



**Image 3:** Northern part of the Brunner House building, viewing west



**Image 4:** Sloped artificial soft-landscaping within the northwestern portion of the site, viewing west



**Image 5:** Boundary wall to the west of the site, viewing southwest to the northern porch of the Brunner House building

# A-squared Studio Site Walkover Record Sheet

**Site Name:** Channing School, Brunner House

| <b>Current Site Features</b><br><i>(or evidence of similar historical features)</i>                                                                                    | <b>Walkover Comments and Photograph References</b>                                                                                                                                                                                                                                                                                                               |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Existing monitoring wells<br>(locations, serviceability,<br>reference IDs)                                                                                             | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Site buildings and uses                                                                                                                                                | The existing Brunner House, which is present across the majority of the site area and particularly towards the west, is a two-storey masonry building with no existing basement space. It is used as classroom space, with some offices and water closets.                                                                                                       |
| Site boundaries (any walls,<br>fences etc.?)                                                                                                                           | There is a reinforced concrete/masonry boundary wall, which is approximately 3m in height to the west of the site.                                                                                                                                                                                                                                               |
| Open ground / soft landscaping<br>etc. and uses                                                                                                                        | There is an area of soft-landscaping to the northern portion of the site, which is used by students for recreational use at breaktime. There are some planters and complimentary soft landscaping across the eastern portion of the site.                                                                                                                        |
| Hardstanding areas and uses                                                                                                                                            | There are areas of hardstanding to the north, east and south of the building. There is a walkway to the east of the building, with some planters. There are additional areas of hardstanding towards the east of the building and to the east of the area of soft-landscaping to the north of the site, which provides access to the wider Channing School site. |
| Cuttings / embankments /<br>retaining structures / raised<br>ground                                                                                                    | The Brunner House building is on raised ground (building is raised by approximately 1m) , with stepped access to the building. The area of soft-landscaping area to the northern portion of the site, is raised and built-up towards the northwest and falls steeply to the northeast of the site.                                                               |
| Petrol filling stations                                                                                                                                                | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Above-ground storage tanks and<br>associated infrastructure<br>including pipework, fill points<br>and dispenser pumps etc.                                             | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Underground storage tanks and<br>associated infrastructure<br>including pipework, fill points<br>and dispenser pumps etc.                                              | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Other industrial infrastructure<br>(e.g. pipework)                                                                                                                     | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Stressed vegetation                                                                                                                                                    | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Electrical substations /<br>transformers                                                                                                                               | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Active industrial processes                                                                                                                                            | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Hazardous chemical storage<br>areas                                                                                                                                    | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Site records of environmental /<br>pollution incidents                                                                                                                 | None known.                                                                                                                                                                                                                                                                                                                                                      |
| Watercourses / ditches / ponds<br>and visual assessment of water<br>quality                                                                                            | No watercourses, ditches or ponds observed.                                                                                                                                                                                                                                                                                                                      |
| Discharge pipes (e.g. drainage<br>pipe discharging into ditch)                                                                                                         | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Details of general site drainage<br>infrastructure and outflow point,<br>including details of any oil -<br>water interceptor(s) or similar<br>drainage infrastructure. | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Evidence of poor housekeeping                                                                                                                                          | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Other vial / olfactory evidence<br>of contamination                                                                                                                    | None observed.                                                                                                                                                                                                                                                                                                                                                   |
| Any recorded taste or odour<br>issues with the site water supply                                                                                                       | None known.                                                                                                                                                                                                                                                                                                                                                      |

## A-squared Studio Site Walkover Record Sheet

| <b>Current Site Features</b><br><i>(or evidence of similar historical features)</i> | <b>Walkover Comments and Photograph References</b>                                                                                                                                                                   |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Potential asbestos containing materials                                             | No potential asbestos containing materials (ACMs) present, nor across the wider Channing School site.                                                                                                                |
| Stockpiled materials                                                                | None observed.                                                                                                                                                                                                       |
| General site topography                                                             | The site is generally flat but is slightly lower to the north and east (and highest in the southwestern portion).                                                                                                    |
| Immediate surrounding land uses                                                     | NW - "Cholmely Park" (a single carriageway road)                                                                                                                                                                     |
|                                                                                     | N - open space, which consists of consists of hardstanding associated with a bin store, cleaners store, picnic benches as well as paving and some soft-landscaping (associated with the wider Channing School site). |
|                                                                                     | NE - "Sixth Form Centre" (and adjoining sports hall) building (part of the wider Channing School site).                                                                                                              |
|                                                                                     | S - various buildings associated with the wider Channing School site ("Channing Cottage", "Channing House", "Slingly House" "Westview House", "Haigh House" & "Founder's Hall" from southwest to southeast).         |
|                                                                                     | W - Cholmely Park                                                                                                                                                                                                    |



## Appendix E: Regulatory Correspondence

## Delphinie Mccarthy

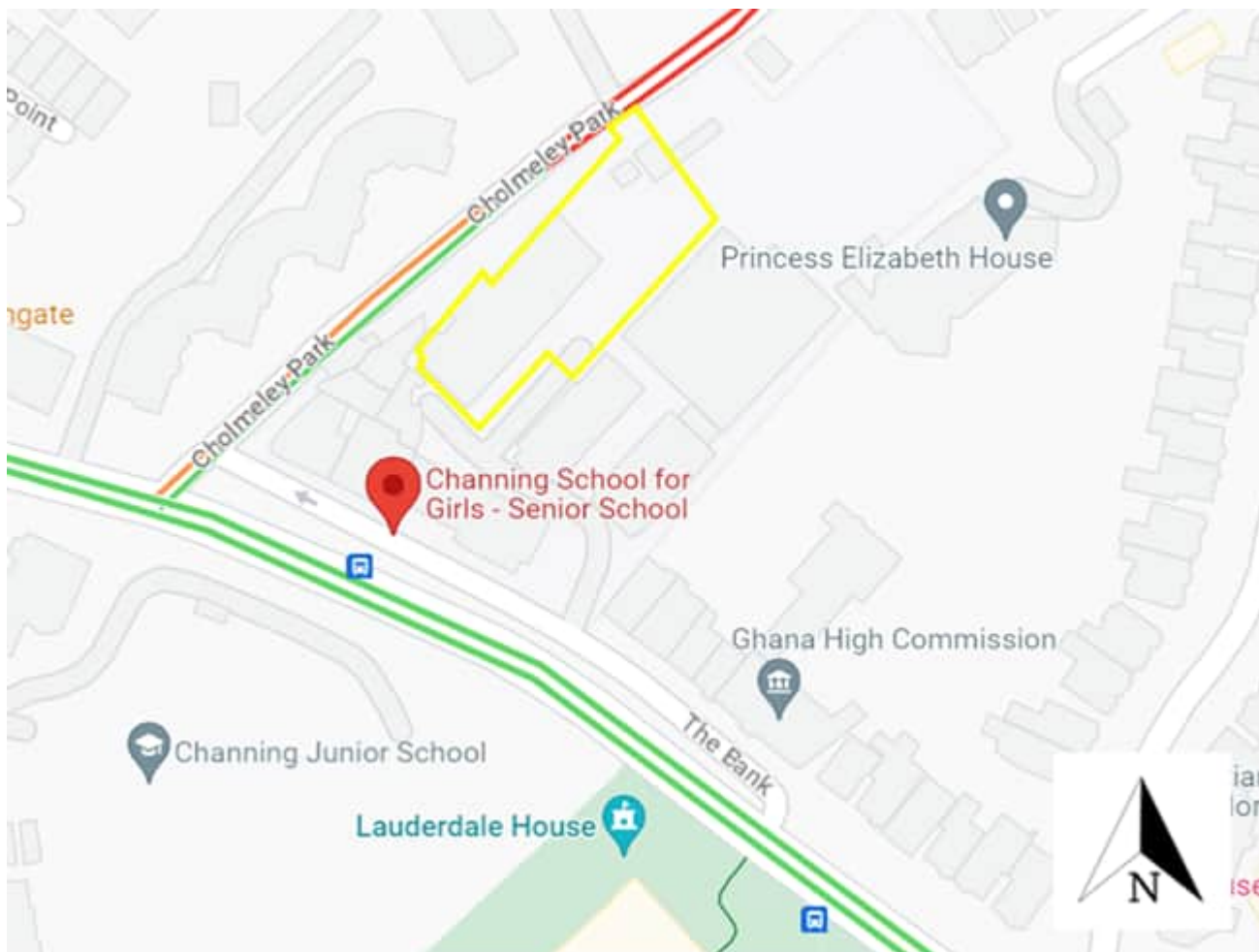
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**From:** Delphinie Mccarthy  
**Sent:** 05 October 2023 10:37  
**To:** 'enforcement@Haringey.gov.uk'  
**Subject:** LA Contaminated Land Search for the Proposed Development at Channing School, Brunner House

Good morning,

A-Squared are preparing a geoenvironmental desk study report. Please can an Environmental Health Officer provide the requested information (see below) held by the local authority with respect to the subject site shown on the below plans, if information is available. The site boundary is as shown by the red outline. The site is located at Brunner House, Channing School, The Bank, Highgate, London, N6 5HF.





The site is located at approximate national grid reference: 528750, 187380.

The information specifically requested is any information held by the local authority on the following bullet-points. Information for the site or within 500 m of the site is generally requested. Information on the distance and direction of each identified feature from the site is also requested.

- Historical land uses (specifically for the site or immediately adjacent to it rather than within 500 m, in this case);
- Licenced private water abstractions (surface or groundwater) and details of the geological unit each abstracts from and water use;
- Recorded pollution incidents and the incident response / remediation details;
- Any Part 2a sites (EPA 1990);
- Any sites being considered for investigation under Part 2a (EPA 1990);
- Records of current or historical landfills and waste sites; and
- Any ground investigation data (specifically for the site or immediately adjacent to it rather than within 500 m, in this case).

Kind regards  
Delphinie

**Delphinie McCarthy**

BEng (Hons)  
Engineer

T: 020 7620 2868 | M: 07403 528422

One Westminster Bridge Rd  
London, SE1 7XW

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## Delphinie Mccarthy

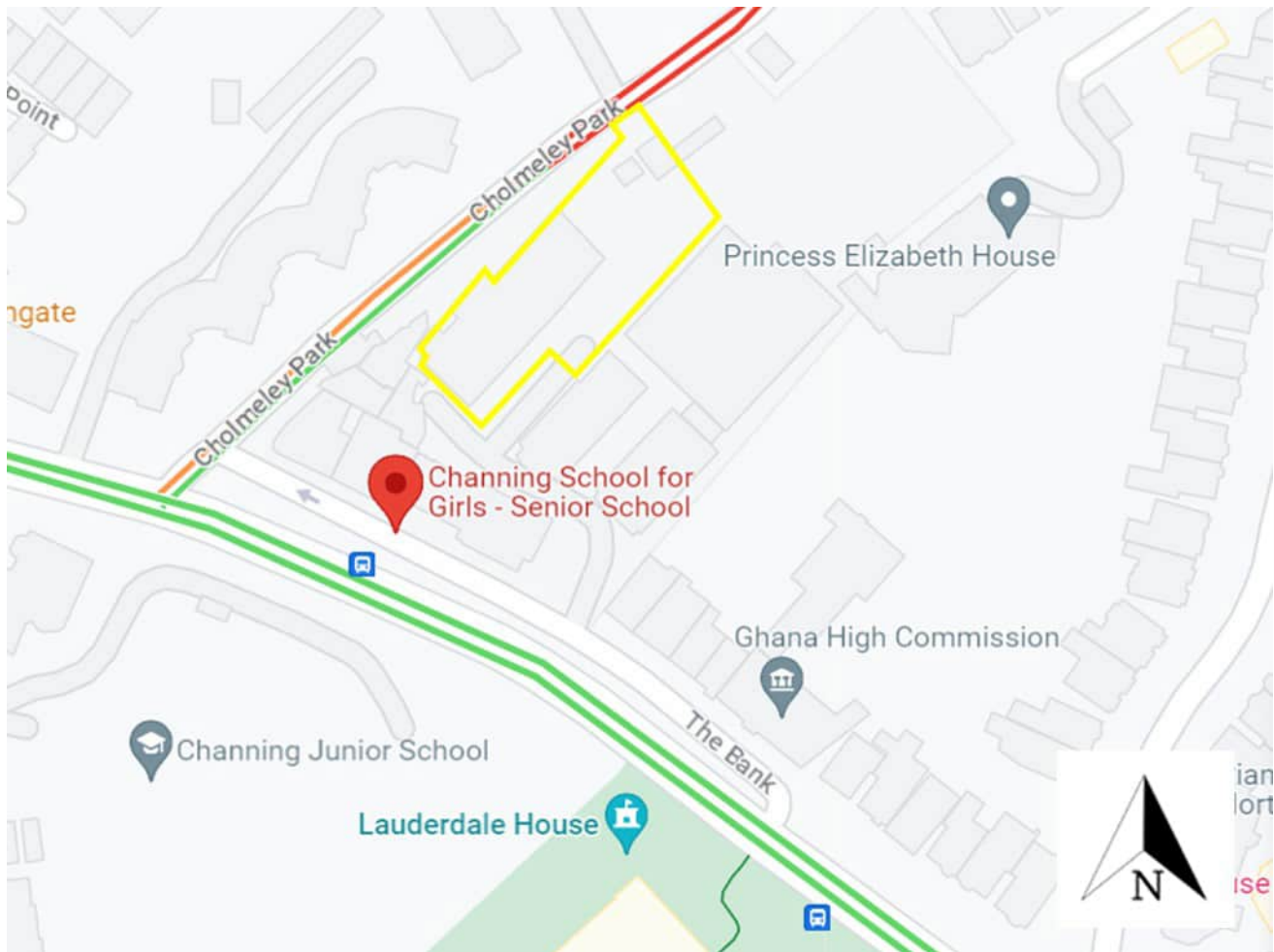
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**From:** Delphinie Mccarthy  
**Sent:** 04 October 2023 12:53  
**To:** 'hnlquiries@environment-agency.gov.uk'  
**Subject:** EA Contaminated Land Search for the Proposed Development at Channing School

Good afternoon,

A-Squared are preparing a geoenvironmental desk study report. Please can you provide the requested information (see below) held by the Environment Agency (EA) with respect to the subject site shown on the below plans if information is available. The site boundary is as shown by the yellow outline. The site is located at Channing School, The Bank, Highgate, London, N6 5HF.





The site is located at approximate national grid reference: 528750, 187380.

The information specifically requested is any information held by the EA on the following bullet-points. Information for the site or within 500 m of the site is generally requested. Information on the distance and direction of each identified feature from the site itself or within 500 m of the site boundary: (information on the distance and direction to each identified feature is also requested)

- Background groundwater and surface water quality;
- Groundwater flow direction (for the various geological units) and general hydrogeological site setting / hydrogeological parameters;
- Licenced water abstractions (surface and groundwater) and details of the geological unit each abstracts from;
- Groundwater Source Protection Zones (SPZs);
- Licenced Discharge Consents;
- Records of any pollution incidents and remediation subsequently undertaken;
- Records of any 'Special Sites' as per Part 2a (EPA 1990);
- Details of any sites under consideration for investigation as a potential 'Special Site' as per Part 2a (EPA 1990);
- Records of current or historical landfill sites or waste sites;
- Details of any lined surface watercourses;
- Details of any culverted watercourses;
- Historical land uses (specifically for the site or immediately adjacent to it rather than within 500 m, in this case); and
- Any ground investigation data for the site or immediately surrounding area.

Kind regards,  
Delphinie

## **Delphinie McCarthy**

BEng (Hons)  
Engineer

T: 020 7620 2868 | M: 07403 528422

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London, SE1 7XW  
[www.a2-studio.com](http://www.a2-studio.com)



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## Delphinie Mccarthy

---

**From:** NET Enquiries <HNLenquiries@environment-agency.gov.uk>  
**Sent:** 04 October 2023 12:54  
**To:** Delphinie Mccarthy  
**Subject:** Enquiry Received

Thank you for your email. We are currently dealing with a very high volume of enquiries which is delaying our response times. We aim to respond to you as soon as possible within 20 working days. **Please be aware that we are currently responding to most enquiries on or close to the 20 working day deadline.**

If your email was to report an environmental incident e.g. pollution, fish in distress, dumping of hazardous waste etc. then please call our **Freephone 24 hour Incident Hotline** on **0800 80 70 60**. For more details about incident reporting please see our website: <https://www.gov.uk/report-an-environmental-incident>. If you require other urgent assistance please use this link <https://www.gov.uk/government/organisations/environment-agency#org-contacts>.

If your request is a general enquiry we will respond to you as soon as possible.

If your request for information falls under either the Freedom of Information Act or Environmental Information Regulations we must respond to you within 20 working days. You may wish to look at [www.data.gov.uk](http://www.data.gov.uk) to see if the data you have requested is available for you online.

If you have contacted us to make a complaint, a complaints coordinator will now assess your complaint to determine the most appropriate person to investigate and respond, as well as the timescales needed to do so. A coordinator will contact you once this assessment has been completed to let you know when to expect our response.

For further information on what you can expect from us and our full service commitment to you, please click this link: <https://www.gov.uk/government/publications/environment-agency-customer-service-commitment>

Kind regards

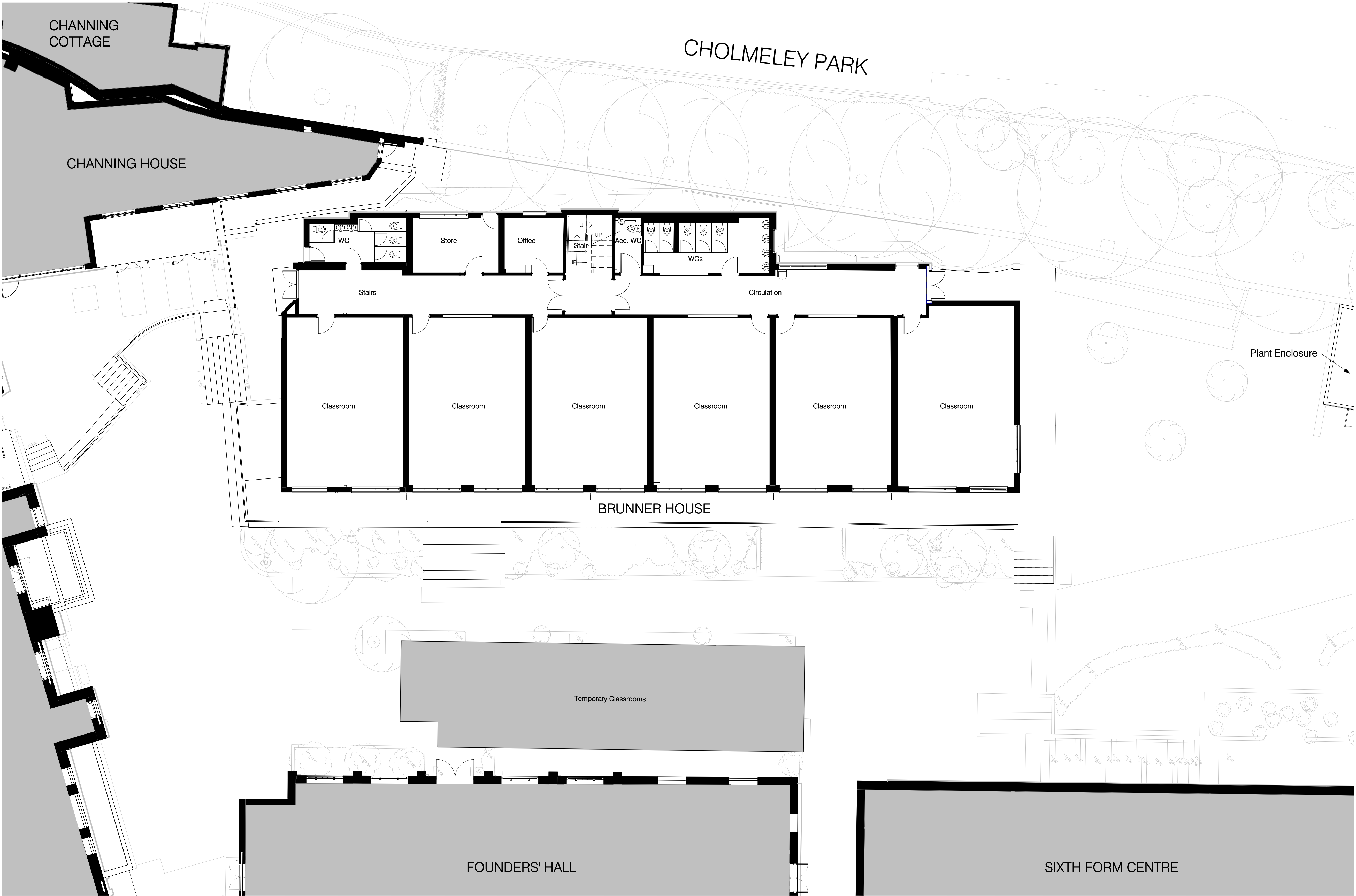
**Customers and Engagement Team**

Environment Agency, Hertfordshire and North London area

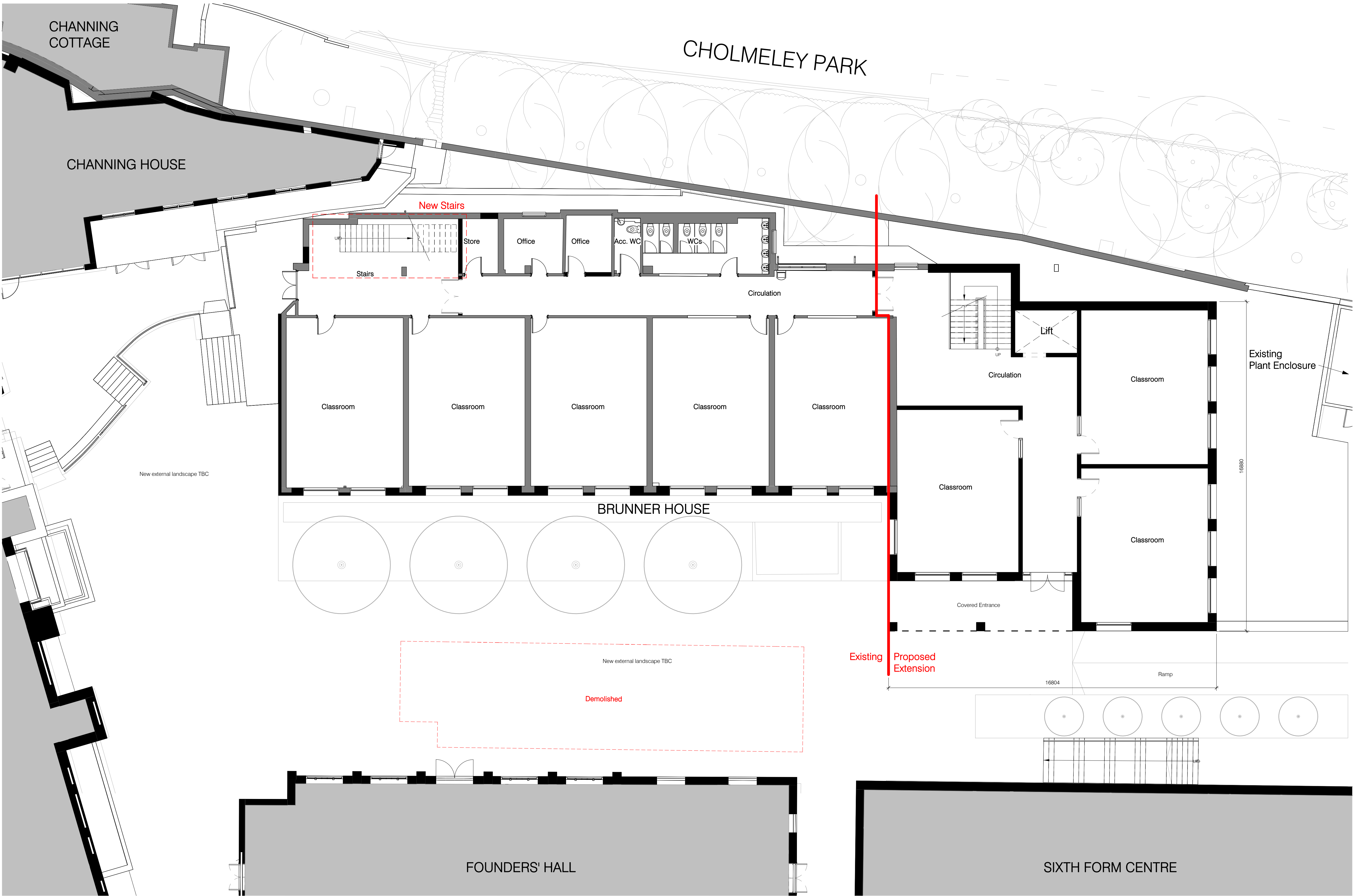
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## Appendix F: Various Existing and Proposed Development Drawings



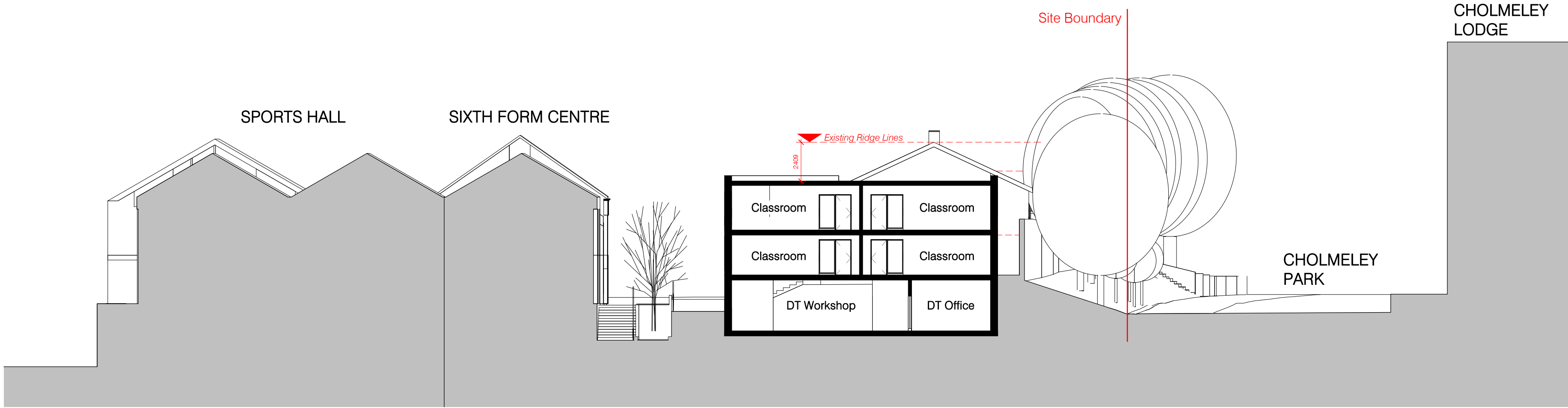
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| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Brunner House Ground Floor Plan  |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
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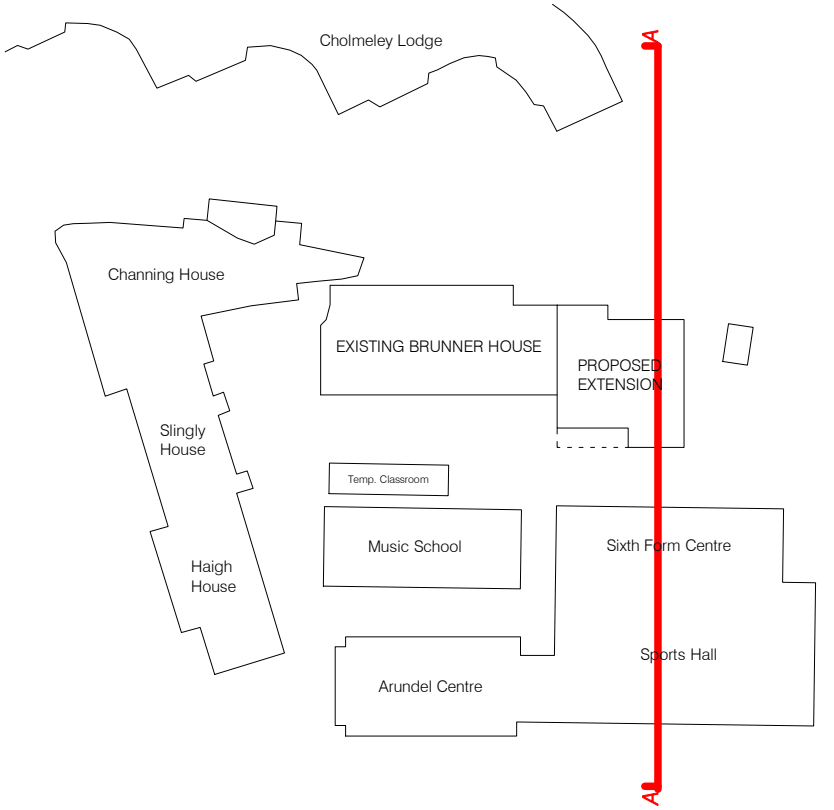
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| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Proposed Brunner House Ground Floor Plan  |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
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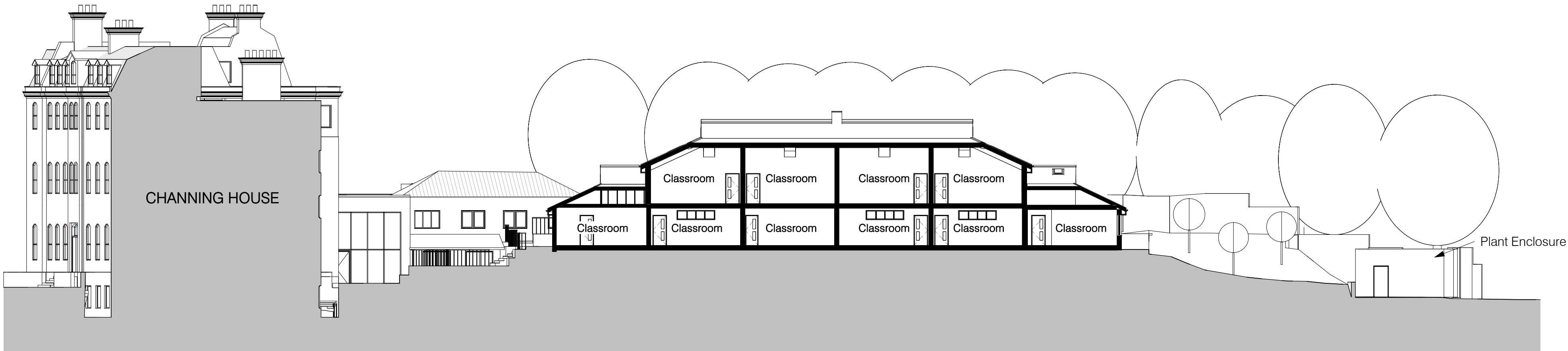
Existing



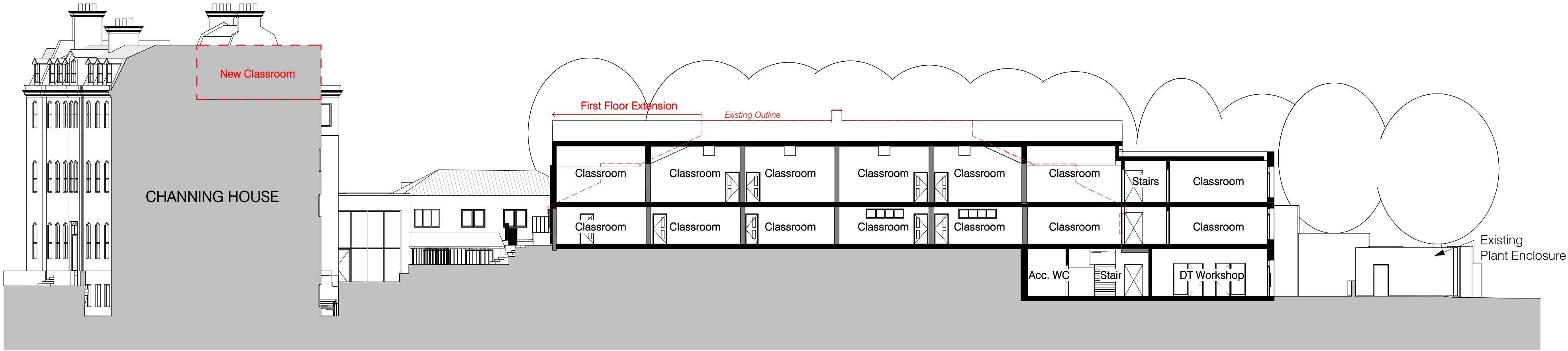
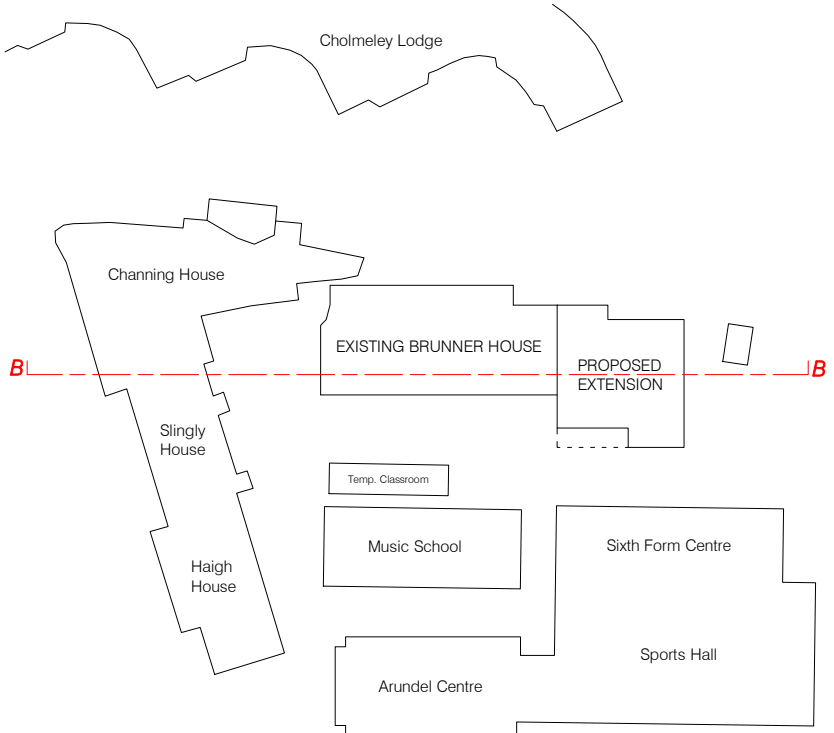
Proposed



|                                                 |                                   |                 |
|-------------------------------------------------|-----------------------------------|-----------------|
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| Rev.                                            | Description                       |                 |
| Client & Project                                |                                   |                 |
| Channing Girls School                           |                                   |                 |
| Brunner House + Main School Redevelopment       |                                   |                 |
| Document Title                                  |                                   |                 |
| Existing & Proposed Brunner House Short Section |                                   |                 |
|                                                 |                                   |                 |
| Project Stage                                   | Purpose                           | Scale           |
| RIBA 2                                          | PRE-APPLICATION                   | 1:200 @A1       |
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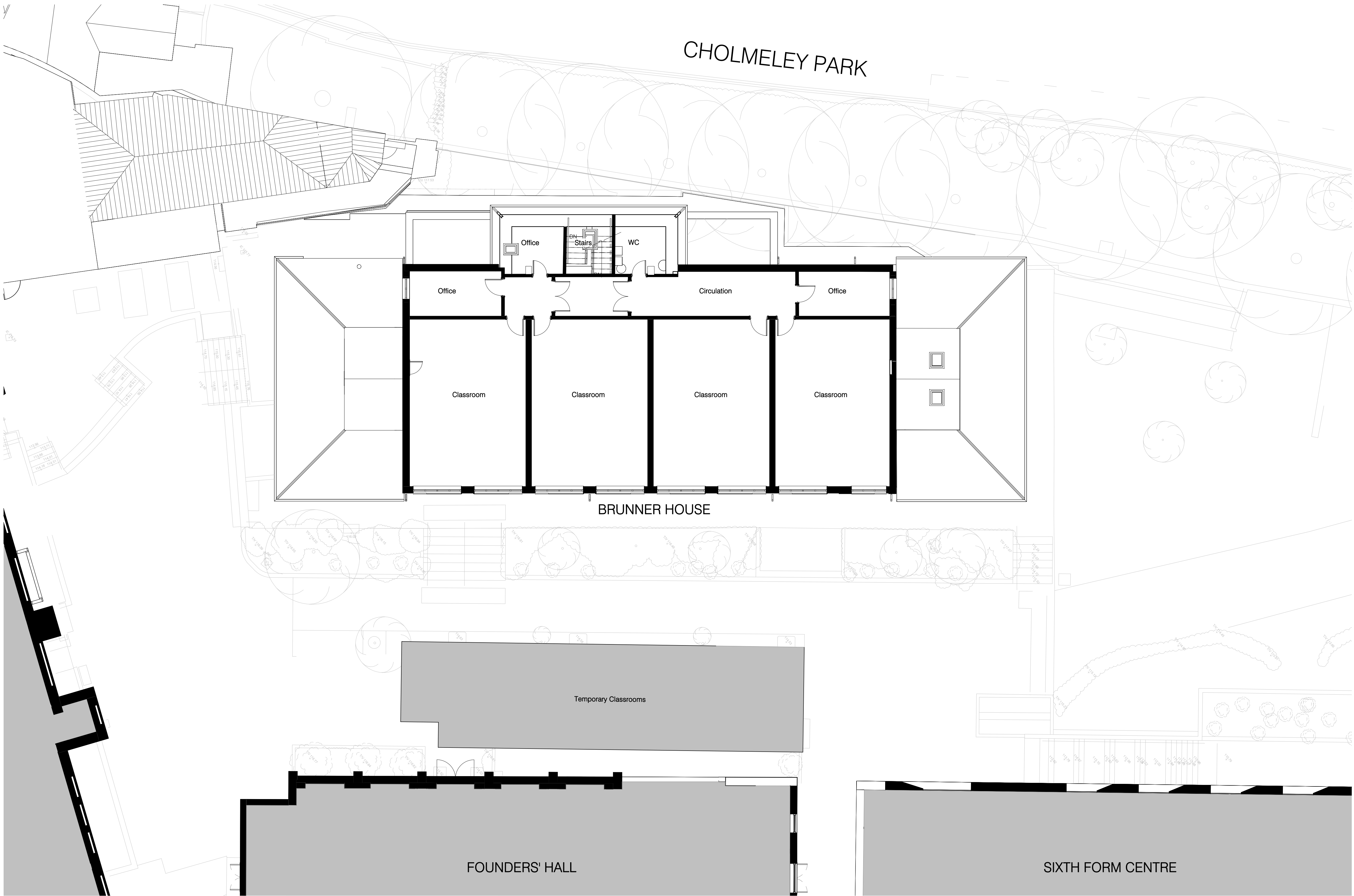


Existing



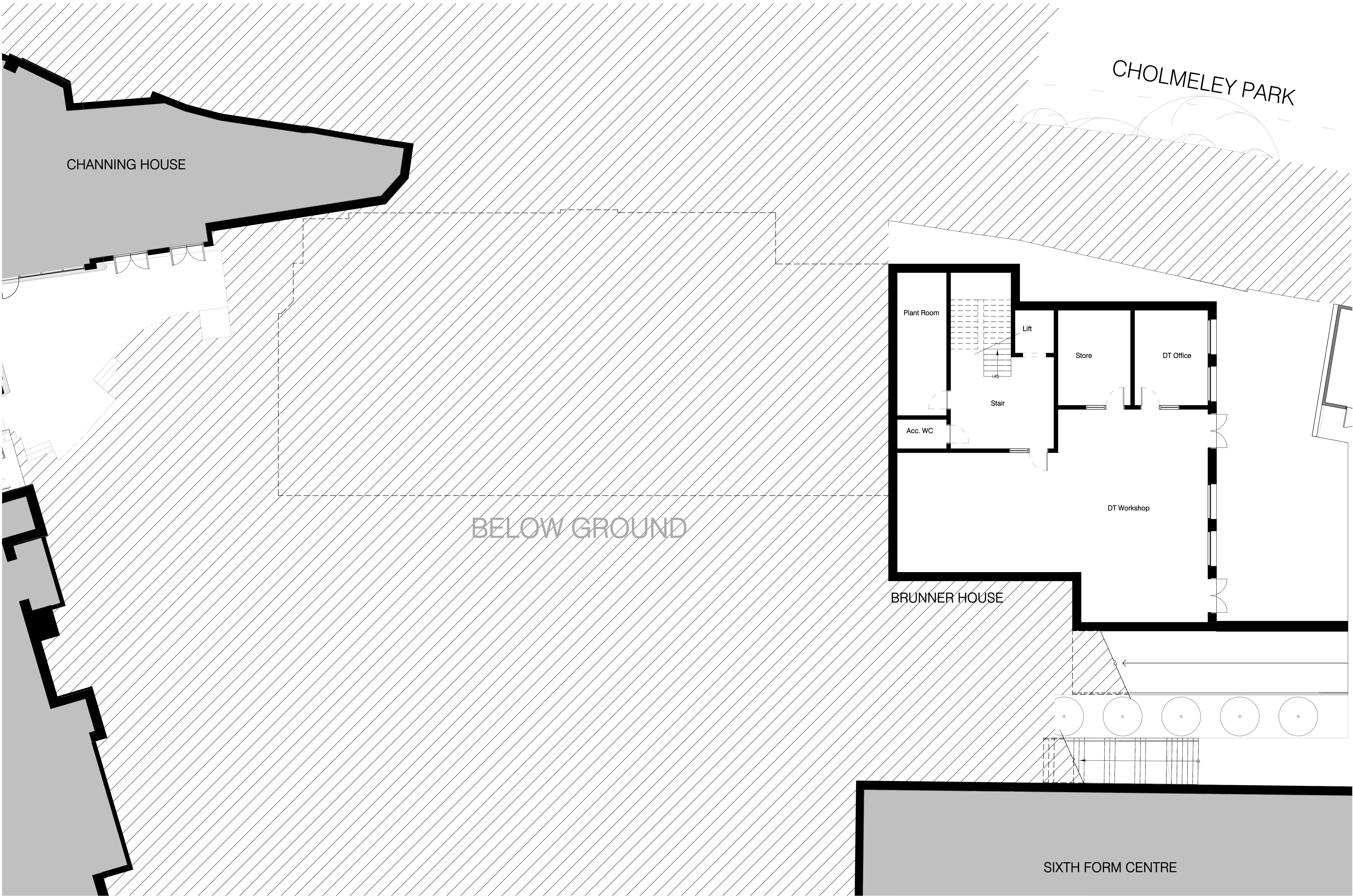
Proposed

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| Rev.                                           | Description                       |           |                 |
| Client & Project                               |                                   |           |                 |
| Channing Girls School                          |                                   |           |                 |
| Brunner House + Main School Redevelopment      |                                   |           |                 |
| Document Title                                 |                                   |           |                 |
| Existing & Proposed Brunner House Long Section |                                   |           |                 |
|                                                |                                   |           |                 |
| Project Stage                                  | Purpose                           | Scale     |                 |
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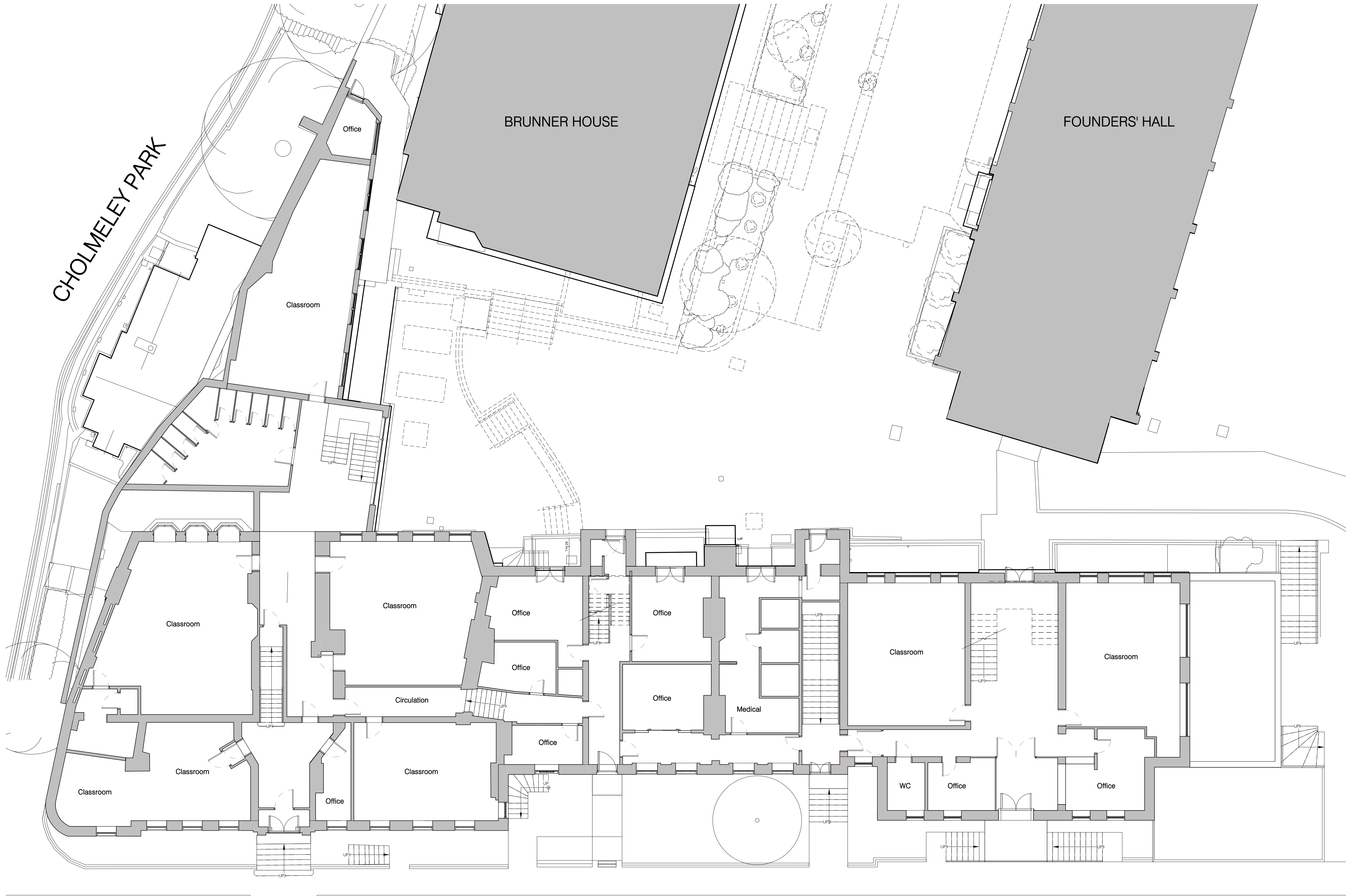


