Confidential

Structural Engineer's Report
Wray Lodge, Northwood College

GDST Northwood College

STR/IPG/260178/17-2/X04/R001

24 September 2026

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Document History

Issue	Date	Comment	Author	Chk'd
01	24.09.2026	First Issue	IPG	IPG

GDST

GIRLS' DAY SCHOOL TRUST

PICK EVERARD

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1. Introduction

1.1 PE Report Reference : STR/IPG/260178/17-2/X04/R001

1.2 Client : GDST Northwood College

1.2.1 Address : Northwood College, Maxwell Road, Northwood, HA6 2YE

1.3 Inspected Property : Wray Lodge, Maxwell Road, Northwood

1.4 Occupier : Staff and students

1.5 Instruction

1.5.1 Mode : Purchase Order

1.5.2 Reference : 032016120

1.5.3 Instructed by : Cathrine Sparey

1.5.4 On behalf of : Northwood College

1.6 Brief

To attend site and carry out a visual, non intrusive internal and external inspection of Wray Lodge at Northwood College, from external ground level vantage points and internal floor levels, and provide a Structural Engineer's report with findings and recommendations.

2. Scope of Investigations and Report

In accordance with the aforesaid instructions, the following investigations have been undertaken:-

(a) A visual inspection of the superstructure

(b) A review of the previous Pick Everard Structural Engineer's report for Wray Lodge, reference STR/IPG/211132/17-2/R001 – Issue Number 01 of October 2021 **(We have appended this report as Appendix C)**

(c) A review of the previous Pick Everard crack monitoring data for Wray Lodge between October 2021 and September 2026 **(We have appended latest monitoring graphs as Appendix D)**

(d) A review of the Simon Pryce Arboriculture report in relation to Wray Lodge of August 2022. **(We have appended this report as Appendix E)**

The investigations and this report are confined to technical assessment of the load bearing elements of the structure, the identification of damage in these elements at the time of our inspection, the cause of damage and the type and scope of measures necessary to repair that damage. Whilst every endeavour will be made to provide a positive and helpful report we are unable to predict the future behaviour of the structure or its components. Guarantee cannot therefore be given that the property will be free from future damage or that existing defects will not suffer from further deterioration or lead to damage.

The visual inspection of the superstructure was made on 1 September 2026 and detailed notes, together with photographs not included in this report, are retained on file. The weather was warm and dry.

No breaking out or opening up of the building fabric was undertaken at that time and no part of the property which was not readily accessible, or which was covered or otherwise concealed, was inspected. Absence of report on any such part is not to be taken that it is free from defect. Such unexposed parts may contain problems and special arrangements would need to be made for these areas to be investigated (where practicably possible) if confirmation were to be required about their condition.

Drains were not inspected or tested. Foundations were not uncovered. Woodwork was not inspected other than for present functional structural adequacy.

Enquiries with local or statutory authorities have not been carried out. Whilst attention may be drawn to any apparent breaches of statutory requirements relative to the buildings or site, the absence of any such comment does not imply compliance with such requirements. The building and associated structures have not therefore, for example, been assessed for compliance with the Building Safety Act, the Building Regulations, The Regulatory Reform (Fire Safety) Order.

Whilst attention may be drawn to the suspected presence of asbestos in the building, this report is to be taken specifically to exclude any advice or recommendation in respect of the identification, handling, management or disposal of asbestos. Advice should be sought from other specialists, as and where appropriate.

Whereas attention may be drawn to obvious defects in suspended ceilings, we have not carried out a full detailed inspection or investigation of the suspended ceiling hangers, frame, or fixings.

We have not carried out any inspections for invasive plant species such as Japanese Knotweed. Whilst attention may be drawn to the suspected presence of invasive plant species this report is to be taken specifically to exclude any advice or recommendation in respect of the identification, handling, management or disposal of such plants. If required advice should be sought from a qualified ecological or landscape consultant as and where appropriate.

2.1 Classification of Visible Damage to Walls and Ceilings

For the purposes of this report, the width of cracks is used as a basis for the classification of visible damage, broadly in compliance with the damage classifications defined by Building Research Establishment Digest 251, revision of 1991 (although updated in 1995 to provide greater description) :-

Description	Approximate crack width	BRE Category of Damage
Hairline cracks	Barely visible, less than 0.1mm wide	0
Very slight cracks	Up to 1mm wide	1
Slight cracks	1mm to 5mm wide	2
Moderate cracks	5mm to 15mm wide	3
Severe cracks	15mm to 25mm wide	4
Very severe cracks	Greater than 25mm wide	5

2.1.1 Orientation

FRONT of the building faces the addressed road.

RIGHT-HAND and LEFT-HAND in relation to the building are taken when facing the Front Elevation i.e. looking from front towards rear.

RIGHT-HAND and LEFT-HAND in relation to individual walls or components are taken when facing that wall or component.

3. The Property – General Details

3.1 Date of Construction : Early 1900s

3.2 Type : Two storey building with a second floor within the roof space, which appears likely to have been incorporated into the original building construction. Appears that the building would have previously been a residential dwelling, now converted into a school office, administration and classroom building **(Photo No. 1).**

3.3 Roof : The main roof is a hip end construction with plain clay tile finish, supported by a traditional cut timber roof structure.

3.4 Walls : External walls appear to be loadbearing 340mm thick solid brickwork walls. Internal ground and first floor walls also appear to be largely loadbearing masonry construction, with some newer internal stud partition walls.

3.5 Floors : Generally suspended timber structure floors to ground floor, first floor and second floor.

3.6 Structural Alterations : Some evidence of external brickwork rebuild locally to the front elevation where it appears there may have been historic movement.

4. The Site

4.1 O.S. Grid Reference : TQ 089 912

4.2 Topography : The site slopes down slightly from the front to the rear and slightly from right to left.

4.3 Substrata/Geology : The RSK Ground Investigation Report referenced in the previous 2021 Pick Everard report states that the exploratory holes in the vicinity of the adjacent Science Block revealed that the site is underlain by a variable thickness of made ground over the Lambeth Group comprising the Lower Mottled Beds and Upnor Formation with Chalk at depth.

4.4 Trees : Please refer to the Simon Pryce Arboriculture report of August 2022. However, we made the following observations during our September 2026 inspection:

T1 – Appears to have regrown substantially since 2022 **(Photo No. 2)**.
T2 – Appears approximately the same as before **(Photo No. 3)**.
T3 - Appears approximately the same as before but appears the Maple tree has been removed **(Photo No. 3)**.
T4 - Appears approximately the same as before, but slightly larger **(Photo No. 4)**.
T5 - Appears approximately the same as before, but slightly larger **(Photo No. 4)**.
T6 – Previously removed – understood to have been during winter 2022/2023
T7 – Previously removed in – understood to have been during winter 2022/2023
T8 - Appears approximately the same as before, but slightly larger **(Photo No. 5)**.
T9 - Appears approximately the same as before, but slightly larger **(Photo No. 5)**.
T10 - Appears approximately the same as before, but recently pollarded by the local authority **(Photo No. 6)**.
T11 – Appears approximately the same as before **(Photo No. 7)**.

4.5 Site Drainage

4.5.1 Foul : It appears that foul drainage discharges to the rear of the property, presumably via main sewers.

4.5.2 Storm : Rain water pipes discharge below ground in the vicinity of the 4 corners of the building, presumably via main sewers or soakaways.

5. Visual Inspection – Observations and Assessment of Findings

As reported to staff on site, an initial immediate concern we observed was a few slipped roof tiles, particularly approximately half of the hip ridge tiles on the front left corner have slipped **(Photo No. 8).** It would be prudent to address these so that they don't fall off and injure passers-by.

We understand from discussions on site that the newer principal cracking to the front left ground floor bay window appeared towards the end of the 2026 summer period.

It is considered that the principal cracking is most likely due to subsidence caused by desiccation of clay subsoils from the action of tree roots. The RSK Ground Investigation Report of 2018, provided in relation to the adjacent part of the site, suggests shallower subsoils are generally of a clay nature considered to be of medium to high plasticity. The soil testing undertaken to the shallower soil samples recovered at approximately 1-2m depth suggests that there was also slight to significant desiccation of these soils at the time of the investigations in 2018.

The location of damage around Wray Lodge is annotated on the plans found within Appendix A. The damage which is new compared to 2021 and which we consider is likely to be related to recent subsidence movement is coloured red. Subsidence damage which was observed in 2021, and which has not yet been repaired, is coloured orange. Other minor cracking (which generally appears to be similar to 2021 and has also not been repaired), which is considered more likely to be due to normal thermal movements, is coloured green. We have included additional photographs within this report in Appendix B of the additional principal damage only, as noted on the plans in Appendix A. The previous Pick Everard report from 2021 is included in Appendix C for reference.

Clay shrinkage subsidence caused by the action of tree roots will cause the foundations to drop and the cracking in the building to open up during the dryer summer months when the surrounding vegetation extracts moisture from the ground. The cracking will likely close up again during the wetter winter months when the sub-soils below the foundations rehydrate and swell. This will likely be a cyclical pattern of movement over the seasons which will continue to varying degrees depending on the climactic conditions each year, unless the cause of the problem is mitigated.

We have installed additional crack monitoring studs across the newer principal cracking and taken initial readings. Crack monitoring graphs and plans are appended in Appendix D. These indicate that some of the previous damage has re-opened slightly, although most monitoring points appear to be relatively stable at the present time.

Slight timber rot was observed to the front left ground floor bay window cill where the paint is peeling **(Photo No. 12).**

Water was observed to the ground around the rain water pipe at the rear right corner of the building **(Photo No. 30).**

6. Recommendations

Potential solutions to mitigate against ongoing subsidence could be as follows:

1. Reduction and/or removal of vegetation that is the primary cause of the clay shrinkage below the foundations.
2. Installation of a root barrier between the vegetation and the building foundations.
3. Underpinning of the foundations.

Reduction of vegetation is usually the least costly option, with underpinning of foundations being the most costly.

We recommend that an Arboricultural Consultant should be re-appointed to review the previous inspection, investigation and vegetation reduction works undertaken and consider the influence that nearby vegetation may be having on the building; with provision of an Arboricultural Report recommending potential reduction/management of the surrounding vegetation, to help mitigate the current damage and reduce the risk of future damage to the building.

If the recommended vegetation reduction works are able to be implemented, this should be undertaken without delay. However, as we understand that the property is within the local authority Conservation Area, permission for vegetation reduction may be difficult to obtain, although may be possible with sufficient investigation evidence that specific vegetation is causing damage to the building.

Should vegetation management not be possible, installation of a root barrier may be the most appropriate alternative. It would be prudent to request that the Arboricultural Consultant considers the potential for a root barrier installation to mitigate current damage, as an alternative to vegetation reduction.

Following the further Arboricultural advice, this may highlight a potential for heave damage to occur to the building (the opposite of subsidence) if vegetation is reduced or if a root barrier is installed. This may require further deeper borehole investigations and analysis to determine the theoretical potential for heave to occur.

If heave damage were considered a significant risk, or if vegetation reduction or root barrier installation were not considered viable, then a scheme to underpin the existing foundations may need to be adopted.

If vegetation reduction works or a root barrier installation were to proceed, we would recommend that crack monitoring continues on a 2 monthly basis following the mitigation works, until the end of the following summer

period, to establish if the mitigation works have been successful and the property has returned to a state of equilibrium; prior to any crack repair and redecoration works being undertaken to the building.

It would be prudent to address the slipped roof tiles observed, to reduce the risk of injury to passers-by and the risk of water ingress into the building, which could cause damage to internal decoration and eventual structural damage if left unattended.

We recommend that the peeling paint to the front left ground floor bay window cill is sanded down and any rotting elements replaced and made good prior to repainting.

It would be prudent to investigate if there is a blockage to the rain water pipe at the rear right corner of the building and remedy this to avoid water escaping onto the adjacent paving and onto the building wall, which could otherwise be a slip hazard in icy conditions and cause frost damage to the building brickwork walls.

7. Status of Report

This report does not provide a warranty or guarantee as regards the structural adequacy and condition of the building. It provides a considered professional opinion based on a limited visual inspection and no liability shall attach to us except to the extent that we have failed to exercise reasonable skill, care and diligence in the provision of our services.

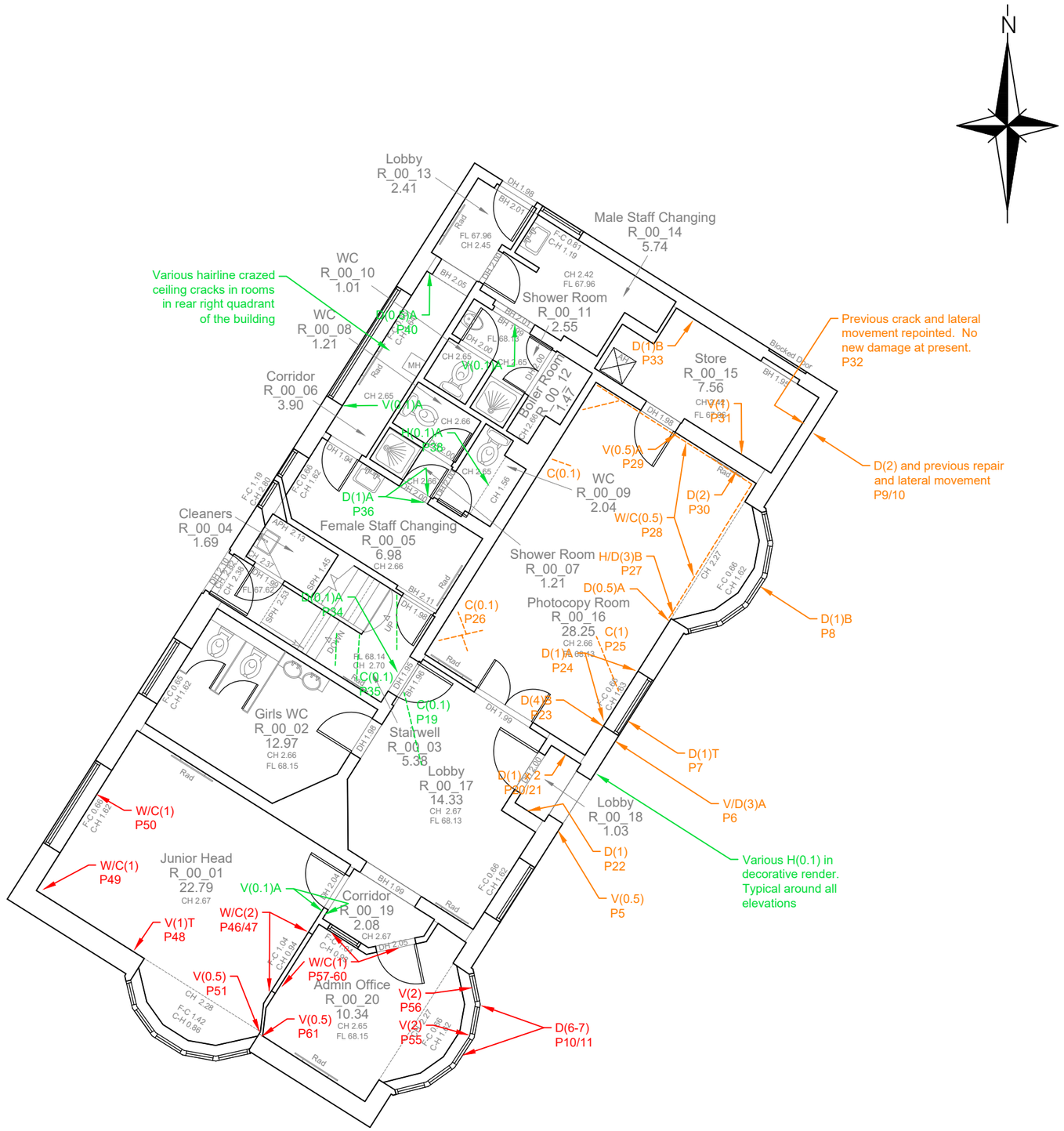
Pick Everard
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Halford House
Charles Street
Leicester
LE1 1HA

Appendix A – Floor Plans

Drawing No. 260178-PEV-X04-00-DR-S-0001 - Wray Lodge Damage Location Plan - Ground Floor

Drawing No. 260178-PEV-X04-01-DR-S-0002 - Wray Lodge Damage Location Plan - First Floor

Drawing No. 260178-PEV-X04-02-DR-S-0003 - Wray Lodge Damage Location Plan - Second Floor



NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Key:

V(1)B - Vertical crack in wall (width in mm) Below opening
H(1) - Horizontal crack in wall (width in mm)
D(1)A - Diagonal crack in wall width in mm) Above opening
C(1) - Ceiling crack (width in mm)
W/C(1) - Wall/Ceiling junction crack (width in mm)
Red text - Considered likely to be related to recent subsidence movement in 2026
Orange text - Considered likely to be related to subsidence movement inspected in 2021. Damage appears generally similar between 2021 to 2026.
Green text - Considered likely to be related to thermal movements. Damage appears generally similar between 2021 to 2026.

