BETTS HYDRO
CONSULTING ENGINEERS

LAND OFF
RADCLIFFE MOOR ROAD
BURY

DRAINAGE MANAGEMENT STRATEGY

For

Westchurch Homes Ltd.
Kennedy House
31 Stamford Street
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Westchurch Homes

SEPTEMBER 2021

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LAND OFF
RADCLIFFE MOOR ROAD
BURY

DRAINAGE MANAGEMENT STRATEGY

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EXECUTIVE SUMMARY

This Drainage Management Strategy was commissioned by Westchurch Homes Limited referred to hereafter as 'the client'. This report has been prepared to support a planning application for development of the land off Radcliffe Moor Road in Bury.

The principle focus of this assessment is on the sustainable management of surface water run-off generated by the development to ensure no increased flood risk results from the proposals in accordance with national and local policy. Surface water run-off management options have been assessed in accordance with the sustainable drainage hierarchy. The first option should be to manage surface water run-off onsite, via an infiltration-based solution. The second option would be to discharge to a nearby watercourse and finally to the sewer network.

Based on the ground conditions identified by the online published datasets, infiltration would not be considered a feasible option for managing surface water run-off generated by future development, based on generally cohesive nature of the underlying strata. As infiltration is not likely to be feasible; this assessment also considered the alternative options. The next method in the sustainable drainage hierarchy is discharge surface water run-off generated by the proposals to a nearby watercourse/waterbody.

Pluvial run-off currently generated by the existing greenfield site would either discharge to ground in low-lying areas (over an extended period) or would flow overland into the ponds located adjacent to the southern boundary of site, given the existing ground levels. An informal dry land drainage ditch has also been observed located adjacent to the south-western boundary of site which flows west and is assumed to convey run-off in extreme rainfall events into Blackshaw Brook (an Environment Agency designated Main River) to the west of site.

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 into the ponds to the south of site. The rate of discharge from the site should mimic that of the existing regime and there will be a requirement to obtain relevant consents for any works to assets outside of the developer's control. Should this not be feasible then the second option would be to discharge surface water run-off into the land drainage ditch located adjacent to the south-western boundary and ultimately to Blackshaw Brook to the west.

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 scale and nature of the development proposals, the proposals are to discharge into the ponds mimicking the existing greenfield regime, Qbar has been calculated to be 11.3 l/s/ha. Given the nature of the proposals it is recommended that permeable surfaces be implemented where feasible within the proposals to allow the first 5mm of rainfall to be dealt with at source and offer water quality improvement as identified in the SuDS Manual.

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.

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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
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

NSRI	National Soil Resources Institute
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.

1.1.2 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). A Drainage Management Strategy (DMS) has been completed and considers the most appropriate drainage management options including the implementation of Sustainable Drainage Systems (SuDS), to ensure there is no increased flood risks as a result of the proposals, in line with national policy.

1.2 Site Context

1.2.1 This DMS has been prepared to support a planning application for the development of four new sports pitches and an associated club house on land off Radcliffe Moor Road in Bury. The site is currently undeveloped and generally falls from the north-eastern to the south-western boundary.

1.3 Consultation

1.3.1 The preparation of this report has been undertaken in consultation with the Environment Agency (EA), United Utilities (UU) and Bury Metropolitan Borough Council (BMBC). Consultation responses can be seen in Appendix B, C and D respectively. The NPPF advises that 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.

2.0 EXISTING SITE LOCATION

2.1 Location

2.1.1 The development site is located off Radcliffe Moor Road in Bury. The Ordnance Survey National Grid Reference (OS NGR) for the site is E: 375544, N: 409104 and the nearest postcode is BL2 6QB (see location plan in Appendix E). The site covers 3.85ha, with Bury New Road to the north and Radcliffe Moor Road to the east. To the south of site is Starmount Lodges and associated ponds/fisheries, and to the west is undeveloped land with Blackshaw Brook beyond, as illustrated in Figure 1.

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

2.2 Existing and Historical Land Use

2.2.1 The site is currently undeveloped and comprises of low-density vegetation, with trees and shrubs along the field boundaries. Historically, the site was utilised for agricultural purposes and no other historical uses have been identified during this assessment.

2.3 Topography

2.3.1 A full topographical survey has been undertaken and included within Appendix F. The topographic survey shows the site generally falls from the north-eastern boundary (at 117.00mAOD) down to the south-western boundary of site (101.00mAOD), as illustrated in Figure 1.

3.0 DEVELOPMENT PROPOSALS

3.1 Nature of the development

3.1.1 The planning application is for the construction of four new sports pitches and an associated club house on the land off Radcliffe Moor Road in Bury. The proposed development will have a new access off Radcliffe Moor Road on the western boundary, as illustrated in the proposed planning layout in Figure 2 (full plans are included in Appendix G).

Figure 2: Proposed Planning Layout (Westchurch Homes, 2021)

3.1.2 The total site covers 6.23ha, however the development area only covers 2.97ha of the total site and is 100% permeable at present. Due to the nature of the development proposals, the impermeable areas of the site will likely increase due to the club house and car parking elements. These impermeable areas equate to 8% of the development area (this equates to 0.25ha). The remaining area onsite will consist of grassed pitches which will remain 100% permeable.

3.1.3 An increase in impermeable areas can lead to an increase in surface water runoff generated by the site given the change in surfacing. This in turn has the potential to result in an increase to flood risk if the additional run-off generated is not suitably dealt with. Therefore, planning policy requires that all new development considers sustainable methods of managing surface water run-off generated by additional impermeable areas.

3.1.4 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 will be utilised where at all feasible for proposed developed areas, to minimise the surface water run-off generated. Detailed design will be required to confirm, subject to ground investigations and detailed levels review.

4.0 SURFACE WATER MANAGEMENT

4.0.1 The total site covers 6.23ha, however, the development area excludes those areas that will remain undeveloped and equates to 2.70ha. The surface water management section focuses on the development area only as the drainage regime for those areas that will remain undeveloped will not be altered by the development. At present the development area is 100% permeable and any natural run-off generated by these areas will run overland towards the existing ponds located adjacent to the southern boundary of site or to the land drainage ditch located within the south-western corner.