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| Channing Girls School                     |                                   |                    |
| Brunner House + Main School Redevelopment |                                   |                    |
| Document Title                            |                                   |                    |
| Existing Brunner House First Floor Plan   |                                   |                    |
|                                           |                                   |                    |
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| Document Reference.                       |                                   | Revision    Status |
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| Client & Project                          |                                   |                      |
| Channing Girls School                     |                                   |                      |
| Brunner House + Main School Redevelopment |                                   |                      |
| Document Title                            |                                   |                      |
| Proposed Brunner House Basement Plan      |                                   |                      |
|                                           |                                   |                      |
| Project Stage                             | Purpose                           | Scale                |
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| Document Reference.                       |                                   | Revision      Status |
| CHS-NVB-BRU-B1-D-A-2100                   |                                   | P01      S2          |



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Contact:

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mailto:mail@nvbarchitects.co.uk

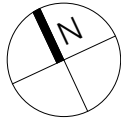
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CHANNING HOUSE

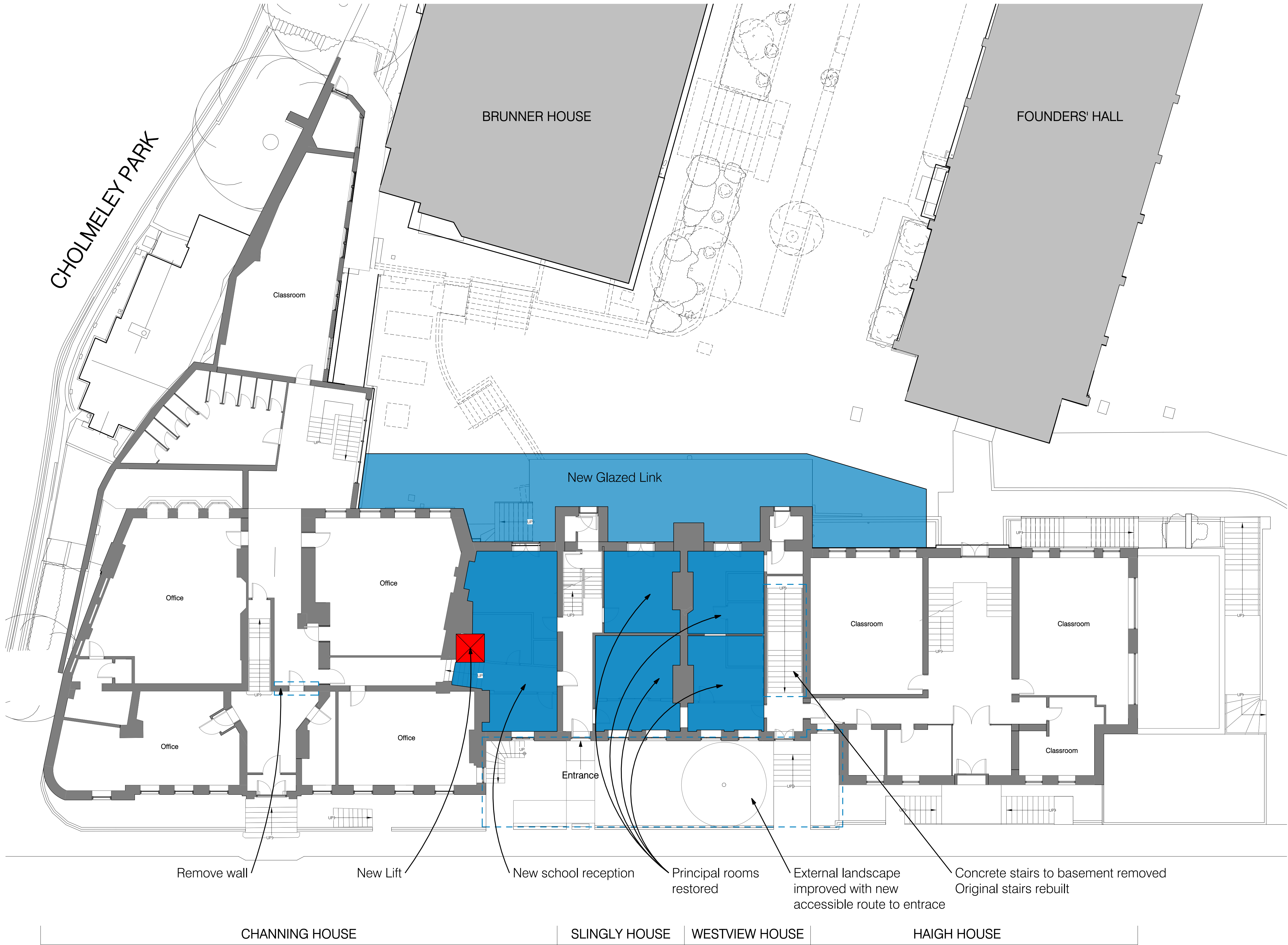
SLINGLY HOUSE

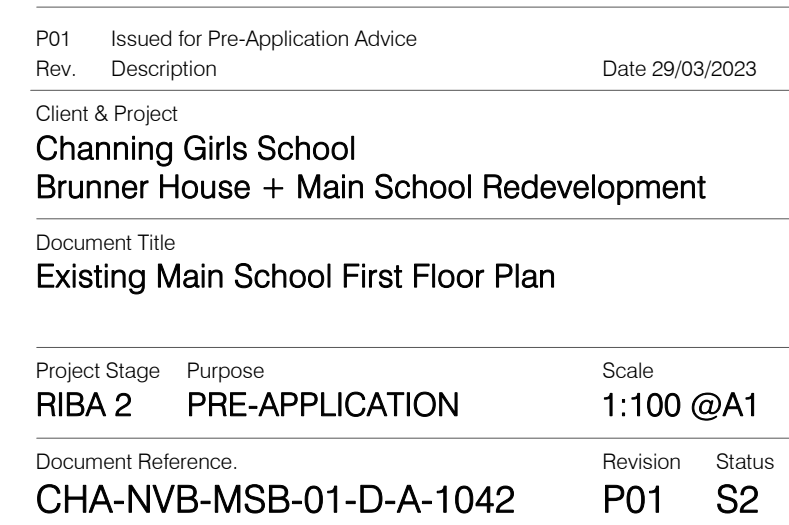
WESTVIEW HOUSE

HAIGH HOUSE

THE BANK

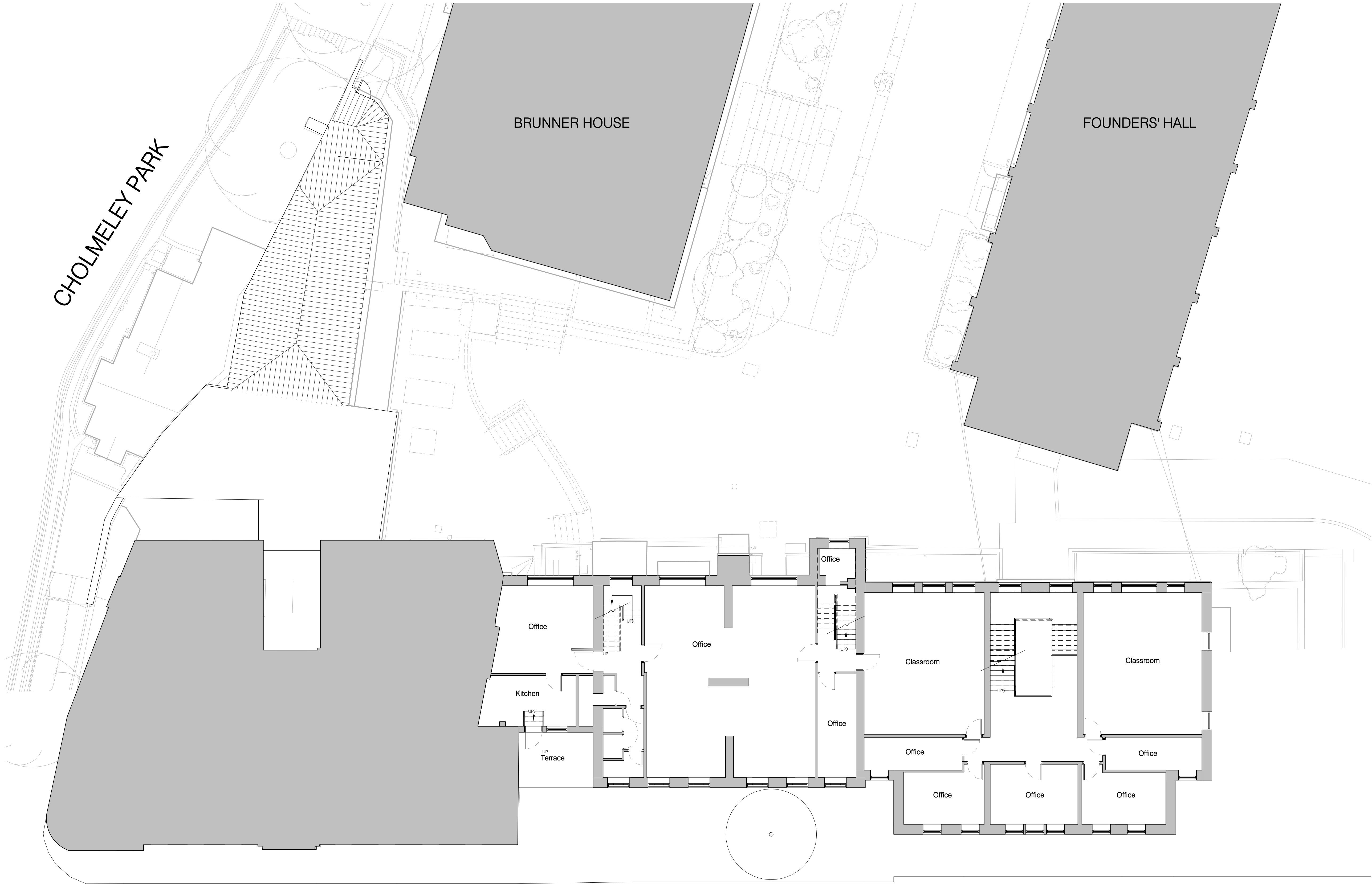
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| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Ground Floor Plan    |                                   |                 |
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| Project Stage                             | Purpose                           | Scale           |
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| Document Reference.                       | Revision                          | Status          |
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| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
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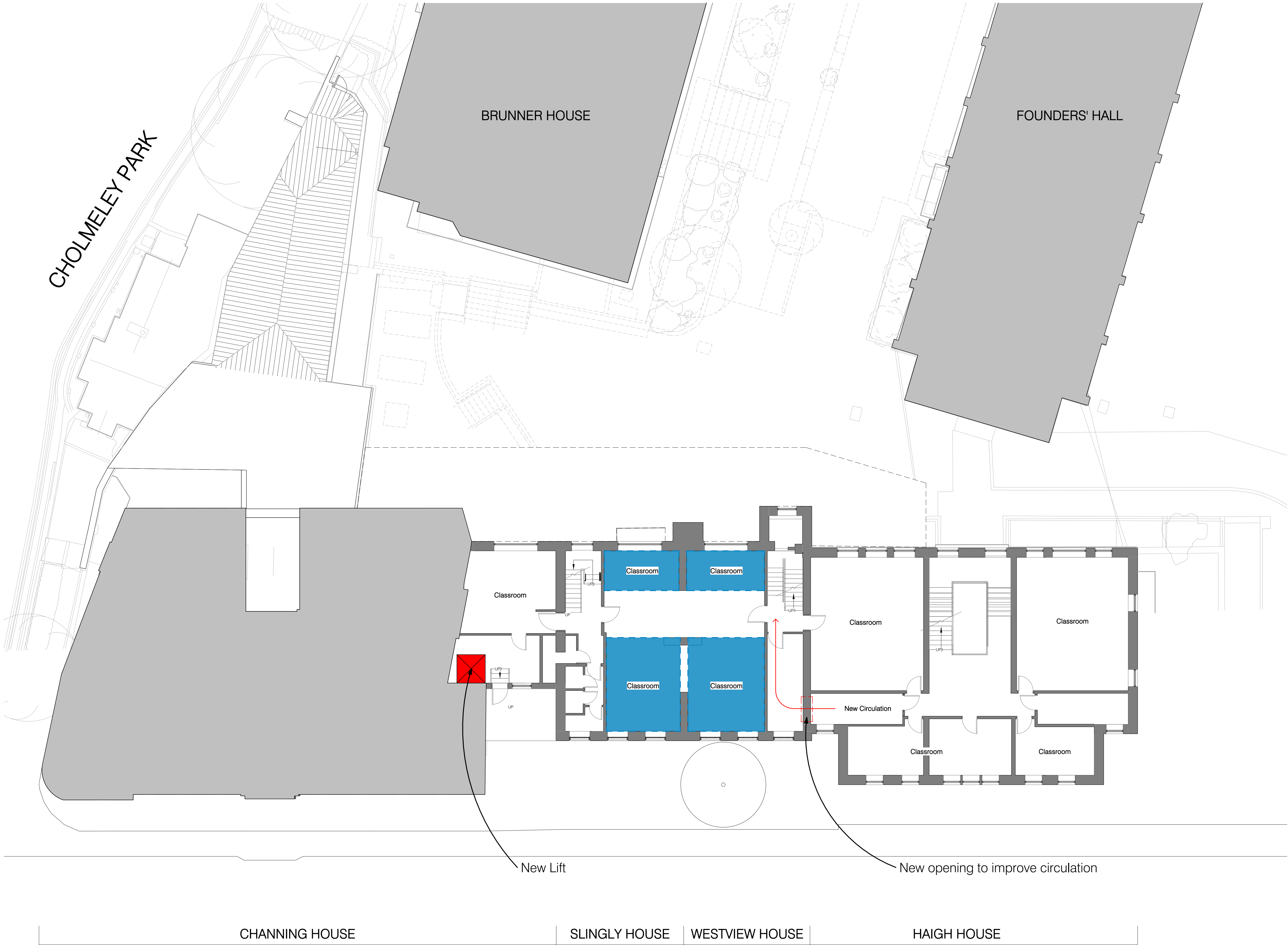


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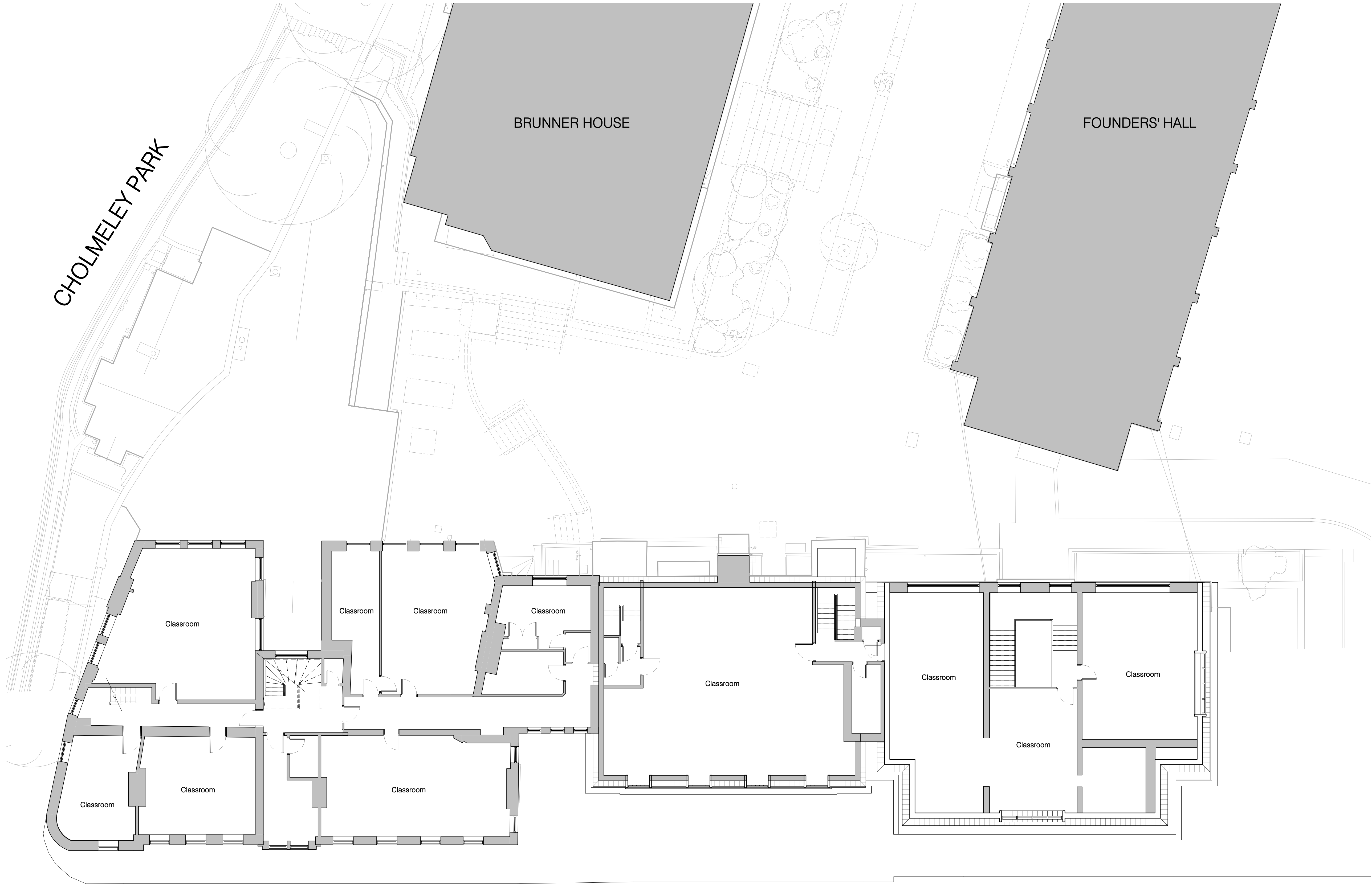
CHANNING HOUSE | SLINGLY HOUSE | WESTVIEW HOUSE | HAIGH HOUSE

THE BANK

|                                           |                                   |                 |
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| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
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| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
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|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
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1:100 @ A1 (1:200 @ A3)

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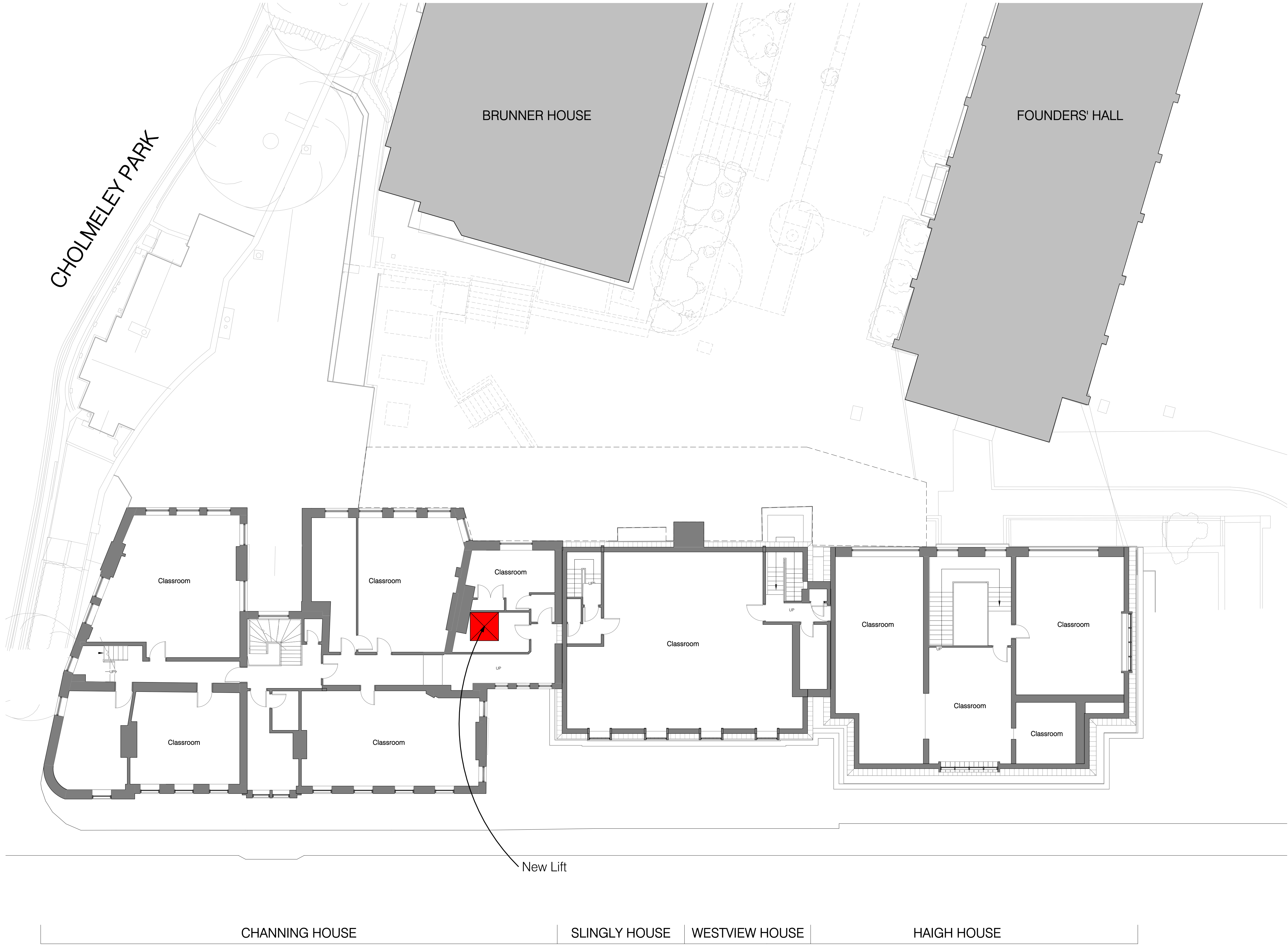
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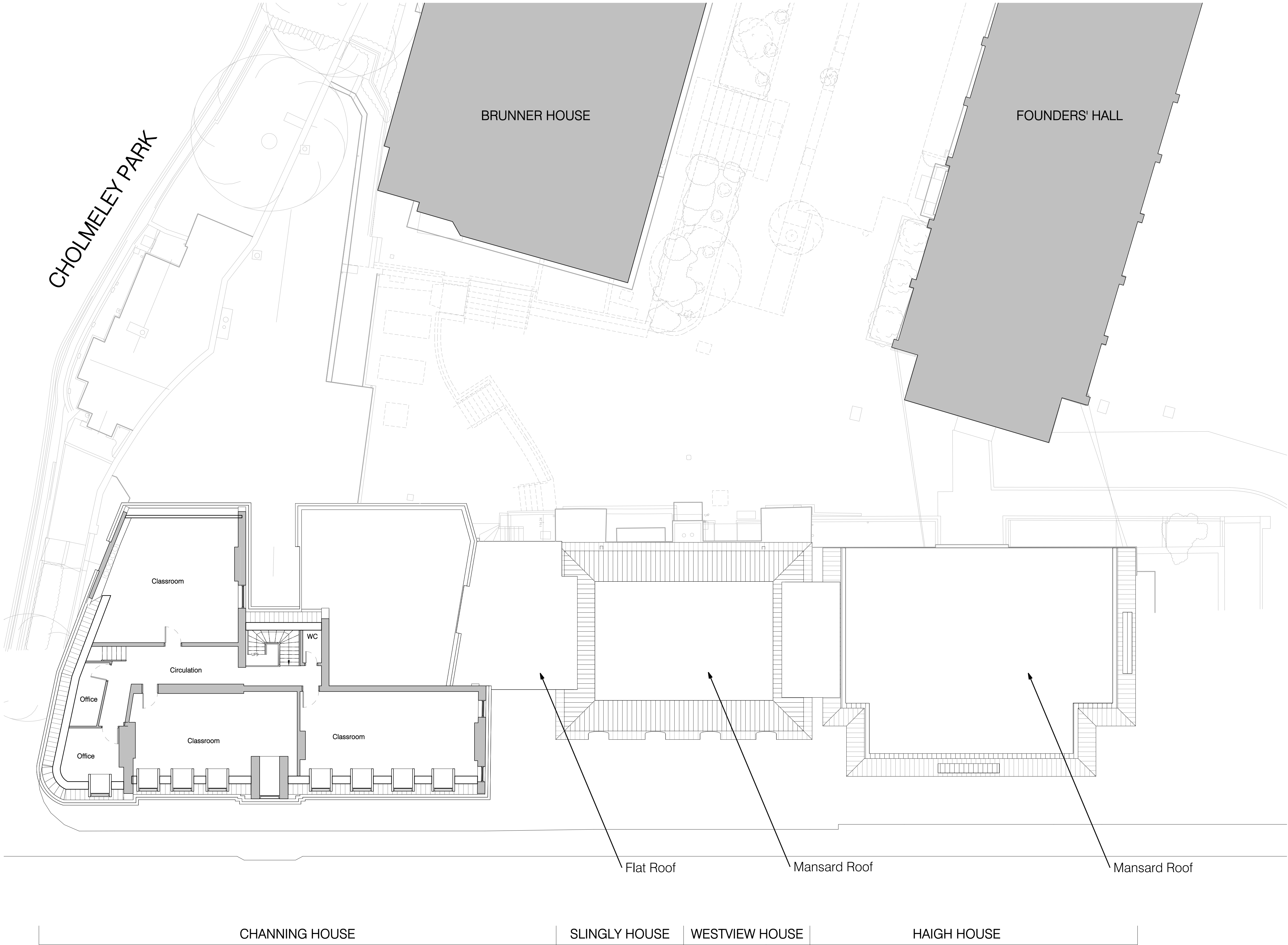
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10m

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| Rev.                                      | Description                       |           |                 |
| Client & Project                          |                                   |           |                 |
| Channing Girls School                     |                                   |           |                 |
| Brunner House + Main School Redevelopment |                                   |           |                 |
| Document Title                            |                                   |           |                 |
| Existing Main School Third Floor Plan     |                                   |           |                 |
|                                           |                                   |           |                 |
| Project Stage                             | Purpose                           | Scale     |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1 |                 |
| Document Reference.                       |                                   | Revision  | Status          |
| CHA-NVB-MSB-03-D-A-1044                   |                                   | P01       | S2              |



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| P01 Issued for Pre-Application Advice     |                 |                 |
| Rev.                                      | Description     | Date 29/03/2023 |
| Client & Project                          |                 |                 |
| Channing Girls School                     |                 |                 |
| Brunner House + Main School Redevelopment |                 |                 |
| Document Title                            |                 |                 |
| Proposed Main School Third Floor Plan     |                 |                 |
| Project Stage Purpose Scale               |                 |                 |
| RIBA 2                                    | PRE-APPLICATION | 1:100 @A1       |
| Document Reference.                       |                 | Revision Status |
| CHA-NVB-MSB-03-D-A-1104                   |                 | P01 S2          |



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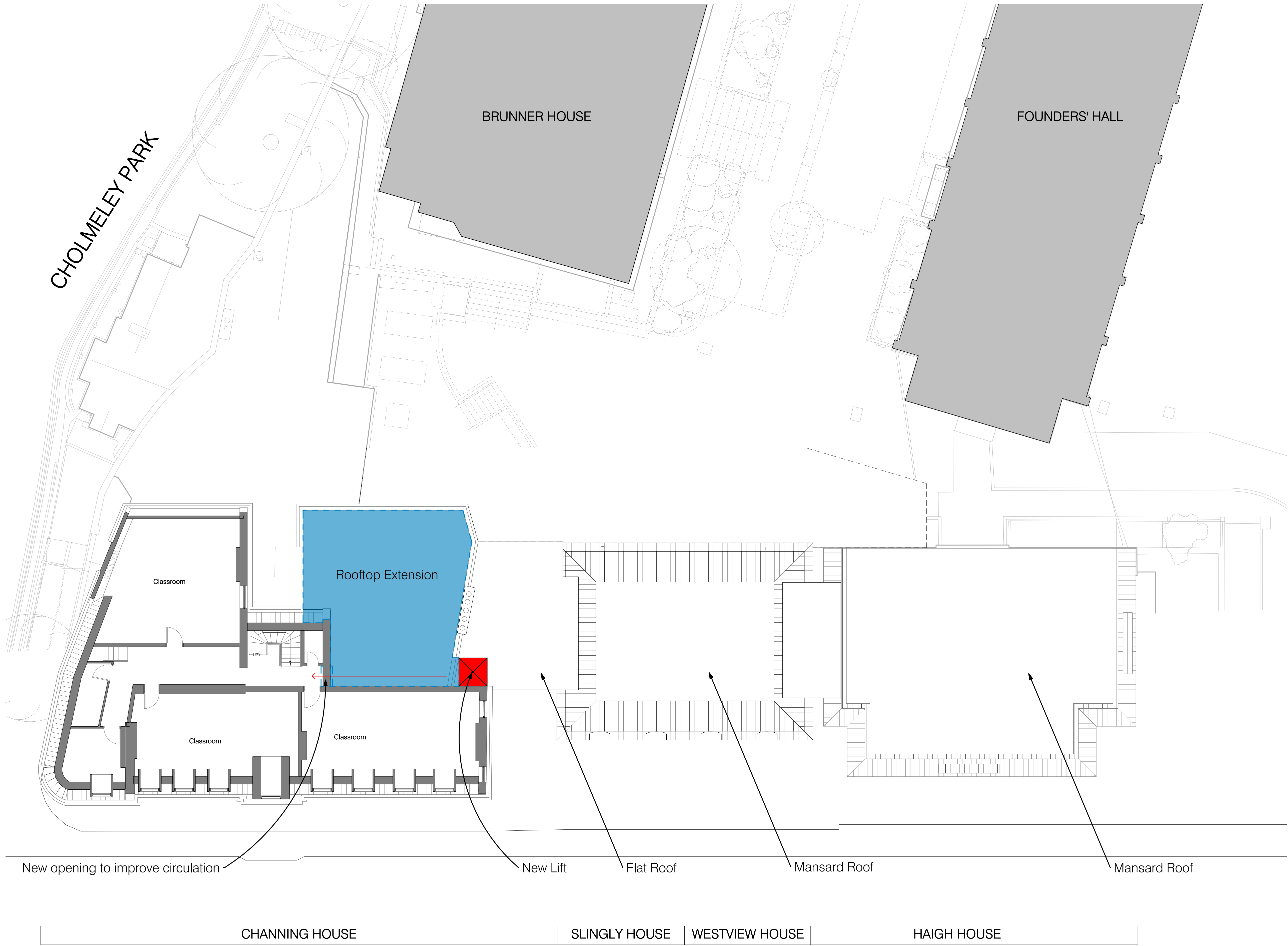
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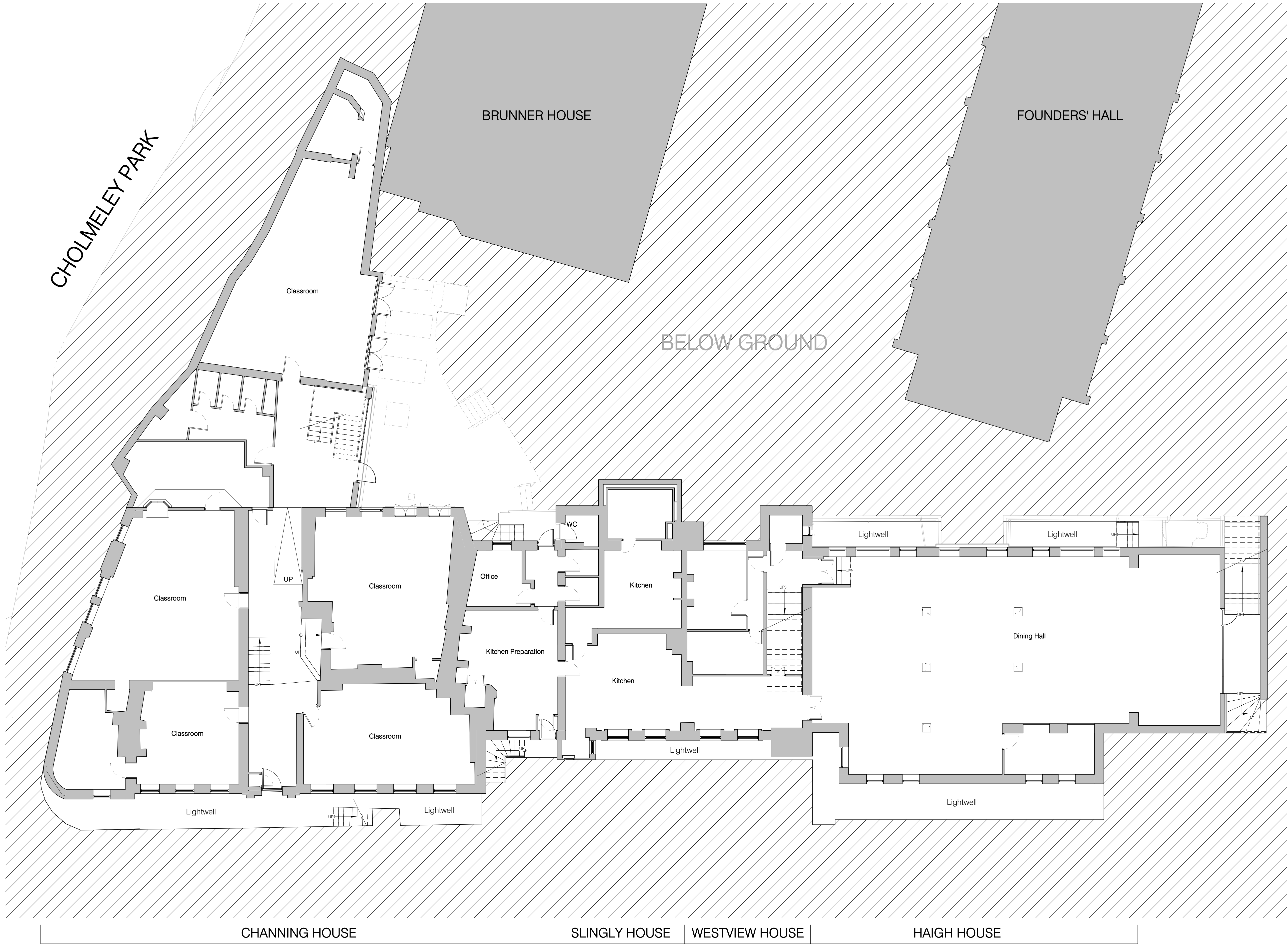
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| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Forth Floor Plan     |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference:                       | Revision                          | Status          |
| CHA-NVB-MSB-04-D-A-1045                   | P01                               | S2              |



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| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Proposed Main School Forth Floor Plan     |                                   |                 |
| Project Stage Purpose Scale               |                                   |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
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| CHA-NVB-MSB-04-D-A-1105                   |                                   | P01 S2          |



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Scale

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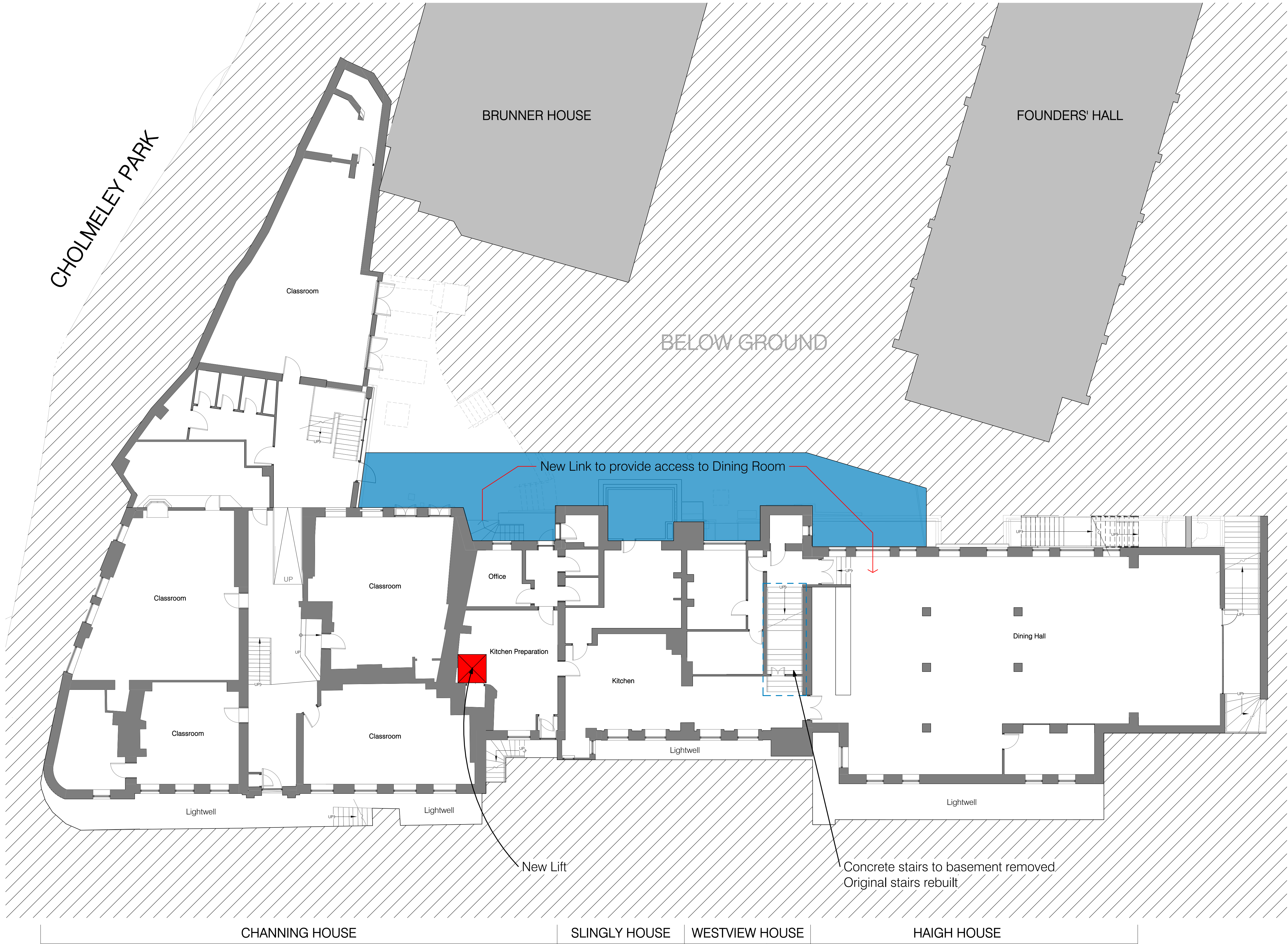
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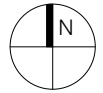
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10m