P1 - Photograph numbers

Notes:

Drawing to be read in conjunction with Pick Everard Structural Engineer's report reference STR/IPG/260178/17-2/X04/R001 of 24 September 2026

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Report Issue	24.09.26	IPG	IPG

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Damage Location Plan
Ground Floor

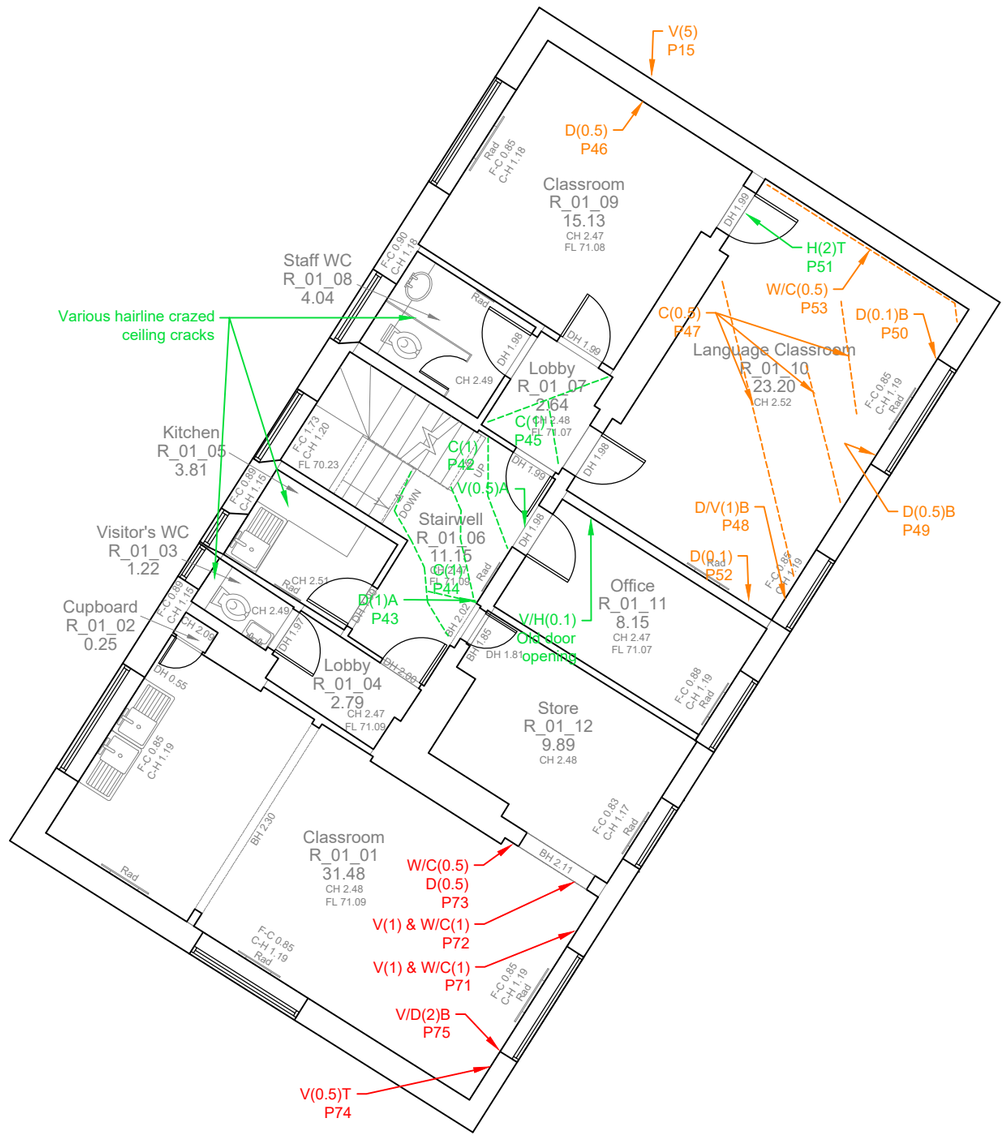
Suitability Status
S2 - Suitable for Information

Job No.	Scale	Size	Rev
260178	1:100	@ A3	P01

Drawing Number
260178-PEV-X04-00-DR-S-0001
Project Code - Originator - Zone - Level - Type - Role - Number

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N

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Key:

V(1)B - Vertical crack in wall (width in mm) Below opening
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Orange text - Considered likely to be related to subsidence movement inspected in 2021. Damage appears generally similar between 2021 to 2026.
Green text - Considered likely to be related to thermal movements. Damage appears generally similar between 2021 to 2026.

P1 - Photograph numbers

Notes:

Drawing to be read in conjunction with Pick Everard Structural Engineer's report reference STR/IPG/260178/17-2/X04/R001 of 24 September 2026

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Report Issue	24.09.26	IPG	IPG

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Damage Location Plan
First Floor

Suitability Status
S2 - Suitable for Information

Job No.	Scale	Size	Rev
260178	**1:100**	**@ A3**	**P01**

Drawing Number
260178-PEV-X04-01-DR-S-0002
Project Code - Originator - Zone - Level - Type - Role - Number

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NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

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C(1) - Ceiling crack (width in mm)
W/C(1) - Wall/Ceiling junction crack (width in mm)
Orange text - Considered likely to be related to subsidence movement inspected in 2021. Damage appears generally similar between 2021 to 2026.
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P1 - Photograph numbers

Notes:

Drawing to be read in conjunction with Pick Everard Structural Engineer's report reference STR/IPG/260178/17-2/X04/R001 of 24 September 2026

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Report Issue	24.09.26	IPG	IPG

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Damage Location Plan
Second Floor

Suitability Status
S2 - Suitable for Information

Job No.	Scale	Size	Rev
260178	**1:100**	**@ A3**	**P01**

Drawing Number
260178-PEV-X04-02-DR-S-0003
Project Code - Originator - Zone - Level - Type - Role - Number

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Appendix B – Photographs

Note that only selected photographs referenced within the report and on the drawings are included in Appendix B. Additional photographs are retained on file, which are generally of the same damage as observed in 2021 which appears to currently be similar to that observed in 2021.



Photo No. 1



Photo No. 2



Photo No. 3



Photo No. 4



Photo No. 5



Photo No. 6



Photo No. 7



Photo No. 8



Photo No. 10



Photo No. 11



Photo No. 12



Photo No. 30



Photo No. 46



Photo No. 47



Photo No. 48



Photo No. 49



Photo No. 50



Photo No. 51



Photo No. 55



Photo No. 56



Photo No. 57



Photo No. 58



Photo No. 59



Photo No. 60



Photo No. 61



Photo No. 71



Photo No. 72



Photo No. 73



Photo No. 74



Photo No. 75

Appendix C – Previous Pick Everard Structural Engineer's report

Previous Pick Everard Structural Engineer's report for Wray Lodge, reference
STR/IPG/211132/17-2/R001 – Issue Number 01 of October 2021

PICK EVERARD

Structural Engineer's Report

Wray Lodge
Northwood College

GDST
GIRLS' DAY SCHOOL TRUST

Issue Number 01
29 October 2021



Document History

Issue	Date	Comment	Author	Chk'd
01	29/10/2021	First Issue	IPG	CDJ

PICK EVERARD

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Appendix A – Floor Plans
Appendix B – Photographs

1.0 Reference and Instruction

1.1	PE Report Reference	:	STR/IPG/211132/17-2/R001 – Issue 01
1.2	Client	:	GDST Northwood College
1.2.1	Address	:	Northwood College, Maxwell Road, Northwood, HA6 2YE
1.3	Inspected Property	:	Wray Lodge, Maxwell Road, Northwood
1.4	Occupier	:	Staff and students

1.5 Instruction

1.5.1	Mode	:	Purchase Order
1.5.2	Reference	:	032009066 (7th October 2021)
1.5.3	Instructed by	:	Ciaran McGann
1.5.4	On behalf of	:	Northwood College

1.6 Brief

To attend site and carry out a visual, non intrusive internal and external inspection of Wray Lodge at Northwood College, from external ground level vantage points and internal floor levels, and provide a Structural Engineer's report with findings and recommendations.

2.0 Scope of Investigations and Report

In accordance with the aforesaid instructions, the following investigations have been undertaken:-

(a) A visual inspection of the superstructure
(b) A desk study of the following reports provided by the client in relation to the adjacent Science Block building which is currently under construction:
   i. Waterman Structures Stage 3 Report revision P05 of February 2020
   ii. RSK Ground Investigation Report (GIR) and Geotechnical / Geoenvironmental Assessment of 21 February 2018.

The investigations and this report are confined to technical assessment of the load bearing elements of the structure, the identification of damage in these elements at the time of our inspection, the cause of damage and the type and scope of measures necessary to repair that damage. Whilst every endeavour will be made to provide a positive and helpful report we are unable to predict the future behaviour of the structure or its components. Guarantee cannot therefore be given that the property will be free from future damage or that existing defects will not suffer from further deterioration or lead to damage.

This report is not to be used for any other purpose or by any third party and is not to be taken as a specification for remedial action or works. However, if the recommendations included within this report are to be subsequently taken forward to detailed design / scheduling and / or construction; before any work can commence, there is a duty on designers, within the definition of the Construction (Design and Management) Regulations 2015, to ensure that Clients are aware of the specific duties they are required to carry out under the provisions set out in the CDM Regulations. HSE's Client Guidance document INDG 411 which can be found on www.hse.gov.uk sets out clear and concise guidance as to the role the Client plays in a project, and also what is expected of other disciplines involved in the project.

The visual inspection of the superstructure was made on 19 October 2021 and detailed notes are retained on file, together with photographs not included within this report. The weather was mild, dry and overcast.

No breaking out or opening up of the building fabric was undertaken at that time and no part of the property which was not readily accessible, or which was covered or otherwise concealed, was inspected. Absence of report on any such part is not to be taken that it is free from defect. Such unexposed parts may contain problems and special arrangements would need to be made for these areas to be investigated (where practicably possible) if confirmation were to be required about their condition.

Drains were not inspected or tested.

Foundations were not uncovered.

Woodwork was not inspected other than for present functional structural adequacy.

Enquiries with local or statutory authorities have not been carried out. Whilst attention may be drawn to any apparent breaches of statutory requirements relative to the buildings or site, the absence of any such comment does not imply compliance with such requirements. The building and associated

structures have not therefore been assessed for compliance with the Building Regulations, for example, Approved Document B – Fire Safety.

Whilst attention may be drawn to the suspected presence of asbestos in the building, this report is to be taken specifically to exclude any advice or recommendation in respect of the identification, handling, management or disposal of asbestos. Advice should be sought from other specialists, as and where appropriate.

We have not carried out any inspections for invasive plant species such as Japanese Knotweed. Whilst attention may be drawn to the suspected presence of invasive plant species this report is to be taken specifically to exclude any advice or recommendation in respect of the identification, handling, management or disposal of such plants. If required advice should be sought from a qualified ecological or landscape consultant as and where appropriate.

2.1 Classification of Visible Damage to Walls and Ceilings

For the purposes of this report, the width of cracks is used as a basis for the classification of visible damage, broadly in compliance with the damage classifications defined by Building Research Establishment Digest 251, revision of 1991 (although updated in 1995 to provide greater description) :-

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Moderate cracks	5mm to 15mm wide	3
Severe cracks	15mm to 25mm wide	4
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2.1.1 Orientation

FRONT of the building faces the addressed road.

RIGHT-HAND and LEFT-HAND in relation to the building are taken when facing the Front Elevation i.e. looking from front towards rear.

RIGHT-HAND and LEFT-HAND in relation to individual walls or components are taken when facing that wall or component.

3.0 The Property – General Details

3.1	Date of Construction	:	Early 1900s
3.2	Type	:	Two storey building with a second floor within the roof space, which appears likely to have been incorporated into the original building construction. Appears that building would have previously been a residential dwelling, now converted into a school office, administration and classroom building **(Photo No. 1).**
3.3	Roof	:	The main roof is a hip end construction with plain clay tile finish, supported by a traditional cut timber roof structure.
3.4	Walls	:	External walls appear to be loadbearing 340mm thick solid brickwork walls. Internal ground and first floor walls also appear to be largely loadbearing masonry construction, with some newer internal stud partition walls.
3.5	Floors	:	Generally suspended timber structure floors to ground floor, first floor and second floor.
3.6	Structural Alterations	:	Some evidence of external brickwork rebuild locally to the front elevation where it appears there may have been historic movement.

4.0 The Site

4.1	O.S. Grid Reference	:	TQ 089 912
4.2	Topography	:	The site slopes down slightly from the front to the rear and slightly from right to left.
4.3	Substrata/Geology	:	The RSK Ground Investigation Report states that the exploratory holes in the vicinity of the adjacent Science Block revealed that the site is underlain by a variable thickness of made ground over the Lambeth Group comprising the Lower Mottled Beds and Upnor Formation with Chalk at depth.
4.4	Trees	:	There are various mature trees surrounding the property ranging from 1-10m in distance from the building **(Photo Nos. 2/3/13/16).**
4.5	Site Drainage		
4.5.1	Foul	:	It appears that foul drainage discharges to the rear of the property, presumably via main sewers.
4.5.2	Storm	:	Rain water pipes discharge below ground in the vicinity of the 4 corners of the building, presumably via main sewers or soakaways.

5.0 Visual Inspection – Observations and Assessment of Findings

We understand from discussions on site that the principal cracking appeared towards the end of the summer period just gone.

It is considered that the principal cracking is most likely due to subsidence caused by desiccation of clay subsoils from the action of tree roots. The RSK Ground Investigation Report of 2018, provided in relation to the adjacent part of the site, suggests shallower subsoils are generally of a clay nature considered to be of medium to high plasticity. The soil testing undertaken to the shallower soil samples recovered at approximately 1-2m depth suggests that there was also slight to significant desiccation of these soils at the time of the investigations in 2018.

The location of damage around Wray Lodge is annotated on the plans found within Appendix A. The damage which is considered likely to be related to subsidence movement is coloured red. Other minor cracking, which is considered more likely to be due to normal thermal movements is coloured green.

Clay shrinkage subsidence caused by the action of tree roots will cause the foundations to drop and the cracking in the building to open up during the dryer summer months when the surrounding vegetation extracts moisture from the ground. The cracking will likely close up again during the wetter winter months when the sub-soils below the foundations rehydrate and swell. This will likely be a cyclical pattern of movement over the seasons which will continue to varying degrees depending on the climactic conditions each year, unless the cause of the problem is mitigated.

As agreed on site, we have installed crack monitoring studs across the principal cracking and taken initial readings.

Although we understand that the adjacent new build Science block utilises a piled design for the foundations, which will likely be deeper than the foundations of Wray Lodge, it appears unlikely that the construction of the new Science block will have undermined the foundations of Wray Lodge and caused the current damage observed, although if there have been any significant vibrations from the groundworks, these may have exacerbated the damage slightly.

In addition to cracking observed within the property, although not of structural concern, it was observed that some roof tiles had slipped **(Photo Nos. 1/61)** and that a window at 2nd floor level had the catch detached from the frame, leaving the window ajar **(Photo Nos. 62/63).**

6.0 Recommendations

Potential solutions to mitigate against ongoing subsidence could be as follows:

1. Reduction and/or removal of vegetation that is the primary cause of the clay shrinkage below the foundations.

2. Installation of a root barrier between the vegetation and the building foundations.

3. Underpinning of the foundations.

Reduction of vegetation is usually the least costly option, with underpinning of foundations being the most costly.

We would therefore recommend that initially, hand excavated trial hole investigations are carried out to establish foundations details of the building and subsoil conditions. Any soil and root samples recovered should then be tested to establish ground conditions and which vegetation is most likely to be influencing the subsoil conditions at the location of the damage.

An Arboricultural Consultant should be appointed to carry out a site survey, review the ground investigation evidence and consider the influence that nearby vegetation may be having on the building; with provision of an Arboricultural Report recommending potential reduction/management of the surrounding vegetation, to help mitigate the current damage and reduce the risk of future damage to the building.

If the recommended vegetation reduction works are able to be implemented, this should be undertaken without delay. However, as we understand that the property is within the local authority Conservation Area, permission for vegetation reduction may be difficult to obtain, although may be possible with sufficient investigation evidence that specific vegetation is causing damage to the building.

Should vegetation management not be possible, installation of a root barrier may be the most appropriate alternative. It would be prudent to request that the Arboricultural Consultant considers the potential for a root barrier installation to mitigate current damage, as an alternative to vegetation reduction.

Following the initial investigations and Arboricultural advice, this may highlight a potential for heave damage to occur to the building (the opposite of subsidence) if vegetation is reduced or if a root barrier is installed. This may require further deeper borehole investigations and analysis to determine the theoretical potential for heave to occur.

If heave damage were considered a significant risk, or if vegetation reduction or root barrier installation were not considered viable, then a scheme to underpin the existing foundations may need to be adopted.

If vegetation reduction works or a root barrier installation were to proceed, we would recommend that crack monitoring continues on a 2 monthly basis following the mitigation works, until the end of the following summer period, to establish if the mitigation works have been successful and the property has returned to a state of equilibrium; prior to any crack repair and redecoration works being undertaken to the building.

