



Brynglas House

Visual Exterior Structural Inspection - Elevations

Client: Newport Norse
Project Ref: C2723
Report Revision: P01

CAMBRIA

Report Control Sheet

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Project	Brynglas House, Newport, NP20 5QU
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Prepared by	G Kenyon <i>MEng</i>
Reviewed and authorised by	J Spencer <i>BSc (Hons) CEng MICE</i>

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Project Ref.	Originator	Vol.	Level	Type	Role	Number
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1 Introduction

- 1.1.1 Cambria Consulting Limited have been appointed by Newport Norse – hereafter known as ‘the Client’, to carry out a visual structural inspection of the elevations at Brynglas House, Brynglas Rd, Newport NP20 5QU.
- 1.1.2 Cambria were asked by the Client to carry out a visual inspection to review the current condition of the exterior via a visual inspection of the property at the above address to determine the structural condition of the elevations and recommend remedial details if necessary.
- 1.1.3 Our report will provide our considered opinion on the structural integrity of the existing building and highlight any areas of concern.
- 1.1.4 The inspection was undertaken by James Spencer CEng MICE of Cambria Consulting on Thursday 1st August 2024. The weather was overcast and dry during the survey. Photographs taken during the survey are referenced at the end of this report.
- 1.1.5 This report does not constitute a full structural survey, whereby all structural elements are identified and investigated, and calculations for adequacy have not been undertaken. This report is a structural inspection report, undertaken specifically to review the condition of the existing exterior structures where visible and provide comments on any observations.
- 1.1.6 We have not inspected all areas of the structure which are covered, unexposed or inaccessible and we are therefore unable to report that any such part is free from defects. We cannot be held responsible for unforeseen conditions which may exist that are covered. Conditions may exist beneath the structure that are not detectable from our visual inspection. Localised intrusive opening works were not undertaken during this inspection.
- 1.1.7 This structural engineering report has been compiled to outline the building’s current condition, observations of structural impairment and possible further investigations into remedial works that may be required.
- 1.1.8 Guidance from the following publications have been utilised in the preparation of this report:
 - ▶ “Appraisal of Existing Structures – By Institution of Structural Engineers”
- 1.1.9 This report has been prepared exclusively for Newport Norse and their professional consultees; it may not be relied upon or reproduced by any third party without the written agreement of Cambria Consulting Limited.

2 Limitations

2.1.1 Except where noted otherwise in the report, the following limitations apply.

- ▶ Mewp was provided by Newport Norse for the elevation survey.
- ▶ The inspection undertaken was based on a walk over survey to accessible external areas only.
- ▶ No site testing or other similar testing defects were undertaken.
- ▶ The dimensions given in this report are approximate.

This report is intended to inform on the structural stability of the structure from a visual perspective. No calculations have been carried out to assess such criteria.

3 General Description

- 3.1.1 The property at the above address comprises a Grade II listed two-storey, traditionally built detached dwelling.
- 3.1.2 Built in 1834 and substantially rebuilt in 1877 by Thomas Cordes MP for Newport whose family remained occupants until 1890. Used as a hospital during the 1914-18 First World War and purchased by Newport Council in 1922 for use as a school and later repurposed into a Community Centre in 1974. Furthermore, standing derelict for the past ~5 years, with the property to the rear being used as a community centre.
- 3.1.3 Constructed in the early Victorian era, the exterior is rendered brickwork with ashlar dressings and plinths.
- 3.1.4 Classical mansion of two storeys. Originally stucco with ashlar dressings, now wholly painted. Shallow pitched hipped roof of Welsh slate with central narrow rectangular stack. Entrance frontage comprises a central canted bay with windows to each face, flanked on each side by a range.
- 3.1.5 Raised end pilasters, corniced parapet and platband separating the storeys. Central flat-roofed portico in front of a round-arched moulded doorway, with entablature, Ionic columns and rear pilasters. Wide single storey ground floor bay projects to left.
- 3.1.6 A central flat-roofed portico in front of a round-arched moulded doorway, with entablature, Ionic columns and rear pilasters. Wide single storey ground floor bay projects to left.
- 3.1.7 The original glazing was 12 pane-sashes; some have previously been altered.
- 3.1.8 Garden frontage with central projecting range - 12-pane windows above two wide canted ground floor bays with large sash windows. The bays are separated by a narrow round-arched niche.
- 3.1.9 At each end are bowed ranges of large first floor 12-pane sashes and long full-height ground floor 15-pane sashes. End pilasters, platband and shallow roof cornice and parapet. N-facing elevation has a similar 3-window range of large sashes.



