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## **STRUCTURAL INSPECTION REPORT**

AT

**HONEYLANDS HOUSE CARE HOME - AIR RAID SHELTER**

FOR

**BRACKLET INVESTMENTS LIMITED**

**UNIT 6  
LOWER FARM BARN  
BAINTON ROAD  
BUCKNELL  
BICESTER  
OX27 7LT**

**CONTENTS**

- 1. Introduction
- 2. Construction
- 3. Inspection
- 4. Findings
- 5. Conclusions

**APPENDICES**

- Appendix A - Location Plan
- Appendix B - Photos
- Appendix C - Terms of Business

Revision	Date	Notes	Prepared by	Checked by
A	10.08.20	Initial Issue	PJT	-

## 1. Introduction

- 1.1. **Date of instruction:** 20<sup>th</sup> July 2020.
- 1.2. **Instructions:** This report has been produced on the instructions of Brackley Investments Limited (the Client) who wish to investigate the existing air raid shelter located on the Honeylands Development.
- 1.3. **Summary:** Brackley Investments Limited (the Client) have requested that TWP provide a structural inspection survey report to determine the nature of construction and its condition.
- 1.4. **Objective:** The objective of the report is to determine if the condition of the shelter does not pose a risk to the end user of the development, or if remedial works can be undertaken to strengthen any defects that it might contain.
- 1.5. **Liability:** This report is for the sole use of the Client mentioned above and no other party shall rely upon it. We do not purport to assign any benefit arising from this report to any third party.
- 1.6. **Limitations:** It is possible that hidden or inaccessible evidence exists that could affect the conclusions drawn. The report includes only aspects affecting the stability of the building. It does not include matters such as, but not restricted to valuation, mortgageability, insurance, legal matters, windows, doors, gutters, decorative condition, garden walls, paths, landscaping, finishes, services, damp proofing, sound and thermal insulation properties, fire protection etc. This is not a generalised report on the condition of the building.

## 2. Construction

- 2.1. **Date of construction of original building:** Circa 1940.
- 2.2. **Listed building:** No, adjacent structure is Grade II Listed.
- 2.3. **History of recent uses:** Air raid shelter during World War II.
- 2.4. **Current use:** Abandoned.
- 2.5. **Local ground conditions:** It is believed that the shelter will have been founded onto natural clays with spoil from the excavation being placed on and around the shelter.
- 2.6. **Construction:** Precast concrete reinforced ribbed panels forming the walls and roof of the structure into an arched shape structure with the panels held in place via bolts in to the adjacent panels.
- 2.7. **Ground floor:** Concrete slab. It is not known if this is reinforced, but it is safe to assume that it is ground bearing.

## 3. Inspection

- 3.1. **Date:** 31<sup>st</sup> July 2020.
- 3.2. **Weather:** Dry, warm and sunny. It had not rained for a number of days previous.
- 3.3. **Present during inspection:** P Thorpe (TWP), L Cottrell (Kirkham Board), Environmental Services.
- 3.4. **Method of inspection:** Visual structural inspection, non-intrusive, carried out at ground floor level. No artifacts were moved or opening up works carried out.
- 3.5. **Third part reports / information available:** *Morgan Structural Limited Report No. 060164 - Honeylands Hospital Structural Inspection.*

## 4. Findings

The shelter itself is half submerged below the surrounding ground levels and appears to have been backfilled around the sides and on top with the spoil from the original excavation. The entrance to the shelter is formed in concrete and has been re-rendered at some point in time with a set of concrete stairs leading to the lower levels. At the time of the inspection the stairs themselves were covered by pieces of timber and plywood and could not be visually inspected.

At the base of the stairs the precast concrete (PCC) arched wall and roof panels were exposed. It is not clear if the rendered section of the shelter has been formed in a similar fashion. Each PCC panel has been bolted back to the adjacent panel.

At the end of the shelter a vertical PCC shaft with lid stretched up from the roof panels and would have formed another means of access if the primary entrance had been sealed.

The floor slab appeared to be relatively dry at the time of the visit. The humidity of the shelter was not recorded.

It was witnessed that all PCC panels had some form of exposed reinforcement, corrosion of reinforcement or spalling of concrete with all the original bolts showing signs of heavy corrosion. Cracks within the PCC panels indicate signs of below surface corrosion of the reinforcement. On average the concrete cover to the reinforcement was in the region of 10mm. The thickness of the PCC units and depth of cover, soil side of the panels, was not measured.