Existing Surface Water Management

4.0.2 Further onsite drainage investigation was undertaken by Invek Surveys Ltd in July 2021. Invek Surveys identified that the site informally drains into the existing ponds/fisheries located adjacent to the southern boundary. These ponds/fisheries where then identified to outfall into Blackshaw Brook (an Environment Agency designated Main River) to the west of the site (see drainage plan within Appendix H).

4.0.3 Furthermore, Invek Surveys identified an informal dry land drainage ditch has also been observed located adjacent to the south-western boundary of site which flows west and is assumed to convey run-off in extreme rainfall events into Blackshaw Brook to the west of site. Some parts of the site appear to fall in a south-westerly direction and would therefore result in some natural conveyance in this direction also (full details are included within Appendix H).

4.1 Pre-Development Surface Water Run-off

4.1.1 The peak rates and volumes of run-off have been calculated for the development area only in 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 H).

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
2.97ha	29.3l/s	57.3l/s	70.1l/s	33.7l/s	336.7cu.m	1032.8cu.m

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

4.2 Post Development Surface Water Run-Off

4.2.1 Due to the nature of the development proposals it is understood that the impermeable areas of the site will increase due to the proposals for a new club house building and car park area only. These areas equate to 8% of the development area (this equates to 0.25ha). The unrestricted post-development run-off rates generated by this potential 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
0.25ha	12.5l/s	23.1l/s	41.5l/s

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

4.2.2 Those rates noted in Table 2 are for the potential impermeable areas only, there will also be greenfield rates generated within the remainder of the development area (2.72ha) which needs to be accounted for. In accordance with national and local planning policies it is, necessary to ensure the post-development discharge rates do not exceed the existing greenfield regime where at all practical. The proposals will therefore be to ensure discharge of surface water run-off from the site does not exceed that which currently leaves the site (Table 1).

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. Given there has been no onsite infiltration testing at this time to support this assessment, the ground conditions have been identified based on the online datasets.

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 Mudstone, Siltstone and Sandstone with Devensian tills at superficial level. BGS Borehole data within the area also confirmed the presence of sandstone, mudstone, shales and coals.

4.4.3 The soil factor for the area, as identified on the soils capes published data, is 0.47 (based on the FEH catchment data). This suggests the soils in the region are non-porous (based on a scale of 0.1 to 0.5, with 0.5 being impermeable).

4.4.4 Based on the ground conditions identified by the published online datasets discussed above, infiltration would not be considered a feasible option for formally managing surface water run-off generated by future development. This is based on impermeable/generally cohesive 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 to satisfy the Lead Local Flood Authority or support detailed drainage design elements.

4.5 Discharge to Watercourse/Waterbody

4.5.1 As infiltration is not likely to be feasible (subject to onsite testing), this assessment has also considered the alternative options. The next method in the sustainable drainage hierarchy is discharge surface water run-off generated by the proposals to a nearby watercourse/waterbody.

4.5.2 Further onsite drainage investigation was undertaken by Invek Surveys Ltd in July 2021 and identified that Pluvial run-off currently generated by the existing site would likely convey overland with the current ground levels and discharge into the ponds located adjacent to the southern boundary of site. These ponds/fisheries where then identified to outfall into Blackshaw Brook (an Environment Agency designated Main River) to the west of the site (see drainage plan within Appendix H).

4.0.3 Furthermore, Invek Surveys identified an informal dry land drainage ditch has also been observed located adjacent to the south-western boundary of site which flows west and is assumed to convey run-off in extreme rainfall events into Blackshaw Brook to the west of site. Some parts of the site appear to fall in a south-westerly direction and would therefore result in some natural conveyance in this direction also (full details are included within Appendix H).

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

** This drawing is not a drainage 'design' it is a preliminary drainage strategy. The location and sizes of proposed assets are not to scale or in fixed locations.*

4.5.3 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 into the ponds located adjacent to the southern boundary, as illustrated within Figure 3. There will be a requirement to obtain relevant consents for any works to assets outside of the developer's control.

4.5.4 Detailed design will need to refine the strategy, based on engineering constraints and final layout. Given the existing ground levels a gravity solution is anticipated. In accordance with national and local planning policies it is, necessary to ensure the post-development discharge rates do not exceed the existing greenfield regime where at all practical. The proposals will therefore be to ensure discharge of surface water run-off from the site does not exceed that which currently leaves the site.

4.5.5 Should there be issue with discharging all the site via one connection to the south, then the alternative would be to split the outfalls, taking some of the site to the informal land drainage ditch located adjacent to the south-western boundary. It is also recommended that further drainage investigation of the land drainage ditch is undertaken to identify connectivity into Blackshaw Brook. Consent and formal agreement will be required from the EA for any works to the Main River and from the LLFA (BMBC) for other watercourses.

Proposed Discharge Rates

4.5.6 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 scale and nature of the development proposals, the proposals are to discharge from the site mimicking the existing greenfield regime, Qbar has been calculated to 33.7l/s for the development area which equates to 11.3 l/s/ha. Attenuation will be confirmed at detailed design. Consent and formal agreement will be required from the LLFA (BMBC) for the proposed discharge rates leaving the site.

4.5.7 It would be beneficial to implement SuDS where at all feasible, to provide water quality benefits and assist with any required onsite attenuation, subject to ground investigation and a detailed levels review. Given the nature of the proposals it is recommended that permeable surfaces be implemented where feasible within the proposals to allow the first 5mm of rainfall to be dealt with at source and offer water quality improvement as identified in the SuDS Manual. Detailed design will confirm at a later stage the feasibility of this strategy.

4.6 Discharge to Public Sewer Network

4.6.1 UU sewer records have identified limited public surface water sewers within the vicinity of site suitable for surface water run-off connections. Should infiltration not be feasible then the surface water flows generated are proposed to discharge into the nearest watercourse or waterbody and not the public sewer network.

4.7 Climate Change

4.7.1 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.

4.7.2 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.

4.7.3 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 2050's" has been utilised.

PROJECTIONS	**TOTAL POTENTIAL CHANGE ANTICIPATED FOR THE 2080'S**
Upper End Estimate	10%
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 to the north and south of the site. The nearest foul water compatible public sewer is a public combined sewer (375mm dia.) within Bradley Fold Road located 190m to the south of the site (refer to sewer records within Appendix C).

