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STRUCTURAL REPORT

FOR

**TEMPLE DINSLEY
PRESTON, HITCHIN
(Our Job No: CE24/4030)**

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Date: REV A. MAY 2024



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1.0 BRIEF

- 1.1 AFP Consulting Engineers were instructed by SCABAL on behalf of the client Russell Prince to undertake a structural inspection of the various structures on the Temple Dinsley estate.
- 1.2 AFP carried out the site visit on 6th March 2024. The weather was overcast and dry.
- 1.3 A separate “Demolition Method Statement” document covers buildings to be demolished.

2.0 SITE CONTEXT

- 2.1 Temple Dinsley Estate is a Grade II listed park and gardens comprising of numerous historic and modern buildings.
- 2.2 Appendix 1 (KPT/SCABAL 641-0001) highlights a key map of the buildings of interest in this report. In summary the buildings and intent are as follows:
 - 1. Old House – conversion to domestic accommodation.
 - 2. East Wing – conversion to domestic accommodation.
 - 3. West Wing – conversion to domestic accommodation.
 - 4. West Spur - conversion to domestic accommodation.
 - 5. East Annexe - conversion to domestic accommodation.
 - 6. Teaching Block - conversion to domestic accommodation.
 - 7. Science Block – demolition.
 - 8. Piggery – repair (non-residential).
 - 9. Barn 1 (Summerhouse) – demolition.
 - 10. Pumping Station – conversion to domestic accommodation.
 - 11. Barn 2 (Tank House) – conversion to domestic accommodation.
 - 12. Lodges – not applicable.
 - 13a Belvedere – repair (non-residential).
 - 13b Pavilion – demolition.
 - 13c Ice House – remain undisturbed.
 - 13d Park Wall – repairs.
 - 14. Sports Hall – demolition.
 - 15. Stables – demolition.

- 2.3 For the purposes of the report the survey brief for repair/conversion covers the following: 1,2,3,4,5,6,8,9,10,11,13a,13d.
- 2.4 Items 7,9,13b,14 and 15 down for demolition are covered in AFP's Demolition and Method Statements.
- 2.5 The British Geological Survey Maps indicate superficial deposits of Boulder Clays overlying chalks.

3.0 LIMITATIONS

- 3.1 This Engineer's report only deals with the above mentioned and our liability in respect of this report is limited to you as our Client. There is no intention to confer any third part rights as described in the Contracts (Rights of Third Parties) Act 1999. Please also note that we have not inspected the condition of timber or any parts of the property which are covered or unexposed and cannot therefore report that such parts of the property are free from defect.
- 3.2 This was a non intrusive survey with the inspection carried out from ground level and limited ladder access. We cannot comment on any structure which was covered or inaccessible.
- 3.3 The existing foundation to the buildings were not exposed. No ground investigations were undertaken during this inspection and therefore any recommendations relating to the substructure works will need to be confirmed following the undertaking of an appropriate investigation.

4.0 GENERAL DESCRIPTION AND SITE OBSERVATIONS

- 4.1 Old House, East Wing, West Wing, West Spur, East Annexe (ref: 1,2,3,4 & 5).
- 4.2 Teaching Block (ref: 6).
- 4.3 Piggery (ref: 8).
- 4.4 Pumping Station (ref: 10).
- 4.5 Barn 2 (Tank House) (ref: 11).
- 4.6 Belvedere (ref: 13a).
- 4.7 Park Wall (ref: 13.d).

