

HINCHLIFFE MILL, WATER STREET, HOLMBRIDGE, HOLMFIRTH, HD9 2NX

FLOOD PROOFING SCHEME Rev A

Condition 9d of planning approval 2021/62/90800/W stipulates:

d) A scheme of flood proofing for units 3, 4, 5, 6, 7, 8 and 9 shall be submitted to and approved in writing by the Local Planning Authority and implemented no lower than the 1% AEP plus 23% climate change level with a suitable allowance for freeboard.

Areas Identified at Risk of Flooding

As identified in the KRS Flood Risk Assessment, dated September 2022 and approved under planning approval 2021/62/90800/W, a small section of the site is at *medium* risk of flooding with an identified maximum flood height of 167.30:

4.3 Finished Floor Levels

The maximum level varies across the Site given the slope of the river but the maximum level in the western flooded adjacent to the River Holme is 168.06mAOD and adjacent to the proposed buildings (i.e. units 3 – 16) is 167.30mAOD. For the new buildings the finished floor levels provide a more than adequate freeboard above the 1 in 100 year (+23%) event.

For the existing mill building all residential living accommodation will be located on the higher levels at a minimum of 169.84mAOD which provides a more than adequate freeboard above the 1 in 100 year (+23%) event.

The finished floor level of the lower ground floor will be set at 166.50mAOD, to conserve and re-use this building it is not possible to raise the finished floor levels further. The Site allocation (ref: HS190) requires that the original buildings shall be retained and reused as part of any development proposals. However, it should be noted that no residential living space will be located on the lower ground floor, only utility rooms, garage/parking, entrance lobby, cloak room etc will be located on the lower ground floor.

Table 7 - Finished Floor Levels

Units	100 (+23%) Water Level (mAOD)	1000 Water Level (mAOD)	Finished Floor Level (mAOD)	Freeboard (m) Above 100 (+23%) Year Event	First Floor Level (mAOD)	Second Floor Level (mAOD)
1 - 2	167.30	168.00	170.50	3.20	173.70	None
3 - 9			166.50	N/A	169.84	173.44
10 - 16			167.60	0.30	170.30	173.30
17 - 19			173.55	6.25	176.25	None

For the reasons identified in the FRA above, the Lower Ground Floor areas to the existing mill within plots 5-9 have a proposed finished floor level of 166.50, and as such Property Flood Resilience (PFR) measures should be incorporated.

It should be noted there is no Lower Ground Floor to plots 3 and 4, and as such, no PFR measures are required, all accommodation is at Upper Ground Floor and First Floor level (169.84 and 173.44 respectively).

Proposed Property Flood Resilience Measures

CIRIA Code of Practice for Property Flood Resilience identifies that PFR is used to reduce the risk of damage to homes that may flood. PFR does not change the chances that a flood will happen, but can reduce damage and disruption when they do occur. PFR can also speed up recovery from flooding.

PFR measures aim to limit the entry of floodwater into homes and minimise the impact of any floodwater that does get inside.

The PFR measures detailed below are to be incorporated into the Lower Ground Floor of plots 5-9 and are based on the findings and subsequent recommendations listed in the KRS FRA dated September 2022:

Design Out Risk

No residential living accommodation will be provided within the Lower Ground Floors of plots 5-9.

Only garaging, lobbies, utilities and store rooms are to be included within the areas identified to be at risk of flooding.

This will reduce the impact upon property owners should flooding ever occur by limiting the lower ground floors to utilitarian spaces. This will minimise the amount of internal fittings installed within these spaces and reduce the likelihood of belongings being damaged.

Flood Resistance Measures

The CIRIA Code of Practice defines Flood Resistance as ‘the use of materials and approaches to manage water entry into the property. This relates to water exclusion ie keeping water out.’

Given the proposals involve the conversion of an existing building, wholly preventing water from entering the properties is unlikely. However, measures can be incorporated to minimise the amount of water ingress should a critical flood event occur.

The measures to be incorporated to the Lower Ground Floors of plots 5-9 are as follows:

- Sealing of all existing penetrations through the external solid walls and repointing of existing stonework.
- Installation of internal cavity drained membrane to all external walls and floors, with externally drained channel drain to perimeters drained to surface water drainage system (see Appendix A for detailed design). Although the inclusion of an internal membrane system won't fully prevent flood water entering the properties during a critical flood event, it will provide a reasonable level of resistance to the free flow of water and the inclusion of a connection the surface water system will aid in the quick removal of water once the flood has receded.
- Garage floor levels to be 150mm lower than habitable areas.
- Installation of fully sealed external aluminium doors.
- External ground finishes to run away from the property to aid in removal of flood waters.
- No air bricks to be installed in external walls below 1200mm.

Flood Recovery Measures

Should the above stated Flood Resistance Measures not fully prevent flood water entering the properties during a critical event, the CIRIA Code of Practice recommends Flood Recovery Measures should be incorporated to reduce the damage caused by flooding and speed up the recovery process.

