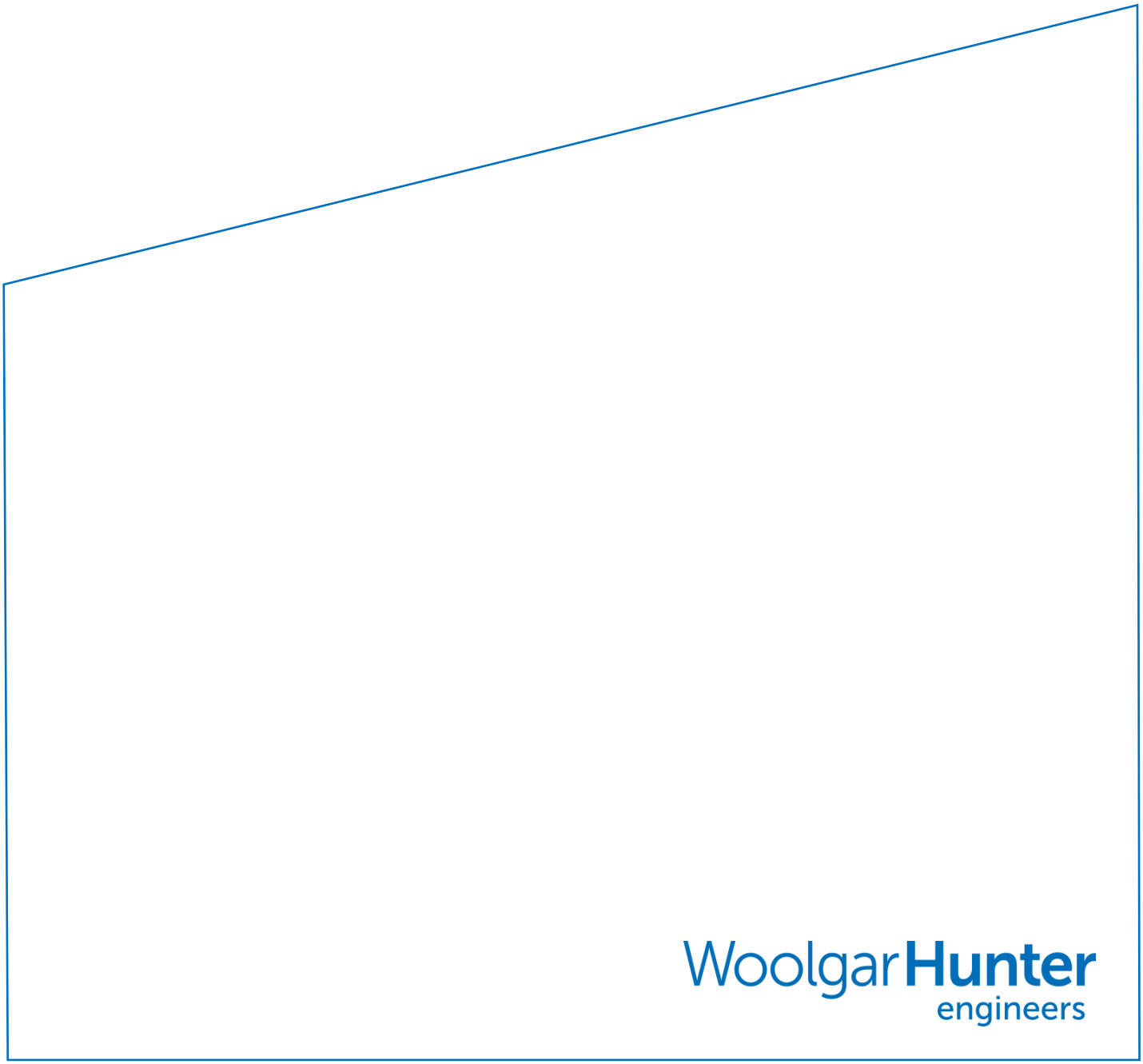
structural inspection

Rylands Building, Manchester
CD9 Properties



Woolgar Hunter
engineers

Project Title: Rylands Building, Manchester
Client: CD9 Properties
Project No: 196002

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1.0 introduction

This document outlines the intention and rationale for the investigations required to identify the structural form and detailing of the Rylands building in Manchester.

The Rylands building is a stone clad, steel framed building and is Grade II listed and will thus require co-ordination with Manchester City Council and heritage teams regarding the proposed works and the repair strategy.

The building is currently occupied by Debenhams and access may be challenging given the current COVID 19 issues and difficulties accessing the building with the current tenant. After previous visits to site, it is understood that Debenhams' shop floor covers basement to third floor, with sub-basement and fourth floor being for storage. Fifth floor and up are neither shop floor nor storage.

The opening up works (OUW) identified within this document are specified under the pretence that works are not permitted by Debenhams on the shop floor from basement to third (inclusive). The document is also written in mind with the current scenario, whereby a soft strip of the structure has not occurred and, as such, further OUW will be required once this has taken place. Additionally, once the OUW within this report have been completed, further OUW may be required, as this may develop a more informed investigation strategy after the soft strip has occurred.

In 2020, the building had an external rope access survey completed as elements of the façade were noted as potentially being in distress by the heritage architect and this report has further informed the locations of opening up works required.

Given the Grade II listed status of the building the proposed works will need to be agreed with the council's heritage team including the proposed remedial works.

This document is intended to share and explain the surveying strategy for the building, the rationale behind the opening up works and where non-intrusive methods have been selected to minimise disruption. The opening up works have been developed with input from specialist contractors, the heritage architect, fire engineers, project architect and the planning consultant.

This report contains detailed proposed locations for the opening up works in Appendix A on over-marked drawings with a detailed schedule of the specific opening up works, their rationale and proposed reinstatement works contained within Appendix B. Some of the locations within the Appendix B require an initial site visit to verify that the opening up works are clear of existing services and can be carried out safely, but they are indicative of the type of opening up works required.

2.0 site description

The Rylands Building was constructed in 1932 for the purpose of being a textile warehouse for the Rylands family. The property, currently in use as a department store, is a Grade II listed building. Due to the building's current use as a department store, this has hindered inspection of floors from basement to third.

The structure itself, which has large floor plates, is comprises of seven storeys plus two basements. The sub-basement is of reduced area compared to the basement. There is a bank of loading bays at the rear of the ground floor, which can be accessed from Bridgewater Place.

The ground floor height is noted on the original drawings as being 20 ft 9 in (6.32 m). Other than this, the typical floor to floor heights are noted to be 13 ft (3.96 m). The basement and sub-basement floor to floor heights are 12 ft (3.67 m) and 11 ft 9 in (3.58 m), respectively.

The building is a steel frame that was originally constructed in two halves to ease with the construction sequencing. The elevations of the Rylands Building are clad in Portland stone.

The façade is Grade II listed and will need to be protected until the extent of the repairs and the access requirements are completely defined.