It would be prudent to address the slipped roof tiles and detached window catch observed, to reduce the risk of water ingress into the building, which could cause damage to internal decoration and eventual structural damage if left unattended.

7.0 Status of Report

This report does not provide a warranty or guarantee as regards the structural adequacy and condition of the building. It provides a considered professional opinion based on a limited visual inspection and no liability shall attach to us except to the extent that we have failed to exercise reasonable skill, care and diligence in the provision of our services.

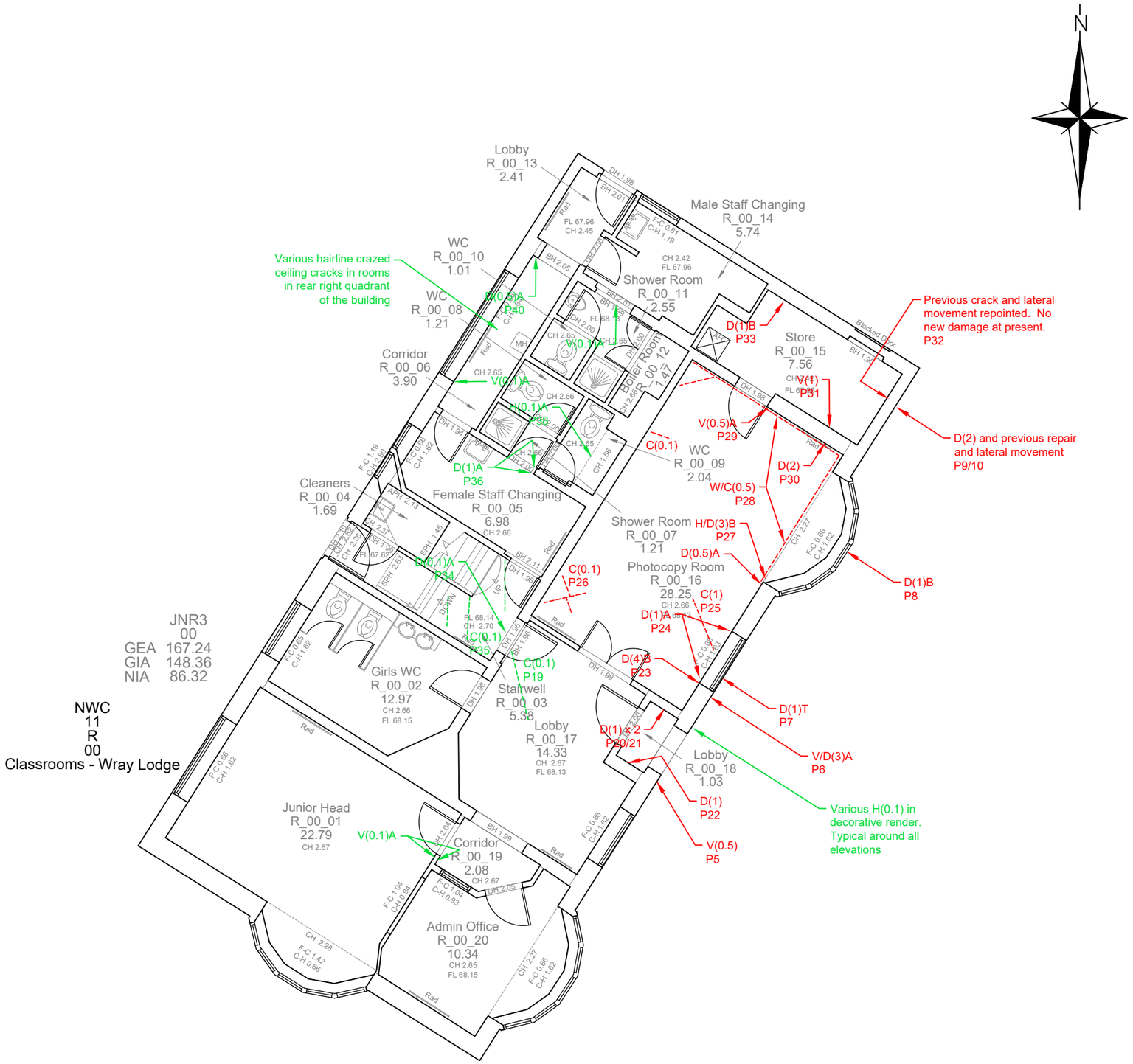
Pick Everard

Pick Everard
Consulting Civil and Structural Engineers
Halford House
Charles Street
Leicester
LE1 1HA

Appendix A – Floor Plans

Drawing No. 211132-PEV-XX-00-DR-S-0001	-	Damage Location Plan - Ground Floor Plan
Drawing No. 211132-PEV-XX-01-DR-S-0002	-	Damage Location Plan - First Floor Plan
Drawing No. 211132-PEV-XX-02-DR-S-0003	-	Damage Location Plan - Second Floor Plan

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING



Key:

V(1)B - Vertical crack in wall (width in mm) Below opening
H(1) - Horizontal crack in wall (width in mm)
D(1)A - Diagonal crack in wall width in mm) Above opening
C(1) - Ceiling crack (width in mm)
W/C(1) - Wall/Ceiling junction crack (width in mm)
Red text - Considered likely to be related to subsidence movement
Green text - Considered likely to be related to thermal movements
P1 - Photograph numbers

Notes:

Drawing to be read in conjunction with Pick Everard Structural Engineer's report reference STR/IPG/211132/17-2/R001

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Report Issue	29.10.21	IPG	CDJ

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Damage Location Plan
Ground Floor

Suitability Status
S2 - Suitable for Information

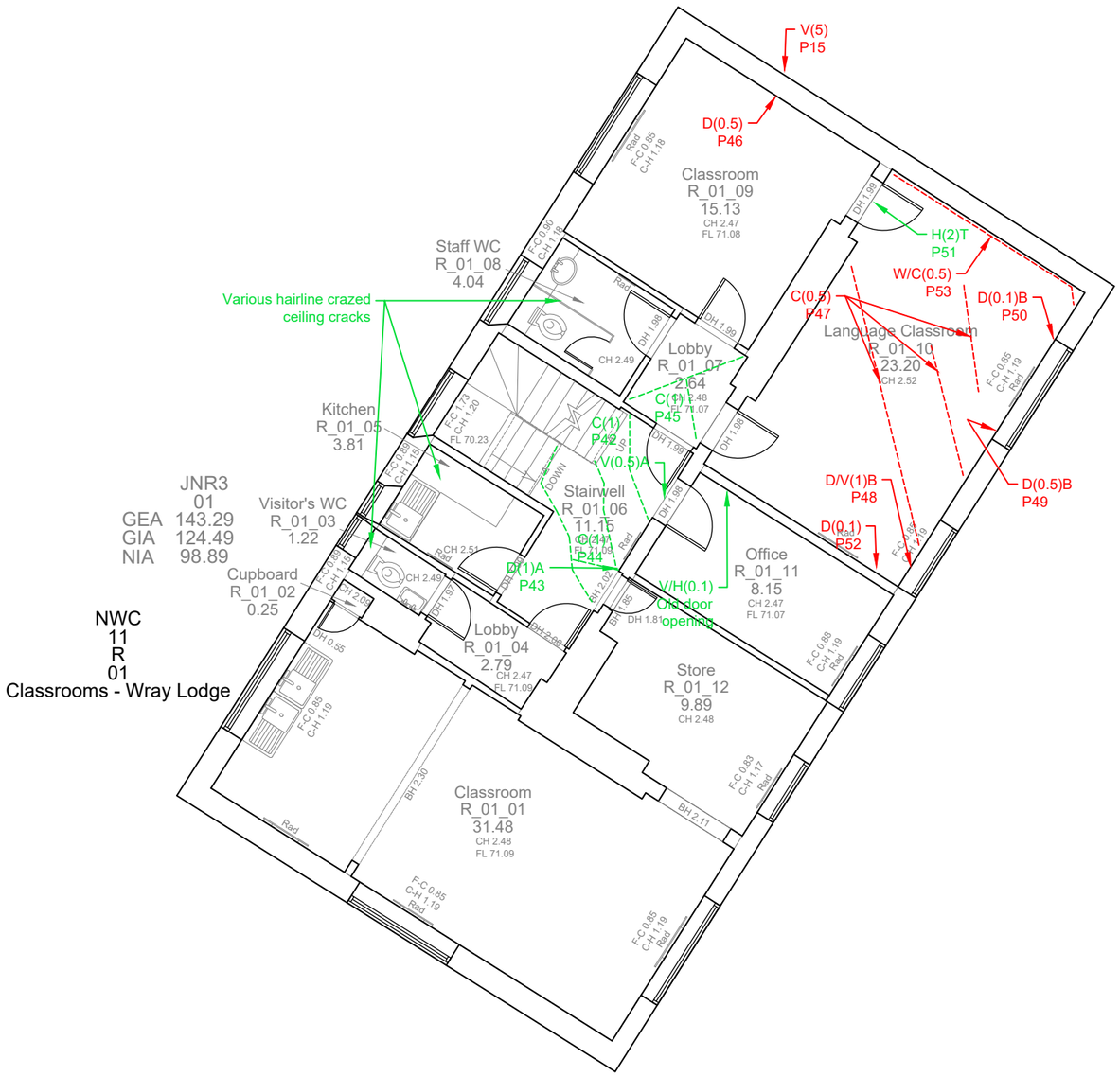
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211132	1:100	@ A3	P01

Drawing Number
211132-PEV-XX-00-DR-S-0001
Project Code - Originator - Zone - Level - Type - Role - Number

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NO DIMENSIONS TO BE SCALED FROM THIS DRAWING



Key:

V(1)B - Vertical crack in wall (width in mm) Below opening
H(1) - Horizontal crack in wall (width in mm)
D(1)A - Diagonal crack in wall width in mm) Above opening
C(1) - Ceiling crack (width in mm)
W/C(1) - Wall/Ceiling junction crack (width in mm)
Red text - Considered likely to be related to subsidence movement
Green text - Considered likely to be related to thermal movements
P1 - Photograph numbers

Notes:

Drawing to be read in conjunction with Pick Everard Structural Engineer's report reference STR/IPG/211132/17-2/R001

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Report Issue	29.10.21	IPG	CDJ

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Damage Location Plan
First Floor

Suitability Status
S2 - Suitable for Information

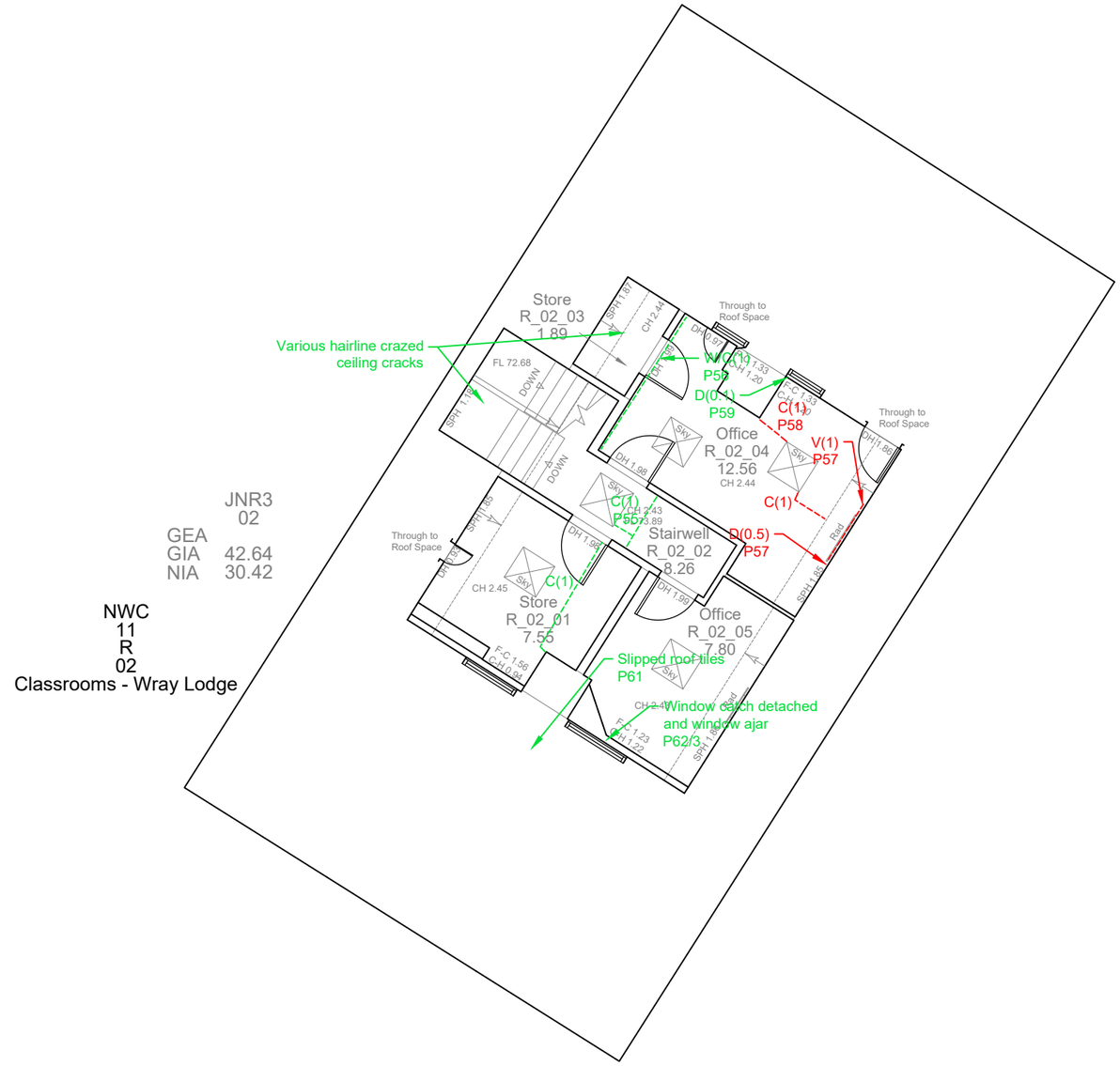
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211132	**1:100**	**@ A3**	**P01**

Drawing Number
211132-PEV-XX-01-DR-S-0002
Project Code - Originator - Zone - Level - Type - Role - Number

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NO DIMENSIONS TO BE SCALED FROM THIS DRAWING



N

Key:

V(1)B - Vertical crack in wall (width in mm) Below opening
H(1) - Horizontal crack in wall (width in mm)
D(1)A - Diagonal crack in wall width in mm) Above opening
C(1) - Ceiling crack (width in mm)
W/C(1) - Wall/Ceiling junction crack (width in mm)
Red text - Considered likely to be related to subsidence movement
Green text - Considered likely to be related to thermal movements
P1 - Photograph numbers

Notes:

Drawing to be read in conjunction with Pick Everard Structural Engineer's report reference STR/IPG/211132/17-2/R001

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Report Issue	29.10.21	IPG	CDJ

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Damage Location Plan
Second Floor

Suitability Status
S2 - Suitable for Information

Job No.	Scale	Size	Rev
211132	**1:100**	**@ A3**	**P01**

Drawing Number
211132-PEV-XX-02-DR-S-0003
Project Code - Originator - Zone - Level - Type - Role - Number