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| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Basement Plan        |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference:                       |                                   | Revision Status |
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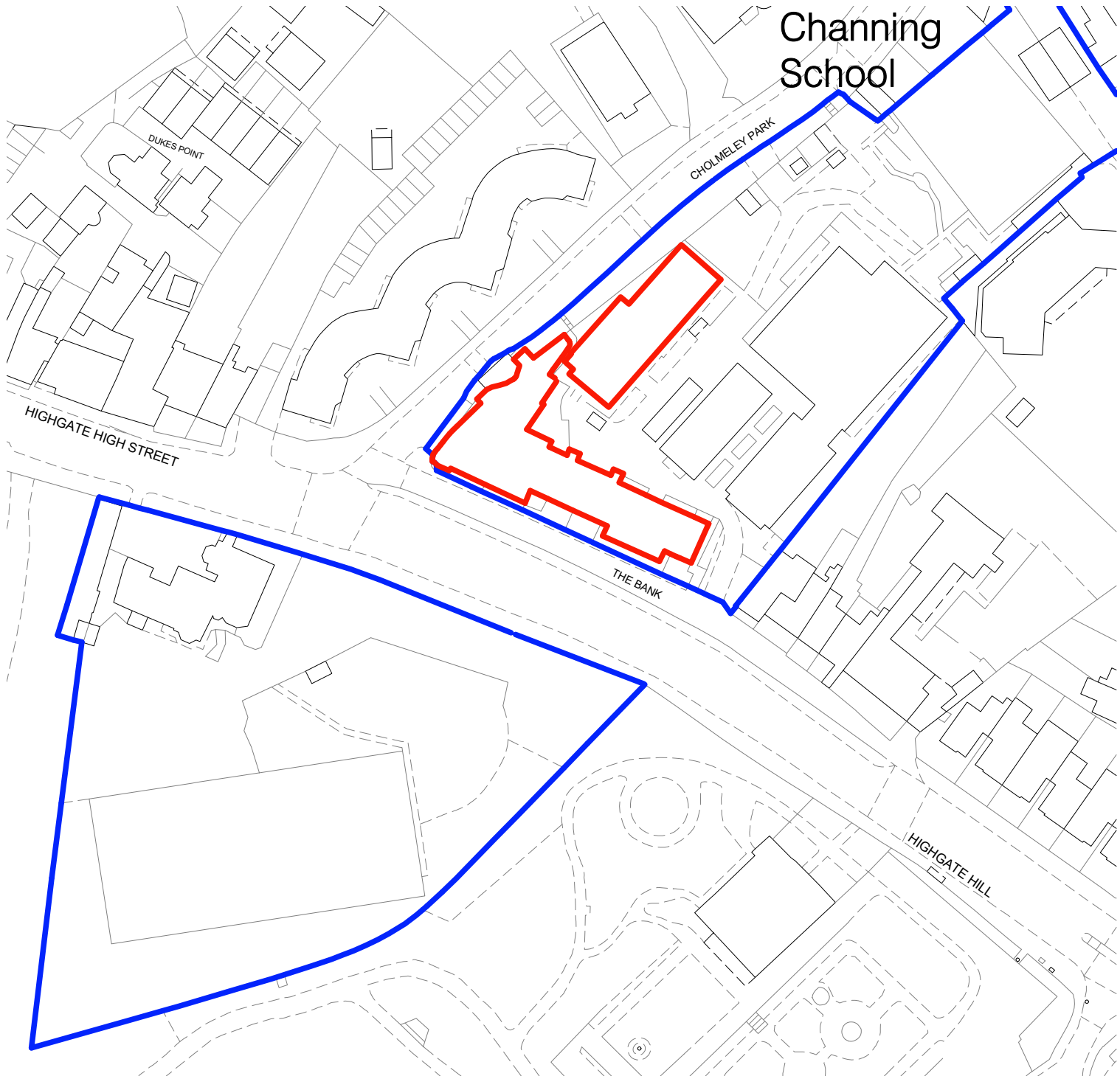
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| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Proposed Main School Basement Plan        |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference:                       |                                   | Revision Status |
| CHA-NVB-MSB-B1-D-A-1100                   |                                   | P01 S2          |



|      |    |      |    |      |    |      |     |       |      |
|------|----|------|----|------|----|------|-----|-------|------|
| 12.5 | 25 | 37.5 | 50 | 62.5 | 75 | 87.5 | 100 | 112.5 | 125m |
|------|----|------|----|------|----|------|-----|-------|------|

**LOCATION PLAN KEY**

- Application Boundary
- Land within Applicant's Control



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Rev. Description

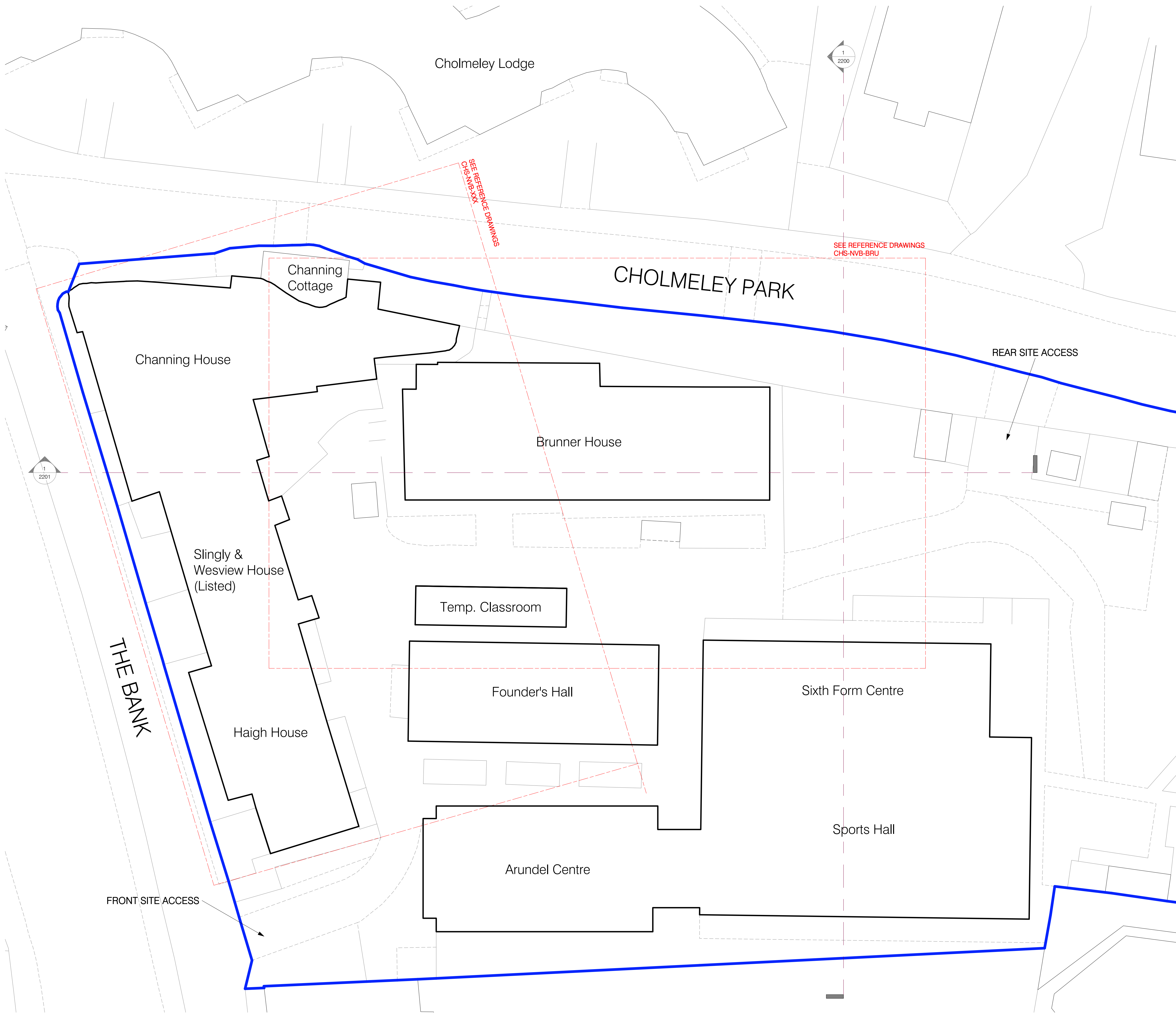
Date 29/03/2023

Client & Project  
**Channing Girls School**  
**Brunner House + Main School Redevelopment**

Project Stage Purpose Scale @ A4  
**RIBA 2 PRE-APPLICATION 1:1250**

Document Title  
**Site Location Plan**

Document Reference. Revision Status  
**CHS-NVB-BRU-00-D-A-2001 P01 S0**



|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Block Plan                                |                                   |                 |
| Project Stage Purpose Scale               |                                   |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:200 @A1       |
| Document Reference.                       |                                   |                 |
| CHS-NVB-BRU-00-D-A-2010                   | Revision                          | Status          |
|                                           | P01                               | S2              |



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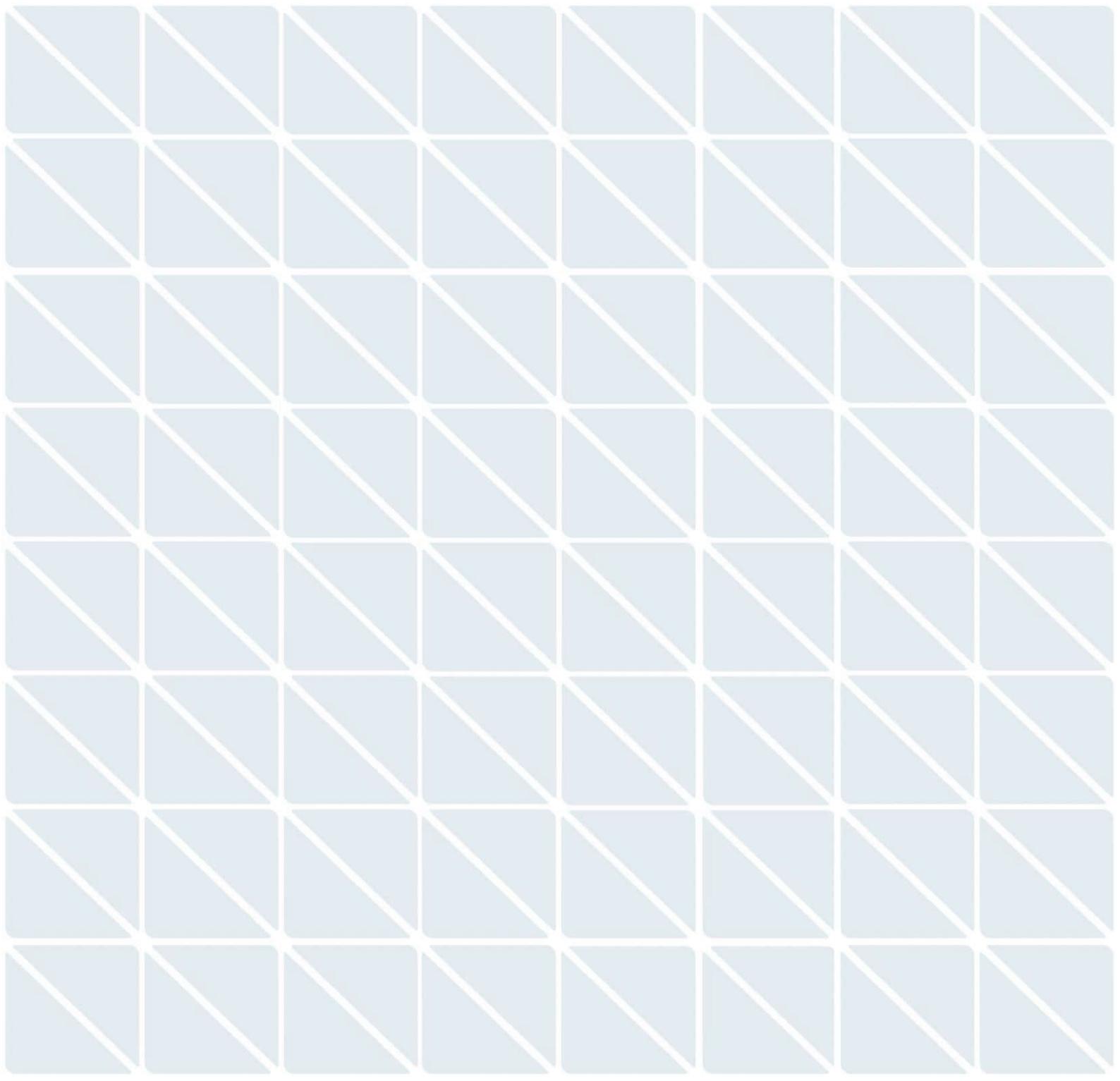
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## Appendix D: Ground Investigation Scope Note



**Project** Channing School, Brunner House Redevelopment  
**Project No.** 2992  
**Subject** Ground Investigation Scope  
**Client** Heyne Tillett Steel Limited

| Document Reference          | Status       | Revision | Prepared                                                         | Checked                                                               | Approved                                                | Date       |
|-----------------------------|--------------|----------|------------------------------------------------------------------|-----------------------------------------------------------------------|---------------------------------------------------------|------------|
| 2992-A2S-XX-XX-TN-Y-0001-00 | First Issue  | 00       | Delphinie McCarthy<br>BEng(Hons)<br>Geo-environmental Consultant | Finlay Campbell<br>MSci (Hons)<br>Senior Geo-environmental Consultant | Hamed Shariff<br>MEng(Hons), CEng,<br>MICE<br>Associate | 26.10.2023 |
| 2992-A2S-XX-XX-TN-Y-0001-01 | Second Issue | 01       | Delphinie McCarthy<br>BEng(Hons)<br>Geo-environmental Consultant | Finlay Campbell<br>MSci (Hons)<br>Senior Geo-environmental Consultant | Hamed Shariff<br>MEng(Hons), CEng,<br>MICE<br>Associate | 01.11.2023 |

## 1. Introduction

A-squared Studio Engineers Ltd (A-squared) has been appointed by Heyne Tillett Steel Limited (HTS) to support the ground engineering works for the Channing School, Brunner House Redevelopment site.

The site currently includes a two-storey building ("Brunner House") with no basement level and soft-landscaping to the northeast and east of the building. The building is currently used as classroom space as part of the wider Channing School site. The proposed development comprises the redevelopment of the existing two-storey building. This will consist of the partial demolition of the building to the north and the erection of a new two-storey building extending laterally northwards from the current onsite development with an additional partial basement level.

The ground investigation works are required to be undertaken outside of term time and the Christmas break is being targeted for these works. The break between the Autumn and Spring Term (Christmas break) for Channing school is Monday 18<sup>th</sup> December 2023 to Friday 5<sup>th</sup> January 2024.

Full reinstatement of the existing conditions is required at the investigation locations as the site will return to its current use (an active school) following the ground investigation works.

This technical note provides the minimum requirements for a site-specific ground investigation, taking into consideration the anticipated ground conditions, site context and proposed development.

## 2. Investigation Context

The ground investigation will form an integral part of the design process. The ground investigation will be required to inform the following aspects, amongst others, throughout the design and construction project lifecycle:

- Development of a site-specific ground model.
- Evaluation and selection of geotechnical parameters for foundation and earth retention system design (in order to inform both temporary and permanent works design requirements).
- Groundwater regime assessment to inform substructure design and evaluation of construction methodologies.



- Explore potential geotechnical hazards at the development site, e.g. ground model anomalies, weak superficial deposits and similar.
- Determine the chemical conditions of the soil with respect to below-ground concrete.
- Assess the foundations of the existing boundary wall and Brunner House foundations.
- Assess the current geo-environmental conditions of the site.

### 3. Preliminary Ground Model

The preliminary ground model tabulated below has been developed based on previous investigation works undertaken on site by Geotechnical & Environmental Associated Limited (GEA) in 2011 and publicly available borehole information. More information can be found in the *Site Investigation & Basement Impact Assessment Report for Channing School* prepared for (and provided by) HTS, prepared by GEA, issued January 2012 (ref. J11240) and the *Phase I Desk Study Report* prepared by A-squared, issued October 2023 (ref. 2992-A2S-XX-XX-RP-Y-0001-00).

**Table 3.1 Preliminary stratigraphic relationships**

| Unit                  | Depth <sup>[1]</sup> (m bgl) | Thickness (m) | Description                                                                                                                                                                                                    |
|-----------------------|------------------------------|---------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Made Ground           | 114.0                        | 1.0           | Variable anthropogenic deposits                                                                                                                                                                                |
| Bagshot Formation     | 113.0                        | 5.5           | Sand becoming light brown occasionally clayey and silty fine to medium sand with depth.<br>Firm light brown silty sandy clay becoming light brown occasionally clayey and silty fine to medium sand with depth |
| Claygate Member       | 107.5                        | 6.0           | Variable sequence of orange to brown and mottled grey silty very sandy and a very clayey silty sand                                                                                                            |
| London Clay Formation | 101.5                        | 113.5         | Firm becoming stiff brownish grey silty fissured clay at depth, with occasional selenite crystals                                                                                                              |

1. Depth refers to the top of the stratum.

### 4. Investigation Scope

#### 4.1. Intrusive Works

- 1 no. cable percussion borehole (BH1) to a depth of 25.0m from ground surface into the Bagshot Formation, Claygate Member and London Clay Formation. Investigation depth, drilling technique and sampling methodology to suit site logistics and meet requirements set out in the relevant sections of Eurocode 7. An indicative borehole location plan is presented in Section 6. It is noted that the depth of the borehole may be increased in the instance that unexpected ground conditions are encountered.
- 5 no. hand-excavated trial pits (TP1 to TP5) to a maximum depth of 1.0m to assess the western boundary wall and existing Brunner House foundation depths and conditions.
- 4 no. mechanically excavated trial pits (TP6 to TP9) to a maximum depth of 1.2m to obtain soil samples from shallow Made Ground for geo-environmental laboratory testing purposes.
- In-situ testing consisting of UT100 sampling, Standard Penetration Testing (SPTs) and soil sample volatile organic compounds (VOC) head-space testing using a photoionisation (PID) detector is to be undertaken at the borehole (BH1).



- Engineering standard logging of ground conditions encountered at each exploratory location.
- Collection of soil samples for chemical laboratory analysis.
- Allowance for the installation of 1 no. dual install of groundwater/gas monitoring slotted standpipe in the Made Ground and granular natural stratum within the borehole (BH1), subject to the ground conditions encountered on site.
- 4 no. rounds of return groundwater elevation, ground gas and soil vapour monitoring. During 1 no of these monitoring rounds, groundwater monitoring and sampling for chemical laboratory analysis should be undertaken where groundwater is identified.

All materials should be logged in accordance with the relevant Eurocodes and British Standards. Soil sampling to include U100/UT100, disturbed, environmental and large/bulk samples. Samples should be collected in a sufficient quantity to satisfy the geotechnical testing requirements. SPT testing shall be alternated with U100 sampling in cohesive materials.

The ground investigation contractor shall consider the risks associated with unexploded ordnance (UXO) in relation to the proposed works. A Preliminary Unexploded Ordnance (UXO) Risk Assessment for Channing School has been prepared by Brimstone Limited, dated October 2023 (ref. PRA-23-2269-00). While a Stage 2 Detailed Risk Assessment in order to assess the risk to the proposed works is recommended, on-site UXO support for any planned ground works would be sufficient.

## 4.2. Geotechnical Laboratory Testing

Allowance for geotechnical laboratory-based testing for classification, strength and stiffness:

- 5 no. soil classification / index testing suites in accordance with BS1377-2:1990.
- 5 no. particle size distribution tests in accordance with BS1377-2:1990.
- 5 no. BRE SD1 concrete aggressivity tests.
- 2 no. undrained unconsolidated triaxial tests on 100mm-diameter undisturbed specimens.

## 4.3. Geo-environmental Laboratory Testing

Allowance for geo-environmental laboratory-based testing for contamination:

### 4.3.1. Soils

- 8 no. Total Organic Content (TOC) tests.
- 6 no. Soil Organic Matter (SOM) tests.
- 6 no. pH tests.
- 6 no. Fraction Organic Carbon (FOC) tests.
- 6 no. Water Soluble Sulphate tests.
- 6 no. Speciated Heavy Metals & Metalloids tests (inc. including arsenic, barium, beryllium, boron (water soluble), cadmium, chromium III, chromium VI, copper, lead, mercury, molybdenum, nickel, selenium, vanadium, zinc).
- 6 no. Speciated Polycyclic Aromatic Hydrocarbons (PAH) EPA 16 tests.
- 6 no. Asbestos Identification (with quantification should asbestos be identified) tests.
- 6 no. Total Petroleum Hydrocarbons Criteria Working Group (TPHCWG) inc. benzene, toluene, ethylbenzene and xylene (BTEX) and methyl tert-butyl ether (MTBE) tests.

### 4.3.2. Groundwater

- 1 no. speciated volatile organic compounds (VOC) tests.
- 1 no. speciated semi-volatile organic compound (SVOC) tests.



#### 4.4. Post-Fieldwork Monitoring

- 4no. groundwater/gas monitoring rounds with at least 1 no. of these also including low-flow groundwater sampling.

#### 4.5. Reporting

- Factual reporting in the form of a Ground Investigation Report in accordance with BS EN 1997-1:2004+A1:2013.
- Contribution to site constraints plan comprising a live document which captures/records all known features, obstructions and constraints which affect the proposed development.

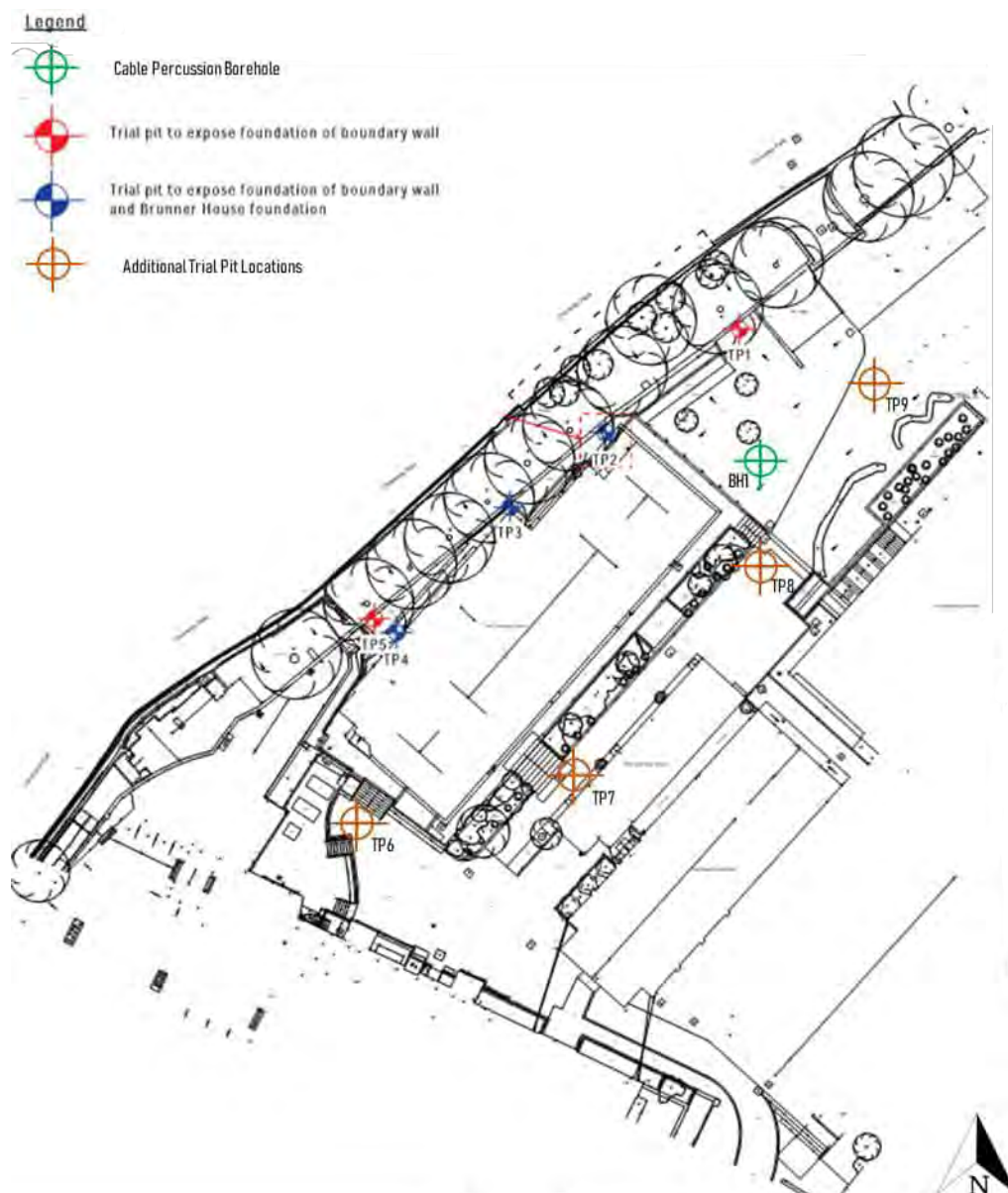
### 5. Exploratory Hole Location Summary

| Location ID | Type                              | Maximum Depth<br>(m bgl) | Details                                                                                                                                                                                                                                                                          |
|-------------|-----------------------------------|--------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| BH1         | Borehole                          | 25.0                     | A dual install of a groundwater/gas monitoring slotted standpipe in the Made Ground and granular natural stratum.<br><br>Within cohesive materials, UT100 sampling and SPT testing at alternate 1m intervals until 5m depth below top of stratum, then alternate 1.5m intervals. |
| TP1         | Hand-excavated trial pit          | 1.0                      | Purpose to assess the western boundary wall and existing Brunner House foundations depths and conditions.                                                                                                                                                                        |
| TP2         | Hand-excavated trial pit          | 1.0                      | Purpose to assess the western boundary wall and existing Brunner House foundations depths and conditions.                                                                                                                                                                        |
| TP3         | Hand-excavated trial pit          | 1.0                      | Purpose to assess the western boundary wall and existing Brunner House foundations depths and conditions.                                                                                                                                                                        |
| TP4         | Hand-excavated trial pit          | 1.0                      | Purpose to assess the western boundary wall and existing Brunner House foundations depths and conditions.                                                                                                                                                                        |
| TP5         | Hand-excavated trial pit          | 1.0                      | Purpose to assess the western boundary wall and existing Brunner House foundations depths and conditions.                                                                                                                                                                        |
| TP6         | Mechanically excavated trial pits | 1.2                      | Purpose to obtain soil samples obtain soil samples from shallow Made Ground for geo-environmental laboratory testing purposes.                                                                                                                                                   |
| TP7         | Mechanically excavated trial pits | 1.2                      | Purpose to obtain soil samples obtain soil samples from shallow Made Ground for geo-environmental laboratory testing purposes.                                                                                                                                                   |
| TP8         | Mechanically excavated trial pits | 1.2                      | Purpose to obtain soil samples obtain soil samples from shallow Made Ground for geo-environmental laboratory testing purposes.                                                                                                                                                   |



| Location ID | Type                              | Maximum Depth<br>(m bgl) | Details                                                                                                                        |
|-------------|-----------------------------------|--------------------------|--------------------------------------------------------------------------------------------------------------------------------|
| TP9         | Mechanically excavated trial pits | 1.2                      | Purpose to obtain soil samples obtain soil samples from shallow Made Ground for geo-environmental laboratory testing purposes. |

## 6. Exploratory Hole Plan



Exploratory hole locations are indicative subject to a change following a review of site logistics.

**Figure 6.1** Exploratory hole location plan



## 7. Ground Investigation Outline Specification and Criteria

1. The contractor shall visit site and inspect all matters relevant to the works including but not limited to site access, parking, storage and security. The contractor shall review all access and logistics related matters in detail in order to inform their submission.
2. The contractor shall satisfy themselves with the available information/surveys relating to the site conditions and utilities. All information supplied by the project team is provided for information purposes only.
3. The contractor shall familiarise themselves with the geological context of the site and shall consider all relevant matters, which may have an impact on their proposed means and methods, and overall scope of works.
4. The contractor shall establish the location and ground elevation level for all investigative positions. This information shall be presented on an as-built or as-installed drawing, which will be made available to the project team in digital/electronic format.
5. The contractor shall maintain a watching brief with regards to any potential unexpected below ground features/structures that may be exposed by the inspection pitting operations. The contractor shall review available relevant information and shall liaise with the project team in the event of encountering any unexpected structures. The contractor shall also maintain a watching brief with regards to any potential contamination that may be exposed by the intrusive investigation operations.
6. Following completion of the works and confirmation with the project team, the contractor shall reinstate all borehole and trial pit positions, with the exception of response zones for groundwater monitoring apparatus, using arisings or a grout mix with a minimum strength corresponding to the surrounding soil.
7. The contractor shall remove in-situ hard-standing and internal substructure finishes with reasonable care in order to facilitate a safe working environment and reinstatement following completion of the work. The contractor shall allow for appropriate reinstatement of hardstanding at all investigative positions (to achieve pre-investigation conditions in order for the site to remain safe and operational). Inspection pits shall be backfilled and compacted in layers, ensuring a robust subgrade at the ground surface.
8. The contractor shall provide all required calibration certification for the proposed equipment.
9. For laboratory testing, the contractor shall provide a schedule to the project team for review. The contractor will carry out the testing in accordance with the returned/reviewed schedule.
10. The contractor shall prepare a Ground Investigation Report detailing all the findings from the fieldwork, laboratory testing and monitoring programme. The Ground Investigation Report shall comply with the requirements set out in the relevant sections of BS EN 1997-1:2004+A1:2013 and current industry best practice.
11. The contractor shall confirm a programme for the works with their submission (also detailing intended working hours). The contractor shall agree all access and working arrangements with the project team.
12. The contractor's return shall include a technical/cost breakdown of the proposed elements of ground investigation scope. The breakdown in the form of an outline bill of quantities shall detail cost rates for all of the scoped elements of fieldwork, reinstatement, testing, monitoring and reporting. The contractor's proposal and submission shall include all mobilisation, demobilisation and associated logistics costs (including any potential temporary works requirements).
13. It is noted that the contractor is not absolved of any of their responsibilities regardless of any review, supervision or site attendance by the project team.



# A-squared Studio

**A-squared Studio Engineers Ltd**

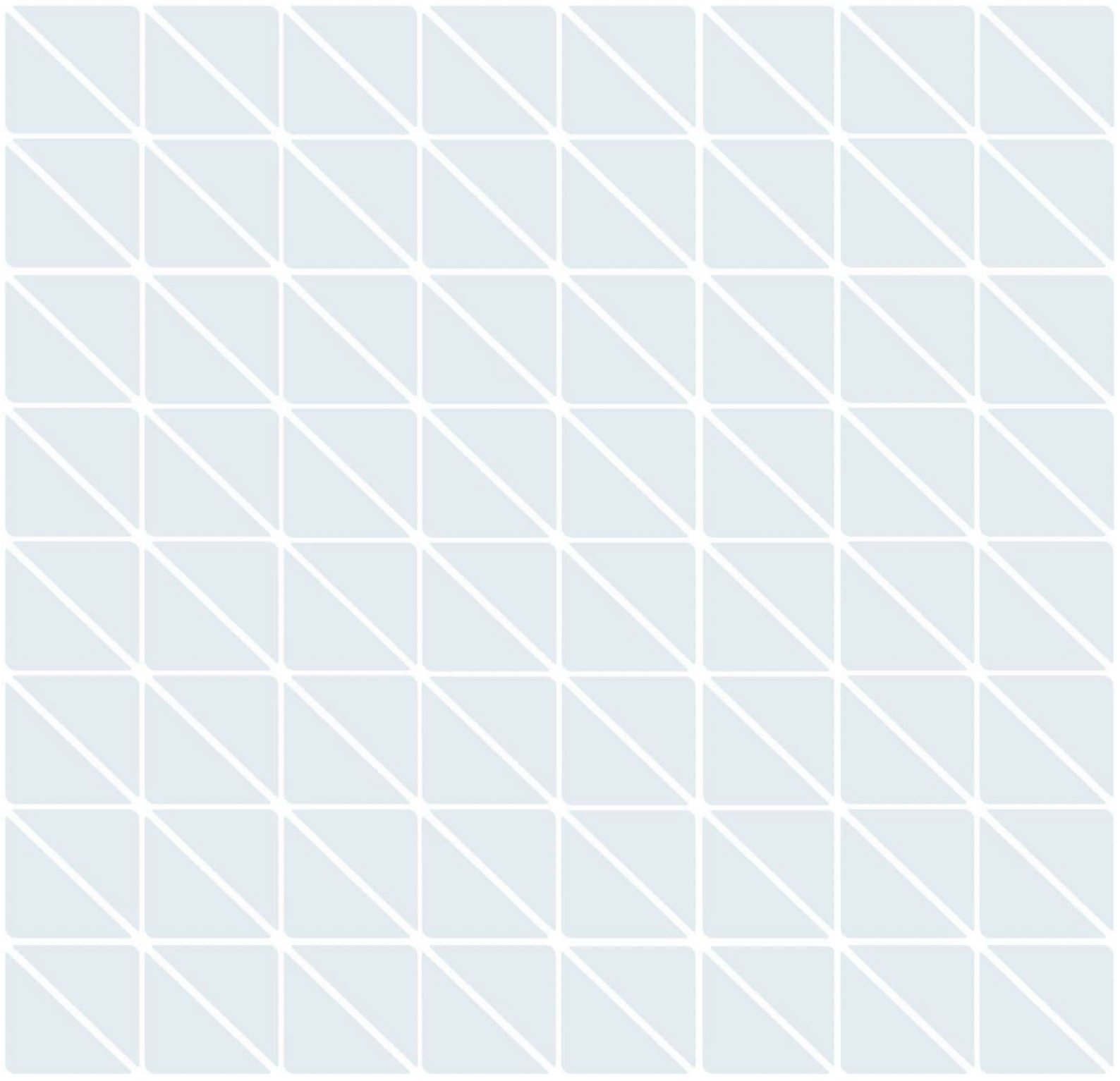
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## Appendix E: Building Ground Movement Assessment Report



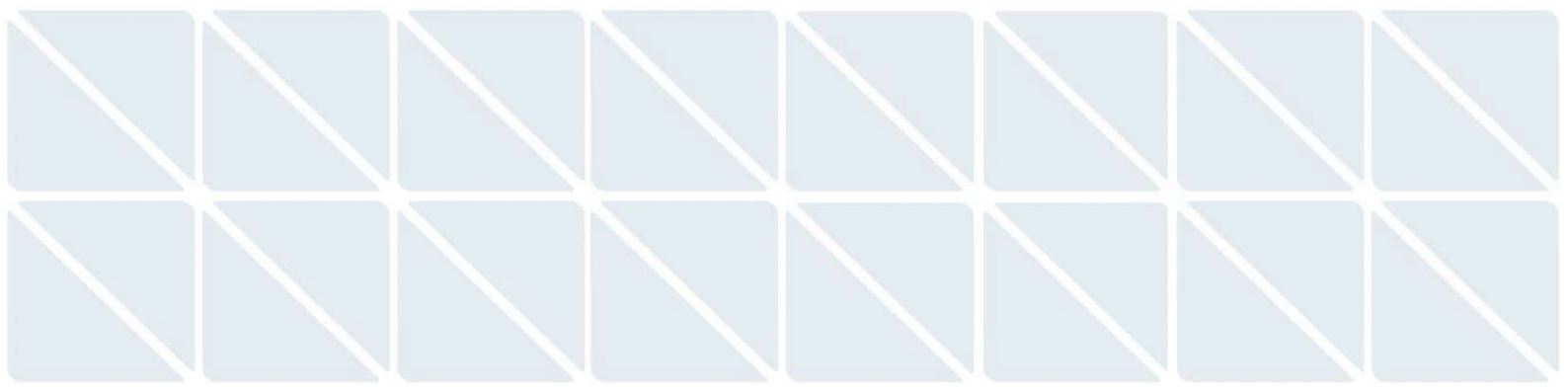
A-squared Studio

# Channing School, Brunner House Redevelopment

## Building Damage Ground Movement Assessment

November 2023

2992-A2S-XX-XX-RP-Y-0003-00





|                |                                              |
|----------------|----------------------------------------------|
| Project Name   | Channing School, Brunner House Redevelopment |
| Project Number | 2992                                         |
| Client         | Heyne Tillett Steel Ltd                      |
| Document Name  | Building Damage Ground Movement Assessment   |

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Director

| Document Reference          | Status      | Notes | Revision | Issued by | Date     |
|-----------------------------|-------------|-------|----------|-----------|----------|
| 2992-A2S-XX-XX-RP-Y-0003-00 | First Issue | -     | 00       | DM        | 14.11.23 |



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| 2. | The Site and Proposed Development | 3  |
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| 4. | Impact Assessment Methodology     | 8  |
| 5. | Conclusions & Closing Remarks     | 16 |

## Appendices

Appendix A: Selected Supporting Information

Appendix B: Oasys PDisp Input and Output

Appendix C: Oasys XDisp Input and Output



# 1. Introduction

A-squared Studio Engineers Ltd (A-squared) has been instructed by Heyne Tillett Steel Ltd (HTS) to prepare a building Ground Movement Assessment (GMA) for the proposed development at Channing School, Brunner House, The Bank, Highgate, London, N6 5HF (herein referred to as the 'site').

The A-squared scope comprises an assessment of the potential impact of the proposed development works on the various neighbouring building façades.

## 1.1. Study Aims & Objectives

A ground movement and impact assessment has been carried out in order to estimate the potential damage induced by the proposed redevelopment works at Channing School, Brunner House on neighbouring building façades.

The original building comprises timber stud loadbearing walls supported by perimeter trench fill strip footings, with some reinforced concrete (RC) raft elements and a RC ground bearing slab is sat between the footings.

The scheme for the proposed redevelopment of the site consists of the partial demolition of the building to the north, and the erection of a new two-storey building, extending out laterally northwards with an additional partial basement level. The existing building footprint will also be extended out slightly to the southwestern corner of the site, with a set of stairs added to this area, connecting the ground floor to the first floor. The proposed building will continue to be used as it is currently, i.e. classroom space, with some offices and water closets with the new basement level being used for new Design & Technology (DT) facilities. These facilities include a DT Workshop & DT Office.

The existing superstructure comprises a combination of elements related to both the original building (1990s) and the extension (2003).

It is anticipated that the basement will be supported with a contiguous piled to the the northern, southern and western boundary. The basement will be constructed to a depth of approximately 3.5m below ground level (bgl). This area of proposed basement development has an elevation of approximately 112m above Ordnance Datum (OD).

The assessment encompasses properties located within the *zone of influence* of the proposed scheme. The GMA assessment is based on *greenfield* ground movements which are unlikely to be exceeded. The adopted assessment methodology provides a robust and conservative assessment, representative of current industry best practice, as detailed in Section 4.

The assessment carried out and described herein aims to:

- Assess the impact of ground movements induced by the proposed works on properties adjacent to the development under consideration.
- Provide performance criteria and inform aspects of substructure construction and design.

This report provides a detailed description of the:

- Site and proposed development.
- Modelling parameters and input.
- Analyses and results.

## 1.2. Information Sources

The following baseline data has been referenced to complete the GMA in relation to the proposed development:



- Current design information/data and drawings (available at the time of undertaking the assessment), provided by the project design team, included as Appendix A.
- *Site Investigation & Basement Impact Assessment Report* for Channing School prepared for (and provided by) HTS, prepared by Geotechnical & Environmental Associated Limited (GEA), issued January 2012 (ref. J11240).
- *Phase I Desk Study Report* for Channing School, Brunner House Redevelopment prepared by A-squared, issued October 2023 (ref. 2992-A2S-XX-XX-RP-Y-0001-00).
- *Ground Investigation Scope Note* for Channing School, Brunner House Redevelopment prepared by A-squared, issued October 2023 (ref. 2992-A2S-XX-XX-TN-Y-0001-01).
- *Envirocheck Report* for Channing School prepared by Landmark Information Group, dated October 2023 (ref. 319191896\_1\_1).
- *Preliminary Unexploded Ordnance (UXO) Risk Assessment* for Channing School, London, prepared by Brimstone Limited, dated October 2023 (ref. PRA-23-2269-00).
- Site walkover undertaken by a representative of A-squared on 6<sup>th</sup> October 2023.
- Information from HTS related to the surface water and flooding of the site (dated 20/10//2023).

Information available in the public domain:

- Google Earth (ref. [earth.google.com/web/](http://earth.google.com/web/)), accessed 4<sup>th</sup> October 2023.
- Flood Maps for Planning from the Environment Agency. (ref. <https://flood-map-for-planning.service.gov.uk/>), accessed 4<sup>th</sup> October 2023).
- The Lost Rivers of London by Nicholas Barton, 1962.
- British Geological Survey, GeoIndex Onshore GIS database (accessed 4<sup>th</sup> October 2023); <https://mapapps2.bgs.ac.uk/geoindex/>.
- Department for Environment, Food & Rural Affairs (DEFRA), Magic Map Application (accessed 4<sup>th</sup> October 2023); <https://magic.defra.gov.uk/MagicMap.aspx>.
- Historic England, online Aerial Photo Explorer (accessed 4<sup>th</sup> October 2023); <https://historicengland.org.uk/images-books/archive/collections/aerial-photos/>.
- UK Health Security Agency (UKHSA) and BGS radon mapping (accessed 4<sup>th</sup> October 2023); <https://www.ukradon.org/information/ukmaps>.
- Local authority planning portal (ref. [https://publicregister.haringey.gov.uk/pr/s/register-view?c\\_\\_r=Arcus\\_BE\\_Public\\_Register](https://publicregister.haringey.gov.uk/pr/s/register-view?c__r=Arcus_BE_Public_Register)), accessed 4<sup>th</sup> October 2023.



## 2. The Site and Proposed Development

### 2.1. Development Site and Current Site Use

The development site is located at Channing School, Brunner House, The Bank, Highgate, London, N6 5HF, as shown in Figure 2.1. The approximate National Grid reference for the site is 528750, 187380 with a footprint that covers approximately 0.15 hectares. The approximate ground surface elevation at the site varies between 111m above Ordnance Datum (OD) within the northeastern portion of the site and 114mOD in the southwestern portion. This change in elevation causes a gentle slope across the site falling towards the north and east.



**Figure 2.1** Location of the proposed development (boundary marked by the red line)

The site falls within the administrative boundaries of the London Borough of Haringey and currently includes a two-storey building (“Brunner House”) with no basement level. Soft-landscaping is identified to the northeast and east of the building. The building is currently used as classroom space as part of the wider Channing School site.

The original building constructed in the 1990s comprises timber stud loadbearing walls supported by perimeter trench fill strip footings, with some reinforced concrete (RC) raft elements and a RC ground bearing slab is sat between the footings. It was later vertically extended by an additional single-storey across the original building footprint in 2003. The existing superstructure comprises a combination of elements related to both the original building and the extension.

The extension building, constructed in 2003, comprises a two-storey steel frame building and new internal mass concrete pad footings, with some additional new footings to the north of the building and additional load bearing walls. All of the foundations, as well as the original timber frame, have been retained. However, the original (1990s) timber stud loadbearing walls no longer support floors/roofs in the two storey areas.



## 2.2. Proposed Development

The scheme for the proposed redevelopment of the site consists of the partial demolition of the building in the north, and the erection of a new two-storey building, extending out laterally northwards with an additional partial basement level. The basement will be constructed to a depth of approximately 3.5m bgl. The existing building footprint will also be extended out slightly to the southwestern corner of the site, with a set of stairs added to this area, connecting the ground floor to the first floor. The proposed building will continue to be used as it is currently, i.e. classroom space, with some offices and water closets with the new basement level being used for new Design & Technology (DT) facilities. These facilities include a DT Workshop & DT Office. It is proposed that the existing soft landscaping to the eastern portion of the site is to be retained.