There have been various investigations and surveys undertaken for the building (see below) however access to the building has been restricted and there are significant gaps in the archive information. For example, there has been notable movement in the facade stonework but investigations to the primary structural frame have been unable to be completed that may point to the cause of the movements.

- TGA Survey Report.
- Sandberg Survey Report.
- Woolgar Hunter Report.
- Stephen Levrant Heritage Architecture Interim Report.
- Stephen Levrant Heritage Architecture Report.
- Stephen Levrant Heritage Architecture Elevation Sketches.
- Original Construction Photographs.
- Quadriga Survey Reports.

3.0 structural integrity

The building has stood for nearly 100 years and was originally constructed as a textile storage building for the Rylands family. As would be expected for this type of building, the frame is substantial in nature consisting of a robust steelwork frame with concrete slabs and a stone clad façade which reflects the intended purpose of the building.

Stability is provided as a combination of the masonry shear cores that run through the building.

In 2017 two independent surveys were commissioned for the building that identified that corrosion was present within the steel frame and areas of cracking were observed in the façade which was attributed to the steel expanding behind the stone, often known as 'Regents Street Disease'.

In 2019 Woolgar Hunter were appointed to investigate the overall feasibility of vertically extending the structure and adapting the floor plates for the refurbishment of the building. The initial site walkover report undertaken noted similar issues with areas of corrosion being evident at the perimeter columns suggesting that the recommendations in the Sandberg and TGA reports had not been undertaken by the client.

In 2020 Stephen Levrant were appointed by CBRE to undertake a further appraisal of the façade using binoculars from the footpath level. The interim report has raised concern that the façade has displaced further in certain locations compared to the photographs taken in the 2017 reports and may be unsafe in parts.

A further detailed survey has been undertaken by Quadriga to inspect the condition of the external stonework although this has not involved any assessment of the structural steel frame.

4.0 investigation strategy and locations

Access to the building has been severely restricted by the tenant. Undertaking rigorous appraisals and developing an understanding of the structural behaviour from this has been challenging. The client is considering redeveloping the building and this will require the adaptation of the structural frame in the following areas.

4.1 introduction of additional floors (OUW1)

It is understood that whilst the frame for the building is formed in steel with a concrete slab based on the archive construction photographs, the majority of this steelwork is believed to be concrete encased.

In order to establish the feasibility of adding additional floors, the following elements will require investigation, preferably using non-destructive techniques:

1. Connectivity of the concrete slab to the steel grillage to identify a path for diaphragm action.
2. Floor slab depths (typical floor and roof level), reinforcement diameters, spacing and depth of cover using Hilti Ferroscan or similar. Intrusive works may be required to obtain all relevant information.
3. Size of the existing steel columns, depth of cover to columns, column splice locations, and confirmation of beam sizes to corroborate the archive plans obtained from the Manchester Central Library archive including framing arrangements and locations of steel in masonry lift cores and risers.
4. Investigation of the steel beam to steel column connection detail to assess the potential for disproportionate collapse and nominal tying.
5. Scanning of concrete encased beams and columns to locate voids.
6. Size, layout, foundation spacing, reinforcement diameter, spacing, and depth of cover for the existing adjacent foundations (using GPR, drilling/ coring, and/ or trial pitting).
7. Coupon, metallic chemical, hardness, testing of beams or columns to determine the properties of the steelwork to validate assumptions made during Stage 2.
8. Compressive and petrographic testing of beam/ column encasement and slabs to determine the properties of the concrete, to validate assumptions made during Stage 2.
9. Investigation of the column capping detail at the uppermost stack/ roof level.

4.2 introduction of central atrium (OUW2)

It is proposed that a significant proportion of the floor slab is to be removed to create a central atrium and lightwell, this will disrupt the diaphragm action of the building and the structural behaviour of the frame, and the connectivity with the slab is required to co-ordinate the intervention and maintain lateral stability.

In order for the design to be developed and the principles assumed the following information will be required:

1. Connectivity of the concrete slab to the steel grillage to identify a path for diaphragm action.
2. Floor slab depths (typical floor and roof level), reinforcement diameters, spacing, and depth of cover using Hilti Ferroscan or similar.

3. Size of the existing steel columns, depth of cover to columns, column splice locations, and confirmation of beam sizes to corroborate the archive plans obtained from the Manchester Central Library archive.

4.3 construction of new stability cores (OUW3)

The introduction of additional floors will necessitate the formation of new distribution cores to facilitate structural stability, lift shafts, service risers, and staircases. This will require the construction of new foundations, removal of parts of the steel frame, and the introduction of new steelwork to frame out the intervention.

In order for the design to be developed and the principles assumed the following information will be required:

1. Connectivity of the concrete slab to the steel grillage to identify a path for diaphragm action.
2. Floor slab depths (typical floor and roof level), reinforcement diameters, spacing, and depth of cover using Hilti Ferroscan or similar.
3. Size of the existing steel columns, depth of cover to columns, column splice locations, and confirmation of beam sizes to corroborate the archive plans obtained from the Manchester Central Library archive.
4. Confirmation of the thickness, reinforcement pattern, bar diameter, and cover to the lowest level basement slab.
5. Size, layout, foundation spacing, reinforcement diameter, spacing, and depth of cover for the existing adjacent foundations (using GPR, drilling/ coring, and/ or trial pitting).
6. Scanning of concrete encased beams and columns to locate voids.

4.4 facade (OUW4)

The surveys to date on Rylands Building have identified movement in the stone façade. The movement of the stone façade is likely due to the expansion and movement of the façade steelwork (columns and bracketry). There are two parts to understanding the façade steelwork, which are:

- Generally determining the condition of the steelwork and condition of the associated bracketry.
- Determining the size, condition of the steelwork, and condition of the associated bracketry.

To understand the current state of the steelwork, the following will be required:

1. Investigation of the steel columns condition, size determination, potential loss of section, and inspection of bracketry supporting the stone façade. This may be a combination of intrusive and non-destructive visual inspection through camera surveys.
2. Investigation of the steel columns condition, potential loss of section, and inspection of bracketry supporting the stone façade. This may be a combination of intrusive and non-destructive visual inspection through camera surveys.

4.5 drainage (OUW5)

Site visits undertaken by Woolgar Hunter have located a number of manholes, one of which was numbered MH14. However, it is unknown where all manholes are located, or whether the total number exceeds 14. The locations of the manholes currently known to Woolgar Hunter are indicatively shown on the drawings in Appendix A. There are two potential scenarios for the drainage surveys:

- Woolgar Hunter attempt to locate remaining manholes on site and map out the locations to be investigated by the contractor.
- The contractor locates the remaining manholes on site as part of the scope for the drainage survey.

A full drainage survey is required to determine the condition of the drainage network as well as the exits from the structure. The surveys would include, but may not be limited to:

1. Camera surveys to determine the condition of the drainage network.
2. Jetting and tracing of all connection points and the surrounding sewer network.