5.2 As the site is undeveloped there are currently no foul water flows entering the public sewer network. Based on the proposals for the construction of a club house the approximate peak foul water flows generated by the site will need to be calculated based on 4000 litres per dwelling per 24 hours as per the guidance contained within Sewers for Adoption.

5.3 The proposals for foul water management will be to connect foul water flows into the nearest public combined sewer (375mm dia.) within Bradley Fold Road. A new formal connection will be required, subject to formal consent and agreement from UU. Detailed design will also be required to confirm feasibility of the strategy and to confirm whether a full gravity connection can be achieved.

5.4 Early consultation with UU is recommended to identify any additional constraints and their preferred point(s) of connection. A pre-development enquiry has been sent to UU, who have agreed in principle to an unrestricted connection into the public combined sewer (375mm dia.) within Bradley Fold Road located 190m to the south of the site (see correspondence within Appendix C)

6.0 SUMMARY AND CONCLUSIONS

6.1 This report has been prepared to support a planning application for development of the land off Radcliffe Moor Road 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 in accordance with national and local policy.

6.2 Surface water run-off management options have been assessed in accordance with the sustainable drainage hierarchy. The first option should be to manage surface water run-off onsite, via an infiltration-based solution. The second option would be to discharge to a nearby watercourse and finally to the sewer network.

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, based on impermeable nature of the underlying strata. As infiltration is not likely to be feasible; this assessment also considered the alternative options. The next method in the sustainable drainage hierarchy is discharge surface water run-off generated by the proposals to a nearby watercourse.

6.4 Further onsite drainage investigation was undertaken by Invek Surveys Ltd in July 2021 and identified that Pluvial run-off currently generated by the existing site would likely convey overland with the current ground levels and discharge into the ponds located adjacent to the southern boundary of site. These ponds/fisheries where then identified to outfall into Blackshaw Brook (an Environment Agency designated Main River) to the west of the site.

6.5 Furthermore, Invek Surveys identified an informal dry land drainage ditch has also been observed located adjacent to the south-western boundary of site which flows west and is assumed to convey run-off in extreme rainfall events into Blackshaw Brook to the west of site. Some parts of the site appear to fall in a south-westerly direction and would therefore result in some natural conveyance in this direction also (full details are included within Appendix H).

6.6 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 into the ponds located adjacent to the southern boundary. There will be a requirement to obtain relevant consents for any works to assets outside of the developer's control.

6.7 Detailed design will need to refine the strategy, based on engineering constraints and final layout. Given the existing ground levels a gravity solution is anticipated. In accordance with national and local planning policies it is, necessary to ensure the post-development discharge rates do not exceed the existing greenfield regime where at all practical. The proposals will therefore be to ensure discharge of surface water run-off from the site does not exceed that which currently leaves the site.

6.8 Should there be issue with discharging all the site via one connection to the south, then the alternative would be to split the outfalls, taking some of the site to the informal land

drainage ditch located adjacent to the south-western boundary. It is also recommended that further drainage investigation of the land drainage ditch is undertaken to identify connectivity into Blackshaw Brook. Consent and formal agreement will be required from the EA for any works to the Main River and from the Lead Local Flood Authority for other watercourses.

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 scale and nature of the development proposals, the proposals are to discharge from the site mimicking the existing greenfield regime, Qbar has been calculated to 33.7l/s for the development area which equates to 11.3 l/s/ha. Consent and formal agreement will be required from the Lead Local Flood Authority for the proposed discharge rates leaving the site.

6.10 It would be beneficial to implement SuDS where at all feasible, to provide water quality benefits and assist with any required onsite attenuation, subject to ground investigation and a detailed levels review. Given the nature of the proposals it is recommended that permeable surfaces be implemented where feasible within the proposals to allow the first 5mm of rainfall to be dealt with at source and offer water quality improvement as identified in the SuDS Manual. Detailed design will confirm at a later stage the feasibility of this strategy.

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 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.

7.2 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).

7.3 Detailed design will need to refine the strategy, based on engineering constraints and final layout. Given the existing ground levels a gravity solution is anticipated for both foul and surface water flows. Consent and formal agreement will be required from the Environment Agency for any works to the Main River. Any works affecting the ponds to the south will need to be agreed with the Landowner at an early stage. The Lead Local Flood Authority will also need to agree to the proposed rates of discharge.

7.4 It is also recommended that further drainage investigation is undertaken onsite to identify the presence of the assumed land drainage ditch located adjacent to the southern boundary. If the land drainage ditch is present, then a connectivity survey into the Main River to the west of site will need to be undertaken to confirm if surface water run-off from site currently discharges in this way. Should further investigation identify a connection does not exist, a new formal outfall into Blackshaw Brook is proposed: subject to consents and agreements from the relative parties.

7.3 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.

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Google Maps – http://maps.google.co.uk/
Streetmap – http://www.streetmap.co.uk/

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 temperatures[48]. 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.

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[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) acceptable[49]. 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 assessment[50]. 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 use[51] 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.

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[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 250m^2) 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 coast[52].

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/uksi/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.

a. Where is the development site located? (eg postal address or national grid reference)

b. What is the current use of the site? (eg undeveloped land, housing, shops, offices)

c. 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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Hannah Buchanan

From: GMMC Info Requests <InfoRequests.GMMC@environment-agency.gov.uk>
Sent: 25 June 2021 12:21
To: Hannah Buchanan
Subject: GMMC222560CC Response attached from the Environment Agency

Dear Hannah,

Re: Pitch Development, Bury New Road, Little Lever, BL2 6QB

Thank you for your enquiry which was received on 21/6/21.

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

There is currently no detailed modelling data within 2km of your site. The site is in Flood Zone 1 and is near the designated main river, Blackshaw Brook. There is JFLOW available for this, however it cannot be used for a Flood Risk Assessment.

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

From: Hannah Buchanan [mailto:hannahbuchanan@betts-associates.co.uk]
Sent: 21 June 2021 15:39
To: GMMC Info Requests <InfoRequests.GMMC@environment-agency.gov.uk>
Subject: Product 4, 5, 6, & 7

To whom it may concern,

Pitch Development, Bury New Road, Little Lever, BL2 6QB

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 above site (location plan attached), including details of historical flooding and any predicted flood water levels; 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.