The Flood Recovery Measures to be incorporated within the Lower Ground Floors of plots 5-9 are as follows:

- Installation of cavity drained wall and floor membrane with connection to surface water drainage system to aid quick remove of flood waters.
- All proposed walls within and between dwellings at Lower Ground Floor level to be constructed of blockwork.
- Use of water resistant insulation within floors and walls (PIR and Jablite polystyrene) to reduce absorption of water within the structure.
- Horizontal installation of magnesium oxide wall boards to lower half of internal walls and internal face of external walls to increase resistance to water and aid in quick replacement if required.
- Solid concrete floor to garages with no void space beneath.
- Cement based screed to habitable areas with no chipboard flooring.
- Floor finishes to be porcelain tiles to habitable areas.
- Sockets, switches and electrical installations to be 1200mm from finished floor level to avoid saturation.
- No electrical appliances to be installed within utility or store rooms (laundry areas provided at first floor level).
- Installation of one way valves to 110mm internal drain connections.
- Installation of solid wood staircases to Lower ground Floors.

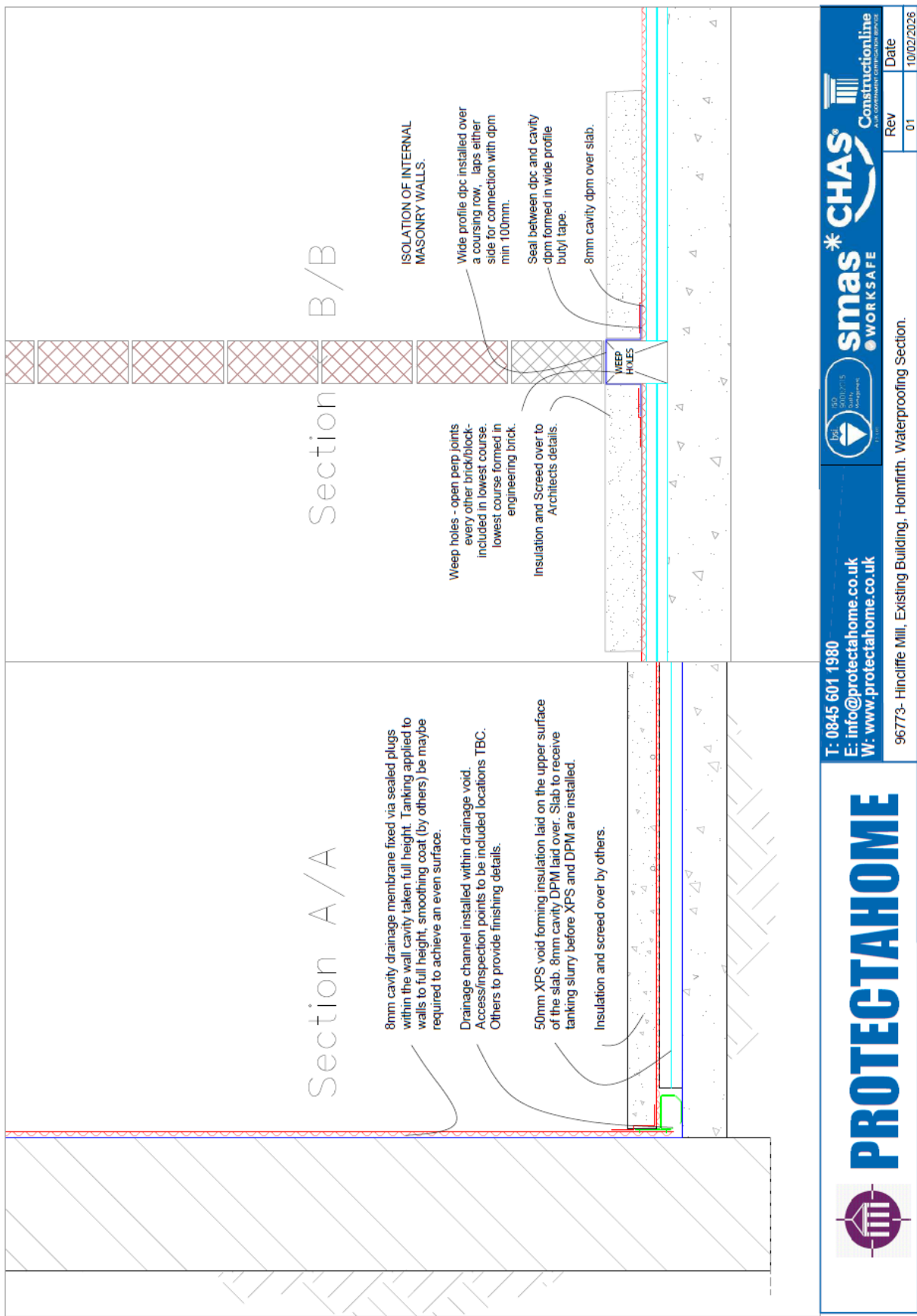
Flood Plan and Hand Over Information

Details of all Flood Resistance and Recovery Measures incorporated in to the development are to be recorded within a Home Owner Hand Over Pack to ensure future occupiers are aware of the measures installed and how to properly maintain these going forward.

A copy of the Environment Agency Personal Flood Plan template will be included within the pack to assist home owners in formulating a plan of action should a flood event occur.

Home owners will also be advised to sign up to the Environment Agency's Flood Alert service which provides advanced warning of potential flood events, allowing home owners time to prepare and thus reduce the damage caused.

APPENDIX A – Waterproofing Layout & Sections





Management company store

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