4.6 basement assessment (OUW6)

The building has been poorly maintained for a period of time and due to a potential change in loading to the top of the basement wall, non-destructive assessment techniques are required to the basement wall to determine potential thickness, reinforcement arrangement, concrete cover and chemical and strength testing for the walls.

1. Investigation into the basement wall thickness, reinforcement diameter, reinforcement arrangement, and depth of cover through non-intrusive techniques and intrusive.
2. Chemical and strength testing of the basement walls to determine its mechanical properties and composition.

The site investigation will require a Ground Penetration Radar scan ahead of drilling to check for existing services, exact positions to be confirmed.

4.7 opening up works and reinstatement strategy

The building is a Grade II listed building and opening up works should be strictly limited to the minimum necessary to establish the principles above. Non-intrusive technologies will be used by the contractor where feasible. Explicit permission will be required from the council prior to opening up the structure and agreement will also be required for the quality and nature of the reinstatement.

The contractor will need to make provision for the opening up and re-instatement works as part of their fee proposal.

4.7.1 type 1 – beams

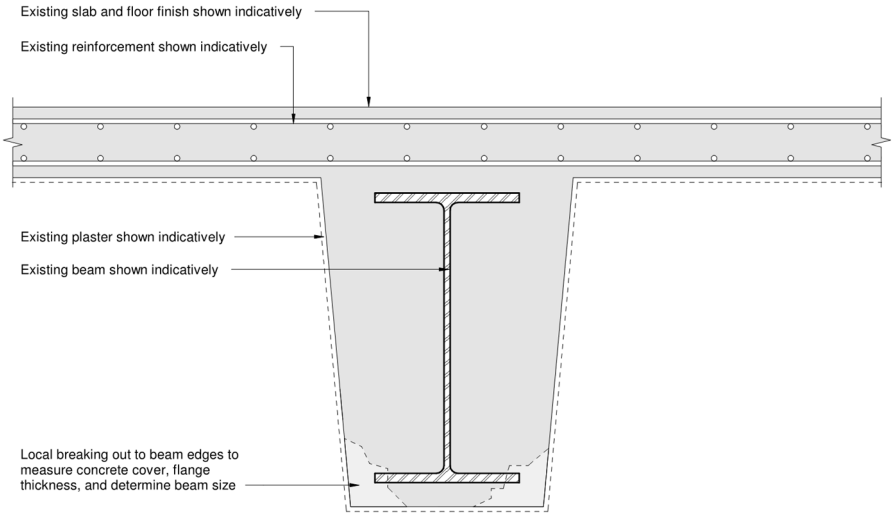


Figure 1: Type 1 - Beams

OUW Strategy

To understand the current state of the internal beams, targeted local OUW will be required. The OUW will be conducted in a targeted manner, located where proposed alterations are to be made. Breaking out local to the beam's bottom flange will help to determine the encasement cover, the section sizes, and will aim to corroborate the historical steelwork planning drawings. These OUWs are to be performed close to columns, allowing inspection of the connection arrangement. This has been depicted in Figure 1. It should be noted that the specialist contractors will likely have input on the strategy and may propose alternative methods of undertaking the works.

OUW Reinstatement Strategy

After inspection and measurement of the internal beam arrangement the reinstatement may be undertaken. The exposed steel and concrete will be prepared and then primed with a bonding agent (such as Sika MonoTop-610), and a high build concrete repair mortar will be applied and finished to match the existing concrete encasement (such as Sika MonoTop-615). Where the existing beams have been plastered, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.2 type 2 - internal columns

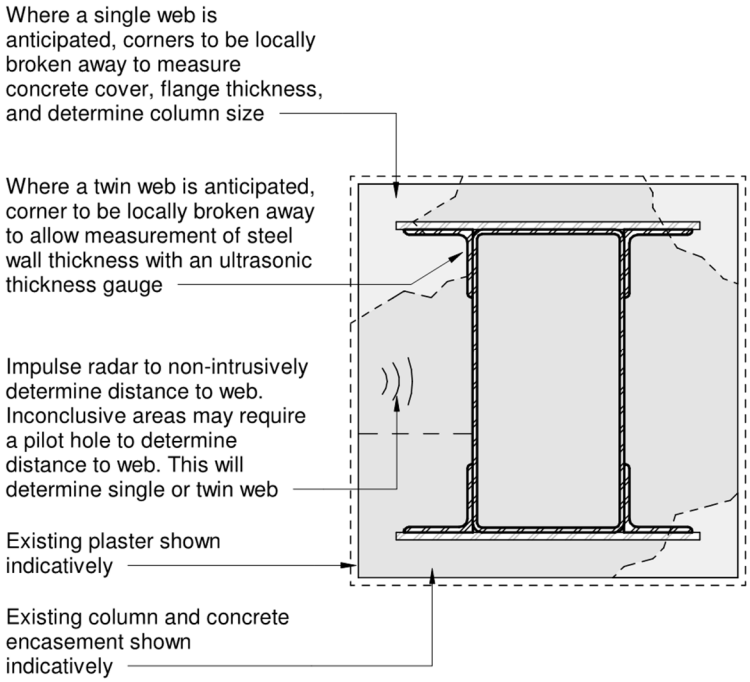


Figure 2: Type 2 – Internal Columns

OUW Strategy

To understand the current state of the internal columns, targeted local OUW will be required. The OUW will be conducted in a targeted manner, located where proposed alterations are to be made. Impulse radar will be used to determine the distance to the column web, where this is inconclusive a pilot hole can be formed to determine the distance. If the column is determined to have a single web, then three corners of the encased steelwork may be exposed to determine the cover, and steel section properties. Where the column is determined to have more than one web, then a corner of the encased steelwork may be exposed until the web is reached, where an ultrasonic thickness gauge will determine the web thickness. This has been depicted in Figure 2. Intrusive works will be required where columns change size at splice locations (above and below the splice), as well as at high level to assess the beam to column connections. Where the column head is haunched, the haunch and connection arrangement is to be exposed. It should be noted that the specialist contractors will likely have input on the strategy and may propose alternative methods of undertaking the works.