4.1 Old House, East Wing, West Wing, West Spur and East Annexe (ref: 1-5)

- 4.1.1 This complex group of buildings is formed of an original C18 Grade II Listed block with various C19 and C20 additions.
- 4.1.2 The buildings all generally consist of solid brick external walls, timber floors on load bearing internal walls, stud work partitions and cut timber roofs with clay tiled roofs.
- 4.1.3 The proposals are to convert to domestic private accommodation. The proposals, where possible limit the amendments to any historic fabric.
- 4.1.4 The basement structure appeared structurally sound with only minor areas of damp and signs of efflorescence. See photographs 1 & 2.
- 4.1.5 The ground floors all appeared to be in satisfactory structural condition.
- 4.1.6 The external walls appeared to generally be in satisfactory structural condition with only a few locations with cracking present which can be repaired with Helibar crack stitching. See photographs 3, 4 & 5,
- 4.1.7 First floors appeared to be timber joisted and appeared to be structurally sound although predominantly covered throughout. So closer inspection was not possible.
- 4.1.8 Some ceilings had locally failed due to water ingress from rainwater or leaks. These can be made good using conservation techniques to suit the ceiling construction type. See photographs 6 & 7.
- 4.1.9 Wholesale, the roof structure appeared to be in satisfactory structural condition. However, no opening up was carried out.
- 4.1.10 Modern roof/floor repair has been carried out in the main building, central wing, rear elevation at first floor level. It appears a timber beam at second floor level may have failed. 2 steel posts have been installed to prop the timber in turn supported on a concealed steel beam above first floor level supported on loadbearing walls below. A revised arrangement will be required for the conversion. See photographs 8 & 9.
- 4.1.11 The Art Block and Bakersfield Blocks may have an additional lower floor installed. Further investigation will be required but alteration to any significant historic fabric will be limited.
- 4.1.12 Further alterations for the conversion tend to follow existing building lines with non loadbearing modern partition removal and minor loadbearing wall removals requiring steel beams.

- 4.1.13 We are of the opinion that these blocks can be successfully converted with limited repairs, strengthening and invasion to historic fabric.

4.2 Teaching Block (ref: 6)

- 4.2.1 The Teaching Block has had various alterations and additions since its original construction in C18. It is likely Curtilage Listed.
- 4.2.2 The structure generally forms a 2 storey brick construction with a dormered roof first floor. There is a 3 storey element to the rear.
- 4.2.3 The Teaching Block is to be converted to domestic accommodation.
- 4.2.4 The building is linked to the Sports Hall which is to be demolished. The western extension and toilet block are to be demolished as part of the works.
- 4.2.5 Where exposed in the 3 storey element the first floors appear to be a beam and block arrangement. See photograph 10.
- 4.2.6 There appears to be no significant structural defects. Therefore, a successful conversion should not require high levels of structural intervention.
- 4.2.7 The buildings appear to be generally structurally sound and suitable for conversion. Whether in part using lower level structure or a full conversion.

4.3 Piggery (ref: 8)

- 4.3.1 The piggery building is a single story solid brick Grade II listed former Piggery built circa early C20. The roof is a timber hipped roof with clay tiles. See photograph 12.
- 4.3.2 This building is to be repaired and restored.
- 4.3.3 There are significant cracks in the walls likely caused by a lack of adequate foundation on a clay subsoil near trees. See photograph 13.
- 4.3.4 Crack stitching using Helibar will be required to eliminate any future movement then some enhancement to the foundations may be required.
- 4.3.5 The timber roof structure is generally in a satisfactory structural condition. However, some water ingress has caused some localised damage to some of the timber work which will require part replacement

via splicing new timber with the existing sound timber using conservation techniques. See photograph 14.

- 4.3.6 In summary repairs can be carried out relatively easily without major structural intervention, retaining structure where possible.

4.4 Pumping Station (ref: 10)

- 4.4.1 The Pumping Station is formed of two single storey 9-inch brick curtilage listed buildings. The roof structures are vaulted cut timber with a clay tiled finish. See photograph 15.
- 4.4.2 These buildings are to be converted to domestic accommodation.
- 4.4.3 The northern building currently houses 3no cylindrical tanks mounted on a 0.5m high concrete plinth. These are to be fully removed for the conversion. See photograph 16.
- 4.4.4 Various modifications have taken place in this building including an infilled arch in the dividing wall of the front rear blocks. A door opening has been created under one side of the arch base, and the wall does not appear to have been toothed into the external wall. See photograph 17.
- 4.4.5 The main section roof has a series of horizontal steel rod ties just below eaves level. In this area the timber roof structure has been boarded over, so an inspection of the condition was not possible. See photograph 17.
- 4.4.6 The timber in the rear section roof appears to be in a satisfactory condition.
- 4.4.7 There are various cracks present which will require Helibar crack stitching. See photograph 18.
- 4.4.8 The floor slab appeared to be circa 100mm thick concrete on loose rubble. This will need upgrading to a more robust base. See photograph 19.
- 4.4.9 There are two small, attached side buildings built off a similar construction to the main building. There are signs of water ingress which as caused some timbers to rot at the apex and some timbers including the hip rafter have lost structural integrity at their base. Replacement and repair of these timbers will be required. See photographs 20 & 21.
- 4.4.10 The southern building is the smaller of the buildings but is of a similar construction..