Figure 3-1: Aerial view of The Campus from Google Earth Pro

4 Observations

- 4.1.1 There are a few vertically propagating cracks located on all elevations see Appendix A. These are primarily propagating from the corner lines of windows and sills but can also be found around door frames. **See Photo 4.1.**
- 4.1.2 Steel lintels have visible corrosion above window frames in multiple locations. **See Photo 4.2.**
- 4.1.3 There are instances where no lintel is present and no arched brick soldier has been implemented above window frames, it is advised these areas to be investigated and monitored for loose stones. **See Photo 4.3.**
- 4.1.4 Sections of the coping stone around the top of the structure have either become dislodged or been removed and therefore are not adequately restrained. **See Photo 4.4.** In areas the coping/dressing stones also are exhibiting signs of weathered and the grouting between the stones has eroded completely in multiple sections. **See Photo 4.5.**
- 4.1.5 There are multiple instances around the elevation of the structure where gutters and drainpipes are blocked causing inadequate drainage, possibly due to the render tapping and removal in some areas and additionally due to vegetation growth. **See Photo 4.6.**
- 4.1.6 Lead lining at the roof base and around the coping has been removed in multiple sections of the roofing. **See Photo 4.7.**
- 4.1.7 On the South Elevation the chimney stone is in poor condition. **See photo 4.8.**
- 4.1.8 Due to the age of the structure and the windows being historically wooden constructed a majority of these have rotted, (in one instance due to a bee's nest located inside the structure). **See photo 4.9.**
- 4.1.9 Coping stones and upstands are in poor condition on the East elevation and require replacing. **See Photo 4.10.**
- 4.1.10 On the North elevation a section of roof requires hip repair. **See Photo 4.11.**
- 4.1.11 Corrosion in present to sections of the historic guttering and rainwater pipes. **See Photo 4.12.**
- 4.1.12 A secondary bees' nest is present on the West elevation.
- 4.1.13 A singular rotten timber is located inside of the wall located of the West elevation, the purpose of which could not be identified during the exterior visual inspection. **See Photo 4.13.**
- 4.1.14 Paint slurry has been noted on the stonework of the west elevation.
- 4.1.15 The top coping stone on the west elevation has been historically cut back, which is cantilevering but appears ok presently, however would be advised to be monitored due to the risk of detachment in the future. **See Photo 4.14.**
- 4.1.16 A smashed window has been noted on the north elevation of the rear extension. **See Photo 4.15.**
- 4.1.17 Vegetation is growing at the base of the downpipe on the north elevation of the extension due to inadequate drainage and an un-sloped flat roof allowing ponding at the base. **See Photo 4.16.**

- 4.1.18 On the south elevation of the extension there are 5 windows where the soldier course overhangs the steel lintel substantially. This should be monitored by the site facilities team periodically for any movement. **See Photo 4.17.**
- 4.1.19 A section on the west extension elevation could not be inspected due to no access. Similarly, a section on the main structure south and east elevations could not be tapped due to the bee's nest being located at the first-floor level.
- 4.1.20 See photographs below of the external structure at the time of the inspection.