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Appendix B – Photographs



Photo No. 1



Photo No. 2



Photo No. 3

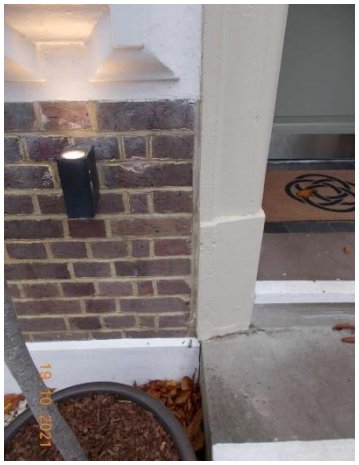


Photo No. 5



Photo No. 6

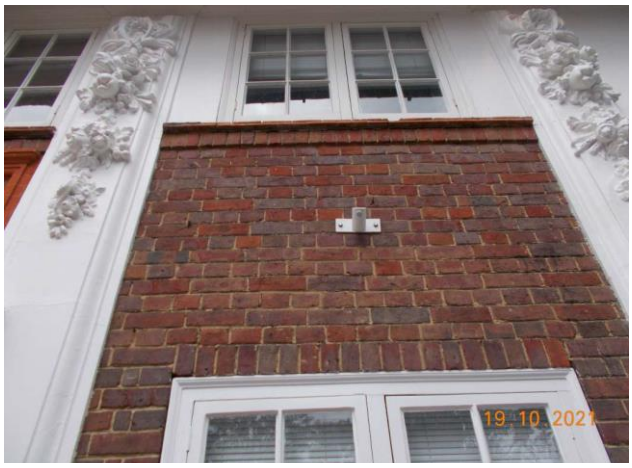


Photo No. 7



Photo No. 8



Photo No. 9



Photo No. 10



Photo No. 13



Photo No. 15



Photo No. 16



Photo No. 19



Photo No. 20



Photo No. 21



Photo No. 22



Photo No. 23



Photo No. 24



Photo No. 25

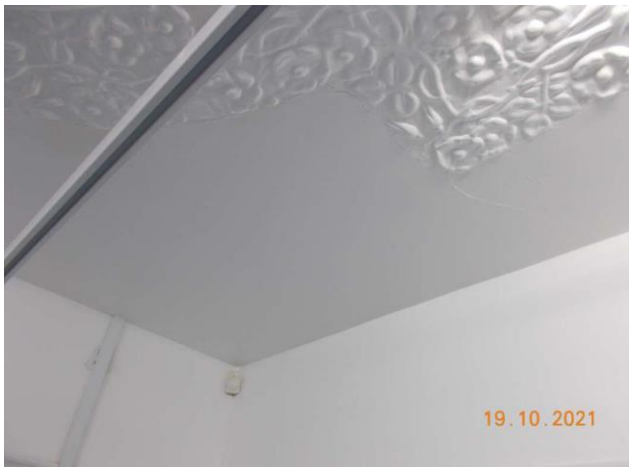


Photo No. 26



Photo No. 27



Photo No. 28



Photo No. 29



Photo No. 30



Photo No. 31



Photo No. 32



Photo No. 33



Photo No. 34



Photo No. 35



Photo No. 36



Photo No. 38



Photo No. 40



Photo No. 42



Photo No. 43



Photo No. 44



Photo No. 45

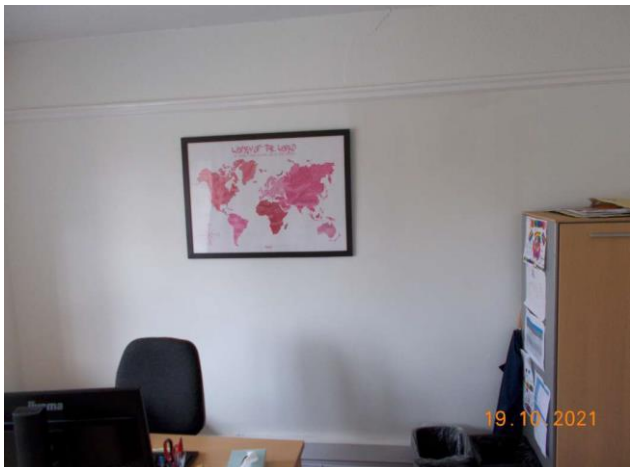


Photo No. 46



Photo No. 47



Photo No. 48



Photo No. 49



Photo No. 50



Photo No. 51



Photo No. 52



Photo No. 53



Photo No. 55



Photo No. 56



Photo No. 57



Photo No. 58



Photo No. 59



Photo No. 61



Photo No. 62

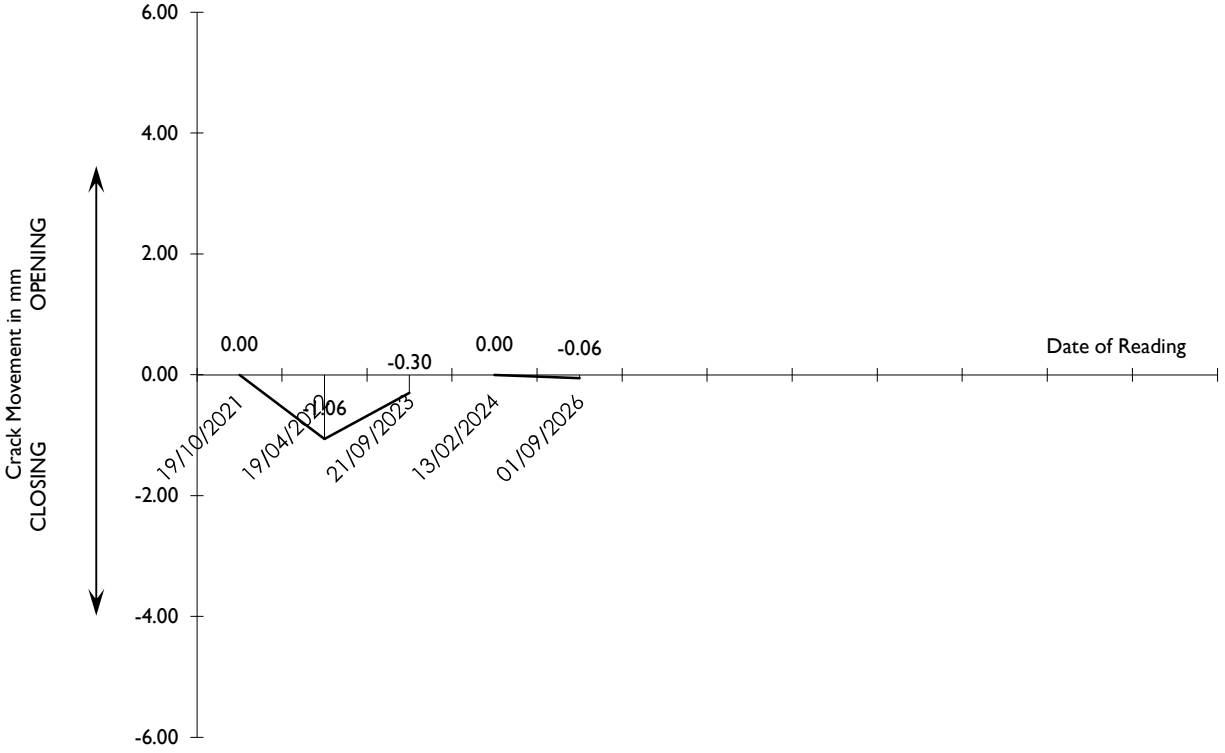


Photo No. 63

Appendix D – Pick Everard Crack Monitoring Data for Wray Lodge between October 2021 and September 2026

Monitoring Point No. 1

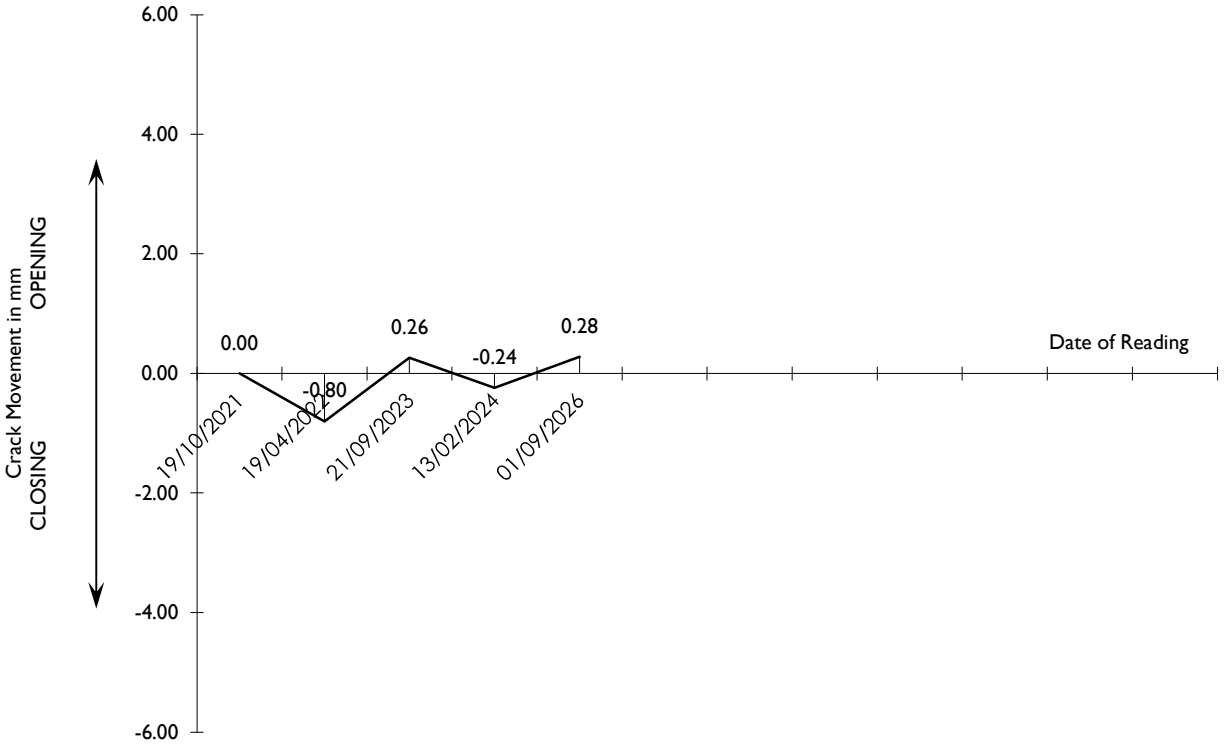
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 3mm.
Stud had fallen off at 13/02/24 visit. Reattached
and new reading taken for future comparison.



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D1
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 2

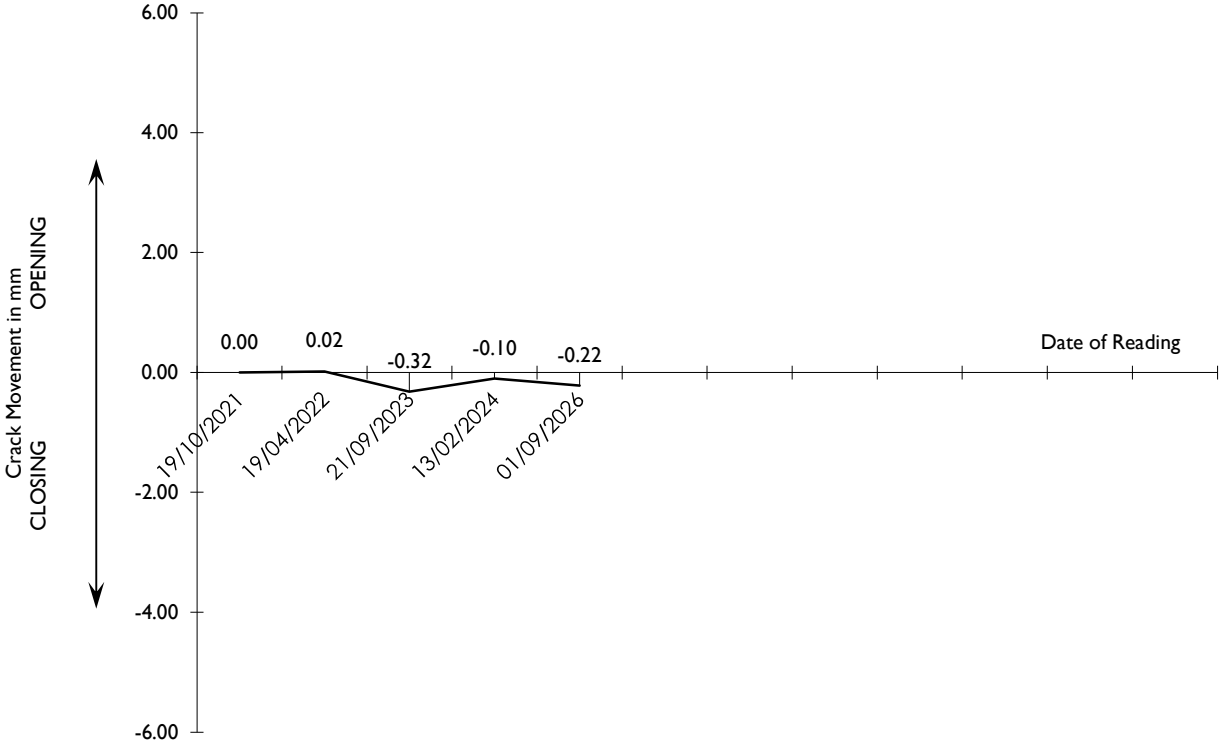
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 3mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D2
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 3

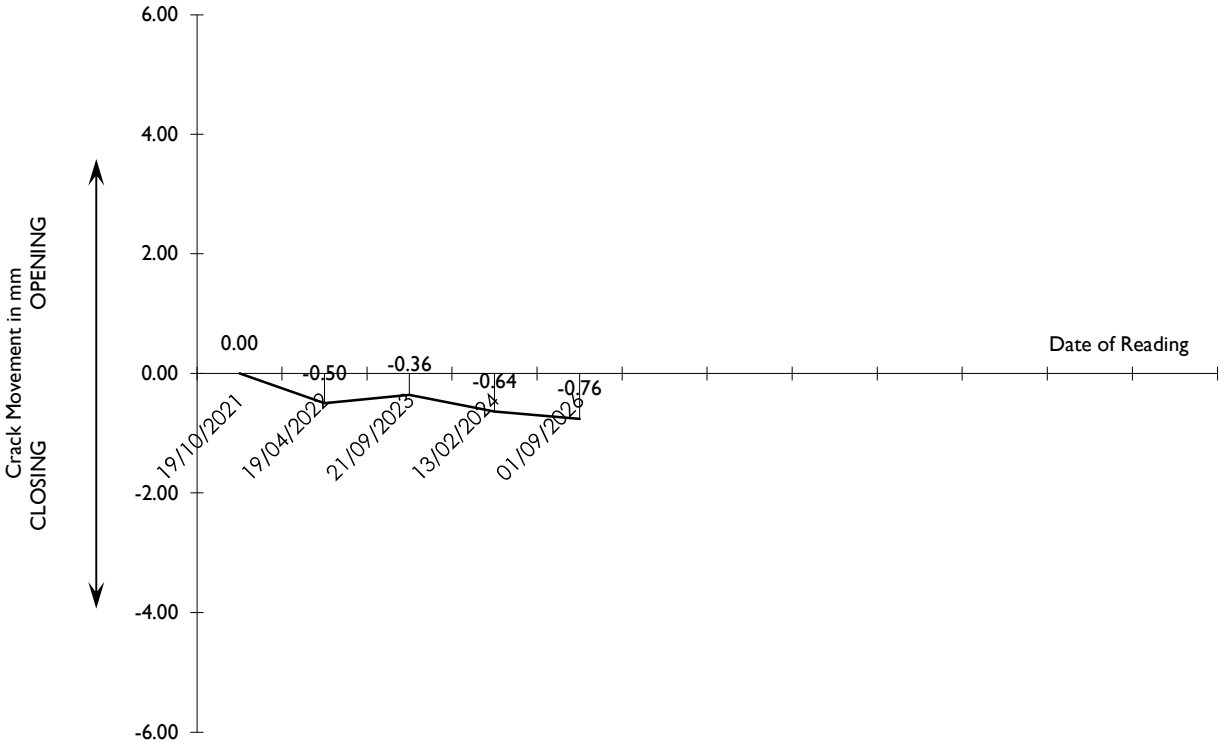
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D3
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 4

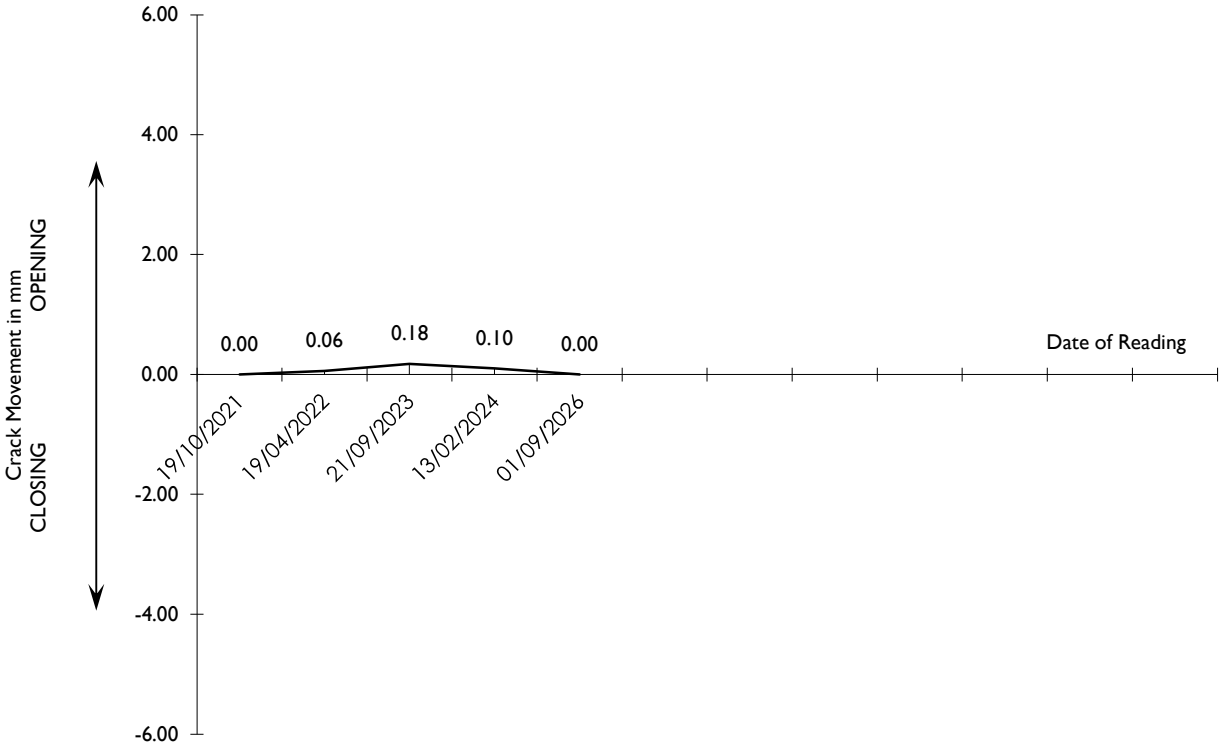
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D4
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 5