Hannah Buchanan BSc
Graduate Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

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

hannahbuchanan@betts-associates.co.uk
www.betts-associates.co.uk

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NATIONAL FLOOD MAPPING

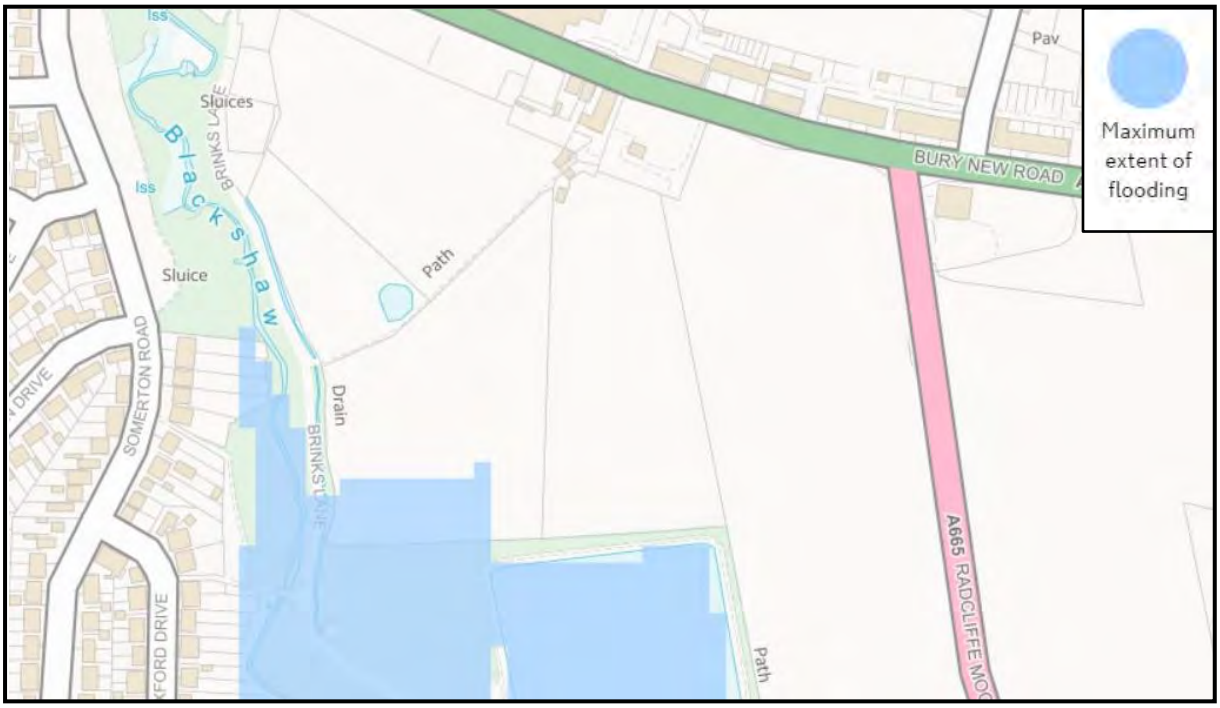
Flood Map for Planning

Long Term Flood Risk – Rivers or Sea

NATIONAL FLOOD MAPPING

Long Term Flood Risk – Surface Water

Long Term Flood Risk - Reservoirs



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APPENDIX C: UU CORRESPONDENCE

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Megan Berry

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 07 July 2021 15:57
To: Megan Berry
Cc: Wastewater Developer Services
Subject: Pre Development Enquiry for : Radcliffe New Road, Little Leaver, BL2 6QB UU reference Number : 4200041205

Good afternoon Megan,

Pre Development Enquiry for: Radcliffe New Road, Little Leaver, BL2 6QB UU Reference Number : 4200041205

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

Foul flow from this site will be allowed to drain into the public foul water/combined sewer system.

Our preferred point of discharge would be to the 375mm diameter public combined sewer within Radcliffe New Road located to the approximately 150m South of your proposed development at an unrestricted rate.

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 approximately 150m West of the proposed site.

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.

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 pubic sewerage network under any circumstances

Sewer Adoptions

If 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

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,

Kind Regards,

Alistair Graham
Wastewater Developer Engineer
Developer Services & Metering
Customer Services
M: 07765941555
unitedutilities.com

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United Utilities Group PLC, Haweswater House, Lingley Mere Business Park, Lingley Green Avenue, Great Sankey,

Hannah Buchanan

From: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Sent: 30 June 2021 11:48
To: Hannah Buchanan
Cc: Wastewater Developer Services
Subject: RE: Sewer Flood Risk Information UUref GENQ 4200041059

Hannah,

Thank you for email.

United Utilities has no record of flooding on or in the vicinity of this site. No record should be taken as there has definitely been no flooding as there may have been flooding that wasn't reported to United Utilities.

There are combined sewer with the vicinity of the proposed site, however we would expect the surface water to go the nearby watercourse in line with the drainage hierarchy.

Please be aware United utilities offer a Wastewater pre-development service were we will work with you to agree your site drainage strategy, points of connection to the wastewater network, and discharge rates. For more information on this service please see our website or use the following link. https://www.unitedutilities.com/builders-developers/pre-development/wastewater-pre-dev/

Kind Regards,

United Utilities
Water for the North West

Alistair Graham
Wastewater Developer Engineer
Developer Services & Metering
Customer Services
M: 07765941555
unitedutilities.com

If you have received a great service today why not tell us?
Visit: unitedutilities.com/wow

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

Coronavirus | Prevent the spread

Wash your hands

Disinfect common surfaces

Practise social distancing

FEVER + COUGH

Stay home if you have symptoms

Click for our message to customers

From: Hannah Buchanan [mailto:hannahbuchanan@betts-associates.co.uk]
Sent: 21 June 2021 15:51
To: Wastewater Developer Services <WastewaterDeveloperServices@uuplc.co.uk>
Subject: Sewer Flood Risk Information

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,

Pitch Development, Bury New Road, Little Lever, BL2 6QB

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 above site (location plan attached), including details of historical flooding and any predicted flood water levels; 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.

