

**Industrial site at
Upbrooks/Lincoln Way
Clitheroe**

Additional building proposal

Flood Risk Assessment

NGR SD 751 421

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1.0 Introduction

The Pozzi site is part of the Lincoln Way/Upbrooks industrial area and there are 2 existing buildings plus hardstandings. Mearley Brook flows through the southern part of the site and this report covers flood risk and surface water matters.

2.0 Executive summary

A new building is proposed on an existing industrial site at Upbrooks/Lincoln Way, Clitheroe. The proposal is just in floodzone 2 and will have a finished floor level of 80 AOD approx. The existing land is grassy and surface water will need to be controlled in accord with SR744 and new surface water flow rates limited to 5 l/sec.

3.0 Existing site and river system

The existing site comprises 2 buildings and hardstandings. The southern and eastern parts of the site are landscaped grass. Mearley Brook flows under Lincoln Way, into the southern part of the site and then flows west, parallel to Upbrooks.

Mearley Brook has a catchment area of 8.37km² which stretches eastwards. The average bedslope DPSBAR is 139.6 m/km indicating a steepish catchment. Annual rainfall is 1294mm with the amount of rain converting to runoff SPRHOST at an average of 41.45%.

4.0 Proposals and drainage

The proposals are to build a new single storey industrial building on the southern grass area between Mearley Brook and the existing buildings. The new slab level will be approx 80 AOD. The existing sewer will need to be diverted around the proposal – the sewer is lower than existing river bed levels. New drainage will be separate with foul flows draining to the public system and surface water flows outfalling at the existing headwall just downstream of Lincoln Way bridge.

Since Jan 2012 new guidelines are in force for new development surface water runoff and are in SR744 ‘preliminary rainfall runoff management for developments’. The guidelines require that new surface water flows and volumes are to be controlled in that:-

1. new runoff rates less than existing – 1 in 1 yr and 1 in 100 yr existing flow rates to be used as limiting flow rates
2. new runoff rates greater than existing and new runoff volumes greater than before – existing 1 in 1 year flow rates to be the limiting flow rate

There is also a new website www.uksuds.com which produces data for the planning process purposes. This produces greenfield runoff data and sustainable drainage storage volumes, however it is set to a minimum site size of 1000 m² and a minimum hard area of 500m². The new industrial building proposal is approx 390m². The website uses a minimum surface water limited flow rate of 5 l/sec which is practical lower limit to minimise repetitive blockages of vortex flow limiters.

Based on a limiting surface water flow rate of 5 l/sec a minor amount of surface water storage, say 2m³, may be needed, and can consist of Polystorm units placed under the carparking spaces. This surface water storage volume will be designed in detail using Microdrainage at the time of detail design. The results from the www.uksuds.com routine are an overestimate because of minimum areas set into the spreadsheet macros.

5.0 Survey work, river modelling, hydrology and flood zoning

The EA website shows the site as floodzone 2. The site has been surveyed including the river channel and a localised Hec Ras 4.1.0 hydraulic computer model has been built. This has consisted of 6 river cross sections plus the downstream footbridge and the upstream twin box culvert Lincoln Way road bridge. The average bed grade of 0.01 has been input for inlet and exit conditions.

Catchment descriptors for Mearley Brook have been input to the Re FSF/FEH spreadsheet and risk flows from this are:-

1 in 1 year	– 5 m ³ /sec
1 in 30 year	– 17.5 m ³ /sec
1 in 100 year	– 23.5 m ³ /sec

A 1 in 100 year plus 20% climate change flow is 28.2 m³/sec and a 1 in 1000 year flow is 40 m³/sec. The Re FSR/FEH spreadsheet produces conservative results. These flows have been input to Hec Ras and at cross section 4 risk levels are:-

1 in 100 year	- 79.23
1 in 100 year plus climate change	-79.35
1 in 1000 year	– 79.79

The proposals site is at a level of 79.6 to 80 and is thus on the upper edge of floodzone 2 and close to floodzone 1 with part being floodzone 1.

6.0 National Planning Policy Framework and Technical Guidance

The commercial proposals are classed as ‘less vulnerable’ in Table 2 and are ‘appropriate in floodzone 2 as Table 3.

All forms of flooding are (former PPS25 notation)

- C4 – rivers – see above
- C5 – sea – no tidal influence
- C6 – land – no undrained land slopes towards the proposal
- C7 – groundwater – no springs or weep areas on site
- C8 – sewers – no local reports of sewer surcharge
- C9 – reservoirs, canals – none nearby

7.0 Attachments

- a. Location plan
- b. Aerial view
- c. Proposals plus existing levels
- d. EA floodzone map
- e. FEH catchment map, descriptors, rain data, Re FSR/FEH printouts
- f. Hec Ras data outputs
- g. Site photos
- h. UK suds printout

This report is an email report and A4 and A3 items are grouped together for scanning and can be put in order using the top RH corner lettering. Should you require river model files please email floodriskengineer@gmail.com