A contiguous piled wall consisting of 450mm diameter piles at 750 crs is to be installed to the northern, southern and western portion of the site within the area of the proposed basement, in order to support the basement excavation. The contiguous pile will have a length of 7.0m, and is to be installed from ground level, with the base anticipated within the Claygate Member.

The existing and proposed cross-section of the site is shown in , which incorporates the proposed basement level (for the cross-section of the proposed development).

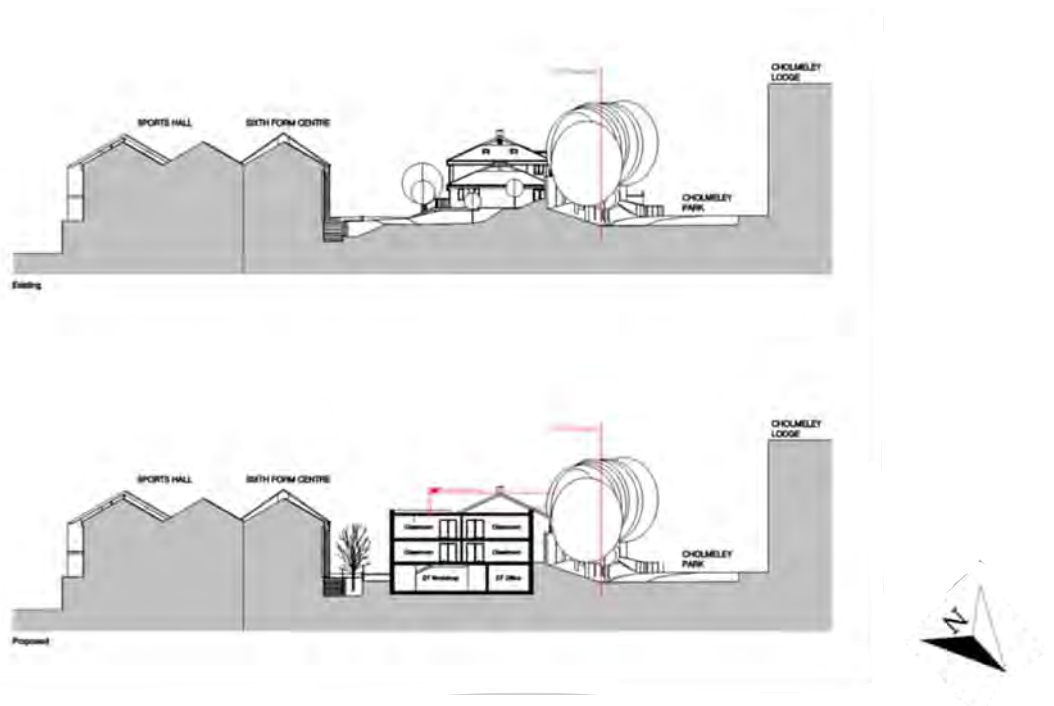


**Figure 2.2 Existing (top) and proposed (bottom) cross-section of the site**

Plan drawings of the proposed redevelopment showing the partial basement level, ground floor level and first floor level are included in this assessment as

Figure 2.3, Figure 2.4 and Figure 2.5 respectively. A proposed ground floor level layout, which specifically incorporates the contiguous piled wall, within the area of the proposed basement, is included as Figure 2.6

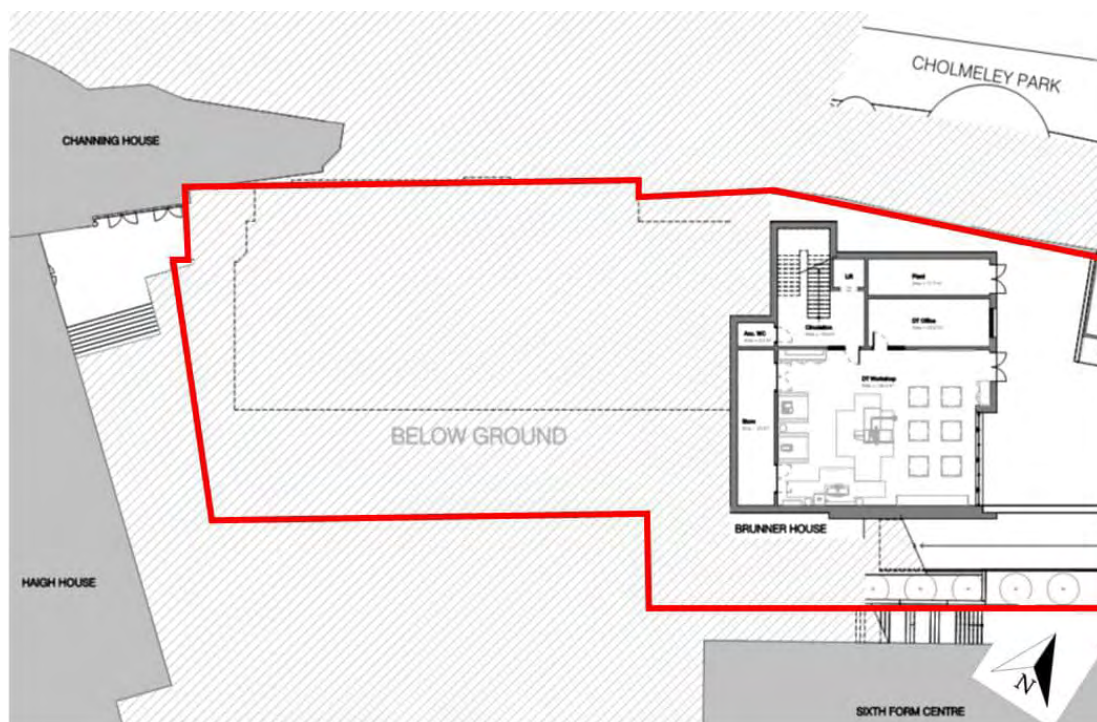


Figure 2.3 Proposed basement floor plan of the site (red line indicative of site boundary)

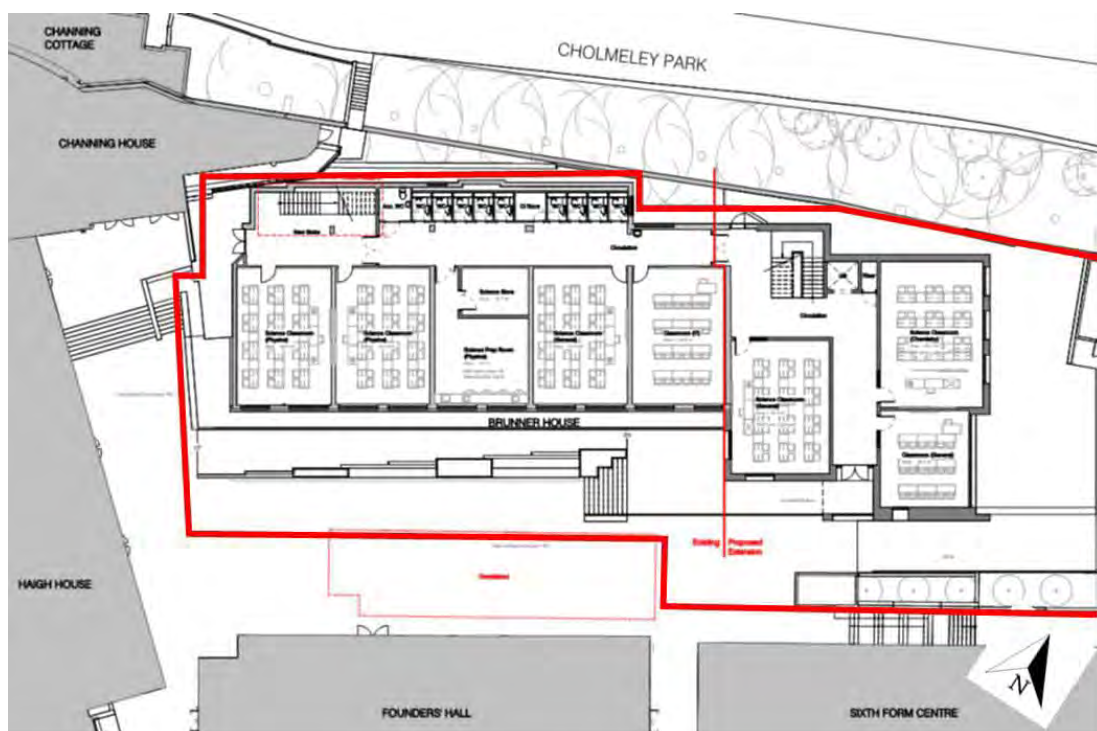


Figure 2.4 Proposed ground floor plan of the site (red line indicative of site boundary)

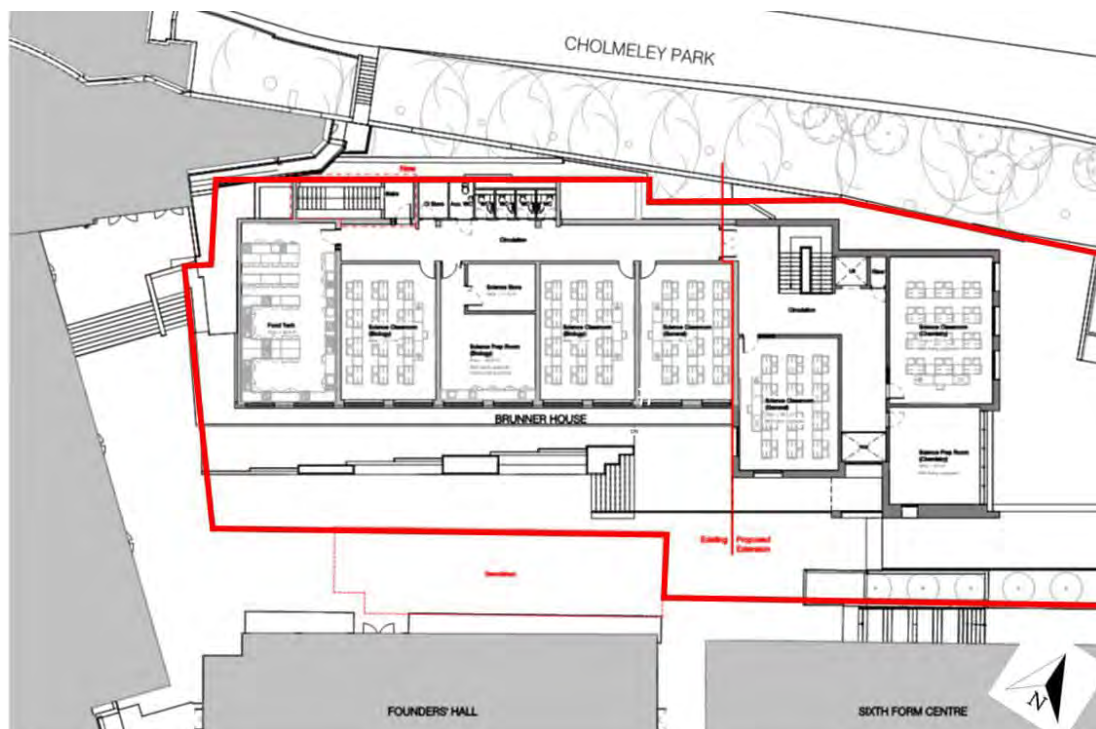


Figure 2.5 Proposed first floor plan of the site (red line indicative of site boundary)

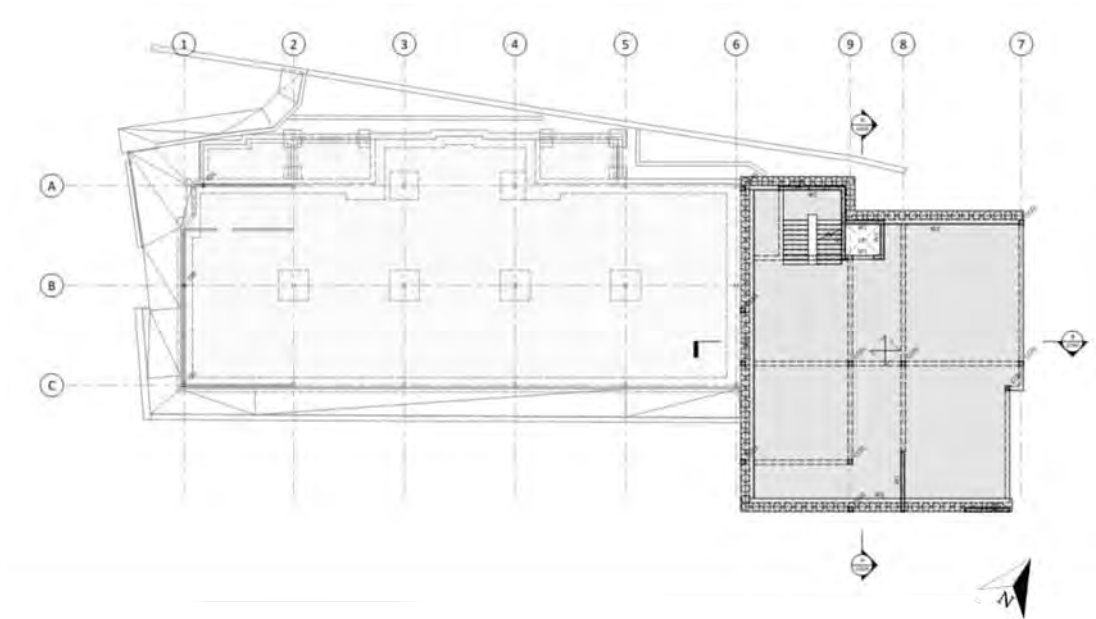


Figure 2.6 Proposed ground floor plan (shaded zone indicative of basement area)



### 3. Ground Conditions

A *Site Investigation (SI) and Basement Impact Assessment (BIA) Report*, issued January 2012 (ref. J11240), for the wider Channing School site has been prepared for HTS by Geotechnical & Environmental Associated Limited (GEA), dated January 2012 (ref. J11240). This report was issued to A-squared by HTS as an archived information source.

The *SI & BIA Report* is associated with the proposed demolition of a sports hall, the construction of a building with a partial basement and the extension of the dining hall located in the wider school site (correct at the time of issuing the report in January 2012).

Based on a review of ground investigation data from available BGS data and the GEA *SI & BIA Report*, (ref. J11240, January 2012), the ground conditions at the site were generally found to comprise the following (in order of succession):

- **Made Ground** – Dark brown sandy CLAY becoming sandy gravelly CLAY with depth with occasional fragments of flint, ash, brick, glass, pottery, concrete and old roots and clinker (variable anthropogenic deposits).
- **Bagshot Formation** – Variable sequence of light brown occasionally clayey and silty fine to medium SAND and firm light brown silty sandy CLAY.
- **Claygate Member** – Variable sequence of orange to brown and mottled grey silty very sandy and a very clayey silty SAND.
- **London Clay Formation** – Firm becoming stiff brownish grey silty fissured CLAY with depth, with occasional selenite crystals (in BH4 between 12.70 to 16.50m bgl).

The above include the strata of engineering interest and significance, taking cognisance of the scale of the proposed development, depth of the proposed basement excavation, and zone of influence.

The ground model adopted for this assessment is presented in Table 3.1. Material strength and stiffness parameters have been derived and assumed from ground investigation data and previous experience in this area of London. It was found that the Head Deposits and London Clay Formation are geotechnically similar, and so they have been assumed to be one strata for the purposes of the Ground Movement Assessment.

**Table 3.1 Ground model and geotechnical parameters adopted for analysis purposes**

| Stratum               | Elevation (mOD) | Thickness (m) | Undrained Young's Modulus, $E_u$ (MPa) <sup>[2]</sup> | Drained Young's Modulus, $E'$ (MPa) <sup>[2]</sup> | Poisson's ratio               |
|-----------------------|-----------------|---------------|-------------------------------------------------------|----------------------------------------------------|-------------------------------|
| Made Ground           | 114 .0          | 1.0           | -                                                     | 10.0                                               | $\nu' = 0.2$<br>$\nu_u = 0.5$ |
| Bagshot Formation     | 113.0           | 5.5           | 18.0                                                  | 14.4                                               | $\nu' = 0.2$<br>$\nu_u = 0.5$ |
| Claygate Member       | 107.5           | 6.0           | 21.6                                                  | 17.3                                               | $\nu' = 0.2$<br>$\nu_u = 0.5$ |
| London Clay Formation | 101.5           | >12.5         | $28.8 + 3.3z^{[3]}$                                   | $23.0 + 2.7z^{[3]}$                                | $\nu' = 0.2$<br>$\nu_u = 0.5$ |

1. Ground model based on site specific ground investigation data in the vicinity of the site. This data has been interpreted specifically for the scope of the GMA presented herein.
2. Stiffness data ( $E_u$  and  $E'$ ) has been evaluated empirically from in-situ testing data taking into consideration the nature of the geotechnical/soil-structure interaction mechanisms and level of anticipated strain within the soil mass.
3.  $z$  refers to the depth in metres below the top of the London Clay formation. Lower bound stiffness values have been adopted for GMA purposes only.



## 4. Impact Assessment Methodology

### 4.1. Assessment Details

The assessment has been undertaken using proprietary spreadsheets and the commercially available software Oasys Pdisp and Xdisp, which consider the three-dimensional ground movement field induced by the proposed excavation works.

Ground movements will arise as a result of various mechanisms which are mobilised as part of the construction works for the proposed scheme. The basement excavations will induce ground movements arising from the overburden removal and installation of the proposed retention system. The permanent condition loading will partially reinstate a portion of the removed overburden, yielding settlements across the foundation system. The induced ground movements will extend over a given zone of influence surrounding the building/excavation footprint.

A series of three-dimensional models of the proposed scheme have been developed in Oasys Pdisp/Xdisp and combined by means of superposition in order to enable ground movement assessments to be carried out representing the various construction stages. The ground movement displacement fields were separated in two groups (A & B) based on the approach followed, as detailed below:

#### Group A – Unloading/Loading ground movements

- A1. Proposed basement excavation and partial demolition of the northern corner of the existing Brunner House (short-term).
- A2. Application of the loading of the existing section and proposed extension section of Brunner House building (long-term).

#### Group B – CIRIA-based ground movements

- B1. Proposed basement excavation and retaining wall.
- B2. Proposed basement excavation, retaining wall installation and application of the loading of the existing Brunner House (long-term).

The Group A assessments are based on *greenfield* ground movements evaluated from linear half-space (Pdisp) analyses and focus on vertical ground movements induced by the overburden removal unloading and reloading processes.

Excavation unloading pressures have been modelled at the basement formation levels representing the removal of approximately 3.5m (~70kPa) of overburden to form the basement level. Demolition unloading pressures of part of the existing Brunner House building to the northeast corner have been modelled as 16kPa, which has been determined from the loading information provided by HTS, included as Appendix A. These unloading pressures have been adopted for the purpose of this analysis and are shown in Figure 4.1.

Uniformly distributed loading zones have been modelled as uniformly distributed unloading and loading pressures. Proposed loading pressures have been determined from the loading information provided by HTS, included as Appendix A and have been adopted for the purpose of this analysis. A total loading pressure of 50kPa for the proposed extension section of Brunner House to the northeast of the site, has been adopted, as shown in Figure 4.2. This pressure is based on this area being a three-storey building (two above ground storeys with a single level partial basement level). The loading of the proposed refurbishment of existing section of Brunner House is negligible, so this loading has not been modelled.

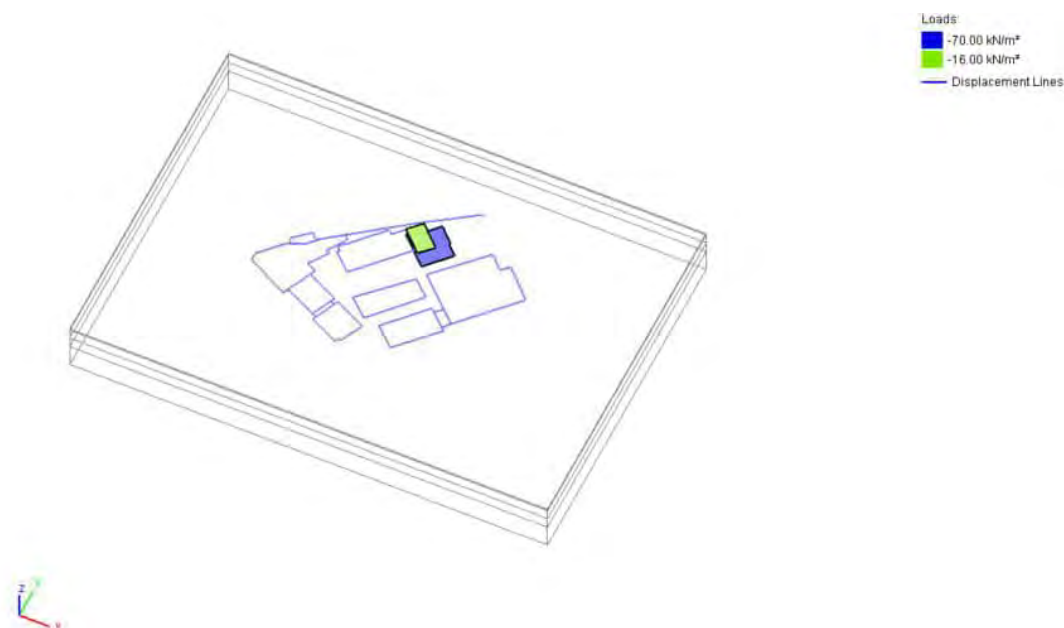


Figure 4.1 Unloading in Pdisp – Excavation

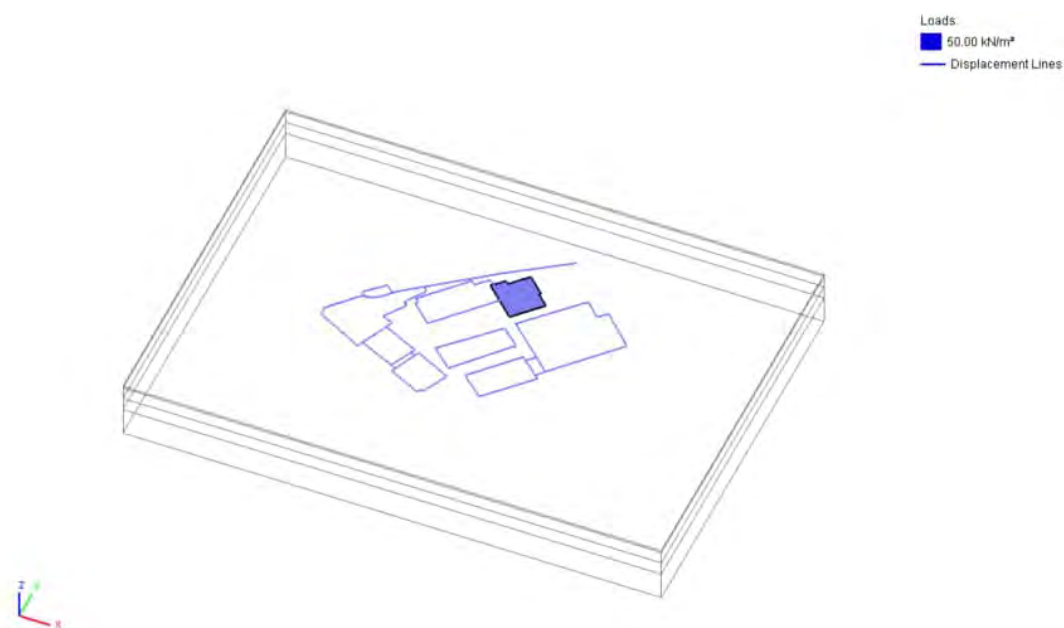


Figure 4.2 Loading in Pdisp – Structural loading stage (basement excavation removed)

The Group B assessments adopt the normalised ground displacement curves reported in CIRIA C760. In addition to the effects arising from the basement excavation, the ground movement effects associated with the installation of the contiguous retaining wall have been considered. The following CIRIA C760 normalised ground movement curves were adopted to assess ground movements due to retention system installation and excavation works:

- *Contiguous retaining wall installation*: Installation of contiguous bored pile wall in stiff clay.
- *Excavation to formation*: Excavation in front of a high stiffness wall in stiff clay.

The contiguous piled wall to be installed to the northern, southern and western boundary of the area of the proposed basement to enable excavation has been assumed to be 7.0m long. This earth retention system is to be installed from ground level and the base is anticipated to be within the Claygate Member.



The empirical data set for the installation of a contiguous bored pile wall has been reduced by 50% based on guidance from technical paper published by Ball & Langdon (2014). Given the depths of the walls and proximity to sensitive infrastructure, utilities and buildings, it is assumed that suitable construction controls and temporary works, including rigorous monitoring methodologies, will be implemented during the wall installation and basement excavation works on site to reduce the overall impact of the development.

In the B2 assessment, the CIRIA ground movements are combined with the long-term settlements induced by the loading redistribution (evaluated in Pdisp).

The two sets of analyses enabled the evaluation of an envelope of damage classification results, with the worst-case results presented herein. A simplified representative geometry has been adopted for defining the excavation/installation geometry implemented in the 3D modelling efforts, as shown in Figure 4.3.

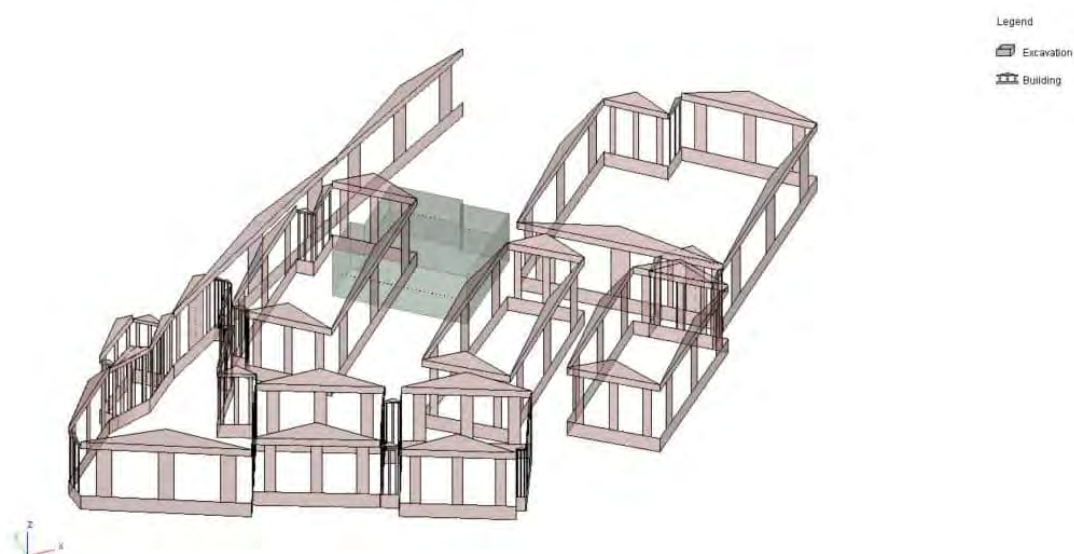


**Figure 4.3** Indicative plot of the three-dimensional analytical model using the Oasys XDisp software suite

## 4.2. Impact Assessment

### 4.2.1. General

The potential impact/damage induced on primary façade/wall elements of the buildings surrounding the proposed scheme have been evaluated on the basis of the calculated ground movement fields. The masonry walls of concern are shown in Figure 4.4 including the wall nomenclature/reference system adopted. The arrangement is based on the currently available survey information and presents an array of masonry façades running both perpendicular and parallel to the proposed basements (covering the key deformation mechanisms). In total, 66 façades of the neighbouring buildings were considered for the current study. Other than the boundary wall between the wider Channing School site and “Cholmeley Park” road (BW.1 to BW.5), all of the neighbouring façades are associated with Channing School. The façades of the original on-site masonry walls, neighbouring buildings and neighbouring boundary walls considered for the current study are grouped in the following manner:

- BW.1 to BW.5, 4.0m, boundary wall to the western and northwestern site boundary.
- CC.1 to CC.5, “Channing Cottage” – a single storey building to the southwestern site boundary.
- CH.1 to CH.19, “Channing House” – a five storey building to the southern and southwestern site boundary.
- SWH.1 to SWH.4, “Singly House and Wesview House” – a five storey, Grade II listed, building to the southern site boundary.
- SWH-HH.1 to SWH-HH.4, a single storey link between “Singly and Wesview House” and “Haigh House” to the southeastern site boundary.



- HH.1 to HH.6, “Haigh House” – a five storey building to the southeastern site boundary.
- FH.1 to FH.4, “Founder’s Hall” – a single storey building to the southeastern site boundary.
- SSH.1 to SSH.6, an integrated two storey “Sixth Form Centre”/“Sports Hall” building to the eastern site boundary.
- SS-AC.1 to SS-AC.4, a single storey link between the integrated “Sixth Form Centre”/“Sports Hall” building and the “Arundel Centre” to the central eastern site boundary.
- AC.1 to AC.4, “Arundel Centre” – a two storey building to the southeastern site boundary.
- BH.1 to BH.8, “Brunner House” – a two storey on-site building (existing section, which is to be retained).

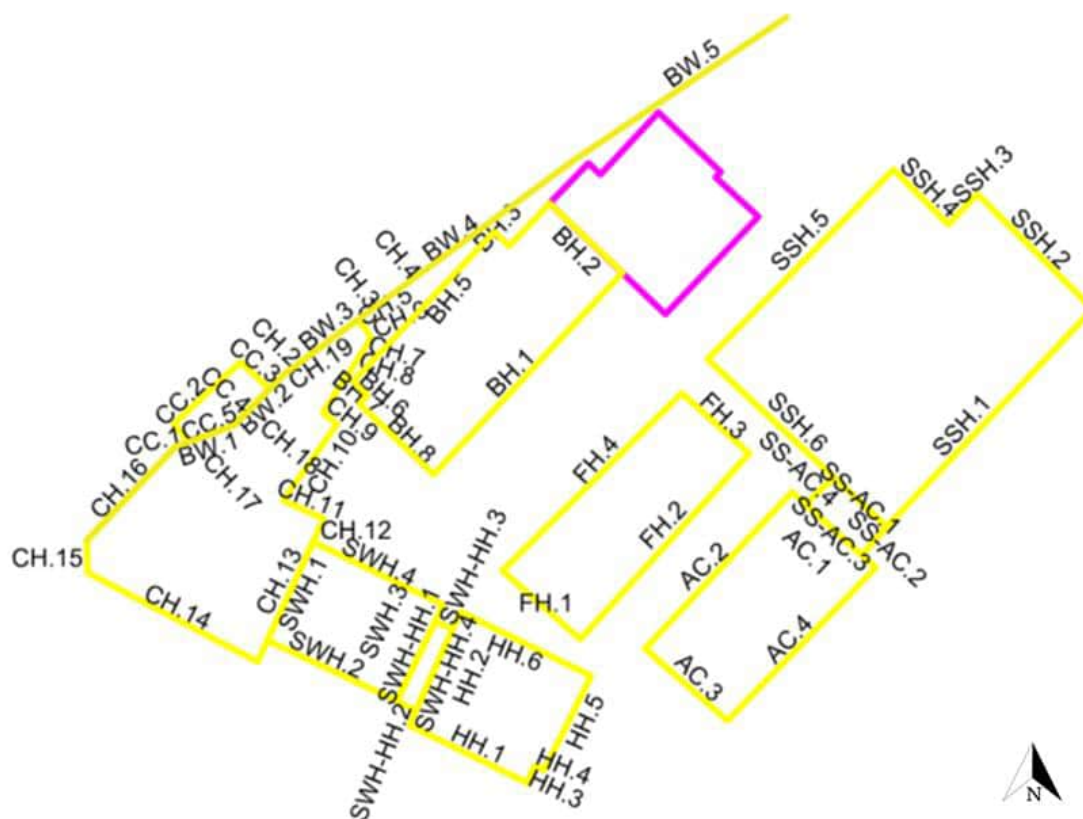


**Figure 4.4** Simplified scheme and nomenclature for each building façade/masonry wall element (pink outline indicative of proposed basement layout)

Each wall has been assumed to behave as an equivalent beam subject to bending and extension/compression deformation mechanism, based on the evaluated greenfield ground movement, as outlined previously.

Tensile strains induced within the building masonry walls have been evaluated based on the deflection ratios  $\Delta/L$  and horizontal extension mechanisms estimated from the analyses. The assessment considers the well-established Burland (1997) damage classification method, as presented and summarised in Figure 4.5 and Figure 4.6. This method involves a relatively simple but robust means of assessment, which is widely adopted and is considered to comprise an industry standard/best practice basis for impact assessments of this typology.

Potential damage categories are directly related to the tensile strains induced by the proposed construction stages, arising from a combination of direct tension and bending induced tension mechanisms. The evaluated damage categories correspond to an unlikely to be exceeded scenario (on the basis of the data sets adopted and greenfield assumptions).

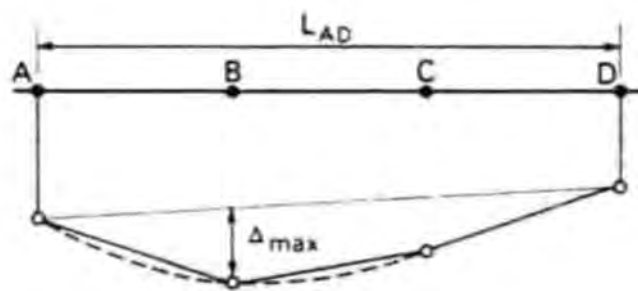


Figure 4.5 Definition of relative deflection  $\Delta$  and deflection ratio  $\Delta/L$

| Category of damage | Description of typical damage<br>(ease of repair is underlined)                                                                                                                                                                                                                                                 | Approximate crack width (mm)                  | Limiting tensile strain $\epsilon_{lim}$ (per cent) |
|--------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------|-----------------------------------------------------|
| 0 Negligible       | Hairline cracks of less than about 0.1 mm are classed as negligible.                                                                                                                                                                                                                                            | < 0.1                                         | 0.0–0.05                                            |
| 1 Very slight      | <u>Fine cracks that can easily be treated during normal decoration.</u> Perhaps isolated slight fracture in building. Cracks in external brickwork visible on inspection.                                                                                                                                       | < 1                                           | 0.05–0.075                                          |
| 2 Slight           | <u>Cracks easily filled. Redecoration probably required.</u> Several slight fractures showing inside of building. Cracks are visible externally and <u>some repointing may be required externally</u> to ensure weathertightness. Doors and windows may stick slightly.                                         | < 5                                           | 0.075–0.15                                          |
| 3 Moderate         | <u>The cracks require some opening up and can be patched by a mason. Recurrent cracks can be masked by suitable linings. Repointing of external brickwork and possibly a small amount of brickwork to be replaced.</u> Doors and windows sticking. Service pipes may fracture. Weathertightness often impaired. | 5–15 or a number of cracks > 3                | 0.15–0.3                                            |
| 4 Severe           | <u>Extensive repair work involving breaking-out and replacing sections of walls, especially over doors and windows.</u> Windows and frames distorted, floor sloping noticeably. Walls leaning or bulging noticeably, some loss of bearing in beams. Service pipes disrupted.                                    | 15–25 but also depends on number of cracks    | > 0.3                                               |
| 5 Very severe      | <u>This requires a major repair involving partial or complete rebuilding.</u> Beams lose bearings, walls lean badly and require shoring. Windows broken with distortion. Danger of instability.                                                                                                                 | usually > 25 but depends on number of cracks. |                                                     |

Figure 4.6 Building damage classification – relationship between category of damage and limiting strain  $\epsilon_{lim}$

#### 4.2.2. Results

The results of the assessment indicate that two façades will experience a maximum of damage Category 2 – Slight throughout the construction works and one façade will experience a maximum of damage Category 1. The affected façades are presented in Table 4.1. The remaining façades are not expected to exceed damage Category 0 – Negligible and are omitted from the table below.

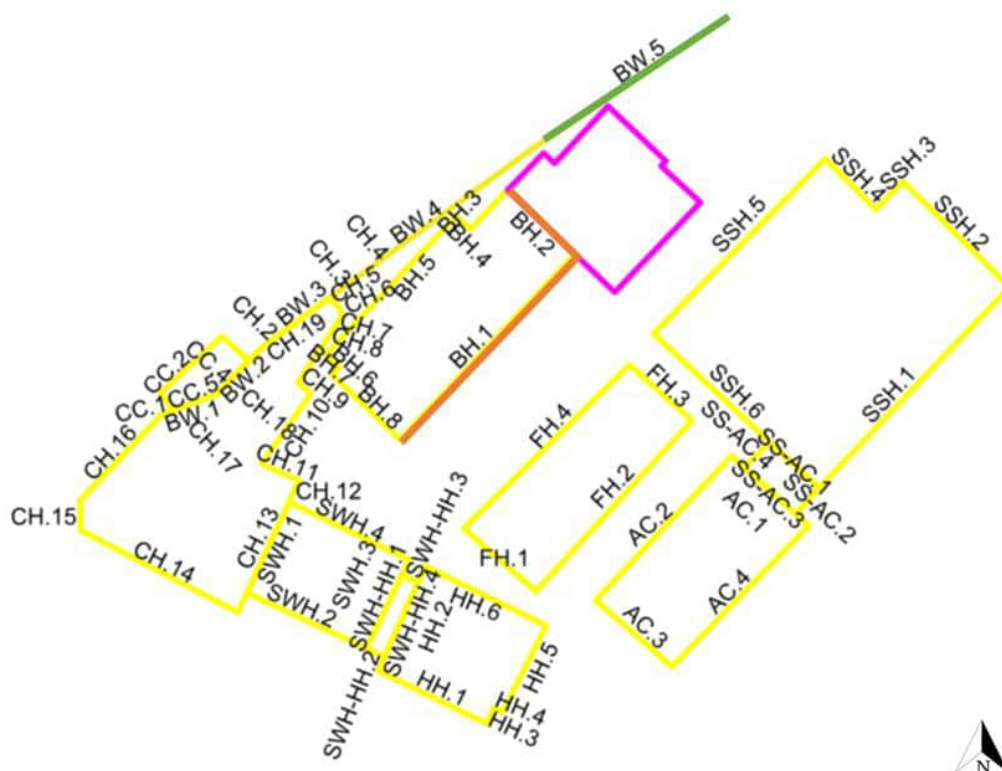


Impact category results are presented in Figure 4.7 for the affected façades. Figure 4.8 and Figure 4.9 depict the vertical and horizontal displacements, respectively, from analysis scenario B2.

While the evaluated potential impact is contained within Category 2 – Slight, in accordance with the Burland Scale for both the base assessment and sensitivity check. The two façades where a Category 2 was assigned, i.e. facade ref. BH1 (to the southern boundary of the site) and facade ref. BH2 (to the eastern boundary of the site) were both determined to be associated with the existing on-site Brunner House, which is proposed to be refurbished as part of the proposed works. In any case, active monitoring will be undertaken to review the impact of the basement construction works. The remainder facade, all of which are off-site, were assigned a maximum of Category 1 – Very Slight.

**Table 4.1** Evaluated damage categories resulting from the assessment

| Façade Reference | Analysis Scenario        |                         |                          |                          |
|------------------|--------------------------|-------------------------|--------------------------|--------------------------|
|                  | A1                       | A2                      | B1                       | B2                       |
| BW.5             | Category 0 – Negligible  | Category 0 – Negligible | Category 1 – Very Slight | Category 1 – Very Slight |
| BH.1             | Category 1 – Very Slight | Category 0 – Negligible | Category 1 – Very Slight | Category 2 – Slight      |
| BH.2             | Category 0 – Negligible  | Category 0 – Negligible | Category 0 – Negligible  | Category 2 – Slight      |



Orange -- façades with maximum Category 2 (slight).  
 Green -- facade with maximum Category 1 (very slight).  
 All remaining facades -- Category 0 (Negligible).  
 Pink -- proposed basement layout (excavation).

**Figure 4.7** Affected façades after all scenarios



**Figure 4.8** Resultant XDisp vertical displacement contours for scenario B2 – Piled wall installation and excavation (CIRIA C760) + building loading



**Figure 4.9** Resultant XDisp horizontal displacement contours for scenario B2 – Piled wall installation and excavation (CIRIA C760) + building loading

### 4.3. Basement Excavation Criteria

A maximum horizontal and vertical movement of 10mm and 12mm respectively are anticipated from the proposed development. The results of this analysis show that all buildings fall within acceptable damage classifications if the ground movements caused by the proposed development are limited to the values presented in Table 4.2.

**Table 4.2** Limiting ground movement values for the project at various construction stages

| Stage                           | Maximum Cumulative Ground Movement (mm) |            |
|---------------------------------|-----------------------------------------|------------|
|                                 | Vertical                                | Horizontal |
| Installation of contiguous wall | 2                                       | 2          |
| Excavation                      | 4                                       | 7          |
| Long term                       | 6                                       | 7          |

It is recommended that ground movement / earth retention system design and construction movement criteria are developed based on the results presented herein. This will enable the design of the contiguous wall and any required temporary propping measures to be undertaken in a holistic fashion, ensuring ground movements are limited to no greater than that presented herein.

Specific wall/façade deflection limits and trigger levels may also be developed as part of the scheme monitoring regime. Such limits and trigger levels should be coordinated with the scheme monitoring specification and monitoring action plan / emergency preparedness plan.



## 5. Conclusions & Closing Remarks

The interaction between the proposed Channing School Brunner House redevelopment and the neighboring properties within the zone of influence of the scheme has been reviewed as part of the GMA study presented herein.

The scheme for the proposed redevelopment of the site consists of the partial demolition of the building to the north, and the erection of a new two-storey building, extending out laterally northwards with an additional partial basement level. The existing building footprint will also be extended out slightly to the southwestern corner of the site, with a set of stairs added to this area, connecting the ground floor to the first floor. The proposed building will continue to be used as it is currently, i.e. classroom space, with some offices and water closets with the new basement level being used for new Design & Technology (DT) facilities. These facilities include a DT Workshop & DT Office. It is proposed that the existing soft landscaping to the eastern portion of the site is to be retained.

It is anticipated that the basement excavation will be supported by the installation new contiguous wall to the northern, southern and western boundary of this excavation. The basement will be excavated to an approximate depth of 3.5m bgl at the deepest point.

The impact of the various construction stages has been reviewed on the basis of two alternative methods, i.e. evaluating the effects of unloading / overburden removal using Pdisp and simulating the excavation-induced ground movement fields using empirical CIRIA curves in Xdisp. In the latter case, a contiguous piled wall to support the basement works (during the installation of the contiguous wall) has been considered, utilising the CIRIA C760 ground movement curves for excavation in front of high stiffness walls in stiff clay.

These two different scenarios have been considered in order to bind the potential ground movements arising from excavation operations (i.e. maximum potential heave and settlement respectively). This strategy ensures a robust evaluation of potential impact in light of the bespoke, intricate, and workmanship-dependent construction methodology. Both short-term (undrained) and long-term (drained) conditions have been assessed by adopting the relevant soil stiffness parameters for each case.

In order to best limit ground movements in proximity to sensitive neighbouring buildings, due consideration may be given to suitable means and methods of construction. For example, reducing the extent of temporary excavations during earth removal operations in close proximity to buildings considered to be at most risk of damage.

