PROPOSED RESIDENTIAL DEVELOPMENT
Hinchliffe Mill, Water Street, Holmbridge

DRAINAGE STRATEGY

November 22, 2021
Rev C
Ref: G560
Client: One 17 Architects

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Revision History

Version	Date	Amendments	Issued to
1.0	26th Jan 2021	First Draft	Client, Design Team
1.1	4th Feb 2021	Full	Client, Design Team
1.2	17th Feb 2021	Site plan updated. Report updated to reflect	Client, Design Team
1.3	14th May 2021	Site plan updated, report updated to reflect plus incorporate comments from LLFA	Client, Design Team
Rev C	Nov 21	Site plan update and associated docs updated to reflect	Architect

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1. Introduction

This drainage strategy has been prepared by collinshallgreen in support of a proposed residential development off Water Street, HOLMBRIDGE.

2. Site Location

The proposed site is off Water Street within Holmbridge to the West of Holmfirth. Water Street runs parallel with the Northern boundary of the site with residential buildings fronting the highway. The site is adjacent to the River Holme which flows in an Easterly direction. A site plan is included as Appendix A. Figure 1 below shows mapping of the site and its surrounding area.

Site outlined in RED

Image taken from Arc Environmental dataset.

Figure 1: Proposed Residential Site

National Grid Reference: 412700, 407060

A plan of the site proportions is appended in the tables to the rear of this report. The site is broadly 250m x 80m on plan set at between 166m AOD to the lower plateau, rising to 173m AOD to the Southern boundary.

3. Principles of Drainage Strategy

- To appreciate the **sites history and development proposals**
- To assess the **existing on site drainage** arrangement.
- To appreciate the nature of the site and its surroundings to understanding aspects affecting the site, including **hydrology** of flooding from fluvial and surface water.
- To obtain information from the lead local flood authority and United Utilities in relation to existing infrastructure **records and current strategies** in the local area
- To plan **future investigations** where necessary
- **To comply with Standards** including the principles of SuDS and building regulations
- To outline a **drainage strategy** for surface water discharge.
- **Foul Water** drainage

3.1 Site History and Development Proposals

The application site sits to the South of Water Street, Holmbridge.

History

The sites initial development on site was for the Hinchliffe Mill in 1832 and this development was expanded in 1922. The development of the mill included the formation of the Mill pond present to the West of the Mill and a number of additional structures situated to both the East and West of the remaining mill building, plus a further structure to the upper plateau to the South of the site.

Development Proposals

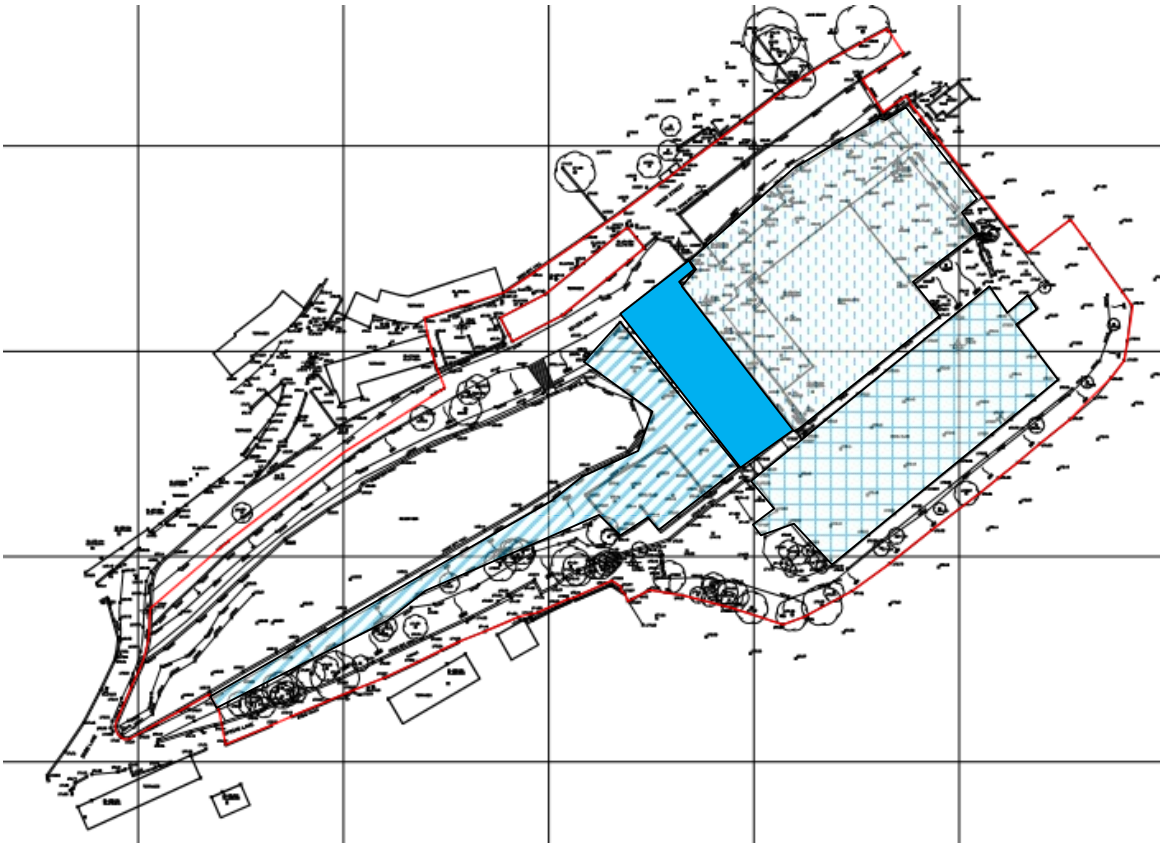
The proposed development comprises four key areas.

