in addition to reviewing this Map to determine and ensure the precise location of any UUWL apparatus. The exact location, positions and depths should be obtained by excavation trial holes.
- The location and position of private drains, private sewers and service pipes to properties are not normally shown on this Map but their presence must be anticipated and accounted for and you are strongly advised to carry out your own further enquiries and investigations in order to locate the same.
- The position and depth of UUWL apparatus is subject to change and therefore this Map is issued subject to any removal or change in location of the same. The onus is entirely upon you to confirm whether any changes to the Map have been made subsequent to issue and prior to any works being carried out.
- This Map and any information shown on it or provided with it must not be relied upon in the event of any development, construction or other works (including but not limited to any excavations) in the vicinity of UUWL apparatus or for the purpose of determining the suitability of a point of connection to the sewerage or other distribution systems.
- No person or legal entity, including any company shall be relieved from any liability howsoever and whensoever arising for any damage caused to UUWL apparatus by reason of the actual position and/or depths of UUWL apparatus being different from those shown on the Map and any information supplied with it.
- If any provision contained herein is or becomes legally invalid or unenforceable, it will be taken to be severed from the remaining provisions which shall be unaffected and continue in full force and affect.
- This agreement shall be governed by English law and all parties submit to the exclusive jurisdiction of the English courts, save that nothing will prevent UUWL from bringing proceedings in any other competent jurisdiction, whether concurrently or otherwise.

APPENDIX D: LPA/LLFA CORRESPONDENCE

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Megan Berry

From: Megan Berry
Sent: 27 August 2020 15:36
To: 'drainageconsultation@bury.gov.uk'
Subject: Historical Flood Risk Information
Attachments: LOCATION PLAN.pdf

F.A.O Flood Risk, Drainage and/or Planning department

To whom it may concern,

Brownhills Close, Tottington, Bury

Please could you confirm whether you have any information that you feel would be valuable to a Flood Risk Assessment and Drainage Management Strategy for the site above (see location plan attached), including details of historical sewer/watercourse/surface water flooding; this would be greatly appreciated. If there are any specific requirements that you require in a scope of works for this site please can you advise at this stage so that it can be fully incorporated into the proposals at an early stage.

Please do not hesitate to contact me on the details below to discuss further should you require additional information or clarification.

Kind Regards

Megan Berry BSc(Hons) GradCIWEM
Graduate Flood Risk Analyst

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APPENDIX E: LOCATION PLAN

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LOCATION PLAN

Brownhills Close, Tottington, Bury



OS X (Eastings)	378443
OS Y (Northings)	412379
Nearest Post Code	BL8 3GG
Lat (WGS84)	N53:36:27 (53.607520)
Long (WGS84)	W2:19:38 (-2.327273)
Lat, Long	53.607520, -2.327273
Nat Grid	SD784123 / SD7844312379
mX	-259070
mY	7061752