- 4.4.11 This building is suffering from masonry cracking throughout. There is a steel beam which is part of the pumping system which has stressed the masonry at its bearings which could be attributed to thermal expansion of the beam and/or stress caused by movement from when the pumping equipment was active. See photographs 22 & 23.
- 4.4.12 Below this beam is the original pumping equipment which includes a circa 1.2m diameter exceptionally deep well. No safety barriers are in place, and we recommend that this area is cordoned off immediately. Any future works will need to take into account the well especially if it will remain as a feature. See photographs 24 & 25.
- 4.4.13 Cracks are present around windows and doors both internally and externally and on gable ends which will require repair. See photographs 26, 27, 28, 29 and 30.
- 4.4.14 We note collar ties are absent within the roof and movement in the roof could be contributing to some of the masonry cracking. Ties will need to be inserted as part of the conversion works.
- 4.4.15 It is likely however that the main contributing factor to the movement seen is from ground movement. Subject to trial hole investigation underpinning may be required to both buildings.
- 4.4.16 The surrounding area was waterlogged at the time of our investigation so some form of land drainage may be required as part of the development.

4.5 Tank House/Barn 2 (ref: 11)

- 4.5.1 The Curtilage Listed Tank House is an isolated cladded timber frame building northwest of the Pumping Station. The roof is a timber hipped arrangement with clay tiles. See photograph 31.
- 4.5.2 The building houses 2 steel frames supporting water tanks at first floor level. See photograph 32 and 33.
- 4.5.3 The proposal is to convert to domestic accommodation.
- 4.5.4 Our visit was after a prolonged period of rain and as such the ground around the barn was saturated. It may be prudent to allow for land drainage as part of the proposals.
- 4.5.5 The internal steel framework does not appear to be tied into the timber structure and is likely the timber structure was built around the frames and tanks at a later date. Therefore, both being structurally independent. See photograph 34.

- 4.5.6 The southern frame is possibly wrought iron and was likely built prior to the northern steel structure.
- 4.5.7 Although slightly different arrangements and sizes, generally the frames consist of posts with ring beams with bracing and secondary floor structure beams.
- 4.5.8 No safe access was possible to first floor level so we cannot comment on the tanks themselves or the roof structure. Although there are no signs of serious structural defects.
- 4.5.9 The southern area has a series of concrete blocks/plinths at ground floor level which likely supported additional equipment as part of the water tank arrangement. See photograph 35.
- 4.5.10 There is no structural ground floor present with the base forming of compacted earth. See photograph 36.
- 4.5.11 The exterior timber wall structure consists of softwood primary posts and secondary studs clad internally with vertical timber boarding and externally with horizontal timber cladding. See photographs 37 & 38.
- 4.5.12 Much of the external cladding is either missing or damaged. Because of this the frame is exposed and subject to further degradation.
- 4.5.13 The roof tiles are damaged and water ingress could be damaging timber structure although access was not possible to confirm any damage.
- 4.5.14 To avoid further degradation of the timber wall and roof structure it would be prudent to temporarily cover the structure.
- 4.5.15 The steelwork is generally exposed and is suffering from surface corrosion. However, the frame appears to be structurally sound.
- 4.5.16 The tank would be difficult to remove with some or all of the timber structure needing to be removed. Therefore, we would suggest the timber frame is carefully dismantled to allow access to the water tanks.
- 4.5.17 The steel/iron framework can be retained or removed without affecting the whole structures integrity.
- 4.5.18 Wholesale amendments are required to this building to convert to domestic accommodation notably, a reconstructed timber frame reusing existing timber, where possible new foundation, ground floor and first floor structure and reconstruction of the roof, reusing existing structure where possible.