1. The Mill conversion centrally to the site
2. North East block of 7 units (lower plateau)
3. South East block of 3 units (upper plateau)
4. 2 units to the West of the Mill

Proposed Site Plan – taken from One17 Architects plan

3.2 Existing on site drainage

The site may be dividing into 4 key areas when considering the drainage of the site which are broadly representative of the proposed developable areas outlined above.

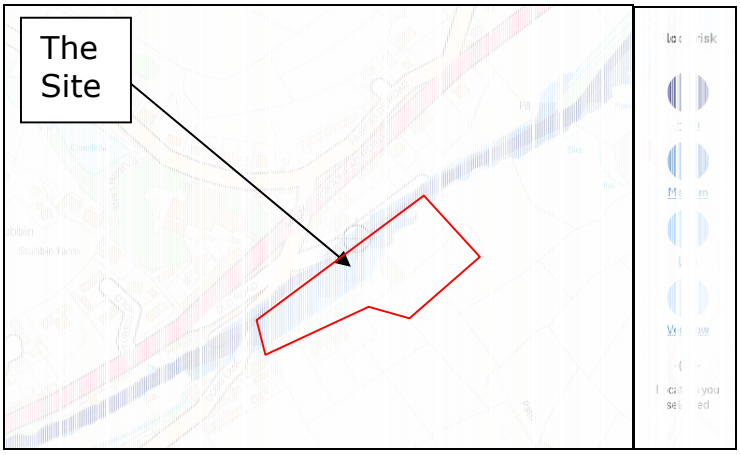


Extract of topographical survey dating 2010 pre demolition of ancillary mill buildings.

- Mill – drainage directly into River Holme
- Former ancillary building drainage directly to River
- Former upper plateau building drainage – unknown, believed to network to river.
- Access road, yard plus ancillary buildings into Mill pond, into River Holme via underground mill race historically with direct overflow from pond currently.

3.3 Watercourses and Flooding

The River Holme is the closest watercourse located off the N of the site, which abuts the Northern boundary.



The governments portal for flooding has classified geographical areas into 1 of 3 zones, depending on how likely a flood is. The Northern strip of the site is in a MEDIUM RISK area (flood zone 2-3) for flooding from rivers, highlighted in BLUE below. This is also verified in the SFRA for Kirklees – see map in appendix

All new development to the site is to the Central and Southern areas of the site which are located in flood zone 1, very low risk, highlighted in GREEN below.

High risk means that each year this area has a chance of flooding of greater than 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Medium risk means that each year this area has a chance of flooding of between 1% and 3.3%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

Low risk means that each year this area has a chance of flooding of between 0.1% and 1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

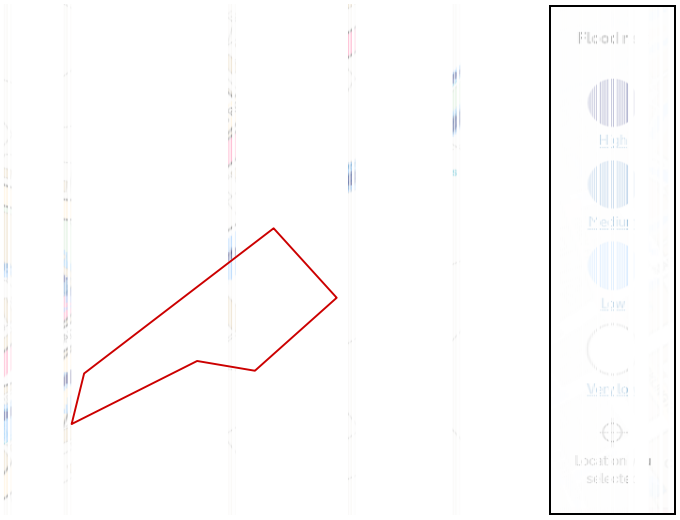
Very low risk means that each year this area has a chance of flooding of less than 0.1%. This takes into account the effect of any flood defences in the area. These defences reduce but do not completely stop the chance of flooding as they can be overtopped, or fail.

The flood risk from surface water is low to the Northern strip of the site and very low to the remainder of the site.

The site is also located within the extents of flooding due to reservoir failure with depths of over 2m and flood water speed over 2m/s. The site is located within flood alert and flood warning area.

What this means

Low risk means that each year this area has a chance of flooding of less than 1%. Flooding from surface water is difficult to predict as rainfall location and volume are difficult to forecast.



The proposed development of the site will allow the on-site surface water to be more effectively managed through permeable paving, SUDS drainage strategies including soakaways if infiltration requirements can be achieved and notionally manipulating surface levels.

This is outlined on One17 architects proposed site plan.

Climate Change

'Global sea level will continue to rise, depending on greenhouse gas emissions and the sensitivity of the climate system. The relative sea level rise in England also depends on the local vertical movement of the land, which is generally falling in the south-east and rising in the north and west.'

In making an assessment of the impacts of climate change on flooding, the table below recommends contingency allowances for peak rainfall intensity to increase. A climate change of 30% has been incorporated into the modelling for this scheme.

The design of surface water discharge from the proposed development should compare brownfield run off against the new impermeable area. The calculations

should ensure climate change is incorporated into the calculation. The drainage system should be designed to accommodate a 100 year storm event plus climate change.

Recommended Finished Floor Levels

It is generally recommended that floor levels in properties are at least 600mm above the 1 in 100 year predicted flood level for residential projects, or 300mm above defence levels. This may also extend to being above historical event levels. The existing level of the lower plateau of the site is set broadly at 166-167m AOD.

Information taken from the FRA for the site below.

