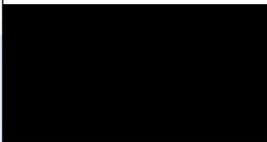


## *Structural Inspection*

Client:	Everards of Leicestershire
Project:	Barn 1, Greendale Oak, Cuckney
Project No:	23-20714
Document No:	0-030
Issue:	2
Date:	22 December 2023
Engineer:	 ..... Andrew Kenyon, MEng (Hons) DIS ILM MStructE Director, DWS Ltd

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1.0	Introduction
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Appendix C	Site Plan

# 1. Introduction

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- 1.1. The reporting was carried out by Andrew Kenyon MEng (Hons) DIS ILM MIStructE. He over 20 years experience in the construction industry carrying out inspections on historic buildings and recommending repair strategies.
- 1.2. Further to instructions we visited The Greendale Oak Public House on 7<sup>th</sup> December 2023. The purpose was to inspect Barn 1 to the rear of the pub.
- 1.3. The property is a two storey barn currently acting as a kitchen store including a walk-in fridge.
- 1.4. The purpose of our visit was to undertake a visual structural inspection of the property following a number of vertical stepped cracks opening up in the stonework.
- 1.5. Our inspection was limited to elements of the structure which were visible, exposed or to which access was available.
- 1.6. We did not inspect woodwork or any other part of the structure which was not visible or inaccessible and we are unable, therefore, to advise that any such part is free from defect.
- 1.7. This report may not be used or relied upon by any unauthorised third party, or for any other proposed use than that specified above, without the explicit written agreement of DWS Ltd.

## 2. Observations

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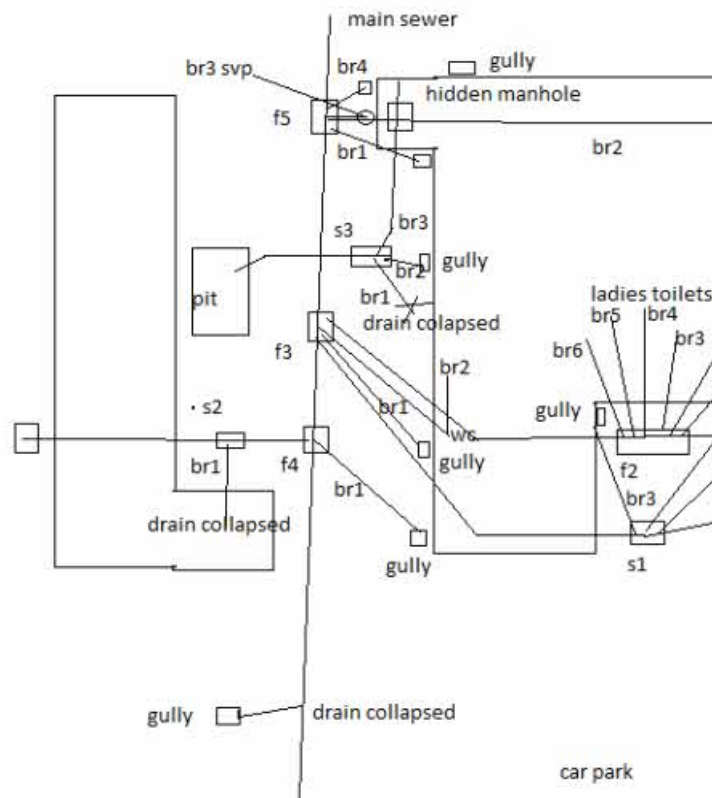
- 2.1. Barn 1 is a semi-detached two storey building constructed in the mid to late 19th century. It is attached to a series of barns as laid out in Appendix C. The building is of typical stone construction and is attached to Barn 3 which was constructed earlier at the same stone construction.



- 2.2. The roof is a timber purlin roof with traditional timber trusses. The first floor is of traditional timber construction. There have been various tie bar type repairs added to the eaves at various points in the life of the building.
- 2.3. The ground floor is of ground bearing slab construction and was showing signs of movement and cracking as evidenced in the failing lino floor. (Category 2)
- 2.4. There is a vertical 'stepped' crack near to the front corner that has been re-pointed but continues to open up. (Category 3)
- 2.5. There is an open vertical straight joint where the stone buttresses the stonework to Barn 3, suggesting this was an extension at some point. Whilst

there is little evidence of ongoing movement, it is clear that there is little tying the stonework together on this corner. (Category 2)

- 2.6. There has been a CCTV survey of the drains in the courtyard that shows that there are a number of broken and leaking drains near to Barn 1. This includes a collapsed drain under the concrete slab and multiple fractures & breaks near F4. This water entering the subsoils near to the existing foundation for extended periods of time, softens the subsoils under the foundation and causes the subsidence seen.



### 3. Conclusions and Recommendations

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- 3.1. The drains need to be fully renovated to prevent the issues developing in the subsoils and stop further movement.
- 3.2. A trial hole will need to be excavated next to the foundation to inspect the subsoils to ensure that underpinning is not required.
- 3.3. Crack stitching in the form of Heli-bars are required to repair the corner crack and to tie the stonework into Barn 3. This is to be carried out in accordance with the details provided on drawing 23-20714-1-001P3.

## Appendix A – Photos

	
<p>Photo 1 – External Crack Barn 1</p>	<p>Photo 2 – Internal Crack Barn 1</p>
	
<p>Photo 3 – Straight Joint Barn 1 to Barn 3</p>	

## Appendix B – IStructE Classification of visible damage to walls

Category of Damage	Approximate Crack Width	Definition of cracks and repair types/consideration
0	Up to 0.1	HAIRLINE – Internally cracks can be filled or covered by wall covering, and redecorated. Externally cracks rarely visible and remedial works rarely justified.
1	0.2 to 2	FINE – Internally cracks can be filled or covered by wall covering, and redecorated. Externally, cracks may be visible, sometimes repairs required for weather tightness or aesthetics. Note: Plaster cracks may, in time, become visible again if not covered by a wall covering.
2	2 to 5	MODERATE – Internal cracks are likely to need raking out and repairing to a recognised specification. May need to be chopped back, and repaired with expanded metal/plaster then redecorated. The crack will inevitably become visible again in time if these measures are not carried out. External cracks will require raking out and repointing, cracked bricks may require replacement.
3	5 to 15	SERIOUS – Internal cracks repaired as for MODERATE., plus perhaps reconstruction is seriously cracked. Rebonding will be required. External cracks may require reconstruction perhaps of panels of brickwork. Alternatively, specialist resin bonding techniques may need to be employed and/or joint reinforcement.
4	15 to 25	SEVERE. – Major reconstruction works to both internal and external walls skins are likely to be required. Realignment of windows and doors may be necessary.
5	Greater than 25	VERY SEVERE – Major reconstruction works, plus possibly structural lifting or sectional demolition and rebuild may need to be considered. Replacement of windows and doors, plus other structural elements, possibly necessary. Note: Building & CDM regulations will probably apply to this category of work.

Table 6.2  
Subsidence of low-rise buildings – The Institution of Structural Engineers (IStructE)



# Appendix C – Site Plan

## Green Dale Oak Structural Survey Works Enabling Works Package

### Site Clearance & Survey Process

- Site clearance as identified.
- Instigate Structural Survey Barn 1 and Barn 2
- Submit LBC for Barns 1 & 2
- Clear Barn 3, 4 & 5 of unwanted objects
- Consolidate retained objects in Barn 5
- Instigate Structural Survey Barns 3 & 4
- Relocate retained objects in Barn 3
- Instigate Structural Survey Barn 5
- Submit LBC for Barns 3, 4 & 5



Figure 1