OUW Reinstatement Strategy

After inspection and measurement of the internal column arrangement the reinstatement may be undertaken. The exposed steel and concrete will be prepared and primed with a bonding agent (such as Sika MonoTop-610), and a high build concrete repair mortar will be applied and finished to match the existing concrete encasement (such as Sika MonoTop-615). Where the existing internal columns have been plastered, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.3 type 3 - perimeter columns

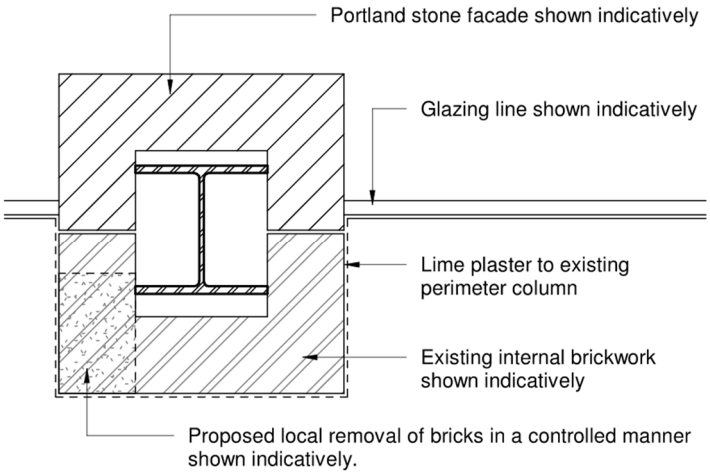


Figure 3: Type 3 - Perimeter Columns

OUW Strategy

To understand the current state of the perimeter steelwork and associated bracketry, targeted local OUW will be required. The OUW will be conducted in a targeted manner, due to the known external façade issues noted by SLHA and Quadriga, which is likely to be a result of the perimeter steelwork degrading. Additionally, from original construction photographs, splices appear to be at low level, while bracketry appears to be at low and high level. This knowledge results in targeted and less intrusive OUW. While it is not possible to understand the condition of the perimeter steelwork in a non-intrusive manner, the local OUW – depicted in Figure 3 – are sympathetic to the existing internal brickwork and associated plaster. Approximately three to four courses of brick will be removed, taking care not to damage or crack the bricks being removed. It should be noted that the specialist contractors will likely have input on the strategy and may propose alternative methods of undertaking the works.

OUW Reinstatement Strategy

After the measurements and inspection of the condition of the steelwork and bracketry has occurred, the reinstatement may be undertaken. The existing bricks may be reinstated in their original location and flush with the in-situ brickwork, using suitable lime mortar. The lime mortar will be used to allow for easier removal of the brickwork in the future if and when further OUW are required for the same area. Plaster will not be applied to the bricks once reinstated, as there is potential for further OUW at the same location. Where the existing perimeter columns have been plastered, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.4 type 4 - typical slabs

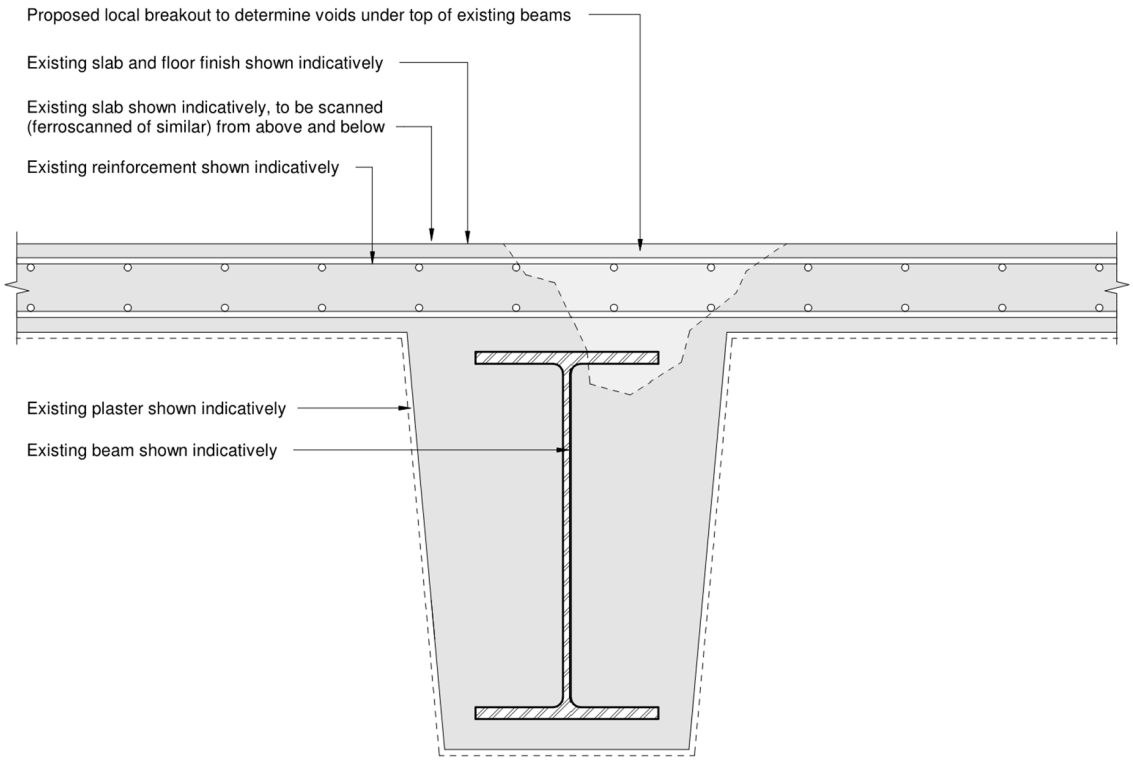


Figure 4: Type 4 – Typical Slabs

OUW Strategy

To understand the arrangement of the slabs, a mixture of non-intrusive and intrusive works are to be undertaken. Ferroscanning – or similar – will be used to scan the suspended slabs which will aid determining the reinforcement attributes, cover, and corroborate the historical planning drawings. Localised targeted breaking out, drilling and/ or coring of the floor slab will be required over beam locations to confirm the slab thickness, and check for voids under the beam top flange. These works are intrusive in nature and would require reinstatement following the works. A petrographic test will be required to one slab to determine the properties and design strength of the existing concrete.

OUW Reinstatement Strategy

After inspection of the slab voids and cores of the slab are taken, the reinstatement may be undertaken. The exposed steel and concrete will be prepared and primed with a bonding agent (such as Sika MonoTop-610), and a high build concrete repair mortar will be applied and finished to match the existing concrete slab (such as Sika MonoTop-615). Where the existing slabs have a finish, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.5 type 5 - basement slabs/ foundations