## 5. Conclusions

The level of corrosion to the reinforcement will have had a significant detrimental effect on the structural integrity of the shelter as in some cases the main bars had corroded completely and are therefore discontinuous. With this in mind, it is more than likely that all reinforcement has been affected in some form or another. It is also a fair assumption that reinforcement to the outer face will have also had some degree of corrosion given its interaction with the surrounding damp soils.

The bolts, although still intact, purely locate the panels and would appear not to provide a significant structural strength to the shelter other than help to distribute uneven external earth pressures to the roof and wall panels. However, corrosion of ferrous metals, such as the bolts, expand at a rate of 6 times the original material, which could lead to other significant structural issues within the PCC panels. These other issue could be surface cracking to the concrete which would in turn allow water ingress to the reinforcement which would then start to corrode.

It is deemed that due to the extensive amount of corrosion, affective reinforced concrete repair would dramatically change the air raid shelters original character and, in some instances, not be possible due to the severity of the corrosion. As the concrete cover to the reinforcement is so thin the longevity of the structure has been compromised and would not meet today's structural standards. Therefore it would not be possible to guarantee the strength and safety of the shelter from risk of future collapse.

Report produced by TWP



Phil Thorpe *BEng (Hons) CEng MStructE*  
Associate Director  
TWP

# **APPENDIX A**

## **LOCATION PLAN**

PINHOE ROAD

Shelter



Shelter Location.

Honeylands House

Honeylands Childrens Assessment Centre

School Clinic

Vranch House School

LAMACRAFT DRIVE

LANE

0

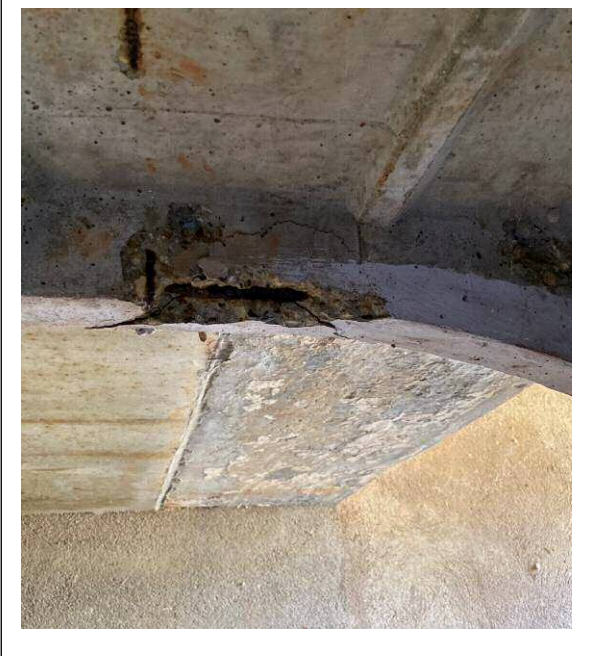


# APPENDIX B

## PHOTOS



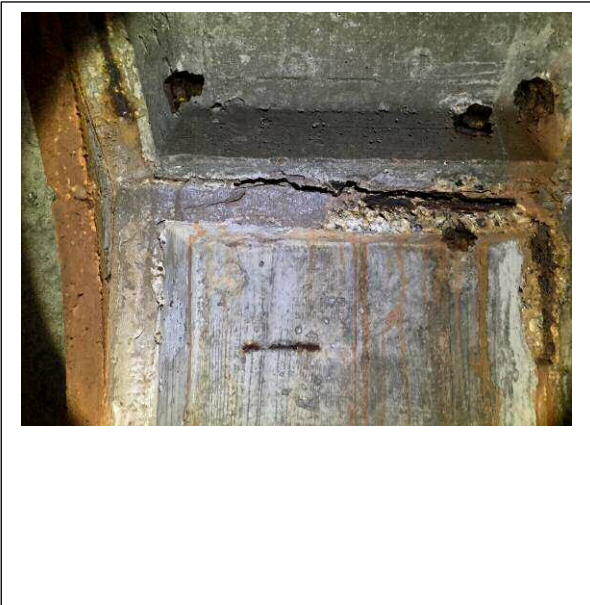
*Photo 1 - Primary roof reinforcement exposure and corrosion.*



