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THORNBERS, SLAIDBURN ROAD, WADDINGTON BB7 3JJ

FLOOD RISK ASSESSMENT

PROPOSED GARAGE

Project Ref: 26.10
Client: Mick and Katy Frankish
Date: July 2026

FLOOD RISK ASSESSMENT

1 Purpose and Scope

This Flood Risk Assessment (FRA) has been prepared to accompany the planning and listed application for a detached garage and demolition of a structure adjacent to a listed building at Thornbers, Waddington. It assesses flood risk to and from the proposed development in accordance with NPPF Chapter 14 and the associated Planning Practice Guidance (Flood Risk and Coastal Change).

The assessment addresses two elements of the proposal: -

The erection of a new detached double garage (7.0m x 6.8m external, ridge height c.4.7m).

The demolition of a redundant cart shed and the opportunity for partial exposure of a culverted watercourse within the curtilage of the site.

2 Flood Zone Classification - Fluvial and Tidal Risk

Thornbers is located at approximately 182m AOD on an elevated hillside north of Waddington, significantly above the River Ribble floodplain to the south. The site falls within Flood Zone 1 (annual probability of fluvial or tidal flooding less than 1 in 1,000 - low probability), as confirmed by the EA Flood Map for Planning. See map extract below.

As the site falls within Flood Zone 1, a site-specific flood risk assessment does not need to be provided (note 63 NPPF 2024).

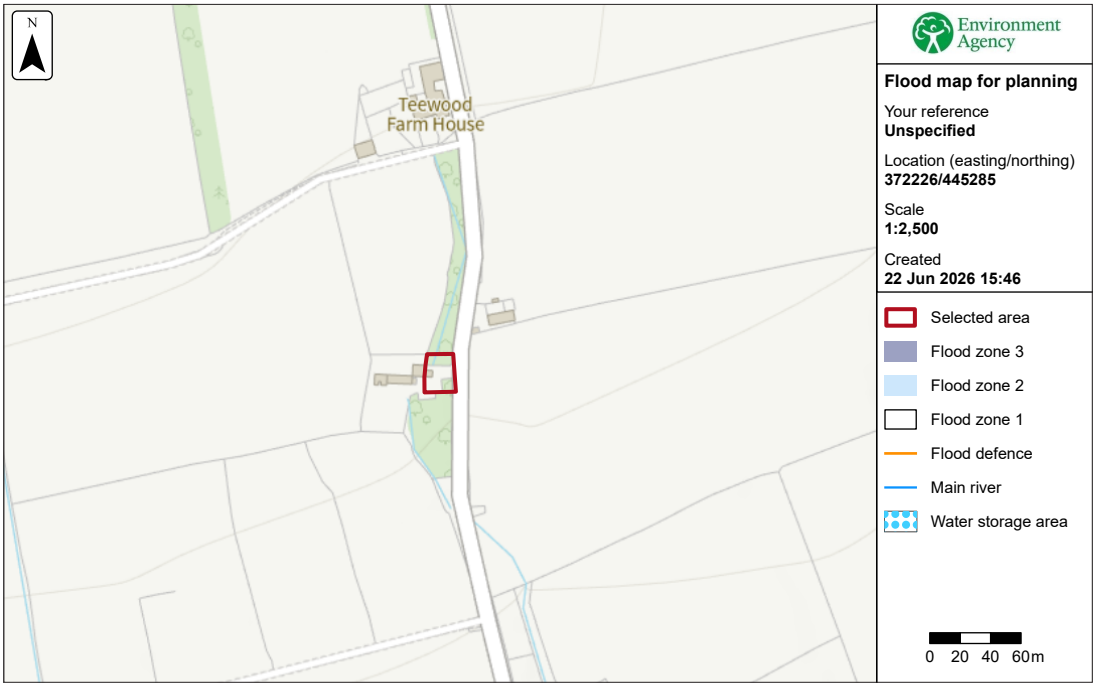

Fig. 1 EA Flood map for planning

3 Surface Water Flood Risk

EA Long Term Flood Risk Service (surface water layer) identifies a medium to high surface water flood risk across parts of the application site. This is consistent with anecdotal evidence from the applicant. See map extract below.