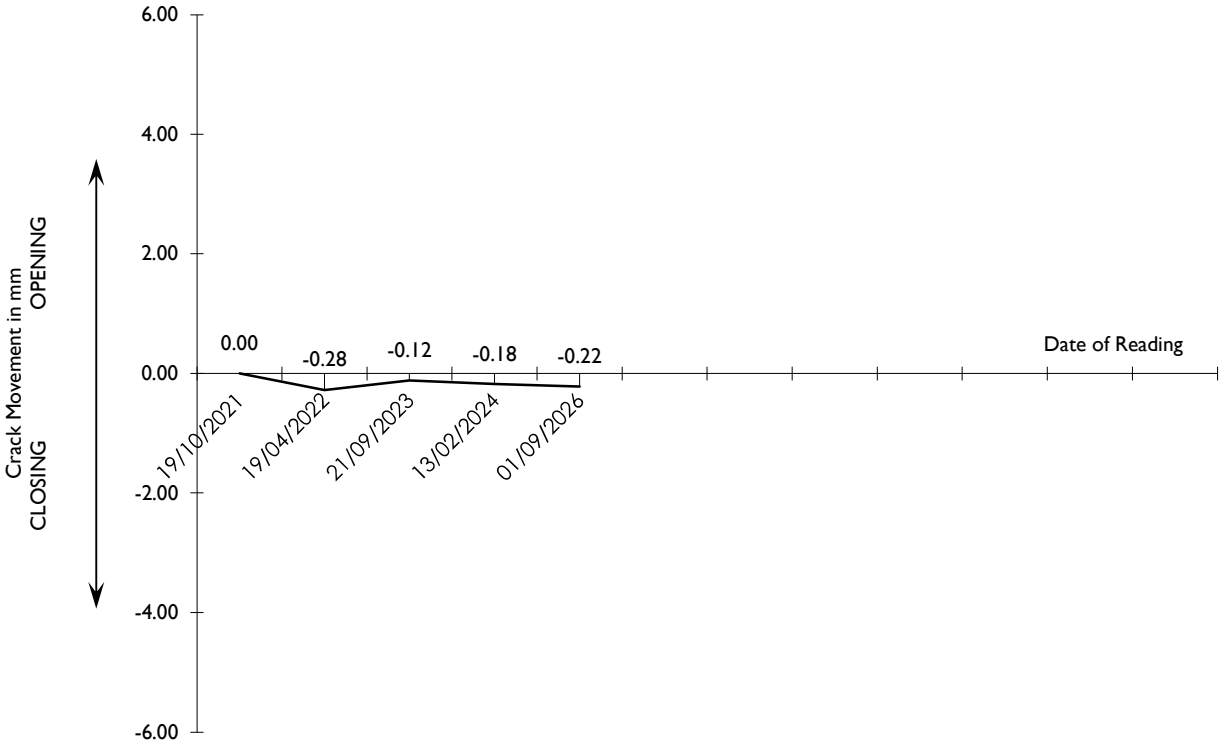
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D5
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 6

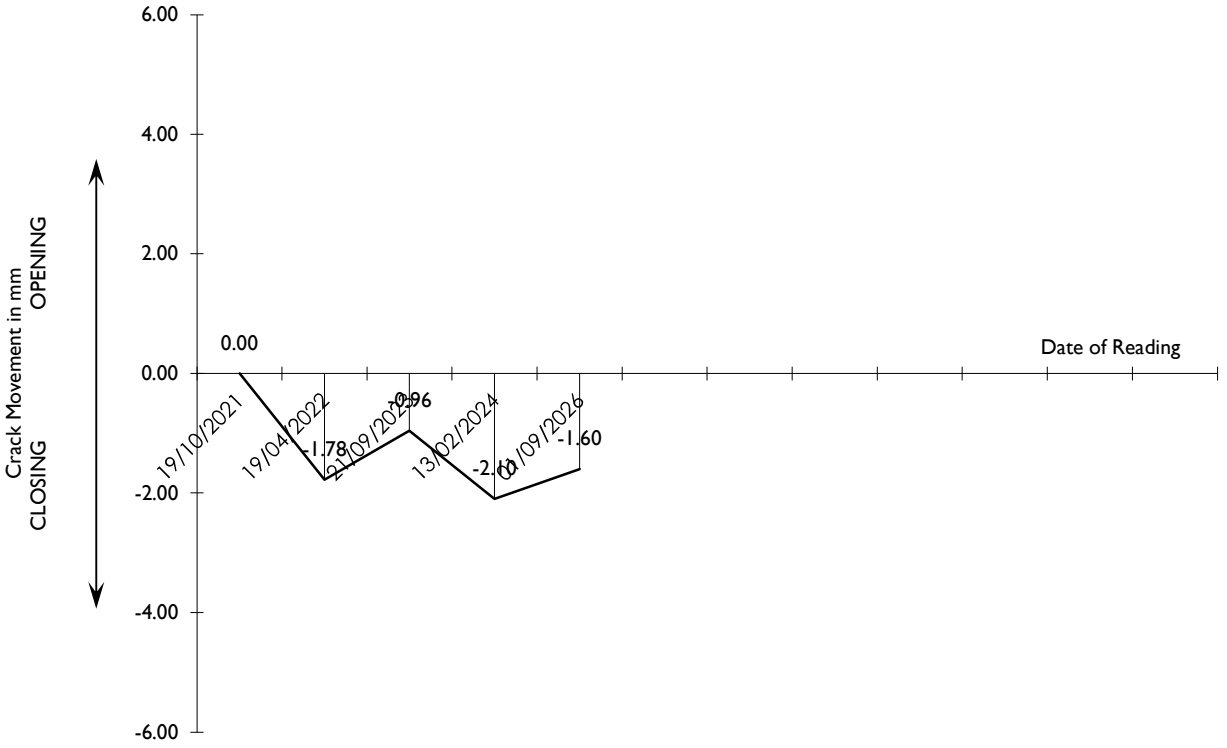
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D6
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 7

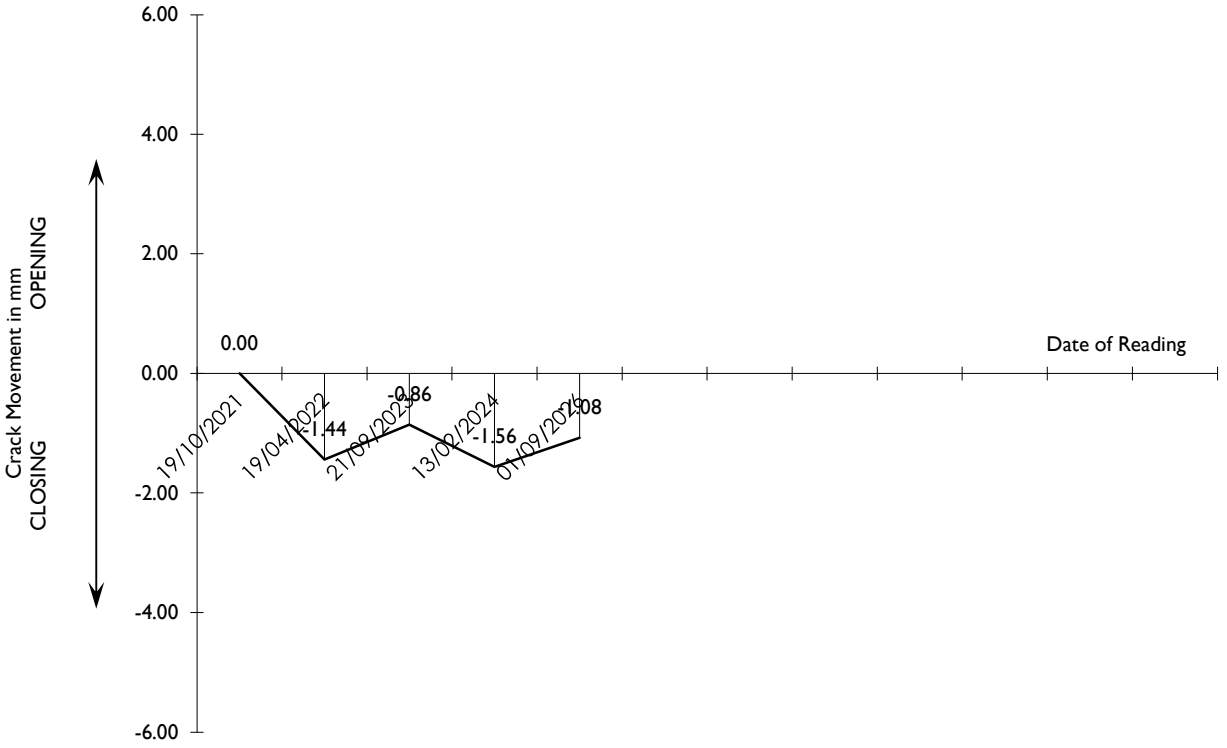
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 4mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D7
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 8

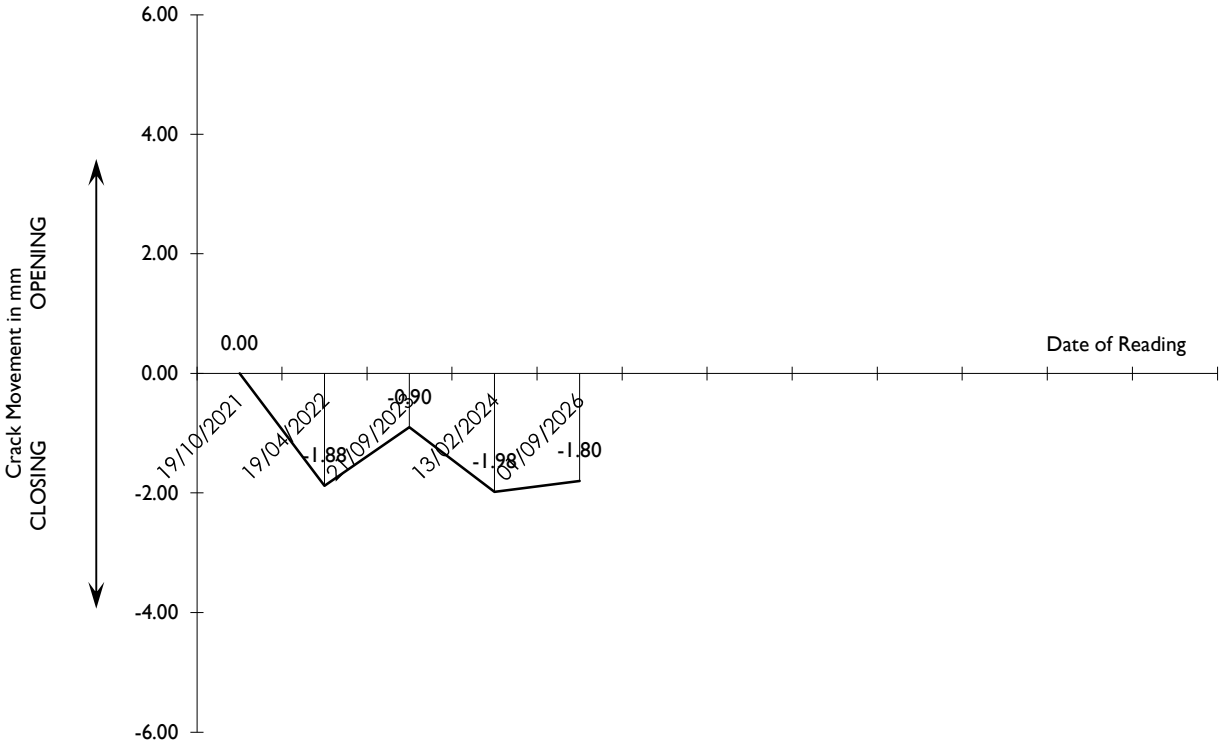
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 4mm



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	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 9

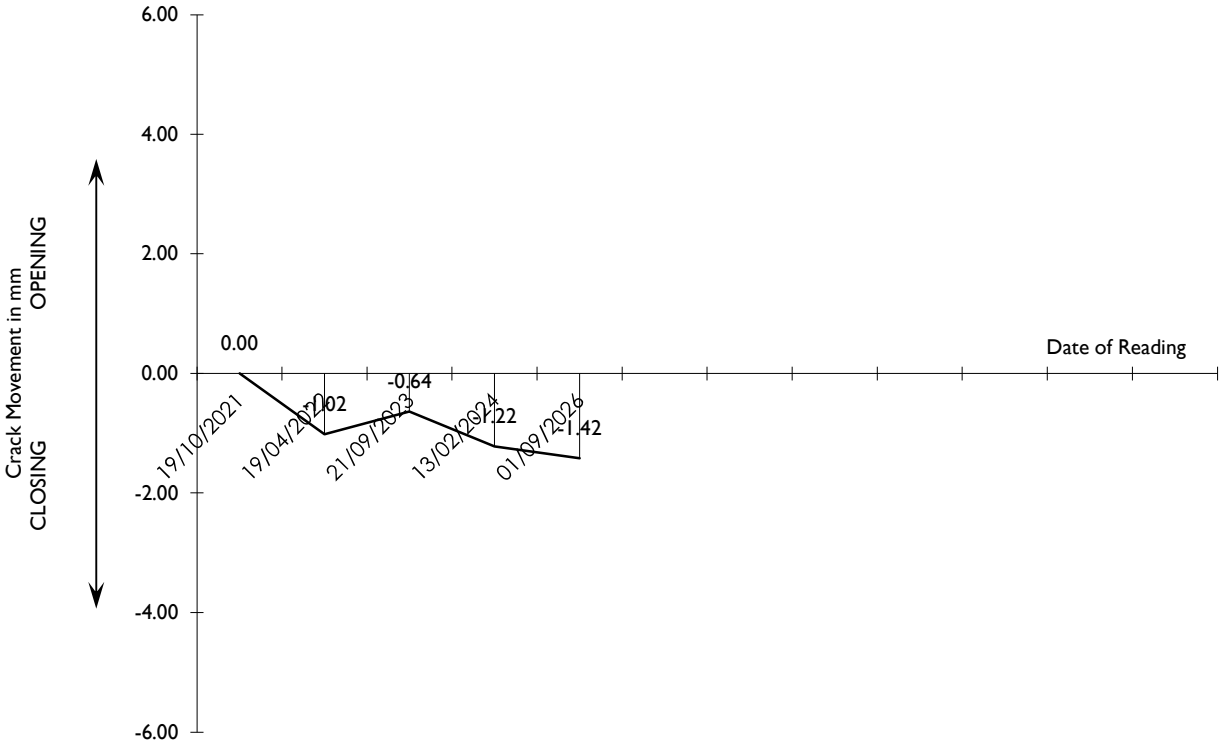
Horizontal Crack. Vertical Measuring Point.
Original Crack Width 3mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D9
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 10

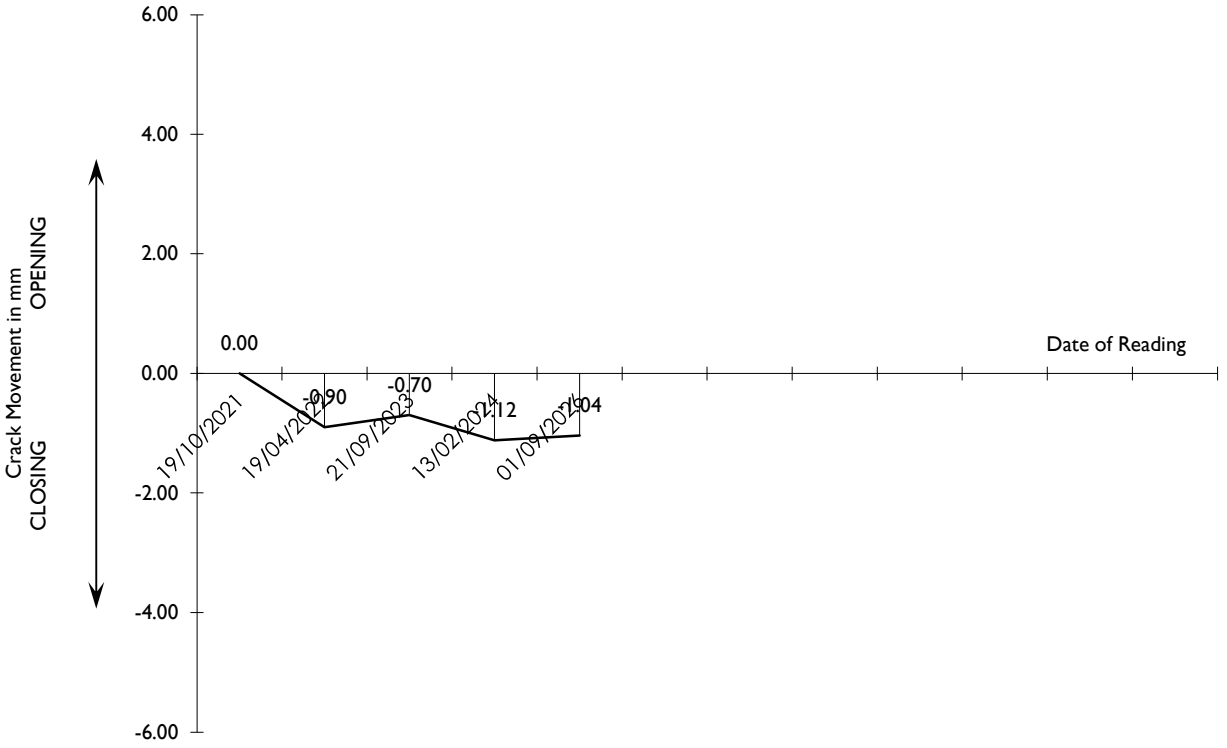
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 2mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D10
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 11