Figure 4-1 – Window Cracking



Figure 4-2 – Corrosion on Steel Lintel



Figure 4-3 - No Arched Brick Soldier or Lintel



Figure 4-4 - Dislodged Coping Stones



Figure 4-5 - Weathered Coping Stones



Figure 4-6 - Blocked Gutters



Figure 4-7 - Lead Lining Missing

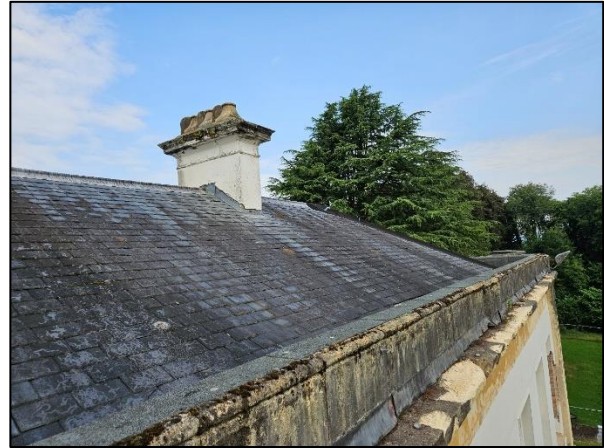


Figure 4-8 - Chimney Poor Condition



Figure 4-9 - Bees Nest Entrance in Rotten Window Frame



Figure 4-10 - Coping Stones in Poor Condition



Figure 4-11 - Roof Hip Repair



Figure 4-12 - Gutters and Downpipes Corroded



Figure 4-13 - Rotten Timber in Wall

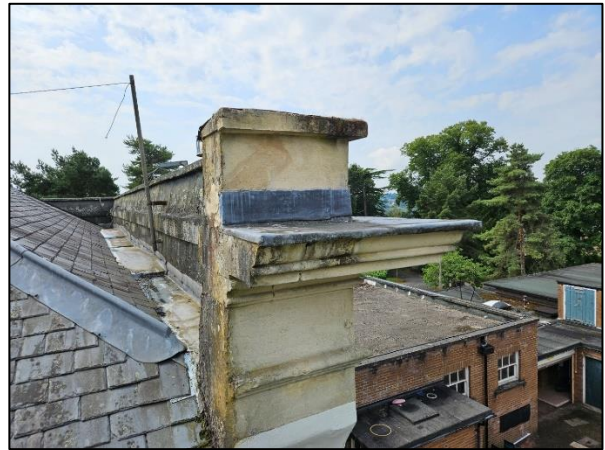


Figure 4-14 - Cantilever Top Stone



Figure 4-15 - Broken Window



Figure 4-16 - Growth and Ponding on Flat Roof



Figure 4-17 - Soldier Overhangs Steel Lintels

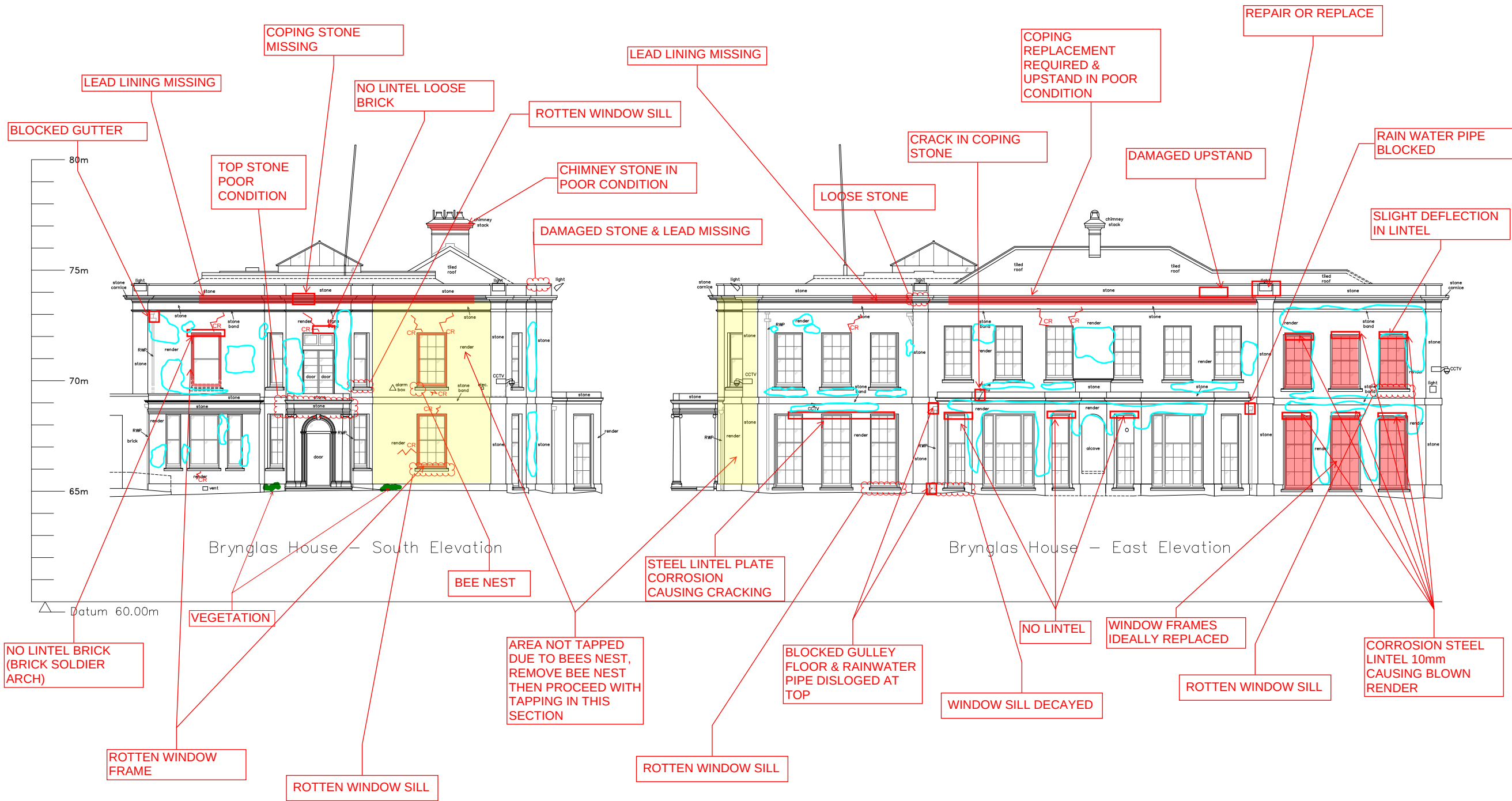
5 Conclusions

- 5.1.1 In our considered opinion the property at the above address is in generally satisfactory condition and does not exhibit any defect of a dramatic progressive structural concern. It is advised that the following recommendations be completed in a 6-month period to avoid any progressive deformation.
- 5.1.2 The cracking noted to the render finish has likely occurred due to the age and type of render installed. The elevations have been tapped and loose render removed. There is one (due to the bee's nest) which they missed. This is to be completed.
- 5.1.3 Steel lintels have corroded possibly due to oxidation from historically poorly galvanised coatings and water ingress through cracked render. Therefore, due to inadequate prior corrosion protection, oxidation can occur resulting in corroding of the steelwork and subsequently spalling render in the surrounding areas.
- 5.1.4 An agreement with the client and Cadw on any remediation measures will be required. Including specification for the render repairs.
- 5.1.5 Windows where there are no steel lintels supporting the masonry and no arched soldier is present will need closer inspection to assess their structural integrity.
- 5.1.6 The rotten timber located in the wall should be assessed as to the purpose and ideally removed if possible. From an exterior visual inspection this cannot be confirmed at this stage, ideally this would be inspected internally by an engineer or suitable contractor.
- 5.1.7 Coping stones will need addressing in areas where they are loose or detached or are showing signs of deformation due to weathering.
- 5.1.8 Roofing repairs will need addressing in areas where the lead lining is missing, or hip repairs are required.
- 5.1.9 Due to the age and rotting of multiple windows frames we would recommend these be addressed to limit water ingress to the structure.
- 5.1.10 The smashed window should be repaired, as this is not part of the listed structure this can be altered without written consent from the planning authority for whichever the cheapest alternative is.

6 Recommendations