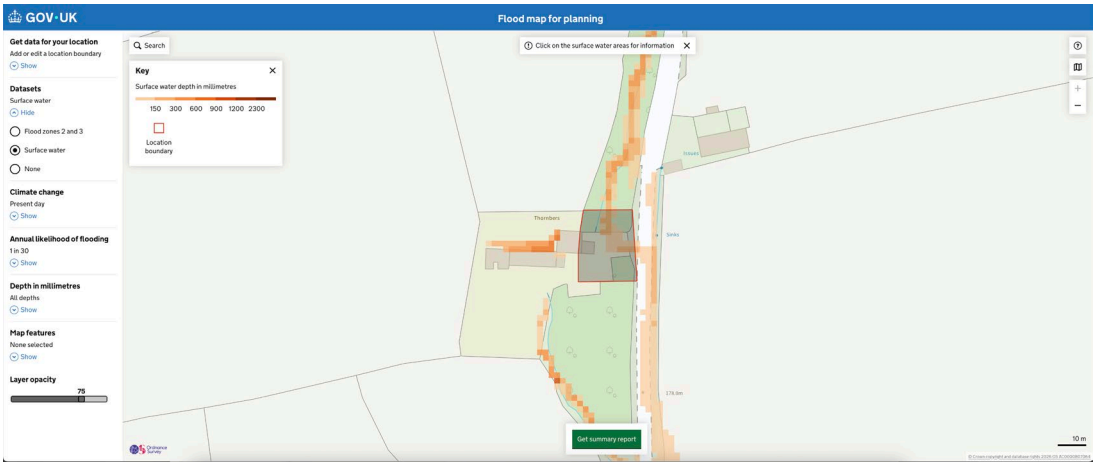

Fig. 2 Surface Water Map

3.1 EA Surface Water Mapping

The EA surface water flood mapping for the Thornbers curtilage identifies: -

Surface water depths in the range 150 - 300mm are indicated within the application boundary in the area of the current site entrance and along the watercourse corridor running diagonally through the eastern part of the site (consistent with the culverted stream shown on Drg.No. 2610/ex.01).

Depths of 300 - 600mm are shown along and immediately adjacent to the watercourse corridor itself - the most constrained section of the drainage path through the site.

A secondary zone of 150 - 300mm depth extends more broadly across the lower part of the curtilage, consistent with overland hillside flow concentrating toward the watercourse.

Slaidburn Road to the east shows significant surface water accumulation, suggesting the road acts as a collection point for flows from this hillside. This is relevant to the design of the garage access and drainage outfall.

The surface water risk is principally driven by the water course to North of the site, constrained hydraulic capacity of the culverted watercourse as it enters the curtilage of the site. Investigations on site have shown that the culvert passes beneath the cart shed, hence the demolition of the cart shed provides an opportunity for improved management of the water course. The natural topography diverts the over-flow onto the road, so there is an opportunity to reduce the impact on the highway.

4 Culvert

The culvert is stone built probably dating back to when the property was a farmstead. It is approx 600 mm wide and 400 mm tall and accesses the site below the stone wall with a metal guarding to reduce risk of blockages within the culvert.

Fig 3 North end of culvert

Fig 4 Width of culvert

Fig 5 Tree roots and stones form obstructions within the culvert.

Fig 6 South end of culvert within the garden, opening width has reduced to 400mm

4.1 Recent Flooding

From our discussions with the applicant and our investigations on site (we have not tried to investigate beyond what we can see from the entrances to the culvert) we believe the flooding is due to localised blockages at the North entrance due to a build of vegetation/sediment etc rather than a lack of capacity.

The entrance to the culvert is not visible from the garden so checks for blockages require a deliberate need to investigate rather than be seen by casual observation. This coupled with the challenging access, over the walls etc make the observation and clearing of the culvert problematic. We believe the risk of flooding can be reduced considerably by improved maintenance. This can be assisted by a partial opening up of the culvert.

5 Deculvert or 'Daylighting'

The case for deculverting or 'daylighting' which involves opening up buried watercourses and restoring the bed, bank and riparian corridor to more natural conditions is well documented. It is good practice to explore opportunities to deculvert as a flood and coastal risk management activity, under consents that are issued via the Environment Agency, and the requirements for planning applications.

There are a limited number of techniques that can be used to implement this environmental improvement, depending upon the location and constraints in and around the culvert. These include:

Completely remove the culvert and bank reprofiling to renaturalise the watercourse;
Remove the 'lid' of the culvert;
Create gaps in the culvert top to provide daylight into the watercourse.

