STRUCTURAL APPRAISAL

TO

OLD DAIRY HOUSE

CASTLE FARM

CASTLE LANE

CODNOR PARK

IRONVILLE

NOTTINGHAMSHIRE

N8723 **SEPTEMBER 2024**

H.M. CHAMBERS & PARTNERS

CONSULTING CIVIL AND STRUCTURAL ENGINEERS

41a Derby Road.
Heanor,
Derbyshire, DE75 7QG
Tel: 01773 – 718994
Fax: 01773 – 531293

N8723

STRUCTURAL APPRAISAL, OLD DAIRY HOUSE, CASTLE FARM, CASTLE LANE, CODNOR PARK, IRONVILLE, NOTTINGHAMSHIRE.

1.00 **Introduction**

1.01 Following a request from Mr. D. Fretwell, the developer of the site, an engineer from H. M. Chambers & Partners Limited attended the above site the object of which was to examine the existing structure and offer an opinion and comments relating to the structural condition and acceptability of the structure for conversion to two residential accommodations.

1.02 A detailed intrusive survey has not been undertaken and therefore, comments contained within the report are in general terms only, although the inspection was considered sufficient to formulate an opinion regarding the present condition and to offer an opinion and comments relating to the structural condition and acceptability of the structure for conversion to residential accommodation.

1.03 We have not inspected parts of the structure, which were covered, unexposed or inaccessible and are, therefore, unable to report that any such part of the property is free from defect.

2.00 **General**

2.01 The structure under consideration comprised a single-storey three span reinforced precast concrete portal framed pitched roof structure with a combination of timber and precast concrete purlins supporting a corrugated metal cladding with perimeter masonry brickwork walls.

3.00 **External Inspection**

3.01 An inspection of the exterior of the structure revealed no evidence of crack damage or movement of a structural nature to the walls or roof constructions. It is also evident from the proposed plan and elevations that the door and window openings are to be positioned at identical positions to the existing openings.

4.00 **Internal Inspection**

4.01 The structure comprised a precast concrete framed portal structure with a pitched roof with columns at equal centres with two central precast concrete columns at the inner valley gutter positions to form a three span framed structure. An inspection of the precast concrete framed structure revealed no evidence of crack damage or distortion of the main frames or the timber and precast concrete purlins to the roof and at the valley gutter positions.

4.02 It was noted, however, that localised delamination of the concrete had occurred exposing the reinforcement bars with evidence of oxidization of the exposed reinforcement bars noted.

4.03 An inspection of the ground floor revealed an in-situ concrete construction with no evidence of crack damage or movement of a structural nature noted.

5.00 **Rainwater Goods**

5.01 Rainwater valley guttering and associated down pipes were noted at several positions to the inner valleys which discharged into the below ground drainage system, however, no rainwater goods were provided to the outer elevations of the structure. It is, therefore, recommended that all rainwater goods are inspected for soundness and replaced where missing to the outer elevations and connected to a below ground drainage system to discharge to an approved drainage system.

6.00 **Conclusions**

6.01 Following an examination of the structure it is evident that the building is structurally sound and is considered suitable for conversion to residential accommodation. It will, however, be necessary to undertake several works of a structural nature to ensure the future integrity and stability of the structure.

6.02 With regard to the delamination of the concrete resulting in the localized exposure of the reinforcement to the precast concrete elements of the structural frame it is likely that the damage will continue to occur during the life of the building if remedial works are not undertaken. The extent of the localised delamination noted were considered to be superficial in nature and were not sufficient to have compromised the structural integrity of the precast concrete

elements and may, therefore, be made good to an approved specification to ensure the longevity of the frame and associated pre-cast concrete elements. It is recommended, therefore, that the precast concrete elements are fully inspected and that all loose/delaminated concrete is removed prior to wire brushing and all exposed reinforcement is painted with a rust inhibitor prior to the reinstatement of the concrete surround with an epoxy rich cementitious compound.

7.00 **Recommendations**

7.01 It is recommended that the following remedial works are undertaken:-

i). Undertake design calculations to determine load capacity and adequacy of the existing timber roof purlins to support the replacement roof covering and modify/strengthen as required to withstand proposed applied loadings.

ii). Ensure all internal masonry fully re-pointed following a thorough wash down with an approved fungicidal fluid.

iii). Provide a concrete overly to the existing floor construction incorporating a damp proof membrane and insulation to comply with the requirements of the current Building Regulations Act.

iv). Undertake an inspect the pre-case concrete elements of the structural frame and associated pre-cast concrete elements to remove all areas of debonded or loose concrete prior to wire-brushing with a rust inhibitor. Following the painting of the exposed reinforcement the concrete surround is to be reinstated with an epoxy rich compound to offer future protection to the reinforcement.

v). Upgrade roof construction to ensure requisite 'U' value and adequate ventilation is achieved, as specified under the Building Regulations Act.

vi). Provide/replace all elements of missing/defective rainwater goods and provide surface water drainage system to an approved specification to the outer elevations of the building.