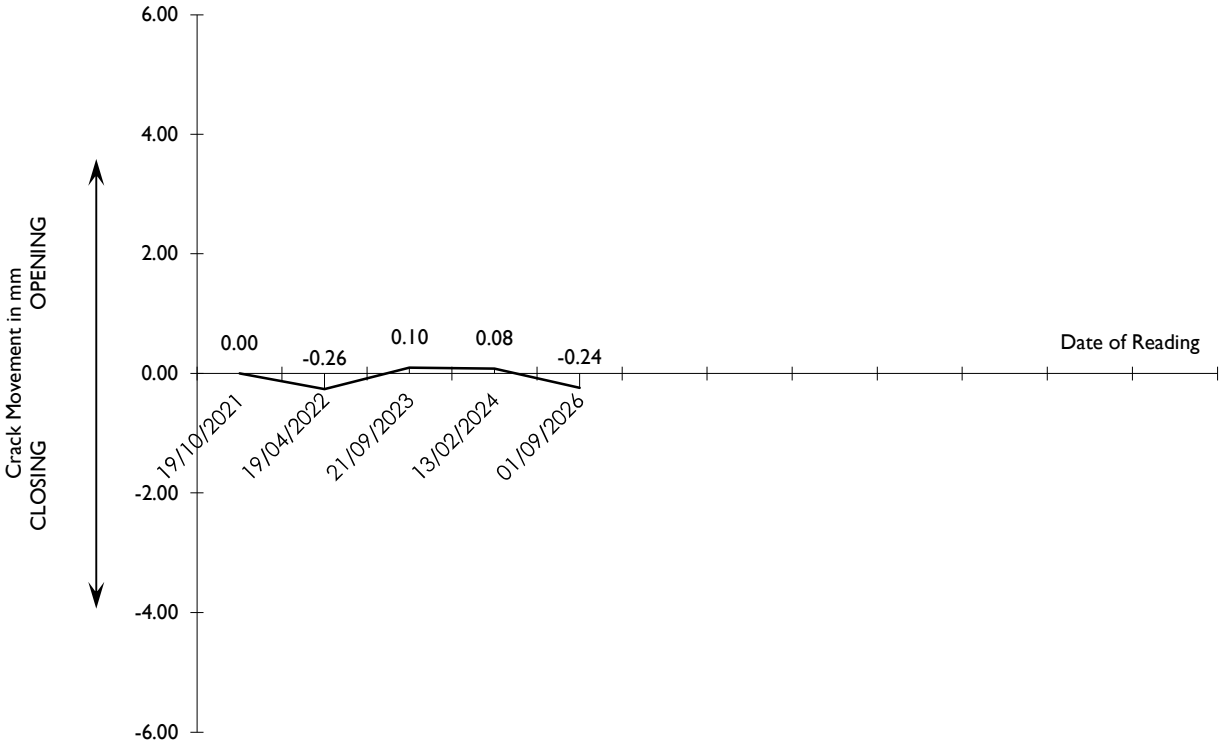
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 2mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D11
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 12

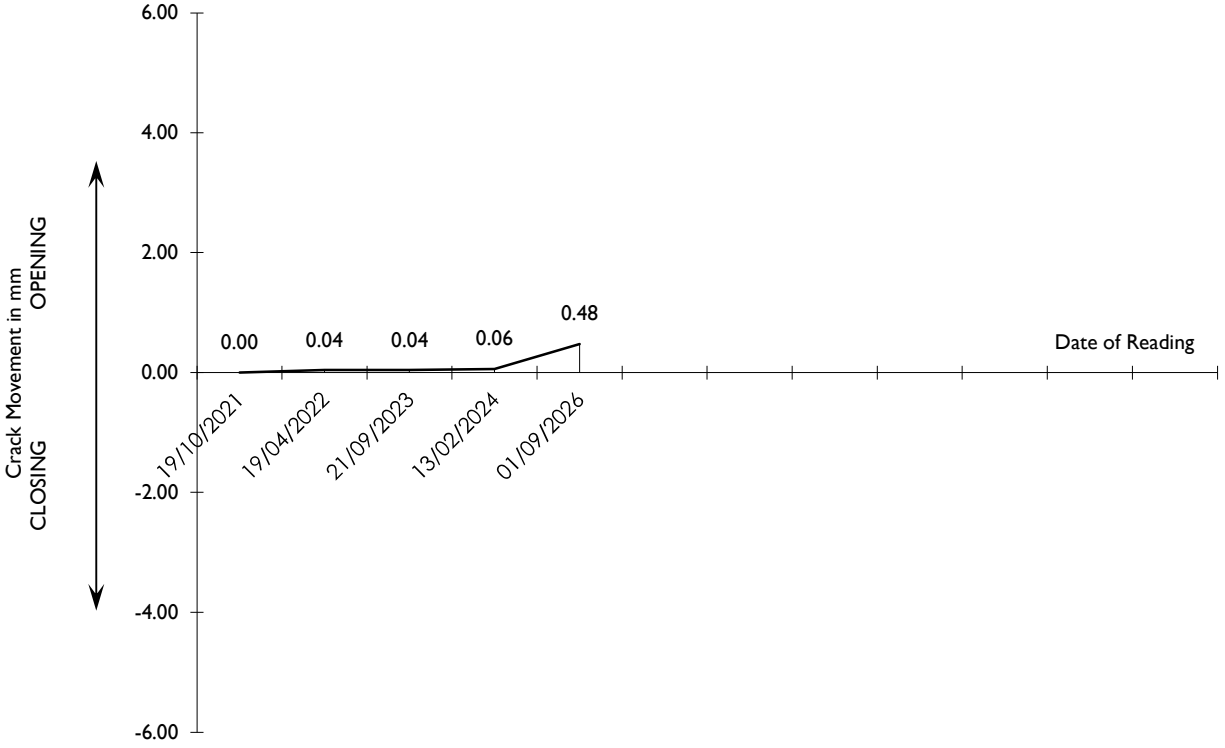
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D12
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 13

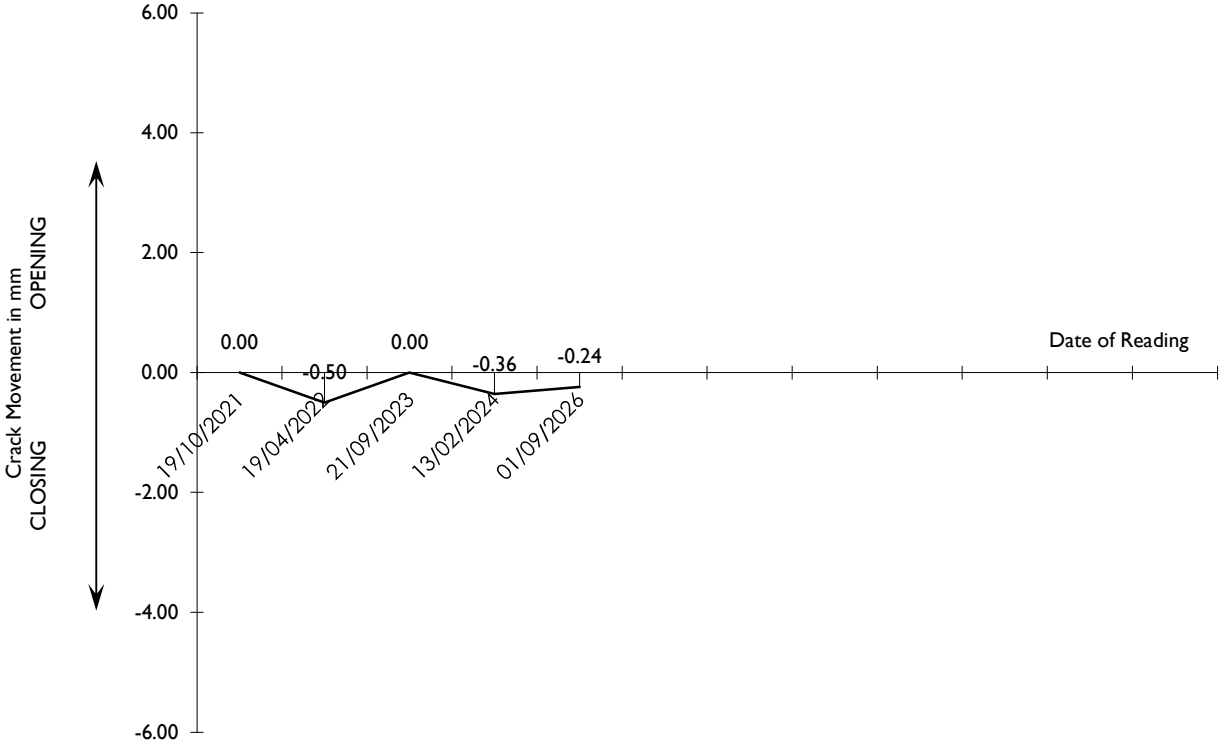
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D13
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 14

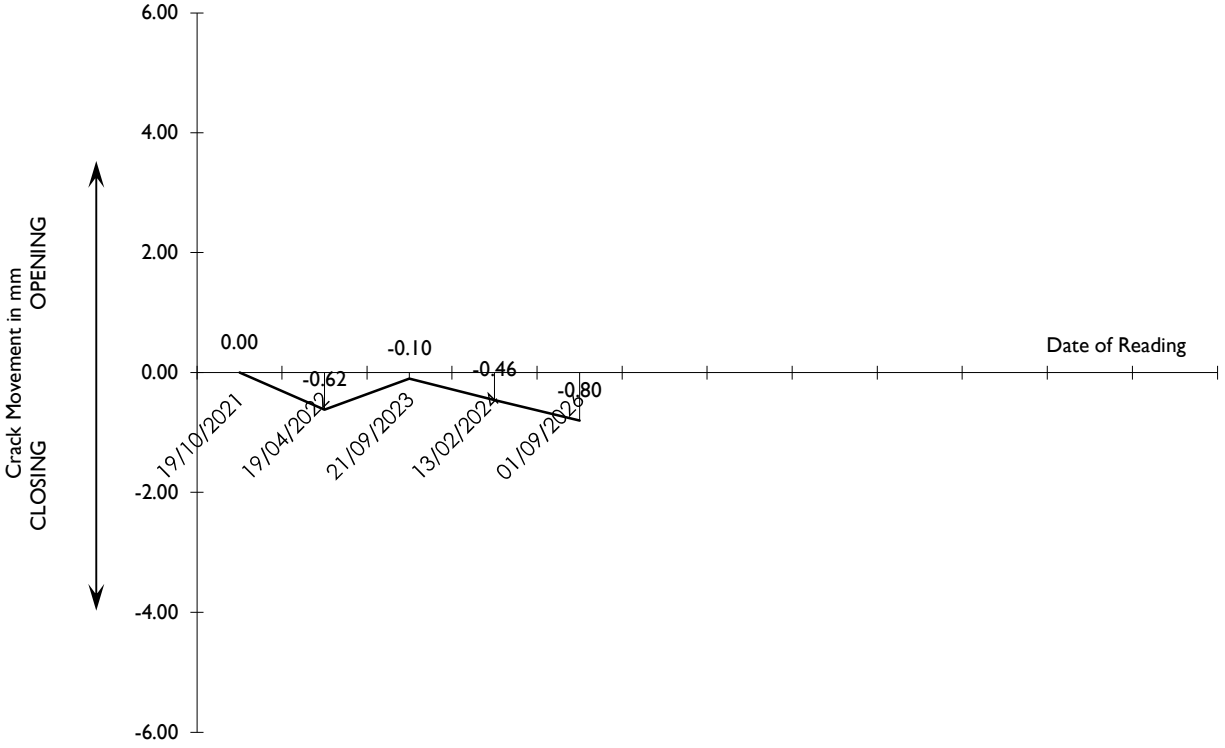
Ceiling Crack. Ceiling Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D14
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
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Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 15

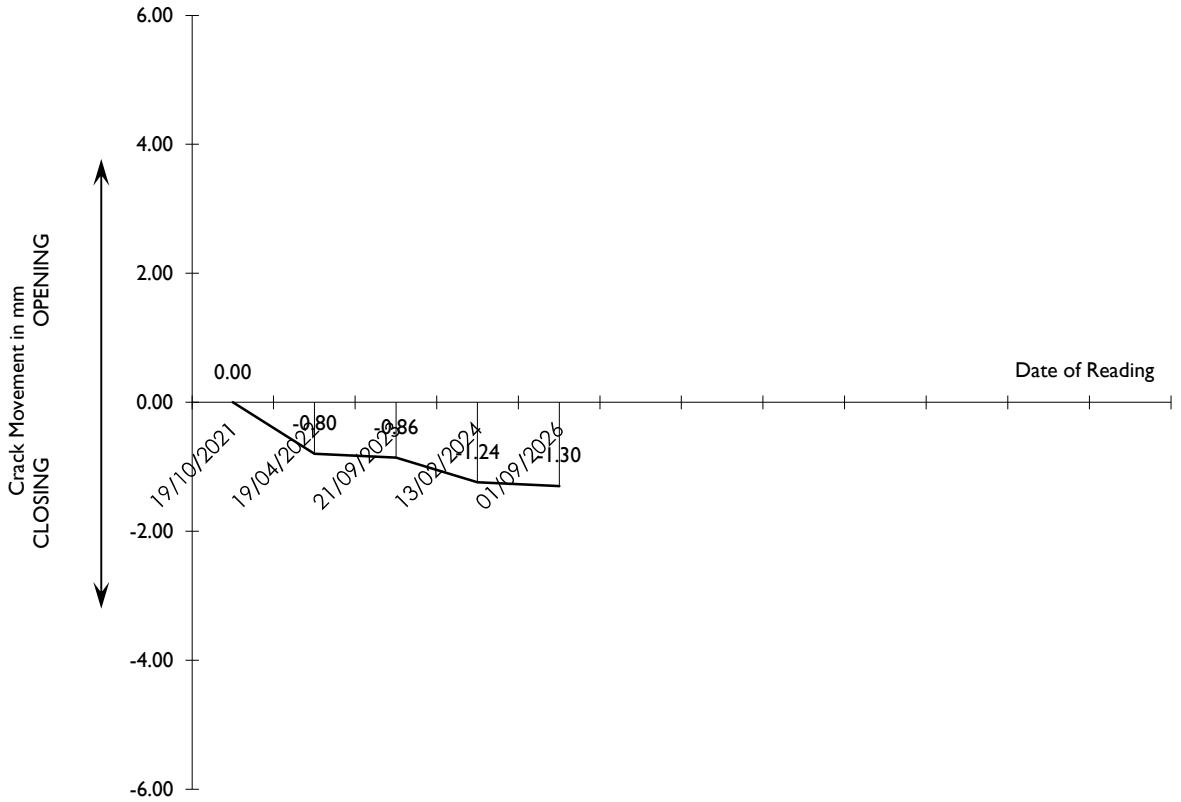
Diagonal/Vertical Crack. Horizontal Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D15
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 16

