

Figure 3.15 – Area of rebuild



Figure 3.16 – Dropped arch stone

There was a slight undulation in the rebuilt section of wall, along with a slight inwards lean at eaves on the left hand side of the wall. The cast iron downpipe discharges onto the ground adjacent to the retaining wall. The roof appeared to be relatively straight and had been reroofed and the finish replaced with concrete tiles.



Figure 3.17 – Downspout and apparent rebuilt section where inwards lean noted

Internally, there was a concrete ground floor and a similar timber truss and purlin roof structure to Barn One. There were battens spanning between the trusses, with the area adjacent to the first floor door being used as storage. There was some cracking under the roof truss bearing over the door, some loose mortar joints and some embedded timber. The front wall and internal crosswall do not appear to be keyed in. It was difficult to view the junction with the rear wall due to wiring.



Figure 3.18 – Cut arch stones and cracking under truss bearing

There was an another lean to extension to the north west gable of Barn Two. The walls were of stone construction, with timber rafters and purlins and a slate roof. It was open to the road side with a door through the Barn Two gable wall. There were numerous open joints with some cement patching and the rear wall did not appear to be keyed into the barn wall. There was a raised platform along the gable and rear, on blockwork, part concrete and part timber. The internal lintel over the door showed signs of infestation and had a reduced section size. There was also some blockwork and cement patching around the doors. The patching noted to the rear wall appeared to have re-cracked (diagonally away from the gable peak). There were also slates missing to the roof over the entrance.





Figure 3.19 – Blockwork patching around doors and cracking to rear wall

Externally, there was undulations in the roof (sagging purlins), loose and missing stones at eaves and missing guttering. There was some cement patching and some loose and missing mortar (as elsewhere). There were also areas of heavily weathered stonework.



Figure 3.20 – Lean to extension and Barn Two gable

There were dry mortar joints to the Barn Two gable above the lean to roof. Missing cement at the verge was noted and a bolt and plate was observed on the right hand side just above the lower roof. Again, there was some cement patching, particularly around the eaves and the lower opening (potentially moved at some point from lower down). The timber and corrugated sheeted building to the side showed signs of decay and corrosion.



Figure 3.21 – Timber building adj Barn Two

### 3.3 Barn Three

Barn Three was located at the north western end of the yard, adjoining The Cottage and Barn Four. The structure consisted of red sandstone walls, corrugated sheeting roof and timber first floor. Undulations were noted in the roof slopes and ridge, presumably sagging between roof trusses. There were dry mortar joints throughout the external walls.



Figure 3.22 – Barn Three yard side wall

An outwards bulge was noted in the gable wall, worsening towards the gable peak, where the ridge then leans inwards (i.e the opposite direction to the bulge). There were also loose coping stones at the verge.



Figure 3.25 – Bulge in first floor wall and lean at ridge

Heavily weathered stone was observed on the gable wall along with recessed mortar joints.



Figure 3.26 – Heavily weathered stone to gable wall

There was staining where the gutter had appeared to have cracked on the northern wall. An apparent dip in the bed joints was also noted in this area. Some loose brick infill was observed between Barn Three and The Cottage. The downspout adjacent also discharged directly onto the ground.



Figure 3.27 – Staining to northern wall



Figure 3.28 – Brick infill adjacent to the cottage

Internally, there was a timber beam and joist floor, propped on the stall posts, with a concrete ground floor. The timberwork appeared sound but there was some cracking in the wall around the yard side windows.



Figure 3.29 – Cracking around yard side windows

#### 3.4 Barn Four

Barn Four consists of several ground floor stalls adjacent to the farm house. It was difficult to survey the internal walls due to the building being used for storage. The barn appeared to have been recently reroofed, with cement tiles similar to Barn Two. The roof was supported by timber trusses and purlins, with some sagging noted in the purlins. This was also noted externally and a dip in the ridge adjacent to the cottage. The external stonework appeared sound, with full mortar joints. One horizontal crack was noted through a door framing stone adjacent to the farm house. The area adjacent to the cottage could not be surveyed at the time of our visit as the farm dog was being held in this area.



Figure 3.30 – Horizontal crack through door stonework



Figure 3.31 – Internal roof structure



Figure 3.32 – Dip in roof adj to cottage

# 3.5 The Cottage

The front of the cottage faced south west, with one door and two windows on the front wall. The rear wall backed onto Barn Three but it did not appear to be the same wall (brick infill between). The gable is bounded by the stone and concrete ramp that leads to the rear door to Barn Three.



Figure 3.33 – Cottage gable

Loose stone and dry mortar joints were observed on the gable wall, with cement patching to the gable corner, gable peak and verge.



Figure 3.34 – Cracking in front wall of cottage

The roof was finished in cement tiles, with stone copings at the verges. There was a crack through the centre of the front wall with significant undulations around the windows and door. The wall dished inwards around the window and then bulged outward adjacent, between the window and the door. The difference between outwards bulge and inwards dish was measured at approximately 70mm. The downspout servicing Barn Four and the cottage discharged onto the ground adjacent to the door.



