Flood Risk Assessment
Saddleworth Secondary School
Huddersfield Road, Diggle, Oldham

For
Education Funding Agency
20th October 2014
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<tr>
<th>Prepared by:</th>
<th>Mark Nelson</th>
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<tr>
<td>Checked by:</td>
<td>John Clark</td>
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1. Flood Risk Assessment.

1.1 Introduction.

Mason Clark Associates have been commissioned by EC Harris LLP on behalf of the Education Funding Agency to undertake a Flood Risk Assessment (FRA) for the proposed development of Saddleworth Secondary School, Huddersfield Road, Diggle, Oldham OL3 5NU.

This flood risk assessment has been carried out in accordance with the National Planning Policy Framework (NPPF), the National Planning Practice Guidance for Flood Risk and Coastal Change and the Oldham Council Hybrid Strategic Flood Risk Assessment (SFRA).

Paragraph 100 of the NPPF states that the Local Authority Planning Department in conjunction with the Environment Agency have to evaluate all developments in respect to flood risk. This flood risk assessment forms part of the necessary evaluation.

1.2 Site Location.

The total site is approximately 3.2ha in size and is situated to the east of Huddersfield Road. The site is predominantly surrounded by open pasture land and some woodland, on the western boundary is the Diggle Brook watercourse and on the eastern boundary is the Huddersfield Narrow Canal. The site currently comprises of a formal access road, a number of redundant commercial/industrial mill buildings and a Grade II listed building.

Grid reference E: 400144 N: 407245

An existing site layout plan is presented in appendix I of this report.

1.3 Topography.

The site generally falls from north east to south west with levels ranging from 184.31m AOD to 179.13m AOD. A topographical survey drawings located in appendix II.

1.4 Flood Risk Identification.

By reference to the Environment Agency’s Indicative Flood Map, the site is located in flood zone 1. Flood Zone 1 is defined in the National Planning Practice Guidance for Flood Risk and Coastal Change as a site with low annual probability of flooding. The zone comprises of land assessed as having less than 1 in 1,000 annual probability of river or sea flooding (<0.1%). A copy of the Environment Agency’s flood map is enclosed in appendix III.

1.5 Flooding from Rivers / Watercourses.

The Diggle Brook watercourse flows adjacent to the western boundary. In the event of an extreme storm, due to the topography of the site any flood water from the Diggle Brook watercourse would spill out of the western embankment and flood the field on the opposite side of the development. Therefore flooding from this watercourse is not considered to be a risk.

1.6 Flooding from the Sea.

The site is located significantly inland therefore flooding from the sea is not considered a risk.
1.7 Flooding from Land.

Any overland flows from the east would be intercepted by the Huddersfield Narrow Canal, any overland flows falling from the west would flow into the watercourse and due to the topography of the site flood water would flow away from the development, therefore this is not considered a risk.

1.8 Flooding from Groundwater.

In the event of any groundwater flooding, water will flow away from the site due to the topography of the land, therefore this is not considered a risk.

1.9 Flooding From Sewers.

Due to the topography of the land it is considered that that any flows generated from surcharged manholes would flow away from the development. In the event of an extreme storm it is considered an excessive flows from surcharged manholes will be contained within the highway and new car park areas. Therefore flooding from sewers is not considered a risk.

1.10 Flooding From Infrastructure Failure.

Map information from the EA shows that the site is at risk of flooding from reservoir failure, however this is considered to be covered as part of the emergency planning procedures by Oldham Flood Risk Management Strategy. It should be noted that reservoir failure is extremely rare as they are inspected and maintained on a regular basis.

The Huddersfield Narrow Canal forms part of the eastern boundary of the site, we have formally written to the Canal and Rivers Trust a copy of their response and technical guidance is presented in appendix IV. They have stated that “The Trust are not aware of any leaks or seepage from the canal in the local area. For further advice on flood risk from canals we have included some generic guidance, please refer to Appendix A attached. Further, please note that the canal pounds adjacent to the site identified are minimal in length with frequent locks, with an average width of 12m”.

As such we believe that the likelihood of flooding from a canal is very low and therefore it is not considered a risk.
1.11 Sequential and Exception Tests.

Both the NPPG and the Oldham Council Hybrid SFRA require the ‘sequential test’ to be applied to ensure that proposed developments are carried out in areas that are at the least risk of flooding before considering development in areas that are at risk of flooding. The proposed site falls within Flood Zone 1 and therefore satisfies this requirement.

Based on Table 3 in the National Planning Practice Guidance for Flood Risk and Coastal Change, the proposed use will be classified as ‘more vulnerable’.