Hannah Buchanan BSc
Graduate Flood Risk Analyst

BETTS HYDRO
Consulting Engineers

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

hannahbuchanan@betts-associates.co.uk
www.betts-associates.co.uk

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APPENDIX D: LPA/LLFA CORRESPONDENCE

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Hannah Buchanan

From: Hannah Buchanan
Sent: 21 June 2021 15:46
To: 'drainageconsultation@bury.gov.uk'
Subject: Historic Flood Risk Information
Attachments: LOCATION PLAN.pdf

To whom it may concern,

Pitch Development, Bury New Road, Little Lever, BL2 6QB

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 above site (location plan attached), including details of historical flooding and any predicted flood water levels; 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.

Hannah Buchanan BSc
Graduate Flood Risk Analyst

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APPENDIX E: LOCATION PLAN

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LOCATION PLAN

Pitch Development, Bury New Road, Little Lever, BL2 6QB

OS X (Eastings)	375544
OS Y (Northings)	409104
Nearest Post Code	BL2 6QB
Lat (WGS84)	N53:34:41 (53.577956184792676)
Long (WGS84)	W2:22:15 (-2.3708278560719718)
Lat,Long	53.577956184792676,-2.3708278560719718
Nat Grid	SD755091 / SD7554409104

APPENDIX F: TOPOGRAPHIC SURVEY

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CLIENT:	PROJECT:	DRAWING TITLE:	DATE:
	PROPOSED FOOTBALL PITCHES, LAND SOUTH OF BURY NEW ROAD	EXISTING SITUATION	February 2021
			LAYOUT: ISO A4

APPENDIX G: PROPOSED PLANNING LAYOUT

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COORDINATED STATIONS

STATION	EASTING	NORTHING	LEVEL (m)
GPS1	375765.472	409053.186	119.764
GPS2	375709.145	409063.864	118.668
A	375742.985	408997.753	114.927
B	375751.023	408942.336	112.002
C	375779.317	408814.378	106.401

NOTES:
Copyright in all documents prepared by the architect and any works executed from these documents and drawings, shall unless otherwise agreed, remain the property of the architect
and must not be reproduced by, lent or disclosed to, a third party without the written consent of Good and Tillotson.

DO NOT SCALE OFF THIS DRAWING.
All dimensions to be checked on site and any discrepancies to be referred to the architect before proceeding.

ALL LEVELS TO BE CHECKED ON SITE.
All discrepancies between information shown on the drawings and the information in the specification to be referred to the architect before proceeding.

All component sizes and references to be checked prior to the ordering of materials.

Positions and designation (i.e. combined, surface water or foul) of existing drain runs on site are to be checked / confirmed by the building contractor prior to commencement of any drainage works. Any existing drains, to which additional connections are to be made, are also to be checked as necessary to ensure they are suitable to accommodate additional capacity and the type of effluent being connected.

All relevant boundary positions are to be checked prior to proceeding.

Rev	Revision	Inl.	Date
A	Building and car park layout updated	JLC	03.08.21

Client:

Bolton Wyresdale F.C.

Project:

Proposed New Facility

Location:

On Land At:
Radcliffe Moor Road,
Bolton

Good & Tillotson Chartered Architects

2 The Studios,
318 Chorley Old Road,
Bolton,
BL1 4JU

Tel: 01204 497700

Email : info@goodandtillotson.co.uk
Web: www.goodandtillotson.co.uk

Drawing Title:

Site Layout Plan

G&T Job No:	Scale:	Drawn:	Checked:	Date:
2102	1:500@A1	JC	RPW	16.07.21

Drawing Purpose:	Status:	Revision:
Planning Drawing	S4	A

BIM Project:	Origin:	Zone:	Level:	Type:	Role:	Dwg No:
2102-GTA-00-00-DR-A-1002						

ABBREVIATIONS

AV	AIR VALVE/VENT
BOL	BOLLARD
BB	BELISHA BEACON
BM	BENCH MARK
BL	BED LEVEL
BS	BUS STOP
BT	BRITISH TELECOM
CL	COVER LEVEL
Dil	DILAPIDATED
Dis	DISUSED
EL	EAVES LEVEL
ELE	ELEC JUNCT. BOX
EP	ELECTRICITY POLE
FH	FIRE HYDRANT
FL	FLOOR LEVEL
FOS	FULL OF SEDIMENT
FP	FLAG POLE
G	GULLY
GM	GAS METER
GV	GAS VALVE
IC	INSPECT CHAMBER
IL	INVERT LEVEL
JKW	JAPANESE KNOTT WEED
LH	LAMP HOLE
LP	LAMP POST
NP	NAME PLATE
MH	MANHOLE
PS	POST/SIGN POST
PB	POST BOX
PX	UNKNOWN SERVICE
RE	RODDING EYE
RL	RIDGE LEVEL
RS	ROAD SIGN
ST	STOP TAP
TH	TRIAL HOLE
TL	TRAFFIC LIGHT
TP	TELEGRAPH POLE
TV	CABLE TV BOX
Utl	UNABLE TO LIFT
WM	WATER METER

APPENDIX H: SURFACE WATER RUN-OFF CALCULATIONS

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SURFACE WATER RUN-OFF CALCULATION SHEET

Development	Radcliffe Moor Road, Little Lever
Project No.	HYD633

Revision	A	Completed by	MB
Date	07/07/2021	Checked by	KW

Areas

Total Site	6.233	ha
Development Area[1]	2.970	ha*
Existing Impermeable	0.000	ha
Existing Impermeable[2]	0.000	ha
Existing Pervious	6.233	ha
Existing Pervious[2]	0.000	ha
Proposed total impermeable	0.250	ha*

*Club house and Cark Park Only

Catchment Characteristics

SAAR	1102	mm
SPR	0.51	
BFI	0.377	

i_1	17.9	mm/hr	d_1	25.1	mm
i_{30}	33.3	mm/hr	d_{30}	50.9	mm
i_{100}	42.7	mm/hr	d_{100}	65.4	mm