- The Western plateau properties are located in flood zone 1 and are proposed to have FFL's of 170.50 AOD.
- The Eastern new build properties are located in flood zone 1 to the southern end of the lower plateau. The Northern strip of this plateau is partially within flood zone 2/3. The properties in this plateau of the site are to be set at a minimum of 167.60m AOD, i.e. in excess of 600mm above the 100 year plus CC projected level of 166.50m AOD.
- The new build on the southern terrace are located in flood zone 1 to the upper plateau. The properties in this plateau of the site are to be set at a minimum of 173.55m AOD.
- The existing Mill is situated on 2 primary levels with the lower of these floor levels being set at 169.85mAOD. All accommodation should be at this level and above. The lower ground floor extending to the Northern end of the unit is set at 166.50m AOD. No accommodation should extend to this portion of the unit.

3.4 Infrastructure and Local Strategies

The drainage records for the area have been requested from Yorkshire Water.

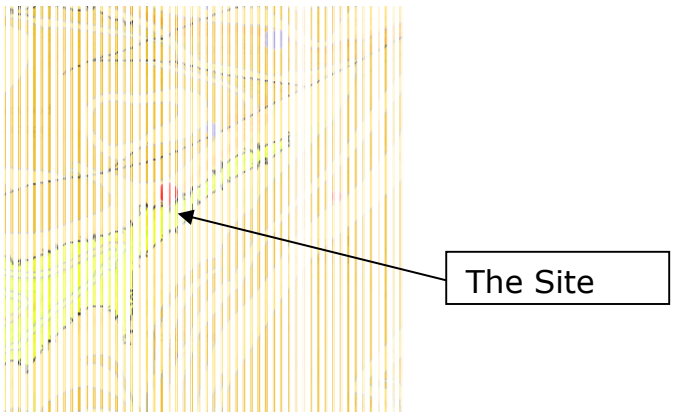
The local strategies to be adopted for this site is to comply with the Kirklees Strategic Flood Risk Assessment prepared by JBA Consulting 2016, to achieve a 30% reduction in brownfield runoff rate with the aim to reduce runoff to greenfield rates for a 1 in 100 year storm event considering climate change at 30%.

To design the infrastructure such that no flood to the development occurs for a 1 in 30 year event.

To demonstrate no property flooding for a 100 year storm event plus 30% climate change.

3.5 Future investigations

A site investigation has been completed on site by ARC environmental. A desk top study finds the site is situated on UPPER KINDERSCOUT GRIT - SANDSTONE. The window sample logs from the site investigation reveal a medium dense brown gravelly SAND with cobbles of sandstone in part and a firm orange brown sandy gravelly CLAY with course gravels of sandstone.



Proposals

- To undertake a Soakaway investigation to verify whether soakaways are a viable option for drainage. Note – the LLFA do not anticipate that soakaways will be suitable.
- To document the location and condition of existing on-site drainage infrastructure to connect with the River Holme. Note, commentary from the project manager suggests much of the buried drainage associated with the former site use was grubbed up during the demolition phase. The former buried mill pond outlet is visible on site at its point of connection to the River Holme. It is intended that the proposed scheme will re-utilise this outfall and the line, and condition of this former channel to the mill will be investigated together with any other remaining buried infrastructure
- To document the location and condition of any on site drainage infrastructure connecting to the Yorkshire Water adopted network, in particular the foul run within the River Holme itself.

3.6 The principles of SuDS Sustainable Drainage Solutions

Paragraph 1.3.2 from the SUDS manual (C697) discusses the SUDS 'management train' which is intended to mimic the natural catchment process as closely as possible. The hierarchy of techniques used to achieve the management train are shown in Table 6 below:

Table 6: Hierarchy of Run Off Control Techniques

Technique	Description
Prevention	The use of good house design and housekeeping measures to prevent run off and pollution; rainwater reuse/harvesting
Source control	Soakaways, porous and pervious surfaces, water butts, green roofs
Site control	Routing water to large soakaways, infiltration or detention basins
Regional control	Balancing pond, wetlands, swales, retention ponds

The proposed development modifies the surface water discharge from the site and hence SuDS has been incorporated as a means of reducing the flows off site.

Source Control

A consideration of the free space available between proposed structures finds the potential for soakaways to be incorporated to be potentially viable, given the requirement to position soakaways a minimum of 5m away from structures and site boundaries. The site investigation is not conclusive in relation to the use of soakaways. These may be practical for the surface water drainage subject to the results of infiltration testing.

Permeable surfacing to parking areas would appear to be a viable option to consider.

The current Mill pond is a viable discharge location for part of the site.

The Mill Pond

The Mill pond is an established water feature which was formed to support the use of the site as a Mill. Following the closure of the Mill and disuse of the site the Mill pond has become a feature which attracts both wildlife and acts as a sustainable feature in relation to the flow of water into and across the site.

The condition of the pond was subject to an inspection and report by others which revealed no obvious significant defects. The current site walkover revealed significant overgrowth to the perimeter of the pond and probable requirements to locally stabilise the perimeter low level stone to the pond, but no other obvious repair requirements. Some local dredging of the pond may

benefit the pond from both a ecological feature and water storage facility. The pond currently serves both the flow from upstream off the old mill race and also from the surrounding flow off the hills and properties lying above the pond to the South.

Flows enter the mill pond from the land adjacent – a series of existing pipes line the Southern bank.

The current overflow to the pond is operating soundly.

The pond should be retained.




See below for SUDS strategies for the site.