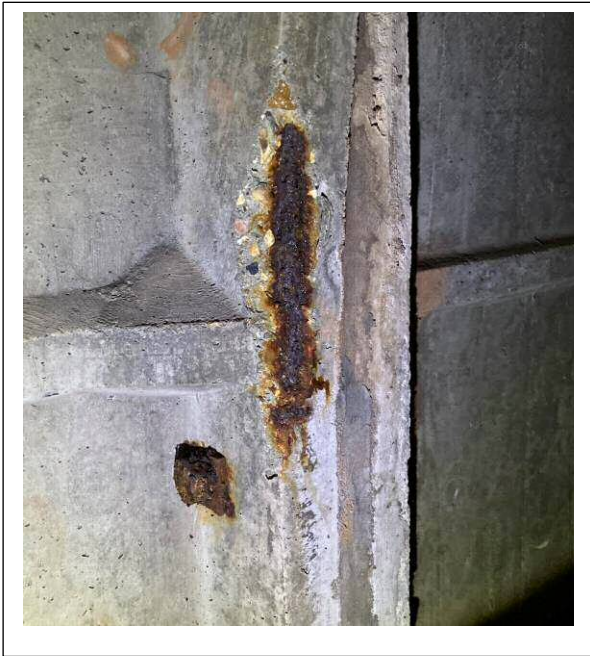
*Photo 2 - Rendered entrance and reinforcement exposure.*



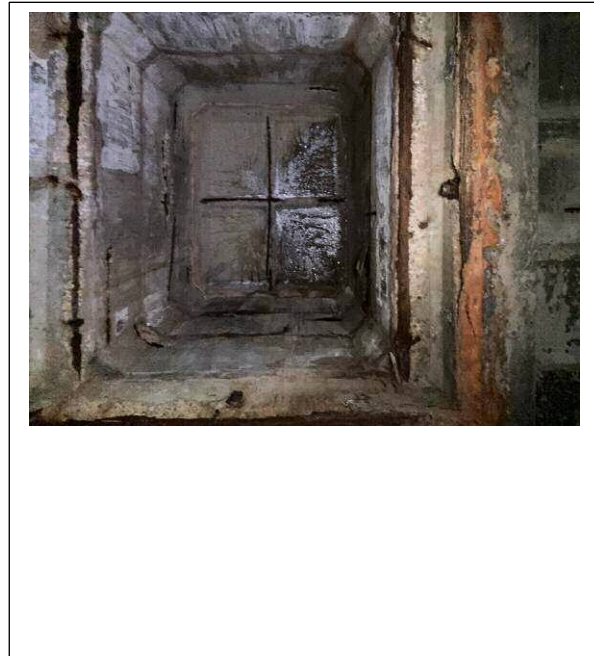
*Photo 3 - Corrosion to bolts and effect on surrounding concrete.*



*Photo 4 - Complete corrosion of primary rebar indicating discontinuity.*



*Photo 5 - Corrosion of primary wall reinforcement.*



*Photo 6 - PCC vertical ceiling shaft.*



*Photo 7 - Surface cracking due to expansion of internal corrosion and bolt corrosion expansion.*

# **APPENDIX C**

## **TERMS OF BUSINESS**

# TERMS OF BUSINESS

## 1.0 DEFINITIONS

1.1 The following defined words have the following meanings in this Agreement:

“Offer” means the letter of offer and any appendices and/or attachments thereto issued to the Client by the Consultant.

“Agreement” means the Consultant’s letter of offer enclosing the Terms of Business, the Appendix to the offer and any subsequently agreed variations to the “Agreement”.

“The Client” means either the person who, or organisation, or company which accepts the Offer.

“Consultant” means TWP.

“Services” means the services to be provided for the Client and which the Consultant identifies in the Offer.

“In writing” means any communication sent by mail and email.

“Force majeure” means any circumstance or condition outside the reasonable control or influence of the Consultant and includes any deferral in the requirement for the Services by the Client.

1.2 The headings in this Agreement do not affect its construction.

## 2.0 VARIATION

2.1 No variation of any kind to this Agreement may be made without the agreement in writing of the Client and of the Consultant.

## 3.0 PERFORMANCE

3.1 The Client agrees to supply to the Consultant without charge all the matters and things necessary for the performance of the Services by the Consultant and also, where necessary, to provide facilities and approvals to the Consultant.

3.2 The Consultant shall, subject to the Agreement, carry out the Services in the Offer and any variations to the Services.

3.3 The Client shall make payment in accordance with the Agreement.

3.4 Unless otherwise agreed in advance, approvals from the Client shall be deemed to have been given unless the Consultant is notified to the contrary within five working days of such approval having been requested.