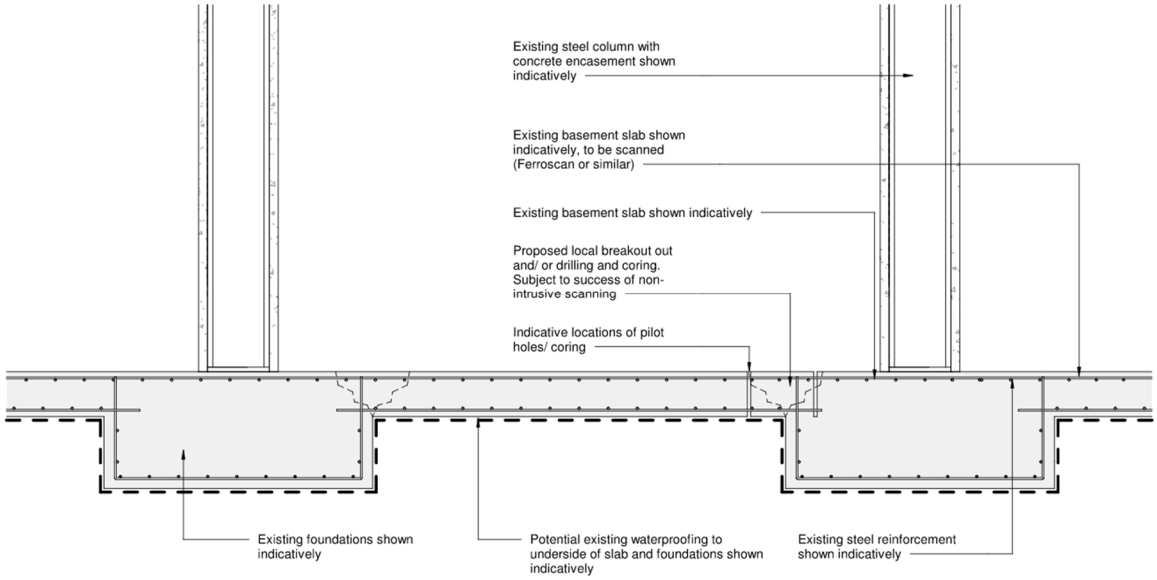


Figure 5: Type 5 - Basement Slabs/ Foundations

OUW Strategy

There are existing drains and drainage runs beneath the sub-basement and basement slab. The contractor should be cognisant of the existing manholes and extensive services at both basement levels while undertaking the works.

OUW undertaken in 2020 used a mixture of non-intrusive and intrusive works, with non-intrusive being used wherever possible. Ferroscanning – or similar – will be used to scan the basement slabs and associated foundations, which will aid determining the slab attributes and extents of foundations. In 2020, interference caused inconclusive results from the non-intrusive scanning of the slab and foundations. In this instance, localised targeted breaking out, drilling and/ or coring of the floor slab or foundations will be required. These works would have to be intrusive and would require reinstatement following the works.

The OUW proposed by Woolgar Hunter for the basement slabs/ foundations, are to determine the structural properties and arrangements. The intrusive investigations will need to be coordinated with IGE Consulting, who are responsible for geotechnical investigations at basement levels to allow the design of new piled foundations for the existing foundations to be strengthened.

OUW Reinstatement Strategy

Until the OUW have occurred, the reinforcement provision and waterproofing membrane presence is unknown. Nonetheless, it is the intention that – if removed – equivalent reinforcement, waterproofing, and concrete will be provided by the contractor to reinstate the intrusive works. Where there are local OUW, this may be reinstated using the noted Sika MonoTop 610 and 615 products to build up and float to match the level of the existing floor. In the event of more extensive OUW, the reinstatement may be completed using traditional concrete. Where the existing slabs have a finish, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.6 type 6 – roof slabs

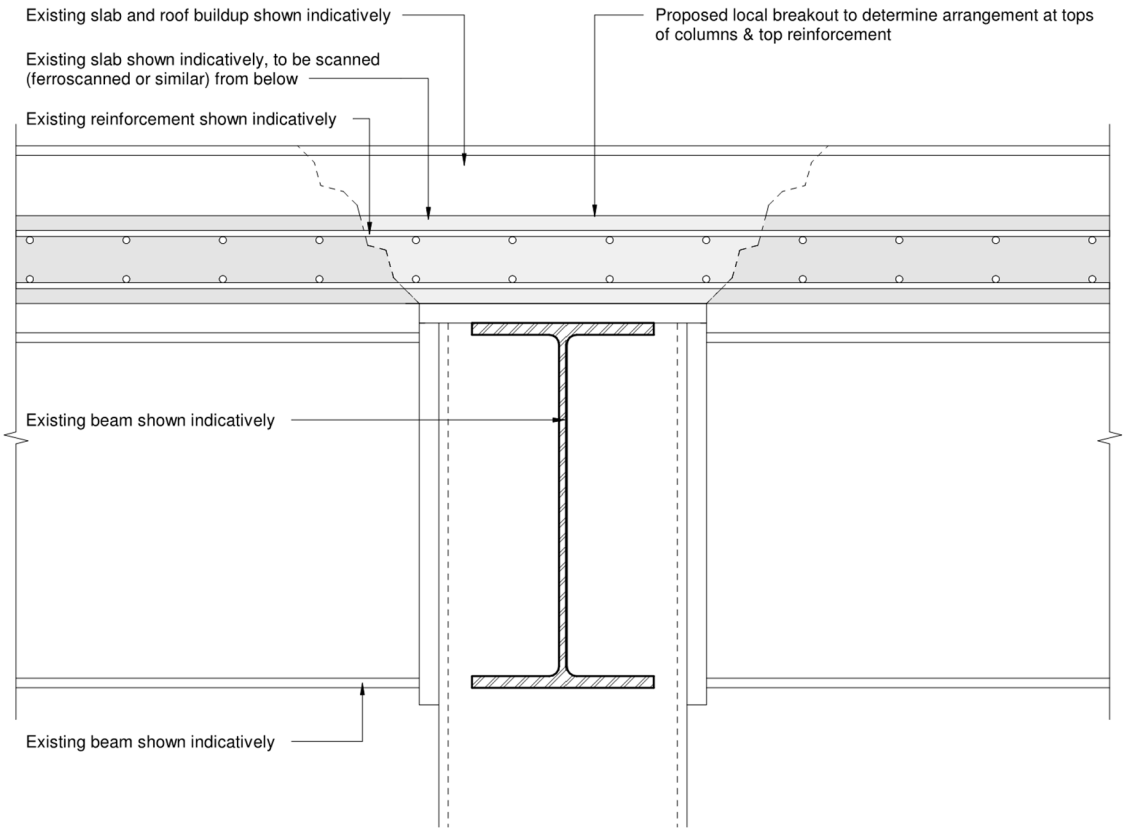


Figure 6: Type 6 – Roof Slabs

OUW Strategy

To understand the roof buildup and arrangement of the roof slab, non-intrusive and intrusive works are to be undertaken. Ferroscanning – or similar – will be used to scan the underside of the roof slabs which will aid determining the reinforcement attributes, cover, and corroborate the historical planning drawings. Scanning has also been scheduled for the top face of the roof slab. It is appreciated that the roof build up may interfere with the success of the scanning. In this instance, the already scheduled intrusive works will also need to determine the cover, bar diameter, and spacing. Localised targeted breaking out, drilling and/ or coring of the roof slab will be required over existing column locations to confirm the slab thickness, top reinforcement, and top of column detail to enable development of the extension column to existing column interface. These works would have to be intrusive and would require reinstatement following the works.