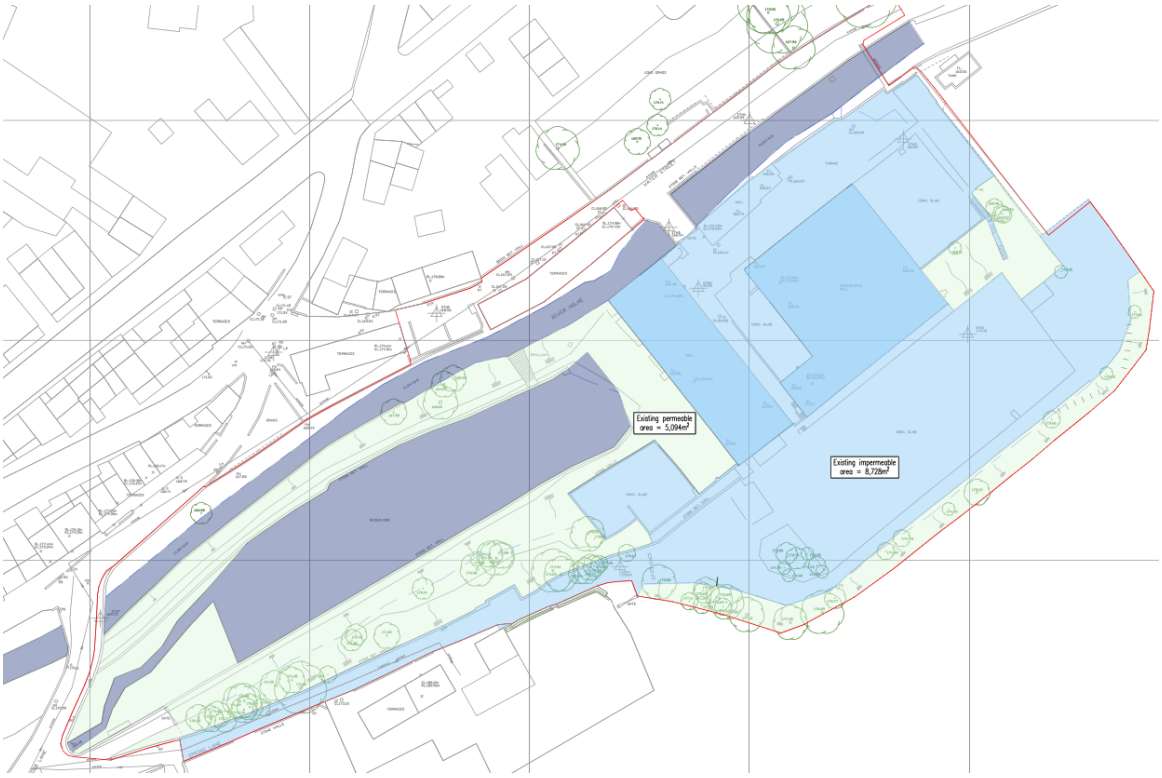
	SUDS Component Type	Suitability Determination & Reasoning
	Filter Strips	Unsuitable, insufficient space on proposed site.
(1)	Swales	There is sufficient space on site to incorporate rills both for collecting land drainage from outwith site and to replace carrier drains.
	Infiltration Basins	Unsuitable, insufficient space on proposed site.
(2)	Wet Ponds	There is an existing Mill pond on-site that will be incorporated into the SW drainage strategy.
	Extended Detention Basin	Unsuitable, insufficient space on proposed site.
	Constructed Wetlands	Unsuitable, insufficient space on proposed site.
(3)	Filter Drains	These may be utilised together with rills for collection and conveyance of land drainage from outwith site..
(4)	Infiltration Devices	Permeable areas of the site are underlain by sandy clay which could be suitable for infiltration, this will require targeted in-site infiltration testing to confirm.
(5)	Pervious Surfaces (infiltration)	Permeable areas of the site are underlain by sandy clay which could be suitable for infiltration, this will require targeted in-site infiltration testing to confirm.
(6)	Pervious Surfaces (storage/filtration/attenuation)	Sufficient car parking area is proposed to provide attenuation within a tanked sub-base beneath permeable paving/surfacing.
	Green Roofs	Pitched roofs therefore unsuitable for this development.
	Brown Roof	Pitched roofs therefore unsuitable for this development.
	Rainwater Harvesting	Some areas of roof could potentially provide catchment, however the relatively small areas of the pitched roofs means each system would provide little input per person.
	Buried Attenuation Storage System	Not required – it is intended that external hard surfaced areas be utilised as either infiltration/attenuation or filtration/tanked sub-base attenuation.

SUDS components forming part of the drainage strategy

3.7 Surface Water Runoff

The new development will amend the amount of hardstanding on the site. The impermeable area of the proposed site is lower than the existing site.