## 4.0 INTELLECTUAL PROPERTY AND CONFIDENTIALITY

4.1 The copyright and all other intellectual property rights in all work prepared or compiled by the Consultant in the performance of this Agreement remains vested in the Consultant but conditional upon payment of all fees and disbursements properly due the Consultant hereby issues a free licence to the Client to use such work as is supplied under the Agreement for the purposes for which the work was prepared or compiled, always providing that such licence shall be limited strictly to the works carried out under this Agreement.

4.2 The Client agrees that any know-how, techniques or processes carried out in the course of the Services is confidential information. The Client shall not, without the prior written consent of the Consultant, divulge to any party details of any confidential information disclosed by the Consultant in the performance of the Services.

## 5.0 LIABILITY

5.1 The Consultant undertakes to exercise reasonable skill, care and diligence in performing the Services and shall be liable only for negligent failure in performing the Services.

5.2 In respect of any matter of force majeure the Consultant shall have no liability for his failure or delay in the performance of the Services or any part of them. Where relevant, the Client shall not cease payments to the Consultant under this Agreement throughout any period or periods of force majeure.

5.3 Notwithstanding anything to the contrary in this Agreement, the liability of the Consultant under or in connection with this Agreement whether in contract or in tort [*delict*], in negligence, for breach of the statutory duty or otherwise (other than in respect of personal injury or death) shall not exceed in aggregate the sum of £25,000, or a multiple of ten times the total of the fees payable to the Consultant by the Client, whichever is the lesser, however that liability might arise.

5.4 Notwithstanding any provision in this Agreement or the identification of any individual in this Agreement, all duties, obligations and liabilities arising under or by virtue of this Agreement, or which may arise by virtue of common law statute or in equity from the performance of any work contemplated by this Agreement, shall be owed or incurred exclusively by the Consultant and not by any employee or member (including any officer or director) of the Consultant. The Client acknowledges that no such individual owes or shall owe any such duty or obligation, or shall incur any such liability to the Client and agrees that the Client will not seek to make liable any such individual for any act, default, omission or negligence committed by the individual whatsoever and irrespective of how such liability may arise. This clause shall not operate to exclude liability for death or personal injury to the Client where the Client is an individual or group of individuals.

5.5 Nothing in this Agreement confers or purports to confer on any third party any benefit or any right to enforce any term of this Agreement.

5.6 Unless specifically noted otherwise in the letter of appointment, liability for any claim(s) arising from pollution or contamination or asbestos is excluded.

5.7 Further and notwithstanding anything to the contrary contained in this Agreement and without prejudice to any provision in this Agreement whereby liability is excluded or limited to a lesser amount, the liability of the Consultant, if any, for any loss or damage (“the loss or damage”) in respect of any claim or claims shall not exceed such sum as it would be just and equitable for the Consultant to pay having regard to the extent of the Consultant’s responsibility for the loss or damage and on the assumptions that:

- (a) all other consultants and advisers, contractors and sub-contractors involved in the Project shall have provided contractual undertakings to the Client on terms no less onerous than those set out in this Agreement in respect of the carrying out of their obligations in connection with the Project; and
- (b) there are no exclusions of or limitations of liability nor joint insurance or coinsurance provisions between the Client and any other party to the Project and that any such other party who is responsible to any extent for the loss or damage is contractually liable to the Client for the loss or damage; and
- (c) all the parties referred to in (a) above, have paid to the Client such proportion of the loss or damage which it would be just and equitable for them to pay having regard to the extent of their responsibility for the loss or damage.

5.8 No action or proceedings under or in respect of this Agreement whether in contract, in tort [*delict*], in negligence, for breach of statutory duty or otherwise shall be commenced against the Consultant after the expiry of six years from the date of completion of services or the termination of the services if earlier.

## 6.0 SUSPENSION AND TERMINATION

6.1 The Client and Consultant agree that without prejudice to any other rights and remedies which the Consultant may possess, if the Client shall fail to pay the Consultant in full any amount properly due and payable under this Agreement by the final date for payment as defined in 7.2 the Consultant may, after giving the Client seven (7) days' notice in writing of the same, suspend its performance and obligations under this Agreement until payment in full occurs.

6.2 Any period during which the Consultant exercises its right to suspend its performance pursuant to 6.1 shall be disregarded in computing for the purposes of any contractual time limit the time taken by the Consultant, or any of the Consultant's sub-contractors to complete any Services directly or indirectly affected by the exercise of such right.