- 6.1.1 We would recommend that where cracking is present that the rendered areas are cleaned back and the presence of cracking through the masonry be determined by a suitably qualified contractor. If crack stitching is required follow guidance in Appendix B. From the current visual inspection cracking in the masonry has not been noted at this stage therefore if no cracking is present in the stonework/ brick masonry the render can be re-applied to the localised area with the addition of plasterer's lath mesh, to limit the likelihood of further cracking in the future.
- 6.1.2 The render repair specification should be agreed with the client, planning officer and Cadw. Should lime render be applied to the structure to suit its historic construction. However, the existing render is a concrete render which was reapplied circa 40-50 years ago. The patch replacement should ideally match the historic construction of lime render; however, it will not match and act the same as the existing concrete render. Client to confirm final render specification. Most likely concrete render to match, then painted white to suit building finish.
- 6.1.3 On the corroded steel lintels, we would recommend that the area is stripped of finishes and the loss of section to the steel element determined, by cleaning back to bright metal, treating for rust and a paint coating applied to the metal such as Forsoc Galvafruid paint or similar, to prevent future corrosion.
- 6.1.4 In the window openings where no steel lintels or soldier/arches are present we would recommend a suitable contractor assess for loose stonework and if found these areas have a new steel lintel implemented to support the stonework above, loose stones removed reinstalled and repointed prior to rendering.
- 6.1.5 In the section where the coping stone has become detached, we would recommend these be taken down and rebuilt using the original stone, we would recommend in all areas where the coping stones or upstands are weathered or loose these ideally be repaired or replaced "like for like" in the near future, primarily in areas where there is a concern of these breaking away.
- 6.1.6 Where drainpipes are too corroded and cannot be repaired, we would recommend these be replaced like for like. All drainpipes and gulleys at ground level which rainwater pipes discharge into are blocked should be cleared to allow adequate drainage.
- 6.1.7 Where roofing repairs are required for the hip or for lead lining, we recommend a suitably skilled roofing contractor be consulted as to the extent of the required repairs, the lining be replaced either for a suitable contractor specified lead or an alternate product with the aims of limiting water ingress to the structure, these should be confirmed with the local planning, the client Newport Norse and Cadw.
- 6.1.8 Where window frames have rotted due to timber construction, we would recommend these be repaired where possible or replaced "like for like", or for a more modern yet historically tasteful alternative to be confirmed with the local planning authority due to the listed nature of the building.
- 6.1.9 The flat roof with ponding on the extension should be cleaned of all growth, a maintenance plan written and therefore cleaned periodically to stop future deterioration to the flat roof.