The results from the GMA (denoting the evaluated damage categorisation in accordance with the Burland criteria described herein) considering neighbouring properties are presented in Table 4.1. The two façades where a maximum of damage Category 2 was assigned, were all determined to be associated with the existing on-site Brunner House. It is observed that the maximum damage classification for the neighbouring properties is Category 1 – Very Slight. The maximum permissible retaining wall lateral deflection during bulk excavation of the basement and installation of contiguous piled walls should be demonstrably limited to 7mm, in order to ensure the damage classifications stated herein remain valid.

It is noted that the predicted ground movements, the associated wall tensile strains, and the level of damage categorisation are considered to be moderately conservative in view of the relatively cautious data selection and greenfield nature of the assessment undertaken.

It is also noted that the GMA will be supplemented by a project-specific monitoring regime and Action Plan, which will delineate lines of responsibility, trigger levels in accordance with those presented in this GMA, and appropriate mitigation measures. The assessment presented herein is dependent and reliant on the works being undertaken by an experienced contractor, high quality workmanship and appropriate supervision of construction means and methods by experienced personnel.

It is recommended that this report is reviewed and understood in full by the project team and relevant stakeholders. Where significant changes are made to items such as construction sequencing, temporary propping arrangements and scheme design, the



engineer should thoroughly review the change and evaluate any potential impacts on ground movement and building damage. If necessary, the building damage categories should be re-evaluated.

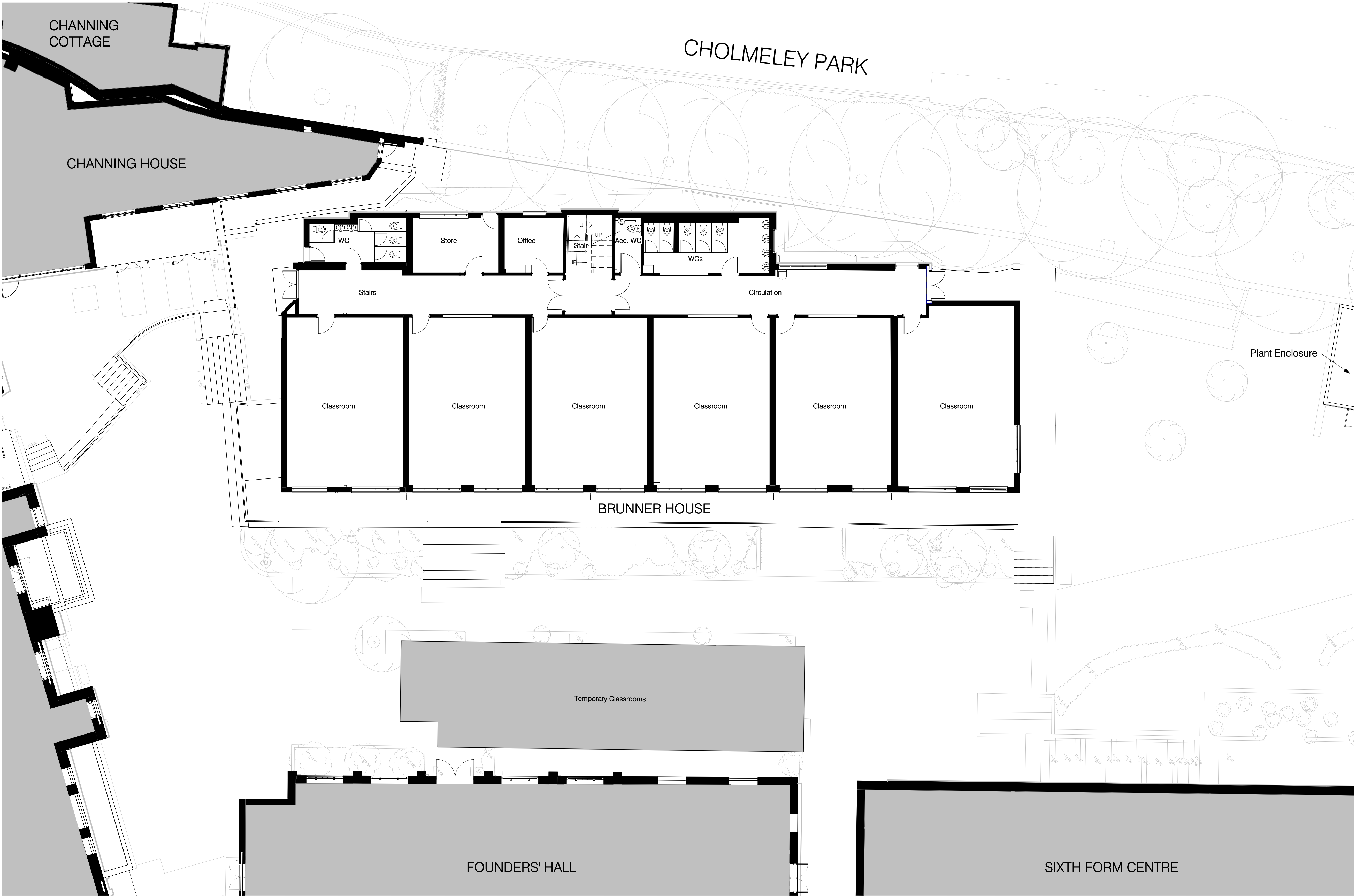
During the design of the embedded contiguous retaining walls and temporary propping measures, deflection performance criteria for these design elements should be derived on the basis of the results presented herein to ensure that the maximum damage classification of Category 1 – Very Slight is not breached.

It is critical that the permanent and temporary works designs are carried out in a coordinated manner between performance specified elements and substructure contractors, with the aim to ensure that such design elements are in alignment with the assumptions/findings of the GMA and overall design intent.

The Client should inform A-squared of the foundation termination depths once final designs have been prepared so that no requirement for a foundation works risk assessment can be confirmed.



## Appendix A: Selected Supporting Information

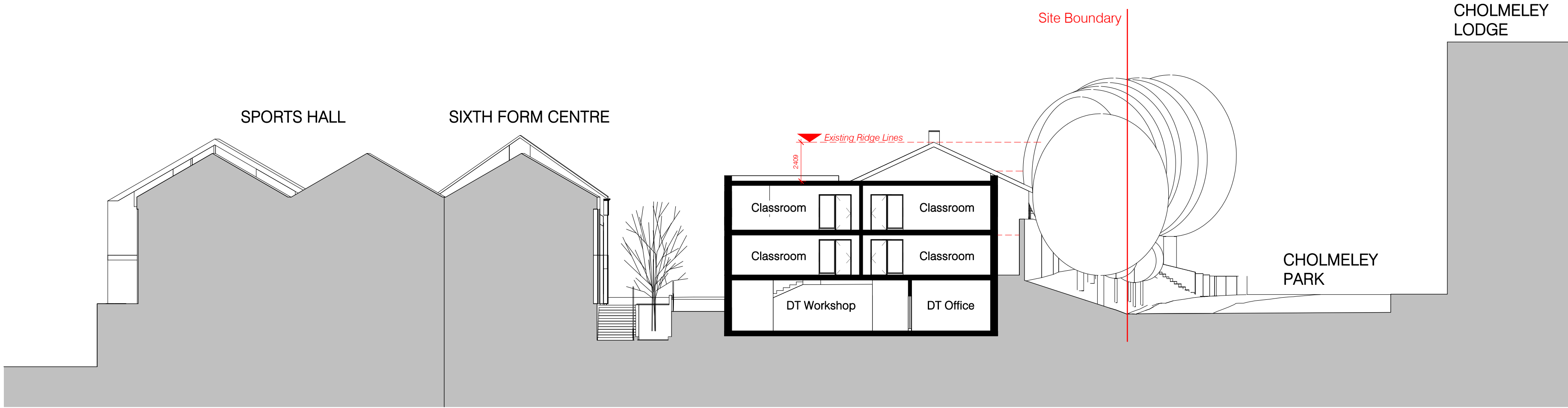


|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Brunner House Ground Floor Plan  |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference.                       |                                   | Revision Status |
| CHS-NVB-BRU-00-D-A-2040                   |                                   | P01 S2          |

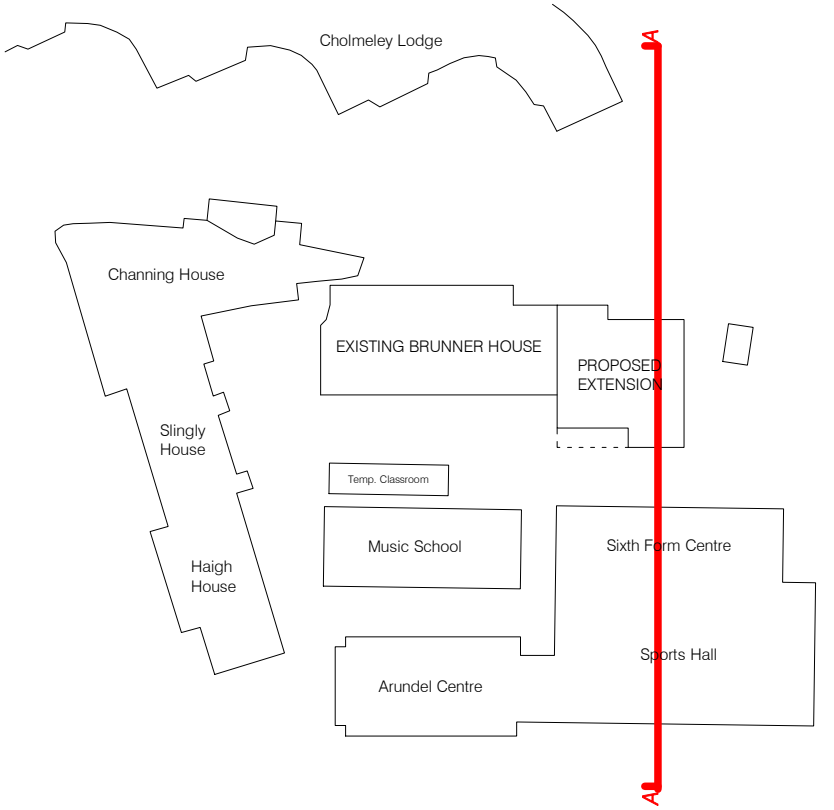




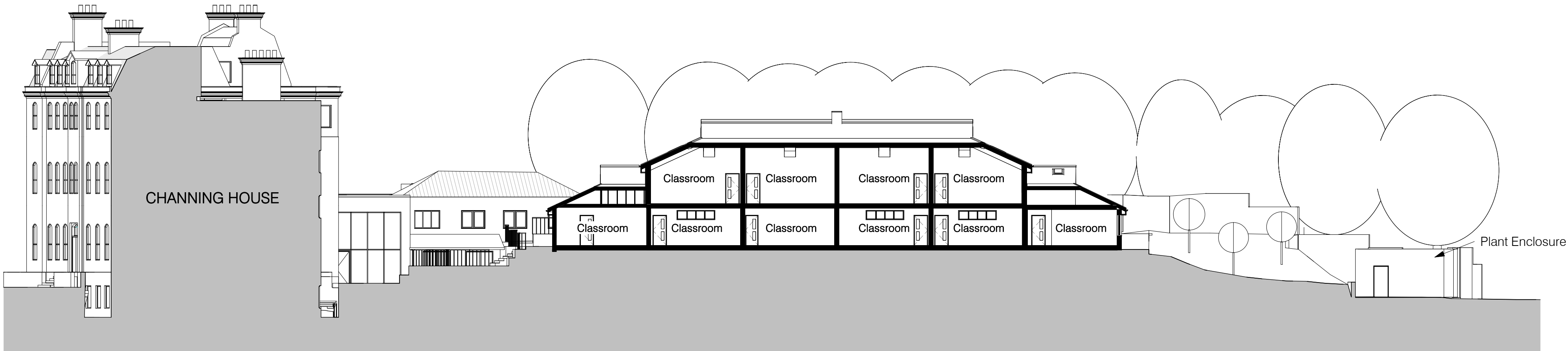
Existing



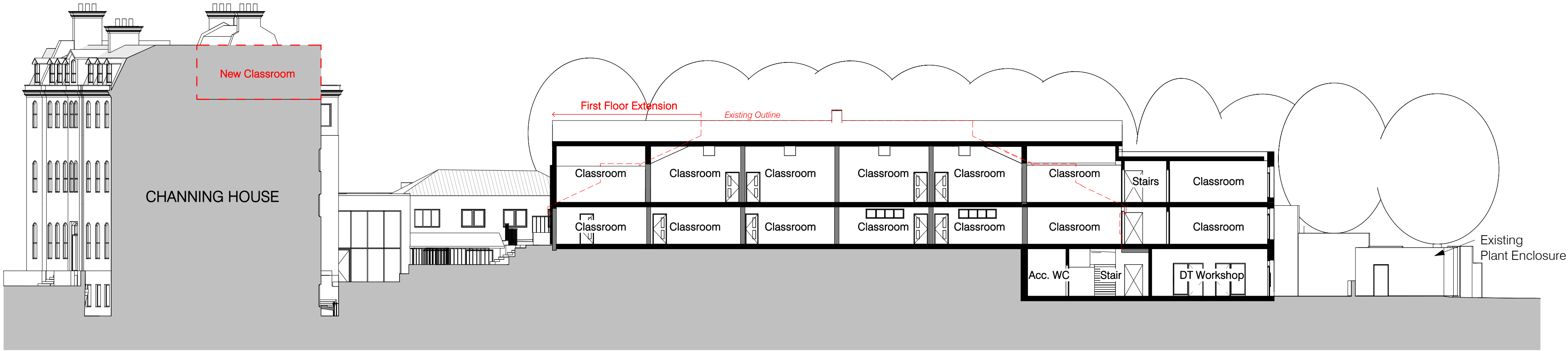
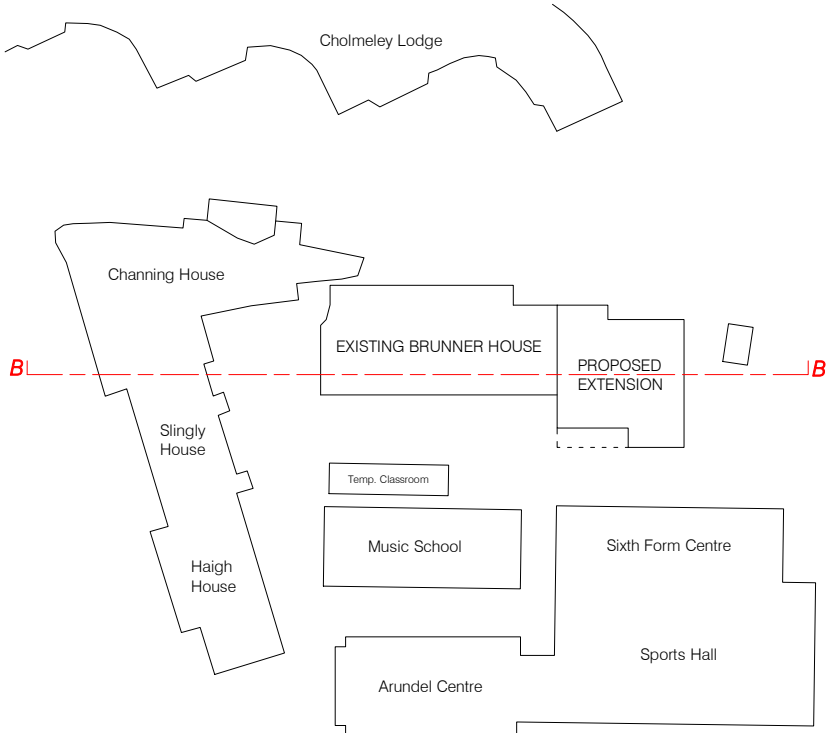
Proposed



|                                                 |                                   |                 |
|-------------------------------------------------|-----------------------------------|-----------------|
| P01                                             | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                            | Description                       |                 |
| Client & Project                                |                                   |                 |
| Channing Girls School                           |                                   |                 |
| Brunner House + Main School Redevelopment       |                                   |                 |
| Document Title                                  |                                   |                 |
| Existing & Proposed Brunner House Short Section |                                   |                 |
|                                                 |                                   |                 |
| Project Stage                                   | Purpose                           | Scale           |
| RIBA 2                                          | PRE-APPLICATION                   | 1:200 @A1       |
| Document Reference.                             |                                   | Revision Status |
| CHS-NVB-BRU-ZZ-DR-A-2200                        |                                   | P01 S2          |



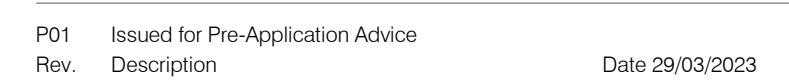
Existing



Proposed

|                                                |                                   |                 |
|------------------------------------------------|-----------------------------------|-----------------|
| P01                                            | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                           | Description                       |                 |
| Client & Project                               |                                   |                 |
| Channing Girls School                          |                                   |                 |
| Brunner House + Main School Redevelopment      |                                   |                 |
| Document Title                                 |                                   |                 |
| Existing & Proposed Brunner House Long Section |                                   |                 |
| Project Stage Purpose Scale                    |                                   |                 |
| RIBA 2                                         | PRE-APPLICATION                   | 1:200 @A1       |
| Document Reference.                            |                                   |                 |
| CHS-NVB-BRU-ZZ-DR-A-2201                       | Revision                          | Status          |
|                                                | P01                               | S2              |



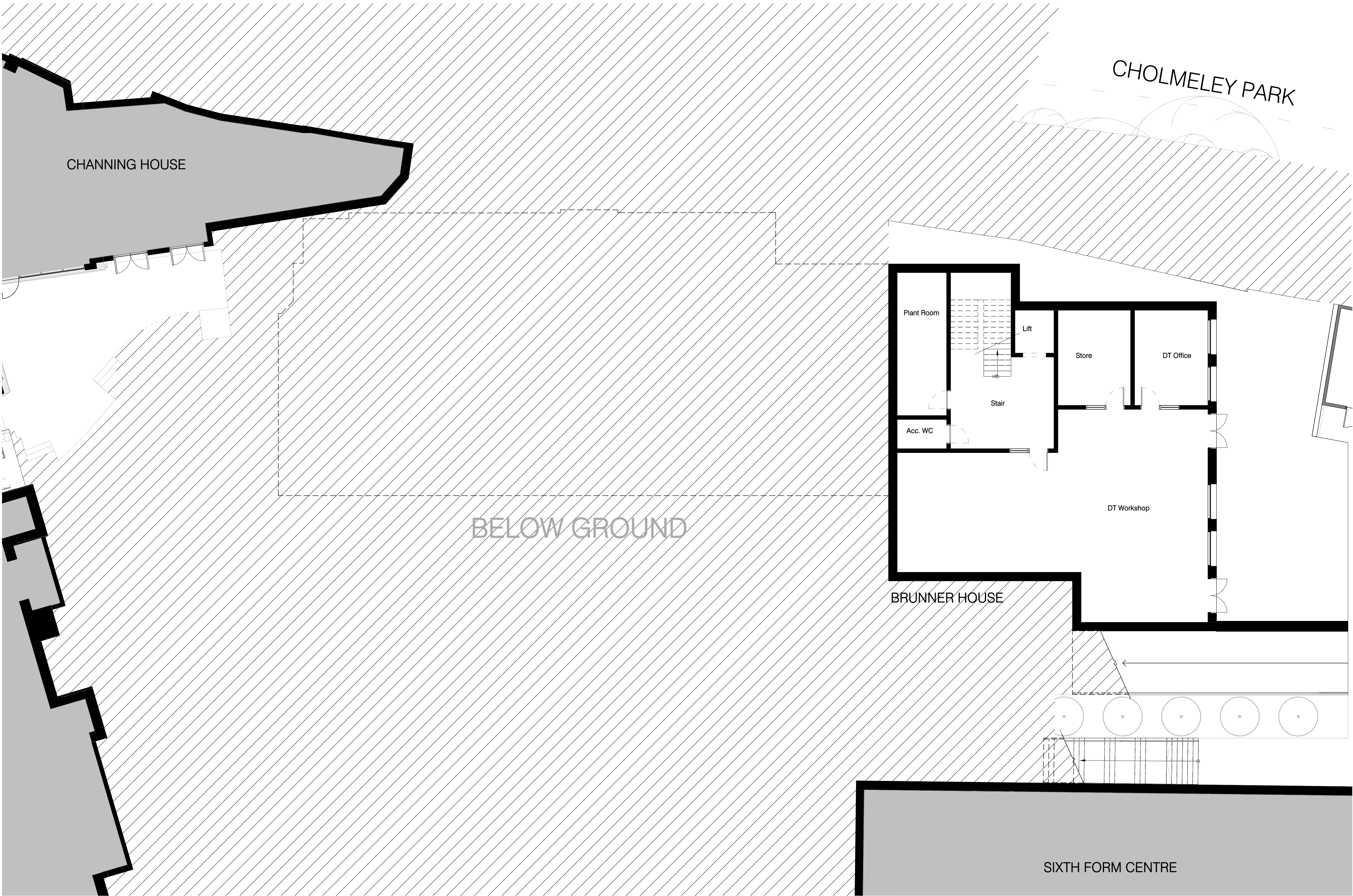


Client & Project  
Channing Girls School  
Brunner House + Main School Redevelopment

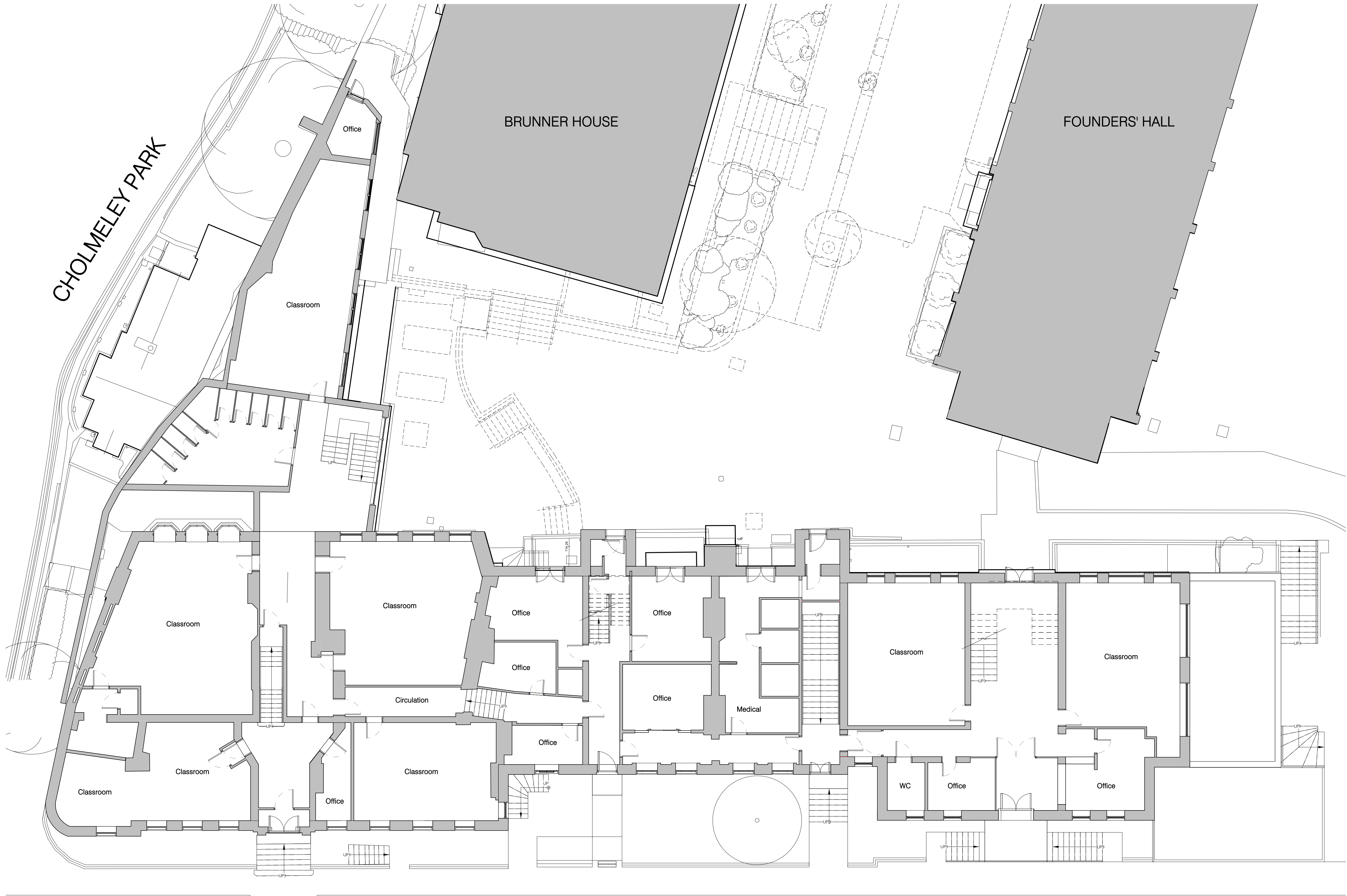
Document Title  
Proposed Brunner House First Floor Plan

| Project Stage | Purpose         | Scale     |
|---------------|-----------------|-----------|
| RIBA 2        | PRE-APPLICATION | 1:100 @A1 |

|                         |          |        |
|-------------------------|----------|--------|
| Document Reference:     | Revision | Status |
| CHS-NVB-BRU-01-D-A-2102 | P01      | S2     |



|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Proposed Brunner House Basement Plan      |                                   |                 |
| Project Stage Purpose Scale               |                                   |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference.                       |                                   |                 |
| CHS-NVB-BRU-B1-D-A-2100                   | Revision                          | Status          |
|                                           | P01                               | S2              |



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Scale

1:100 @ A1 (1:200 @ A3)

1

2

3

4

5

6

7

8

9

10m

CHOLMELEY PARK

BRUNNER HOUSE

FOUNDERS' HALL

Classroom

Classroom

Office

Office

Classroom

Classroom

Circulation

Office

Medical

Classroom

Classroom

Classroom

Office

Office

WC

Office

Office

CHANNING HOUSE

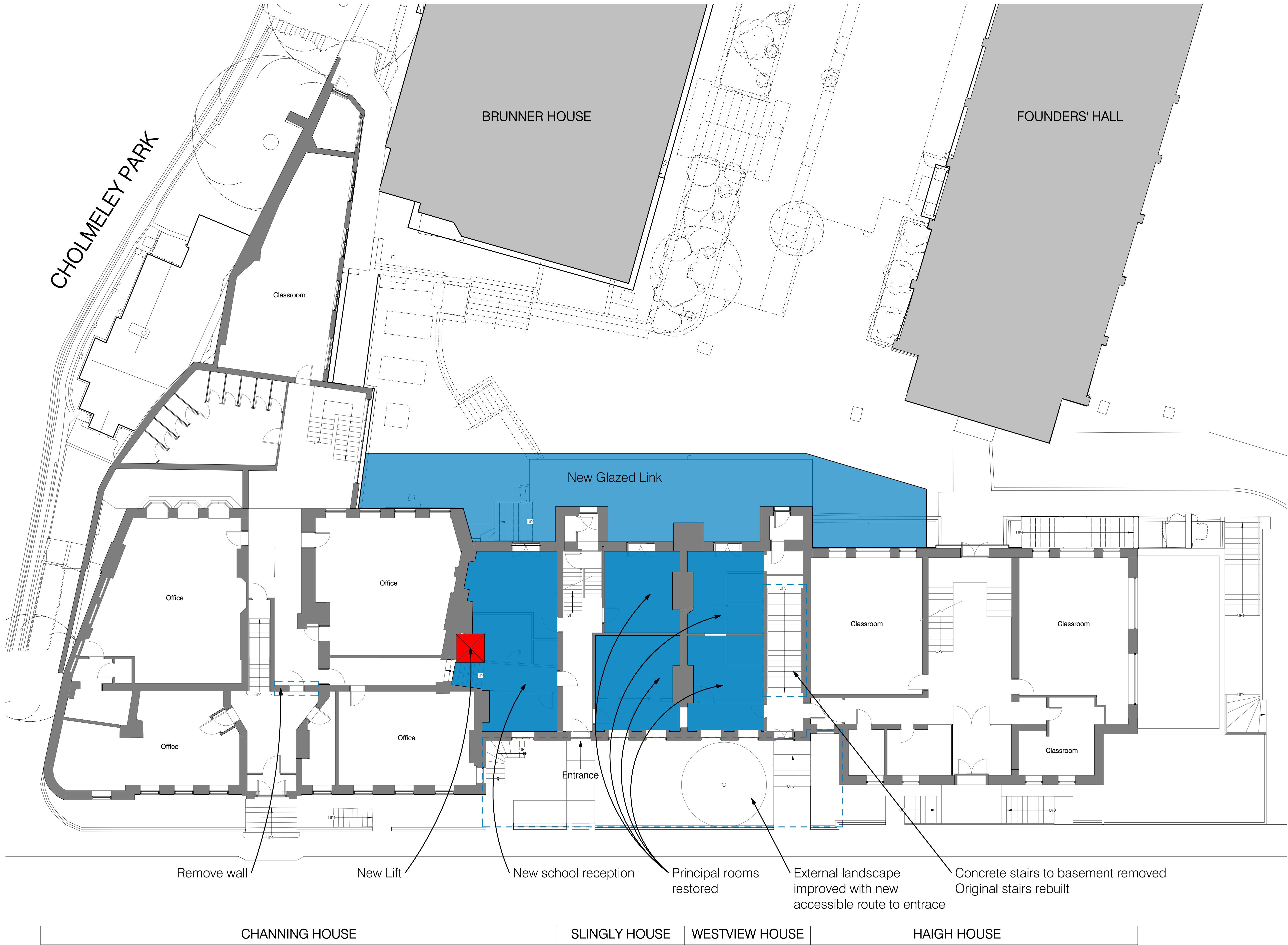
SLINGLY HOUSE

WESTVIEW HOUSE

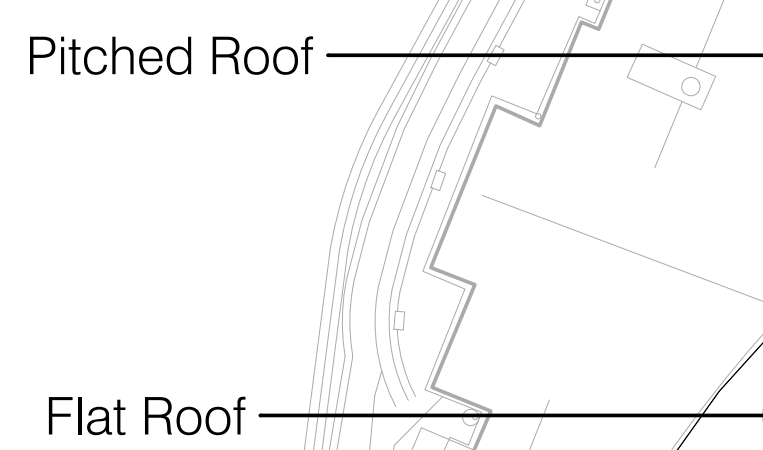
HAIGH HOUSE

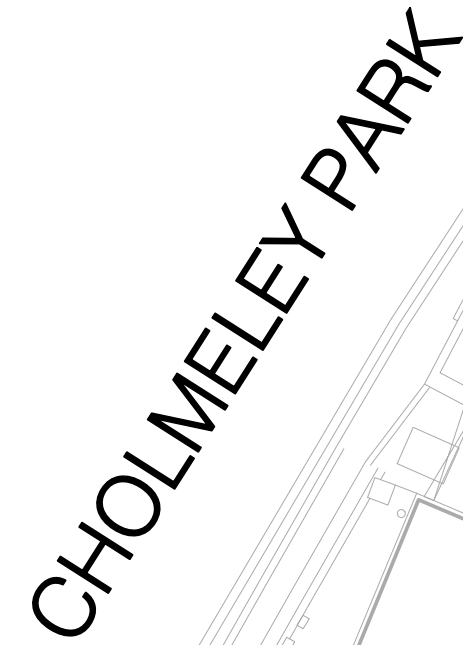
THE BANK

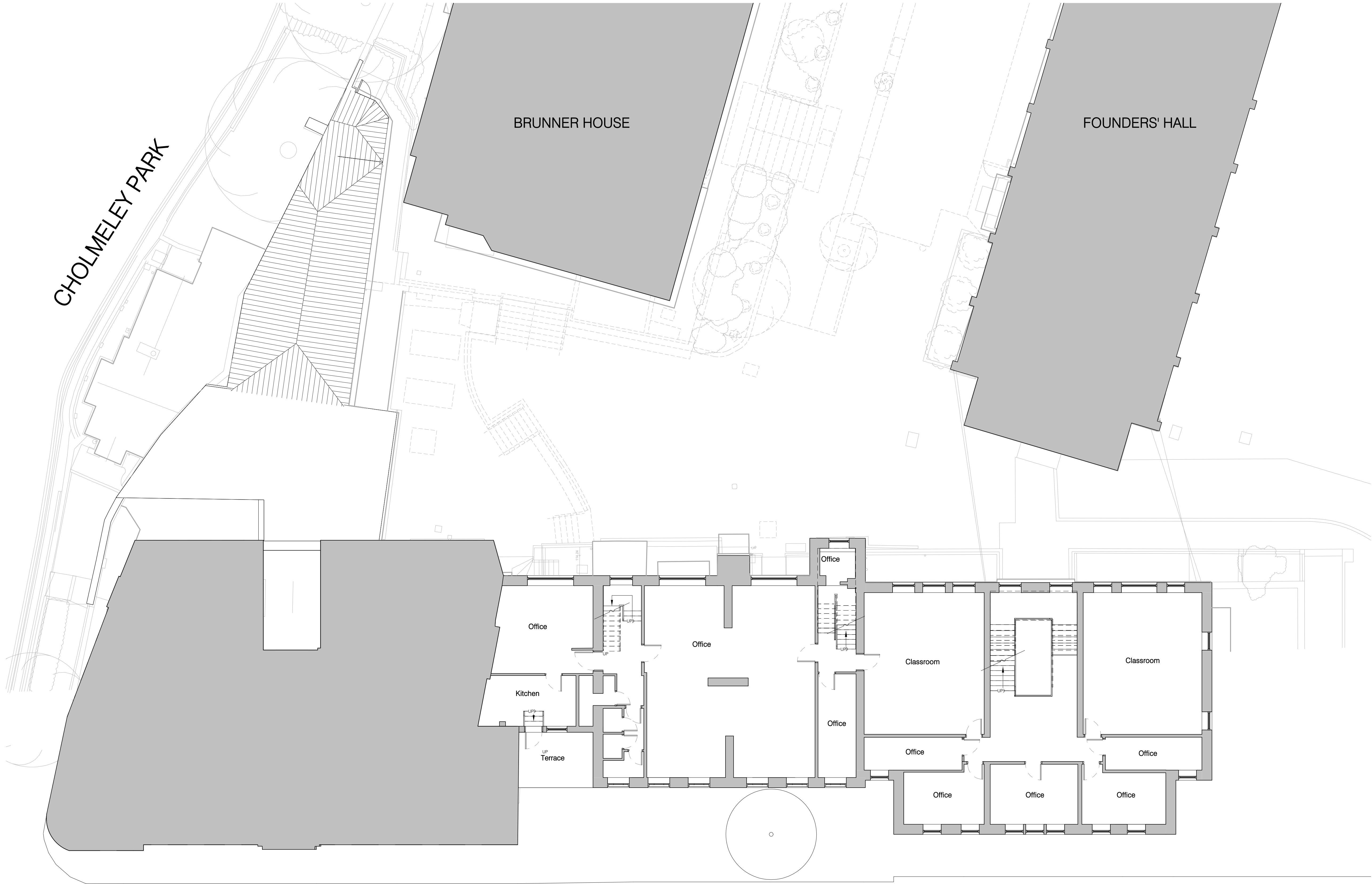
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|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Ground Floor Plan    |                                   |                 |
| Project Stage Purpose Scale               |                                   |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference.                       |                                   | Revision Status |
| CHA-NVB-MSB-00-D-A-1041                   |                                   | P01 S2          |



|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Proposed Main School Ground Floor Plan    |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference                        | Revision                          | Status          |
| CHA-NVB-MSB-00-D-A-1101                   | P01                               | S2              |







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Scale

1:100 @ A1 (1:200 @ A3)

|   |   |   |   |   |   |   |   |   |     |
|---|---|---|---|---|---|---|---|---|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10m |
|---|---|---|---|---|---|---|---|---|-----|

CHOLMELEY PARK

BRUNNER HOUSE

FOUNDERS' HALL

CHANNING HOUSE

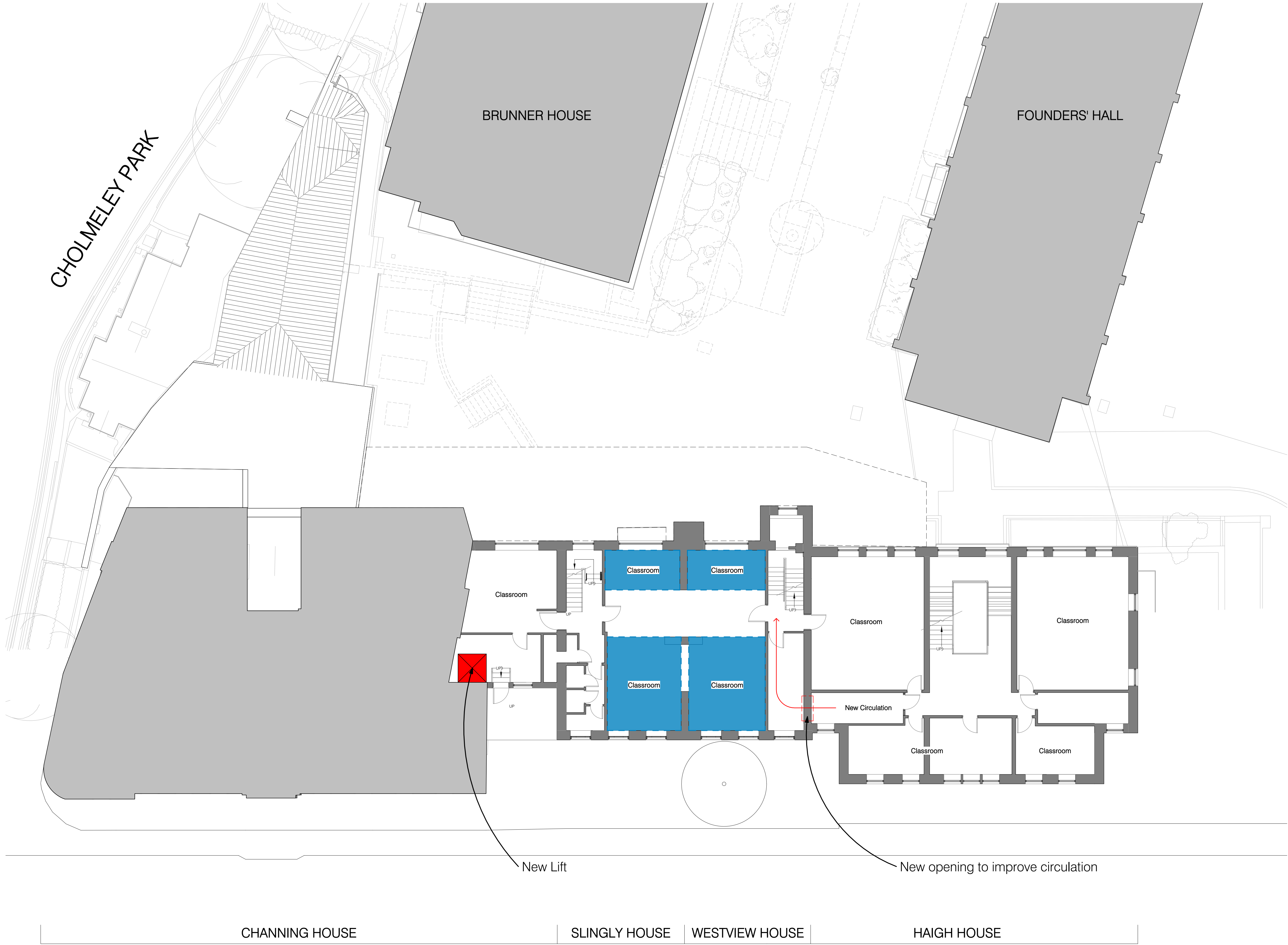
SLINGLY HOUSE

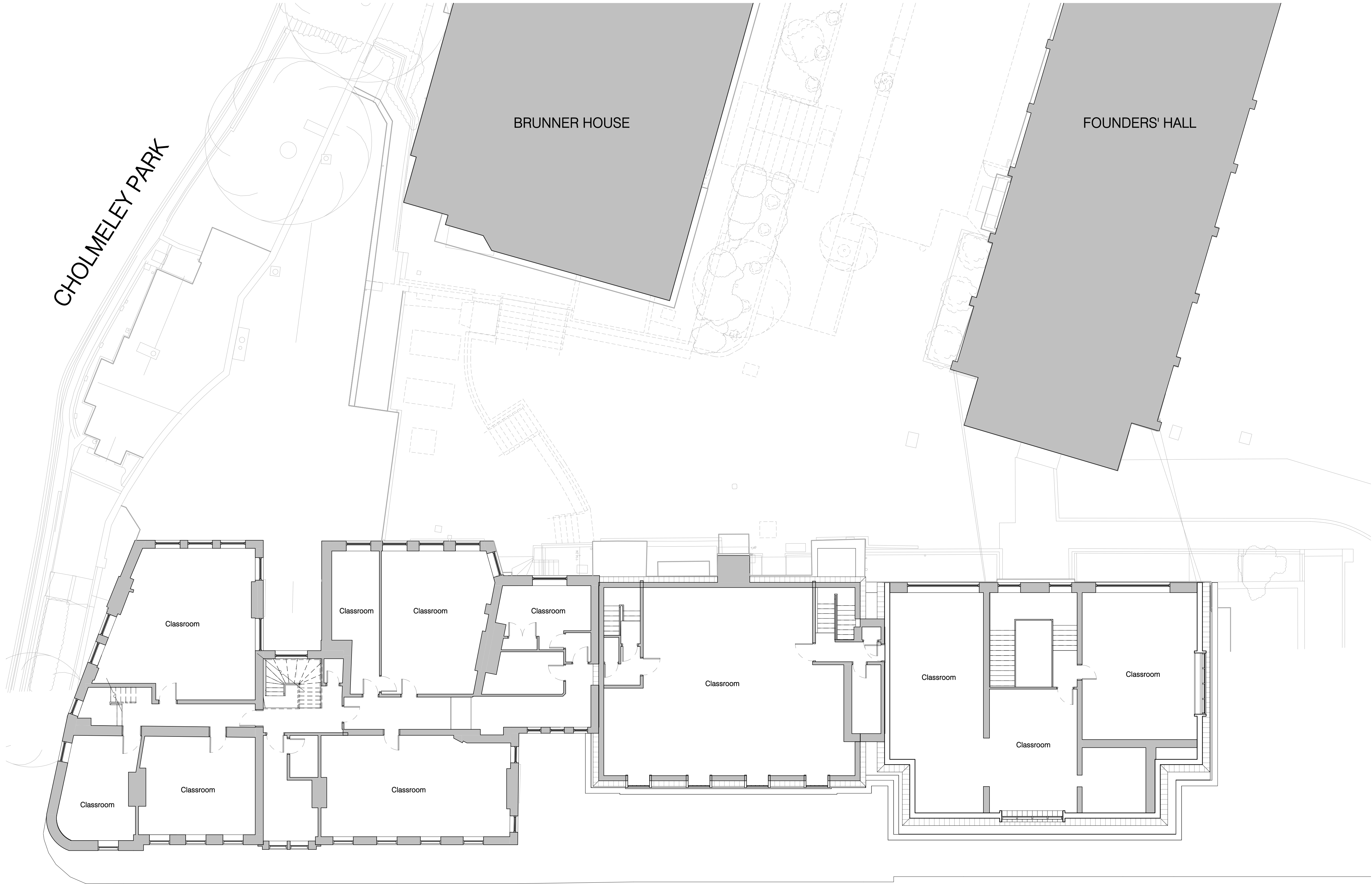
WESTVIEW HOUSE

HAIGH HOUSE

THE BANK

|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Second Floor Plan    |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference:                       |                                   | Revision Status |
| CHA-NVB-MSB-02-D-A-1043                   |                                   | P01 S2          |





