Proposed commercial units
Twinbrook site
Lincoln Way, Clitheroe

Flood risk assessment

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1.0 Introduction

The former golf driving range at Twinbrook, Clitheroe is to be redeveloped with commercial units. The site is in the commercial area of Clitheroe and is next to Mearley Brook and is accessed from Lincoln Way and then Upbrooks.

2.0 Executive summary

The site is floodzones 1 and 2 with a small portion of floodzone 3a in the southeast corner which will not have buildings on it. The proposals are to build commercial units with yard areas and parking. The existing public foul sewer crossing the site will be diverted and surface water runoff will be stored in underground cellular soakaway lines as percolation tests show that the ground is permeable and all runoff can soak into the ground. The development will reduce downstream flood risk as a result of this.

Ground floor slab levels for units 1 to 12 and 18 to 21 will all be at or above 1 in 1000 year risk level, units 13 to 17 will be set just below 1 in 1000 year risk level. All risk level data has been obtained from the Environment Agency. Parts of the access roadways will be in floodzone 2 and all unit occupiers will sign up for the EA floodwarning service.

3.0 Existing site, flood risk, history, existing drainage mode.

The existing site is at the end of Upbrooks which is in the Lincoln Way commercial and manufacturing area of Clitheroe. It has been a golf driving range which is now closed. The existing site is now effectively a greenfield site and Mearley Brook flows past the eastern and southern boundaries. There are two streams joining next to the site to form Mearley Brook and these are Worston Brook and Pendleton/ Mearley Brook. On the western side of the site there is a large commercial building occupied by Ultraframe. This has experienced past flooding and SWEL which is Sustainable Water Environment Lancashire has provided advice to the company with regard to preparing for flooding and dealing with it if it occurs.

The existing site has an area of 22,400 m2 and has a level range of 81 at the southwest corner to 94 m AOD at the upper northern boundary. The Environment Agency has a river model of the brooks and risk levels have been purchased from the Agency to allow accurate floodzoning of the site. The current EA website mapping shows the site to be part floodzone 2 and mostly floodzone 1 for the northern part. Accurate floodzoning done by comparing the EA risk levels with accurate survey levels confirms this and also shows that a small part of the southeastern corner is floodzone 3a. Mearley Brook 1 in 100 year and 1 in 1000 year risk levels have been used to zone the site into floodzone 3a below a 1 in 100 year risk level, floodzone 2 between 1 in 100 year and 1 in 1000 year risk levels, and floodzone 1 above 1 in 1000 year risk levels. The Mearley Brook catchment at Twinbrook is 8.1 km2 in area and is quite steep with DPSBAR at 143 m/km. Annual rainfall is 1297mm and BFIHOST is 0.355 indicating relatively impermeable soils.

Public sewer records show a 300 mm dia public foul sewer crossing the site, also that there is a 1500 mm dia surface water sewer in the northeast part of the site which

outfalls to the brook system. The existing drainage mode of the site is that the rough grass area greenfield runoff drains downhill southwards into Mearley Brook.

Calculating greenfield runoff rates is done via the HR Wallingford website spreadsheet routine and the IoH 124 method gives a 1 in 1 year greenfield runoff figure of 21.13 l/sec for the site. A 1 in 100 year greenfield runoff rate will be 52.8 l/sec utilising a growth factor of 2.5.

4.0 Proposals, new drainage.

The proposals are to build new commercial units on the site plus access roadways and parking areas. New drainage will be separate system. The site will connect foul sewage to the public foul sewer system which will be diverted to suit the new layout. Surface water from roofs and roads will flow into underground cellular storage systems each built as a line soakaway and all runoff will soak into the ground, percolation tests have been carried out on site. The carpark area in floodzone 3a next to the proposed unit 12 will be of permeable makeup.

Proposed slab levels will be as follows:-

Unit	Slab level	1 in 100 year risk level	1 in 1000 year risk level
1 to 12	84.45	83.45	84.45
13 to 17	84.66	83.9	84.88
18 to 19	85.9	84.35	85.32
20	86.6	84.43	85.34
21	91.8	84.43	85.34

The new roads roofs and parking areas will total approx 16300 m2. As the open land currently drains to Mearley Brook the use of cellular linear soakaways will reduce the existing 1 in 100 year discharge to the brook from 52.8 l/sec to zero and this will reduce downstream flood risk.

The lower part of the site will be at risk from Mearley Brook as part of it is floodzone 2 and this means units 13 to 17 and the estate acccess roads in accord with their levels. All occupiers of units will have written emergency procedures in that provided the access road is not flooded vehicles can leave the site- if the access road is flooded vehicles can move to the top of the site and people can leave the site by walking uphill northwards to join the footpath system to Lincoln Way. All unit occupiers will sign up to receive the EA floodwarning service.

5.0 Strategic Flood Risk Assessments.

The Ribble Valley Council planning section of its website contains a download of its level 1 May 2010 SFRA report and extracts are attached from the sustainable drainage text.

6.0 National Planning Policy Framework and Technical Guidance and EA mapping.

The proposed commercial use is classed as 'less vulnerable' in Table 2 and is 'appropriate' in floodzone 1 and 2 as per Table 3. The exception test is not required.