Assessment of Existing Impermeable and permeable areas

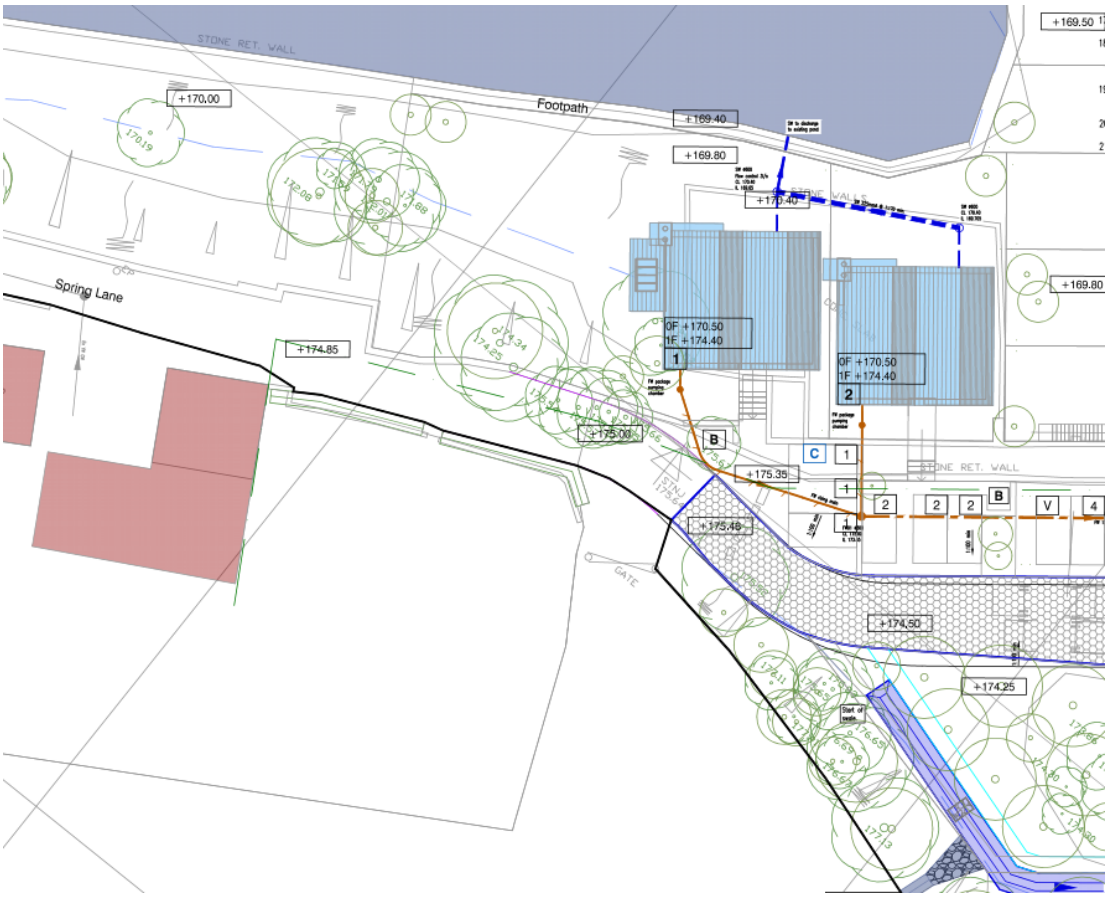


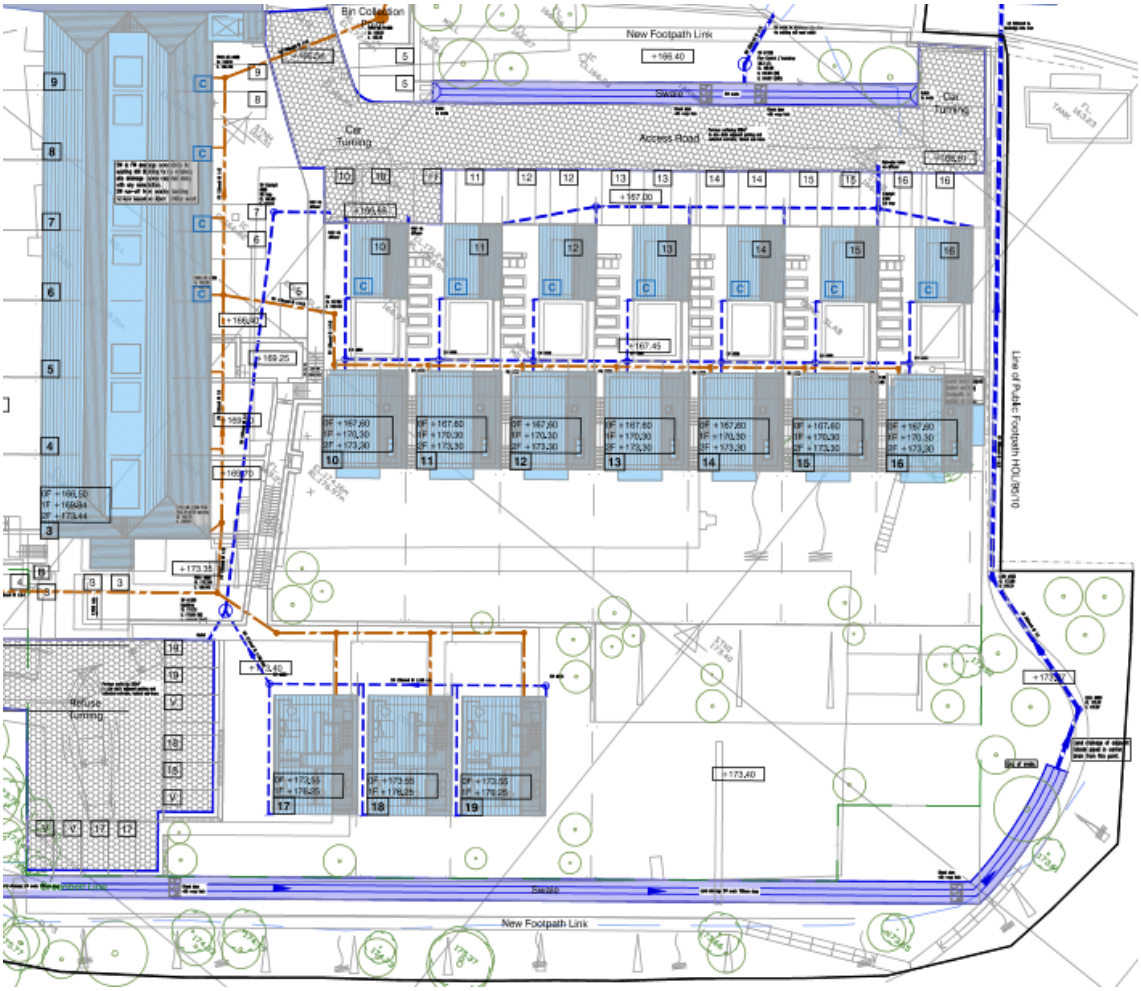
Existing

Proposed

See full drawings for greater clarity G560-CHG-XX-00-DR-C-0001 P4

Proposed Drainage Strategy




Bin Collection
New Footpath Link
Car Turning
Access Road
Swale
Line of Public Footpath HOL/8/10
Refuse Turning
New Footpath Link

CATCHMENT AREAS
Total site area = 16,237m²

EXISTING AREAS
Soft = 5,094m²
Hardstanding/Roof = 8,728m²
(Open water = 2,398m²)
Peak flow estimate using greenfield run-off rate of 5l/s/ha + QBar for impermeable areas = 141 l/s

PROPOSED AREAS
Soft = 7,732m²
Hardstanding area = 3,538m²
Roof area = 2,032m²
(Open water = 2,398m²)
Peak flow estimate using 50mm/hr (Qbar) -30% + greenfield run-off for permeable areas = 65.7 l/s

NB existing and proposed flows calculated using areas excluding area of existing pond.