Appendix A – Elevation Markups



 - TAPPED REMOVED RENDER
 - VEGETATRION

P1	For Information	GK	JS
			12.08.24

Client:
Newport Norse

Project:
Brynglas House

Drawing Title:
Elevation 1 Visual Inspection
Markup

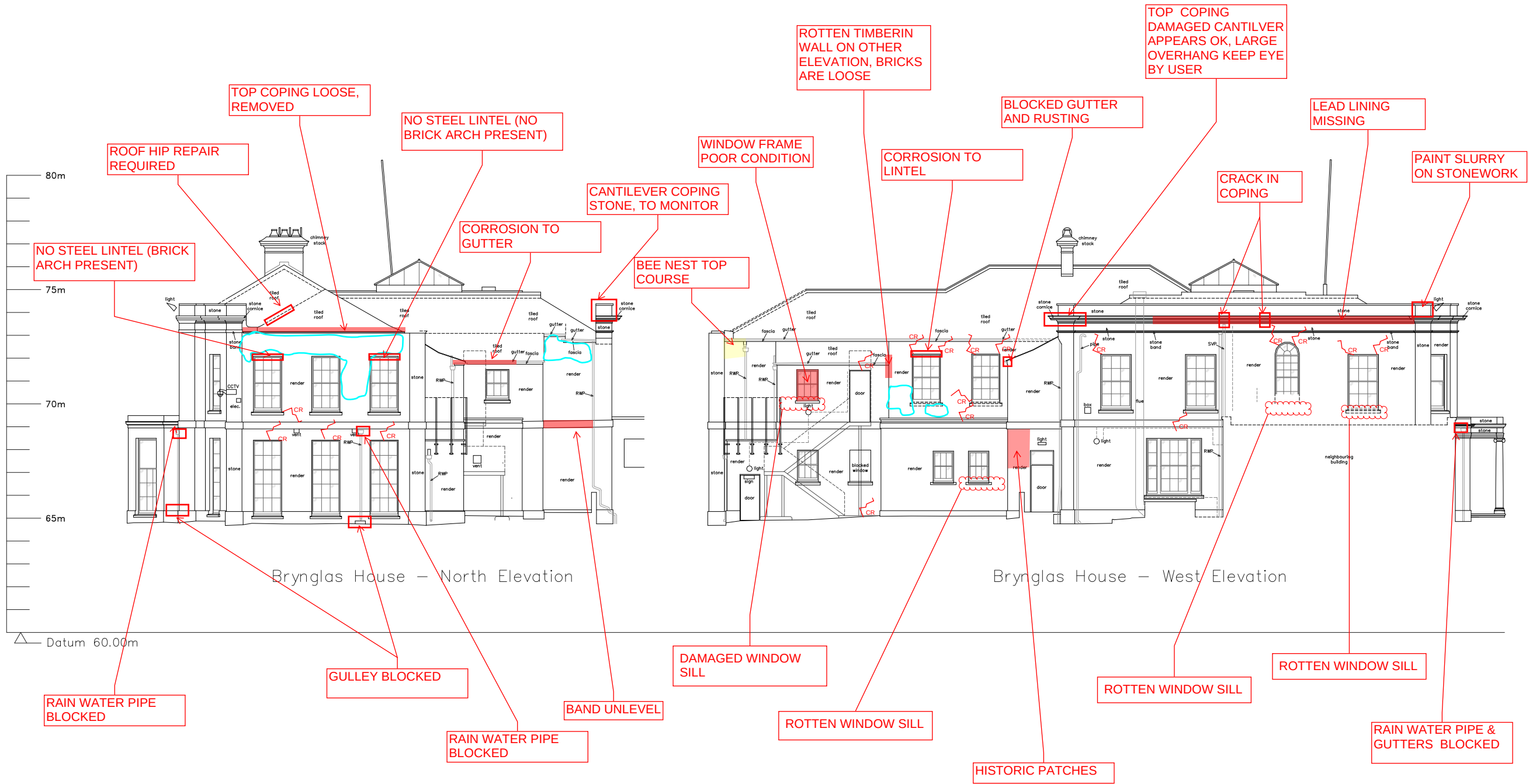
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C2723	SK 01	P01

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For Information	NTS @ A3

CAMBRIA
Constructive Thinking

Civil & Structural Engineers
Cambria House
16 Plas St. Poi de Leon
Penarth Marina
Cardiff, CF64 1TR

T 029 2099 3333
E admin@camoria.co.uk
W www.camoria.co.uk
@cambriauk
uk.linkedin.com/in/cambriauk



P1	For Information	GK	JS
			12.08.24

Client:
Newport Norse

Project:
Brynglas House

Drawing Title:
Elevation 2 Visual Inspection Markup

Project No.: C2723	Drawing No.: SK 02	Revision: P01
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Status: For Information	Scale: NTS @ A3
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Civil & Structural Engineers
Cambria House
16 Plas St. Pol de Leon
Penarth Marina
Cardiff, CF64 1TR