Types of flooding that could affect the site are:-

1. River- floodzone 1, 2 and 3a
2. Sea- no tidal influence
3. Land- some undrained land slopes towards the north site boundary and a cutoff drain will be specified.
4. Groundwater- no springs or weep areas on the site
5. Sewers- no local internet reports of sewer surcharge
6. Reservoirs canals- none nearby

Environment Agency mapping is as follows:-

Flood map for Planning- the site is floodzone 1, 2 and 3a
Risk of flooding from rivers and sea- this shows the effect of any flood defences.
Flood warning- part of the site is covered by the EA flood warning service.
Groundwater- the site is not in a groundwater protection zone.
Risk of flooding from reservoirs- this shows reservoir risk- all utility company reservoirs are maintained to a 1 in 10,000 year risk standard under the Reservoirs legislation and this is a very rare and unlikely risk.
Risk of flooding from surface water- pluvial mapping is the subject of a separate EA paper made public in November 2013 and is useful in locating possible ground low points and depressions. This mapping shows the effect of various types of storms and is an approximate guide to low spots. In urban areas existing drainage systems are taken into account by subtracting 12 mm/hr from the Jflow 2D storm profiles input to the software, also there is a 30% reduction to allow for average infiltration and the resulting runoff is then routed over a digital terrain map. We quote-' the conveyance effect of ordinary watercourses or drainage channels is not explicitly modelled'- so whilst the EA mapping shows channel low points it does not show that ditch systems will carry flow forward and it takes no account of road under-culverts passing flow forward. . In practice intense urban storm runoff will run along public and private roadways and the mapping is conservative.

7.0 Attachments

Attachment	Number	Size
Location plan	1	A3
OS map	2	A3
Public sewer records	3 to 6	A3
Land survey	7	A3
Proposals	8	A3
EA risk levels	9	A3
Drainage proposals	10	A3
Mearley brook descriptors, rain data	11 to 13	A4
HR Wallingford storage	14	A4

calculation		
SWEL Ultraframe	15, 16	A4
Ribble Valley SFRA extracts	17 to 20	A4
EA mapping	21 to 26	A4

This report is an email report and attachments are grouped together in A4 and A3 for scanning and can be put in order using the top RH corner lettering. This report is copyright.
Email files
150203fra02
150204attach1-A3
150203attach2-A4

EA comments post submission
19/3/15-EA letter attached ref NO/2015/107616/01-L01
FRA report revised as above to version 03- re item 3 the unit footprint of 5, 6, and 12 has been slightly revised so that no part of these units is closer than 8m to the top of bank. All other comments are dealt with above.

Ribble Valley Borough Council
Development Control
Council Offices
Church Walk
Clitheroe
BB7 2RA

Our ref: NO/2015/107616/01-L01
Your ref: 3/2015/0159

Date: 19 March 2015

Dear Sir/Madam

PROPOSED INDUSTRIAL ESTATE DEVELOPMENT
LAND AT TWIN BROOK FARM, CLITHEROE

Thank you for consulting us on the above application, received on 5 March 2015. We would like to make the following comments:

Environment Agency position
In the absence of an acceptable Flood Risk Assessment (FRA) we object to the grant of planning permission and recommend refusal on this basis for the following reasons:

Reasons
The FRA submitted with this application does not comply with the requirements set out in section 10, paragraph 30 of the Flood Risk and Coastal Change (FRCC) guidance category of the Planning Practice Guidance (PPG). The FRA does not therefore, provide a suitable basis for assessment to be made of the flood risks arising from the proposed development. In particular, the submitted FRA:

1. Does not state how the development will be protected from flooding;
2. Does not propose a sustainable drainage system as required by Planning Policy;
3. Proposes development within the 8m wide Main River easement, which is not acceptable to the Environment Agency. The FRA does not even state that the two adjacent watercourses are Main Rivers which have easements. They are incorrectly referred to as "streams";
4. Does not give finished floor levels for all the proposed buildings; and
5. Does not estimate the flood risk levels on the site.

If the applicants or agents wish to discuss this position with us, they should contact Colin Worswick on 01772 714259.

Overcoming our objection
You can overcome our objection by submitting an FRA which covers the deficiencies

highlighted above and demonstrates that the development will not increase risk elsewhere and where possible reduces flood risk overall. If this cannot be achieved we are likely to maintain our objection to the application. Production of an FRA will not in itself result in the removal of an objection.

We ask to be re-consulted with the results of the FRA. We will provide you with bespoke comments within 21 days of receiving formal reconsultation. Our objection will be maintained until an adequate FRA has been submitted.

Advice to LPA/Applicant
The watercourses adjoining the site are designated as Main Rivers and are therefore subject to Land Drainage Byelaws. In particular, no trees or shrubs may be planted, fences, buildings, pipelines or any other structure erected within 8 metres of the top of the bank/retaining wall of the watercourse without the prior written Consent of this Agency. In this particular case it is essential that this 8 metre strip is preserved for access purposes. Based on the information available Consent is unlikely to be granted for this proposed development.

The Environment Agency has a right of entry to the two Main Rivers adjoining this site by virtue of Section 172 of the Water Resources Act 1991, and a right to carry out maintenance and improvement works by virtue of Section 165 of the same Act.

Informative
We have previously provided a preliminary opinion for the proposed development on this site to Stanton Andrews Architects. This has been attached for your information.

Yours faithfully

Mr Dave Hortin
Planning Advisor - Sustainable Places Team

Direct e-mail clplanning@environment-agency.gov.uk

cc Avalon Town Planning