Run-off Rates

Pre-development

Impermeable ------	1yr	0.0	l/s
	30yr	0.0	l/s
	100yr	0.0	l/s
	50mm/hr[3]	0.0	l/s
Pervious[4] ------	1yr	29.3	l/s
	30yr	57.3	l/s
	100yr	70.1	l/s
	QBar[5]	33.7	l/s
Total ------	1yr	29.3	l/s
	30yr	57.3	l/s
	100yr	70.1	l/s

Post-development (without control)

Impermeable[6] ------	1yr	12.5	l/s
	30yr	23.1	l/s
	100yr+40%CC	41.5	l/s

Volumes

Pre-development

Impermeable ------	1yr	0.0	cu.m
	30yr	0.0	cu.m
	100yr	0.0	cu.m
Pervious[4] ------	1yr	336.7	cu.m
	30yr	770.2	cu.m
	100yr	1032.8	cu.m
Total ------	1yr	336.7	cu.m
	30yr	770.2	cu.m
	100yr	1032.8	cu.m

Post-development

Impermeable[6] ------	1yr	6.3	cu.m
	30yr	12.7	cu.m
	100yr+40%CC	16.3	cu.m

1/ The 'development area' removes areas of POS and/or landscaped areas of the wider site that are to remain as existing.
2/ On occasion the existing impermeable area cannot be evidenced to connect and a reduction is applied.
3/ 50mm/hr is used for BRegs calculations and often used by Water Companies when considering allowable post-development rates of discharge. (Rational Method)
4/ The Greenfield rates and of run-off have been calculated using the UK SUDS Calculator
5/ QBar is the estimated flood flow for the 2.33yr return period event and is often used as a post-development rate restriction.

6/ Post-development run-off is only considered from the impermeable area when the proposed post-development impermeable area >50% in accordance with the EA Guidance Preliminary rainfall runoff management for developments (W5-074/A/TR1/1 rev E (2012).

NB. The catchment characteristics are from the FEH catchment, the UK SUDS Calculator and Microdrainage.
NB. The rainfall intensities and depths are calculated for the 6hr duration rainfall event (peak summer intensity)

Greenfield runoff rate estimation for sites

www.uksuds.com | Greenfield runoff tool

Calculated by:	Megan Berry
Site name:	RADCLIFFE MOOR RD
Site location:	BURY

This is an estimation of the greenfield runoff rates that are used to meet normal best practice criteria in line with Environment Agency guidance "Rainfall runoff management for developments", SC030219 (2013) , the SuDS Manual C753 (Ciria, 2015) and the non-statutory standards for SuDS (Defra, 2015). This information on greenfield runoff rates may be
the basis for setting consents for the drainage of surface water runoff from sites.

Site Details

Latitude:	53.57615° N
Longitude:	2.36912° W
Reference:	1729619536
Date:	Jul 23 2021 13:13

Runoff estimation approach

FEH Statistical

Site characteristics

Total site area (ha): 2.97

Methodology

Q_{MED} estimation method:	Calculate from BFI and SAAR
BFI and SPR method:	Specify BFI manually
HOST class:	N/A
BFI / BFIHOST:	0.377
Q_{MED} (l/s):	
Q_{BAR} / Q_{MED} factor:	1.08

Hydrological characteristics

	Default	Edited
SAAR (mm):	1084	1084
Hydrological region:	10	10
Growth curve factor 1 year:	0.87	0.87
Growth curve factor 30 years:	1.7	1.7
Growth curve factor 100 years:	2.08	2.08
Growth curve factor 200 years:	2.37	2.37

Notes

(1) Is Q_{BAR} < 2.0 l/s/ha?

When Q_{BAR} is < 2.0 l/s/ha then limiting discharge rates are set at 2.0 l/s/ha.

(2) Are flow rates < 5.0 l/s?

Where flow rates are less than 5.0 l/s consent for discharge is usually set at 5.0 l/s if blockage from vegetation and other materials is possible. Lower consent flow rates may be set where the blockage risk is addressed by using appropriate drainage elements.

(3) Is SPR/SPRHOST ≤ 0.3?

Where groundwater levels are low enough the use of soakaways to avoid discharge offsite would normally be preferred for disposal of surface water runoff.

Greenfield runoff rates

	Default	Edited
Q_{BAR} (l/s):		33.71
1 in 1 year (l/s):		29.33
1 in 30 years (l/s):		57.31
1 in 100 year (l/s):		70.12
1 in 200 years (l/s):		79.9

This report was produced using the greenfield runoff tool developed by HR Wallingford and available at www.uksuds.com. The use of this tool is subject to the UK SuDS terms and conditions and licence agreement , which can both be found at www.uksuds.com/terms-and-conditions.htm. The outputs from this tool are estimates of greenfield runoff rates. The use of these results is the responsibility of the users of this tool. No liability will be accepted by HR Wallingford, the Environment Agency, CEH, Hydrosolutions or any other organisation for the use of this data in the design or operational characteristics of any drainage scheme.

Greenfield Runoff Volume

FSR Data

Return Period (years)	100
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.290
Areal Reduction Factor	1.00
Area (ha)	2.970
SAAR (mm)	1138
CWI	123.674
Urban	0.000
SPR	47.000

Results

Percentage Runoff (%)	51.28
Greenfield Runoff Volume (m^3)	1032.869

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Greenfield Runoff Volume

FSR Data

Return Period (years)	30
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.290
Areal Reduction Factor	1.00
Area (ha)	2.970
SAAR (mm)	1138
CWI	123.674
Urban	0.000
SPR	47.000

Results

Percentage Runoff (%)	49.32
Greenfield Runoff Volume (m^3)	770.202

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Greenfield Runoff Volume

FSR Data

Return Period (years)	1
Storm Duration (mins)	360
Region	England and Wales
M5-60 (mm)	19.000
Ratio R	0.290
Areal Reduction Factor	1.00
Area (ha)	2.970
SAAR (mm)	1138
CWI	123.674
Urban	0.000
SPR	47.000