OUW Reinstatement Strategy

After inspection of the column tops and roof buildup, reinstatement may be undertaken. The exposed steel and concrete will be prepared and primed with a bonding agent (such as Sika MonoTop-610), and a high build concrete repair mortar will be applied and finished to match the existing concrete slab (such as Sika MonoTop-615). As the roof buildup is not known, a suitable repair detail will be developed upon opening up. A compatible waterproof repair detail will be required for the existing roof. Where the existing slabs have a finish, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.7 type 7 – mansard roof

OUW Strategy

The OUW strategy for the mansard roof is to determine the condition of the structural elements, as well as its connectivity to the rest of the primary structural frame. At this stage, all OUW for the mansard roof will be conducted internally. The concrete encasement is known to be in disrepair for much of the mansard roof. Structural elements in disrepair will not be selected for the OUW, as the works may cause further disrepair. Instead, similar cranked beams and columns will be selected for limited OUW.

The OUW will be conducted in a targeted manner, breaking out local to the beam's bottom flange will help to determine the encasement cover, the section sizes, and will aim to corroborate the historical steelwork planning drawings. These are to be performed close to columns, allowing inspection of the connection arrangement. It should be noted that the specialist contractors will likely have input on the strategy and may propose alternative methods of undertaking the works.

OUW Reinstatement Strategy

After inspection and measurement of the mansard beam arrangement the reinstatement may be undertaken. The exposed steel and concrete will be prepared and primed with a bonding agent (such as Sika MonoTop-610), and a high build concrete repair mortar will be applied and finished to match the existing concrete encasement (such as Sika MonoTop-615). Where the existing beams or columns have been plastered, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.7.8 type 8 – basement walls/ foundations

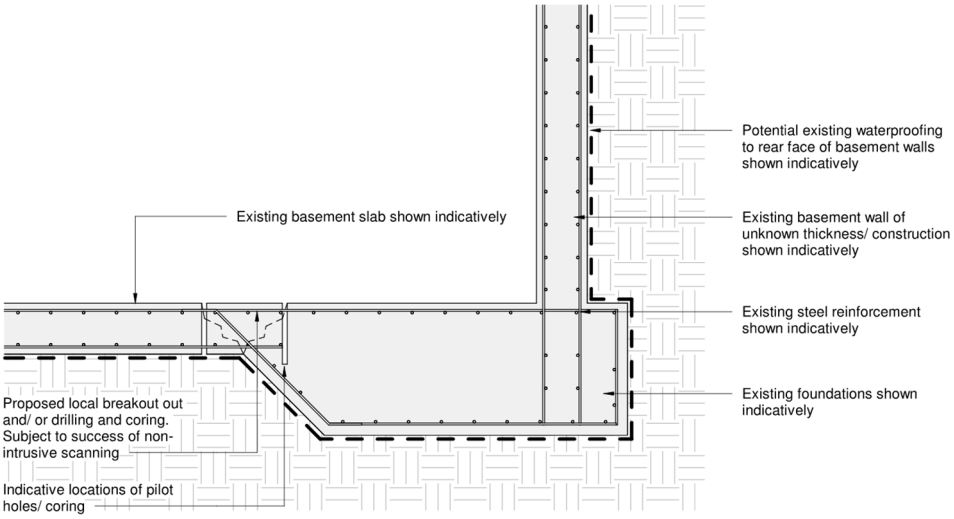


Figure 7: Type 8 - Basement Walls/ Foundations

OUW Strategy

The contractor should be cognisant of the existing manholes and extensive services at both the basement and sub-basement levels while undertaking the works.

OUW undertaken in 2020 used a mixture of non-intrusive and intrusive works, with non-intrusive being used wherever possible. Ferroscanning – or similar – will be used to scan the basement walls and associated foundations, which will aid determining the wall attributes and extents of foundations. In 2020, interference caused inconclusive results from the non-intrusive scanning. In this instance, localised targeted breaking out, drilling and/ or coring will be required. These works would have to be intrusive and would require reinstatement following the works.

In addition to scanning the basement walls, one petrographic and compressive test will be completed on the basement walls at this stage to gain an understanding of the properties and quality of the wall. This work will require reinstatement of the wall but will be minimally intrusive.

The OUW proposed by Woolgar Hunter for the basement slabs/ foundations, are to determine the structural properties and arrangements. The intrusive investigations will need to be coordinated with IGE Consulting, who are responsible for geotechnical investigations at basement levels to allow the design of new piled foundations for the existing foundations to be strengthened.

OUW Reinstatement Strategy

Until the OUW have occurred, the reinforcement provision and waterproofing membrane presence beneath the slab is unknown. Nonetheless, it is the intention that – if removed – equivalent reinforcement, waterproofing, and concrete will be provided by the contractor to reinstate the intrusive works. Where there are local OUW in the basement wall, this may be reinstated using the noted Sika MonoTop 610 and 615 products to build up and skim to match the level and finish of the existing basement wall and floor. In the event of more extensive OUW being required around the foundations, the reinstatement may be completed using traditional concrete. Where the existing walls have a finish, the reinstatement of the internal finishes will be completed as part of the discharge of the consents during construction. If construction does not commence before the planning application expires then the reinstatement will occur at the expiration of the current consent.

4.8 schedule of works

The schedule of works comprises each element to be inspected at this stage. The schedule is comprised of:

- Floor level of OUW;
- Element to be inspected;
- OUW type;
- OUW location;
- Value of OUW;
- Reinstatement of element; and
- Photograph of element.

Since Woolgar Hunter's last site visit to document OUW, the scheme and structural principles have been developed in response to the council's request for the extension height to be compressed during the planning submission. As such, specific photos for some elements are still required. Where possible, nearby or indicative photos of elements have been shown instead. It is noted in the schedule where this is the case. The schedule of works to be undertaken at this stage is documented within Appendix B.

4.9 future surveys

As previously noted, this document has been written with the knowledge that the proposed works will not be carried out on current shop floors and will be before a soft strip of the structure has been undertaken. Therefore, the scope of the proposed works will be limited and additional future surveys will be inevitable. However, the proposed works within this document will likely inform a more comprehensive understanding of the existing structure, which will in turn allow for more informed OUW subsequently.

The future works would include, but not be limited to:

- Cloud point survey after soft strip.
- OUW as described in this report, but for areas such as, but not limited to, the shop floor and all other areas requiring a soft strip.
- Chemical and strength testing of structural elements, such as beams, columns, slabs, and walls.

A cloud point survey is not proposed as part of the works for this package but would prove to be invaluable from a structural design perspective. The cloud point survey will enable an accurate 3D model of the existing building to be built. This will be used to develop structural principles and understand tolerances for proposed structure, such as threading the twin columns either side of existing beams and highlight undocumented changes during the building's life. The cloud point survey will be beneficial following a soft strip, which will remove elements that are concealing the primary structural frame.

5.0 site constraints and risks

All of the investigative works proposed at this stage will be undertaken from within the building, however access to the roof will be required.

Access to the lowest level of the basement is possible through the use of a goods lift running the full height of the building, specific loading capacity and dimensions are not currently available but are in the process of being obtained. Please make any requirements for the goods lift to be identified within the fee.

The access to the building is challenging due to the tenant limiting access and instruction may require a quick mobilisation period from the contractor in order to gain access.