6.3 The Client and the Consultant agree that either may give to the other written notice of termination in the following circumstances:

- (a) if 14 days after having received written notice of a breach of the Agreement no attempt to rectify that breach has been made; or
- (b) the Agreement has been affected by force majeure for at least 60 days; or
- (c) if circumstances arise for which the Consultant is not responsible and which the Consultant considers it irresponsible for the Consultant to perform all or any part of the Services, the Consultant shall be entitled to terminate the appointment of the Consultant by 14 days' notice in respect of all or such part of the Services.

6.4 In the event of termination under 6.3 of this Agreement, the Client shall pay to the Consultant the following sums:

- (a) such payment as is due for the performance of the Services up to and including the day upon which notice of termination was given;
- (b) such payment as is due in accordance with 5.2 above;
- (c) such monies, if any, as would become due and payable by the Consultant in the performance of the Services.

6.5 In the event that the Client instructs the Consultant to carry out the Services in a way which could, in the Consultant's reasonable opinion, lead to a breach of the Environmental Protection Act 1990, the Environment Act 1995, or other statute, the Consultant may without prejudice to any other remedy and upon not less than four weeks' notice, suspend for a period of up to 12 weeks the performance of the Services under this Agreement. If the Client does not, to the reasonable satisfaction of the Consultant, take steps within the period of suspension to remedy any act or instruction that may breach the aforementioned statutes, then the Consultant may by further notice on the expiry of the period of suspension determine the Agreement forthwith.

## 7.0 PAYMENT

7.1 Unless noted otherwise in the Agreement, the payment provisions of the Housing Grants, Construction and Regeneration Act 1996, as amended on 1<sup>st</sup> October 2011, will apply to this Agreement.

7.2 Unless noted otherwise in the Agreement, the payment due date for all TWP invoices shall be 10 calendar days (excluding bank holidays) after the date of the invoice.

7.3 Unless noted otherwise in the Agreement, the final date for payment for all TWP invoices shall be 28 calendar days (excluding bank holidays) after the date of the invoice.

7.4 Interest at the rate of 8% over the base rate of Handelsbanken shall be added to all amounts remaining unpaid after the final date for payment.

## 8.0 DISPUTES

8.1 Any dispute which cannot be settled amicably shall, in the first instance, be referred to the respective Chief Executive or Managing Director of the Client and the Consultant who shall attempt, in good faith, to resolve the matter.

8.2 In the event of the dispute not being resolved under 8.1 above, the matter shall be referred to adjudication in accordance with the Construction Industry Council Model Adjudication Procedure current at the time of the referral.

8.3 In the event of either the Client or the Consultant not agreeing with the decision of the adjudicator under 8.2 above, the dispute shall be referred to arbitration in accordance with The Institution of Civil Engineers' Arbitration Procedure.

## 9.0 PERSONNEL

9.1 No party shall directly solicit the services of any employee, agent or representative of another party without the prior written consent of that other party during the term of this Agreement, or the period of six months after the termination of this Agreement. If during the term of this Agreement, or for the period of six months after the termination of this Agreement, any employee of one party accepts an offer of employment made by another party as a result of an introduction in the course of this Agreement, the party that made the offer of employment shall pay to the other a sum equivalent to six months gross salary of the employee concerned, including any monetary bonuses payable to that employee during the term of this Agreement or for the period of six months after termination of this Agreement.

## 10 CDM REGULATIONS

10.1 The CDM Regulations 2015 (the CDM regs) apply to all building and construction work. Failure to comply with the CDM regs can result in criminal charges and imprisonment.

10.2 It is a requirement that the Client must be aware of its responsibilities under the CDM regs. Refer to <http://www.hse.gov.uk/construction/cdm/2015/summary.htm> and follow the appropriate link depending upon whether the Client is a commercial client or a domestic client.

10.3 In most circumstances the Client must appoint a principal designer before any works (design or otherwise) are undertaken.

10.4 If the Client, after following guidance in clauses 10.2 and 10.3, is unclear of their duties under the CDM Regulations, then the Client should contact the Consultant or another appropriately qualified building professional to ensure without delay that the Client becomes aware of their responsibilities under the CDM Regulations.

## 11.0 APPLICABLE LAW

11.1 The Client and the Consultant agree that the construction, validity and performance of the Agreement shall be governed by, and constructed under, English Law and for all matters arising under, out of, or in connection with the Agreement, they shall submit themselves to the exclusive jurisdiction of the English Courts.