Results

Percentage Runoff (%)	46.67
Greenfield Runoff Volume (m^3)	336.732

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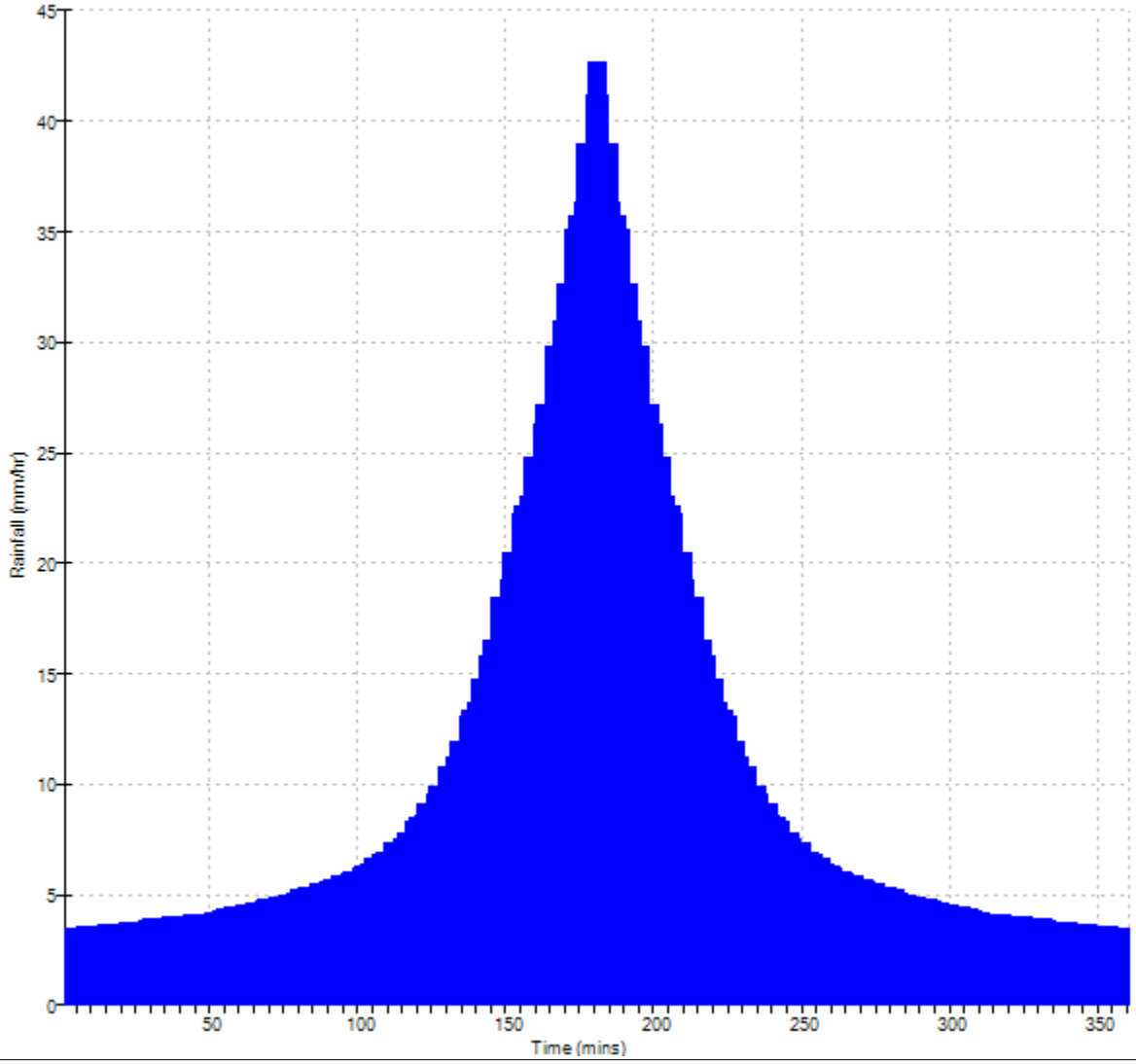
Rainfall profile

Storm duration (mins) 360

FEH Data

FEH Rainfall Version	2013
Site Location	GB 375609 408947 SD 75609 08947
Data Type	Point
Peak Intensity (mm/hr)	42.714
Ave. Intensity (mm/hr)	10.896
Return Period (years)	100.0



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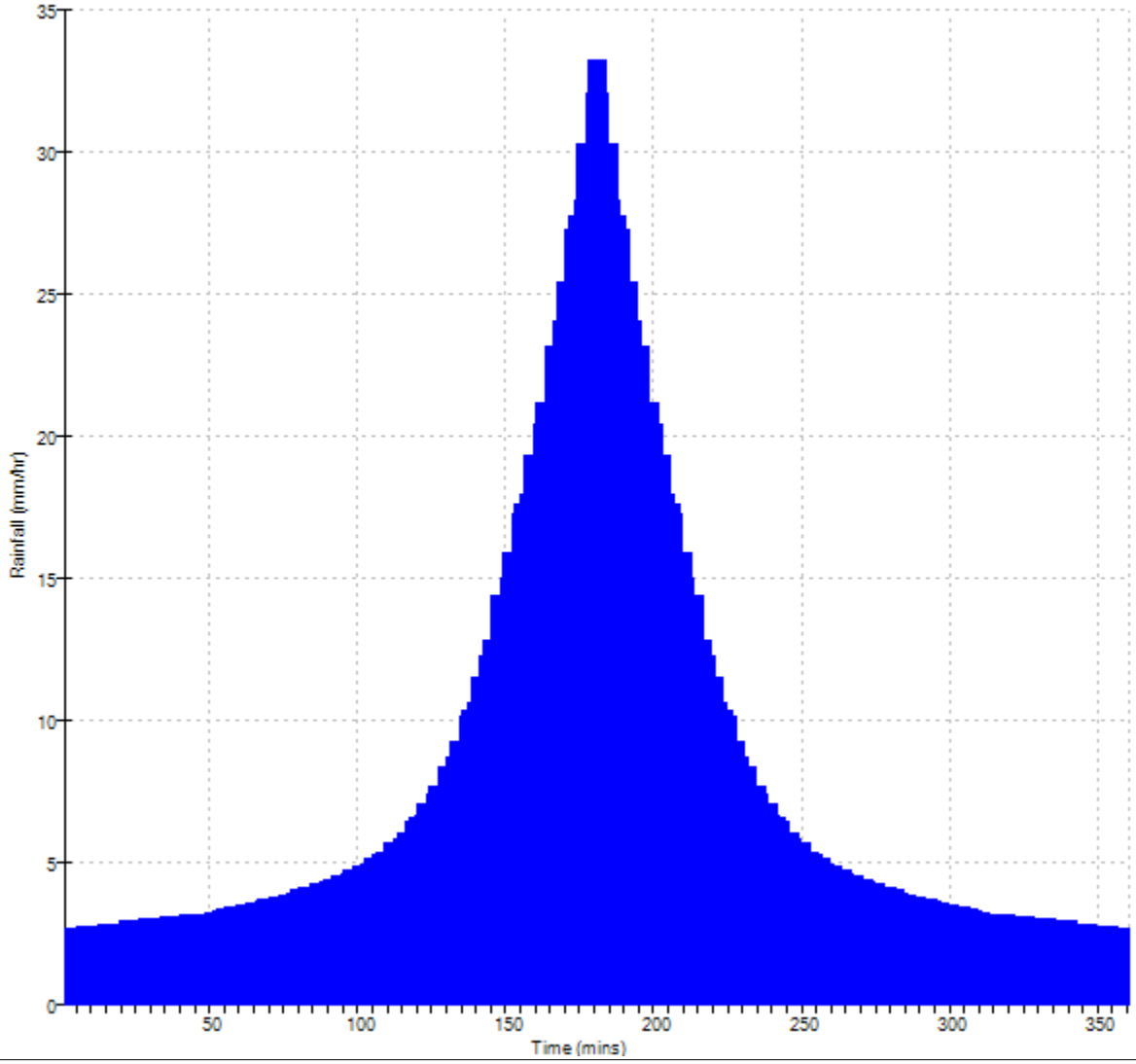
Rainfall profile