<table>
<thead>
<tr>
<th>Flood Risk Vulnerability Classification</th>
<th>Essential Infrastructure</th>
<th>Water compatible</th>
<th>Highly Vulnerable</th>
<th>More Vulnerable</th>
<th>Less Vulnerable</th>
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<tr>
<td>Zone 1</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Zone 2</td>
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<td>✓</td>
<td>Exception Test required</td>
<td>✓</td>
<td>✓</td>
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<tr>
<td>Zone 3a</td>
<td>Exception Test required</td>
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<td>x</td>
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<td>✓</td>
</tr>
<tr>
<td>Zone 3b</td>
<td>Exception Test required</td>
<td>✓</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
</tbody>
</table>

✓ Development is appropriate  × Development should not be permitted
2. **Surface Water Drainage.**

2.1 Sustainable drainage.

Building Regulations (H3) states the priority for discharging surface water runoff from a development is as follows: Infiltration into the ground, discharge into a watercourse, discharge into a sewer. An inspection of the 1:50,000 scale British Geological Survey (BGS) map shows the site is underlain with Mudstone and Siltstone with superficial deposits of Till, Devensian – Diamicton.

The site is not located within a groundwater source protection zone. It is recommended that a site investigation is carried out to include percolation tests, establish water table level and the current flow route of ground water.

There is an opportunity to implement SUDS on this site, the designer should consult with the client to ascertain who will be responsible for maintaining the new development and its drainage infrastructure as this may determine what sustainable drainage systems can be used. A copy of the proposed layout is shown in appendix V.

2.2 Discharge to watercourse.

Where infiltration is not feasible, H3 recommends that surface water flows are to be discharged into a watercourse. An assessment of the area shows that the Diggle Brook watercourse is located on the western site boundary.

The designer should seek approval from the Environment Agency for surface water flows generated from the new development to discharge into the watercourse. An attenuation system will be required with a restricted rate of discharge. It is recommended that further investigation and survey work is carried out to establish the drainage infrastructure that currently serves the site. This information will allow the designer to assess the existing 1 in 1 year storm peak run off rate from the site.

The designer will apply a restricted rate of discharge to serve the new development, this rate will be calculated in accordance with current guidelines and working practice. The restriction rate will need to be agreed with the Environment Agency.

The onsite attenuation system will need to cater for flows up to a 1 in 30 year storm ensuring that all storm water remains within the surface water drainage system. The system will also be checked for a 1 in 100 year storm + 30% for climate change, any flooding from this storm event will be contained on site and not affect any properties or any offsite areas.
3. **Conclusion.**

- The site is within an area that has been designated as Flood Zone 1 and is therefore suitable for development in accordance with the NPPG and the Oldham Council Hybrid SFRA.

- It is not envisaged that the development will increase or cause flooding that would affect others.

- The new discharge rate will meet the current requirements and there is sufficient land available on the site to construct appropriate attenuation systems.

- The development has the opportunity to implement sustainable drainage systems.

4. **Recommendations.**

- This FRA has found that the risk of flooding to the new development is low and the proposed ground floor level will be set at a minimum of 300mm above the lowest external finished level.

- The designer should consult with the Environment Agency to agree the rate of discharge into the watercourse.

- The designer should consult with the Client to ascertain the responsibility and maintenance of the drainage system, as this will influence/dictate what sustainable drainage systems can be used.

- A drainage survey should be carried out to establish existing drainage infrastructure that currently serves the mill works.

5. **Scope.**

This report has been commissioned by EC Harris LLP on behalf of the Education Funding Agency to assess the probability of flooding of the proposed development of Saddleworth Secondary School, Huddersfield Road, Diggle, Oldham OL3 5NU.

This report is based upon the data referred to and is an assessment of the likelihood of the site flooding from the various sources discussed. Owing to the variable nature of flooding, it is possible that future flooding scenarios will be different to past scenarios.

This report shall be for the private and confidential use of Education Funding Agency for whom the report is undertaken and their immediate advisors in connection with the proposed development. It shall not be reproduced in whole, or in part, or relied upon by third parties for any use whatsoever without the express written authority of Mason Clark Associates Limited.

Mason Clark Associates shall have no liability for any use of the report other than for the purpose for which the report was originally prepared.
Appendix I

Existing Site Plan
Check all dimensions on site. Do not scale from this drawing. Report any discrepancies and omissions to HLM Architects.

This Drawing is Copyright.

PHOTOCOPIED/SCANNED INFORMATION

NB This drawing is based on photocopied/scanned information liable to distortion in scale.

AREA CALCULATIONS

NB The areas shown are approximate only and have been measured off preliminary drawings as the likely areas at the current state of design using the stated option from the Code of Measuring Practice, 4th edition. RICS/ISVA. These may be affected by future design development and construction tolerances, or the result of surveys for existing buildings. Take account of these factors before planning any financial or property development purpose or strategy and seek confirmation of latest areas before decision making.