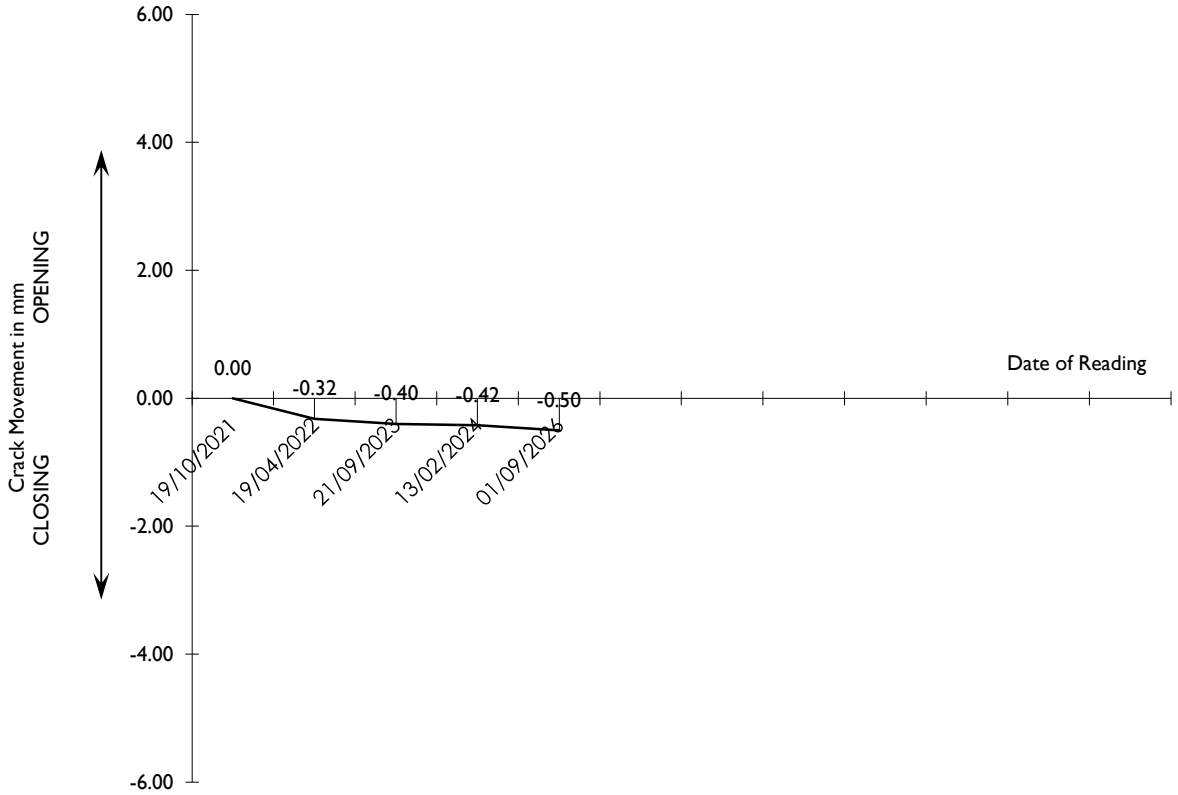
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D16
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 17

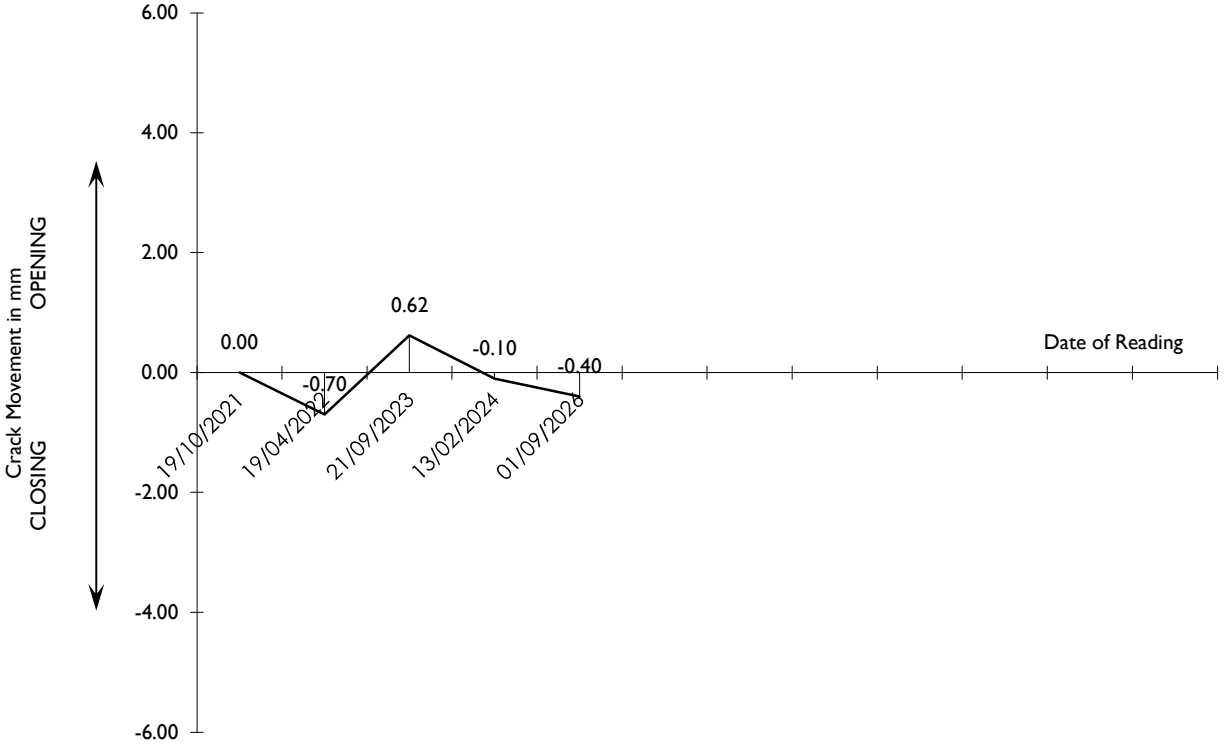
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D17
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 18

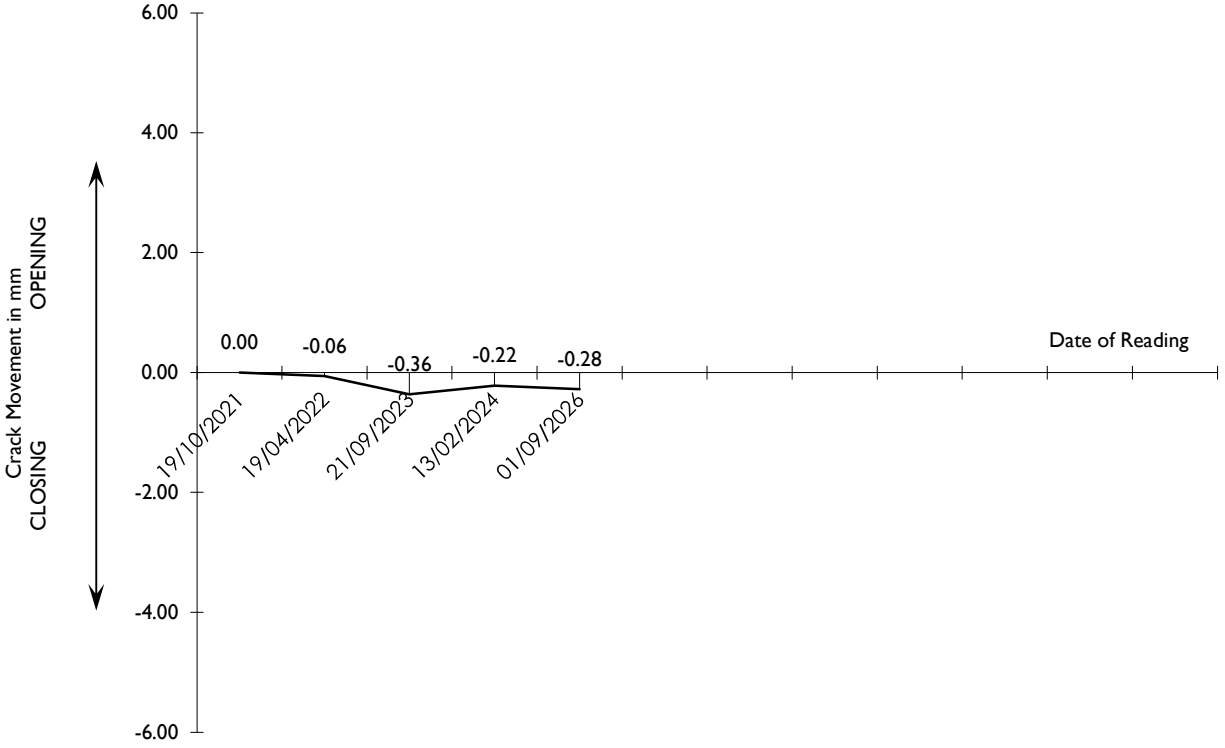
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D18
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
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HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 19

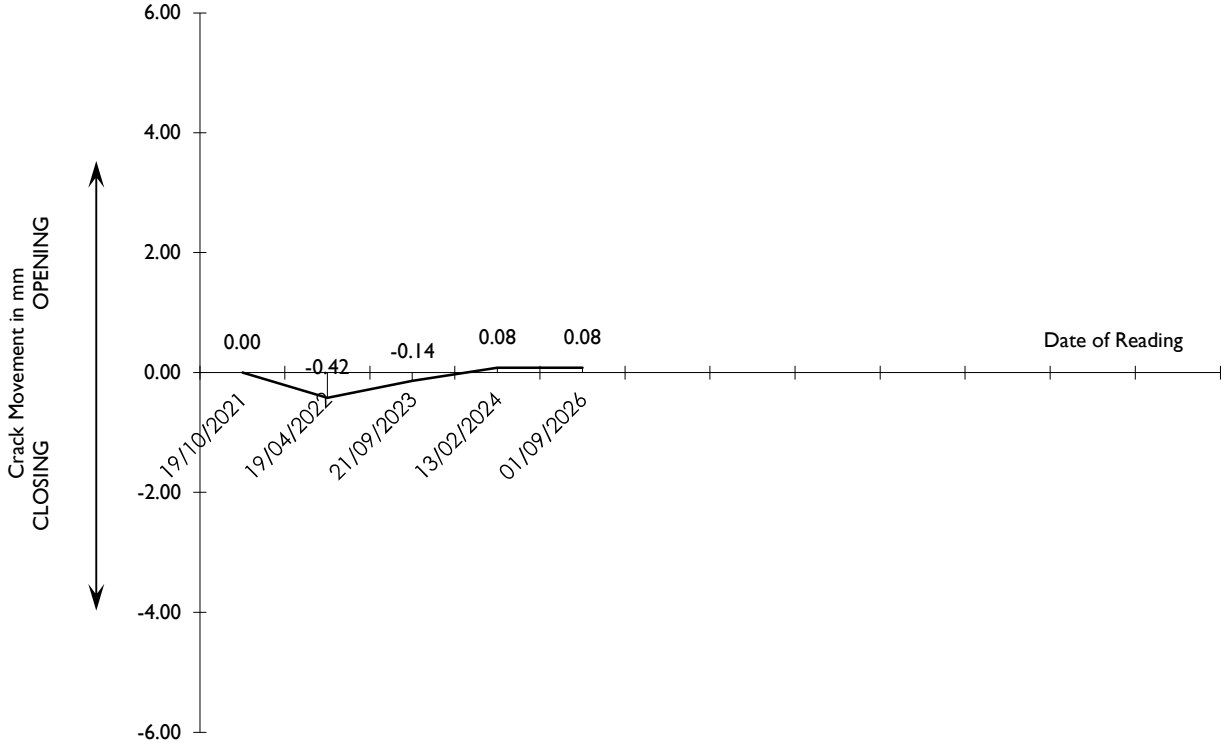
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D19
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 20

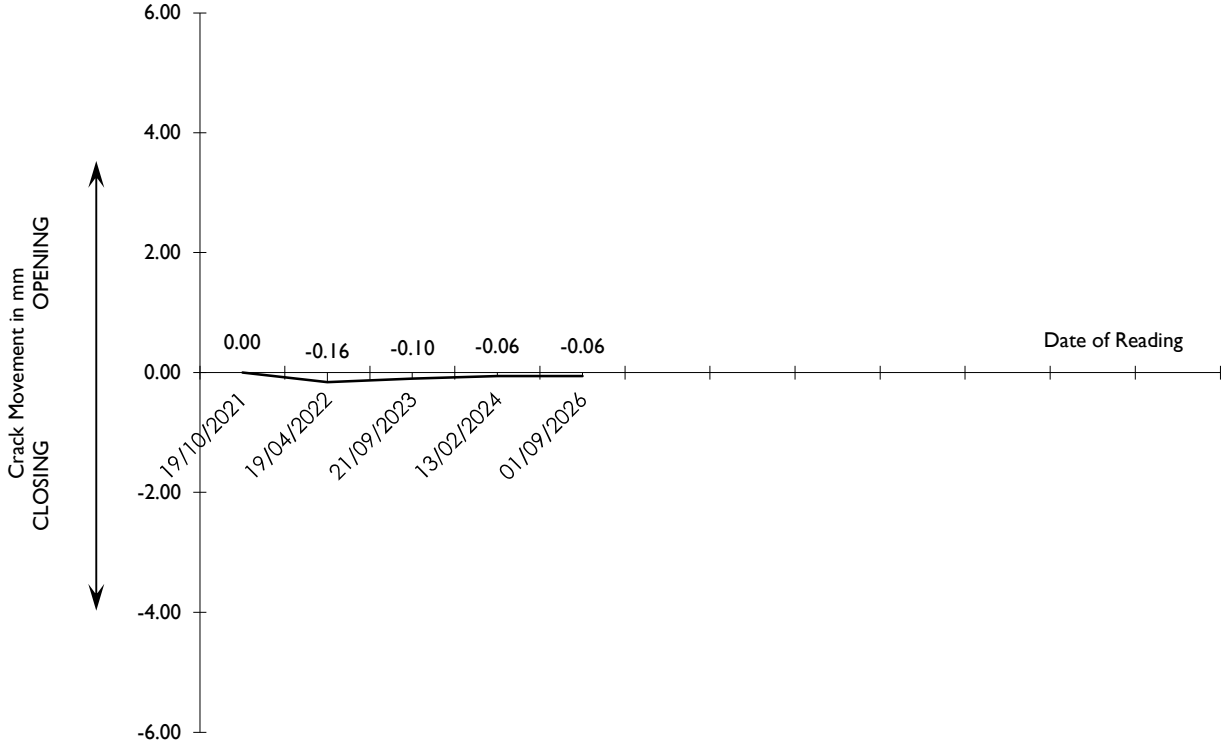
Diagonal Crack. Horizontal Measuring Point.
Original Crack Width 1mm



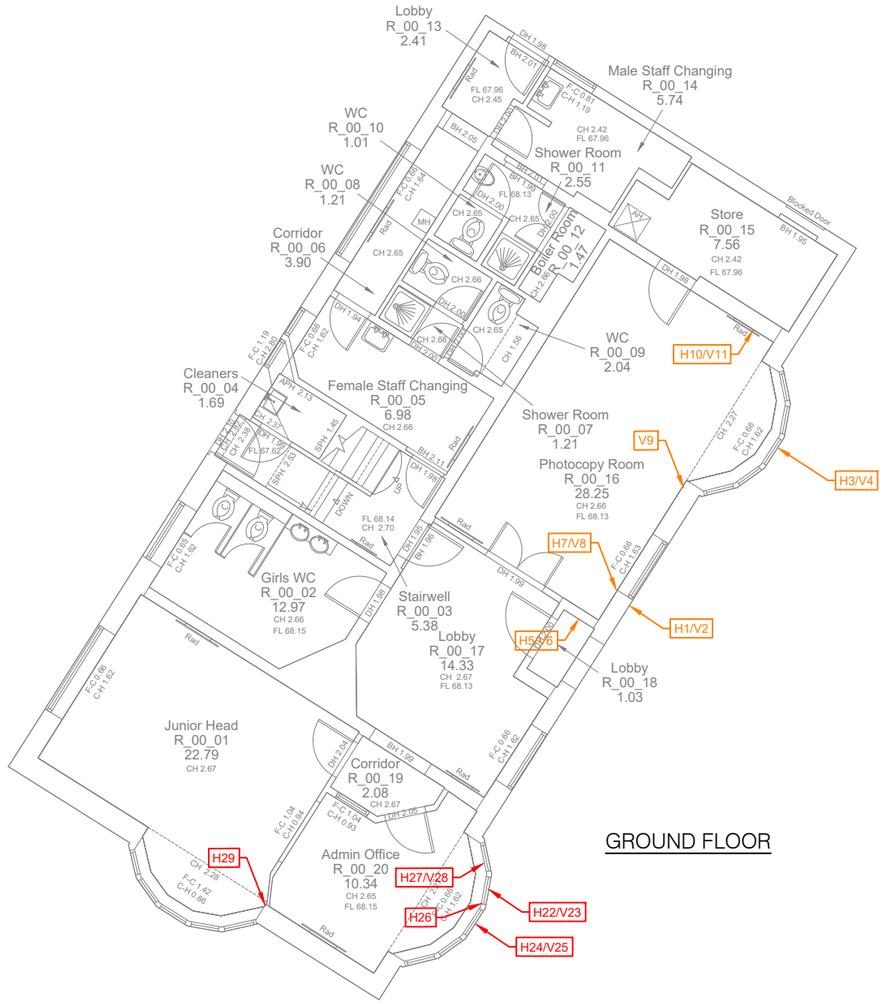
SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D21
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411