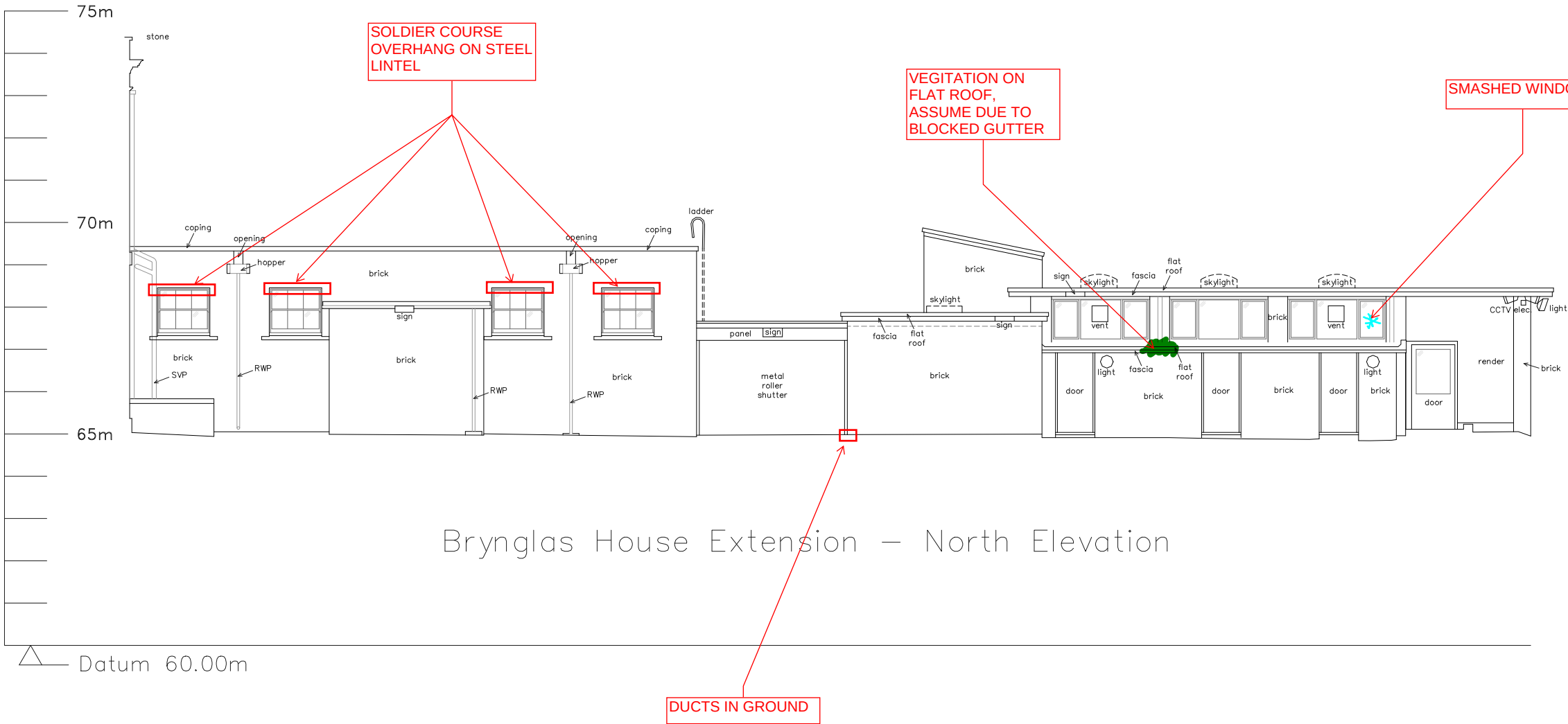
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W www.camoria.co.uk
@cambriauk
uk.linkedin.com/in/cambria

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Brynglas House Extension – North Elevation

P1	For Information	GK	JS
			12.08.24

Client:
Newport Norse

Project:
Brynglas House

Drawing Title:
Elevation 3 Visual Inspection
Markup

Project No.:	Drawing No.:	Revision:
C2723	SK 03	P01

Status:	Scale:
For Information	NTS @ A3

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Civil & Structural Engineers
Cambria House
16 Plas St, Pwll de Leon
Penarth Marina
Cardiff, CF64 1TR