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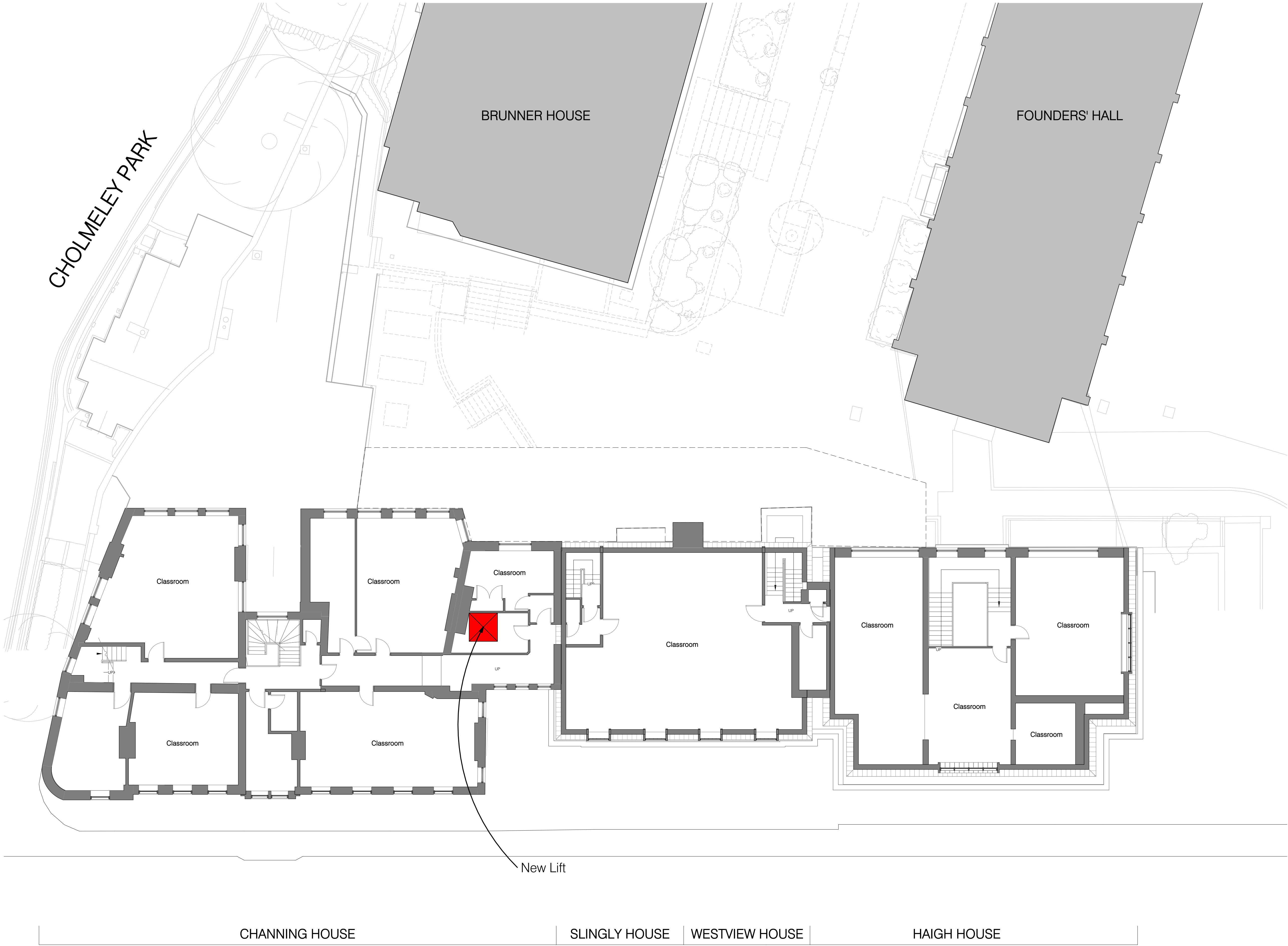
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Scale

1:100 @ A1 (1:200 @ A3)

|   |   |   |   |   |   |   |   |   |     |
|---|---|---|---|---|---|---|---|---|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10m |
|---|---|---|---|---|---|---|---|---|-----|

|                                           |                 |                 |           |
|-------------------------------------------|-----------------|-----------------|-----------|
| P01 Issued for Pre-Application Advice     |                 | Date 29/03/2023 |           |
| Rev.                                      | Description     |                 |           |
| Client & Project                          |                 |                 |           |
| Channing Girls School                     |                 |                 |           |
| Brunner House + Main School Redevelopment |                 |                 |           |
| Document Title                            |                 |                 |           |
| Existing Main School Third Floor Plan     |                 |                 |           |
|                                           |                 |                 |           |
| Project Stage                             | Purpose         |                 | Scale     |
| RIBA 2                                    | PRE-APPLICATION |                 | 1:100 @A1 |
| Document Reference.                       |                 | Revision Status |           |
| CHA-NVB-MSB-03-D-A-1044                   |                 | P01 S2          |           |



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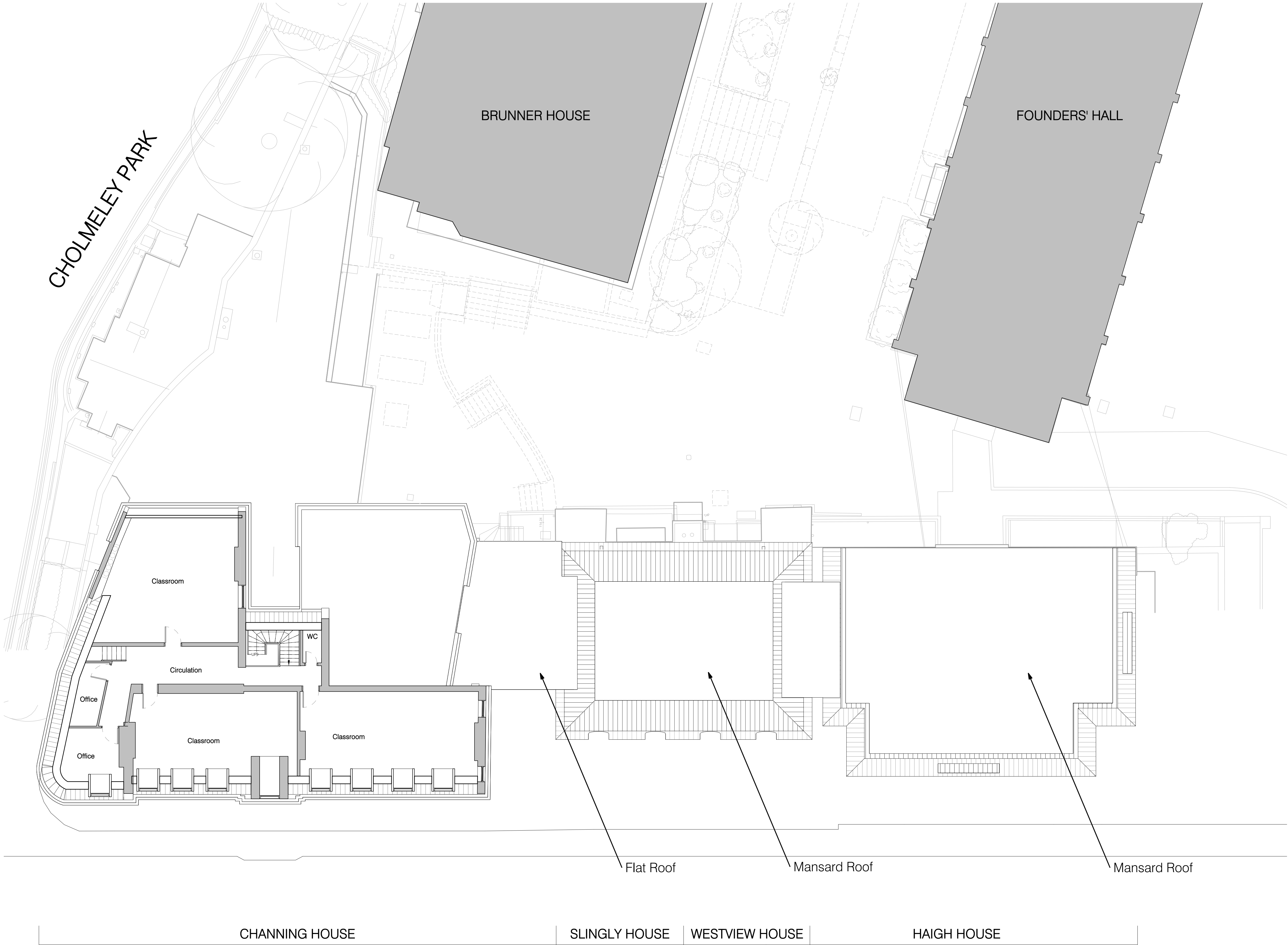
Responsibility will not be accepted for errors made in scaling  
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Scale

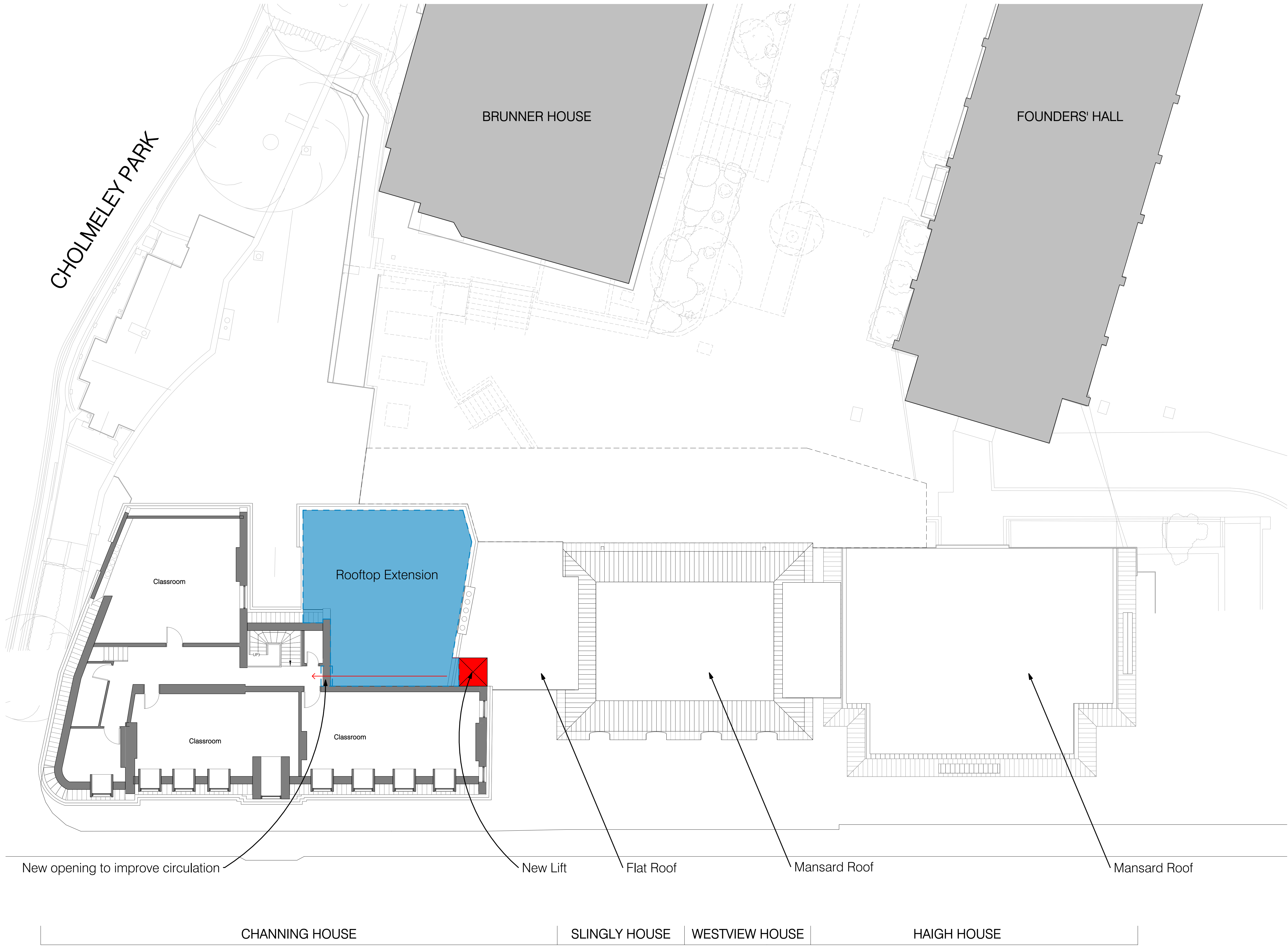
1:100 @ A1 (1:200 @ A3)

|   |   |   |   |   |   |   |   |   |     |
|---|---|---|---|---|---|---|---|---|-----|
| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10m |
|---|---|---|---|---|---|---|---|---|-----|

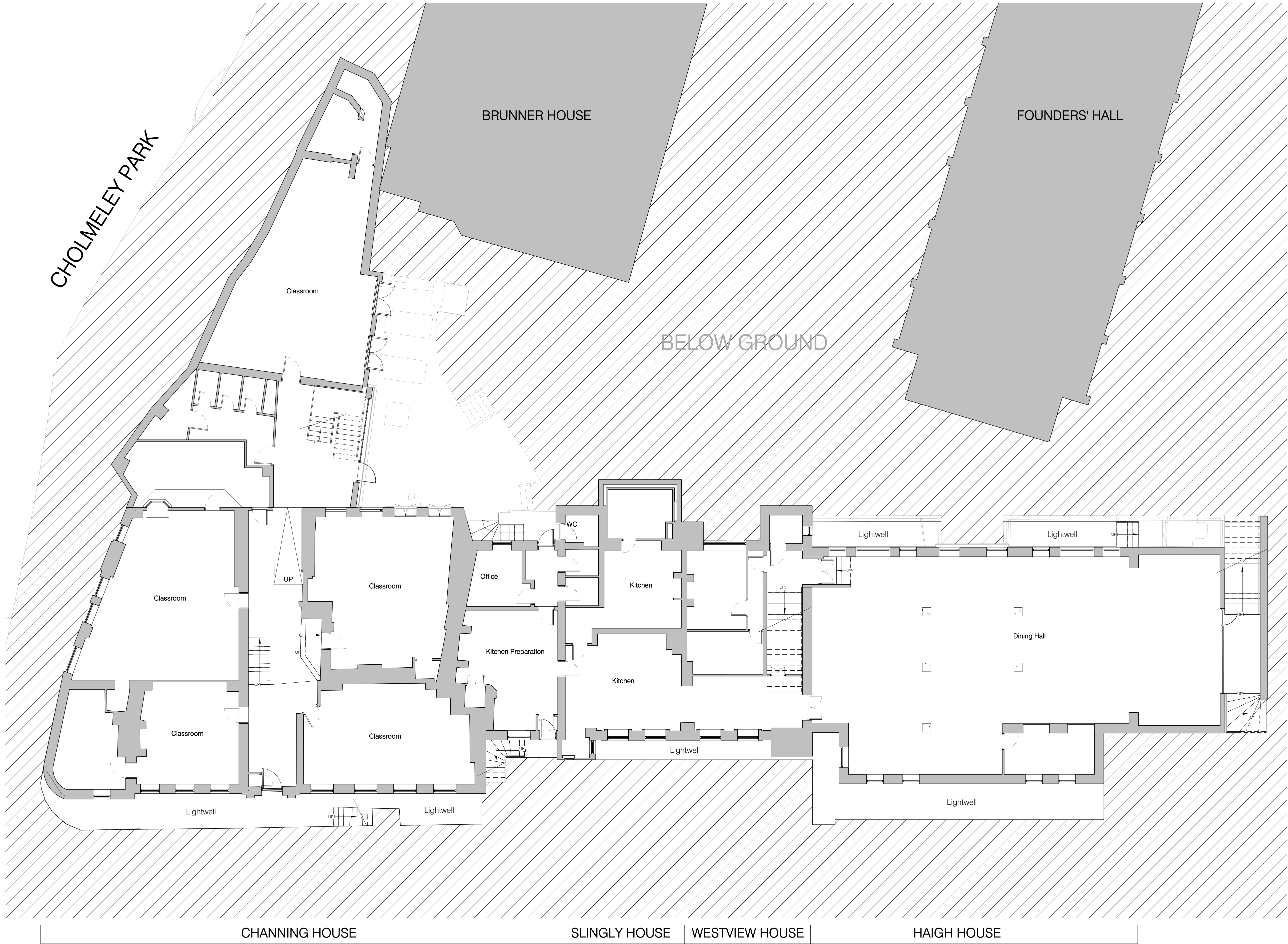
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| P01 Issued for Pre-Application Advice     |                 |                 |
| Rev.                                      | Description     | Date 29/03/2023 |
| Client & Project                          |                 |                 |
| Channing Girls School                     |                 |                 |
| Brunner House + Main School Redevelopment |                 |                 |
| Document Title                            |                 |                 |
| Proposed Main School Third Floor Plan     |                 |                 |
| Project Stage Purpose Scale               |                 |                 |
| RIBA 2                                    | PRE-APPLICATION | 1:100 @A1       |
| Document Reference.                       |                 | Revision Status |
| CHA-NVB-MSB-03-D-A-1104                   |                 | P01 S2          |



|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Forth Floor Plan     |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference:                       | Revision                          | Status          |
| CHA-NVB-MSB-04-D-A-1045                   | P01                               | S2              |



|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Proposed Main School Forth Floor Plan     |                                   |                 |
| Project Stage Purpose Scale               |                                   |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference.                       |                                   | Revision Status |
| CHA-NVB-MSB-04-D-A-1105                   |                                   | P01 S2          |



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Scale

1:100 @ A1 (1:200 @ A3)

1

2

3

4

5

6

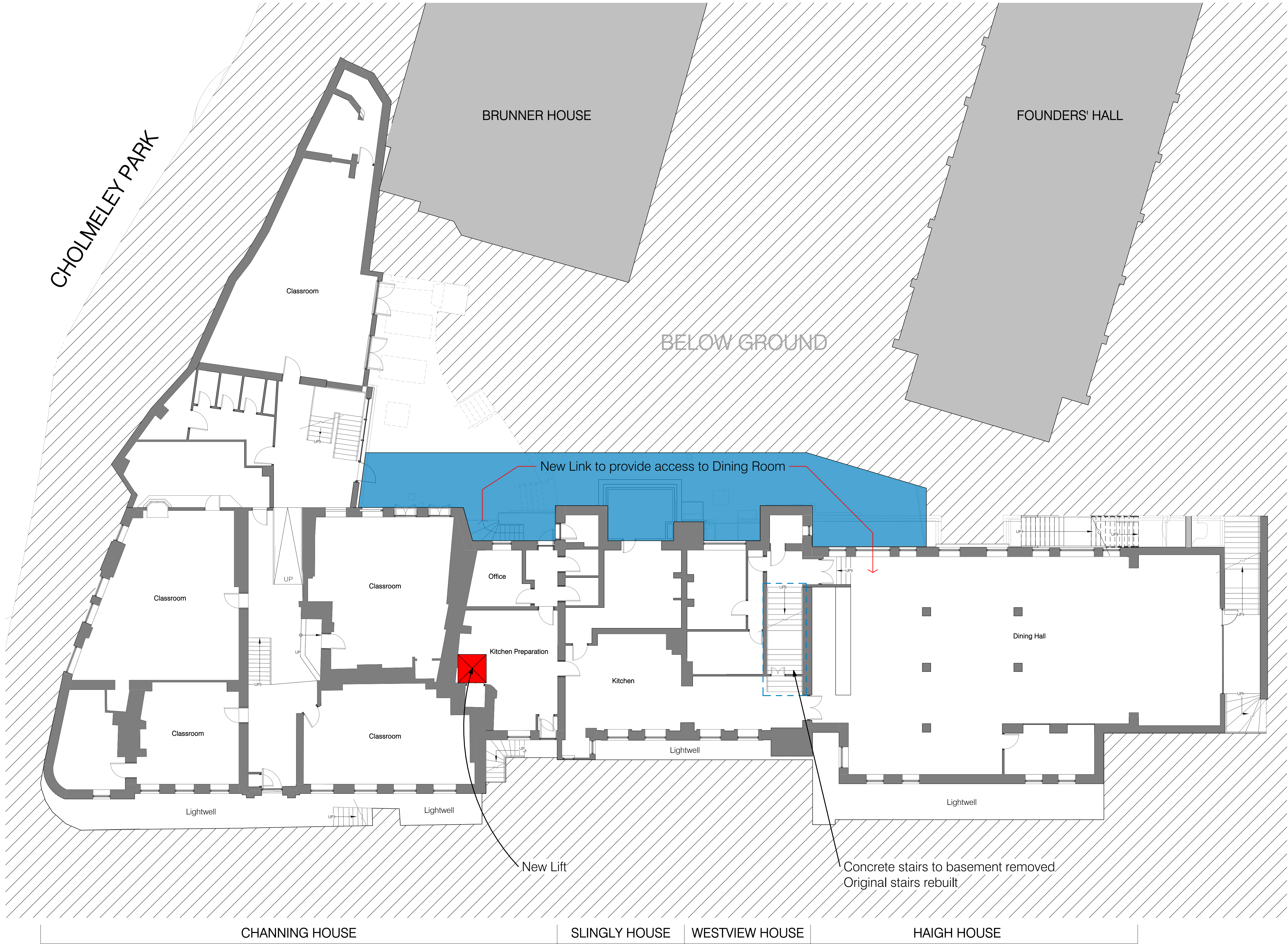
7

8

9

10m

|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Existing Main School Basement Plan        |                                   |                 |
|                                           |                                   |                 |
| Project Stage                             | Purpose                           | Scale           |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1       |
| Document Reference:                       |                                   | Revision Status |
| CHA-NVB-MSB-B1-D-A-1040                   |                                   | P01 S2          |



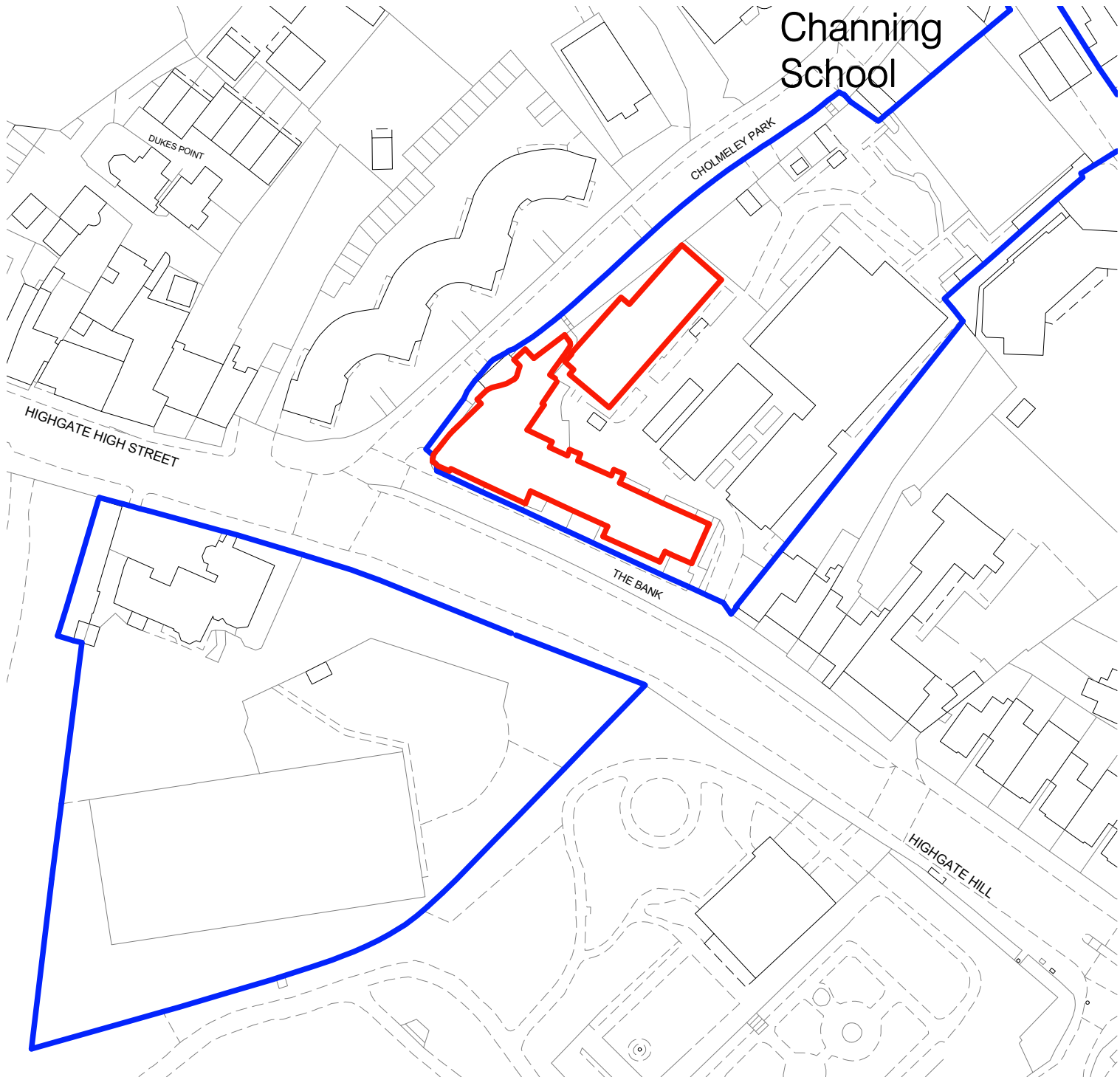
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|-------------------------------------------|-----------------------------------|--------------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023    |
| Rev.                                      | Description                       |                    |
| Client & Project                          |                                   |                    |
| Channing Girls School                     |                                   |                    |
| Brunner House + Main School Redevelopment |                                   |                    |
| Document Title                            |                                   |                    |
| Proposed Main School Basement Plan        |                                   |                    |
|                                           |                                   |                    |
| Project Stage                             | Purpose                           | Scale              |
| RIBA 2                                    | PRE-APPLICATION                   | 1:100 @A1          |
| Document Reference:                       |                                   | Revision    Status |
| CHA-NVB-MSB-B1-D-A-1100                   |                                   | P01    S2          |



|      |    |      |    |      |    |      |     |       |      |
|------|----|------|----|------|----|------|-----|-------|------|
| 12.5 | 25 | 37.5 | 50 | 62.5 | 75 | 87.5 | 100 | 112.5 | 125m |
|------|----|------|----|------|----|------|-----|-------|------|

**LOCATION PLAN KEY**

- Application Boundary
- Land within Applicant's Control



P01 Issued for Pre-Application Advice  
Rev. Description

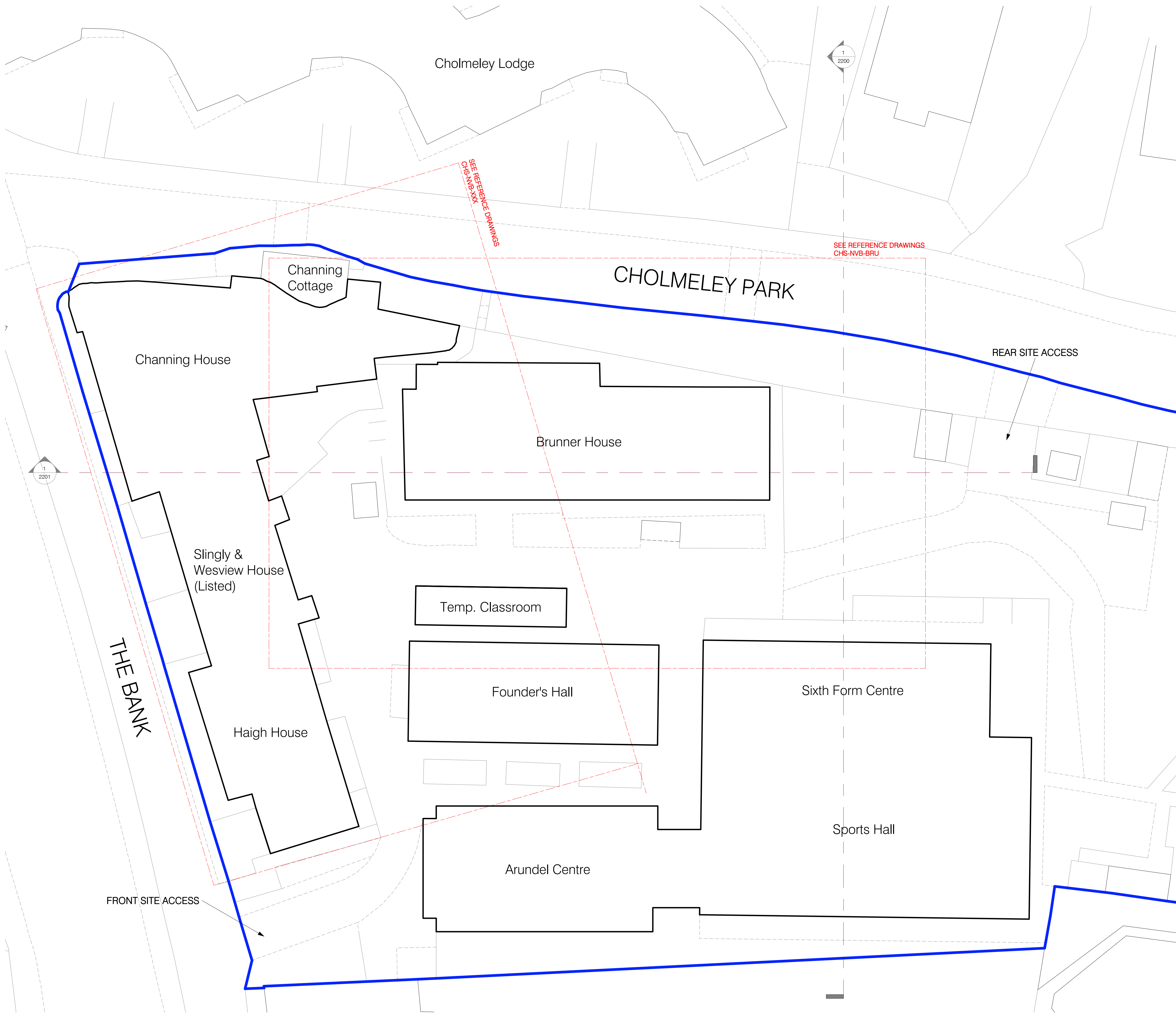
Date 29/03/2023

Client & Project  
**Channing Girls School**  
**Brunner House + Main School Redevelopment**

Project Stage Purpose Scale @ A4  
**RIBA 2 PRE-APPLICATION 1:1250**

Document Title  
**Site Location Plan**

Document Reference. Revision Status  
**CHS-NVB-BRU-00-D-A-2001 P01 S0**



|                                           |                                   |                 |
|-------------------------------------------|-----------------------------------|-----------------|
| P01                                       | Issued for Pre-Application Advice | Date 29/03/2023 |
| Rev.                                      | Description                       |                 |
| Client & Project                          |                                   |                 |
| Channing Girls School                     |                                   |                 |
| Brunner House + Main School Redevelopment |                                   |                 |
| Document Title                            |                                   |                 |
| Block Plan                                |                                   |                 |
| Project Stage Purpose Scale               |                                   |                 |
| RIBA 2                                    | PRE-APPLICATION                   | 1:200 @A1       |
| Document Reference.                       |                                   |                 |
| CHS-NVB-BRU-00-D-A-2010                   | Revision                          | Status          |
|                                           | P01                               | S2              |

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|                                                                                       |                                |
|---------------------------------------------------------------------------------------|--------------------------------|
|  | Area of floor to be demolished |
|  | Beam demolished / removed      |
|  | Column demolished / removed    |
|  | RC / Masonry wall demolished   |

|          |       |
|----------|-------|
| <b>1</b> | Notes |
| <b>2</b> | Notes |

| Rev | Date | By | Eng | Amendment |
|-----|------|----|-----|-----------|
|-----|------|----|-----|-----------|

<http://hts.uk.com/>

Drawing Title

# Demolition

## Ground Floor Plan

Org No **2884-HTS-00-00-DR-S-21100**

HTS Job No **2884**      Suitability **S1**      Rev



Date / Time Printed : 24/10/2023 09:31:47

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|                                                                                       |                                |
|---------------------------------------------------------------------------------------|--------------------------------|
|  | Area of floor to be demolished |
|  | Beam demolished / removed      |
|  | Column demolished / removed    |
|  | RC / Masonry wall demolished   |

|          |       |
|----------|-------|
| <b>1</b> | Notes |
| <b>2</b> | Notes |

| Rev | Date | By | Eng | Amendment |
|-----|------|----|-----|-----------|
|-----|------|----|-----|-----------|

<http://hts.uk.com/>

Drawing Title

# Demolition

## First Floor Plan

Org No **2884-HTS-00-01-DR-S-21110**

HTS Job No **2884**      Suitability **S1**      Rev



Date / Time Printed : 24/10/2023 09:31:51

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- 3 All demolition drawings are to be read in conjunction with proposed plans
- 4 Assume all edges of RC are to be disc-cut UNO  
Where edges of slab are to be demolished, floors are to be disc cut to face of nearest beam if applicable.
- 5 Care to be taken not to cut / adversely affect existing retained beams / columns while demolition is taking place. Contractor to undertake careful exploratory works and submit appropriate method statement to ensure retained structure is not damaged undertaking areas of demolition
- 6 Treat all cut concrete faces with Ronabond concrete repair system by Ronacrete, or similar concrete repair system
- 7 Temporary bracing required prior to demolition of existing stability cores and until the new stability structure is in placeprior to construction of new stability structure. Contractor to submit full temporary works and sequencing proposal to the CA for review prior to commencing work
- 8 The foundations of the existing structure must not be undermined. Upon exposing the retained structures the contractor should identify if any proposed excavation levels are deeper than the existing founding levels and notify the engineer accordingly

The existing structural information shown on these drawings is based on visual inspection of the building, limited opening up works and relevant archive information. All details of the existing construction are subject to confirmation by the Contractor during the works on site. No materials are to be ordered until the relevant details and conditions are confirmed by the Contractor on site. Should the contractor discover any discrepancies between the assumed existing structure and what is found on site they should notify the engineer immediately, and await further instruction

| Demolition legend |                                |
|-------------------|--------------------------------|
| <div></div>       | Area of floor to be demolished |
| <div></div>       | Beam demolished / removed      |
| <div></div>       | Column demolished / removed    |
| <div></div>       | RC / Masonry wall demolished   |

| Demolition Key |       |
|----------------|-------|
| 1              | Notes |
| 2              | Notes |

|     |      |    |     |           |  |
|-----|------|----|-----|-----------|--|
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
|     |      |    |     |           |  |
| Rev | Date | By | Eng | Amendment |  |

HEYNE

TILLET

STEEL

STRUCTURAL &  
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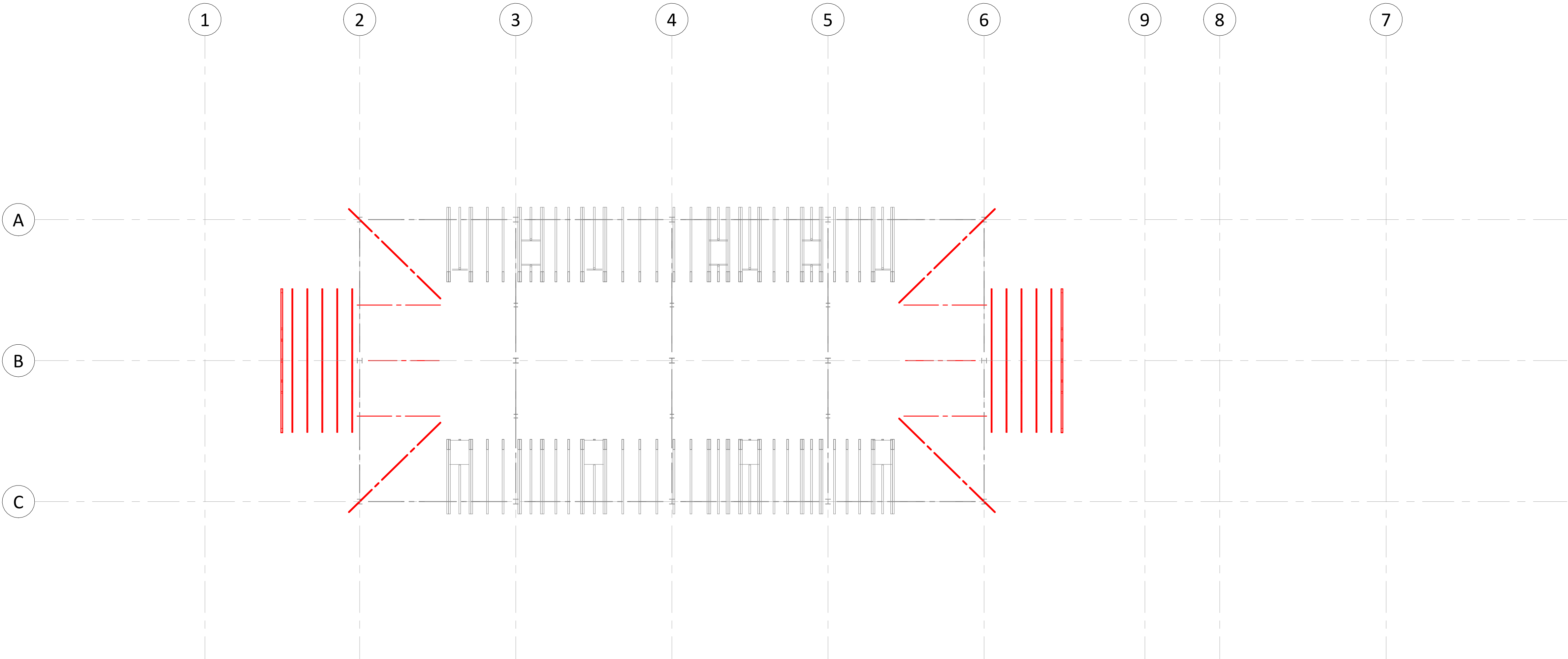
Job Name  
Channing School, Brunner House

Drawing Title  
Demolition  
Lower Roof Floor Plan

Purpose of Issue Preliminary Scale at A1 1 : 100

Drg No 2884-HTS-00-LR-DR-S-21120

HTS Job No 2884 Suitability S1 Rev



Work In Progress

Date / Time Printed : 24/10/2023 09:31:54

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- 3 All demolition drawings are to be read in conjunction with proposed plans
- 4 Assume all edges of RC are to be disc-cut UNO  
Where edges of slab are to be demolished, floors are to be disc cut to face of nearest beam if applicable.
- 5 Care to be taken not to cut / adversely affect existing retained beams / columns while demolition is taking place. Contractor to undertake careful exploratory works and submit appropriate method statement to ensure retained structure is not damaged undertaking areas of demolition
- 6 Treat all cut concrete faces with Ronabond concrete repair system by Ronacrete, or similar concrete repair system
- 7 Temporary bracing required prior to demolition of existing stability cores and until the new stability structure is in placeprior to construction of new stability structure. Contractor to submit full temporary works and sequencing proposal to the CA for review prior to commencing work
- 8 The foundations of the existing structure must not be undermined. Upon exposing the retained structures the contractor should identify if any proposed excavation levels are deeper than the existing founding levels and notify the engineer accordingly

The existing structural information shown on these drawings is based on visual inspection of the building, limited opening up works and relevant archive information. All details of the existing construction are subject to confirmation by the Contractor during the works on site. No materials are to be ordered until the relevant details and conditions are confirmed by the Contractor on site. Should the contractor discover any discrepancies between the assumed existing structure and what is found on site they should notify the engineer immediately, and await further instruction

| Demolition legend |                                |
|-------------------|--------------------------------|
| <div></div>       | Area of floor to be demolished |
| <div></div>       | Beam demolished / removed      |
| <div></div>       | Column demolished / removed    |
| <div></div>       | RC / Masonry wall demolished   |

| Demolition Key |       |
|----------------|-------|
| 1              | Notes |
| 2              | Notes |

|     |      |    |     |           |  |
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| Rev | Date | By | Eng | Amendment |  |

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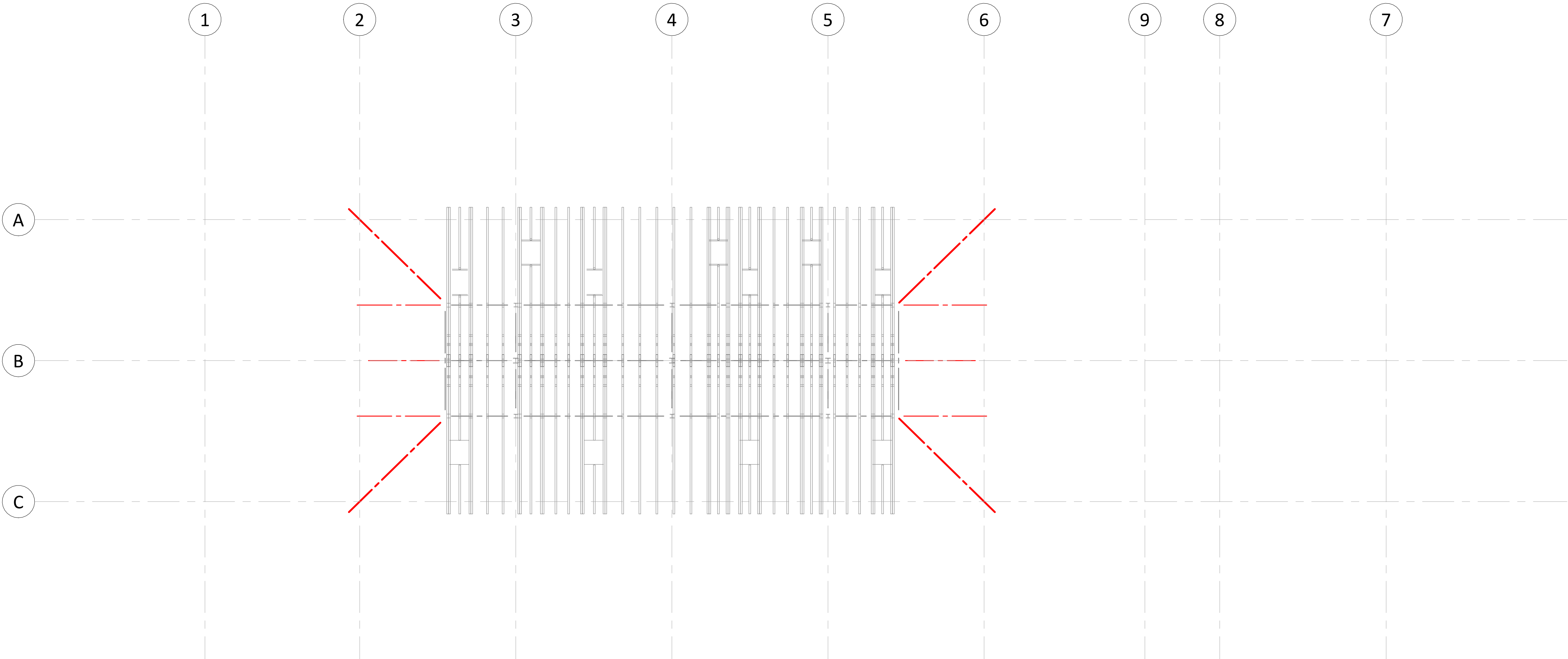
Job Name  
Channing School, Brunner House

