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## Structural Assessment Report Town Head Farm Nethertown



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## Structural Assessment Report

### 1.0 Brief

Tweddell and Slater Ltd were appointed by Stuart Woodall, to carry out a structural survey of the barns and cottage at Town Head Farm, Nethertown. We visited the property on 14<sup>th</sup> August 2020 to carry out a visual inspection only. This report is not therefore intended to be a full structural survey, we cannot comment on areas of the structure that were concealed or inaccessible.

### 2.0 Description

The property is a farm and outbuildings located in the village of Nethertown, West Cumbria. The stone barns are located around a cobbled yard, with the farmhouse at the south eastern end. The cottage was located at the north western corner. The weather during the survey was dry and clear.



*Figure 2.0 – Barn One viewed from the yard*

Each barn has been designated with a number for the purposes of this report:

- Barn One: the two storey south eastern barn, on Nethertown Road.
- Barn Two: the single storey barn adjacent to barn one, on Nethertown Road.
- Barn Three: the two storey barn on the north western edge of the yard.
- Barn Four: the low level outbuilding along the western edge of the yard.
- The Cottage: the two storey building at the north western corner of the yard between Barns three and four.

The outbuildings were generally of stone construction, with either slate, cement tile or corrugated roofing. The roofs were generally supported on timber principal trusses with timber purlins and loose rafters. The ground floors were generally concrete or stone flags and any first floors were generally timber beams, joists and boards.

### 3.0 Observations

#### 3.1 Barn One

Barn One was located at the south eastern end of the yard. It comprised of two storeys, the ground floor accessed from the yard side and the first floor accessed from a ramp in the road side. The earth ramp was bounded by a stone retaining wall adjacent the road and Barn two behind, which had an outwards lean at the top of the wall.



*Figure 3.0 – Lean in retaining wall to Barn One*

The adjacent road also sloped up from the north western end to the gable and then back down into the yard. There were two lean to extensions on the gable of Barn One, the yard side one constructed in blockwork with render finish and corrugated roof sheeting and the road side one constructed in stone with slate roof. The barn gable above the lean to roofs was also rendered in cement.



*Figure 3.1 – Lean to extensions and rendered gable*



There were some undulations in the yard side wall, with an outwards lean of up to 35mm in a 1.2m length over the barn door. There were areas of missing mortar and heavily weathered stones and some areas of cement pointing were noted, with some spalling off. A straight joint was observed between Barn One and Barn Two.



*Figure 3.2 – Yard side wall of Barn One*

An inwards dish was noted in the gable peak, with an inward lean at the ridge. Loose stonework and cracked render was noted at the yard side eaves. A cast iron downspout was noted to discharge onto the ground behind the blockwork lean to extension.



*Figure 3.3 – Dish in gable*



*Figure 3.4 – Loose stones at eaves and cracking to extension*

There was cracking to the blockwork along the eaves of the yard side lean to. The steel angle purlins supporting the roof sheeting appeared to have corroded and broken the blockwork at the bearings. Corrosion of the purlins and cracking at bearings was also noted internally, as well as some water staining on the internal wall.



*Figure 3.5 – Cracking at purlin bearings*





*Figure 3.6 – Water staining and cracking to internal wall*

There was a large dip in the roof of the stone lean to, with some separation in the tiles at the junction with the barn gable. There were also two glazed rooflights and some slipped slates.



*Figure 3.7 – Dip in roof of stone lean to extension*



The quoins adjacent to the door were weathered and broken and there was some loose stone and patches of missing mortar on the gable peak facing the yard. Internally, there were timber loose rafters and purlins supported on a timber monopitch truss. There was some cracking under the truss bearings and loose and missing stone around the purlin bearings and the door. A dip in the purlins was also noted, particularly at the bearing onto the truss.



*Figure 3.8 – Cracking at truss bearing, loose stone by door and dip in purlin*



The ground floor section of the road side (front) wall appeared to retain the earth for the ramp up to the first floor entrance. An inwards dish was noted to the left hand side of the barn door.



*Figure 3.9 – Inwards dish in front wall*

Missing stonework was noted to the gable peak of the lean to extension, along with a straight joint up to the underside of the window. Some patches of cement pointing were observed, particularly around the pipe and at eaves. Otherwise, mortar joints were relatively well filled and only some individual stones appeared well weathered. There was an opening to the lower level with grating over. Cracked stones were noted around the door, particularly where the hinges had corroded and broken the stone. There were also some dry mortar joints to the right hand side of the door.





*Figure 3.10 – Broken stones around door*

Internally, the floor was suspended timber which appeared relatively stiff under foot but some of the boards were showing signs of rot. The timber loose rafters and purlins were supported on timber principal trusses. The slates and parging were visible from inside, with a couple of slates missing or slipped. The roof timbers generally appeared sound upon visual inspection.



*Figure 3.11 – Barn One roof trusses*



There was a large opening in the internal cross wall with cement render around, that had cracked and spalled. A large diagonal crack was noted at the internal wall/yard wall junction. There was an outwards lean on the yard side wall, measured at approximately 10-15mm in a 1.2m length.



*Figure 3.12 – Cracking in internal wall*

A vertical crack was noted in the gable wall up to the ridge, widening towards the top.



*Figure 3.13 – Vertical crack in gable*



At ground floor level the barn was accessed from the timber sliding door on the yard side. The first floor was supported by one timber beam, measured at approximately 175x225mm, and one steel beam, approximately 230x100mm with an 8mm tapered flange (which could be a 9x3.75x26 RSJ). The steel beam appeared to have replaced an equivalent timber beam at some point and the remaining timber beam appeared to have deflected. Water staining was observed to the floor joists, with corrosion to the steel beam. Corbals were noted at each of the beam bearings. There was some cracking over the yard side window to the left hand side of the door (viewed from inside), as well as some cracking under a joist bearing on the internal wall (near to the yard side).



Figure 3.14 – Cracking in Barn One ground floor and first floor structure

### 3.2 Barn Two

The inspection of Barn Two began at the road side wall. The tenant advised us that the northern end of the roadside wall had been previously rebuilt in blockwork and faced with stone after a collapse (date unknown). The edge of this blockwork could just be viewed internally, but the majority was obstructed by straw bales.



*Figure 3.14 – Edge of blockwork rebuild*

There was some cement patching to either side of the door – presumably related to the rebuild. The key stone of the arch appeared to have dropped (it also appeared to have stepped out at the front but this seems to be a stonework detail as it was flush at the rear). When viewed from inside the arch stones appear to have been cut out to accommodate a square door at some point. Again, there were broken quoin stones around the door where the hinges had corroded. There was also one stone that appeared to have twisted and been displaced.