5.1 Partial Daylighting

The intention is to remove the culvert and bank reprofiling to renaturalise the watercourse for 4m approx, in addition to the reduced culvert length it also allows us to partially remove the stone wall as well as bringing the entrance to the culvert into the garden to a point where it can be seen in passing daily whilst also allowing better access and mechanical clearing of the watercourse if required without impacting on the trees.

It increases the hydraulic capacity; removing the culvert constraint allows the watercourse to convey design flood flows at lower depth, reducing the risk of overland flooding. There is a reduced risk blockage; open channels can be inspected and cleared more readily than buried culverts. Removing the cart shed (currently sitting over the culvert impeding inspection and maintenance access) removes this risk.

It has ecological benefits, daylighting restores riparian habitat, consistent with Water Framework Directive objectives and the rural character of the listed farmstead setting.

There is planning policy support in NPPF, paragraph 172

> *using opportunities provided by new development and improvements in green and other infrastructure to reduce the causes and impacts of flooding, (making as much use as possible of natural flood management techniques as part of an integrated approach to flood risk management);*

5.2 Design Requirements for the Channel

Hydraulic capacity: No net loss of capacity: The channel must not be narrower in cross-sectional area than the existing culvert at any point along its length.

Bank stability: Battered back at a slope of 1:3 grassed and in keeping with the rural character and the setting of the listed building.

Inlet and outlet transitions: Transitions between the open channel and any remaining culverted sections, designed to avoid turbulence, scour and debris accumulation.

Maintenance access: A minimum 3m clear maintenance strip along at least one bank of the open channel, free of the garage structure and boundary treatments.

5.3 Consents for Watercourse Works

Land Drainage Act 1991, Section 23 Consent - required from Lancashire County Council as Lead Local Flood Authority (LLFA) before any works affecting the ordinary watercourse commence. This is a separate legal consent, independent of planning permission.

Water Framework Directive: The design should demonstrate no deterioration in the ecological or chemical status of the watercourse. 'Daylighting' is generally considered a WFD-positive intervention.

6 Garage design and Surface Water Drainage

Roof drainage from the proposed garage roof (approximately 7.0m x 6.8m = 47.6m^2 plan area) is proposed to discharge to the watercourse. Soakaway drainage has been discounted on the basis of multiple ground investigation and percolation tests carried out in the locality over a number of years by the practice, which confirm the presence of heavy clay soils with insufficient permeability for infiltration drainage. Discharge to the highway or public drainage system is not proposed.

The impermeable roof area of the proposed garage (47.6m^2) is comparable to and no greater than the existing cart shed footprint. There is no net increase in impermeable area arising from this proposal.

6.1 Considerations

This proposal replaces an existing structure on a similar footprint it does not introduce new development to a flood-risk area. It is located so as NOT to be on the culvert or adjacent to the listed house. A garage (water-compatible use, no sleeping accommodation) is the least vulnerable type of development possible in this functional context.

6.2 Mitigation

The following design measures have been adopted to mitigate surface water flood risk to the proposed garage: -

Finished Floor Level (FFL): The garage FFL at 182.65 is approx 200 - 300mm above the external ground level below the culvert and nearly 700mm above the highway.

Flood-resilient construction: Ground floor construction to be a concrete slab (flood-resilient specification). Cavity walls to be designed to resist localised water ingress. Sockets etc are all to raised off ground to minimise impact of any flooding.

7 Climate Change Allowances

The risk of flooding will increase with climate change current DEFRA/EA guidance for the North West England planning region, suggest the following uplifts should be applied in all hydraulic design calculations: -

Peak river flow: +40% on the 1 in 100 year event for the design horizon 2070–2115.
Peak rainfall intensity (surface water): +40% on the 1 in 100 year event.

It is this potential risk that has led to the applicant progressing the application.

8 Conclusion

The application site falls within Flood Zone 1 and is at low risk from fluvial or tidal flooding. However, the EA surface water flood risk mapping identifies medium to high surface water flood risk within parts of the curtilage. The proposed partial exposure of the culvert directly addresses the principal cause of this surface water risk and is expected to materially reduce flood depths within the watercourse corridor in the curtilage. The replacement garage is a water-compatible use designed with appropriate flood resilience measures.

The following have been adopted to reduce the consequences of flood risk requirements: -

Garage FFL 200 - 300mm above ground to the west of the property.

Ensure flood-resilient construction for the garage ground floor and lower walls to resist water ingress.

Obtain Land Drainage Act S23 Consent from LCC (and EA permit if required) before any watercourse works commence.

Roof water drainage from the proposed garage to discharge to the watercourse.