Drawing Title  
Demolition  
Roof Plan

Purpose of Issue Preliminary Scale at A1 1 : 100

Drg No 2884-HTS-00-RF-DR-S-21130

HTS Job No 2884 Suitability S1 Rev



Work In Progress

Date / Time Printed : 24/10/2023 09:31:58

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- NOTE:  
All existing details shown are based on archive drawings and limited opening up works. Assumptions have been made regarding existing construction. Materials, construction, framing and spans of existing slabs and walls to be confirmed by site investigations.

| Extg Steel Columns |              | Extg Steel Beams |              |
|--------------------|--------------|------------------|--------------|
| Ref                | Type         | Ref              | Type         |
| EC1                | UC203x203x46 | EB1              | UC203x203x46 |
| EC2                | SHS90x90x5   | EB2              | UC203x203x60 |
|                    |              | EB3              | UC203x203x71 |

| Ref | Thickness and Type |
|-----|--------------------|
| EW1 | 100 /stud wall/    |
| EW2 | 100 /Blockwork/    |

| Ref | Thickness and Type   |
|-----|----------------------|
| E1  | 125 Existing RC slab |
| E2  | 200 Existing RC slab |

| Ref | Thickness | Description |
|-----|-----------|-------------|
| E3  | 700       | RC Raft     |

| Ref | Joists           | Boarding                        |
|-----|------------------|---------------------------------|
| 1   | 50x200 at 400crs | 18mm joists screwed to top face |
| E1  | 50x200 at 400crs | 18mm joists screwed to top face |

|                                                                                       |                                |
|---------------------------------------------------------------------------------------|--------------------------------|
|  | Existing structural walls      |
|  | Existing structure below       |
|  | Existing padstone, TBC on site |

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Drawing Title

# Existing Ground Floor Plan

Org No **2884-HTS-XX-00-DR-S-11100**

HTS Job No **2884**      Suitability **S1**      Rev



Date / Time Printed : 24/10/2023 09:31:29

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Slab levels shown in red have been derived from assumed finishes and are to be confirmed by site investigations.

| Extg Walls |                    |
|------------|--------------------|
| Ref        | Thickness and Type |
| EW1        | 100 /stud wall/    |
| EW2        | 100 /Blockwork/    |

| Extg Foundation Slabs |           |             |
|-----------------------|-----------|-------------|
| Ref                   | Thickness | Description |
| E3                    | 700       | RC Raft     |

| Extg Timber Floors |                  |                                 |
|--------------------|------------------|---------------------------------|
| Ref                | Joists           | Boarding                        |
| 1                  | 50x200 at 400crs | 18mm joists screwed to top face |
| E1                 | 50x200 at 400crs | 18mm joists screwed to top face |

|                                                                                       |                                |
|---------------------------------------------------------------------------------------|--------------------------------|
|  | Existing structural walls      |
|  | Existing structure below       |
|  | Existing padstone, TBC on site |

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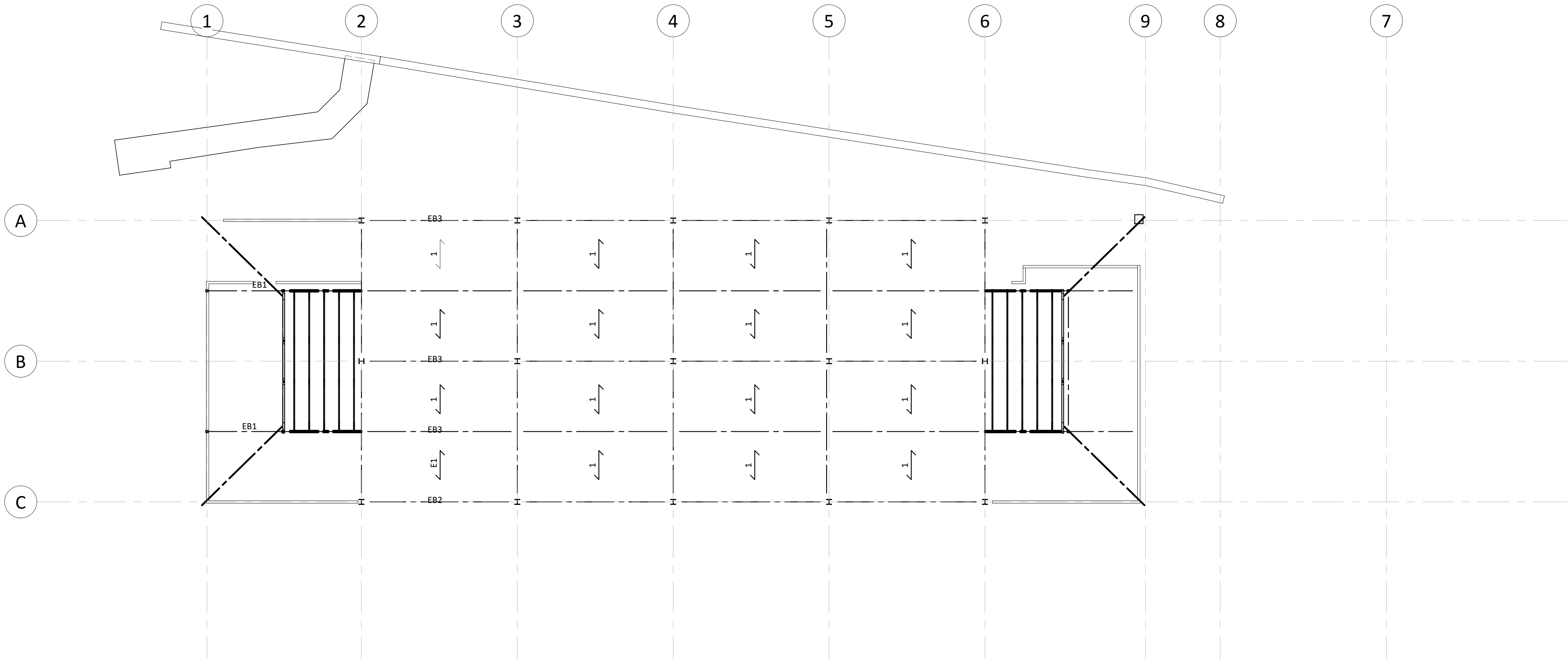
Drawing Title

**Existing**

**First Floor Plan**

Org No **2884-HTS-XX-00-DR-S-11110**

HTS Job No **2884**      Suitability **S1**      Rev



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- 2
- Do not scale from this drawing in either paper or digital form. Use written dimensions only. To check drawing has been printed to the intended scale the above bar should be 100mm long

NOTE:  
All existing details shown are based on archive drawings and limited opening up works. Assumptions have been made regarding existing construction. Materials, construction, framing and spans of existing slabs and walls to be confirmed by site investigations.

Slab levels shown in red have been derived from assumed finishes and are to be confirmed by site investigations.

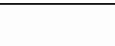
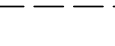
| Extg Steel Columns |              | Extg Steel Beams |              |
|--------------------|--------------|------------------|--------------|
| Ref                | Type         | Ref              | Type         |
| EC1                | UC203x203x46 | EB1              | UC203x203x46 |
| EC2                | SHS90x90x5   | EB2              | UC203x203x60 |
|                    |              | EB3              | UC203x203x71 |

| Extg Walls |                    |
|------------|--------------------|
| Ref        | Thickness and Type |
| EW1        | 100 /stud wall/    |
| EW2        | 100 /Blockwork/    |

| Extg Floors |                      |
|-------------|----------------------|
| Ref         | Thickness and Type   |
| E1          | 125 Existing RC slab |
| E2          | 200 Existing RC slab |

| Extg Foundation Slabs |           |             |
|-----------------------|-----------|-------------|
| Ref                   | Thickness | Description |
| E3                    | 700       | RC Raft     |

| Extg Timber Floors |                  |                                 |
|--------------------|------------------|---------------------------------|
| Ref                | Joists           | Boarding                        |
| 1                  | 50x200 at 400crs | 18mm joists screwed to top face |
| E1                 | 50x200 at 400crs | 18mm joists screwed to top face |

| Extg legend                                                                           |                                |
|---------------------------------------------------------------------------------------|--------------------------------|
|  | Existing structural walls      |
|  | Existing structure below       |
|  | Existing padstone, TBC on site |

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| Rev | Date | By | Eng | Amendment |

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Job Name  
Channing School, Brunner House

Drawing Title  
Existing  
Lower Roof Plan

Purpose of Issue  
Scale at A1  
1 : 100

Drg No  
2884-HTS-XX-00-DR-S-11120

HTS Job No 2884 Suitability S1 Rev

Work In Progress

Date / Time Printed : 24/10/2023 09:31:39

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- 1
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NOTE:  
All existing details shown are based on archive drawings and limited opening up works. Assumptions have been made regarding existing construction. Materials, construction, framing and spans of existing slabs and walls to be confirmed by site investigations.

Slab levels shown in red have been derived from assumed finishes and are to be confirmed by site investigations.

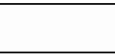
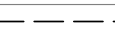
| Extg Steel Columns |              | Extg Steel Beams |              |
|--------------------|--------------|------------------|--------------|
| Ref                | Type         | Ref              | Type         |
| EC1                | UC203x203x46 | EB1              | UC203x203x46 |
| EC2                | SHS90x90x5   | EB2              | UC203x203x60 |
|                    |              | EB3              | UC203x203x71 |

| Extg Walls |                    |
|------------|--------------------|
| Ref        | Thickness and Type |
| EW1        | 100 /stud wall/    |
| EW2        | 100 /Blockwork/    |

| Extg Floors |                      |
|-------------|----------------------|
| Ref         | Thickness and Type   |
| E1          | 125 Existing RC slab |
| E2          | 200 Existing RC slab |

| Extg Foundation Slabs |           |             |
|-----------------------|-----------|-------------|
| Ref                   | Thickness | Description |
| E3                    | 700       | RC Raft     |

| Extg Timber Floors |                  |                                 |
|--------------------|------------------|---------------------------------|
| Ref                | Joists           | Boarding                        |
| 1                  | 50x200 at 400crs | 18mm joists screwed to top face |
| E1                 | 50x200 at 400crs | 18mm joists screwed to top face |

| Extg legend                                                                           |                                |
|---------------------------------------------------------------------------------------|--------------------------------|
|  | Existing structural walls      |
|  | Existing structure below       |
|  | Existing padstone, TBC on site |

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| Rev | Date | By | Eng | Amendment |

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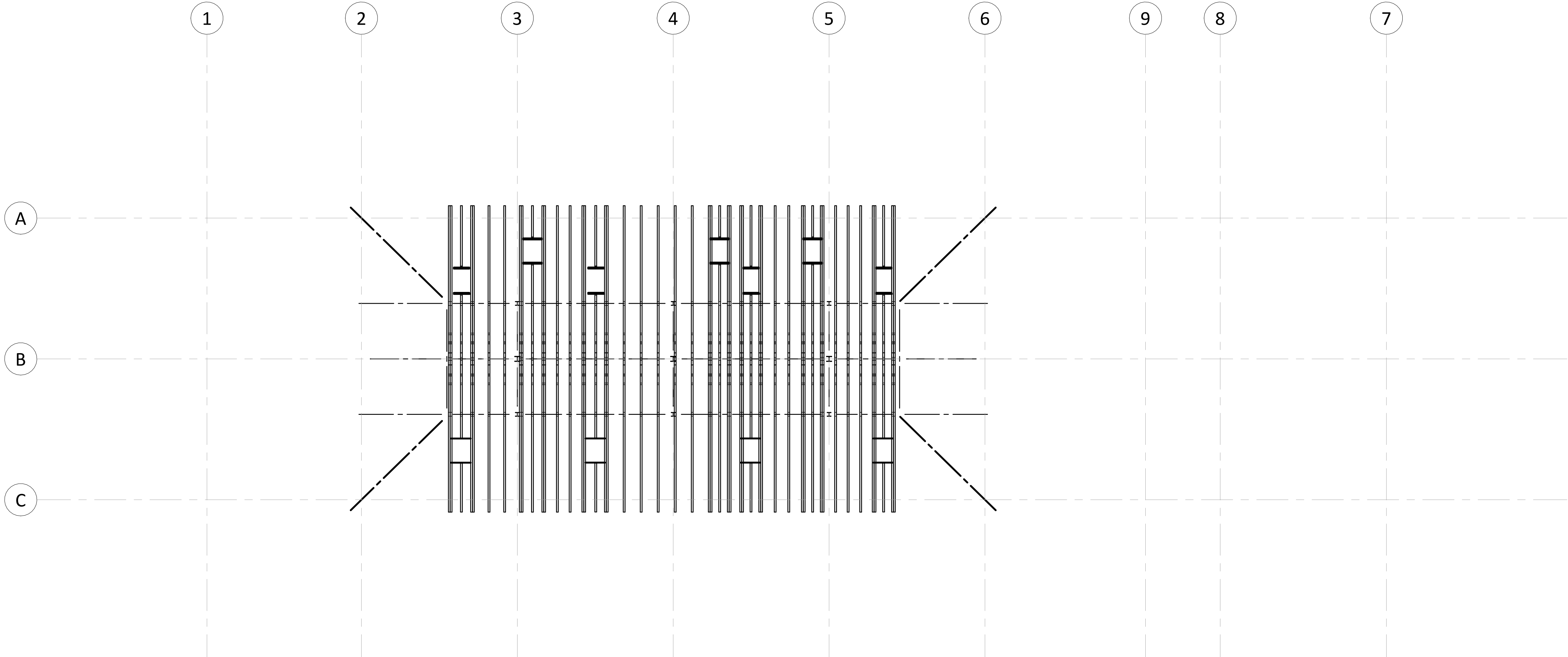
Job Name  
Channing School, Brunner House

Drawing Title  
Existing Roof Plan

Purpose of Issue  
Scale at A1  
1 : 100

Drg No  
2884-HTS-XX-00-DR-S-11130

HTS Job No 2884 Suitability S1 Rev

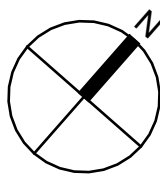


Existing Roof Plan

Work In Progress

Date / Time Printed : 24/10/2023 09:31:43

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100mm @ A1 (50mm @ A3)

- This drawing is to be read in conjunction with all relevant architects, engineers and specialists drawings and specifications.
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- Any setting out dimensions shown in red are to be confirmed by the architect. All dimensions are to be checked by the contractor against site dimensions prior to fabrication /commencement of work on site. Beams and columns are to be centred on grid unless noted otherwise. Setting out of steelwork is shown to the centre of symmetric sections and to the back face of PFCs and RSAs.

#### Proposed RC Cols

| Ref  | Size / Dia (mm) | Type |
|------|-----------------|------|
| CC01 | 250 x 250       | C40  |

#### Proposed RC Beams

| Ref  | Size        |
|------|-------------|
| CB01 | 450d x 250w |

#### Proposed Steel Cols

| Ref | Type         |
|-----|--------------|
| C01 | UC152x152x23 |
| C02 | SHS90x90x5   |

#### Proposed Steel Beams

| Ref | Type         |
|-----|--------------|
| B01 | UC203x203x71 |
| BR1 | SHS90x90x4   |

#### Proposed Timber Cols

| Ref | Size |
|-----|------|
|-----|------|

#### Proposed Timber Beam

| Ref | Type |
|-----|------|
|-----|------|

#### Proposed Walls

| Ref | Thickness and Type |
|-----|--------------------|
| W1  | 200 RC             |
| W2  | 250 RC             |

#### Proposed Floors

| Ref | Thickness and Type |
|-----|--------------------|
| 1   | 250 thk RC slab    |

#### Proposed Timber Floors

| Ref | Joists | Boarding |
|-----|--------|----------|
|-----|--------|----------|

#### Proposed Foundation Slabs

| Ref | Foundation Slab Type              |
|-----|-----------------------------------|
| F1  | 300 thk 300 thk RC ground Bearing |

#### Legend

|  |                                                                                    |
|--|------------------------------------------------------------------------------------|
|  | Proposed RC structure                                                              |
|  | Proposed WRC structure                                                             |
|  | Proposed Steel Framing                                                             |
|  | Red dimension TBC by architect                                                     |
|  | PS1 - 450lg x 215wd x 150dp MC padstone<br>PS1 - 600lg x 215wd x 215dp MC padstone |
|  | ST Connection Strengthening                                                        |
|  | C Crank                                                                            |
|  | S Splice                                                                           |
|  | TB Thermal Break                                                                   |
|  | BR Break in beam                                                                   |

| Rev | Date | By | Eng | Amendment |
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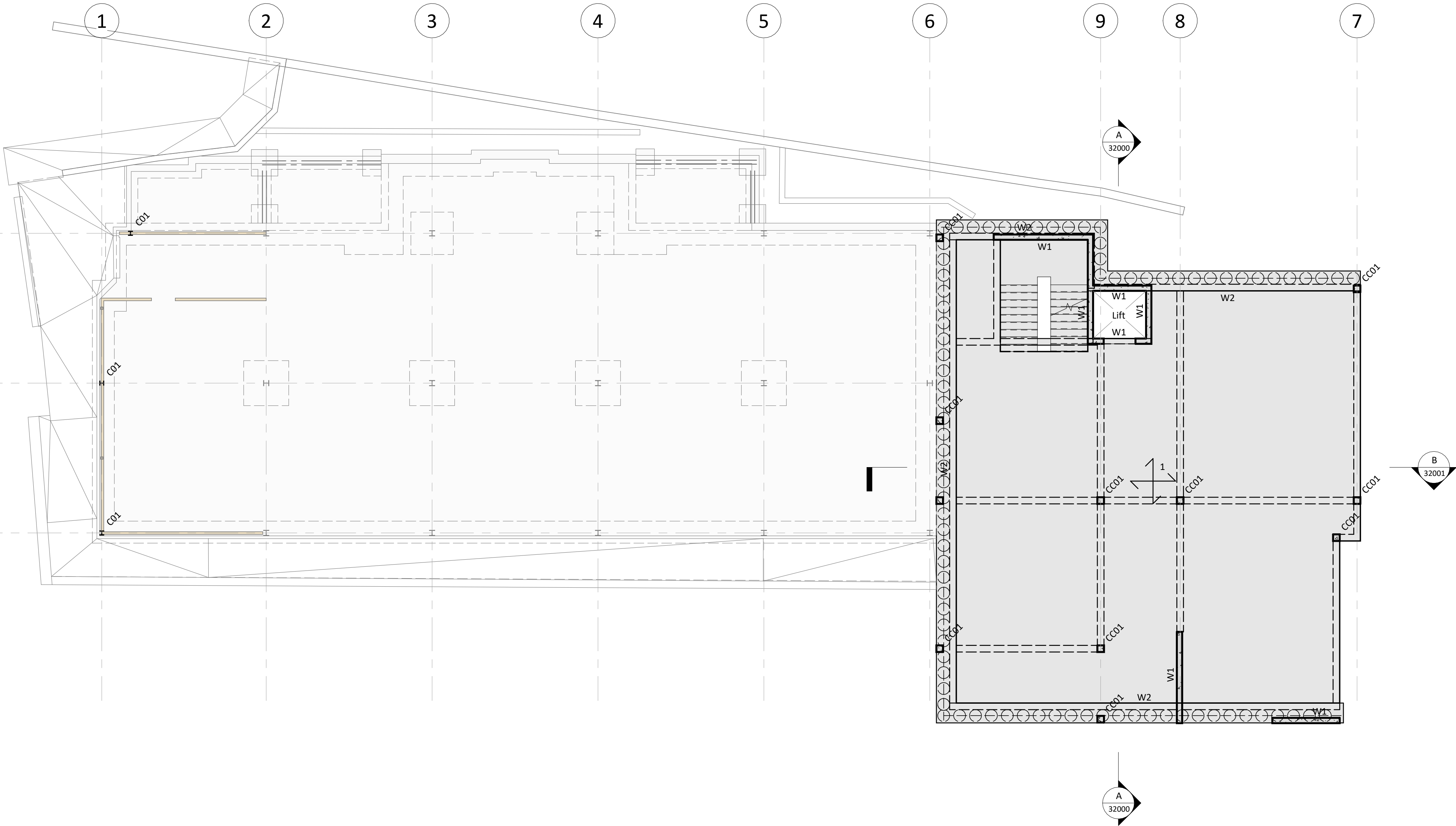
Job Name  
**Channing School, Brunner House**

Drawing Title  
**Proposed Ground Floor Plan**

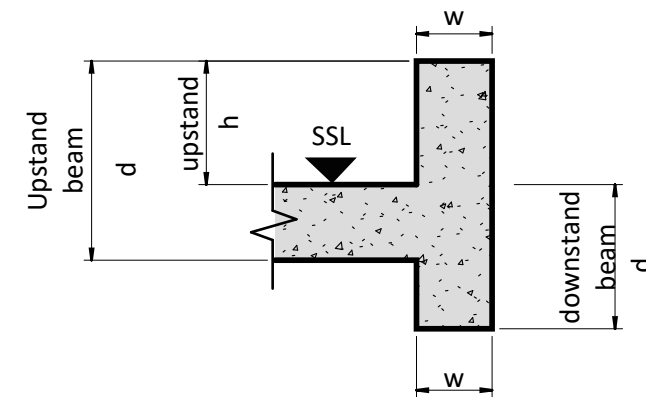
Purpose of Issue: **Preliminary** Scale at A1: **1 : 100**

Drg No: **2884-HTS-XX-00-DR-S-31100**

HTS Job No: **2884** Suitability: **S1** Rev:



#### Typical Beam Notation

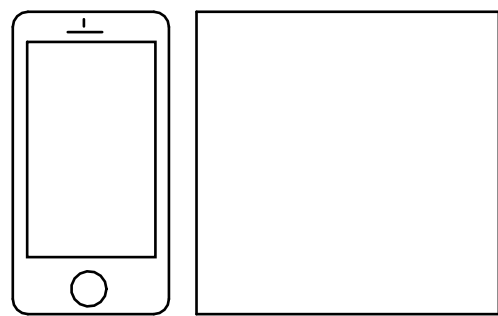


**Work In Progress**

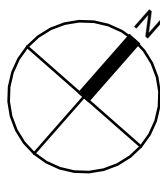
Date / Time Printed : **24/10/2023 09:32:10**

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100mm @ A1 (50mm @ A3)

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- Any setting out dimensions shown in red are to be confirmed by the architect. All dimensions are to be checked by the contractor against site dimensions prior to fabrication /commencement of work on site. Beams and columns are to be centred on grid unless noted otherwise. Setting out of steelwork is shown to the centre of symmetric sections and to the back face of PFCs and RSAs.

| Proposed RC Cols |                 |      | Proposed RC Beams |             |
|------------------|-----------------|------|-------------------|-------------|
| Ref              | Size / Dia (mm) | Type | Ref               | Size        |
| CC01             | 250 x 250       | C40  | CB01              | 450d x 250w |

| Proposed Steel Cols |              | Proposed Steel Beams |              |
|---------------------|--------------|----------------------|--------------|
| Ref                 | Type         | Ref                  | Type         |
| C01                 | UC152x152x23 | B01                  | UC203x203x71 |
| C02                 | SHS90x90x5   | BR1                  | SHS90x90x4   |

| Proposed Timber Cols |      | Proposed Timber Beam |      |
|----------------------|------|----------------------|------|
| Ref                  | Size | Ref                  | Type |

| Proposed Walls |                    |
|----------------|--------------------|
| Ref            | Thickness and Type |
| W1             | 200 RC             |
| W2             | 250 RC             |

| Proposed Floors |                    |
|-----------------|--------------------|
| Ref             | Thickness and Type |
| 1               | 250 thk RC slab    |

| Proposed Timber Floors |        |          |
|------------------------|--------|----------|
| Ref                    | Joists | Boarding |

| Proposed Foundation Slabs |                                   |
|---------------------------|-----------------------------------|
| Ref                       | Foundation Slab Type              |
| F1                        | 300 thk 300 thk RC ground Bearing |

| Legend |                                                                                    |
|--------|------------------------------------------------------------------------------------|
|        | Proposed RC structure                                                              |
|        | Proposed WRC structure                                                             |
|        | Proposed Steel Framing                                                             |
|        | Red dimension TBC by architect                                                     |
|        | PS1 - 450lg x 215wd x 150dp MC padstone<br>PS1 - 600lg x 215wd x 215dp MC padstone |
|        | Connection Strengthening                                                           |
|        | Crank                                                                              |
|        | Splice                                                                             |
|        | Thermal Break                                                                      |
|        | Moment connection                                                                  |
|        | Break in beam                                                                      |
|        | B1 [ 25mm ] Pre-camber                                                             |

| Rev | Date | By | Eng | Amendment |
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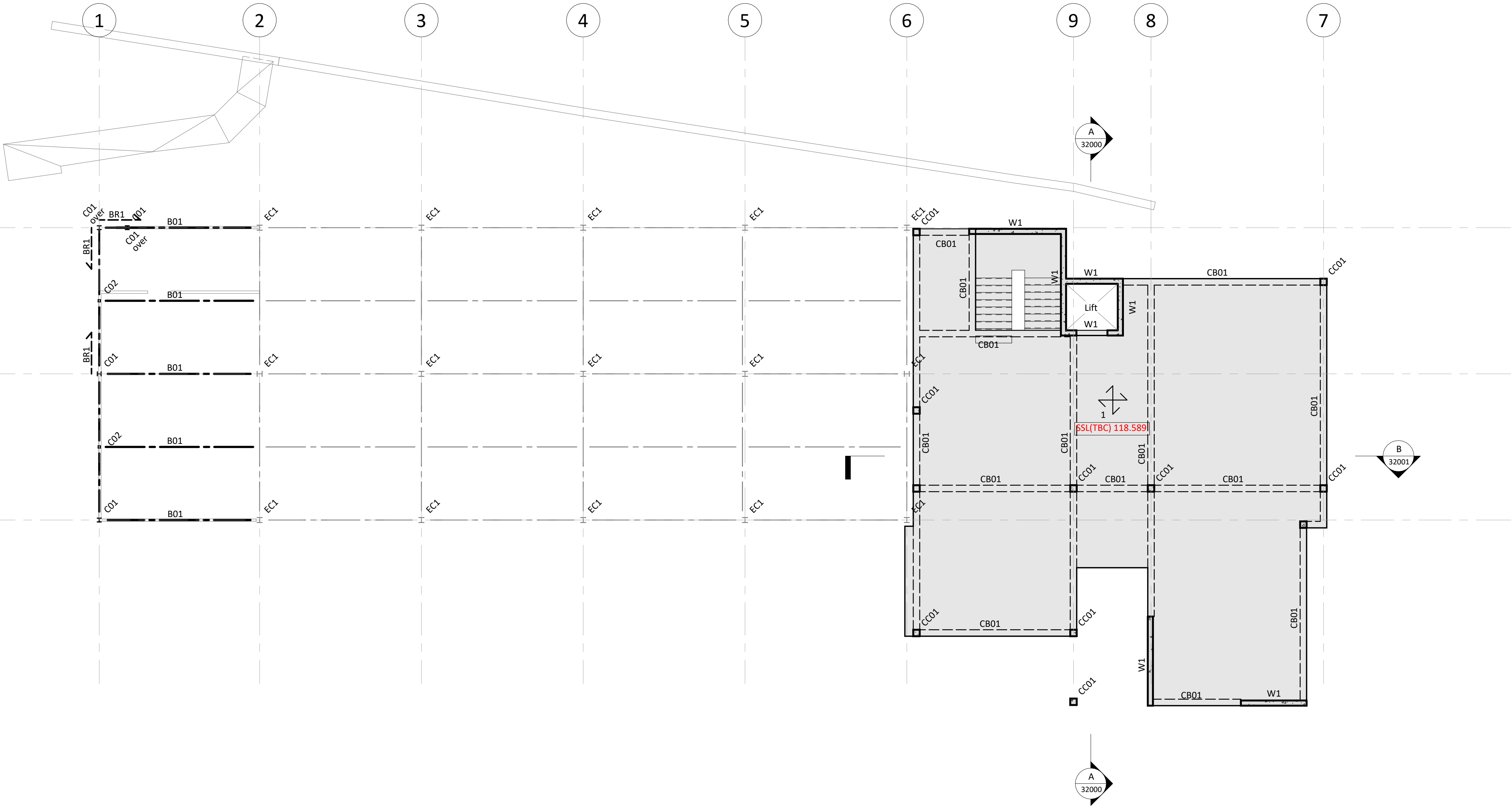
Job Name  
**Channing School, Brunner House**

Drawing Title  
**Proposed First Floor Plan**

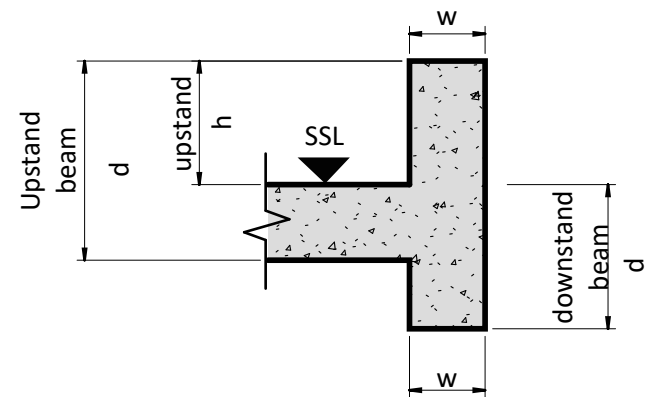
Purpose of Issue: **Preliminary** Scale at A1: **1 : 100**

Drg No: **2884-HTS-XX-01-DR-S-31110**

HTS Job No: **2884** Suitability: **S1** Rev:



Typical Beam Notation

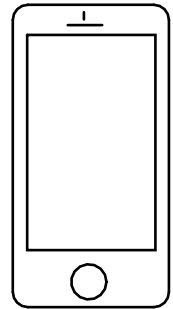


**Work In Progress**

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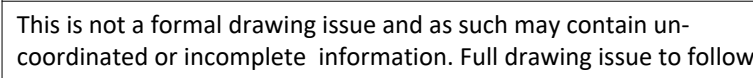
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- HTS Job No **2884**      Suitability **S1**      Rev





- | Proposed RC Cols |                 |      | Proposed RC Beams |             |
|------------------|-----------------|------|-------------------|-------------|
| Ref              | Size / Dia (mm) | Type | Ref               | Size        |
| CC01             | 250 x 250       | C40  | CB01              | 450d x 250w |

| Proposed Steel Cols |              | Proposed Steel Beams |              |
|---------------------|--------------|----------------------|--------------|
| Ref                 | Type         | Ref                  | Type         |
| C01                 | UC152x152x23 | B01                  | UC203x203x71 |
| C02                 | SHS90x90x5   | BR1                  | SHS90x90x4   |

| Proposed Timber Cols |      | Proposed Timber Beam |      |
|----------------------|------|----------------------|------|
| Ref                  | Size | Ref                  | Type |

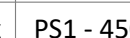
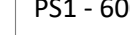
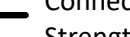
| Proposed Walls |                    |
|----------------|--------------------|
| Ref            | Thickness and Type |
| W1             | 200 RC             |
| W2             | 250 RC             |

| Proposed Floors |                    |
|-----------------|--------------------|
| Ref             | Thickness and Type |
| 1               | 250 thk RC slab    |

### Proposed Timber Floors

| Ref | Joists | Boarding |
|-----|--------|----------|
|-----|--------|----------|

| Proposed Foundation Slabs |                                   |
|---------------------------|-----------------------------------|
| Ref                       | Foundation Slab Type              |
| F1                        | 300 thk 300 thk RC ground Bearing |

| Legend                                                                                |                                                                                    |
|---------------------------------------------------------------------------------------|------------------------------------------------------------------------------------|
|  | Proposed RC structure                                                              |
|  | Proposed WRC structure                                                             |
|  | Proposed Steel Framing                                                             |
|  | Red dimension TBC by architect                                                     |
|  | PS1 - 450lg x 215wd x 150dp MC padstone<br>PS1 - 600lg x 215wd x 215dp MC padstone |
|  | Connection<br>Strengthening                                                        |
|  | Moment<br>connection                                                               |
|  | Pre-camber                                                                         |
|  | Crank                                                                              |
|  | Splice                                                                             |
|  | Thermal Break                                                                      |
|  | Break in beam                                                                      |

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| Rev | Date | By | Eng | Amendment |

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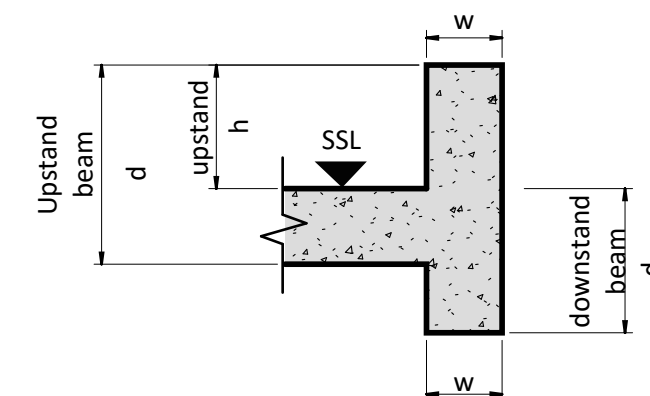
Drawing Title

**Proposed**

**Basement Floor Plan**

|                  |                    |             |                |
|------------------|--------------------|-------------|----------------|
| Purpose of Issue | <b>Preliminary</b> | Scale at A1 | <b>1 : 100</b> |
|------------------|--------------------|-------------|----------------|

Drg No **2884-HTS-XX-B1-DR-S-31090**

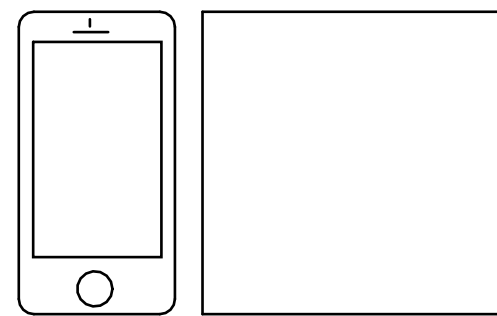
HTS Job No **2884** Suitability **S1** Rev

## Work In Progress

Date / Time Printed : 24/10/2023 09:32:04

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- ### Proposed RC Cols

| Ref  | Size / Dia (mm) | Type |
|------|-----------------|------|
| CC01 | 250 x 250       | C40  |

|      |             |
|------|-------------|
| Ref  | Size        |
| CB01 | 450d x 250w |

| Ref | Type         |
|-----|--------------|
| C01 | UC152x152x23 |
| C02 | SHS90x90x5   |

| Ref | Type         |
|-----|--------------|
| B01 | UC203x203x71 |
| BR1 | SHS90x90x4   |

| Ref | Size |
|-----|------|
|-----|------|

| Ref | Type |
|-----|------|
|-----|------|

| Ref | Thickness and Type |
|-----|--------------------|
|-----|--------------------|

|    |        |
|----|--------|
| W1 | 200 RC |
| W2 | 250 RC |

| Ref | Thickness and Type |
|-----|--------------------|
|-----|--------------------|

|   |                 |
|---|-----------------|
| 1 | 250 thk RC slab |
|---|-----------------|

**Proposed Timber Floors**

| Ref | Joists | Boarding |
|-----|--------|----------|
|-----|--------|----------|

| Proposed Foundation Slabs |                      |
|---------------------------|----------------------|
| Ref.                      | Foundation Slab Type |

### Proposed Foundation Slabs

|     |                                   |
|-----|-----------------------------------|
| Ref | Foundation Slab Type              |
| F1  | 300 thk 300 thk RC ground Bearing |

### Proposed Foundations

| Ref                             | Width | Length | Depth | Description |
|---------------------------------|-------|--------|-------|-------------|
| <b>Proposed RC Ground Beams</b> |       |        |       |             |

### Proposed RC Ground Beams

| Ref | Width | Depth | Description |
|-----|-------|-------|-------------|
|     |       |       |             |

|  |  |      |
|--|--|------|
|  |  | 5000 |
|  |  | 6000 |

|               |       |       |     |
|---------------|-------|-------|-----|
| <b>Legend</b> | 6000  |       |     |
|               | 15998 | 18988 | 700 |

|                                                                                       |                        |
|---------------------------------------------------------------------------------------|------------------------|
|  | Proposed RC structure  |
|  | Proposed WRC structure |

|                                                                                       |                        |
|---------------------------------------------------------------------------------------|------------------------|
|  | Proposed Steel Framing |
|---------------------------------------------------------------------------------------|------------------------|

|                                                                                       |                                 |
|---------------------------------------------------------------------------------------|---------------------------------|
|  | Red dimension TBC by architect  |
|  | Blue dimension TBC by architect |

|     |                                                                                    |
|-----|------------------------------------------------------------------------------------|
| PSX | PS1 - 450lg x 215wd x 150dp MC padstone<br>PS1 - 600lg x 215wd x 215dp MC padstone |
|-----|------------------------------------------------------------------------------------|

ST  Connection Strengthening

BR Break in beam

|     |      |    |     |           |
|-----|------|----|-----|-----------|
|     |      |    |     |           |
|     |      |    |     |           |
|     |      |    |     |           |
|     |      |    |     |           |
|     |      |    |     |           |
|     |      |    |     |           |
|     |      |    |     |           |
| Rev | Date | By | Eng | Amendment |

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Job Name  
**Channing School, Brunner  
House**

Drawing Title

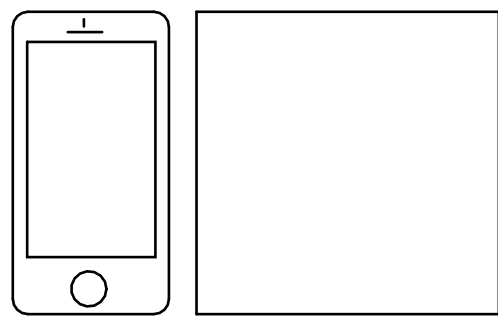
# Proposed Timber Roof Plan

| Purpose of Issue                                               | Preliminary | Scale at A1 |
|----------------------------------------------------------------|-------------|-------------|
| 1. To determine the extent of the problem                      | 1.0         | 1.0         |
| 2. To determine the cause of the problem                       | 1.0         | 1.0         |
| 3. To determine the effect of the problem                      | 1.0         | 1.0         |
| 4. To determine the solution to the problem                    | 1.0         | 1.0         |
| 5. To determine the impact of the problem                      | 1.0         | 1.0         |
| 6. To determine the responsibility for the problem             | 1.0         | 1.0         |
| 7. To determine the time frame for the problem                 | 1.0         | 1.0         |
| 8. To determine the location of the problem                    | 1.0         | 1.0         |
| 9. To determine the nature of the problem                      | 1.0         | 1.0         |
| 10. To determine the severity of the problem                   | 1.0         | 1.0         |
| 11. To determine the frequency of the problem                  | 1.0         | 1.0         |
| 12. To determine the duration of the problem                   | 1.0         | 1.0         |
| 13. To determine the scope of the problem                      | 1.0         | 1.0         |
| 14. To determine the impact of the problem on the organization | 1.0         | 1.0         |
| 15. To determine the impact of the problem on the community    | 1.0         | 1.0         |
| 16. To determine the impact of the problem on the environment  | 1.0         | 1.0         |
| 17. To determine the impact of the problem on the economy      | 1.0         | 1.0         |
| 18. To determine the impact of the problem on the culture      | 1.0         | 1.0         |
| 19. To determine the impact of the problem on the society      | 1.0         | 1.0         |
| 20. To determine the impact of the problem on the world        | 1.0         | 1.0         |

Drp No **2884-HTS-XX-RF-DR-S-31121**

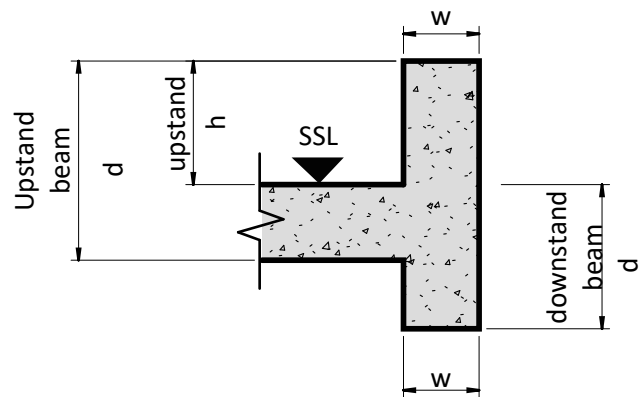
HTS Job No **2884**      Suitability **S1**      Rev

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### Typical Beam Notation



## Work In Progress

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| Proposed Steel Cols |              | Proposed Steel Beams |              |
|---------------------|--------------|----------------------|--------------|
| Ref                 | Type         | Ref                  | Type         |
| C01                 | UC152x152x23 | B01                  | UC203x203x71 |
| C02                 | SHS90x90x5   | BR1                  | SHS90x90x4   |

| Proposed Walls |                    |
|----------------|--------------------|
| Ref            | Thickness and Type |
| W1             | 200 RC             |
| W2             | 250 RC             |

| Proposed Timber Floors |        |          |
|------------------------|--------|----------|
| Ref                    | Joists | Boarding |

| Legend |                                        |
|--------|----------------------------------------|
|        | Proposed RC structure                  |
|        | Proposed WRC structure                 |
|        | Proposed Steel Framing                 |
|        | Red dimension TBC by architect         |
|        | PS1 - 450g x 215wd x 150dp MC padstone |
|        | PS1 - 600g x 215wd x 215dp MC padstone |
|        | ST - Connection Strengthening          |
|        | M - Moment connection                  |
|        | B1 [ 25mm ] Pre-camber                 |
|        | C - Crank                              |
|        | S - Splice                             |
|        | TB - Thermal Break                     |
|        | BR - Break in beam                     |

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Drawing Title

**Proposed Overall Sections**

**Sheet 1**

Drg No **2884-HTS-XX-ZZ-DR-S-32000**

HTS Job No **2884** Suitability **S1** Rev

The diagram illustrates a T-junction between an upstream beam and a downstream beam. The upstream beam has a total height  $d$  and a width  $w$ . The downstream beam has a height  $d$  and a width  $w$ . The SSL (Sill Seal Lip) is located at the junction, with a height  $h$  from the top of the downstream beam to the top of the upstream beam. The SSL is shown as a shaded area with a jagged line indicating the seal.