Monitoring Point No. 21

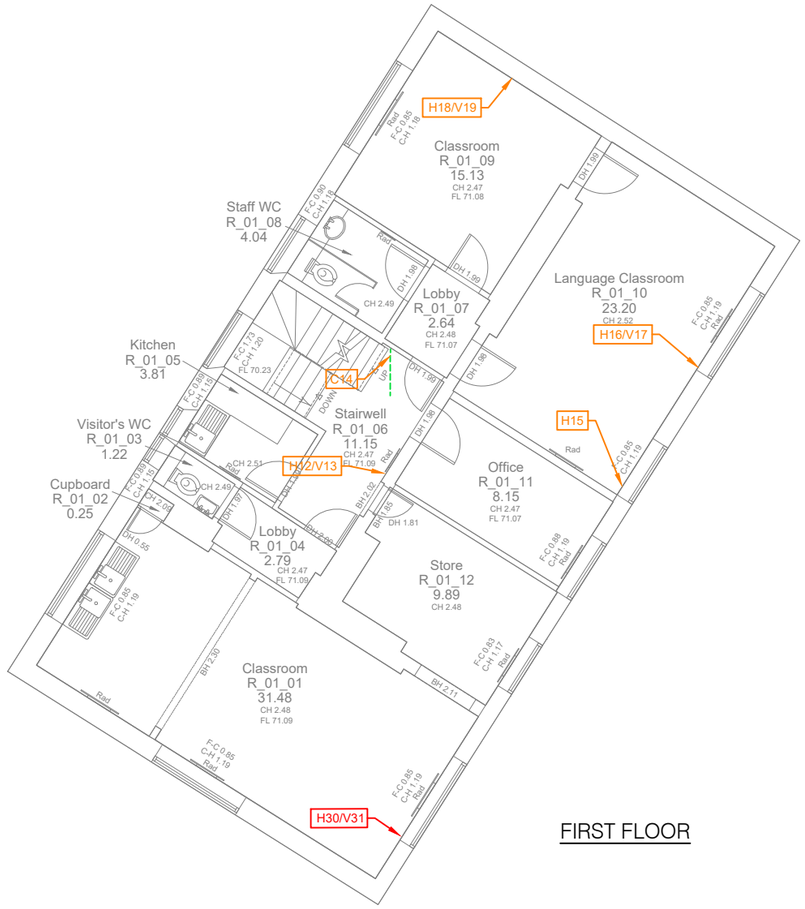
Diagonal Crack. Vertical Measuring Point.
Original Crack Width 1mm



SUBSIDENCE INVESTIGATION	Drawing No. 260178/17-10/X04M/D21
	DATE: 1 September 2026
ADDRESS	**PICK EVERARD**
Wray Lodge, Maxwell Road	Consulting Civil & Structural Engineers
Northwood	Halford House
Middlesex	Charles Street
HA6 2YE	Leicester LE1 1HA
OWNER: Northwood College	TEL: 0116 223400
CLIENT: Northwood College	FAX: 0116 2234411



GROUND FLOOR



FIRST FLOOR



SECOND FLOOR

N

NO DIMENSIONS TO BE SCALED FROM THIS DRAWING

Key:

H1 - Horizontal Crack Monitoring Point
V2 - Vertical Crack Monitoring Point
C14 - Ceiling Monitoring Point

Notes:

Drawing to be read in conjunction with Pick Everard Monitoring Graphs

Monitoring points 1-21 were installed in October 2021. (Original drawing no. 211132-PEV-XX-XX-DR-S-0010)

Monitoring points 22-31 were installed in September 2026

Base floor plans provided by Client are Gleeds drawing no. LNBS446_NWC_JNR3 revision 0 of 07/11/16

Revision		Date	Drn	Chk
P01	Issued with updated monitoring graphs	23.09.26	IPG	IPG

Client
GDST Northwood College
Northwood

Project
Wray Lodge
Structural Inspection

Drawing Title
Crack Monitoring Location Plans

Suitability Status
S2 - Suitable for Information

Job No.	Scale	Size	Rev
260178	**NTS**	**@ A3**	**P01**

Drawing Number
260178-PEV-X04-XX-DR-S-0010
Project Code - Originator - Zone - Level - Type - Role - Number

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Appendix E – Simon Pryce Arboriculture report in relation to Wray Lodge of August 2022

Simon Pryce Arboriculture

Report

Client:	**Girls Day School Trust**
Site:	**Wray Lodge, Northwood College, Maxwell Road, Northwood, HA6 2YE**
Subject:	**Updated report on the trees and other vegetation near the building and their effects on it. Specification for necessary or appropriate work.**
Inspection date:	**14th November 2023**
Report date:	**14th March 2024 - updates report of 6th August 2022**
Reference:	**22/032/2**
Author:	**Simon Pryce, BSc, FArborA, RCArborA, CBiol, FICFor**

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AA Registered CONSULTANT trees.org.uk

1 Introduction

1.1 This report has been prepared for the Girls Day School Trust in connection with an investigation of subsidence at Wray Lodge, Maxwell Road, Northwood, HA6 2YE and updates my previous report of 6th August 2022, based on a site visit and survey on 21st December 2021.

1.2 The recommended tree works were carried out including the felling of an ash to the rear right and goat willow to the front right of the building and crown reduction of a horse chestnut and Turkey oak to the front left and right respectively.

1.3 This report is an update based on the results of ongoing crack monitoring up to 13th February 2024 and a reinspection of the trees on 14th November 2023.

1.4 The previous findings and latest monitoring are summarised and discussed below. The attached schedule contains updated comments and recommendations for the trees and they are shown on the site plan. Left and right are used as if facing buildings from the front, unless noted otherwise.

2 Summary

Causation

2.1 Site investigation and crack monitoring confirmed that the damage in the building was subsidence caused by the sub soil shrinking as it has been dried by roots from nearby trees and the main damage was at the front and right. Roots there were identified as being from a goat willow, tree 7, which was removed, together with an ash to the rear right, tree 6.

2.2 Roots from the Turkey oak to the front right, tree 9, were not identified, but it was the largest tree in the vicinity and a high water demanding species. It was crown reduced by 3 - 4m and regrowth is dense and vigorous.

2.3 There was no reported cracking at the front left, but soil conditions there were similar to the front right. Roots from the nearby horse chestnut, tree 1, were found well below the foundations, indicating that it could cause damage during dry summers. It has been reduced back to the former reduction points and is also regrowing.

2.4 The original findings indicated that the removals were unlikely to cause heave damage in the building and there are no reports of any problems since the works were done.

Remedial options

2.5 Underpinning is an engineering option, but is costly and, from an arboricultural perspective, would not necessarily address future problems. Root barriers are costly and would not be a practical option here.

2.6 The arboricultural option adopted was to fell the goat willow as a remedy and the ash as a precaution. As a precaution the horse chestnut and Turkey oak were both crown reduced and are to be managed by cutting regrowth regularly.

Monitoring

2.7 Crack monitoring started in October 2021 and by the second reading in April 2022 all the cracks had narrowed by up to about 1.78m and my first report noted that this recovery was consistent with the effects of vegetation.

2.8 The third reading in September 2023 showed that most of the cracks had widened and by February 2024 most cracks showed little movement or had recovered. As before the movement was most pronounced in the cracks at the front left of the building (points 7 - 11), which were up to 4mm wide with overall movements up to about 2mm.

3 Observations - trees and other vegetation

3.1 By the time of my second survey the ash and goat willow had both been felled and the stumps ground out and the horse chestnut and Turkey oak had both been reduced as specified. The only significant vegetation near the building is now in the planting bed at the front right and includes shrubs, self-seeded ash and sycamore seedlings and shoots from the willow's root system.

3.2 The tree and other vegetation are described individually in the schedule forming the second part of this report, with recommendations for any necessary or appropriate work. They are numbered on the attached site plan.

4 Discussion

Causation

4.1 The summer of 2022 was exceptionally dry and the drought continued into early 2023, but the monitoring intervals were too wide to show any conclusive effects of that. The chestnut and turkey oak are starting to regrow, but reducing them and felling the ash and goat willow will have reduced any influence on the building considerably. The only likely cause of the ongoing seasonal movement at the front right is the remaining shrubs, saplings and willow shoots, item 11. These are nearly all capable of growing much larger if left, particularly the saplings and willow shoots, with their water uptakes increasing in the process.

Remedies

4.2 The simplest and most practical arboricultural option is to remove all the item 11 vegetation to the front right. Stumps and root system should be removed or treated with a suitable herbicide to prevent any regrowth.

4.3 This part of the building is evidently vulnerable to movement even from minor vegetation, so it would be advisable to keep the area to the front right clear of woody vegetation in future. Low growing ground vegetation would be the best option.

4.4 The regrowth on trees 1 and 9 should also be trimmed regularly. In light of the monitoring readings a 2 year cycle would be advisable, i.e. making the next cut between the 2024 and 2025 growing seasons.

Heave

4.5 The remaining vegetation is all small and much younger than the building, so there is not a significant potential for heave.

Restrictions

4.6 The vegetation in item 11 is too small to be covered by the Conservation Area legislation, so there are no statutory restrictions on removing it. However Hillingdon Council would need to be given six weeks notice (Section 211 notice) of cutting the regrowth on the oak and horse chestnut.

Tree work

4.7 The small vegetation could be removed by a reasonably competent gardener or landscaper, but any tree work should be carried out in accordance with BS3998: 2010, Recommendations for Treework, by an arboricultural contractor with appropriate third party and public liability insurance. The Arboricultural Association has a list of approved contractors, at https://www.trees.org.uk/ARB-Approved-Contractor-Directory .

5 Conclusions

5.1 The original site investigation and monitoring show that the damage at the front right of the building was subsidence caused by nearby trees.

5.2 Felling trees 6 and 7 and reducing trees 1 and 9 have reduced the drying effect considerably, but the ongoing seasonal movement at the front right indicates a continuing influence, albeit a small one.

5.3 The only likely cause of this is the shrubs, tree saplings and willow shoots near the affected area, item 11. If left they are healthy and capable of growing much larger, particularly the saplings and willow shoots.

5.4 The most appropriate option is to clear the woody vegetation near the front left of the building and replant with low growing ground cover.

5.5 Regrowth on the horse chestnut and Turkey oak should be cut every 2 years, starting between the 2024 and 2025 seasons.

5.6 There is no potential for heave following this work.

5.7 There are no restrictions on removing the shrubs and saplings, but cutting regrowth would need a Section 211 notice to Hillingdon Council.

Simon Pryce

Simon Pryce, BSc, FArborA, RCArborA, CBiol, FICFor

Photograph



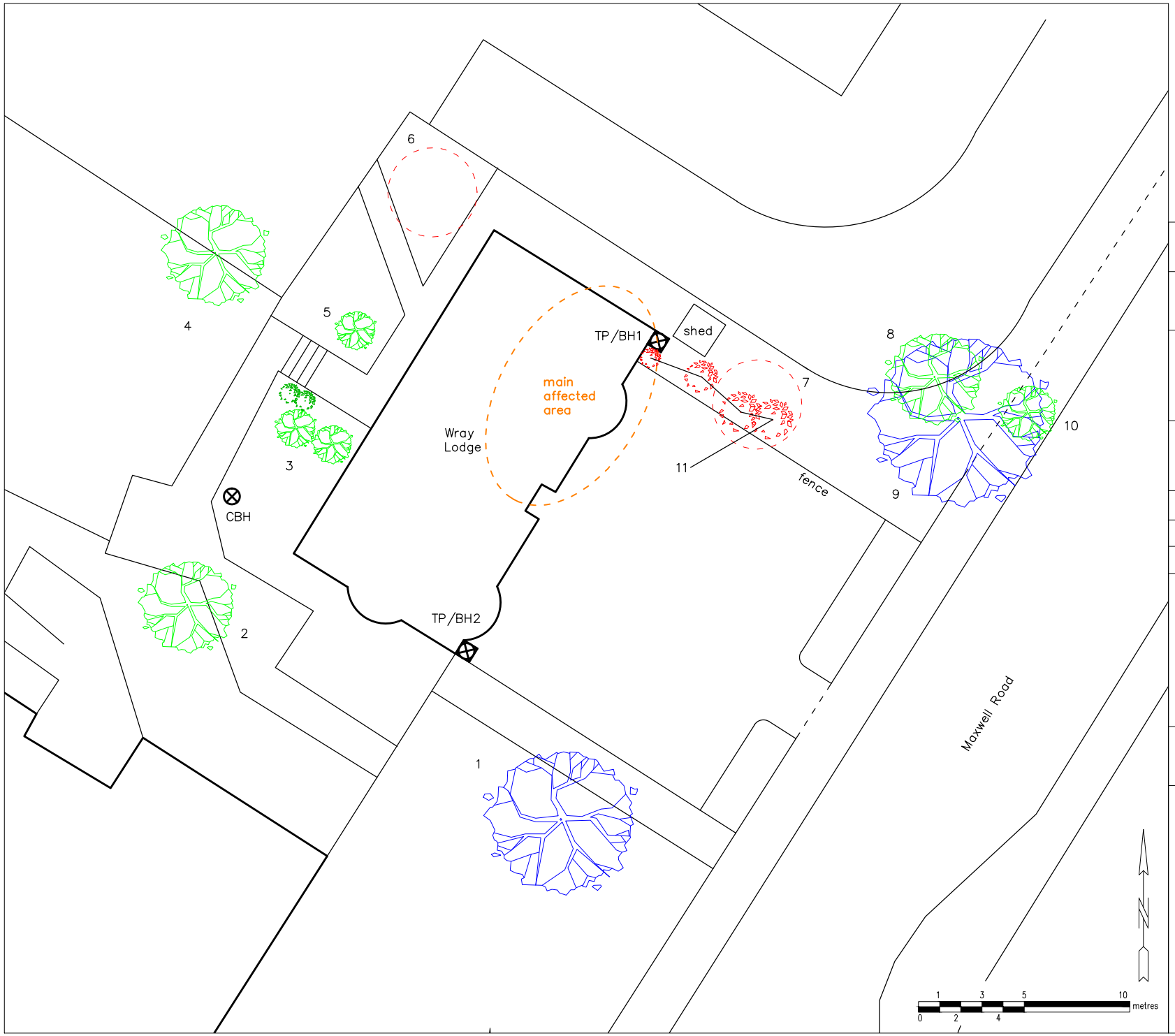
1) Shrubs and saplings to the front right of the building (Item 11)

Tree no.	Species	Distance	Height	Trunk dia.	Est. age	Comments and recommendations
The trees are described in sequence, starting in front of the building and going round clockwise. Asterisks in the first column denote those in other ownership, with house numbers in brackets or [c] denoting council owned trees. m/s = multiple stemmed.						
1	Horse chestnut	10m	17m	600mm	90+	Since the previous report it has been reduced to the original points and there is healthy looking new growth. Roots from it were found in TP/BH2 in 2022. • *Cut regrowth every 2 years, starting winter 2024/25.*
2	Tibetan cherry	6m	5m	270mm	40+	Healthy, more or less full grown, has been cut back to clear the building in the past and is growing back. • *No work needed beyond routine management to maintain clearance from building and paths as necessary.*
3	Japanese maples etc.	1 - 4m	2 - 3.5m	50 - 100mm	40+	Group of two Japanese maples and two fatsias and a dogwood. Mature specimens, not likely to grow much larger. • *No work needed beyond normal maintenance.*
4	Birch	10m	12m	240mm	30+	Healthy, but is among the lower risk species and not a significant risk at this range. • *No work needed beyond normal maintenance.*
5	Cherry	3m	4m	50mm	10+	Upright branched form "Amanogawa". Healthy, but is one of the smaller growing cherries and not an imminent or major threat. • *No work needed beyond normal maintenance.*
6	Ash					Removed since the original survey
7	Goat willow					Removed since the original survey. Roots from it were found in TP/BH2 in 2022.
8	Sycamore	13m	14m	370+ 250mm	40+	Pair of trees, suppressed by the oak, still have sparse twig growth and dead wood in the crowns, but reasonably healthy otherwise. One branch growing towards the oak has been removed. Not an imminent or major threat • *No work needed at present, could be reduced and managed if the need arose.*
9	Turkey oak (tag 520)	15m	15m	550mm	60+	Healthy high water demanding species, capable of growing much larger. Roots from it were not identified but the front of the building is within influencing distance. It was crown reduced by 3 - 4m and regrowth is dense and vigorous. • *Cut regrowth every 2 years, starting 2024/25.*
10	Lime	17m	3.5	320mm	60+	Street tree, well away from the building and pollarded every few years by the council. • *Continue pollarding regime.*

Tree no.	Species	Distance	Height	Trunk dia.	Est. age	Comments and recommendations
11	Various	0 - 6m	1 - 3.5m	m/s	10+	Assorted shrubs and saplings, including euonymus next to the front of the building, a large berberis, several ash and sycamore seedlings and some shoots from the goat willow roots system. None very larger but they are healthy and the only likely cause of the ongoing movement in that part of the building. • *Remove completely. The area can be planted with small non-woody herbaceous plants and any trees that seed themselves should be removed.*

Simon Pryce

Simon Pryce, BSc, FArborA, RCArborA, CBiol, FICFor



Simon Pryce Arboriculture

Client:
Northwood College

Site:
Wray Lodge, Northwood College,
Maxwell Road, Northwood, HA6 2YE

Title:
Trees and subsidence investigation - resurvey and updated report

Date: 14 November 2023

Ref: 22/032/2 | Rev:

Scale: 1:250 at A4

30 Woodfield Road,
Radlett,
Herts,
WD7 8JD
01923 467600
07710 224906
info@simonpryce.co.uk
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Original drawing:
Simon Pryce on OS base plan

Trees are colour coded according to effects on the building and work needed:

Red - directly implicated or a significant risk, removal or intensive management needed

Blue - not conclusively implicated but active management and/or monitoring recommended

Green - no current effect found and any risk does not warrant intervention, no work beyond routine maintenance

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