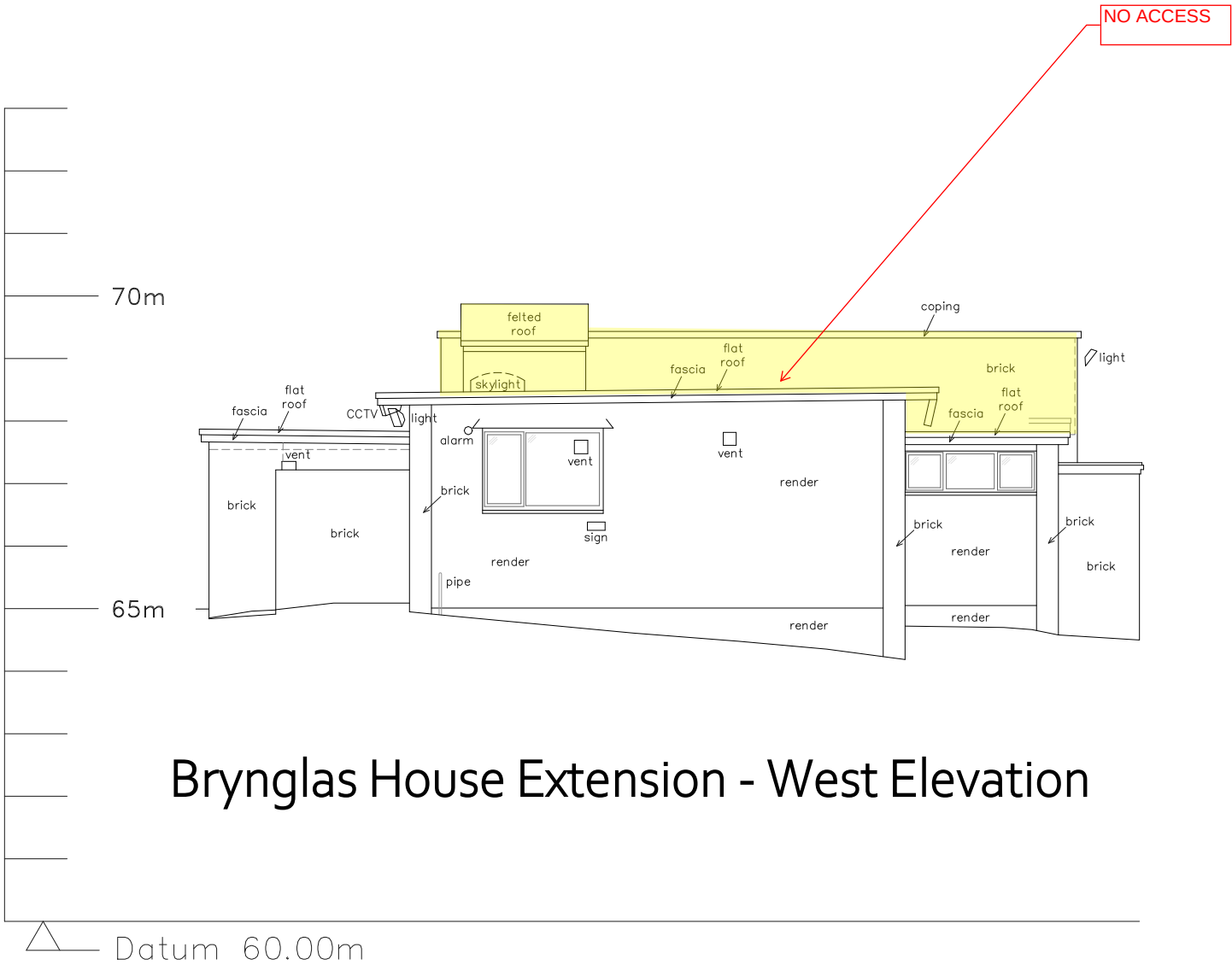
T 029 2099 3333
E admin@camoria.co.uk
W www.camoria.co.uk
@cambriauk
uk.linkedin.com/in/cambria

-  - TAPPED REMOVED RENDER
-  - VEGETATRION

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Civil & Structural Engineers T 029 2009 3333
Cambria House E admin@cambria.co.uk
16 Plas St. Pol de Leon W www.cambria.co.uk
Penarth Marina @cambriauk
Cardiff, CF64 1TR in uk.linkedin.com/in/cambriauk



Brynglas House Extension - West Elevation

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P1	For Information	GK	JS
			12.08.24

Client:
Newport Norse

Project:
Brynglas House

Drawing Title:
Elevation 5 Visual Inspection Markup

Project No.:	Drawing No.:	Revision:
C2723	SK 05	P01

Status:	Scale:
For Information	NTS @ A3

CAMBRIA
Constructive Thinking

Civil & Structural Engineers
Cambria House
16 Plas St, Poi de Leon
Penarth Marina
Cardiff, CF64 1TR

T 029 2099 3333
E admin@camoria.co.uk
W www.camoria.co.uk
@cambriauk
uk.linkedin.com/in/cambriauk