Figure 3.35 – Undulations to front wall of cottage

Internally, there was a stone flag ground floor and timber first floor supported on timber beams spanning front to back. All timberwork showed signs of rot and infestation. An alcove in the internal crosswall with Barn Four has a timber plank lintel that had deflected significantly. There was significant cracking adjacent to the front door and the fireplace lintel had snapped in the centre and dropped at the left hand side. There was also significant deflection in the timber beams over the fireplace. We also observed a pull on the first floor beam bearing on the front wall.



Figure 3.36 – Front beam bearing

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Figure 3.37 – Split fireplace lintel

The stone staircase in the eastern corner led up to the first floor, through a timber door and partition. The door stuck when trying to open and close. The roof was supported by a truss which had a collar arrangement at the ridge – it was unclear whether this was original but did appear to be a similar age to the other timber. An additional timber had been installed beneath the ridge between the truss and the Barn Four gable.



Figure 3.38 – Roof truss apex



Figure 3.39 – Roof structure

A twist in the truss rafter was observed at the bearings when viewed from directly underneath the apex. There was also a drop in the purlins, particularly over the stair partition. Loose stonework was observed at eaves level and the stonework pier supporting the ridge was noted to be leaning to the rear (although there was little, if any cracking so it could have been constructed this way). We were unable to inspect the chimney breast and gable wall on the first floor due to the unstable nature of the floor.



Figure 3.40 – Gable wall adjacent to Barn Four



Figure 3.41 – Gable wall cracking at purlin bearing

A series of cracks were noted on the gable wall adjacent to the stair, with several areas of loose stonework, particularly around purlin bearings. The roof appeared to have been reroofed, with new loose rafters and felt. The cement tiles externally were the same as elsewhere.

# 4.0 Conclusions and Recommendations

The items noted above are generally typical of buildings of this type and age, particularly in a coastal location. The smooth, rounded edges of the heavily weathered sandstone are typical of coastal erosion and the dry mortar joints are also an indicator of strong winds and wind blown sand. Generally, the walls appear to be in relatively good condition, with some exceptions, and we would recommend that all joints are raked out and repointed with a suitable lime based mortar, as a minimum. We would suggest any seriously degraded stonework that reduces the capacity of the wall is locally removed and replaced.

Several downspouts were noted to discharge directly onto the ground, which can lead to saturation of the ground around the foundations and washing away of the substrate, promoting settlement. We would recommend that any downspouts are directed into drains away from the base of the buildings.

The majority of the internal structures consisted of timber, and therefore, we would recommend that all timber is assessed by a specialist and any remedial treatment or repairs carried out as required.

### 4.1 Barn One

We would recommend that if the extensions to the gable of Barn One are to be retained, that they have the roofs and any broken or missing stone, removed and replaced.

There appears to be a lean in the side walls towards the yard side, likely due to the retained material on the road side, the lack of bracing in the roof structure and the tall, relatively unrestrained walls, particularly at first floor level. We would recommend that the retaining section of the wall is checked for structural adequacy, with further details for additional strengthening provided if required. If the ground floor of the barn is to be developed into habitable space then tanking of the road side wall will need to be considered.

The roof structure appeared relatively sound but all timber, including the first floor, would require assessment by a specialist. We would recommend that the roof finishes are removed and yard side wall taken down to first floor level and rebuilt plumb. We would also recommend that any rebuilt walls are fully keyed into the adjacent stonework. We would suggest that the stonework over and around the barn door is also removed and rebuilt, replacing any damaged stonework, at which point the lintel can be replaced if required. All loose stonework at eaves and verge should also be reset.

At a minimum, the first floor would benefit from some strengthening to the remaining timber beam, and the steel beam should be wire brushed and painted with a suitable corrosion protection system (a specification can be provided upon request). If the building is to be converted we would suggest a new first floor is installed at a suitable level, at which point the walls should be strapped to the new structure to provide lateral restraint and restrict any future movement.

#### 4.2 Barn Two

We were unable to fully inspect Barn Two due to the straw bales being stored at the northern end, but we understand from the tenant that there has been previous movement in the road side wall of this barn, with a previous collapse. In our opinion, this is again likely due to the lack of restraint of the walls and lack of bracing in the roof. With no first floor this barn is currently particularly susceptible as the walls are very tall and long with very little restraint in the form of strapped floors or cross walls. As previously, the walls would benefit from being strapped to a first floor or ceiling. Details for this can be provided upon request.

The rebuilt section of the wall appeared sound at the time of survey but still displayed some undulations. We would recommend this is monitored over the next year. The arch had dropped and the area of stone above it would appear to benefit from being taken down and rebuilt, with the arch reset at this point. This area is particularly susceptible to movement due to how flat arch is. We were unable to closely inspect the roof but it appeared relatively sound upon inspection from the ground floor.

As at the opposite gable, we would recommend the roof of the lean to extension is removed and replaced and all loose stone at the eaves removed and reset. Whilst not showing signs of significant distress, we would recommend that the timber and steel lean to is demolished over the longer term.

### 4.3 Barn Three

Barn Three appeared to suffer from very similar issues to Barns One and Two, with some movement in the gable, likely due to lack of bracing in the roof. It is difficult to say from one site visit whether this movement is ongoing, so we would recommend that it is monitored over the next year.

We were unable to inspect the internal roof structure but missing ridge tiles and the condition of the corrugated sheeting would indicate there has been some water ingress.