The limit of flow off site from all discharge points would be 65.7 l/s.

Reducing the existing flow from impermeable areas by 30% gives a limit of flow off site from all discharge points as 65.7l/s.

Note that the comparison of permeable to impermeable areas does not include the mill pond.

The site will discharge surface water in accordance with the hierarchy set out in Paragraph: 080 Reference ID: 7-080-20150323 of Planning practice guidance, Flood risk and coastal change, in this case discharge will be made via:
Existing Mill Structure = existing connections into the river,
West cottage clusters = into the existing Mill Pond,
East dwelling clusters = into the river utilising existing connections where possible,
all with relevant flow control devices as the discharge rate is divided pro-rata based on catchment areas and subject to YW / planning agreement.

This off-site flow is a 30% betterment in the pre development surface water run off.

See full size drawn CHG SuDS assessment drawing to rear of this report for further detail associated with the components considered for the drainage strategy to the development.

To achieve this reduction the surface water is to be attenuated on site in a surface water rill/swale and through lower terrace paving sub base. The flow is to be controlled using an orifice plate hydro-brake.

The development also incorporates consideration of SuDS components.

The surface water drainage proposal to be developed is intended to connect to the River Holme to as mimic the natural catchment process as closely as possible. This will also incorporate the use of the Mill Pond for the properties to the West of the Mill.

An enquiry should be submitted to the Environment Agency to determine if this flow is acceptable.

Exceedance strategy

The drainage system is to be sized to accommodate a 100 year event plus climate change at 30%. The size of the system is such that surface water is accommodated within this below ground system.

The surface ground levels are being developed to ensure that rainwater will fall away from the buildings, these will in turn provide the logical exceedance route of flowing away from the building towards the carriageway.

The flow off site should be part of a detailed hydraulic model and discussion with the Environment Agency and the lead local flood authority.

The above ground SUDS components will be maintained by the building operator including the hydrobrake (inspection of in accordance with manufacturers guidance) and permeable paving (in accordance with the designers guidance). See drawn information for detailed maintenance strategy – extract below

MAINTENANCE OF DRAINAGE / SuDS:

All onsite SuDS and drainage systems will require maintenance, as they will remain in private ownership they will be privately maintained.

It is a planning requirement that a maintenance regime be detailed and the Following table outlines a proposed maintenance regime for below ground drainage on site.

In addition it is advisable that all on-site drainage, both foul and surface should be inspected following the first rainfall event post completion and then inspected monthly for the remainder of the first quarter post completion.

Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Comments
Foul Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage Attenuation Tank	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Swales/Ponds	Monthly	visual inspection, remove litter, (during growing season) cut grass to max 150mm length, remove nuisance plants,		
	Half yearly	inspect outlets and facility surface for silt accumulation, establish appropriate silt removal frequencies, inspect vegetation coverage,		
	If bare soil >10% surface area			reseed areas of poor vegetation growth, altering plant species as appropriate
Gullies/Channels	1 year	1 year	N/A	Cleansing to be carried out as necessary
Catchpits	1 year	1 year	N/A	Cleansing to be carried out as necessary
Proprietary Products	3-6 months	Refer to individual manufacturers recommendations.		

Pervious paving maintenance guide from Tobermore

To ensure optimum performance of Hydropave permeable paving, Tobermore provide the following maintenance guidelines. These guidelines are provided as a general maintenance regime but may be altered if necessary depending on the specific paved area or any factors which may impact the paving. Hydropave permeable paving relies upon its ability to infiltrate surface water through its joints into a sub-base beneath. Hydropave Permeable Paving requires much less maintenance than is perceived by many however maintenance of the pavement should be carried out when necessary to ensure the infiltration of the paving is maintained and the paving is kept looking at its best. During design, construction and after construction care should be taken to ensure that the paved area is protected and maintained to minimise clogging of the joints. With age and use, detritus and silt collects in jointing material at the top of the joints. This forms a thin crust like layer over the joints however this does not severely impact the ability of the joints to infiltrate surface water. Research has demonstrated that whilst the infiltration rate of the joints decreases over time it stabilises and still exceeds UK & Ireland hydrological requirements

Rainfall experienced in the UK & Ireland is typically 20mm per hour with an extreme rainfall event being 75mm per hour. Research has concluded that the infiltration capacity of a newly installed Hydropave Concrete Block pavement is over 4,000mm per hour. The bedding course and sub-base aggregates will have even higher infiltration

capacity. The UK guidelines require the infiltration rate of the surface joints to be 400mm an hour which is only 10% of the actual rate of newly installed permeable paving. Even allowing for clogging over the long term there is a large factor of safety built in.

grading of jointing material.