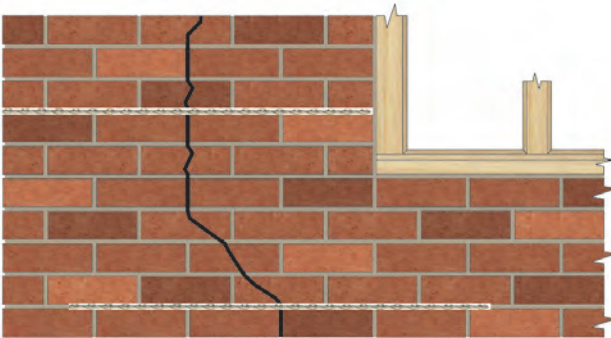
Appendix B – Crack Stitching Guidance

Crack Stitching

A reliable and cost-effective means of repairing and stabilising cracked masonry

APPLICATIONS

- Rapid and permanent solution to cracked masonry
- Suitable for all forms of masonry structure



Over 100 standard repair specifications are available online, covering all common structural faults.

Relevant Repair Details: RDs CS01 to CS14



FEATURES

- Fully concealed, non-disruptive repair solution
- More reliable than crack injection methods
- HeliBond cementitious grout is injectable and rapidly produces high compressive strength
- HeliBars and HeliBond grout combine to create excellent tensile strength within the masonry
- No additional stresses are introduced during installation
- Masonry remains flexible enough to accommodate normal building movement
- Tensile loads are redistributed
- Reduces likelihood of further cracking nearby
- Avoids costly and disruptive taking down and rebuilding



HeliBar is inserted into HeliBond grout with a cut slot



For full product information, case studies and downloadable repair details go to:
www.helifix.co.uk/products/remedial-products/crackstitching/

TECHNICAL SPECIFICATIONS

CRACK STITCHING

Material	Austenitic stainless steel Grade 304 (1.4301) or 316 (1.4401)
Diameter	6mm (or 4.5mm for thin mortar joints)
Tensile strength (6mm HeliBar)	10 kN
0.2% Proof stress (6mm HeliBaR)	900N/mm ²
Length	To extend 500mm either side of the crack or outer cracks, if more than one
Standard lengths	1m, 1.5m and 2m – in packs of 10. May be cut to length on site
Height of slot	Full height of mortar bed or approx. 10mm if cut through the masonry unit
Bonding agent	HeliBond cementitious grout. 1 x 3ltr HeliBond = 10 linear metres of crack stitching

RECOMMENDED TOOLING

For cutting slot up to 40mm deep:	Twin-bladed cutter with vacuum attachment or angle grinder or hammer and mortar chisel
For mixing HeliBond grout:	3-jaw-chuck drill with mixing paddle
For injection of HeliBond into slots:	Helifix Pointing Gun CS with mortar nozzle
For smoothing pointing:	Standard finger trowel
For inserting HeliBar:	HeliBar insertion tool

SLOT DEPTH AND SPACING

	Single skin/ Cavity wall	Solid Masonry		
		Up to 102.5mm	102.5mm to 225mm	Over 225mm
Depth of slot	25 – 35mm		25 – 40mm	25 – 40mm on both sides
Vertical spacing	Every 4 – 6 courses, 300 – 450mm			

INSTALLATION PROCEDURES

1. HeliBar to be long enough to extend a minimum of 500mm either side of the crack or 500mm beyond the outer cracks if two or more adjacent cracks are being stitched using one rod.
2. Where a crack is less than 500mm from the end of a wall or an opening, the HeliBar is to be continued for at least 200mm around the corner and bonded into the adjoining wall or bent back and fixed into the reveal, avoiding any DPC.
3. For solid masonry in excess of 300mm thick and in a cavity wall where both leaves are cracked, the wall must be crack stitched on both sides.
4. If there is render, this thickness must be added to the depth of slot. Crack stitching must be installed in the masonry and never in the render.
5. Ensure the masonry is well wetted or primed to prevent premature drying of the HeliBond due to rapid de-watering, especially in hot conditions. Ideally additional wetting of the slot should be carried out 1 to 2 minutes prior to injecting the HeliBond grout.
6. Do not use HeliBond when the air temperature is +4°C and falling or apply over ice. In all instances the slot must be thoroughly damp or primed prior to injection of the HeliBond grout.



1. Rake out or cut slots into the horizontal mortar beds, a minimum of 500mm either side of the crack.



2. Clean out slots and flush with clean water and thoroughly soak the substrate within the slot.



3. Using the HeliFix Pointing gun, inject a bead of HeliBond along the back of the slot.



4. Using the HeliBar insertion tool, push one HeliBar into the grout to obtain good coverage.



5. Insert a further bead of HeliBond over the exposed HeliBar, finishing 12mm from the face, and 'iron' firmly into the slot using the HeliBar insertion tool.



6. Re-point the mortar bed and make good the vertical crack with CrackBond TE3.