Storm duration (mins) 360

FEH Data

FEH Rainfall Version	2013
Site Location	GB 375609 408947 SD 75609 08947
Data Type	Point
Peak Intensity (mm/hr)	33.255
Ave. Intensity (mm/hr)	8.483
Return Period (years)	30.0



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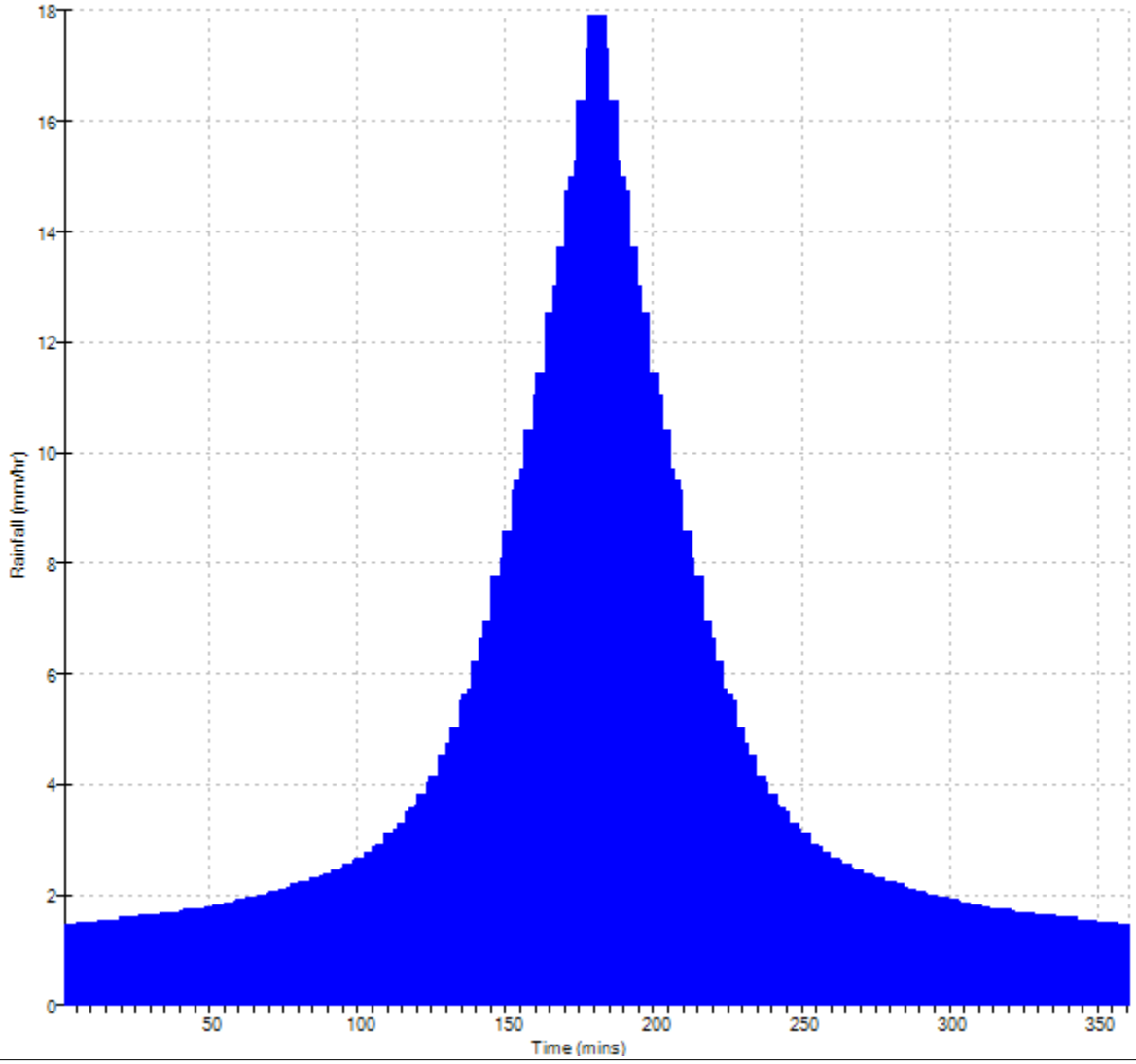
Rainfall profile

Storm duration (mins) 360

FEH Data

FEH Rainfall Version	2013
Site Location	GB 375609 408947 SD 75609 08947
Data Type	Point
Peak Intensity (mm/hr)	17.944
Ave. Intensity (mm/hr)	4.577
Return Period (years)	2.0



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APPENDIX I: PRE/POST DRAINAGE PLANS

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