No intrusive surveying that will create dust or damage fixtures or fittings is intended within the shop floors, access to these areas may potentially be denied or hindered due to the fitting out of the area.

The floor to ceiling heights will require a safe working platform, to be provided by the contractor to enable access to the high level beams and column connections.

Copies of the asbestos register are being sought for the Rylands Building. Discussions with the Project Manager are ongoing with respect to appointing one common asbestos specialist for all contractors on site, who would be responsible for sweeping the pre-determined locations for asbestos. However, it may be required that each contractor has their own suitably qualified asbestos specialist to sweep the pre-determined locations.

It is noted that areas on the fifth floor have boarding with a notice, shown in Figure 8. It is unknown whether this is related to the presence of asbestos.

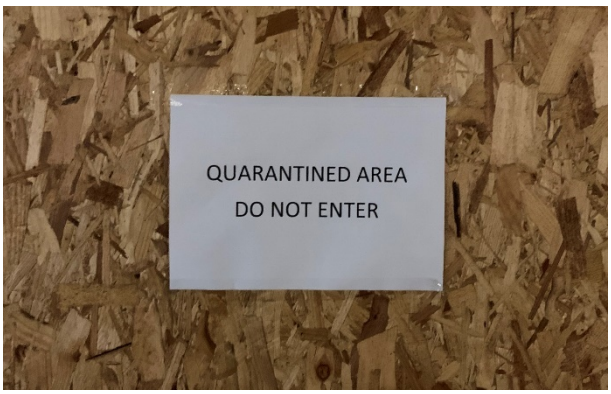


Figure 8: Quarantined Area

A copy of the buildings current asbestos report will be forwarded by the Project Manager.

The design team are aware that a previous façade inspection using a cherry picker, resulted in a collapse on the Tib Street elevation in 2017, as part of the foot path collapsed beneath the plant. The cause of the collapse is believed to be through a leaking sewer that washed out the ground beneath the footpath on Tib Street. The façade works proposed in this report at this stage are from the internal face, which means external access should not be required. At a later date if more extensive works are required to the façade, the contractor will need to determine the suitability of the footpath around the perimeter of the building to ensure that the supporting ground is appropriate for their proposed temporary works. If necessary, carrying out exploratory works and or plate load tests to verify the stability of the operating plant and machinery.

6.0 legislation

The temporary works will be carried out in accordance with all relevant legislation including the following:

- British Standard Code of Practice 6187:2011.
- British Standard Code of Practice BS 5975:2019 Temporary Works Procedures And The Permissible Stress Design Of Falsework
- HSE Guidance Note GS29 Parts 1 to 4 which, although withdrawn, remain relevant at least in part.
- The Noise at Work Regulations 2005
- The Working at Height Regulations 2005
- Health and Safety at Work Act 1974
- The Management of Health and Safety at Work Regulations 1999
- The Health and Safety (young persons) Regulations 1997
- The Working Time (Amendment) Regulations 2003
- The lifting Operations and Lifting Equipment Regulations 1998
- The Provision and Use of Work Equipment Regulations 1998
- The Personal Protective Equipment at Work Regulations 1992
- The CDM Regulations 2015
- Reporting of Injuries, Diseases and Dangerous Occurrences Regulations 2013 (RIDDOR)
- The Control of Asbestos Regulations 2012
- The Asbestos (Licensing) Regulations (Amended) 1998
- The Manual Handling Operations Regulations 1992
- The Health and Safety (First Aid) Regulations 1981
- The Control of Substances Hazardous to Health Regulations 2002
- The Control of Vibration at Work Regulations 2005

7.0 additional requirements

Additional requirements are listed.

- The contractor will provide necessary adequate protection to adjacent properties prior to commencement of any of the works.
- The contractor will clean to a high standard any dust, detritus, or arisings as a part of their investigative works. Particularly in the areas clearly occupied by Debenhams as either front or back of house.
- All neighbours/ tenants will be notified of the works by the contractor and provided with contact details should there be any issues with dust, noise or vibration.
- Any areas of intrusive survey and associated re-instatements works should be photographically documented in their before and after states as a photographic record.
- Should any cores or breaking out works be scheduled, then careful consideration should be given to the containment of flush and or dust and vibration. Any waterproofing or roof finishes should be appropriately repaired to maintain the integrity of the envelope.
- There is likely to be several contractors within the building, COVID risk assessments will be sought from each contractor.

8.0 outline method statement

8.1 general matters

The contractor should provide a detailed method statement with their submission.

The works shall be carried out in accordance with the relevant Eurocode and British Standard design standards together with any current revisions or amendments and in accordance with all directions issued by Building Control under those regulations.

Notwithstanding the foregoing, the contractor shall conform in all respects to the requirements laid down in any act of Parliament or any other Regulation or Bye-law of the Local Authority or any other Statutory Authority and the rules and regulations of all public bodies and companies in relation to the execution of the works or any temporary works.

The works will be required to comply with this method statement and all other documents and drawings submitted with the agreed permits and their application.

Buildings and structures, on site or adjacent, affected by the temporary works are to be thoroughly examined. The Contractor's attention is drawn to his total responsibility.

Dilapidation surveys to be undertaken, prior to the commencement of the works, of all areas of structure and the associated finish and record their condition. These surveys shall be agreed with the Project Manager prior to the works commencing. On completion of the works a further survey will be made and variations to the conditions of the adjacent properties etc., agreed with the Project Manager.

All the works shall be carried out in such a manner as to ensure the safety of the public and to cause as little inconvenience as possible to them, the tenant, and the adjoining owners.

In the event of any existing services, of any type, being disturbed or damaged, as a result of the execution of the works, the Contractor shall be responsible for all costs incurred in their permanent reinstatement to the satisfaction of the appropriate statutory body. Any such damage shall be immediately reported and reinstated without any delay.

Any underground voids found during the works are to be reported to the Engineer. Underground chambers, storage tanks, wells and vaults are examples of such voids.

8.2 welfare facilities

It is presumed that the buildings welfare facilities will be able to be used, but confirmation is still being sought. Contractors may wish to make their own arrangements to ensure COVID security.

8.3 noise

All reasonable precautions are to be taken to avoid unnecessary noise and vibration. The demolition contractor shall at all times comply with BS 5228:2009 "Noise Control on Construction and Demolition Sites" and Section 60 of the Control of Pollution Act 1974.

As modern demolition equipment will be used, it is expected that this will minimise noise. Noise levels will be monitored throughout the works. Should agreed noise levels be exceeded then works will cease pending review.

There will be no noisy working outside of normal working hours.