Maintenance overview

SCHEDULE	ACTION	FREQUENCY
Routine visual inspection	Visually inspect the paving for ponding during heavy rainfall or following heavy rainfall.	Once a year
Remedial maintenance for ponding	Brush / vacuum joints Replace any lost jointing material	As required
Structural Maintenance	Replace damaged blocks Repair any rutting	As required
Maintenance for aesthetics of the joints	Brush / vacuum joints as required Replace any lost jointing material	Recommended once a year
Maintenance for aesthetics of the paving blocks	Brush with soapy water Light pressure wash	As required
Weed control	Treat with weedkiller	As required
Maintenance during the winter months	De-icing salts	As required during winter
WARNING !	Do not replace the jointing grit with kiln dried sand as this will block the joints and prevent infiltration. Do not store materials which may clog up the permeable joints such as soil and mulch on top of the paving.	

3.8 Foul Water Drainage Strategy

The existing on-site regime suggests that all existing buildings discharge foul flows toward an adopted infrastructure which flows along the River Holme.
The existing off site network is to be surveyed to determine routing and condition including connection positions to the existing Yorkshire Water network.

4. Conclusions and Recommendations

- The existing site contains the current Mill building which is to be retained plus a number of hardpaving areas from the floor slabs to the previous ancillary buildings to the East, West and South of the Mill which are to be predominately removed.

- The former Mill also has both a Mill pond with an overflow to the River Holme and former buried mill race with connectivity to the River Holme. This buried infrastructure should be investigated to ensure it does not affect the project.

- The Mill Pond is an important feature to be retained for both its function to distribute surface water flows upstream and from the site as existing, but also for its benefits to ecology and landscape.

- The local drainage strategy for the area requires flows off site to be reduced by 30% for brownfield flow rate. This reduced rate has been calculated as 65.7l/s.

- Proposed drainage is to be modelled for a 1 in 100 year storm event.

- Climate change of 30% is to be incorporated into the design

- The site is underlain by a sandy clay over sandstone.

- The site is partly located in a medium risk area (flood zone 2/3) to the Northern area of the site and a very low risk area for the central and southern portion of the site (flood zone 1).

- The site is to be investigated for soakaways through infiltration testing and ground water levels. It is currently believed that developing a drainage strategy through infiltration is unlikely to be possible based on the LLFA commentary.

- The consideration of SuDS techniques has been incorporated for the proposed scheme with a proposal for a surface rill/swales to act as a storage facility having an orifice plate hydrobrake to control flows to the existing discharge location and reduced rate. Permeable paving is to be incorporated to the hard landscaping design including a tanked sub-base if necessary to form connectivity into the surface drainage network.

- The maintenance of all SUDS elements is to be developed to be managed by the management company following completion of the scheme.

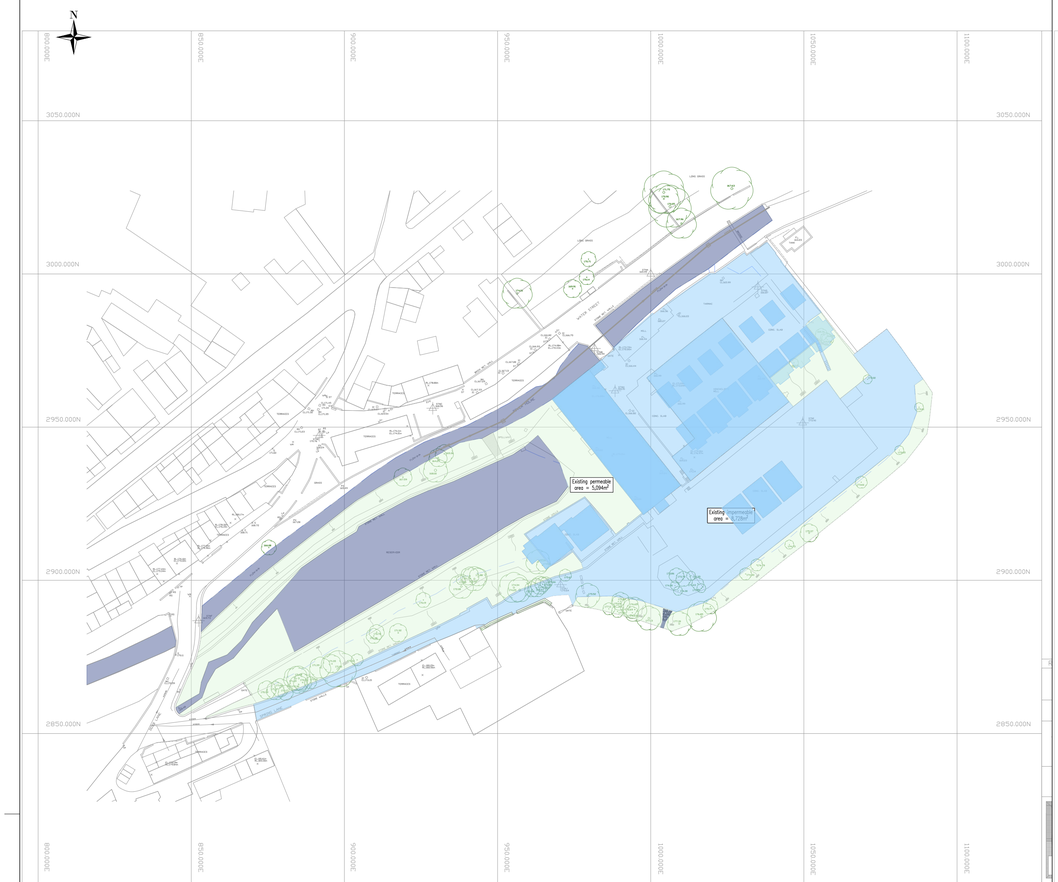
- The site is located within flood alert and flood warning area.

- The proposed discharge rate is to be agreed with the lead local flood authority and Environment Agency.

- A CCTV survey is required of any remining existing drainage on site and the Yorkshire Water infrastructure within the River Holme.