4.6 Belvedere (ref: 13a)

- 4.6.1 The Belvedere building is a square two storey Grade II listed brick building with a clay tiled hipped roof. See photograph 39.
- 4.6.2 This building is to be repaired and reinstated as a feature Belvedere building.
- 4.6.3 The ground floor is buried on two sides, so the wall is acting as a retaining wall in these positions.
- 4.6.4 There is evidence of movement in the ground retaining walls as seen in the photos in the appendix. These will require repair using Helibar stitch repairs. See photographs 40 & 41.
- 4.6.5 Additional buttressing will be required to stop any further movement. Either via wall thickening or buttressing piers internally to retain the ground.
- 4.6.6 The masonry at first floor level was in a generally good condition with just localised repointing in lime mortar required.
- 4.6.7 The roof appeared to be in an acceptable structural condition, however, no opening up was carried out to inspect the condition of any timber.
- 4.6.8 In summary, repairs can be carried out relatively easily without major structural intervention.

4.7 Park Wall (ref: 13d)

- 4.7.1 AFP carried out a limited survey of the boundary park wall.
- 4.7.2 The wall is early C16 Grade II listed comprising of solid masonry English bond brickwork with feature gate piers at the entrances. Photograph 42.
- 4.7.3 Generally the walls are in satisfactory condition.
- 4.7.4 There are some cracks which will require stitching with Helibar and localised replacement of damaged bricks to match. See photograph 43.
- 4.7.5 Localised repointing in lime mortar will be required to loose or missing mortar joints. See photographs 43.
- 4.7.6 There are localised areas of vegetation on the wall which we recommend to be removed. See photographs 44.

- 4.7.7 In summary, required repair of these walls are achievable with minimal requirements.

5.0 Summary

- 5.1 In conclusion, all buildings will require some kind of structural intervention to convert successfully into domestic accommodation.
- 5.2 The Old House, East Wing, West Wing, West Spur, East Annexe and Teaching Block are in good structural condition keeping minimal repair works and we deem adequate for conversion.
- 5.3 The Pumping Station requires some further investigation and will require a more intensive repair schedule but can be converted into domestic accommodation.
- 5.4 The Tank House will require intrusive works, notably to safely remove this water tank and will require a reconstruction, where possible reusing existing materials.
- 5.5 The Piggery, Belvedere and Park Wall can all be repaired using conservation techniques where possible to restore them.

We trust that this report provides the details required. Please contact us if you have any questions.

Yours sincerely



Scott Redhead BSc (Hons)

Associate

For and on behalf of AFP Consulting Engineers Ltd

PHOTOGRAPHS



Photograph 1 (Ref: 4.1.4)



Photograph 2 (Ref: 4.1.4)



Photograph 3 (Ref: 4.1.6)



Photograph 4 (Ref: 4.1.6)



Photograph 5 (Ref: 4.1.6)



Photograph 6 (Ref: 4.1.8)



Photograph 7 (Ref: 4.1.8)



Photograph 8 (Ref: 4.1.10)



Photograph 9 (Ref: 4.1.10)



Photograph 10 (Ref: 4.2.5)



Photograph 12 (Ref: 4.3.1)



Photograph 13 (Ref: 4.3.3)



Photograph 14 (Ref: 4.3.5)



Photograph 15 (Ref: 4.4.1)



Photograph 16 (Ref: 4.4.3)



Photograph 17 (Ref: 4.4.4)



Photograph 18 (Ref: 4.4.7)



Photograph 19 (Ref: 4.4.8)



Photograph 20 (Ref: 4.4.9)



Photograph 21 (Ref: 4.4.9)



Photograph 22 (Ref: 4.4.11)



Photograph 23 (Ref: 4.4.11)



Photograph 24 (Ref: 4.4.12)



Photograph 25 (Ref: 4.4.12)



Photograph 26 (Ref: 4.4.13)



Photograph 27 (Ref: 4.4.13)



Photograph 28 (Ref: 4.4.13)



Photograph 29 (Ref: 4.4.13)



Photograph 30 (Ref: 4.4.13)



Photograph 31 (Ref: 4.5.1)



Photograph 32 (Ref: 4.5.2)



Photograph 33 (Ref: 4.5.2)



Photograph 34 (Ref: 4.5.5)



Photograph 35 (Ref: 4.5.9)



Photograph 36 (Ref: 4.5.10)



Photograph 37 (Ref: 4.5.11)



Photograph 38 (Ref: 4.5.11)



Photograph 39 (Ref: 4.6.1)



Photograph 40 (Ref: 4.6.4)



Photograph 41 (Ref: 4.6.4)



Photograph 42 (Ref: 4.7.2)



Photograph 43 (Ref: 4.7.4)



Photograph 44 (Ref: 4.7.6)