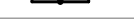
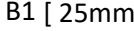
Date / Time Printed : 24/10/2023 09:32:33

This is not a formal drawing issue and as such may contain uncoordinated or incomplete information. Full drawing issue to follow

| Proposed Steel Cols |              | Proposed Steel Beams |              |
|---------------------|--------------|----------------------|--------------|
| Ref                 | Type         | Ref                  | Type         |
| C01                 | UC152x152x23 | B01                  | UC203x203x71 |
| C02                 | SHS90x90x5   | BR1                  | SHS90x90x4   |

| Ref | Thickness and Type |
|-----|--------------------|
| W1  | 200 RC             |
| W2  | 250 RC             |

| Proposed Timber Floors |        |          |
|------------------------|--------|----------|
| Ref                    | Joists | Boarding |

| Legend                                                                                |                                         |
|---------------------------------------------------------------------------------------|-----------------------------------------|
|    | Proposed RC structure                   |
|   | Proposed WRC structure                  |
|  | Proposed Steel Framing                  |
|  | Red dimension TBC by architect          |
|  | PS1 - 450lg x 215wd x 150dp MC padstone |
|  | PS1 - 600lg x 215wd x 215dp MC padstone |
|  | Connection Strengthening                |
|  | Moment connection                       |
|  | Pre-camber                              |
|  | Crank                                   |
|  | Splice                                  |
|  | Thermal Break                           |
|  | Break in beam                           |

[illegible]

1:50

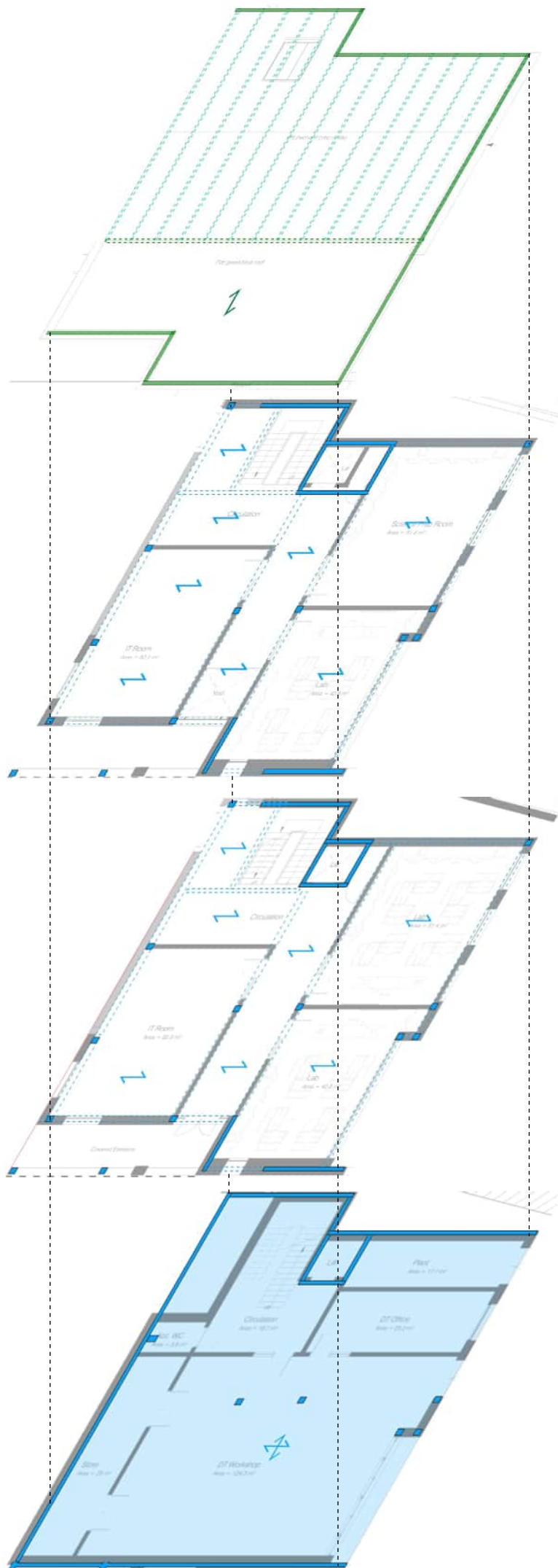
<http://heynetillettsteel.com/>

The diagram illustrates the cross-section of a T-junction. The top horizontal section is labeled 'upstand beam' with a total height of  $d$  and a top flange height of  $h$ . The vertical section is labeled 'downstand beam' with a height of  $d$ . The width of both the top flange and the bottom stem is  $w$ . A central vertical line represents the 'SSL' (Structural Steel Line). The bottom stem is filled with a stippled pattern, representing concrete.

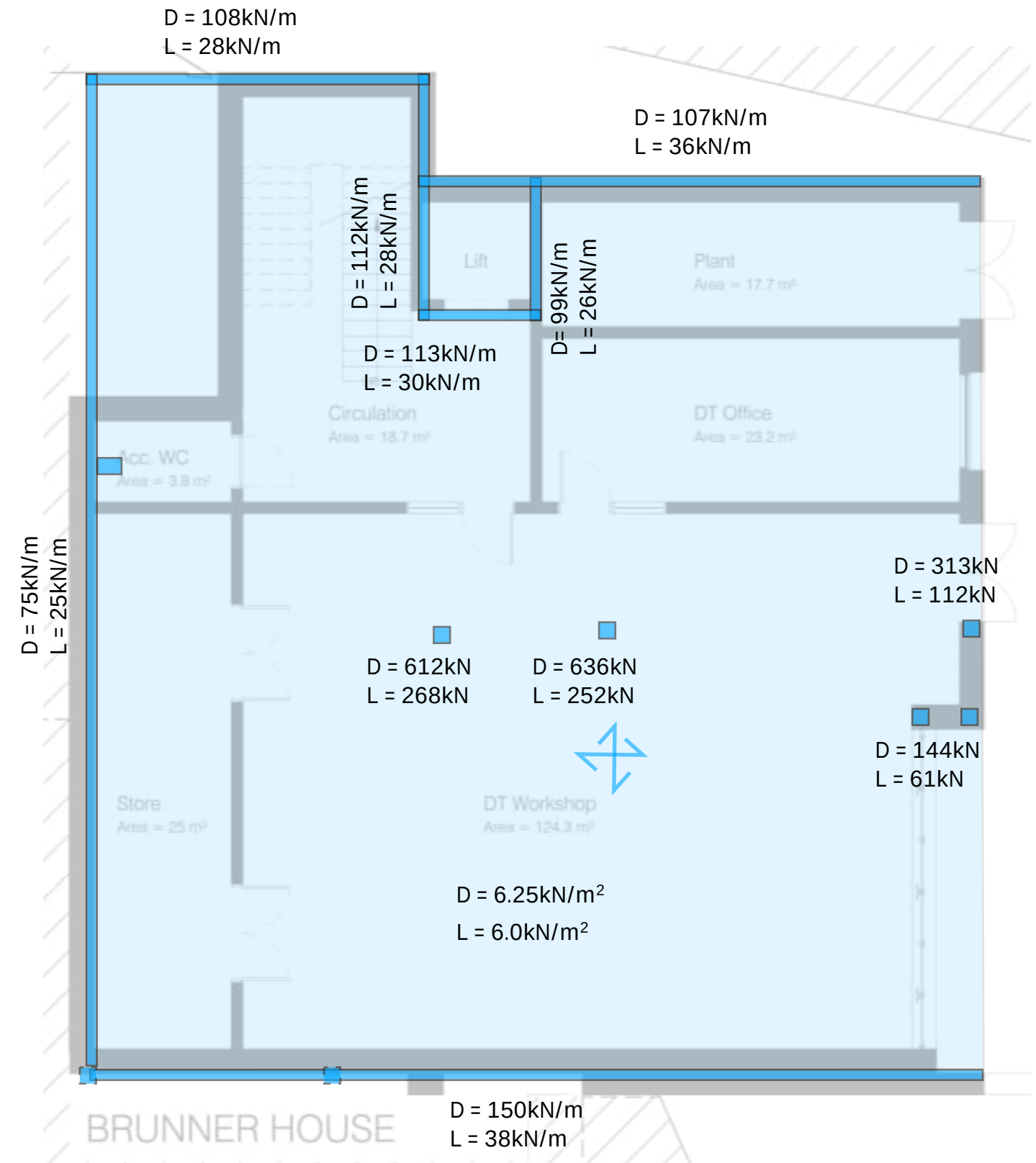
## Work In Progress

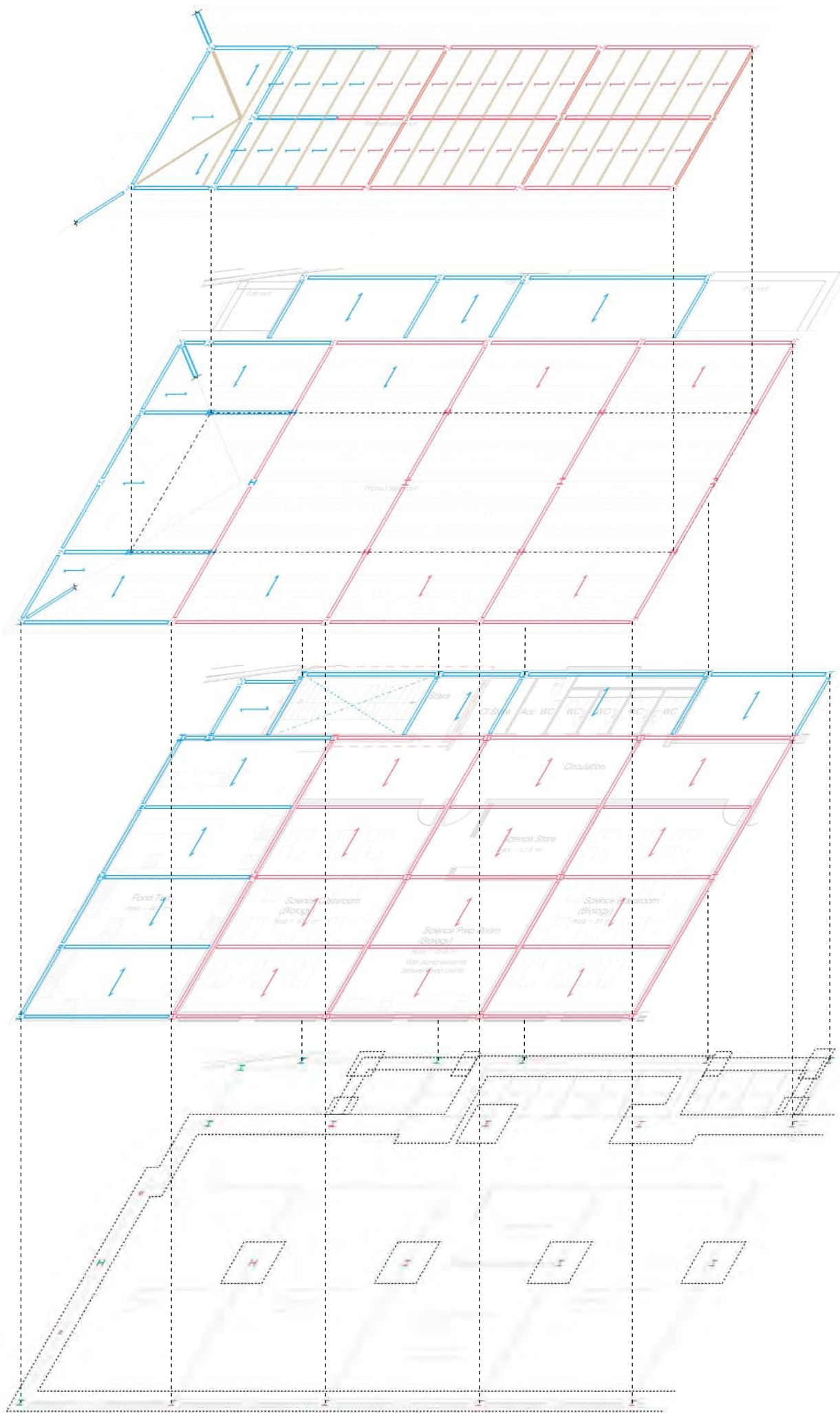
Date / Time Printed : 24/10/2023 09:32:36

This is not a formal drawing issue and as such may contain un-coordinated or incomplete information. Full drawing issue to follow



|              |                                                               |                                           |
|--------------|---------------------------------------------------------------|-------------------------------------------|
| Roof         | Dead = 1.0kN/m <sup>2</sup><br>Live = 0.6kN/m <sup>2</sup>    | (timber truss)<br>(snow)                  |
| 1st Ceiling  | Dead = 6.25kN/m <sup>2</sup><br>Live = 0.75kN/m <sup>2</sup>  | (250mm RC slab)<br>(maintenance)          |
| 1st Floor    | Dead = 6.25kN/m <sup>2</sup><br>Live = 3(+1)kN/m <sup>2</sup> | (250mm RC slab)<br>(classroom)            |
| Ground Floor | Dead = 6.25kN/m <sup>2</sup><br>Live = 3(+1)kN/m <sup>2</sup> | (250mm RC slab)<br>(classroom)            |
| Basement     | Dead = 6.25kN/m <sup>2</sup><br>Live = 5(+1)kN/m <sup>2</sup> | (250mm raft foundation)<br>(workshop)     |
| Structure    | Beams = 2.81kN/m<br>Walls = 17.5kN/m<br>Columns = 5.47kN      | (450dp RC)<br>(200mm thk)<br>(250x250 RC) |



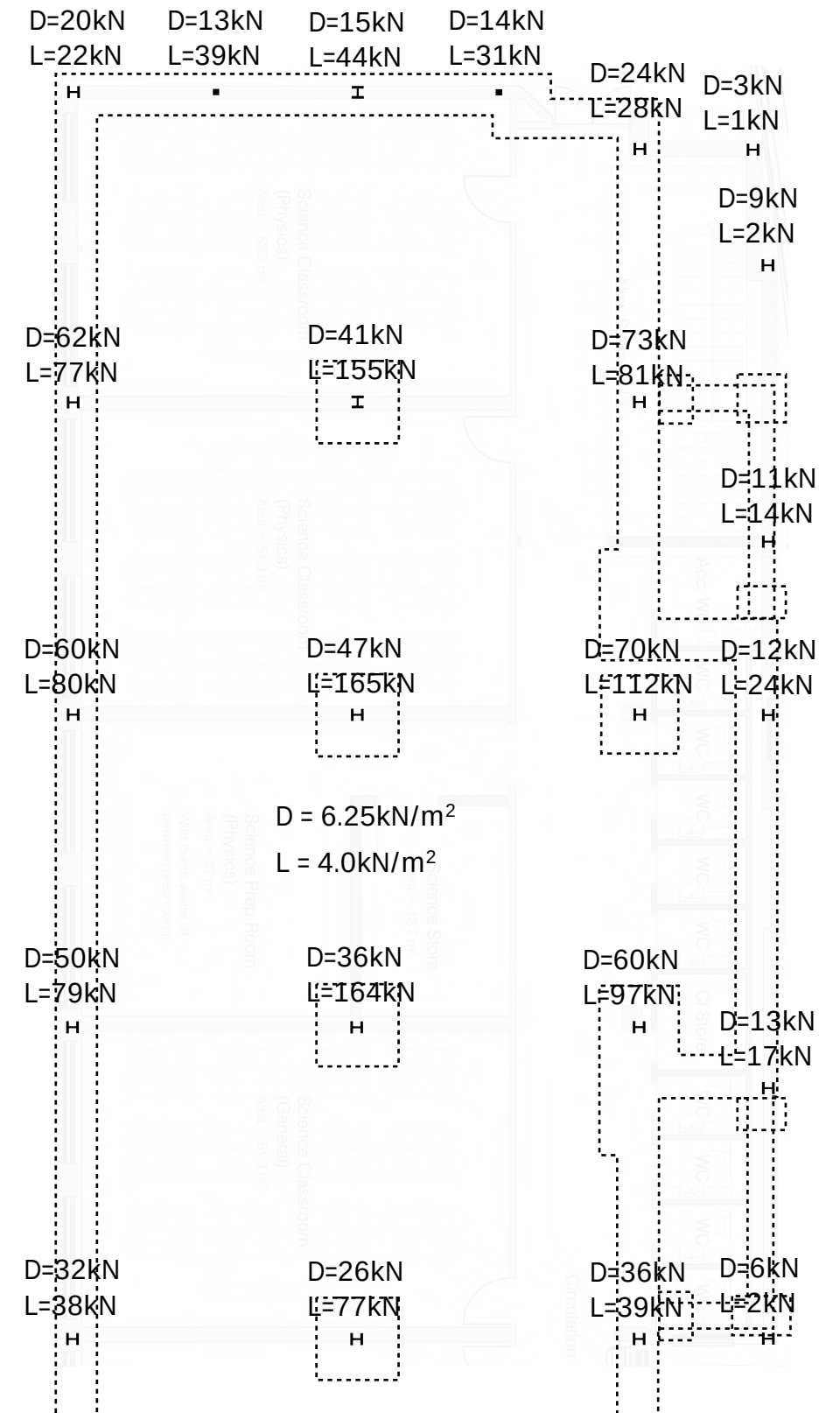


Roof  
Dead = 1.0kN/m<sup>2</sup>  
Live = 0.6kN/m<sup>2</sup>  
(timber truss)  
(snow)

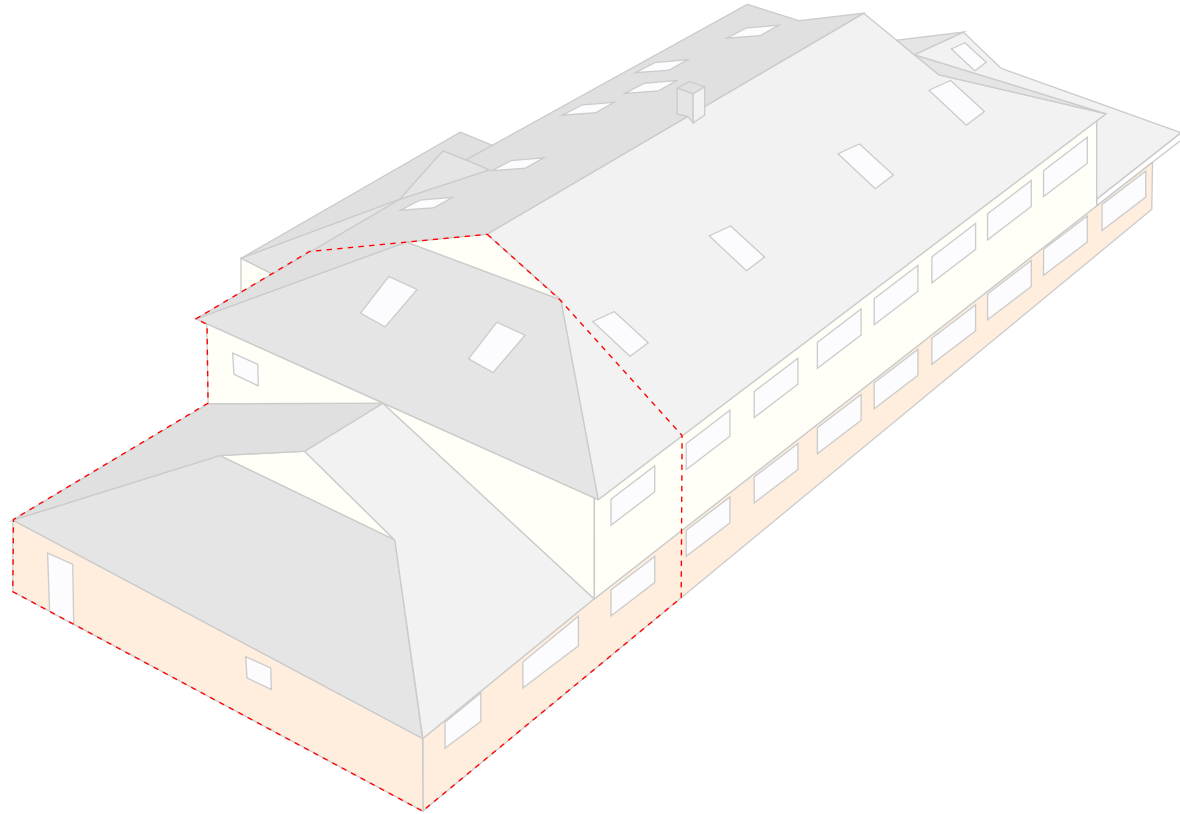
Roof  
Dead = 1.0kN/m<sup>2</sup>  
Live = 0.6kN/m<sup>2</sup>  
(timber truss)  
(snow)

1st Floor  
Dead = 0.5kN/m<sup>2</sup>  
Live = 3(+1)kN/m<sup>2</sup>  
(timber floor)  
(classroom)

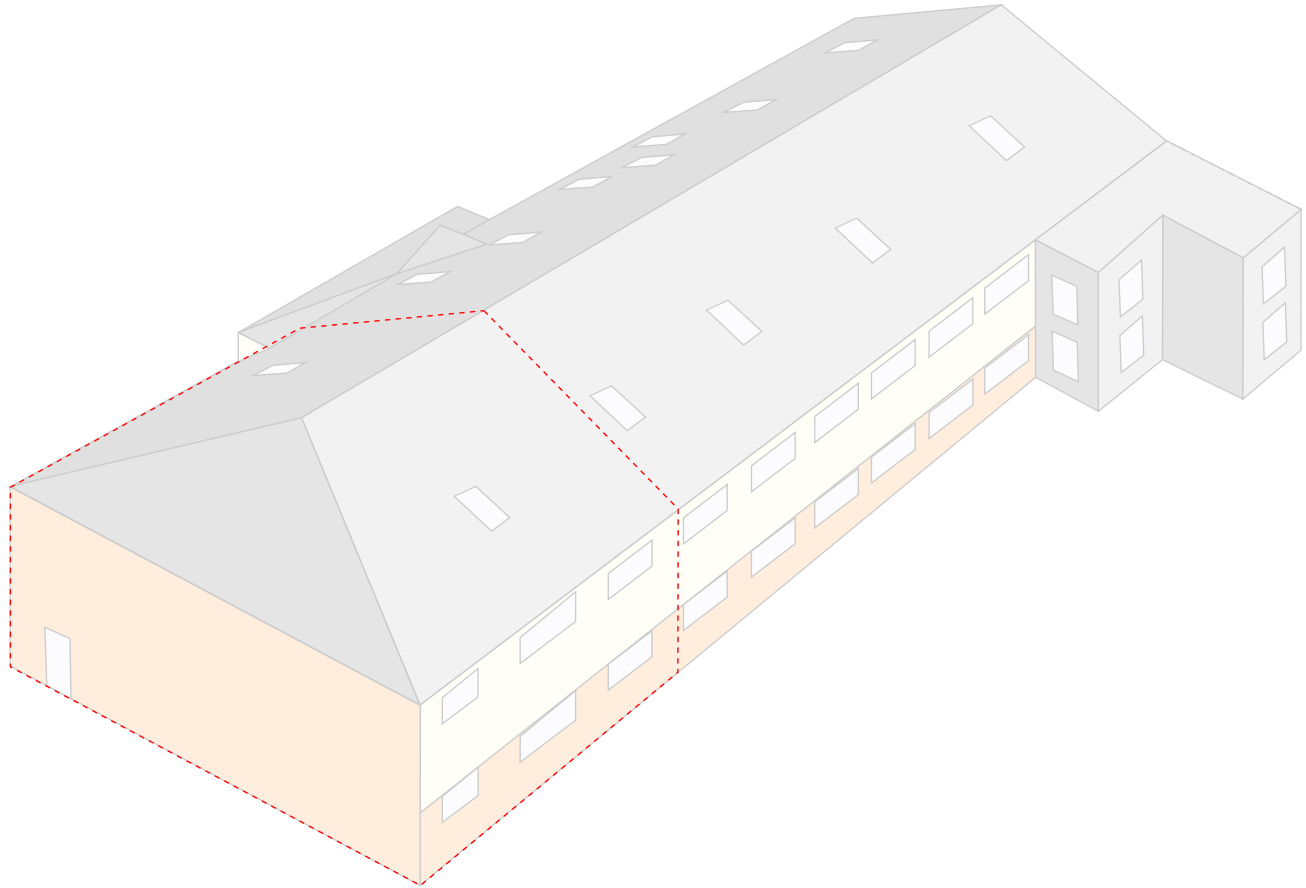
Ground Floor  
Dead = 0.5kN/m<sup>2</sup>  
Live = 3(+1)kN/m<sup>2</sup>  
(timber floor)  
(classroom)



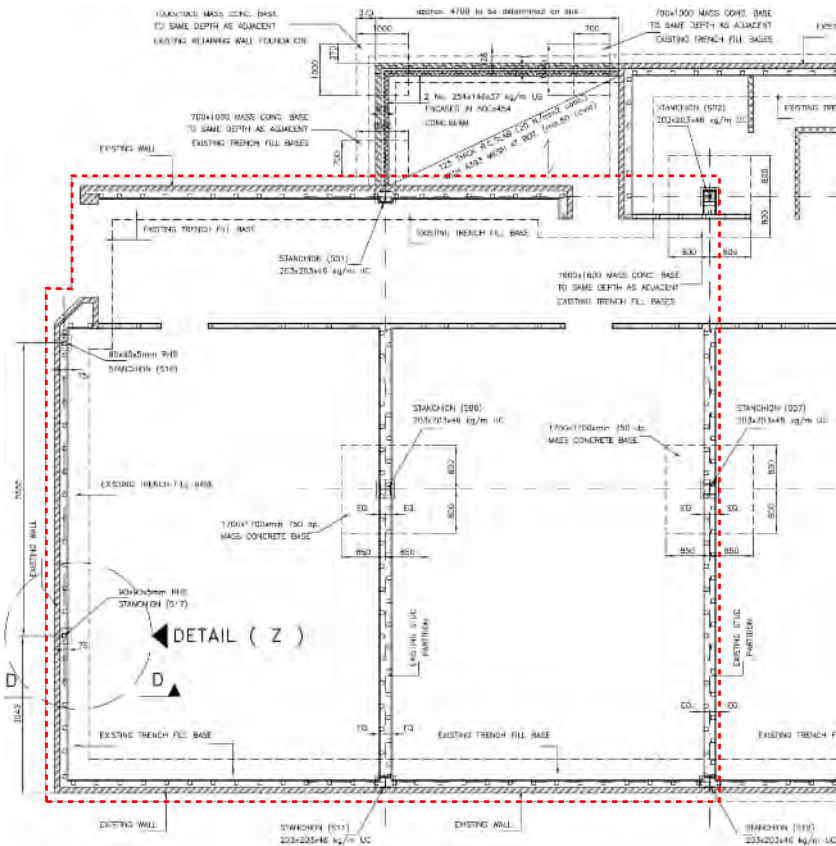




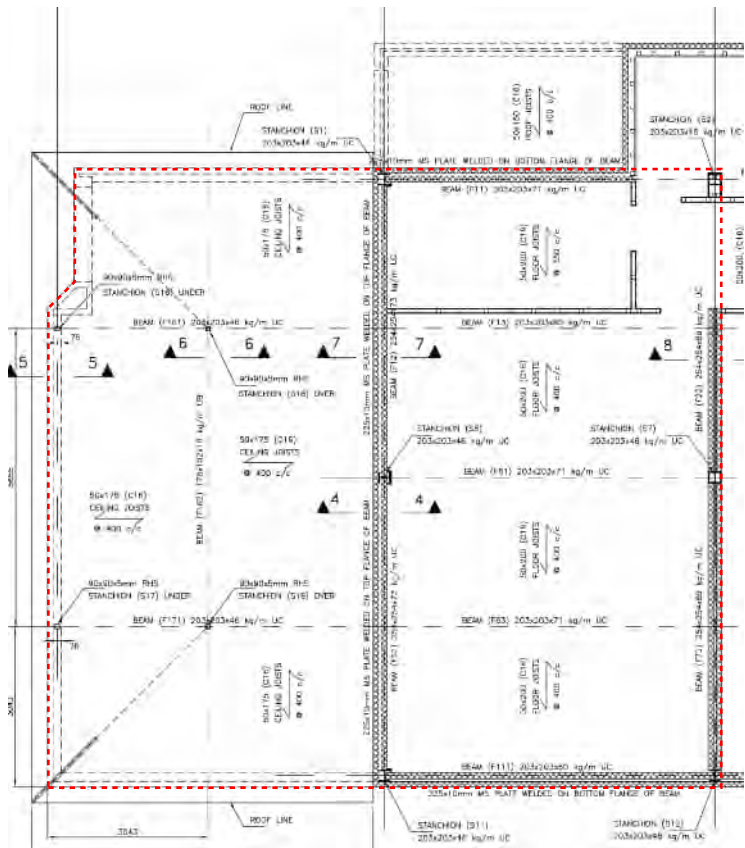
Perspective view of existing building



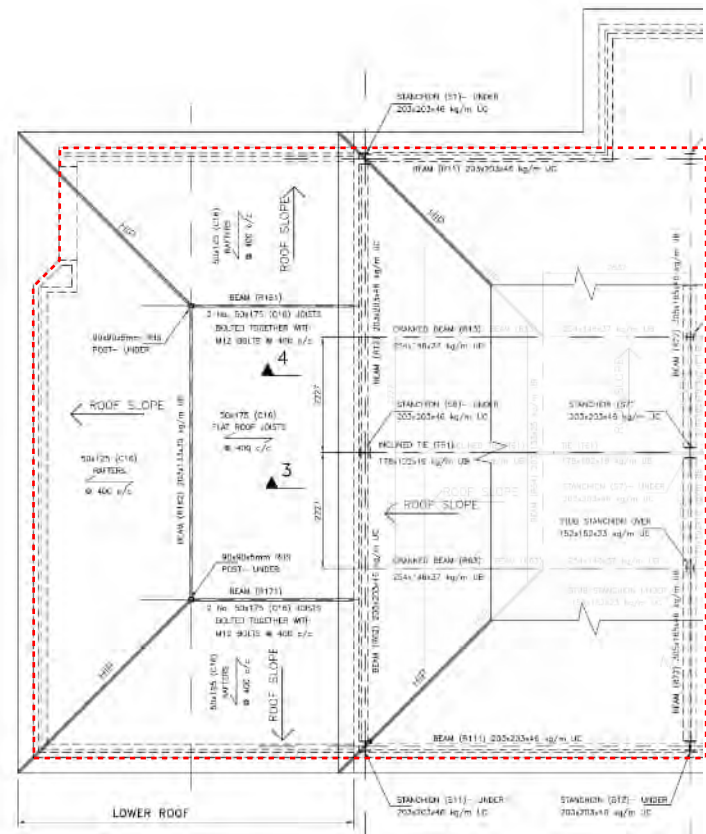
Perspective view of proposed building



Archive ground floor plan



Archive first floor plan



Archive roof and upper roof plan

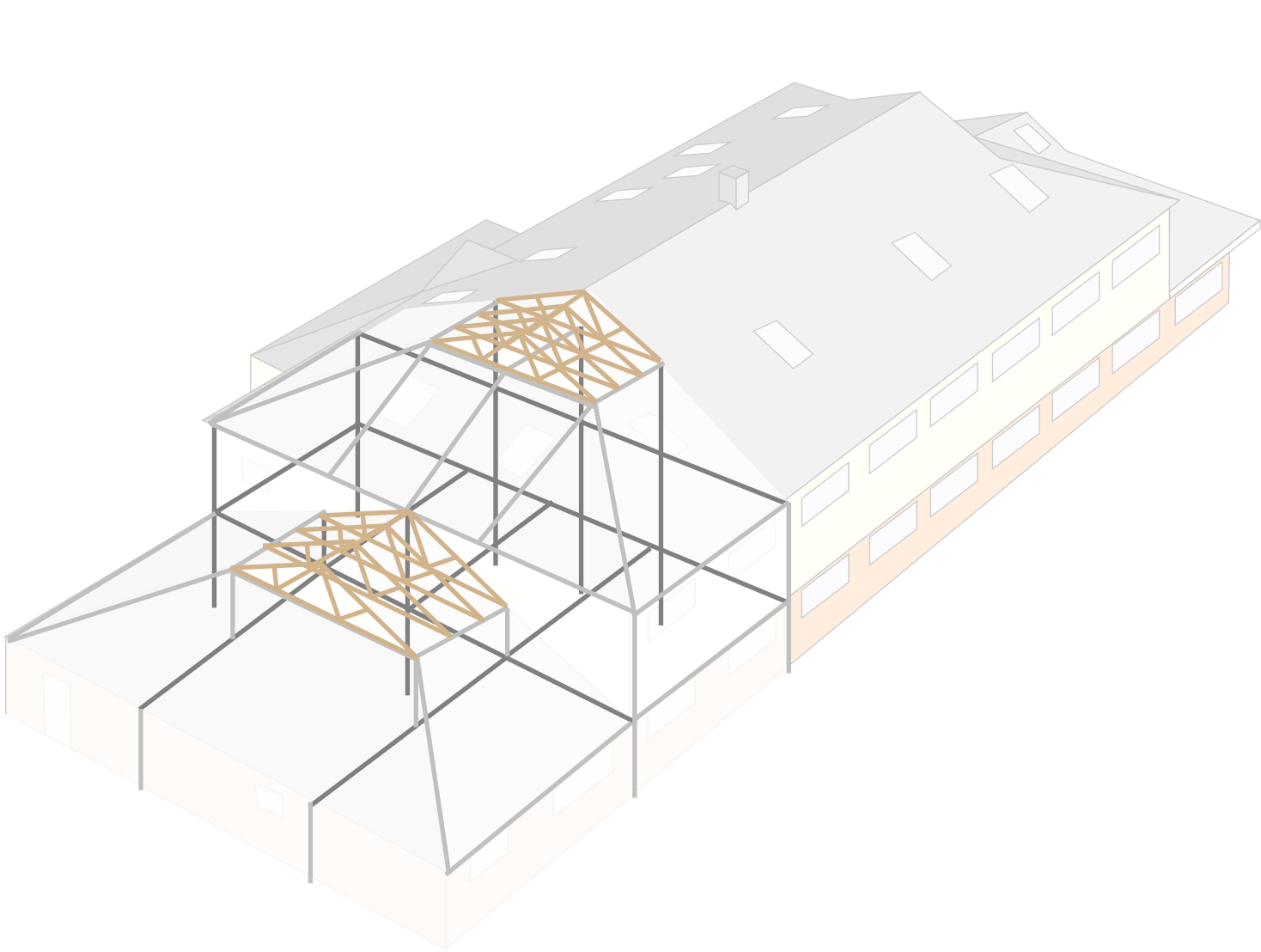
KEY:

Steel Struture

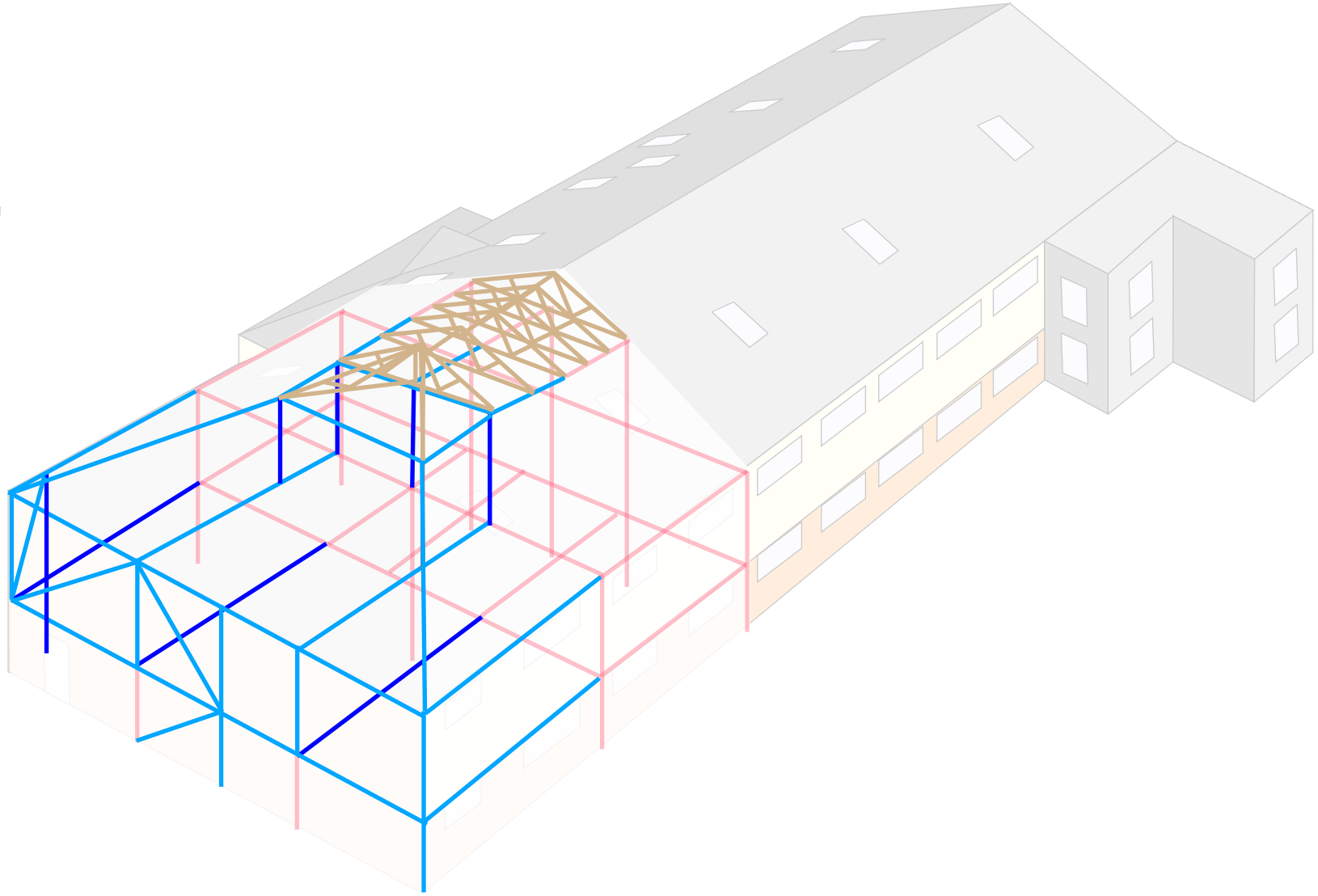
Timber Structure

Reused Steel

New Steel

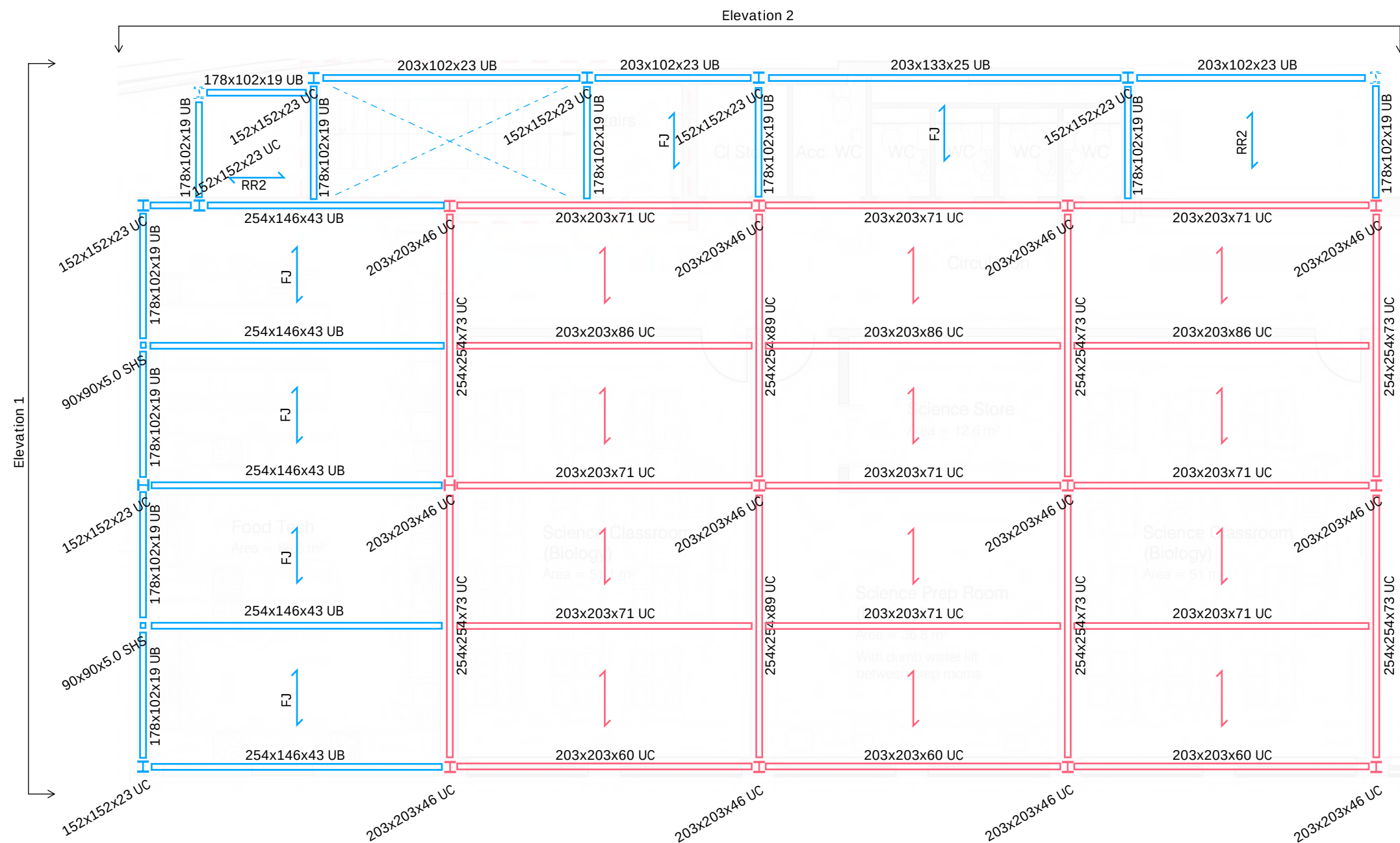


Existing structure



Proposed structure and reuse of existing





KEY:

- Extg. foundations
- New foundations
- Extg. column
- Extg. column below
- Extg. beam
- Extg. span of floor/roof
- New column
- New column below
- New beam
- New span of floor/roof
- New timber roof truss

- 50x200 (C16)  
Floor joists  
@ 400 c/c
- FJ  
50x200 (C20)  
Floor joists  
@ 400 c/c
- RR2  
50x150 (C20)  
Roof rafters  
@ 400 c/c