3RD-PARTY INFORMATION

NB This drawing includes information provided by independent surveyors and/or consultants, to whom all queries shall be made. HLM Architects can accept no liability for its content or accuracy.
Appendix II

Topographical Survey
Note: The underground services information has been supplied by A.E. Byrne.

UTILITY KEY

PR = PR
RE = RE
SV = SV
TP = TP
TFR = TFR
WL = WL
UTS = UTS
UTL = UTL
SVP = SVP
SA = SA
RWP = RWP
AR = AR
BD BACKDROP = BD BACKDROP
CR = CR
CL = CL
DP = DP
FH = FH
G = G
EOT = EOT
EoC = EoC
EP = EP

GULLY = GULLY
CABLE RISER = CABLE RISER
DOWN PIPE = DOWN PIPE
CATCHPIT = CATCHPIT
COVER LEVEL = COVER LEVEL

ASSUMED ROUTE = ASSUMED ROUTE
END OF TRACE = END OF TRACE

FIRE HYDRANT = FIRE HYDRANT
ELECTRICITY POLE = ELECTRICITY POLE
EDGE OF CANOPY = EDGE OF CANOPY

VR = VR
WMWO = WMWO
IL = IL
IC = IC
LH = LH
MH = MH
NL = NL
NVE = NVE

LP = LP
LAMP POST = LAMP POST
MANHOLE = MANHOLE
LAMP HOLE = LAMP HOLE

SWS = SWS
CWS = CWS
FWS = FWS

INSPECTION CHAMBER = INSPECTION CHAMBER
INVERT LEVEL = INVERT LEVEL
NOT LOCATED = NOT LOCATED
NO VISIBLE EXIT = NO VISIBLE EXIT
SURFACE WATER SEWER = SURFACE WATER SEWER
COMBINED WATER SEWER = COMBINED WATER SEWER
FOUL WATER SEWER = FOUL WATER SEWER

GV = GV
VP = VP

ABBREVIATIONS

TAKEN FROM RECORDS
STOP VALVE = STOP VALVE
WATER METER = WATER METER
WASH OUT VALVE = WASH OUT VALVE
VAPOUR RECOVERY = VAPOUR RECOVERY
TELEGRAPH POLE = TELEGRAPH POLE
UNABLE TO SURVEY = UNABLE TO SURVEY
VENT PIPE = VENT PIPE
WATER LEVEL = WATER LEVEL
UNABLE TO LIFT = UNABLE TO LIFT
RAINWATER PIPE = RAINWATER PIPE
PIPE RISER = PIPE RISER
RODDING EYE = RODDING EYE
SOIL VENT PIPE = SOIL VENT PIPE
SOAKAWAY = SOAKAWAY
END OF TRACE = END OF TRACE
COMMUNICATION CABLE = COMMUNICATION CABLE
SERVICE DUCTS = SERVICE DUCTS
ELECTRIC CABLE = ELECTRIC CABLE
TELECOMS CABLE = TELECOMS CABLE
WATER PIPE = WATER PIPE
GAS PIPE = GAS PIPE
FUEL PIPE = FUEL PIPE
VENT PIPE = VENT PIPE
OFFSET FILL PIPE = OFFSET FILL PIPE
GAUGE LINE = GAUGE LINE
VAPOUR RECOVERY = VAPOUR RECOVERY
FOUL DRAINAGE = FOUL DRAINAGE
SURFACE DRAINAGE = SURFACE DRAINAGE
COMBINED DRAINAGE = COMBINED DRAINAGE
CABLE TELEVISION = CABLE TELEVISION
UNIDENTIFIED = UNIDENTIFIED
Note: The underground services information has been supplied by A.E. Byrne.

UTILITY KEY

PR
RE
SV
TP
TFR
WL
UTS
UTL
SVP
SA
RWP

AR
BD BACKDROP
CR
CL
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G
EOT
EoC
EP

GULLY
CABLE RISER
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ASSUMED ROUTE
END OF TRACE

FIRE HYDRANT
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LP LAMP POST

MANHOLE
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SWS
CWS
FWS

INSPECTION CHAMBER
INVERT LEVEL
NOT LOCATED
NO VISIBLE EXIT
SURFACE WATER SEWER
COMBINED WATER SEWER
FOUL WATER SEWER

DISCLAIMER

GAS VALVE
GVVP

ABBREVIATIONS

TAKEN FROM RECORDS
STOP VALVE
WATER METER
WASH OUT VALVE
VAPOUR RECOVERY
TELEGRAPH POLE
UNABLE TO SURVEY
VENT PIPE
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VAPOUR RECOVERY
FOUL DRAINAGE
SURFACE DRAINAGE
COMBINED DRAINAGE
CABLE TELEVISION
UNIDENTIFIED
Appendix III

Environment Agency Flood Map
Enter a postcode or place name: OL3 5NU

OL3 5NU at scale 1:10,000

More about flooding:

Understanding the Flood Map for Planning (Rivers and Sea)

A more detailed explanation to help you understand the flood map shown above.