- The foul water flows to all properties should be discharged to the foul water run within the River Holme to the lower plateau into an adopted network with flows and connection details to be agreed with Yorkshire Water. This discharge route should permit a gravity system to be accommodated for this scheme. Given that the pipe is within the river itself the means of working in the river will need approval of the Environment Agency as well as Yorkshire Water. Should permission for this gravity run not be permitted then an alternative discharge in Dam Head as a pumped system will need to be developed.

Existing Impermeable Area



Proposed Impermeable Area

NOTES

Dimensions must not be scaled from this drawing. The Contractor is to check and verify all building and site dimensions before work is put in hand.

This drawing must be read and checked against any Architects or other specialists drawings.

The Contractor is to check and verify with all Statutory Authorities and the Employer the location and condition of any underground or overhead services or confirm that none exist prior to work commencing on site.

The Contractor shall comply with enactments regulations and working rules relating to safety health and welfare of workpeople.

SUDS Component Summary

CIRIA 697 – Ref Table 1.1		Suitable As An Infiltration Device?	Improves Water Quality?	Reduces Runoff Volume?
SUDS Component Type	Brief Description			
Filter Strips	Wide, gently sloping areas of grass to treat runoff from adjacent impermeable areas.	Yes	Yes (a)	Yes (b)
Swales	Broad, shallow channels covered by grass to convey and store runoff.	Yes	Yes (a)	Yes (b)
Infiltration Basins	Surface depressions to store runoff as part of an infiltration approach.	Yes	Yes	Yes (b)
Wet Ponds	Basins with a permanent pool of water.	No	Yes	No
Extended Detention Basin	Normally dry, designed as open attenuation storage.	No	Yes	No
Constructed Wetlands	Ponds with extension shallow areas.	Yes	Yes	Yes (b)
Filter Drains	Trenches filled with permeable material and perforated carrier drain. French Drain.	Yes	Yes	Yes (b)
Infiltration Devices	Buried storage volumes. Soakaways.	Yes	Yes	Yes
Pervious Surfaces	Constructed pavements designed to allow runoff to infiltrate to sub-base layers. Permeable Paving.	Yes	Yes	Yes (b)
Green Roofs	A vegetative medium installed on top of low pitched roofs.	No	Yes	Yes
Brown Roof	Site won material placed on top of low pitched roofs.	No	Yes	No
Rainwater Harvesting	Roof water collection system, designed to store rainwater for re-use as non-potable water. i.e. toilet flushing, irrigation.	No	No	Yes
Buried Attenuation Storage System	Sealed, buried tank designed to store runoff in conjunction with a flow control device.	No	No	No

Notes:
(a) With or without infiltration.
(b) With infiltration only

SUDS Component Suitability – Project Specific:

	SUDS Component Type	Suitability Determination & Reasoning
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Hardstanding area = 3,538m²
Roof area = 2,032m²
(Open water = 2,398m²)
Peak flow estimate using 50mm/hr (Qbar) –30% + greenfield run-off for permeable areas = 65.7 l/s

NB existing and proposed flows calculated using areas excluding area of existing pond.

The limit of flow off site from all discharge points would be 65.7 l/s.

The site will discharge surface water in accordance with the hierarchy set out in Paragraph: 080 Reference ID: 7-080-20150323 of Planning practice guidance, Flood risk and coastal change, in this case discharge will be made via:
Existing Mill Structure = existing connections into the river,
West cottage cluster = into the existing Mill Pond,
East dwelling clusters = into the river utilising existing connections where possible,
all with relevant flow control devices as the discharge rate is divided pro-rata based on catchment areas and subject to YW / planning agreement.

CONCLUSION:

Should SUDS mechanisms be implemented on this site, water volume will be reduced through component (1), (2), (3) (4)/(5) and (6) and the Local Sewerage Undertaker's requirements will be met by component.

MAINTENANCE OF DRAINAGE / SuDS:

All onsite SuDS and drainage systems will require maintenance, as they will remain in private ownership they will be privately maintained.

It is a planning requirement that a maintenance regime be detailed and the Following table outlines a proposed maintenance regime for below ground drainage on site.

In addition it is advisable that all on-site drainage, both foul and surface should be inspected following the first rainfall event post completion and then inspected monthly for the remainder of the first quarter post completion.

Item	Visual Inspection	Cleanse / De-sludge	CCTV Survey	Comments
Foul Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage System (pipework, chambers etc.)	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage Attenuation Tank	5 years	10 years	10 years	Cleansing to be carried out as necessary
Surface Water Drainage permeable/pervious surfacing		Annual	N/A	Refer to manufacturers recommendations.
Surface Water Swales/Ponds	Monthly	visual inspection, remove litter, (during growing season) cut grass to max 150mm length, remove nuisance plants,		
	Half yearly	inspect outlets and facility surface for silt accumulation, establish appropriate silt removal frequencies, inspect vegetation coverage,		
	If bare soil >10% surface area			reseed areas of poor vegetation growth, altering plant species as appropriate
Gullies/Channels	1 year	1 year	N/A	Cleansing to be carried out as necessary
Catchpits	1 year	1 year	N/A	Cleansing to be carried out as necessary
Proprietary Products	3–6 months	Refer to individual manufacturers recommendations.		

Do not scale

A1

0 10 20 30 40 50 100 150 200 300

Date	Description	Drawn	Chkd	Rev
03.11.21	Site layout updated, areas updated to suit.	AD	–	P4
12.05.21	Site layout updated, areas updated to suit.	AD	–	P3
10.02.21	Site layout updated, areas updated to suit.	AD	–	P2
04.02.21	Initial issue	AD	–	P1

Drawing Status: Preliminary

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Project: Hinchliffe Mill

Title: SUDS Assessment

Drg Scale	Drawn	Checked	CHG job No.
1:1000 @ A1	AD	chk'd	G560

Drawing Number: G560-CHG-XX-00-DR-C-0001

Revision: P4