Current flood warnings

We provide flood warnings online 24 hours a day. Find out the current flood warning status in your local area.

* Legend Information: Flood defences and the areas benefiting from them are gradually being added through updates. Please contact your local environment agency office for further details.
Appendix IV

Canal and River Trust correspondence and Technical Guidance
Dear Mark

RE:- Flood risk enquiry – Saddleworth Secondary School, Huddersfield Road, OL3 5NU. Huddersfield Narrow Canal

Further to your enquiry received 14th October 2014, Canal & River Trust can confirm the following:-

The Trust are not aware of any leaks or seepage from the canal in the local area.

For further advice on flood risk from canals we have included some generic guidance, please refer to Appendix A attached.

Further, please note that the canal pounds adjacent to the site identified are minimal in length with frequent locks, with an average width of 12m.

Please be aware that we are unable to comment on the flood risk to individual properties or developments and interpretation of the information provided in this e-mail is your responsibility.

We trust this is satisfactory, however if you do require any further information please do not hesitate to contact the undersigned.

Regards

Mark

Mark Heath
Senior Water Engineer
(Manchester & Pennine, North West Waterways)

Canal & River Trust I Red Bull Yard I Congleton Road South I Church Lawton I Stoke-on-Trent I ST7 3AP

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Please visit our website to find out more and download our Shaping our Future document on the About Us page.

Hi Mark,

I have been passed your details regarding information relating to the Huddersfield Narrow Canal, we are in the process of drafting up a flood risk assessment report to accompany a planning application, the proposed works consist of redeveloping an existing industrial/commercial works unit into a secondary school. As such we are interested in any information relating to the Canal Hazard Zone and any of the following information;

1. Any relevant flood mapping data
2. Modelled flood levels
3. Modelled breach analysis
4. Historical flooding information

It is noted that the Huddersfield Narrow Canal is at a higher level than the adjacent land to the proposed school. We attach for your information a site location plan and proposed layout. Please could you also indicate if there any cost associated with obtaining the data.

Any assistance is much appreciated. Should you have any queries please do not hesitate to contact us.

Regards

Mark Nelson (EngTech) TMICE
Infrastructure Engineer

Visit our new website: www.masonclark.co.uk

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The Canal & River Trust is a new charity entrusted with the care of 2,000 miles of waterways in England and Wales. Get involved, join us - Visit / Donate / Volunteer at www.canalrivertrust.org.uk

Canal & River Trust is a charitable company limited by guarantee registered in England & Wales with company number 7807276 and charity number 1146792. Registered office address First Floor North, Station House, 500 Elder Gate, Milton Keynes MK9 1BB.

Elusen newydd yw Glandŵr Cymru sy’n gofalu am 2,000 o filltiroedd o ddyfryrdd yng Nghymru a Lloegr. Cymerwch ran, ymunwch â ni - Ewch i Rhoddion a Gwirfoddoli yn www.glandwrcymru.org.uk

Mae Glandŵr Cymru yn gwmni cyfyngedig drwy warant a gofrestredd yng Nghymru a Lloegr gyda rhif cwmni 7807276 a rhif elusen gofrestredig 1146792. Swyddfa gofrestredig: First Floor North, Station House, 500 Elder Gate, Milton Keynes MK9 1BB.
Appendix A - Guidance Note for Flood Risk Assessments

The main incidents of uncontrolled loss of water from our waterways are overtopping and breaching as a result of inundation from adjacent water courses, vandalism or structural failure.

Canal & River Trust maintains water levels using reservoirs, feeders and boreholes, and thereafter manages the water by transferring it within the canal system. The level of the water in canals is normally determined predominantly by the level and size of weirs. Water levels in river navigations are affected by the flow in the river and will fluctuate more widely than canals.

When surface water enters our waterways, the level of the water rises. Eventually the water level will reach a point where it discharges from our waterways through control structures. Where the capacity of these control structures is exceeded, overtopping may result.

Breaches which may lead to flooding can occur on our waterways. There can be a number of causes for these including: culvert collapse, animal burrowing and overtopping. Canal & River Trust operates a comprehensive asset management system which enables us to manage the risks of such events occurring.

Breaches occur on average at a rate of three per year over the whole of the Canal & River Trust owned canal network (that's over 2,000 mile of canal).
Appendix V

Proposed Layout
C

Check all dimensions on site. Do not scale from this drawing

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