9.0 temporary works performance specification

To be read with Preliminaries/ General conditions:

- Contractor is responsible for the development, procurement and execution of all relevant permits required to install, maintain, and remove the temporary safety works with the appropriate statutory bodies.
- Contractor is responsible for ensuring that the temporary works are designed for the wind loadings as outlined within the relevant Eurocodes.
- The building previously had the condition of its façade ascertained from a rope access survey.
- Historically the pavement along Tib Street has collapsed under the weight of a cherry picker, the contractor will be responsible for verifying and checking that no voids or openings are present around the entire perimeter of the building should their temporary works solution take support from the footpath or highway. This may take the form of a ground penetrating radar or similar.
- Access to Rylands building is difficult and the temporary works designer will need to co-ordinate with tenant to minimise disruption to the building.
- Do not block entrances/ exits to the building including deliveries.
- The contractor is to agree and establish any pedestrian management needs with the Council.
- If a scaffold is provided, there may be a requirement for access for inspection of the façade from the scaffold.
- The façade is classed as a Grade II listed façade and will have restrictions placed upon it where it can be fixed to in order to provide the temporary safety measures.
- All materials used to restrain the façade are to be non-flammable and present no fire risk to the building.

9.1 general requirements

9.1.1 desk study/survey

In the process of determining OUW locations for this document, Woolgar Hunter have reviewed the following reports/ documents. These documents will highlighted to the contractor.

- TGA Survey Report.
- Sandberg Survey Report.
- Woolgar Hunter Report.
- Stephen Levrant Heritage Architecture Interim Report.
- Stephen Levrant Heritage Architecture Report.
- Stephen Levrant Heritage Architecture Elevation Sketches.
- Original Construction Photographs.
- Jeff Bell Architects Site Plans.
- Quadriga Survey Reports.

9.1.2 asbestos containing materials – known occurrences

General: Materials containing asbestos are known to be present in: Refer to Demolition and Refurbishment Report.

Removal: By contractor licensed by the Health and Safety Executive, and prior to other works starting in these locations.

9.1.3 asbestos containing materials – unknown occurrences

Discovery: Give notice immediately of suspected asbestos-containing materials when discovered during deconstruction/ demolition work. Avoid disturbing such materials. Removal: Submit statutory risk assessments and details of proposed methods for safe removal.

9.1.4 unforeseen hazards

Discovery: Give notice immediately when hazards such as unrecorded voids, unsafe façade elements or other risks are encountered.

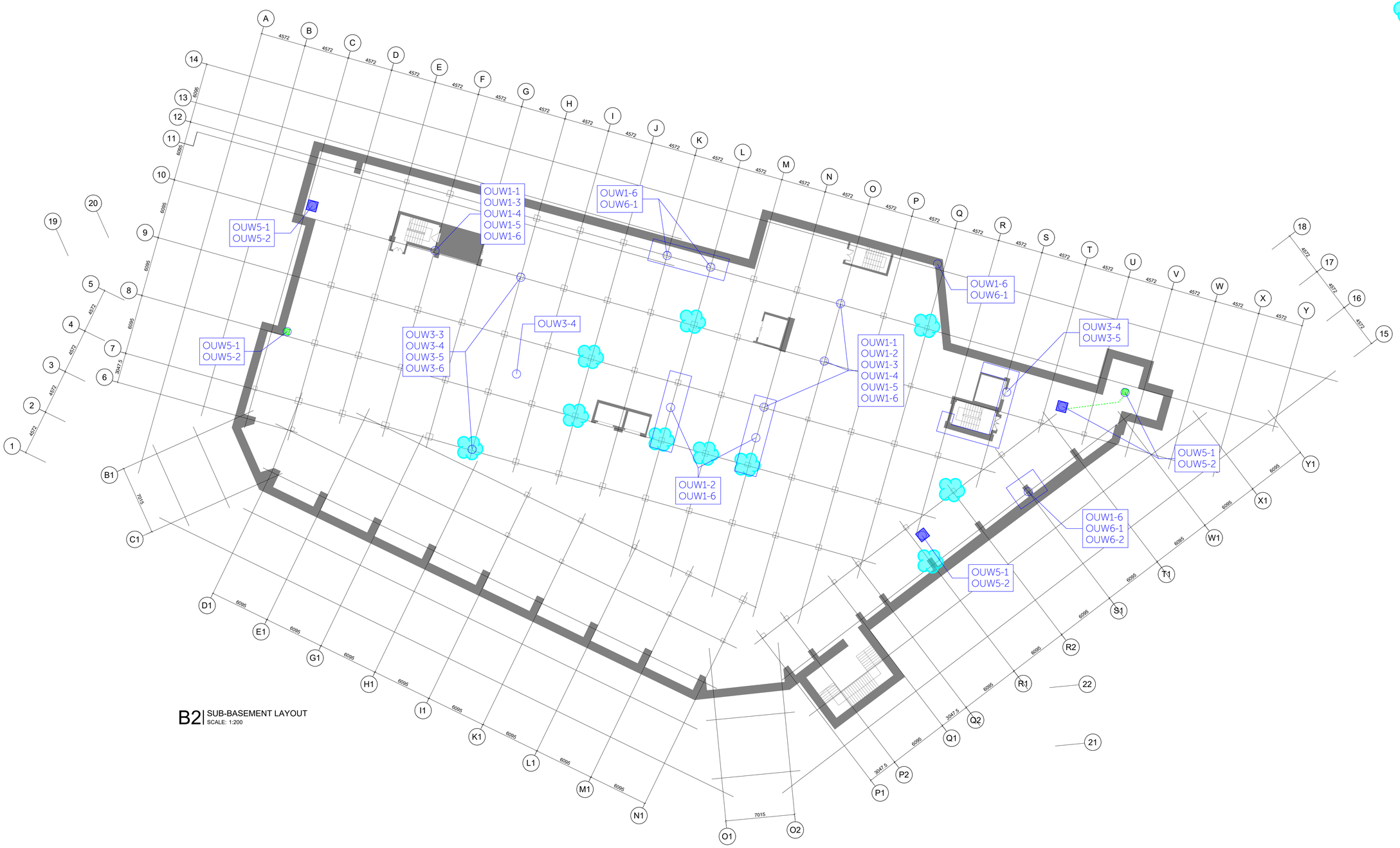
Removal: Submit details of proposed methods for filling, removal, etc.

9.1.5 site condition at completion

Debris: Clear away and leave the site in a tidy condition.

Other requirements: Provide copies of all permits and ensure that they are maintained until such time as required by the client.

appendix a
structural inspection locations



B2 | SUB-BASEMENT LAYOUT
SCALE: 1:200

Opening Up Works

The opening up works cross-referenced on this drawing are to be read in conjunction with Woolgar Hunter's Structural Inspection report V1.50.

Existing manhole

Existing drain

Previous HTA OUW location

REV	AMENDMENTS	DATE	BY	CHK

www.woolgarhunter.com

STATUS: **INFORMATION**

CONTRACT No:	SCALE:
196002	AS INDICATED @ A1

RYLANDS BUILDING
MANCHESTER

SUB-BASEMENT EXISTING

Woolgar**Hunter** engineers

DRAWING No:	REV:
RYLANDS-WHL-XX-B2-DR-S-2197	**P01**

OUW4-1
OUW6-1

OUW5-1
OUW5-2

OUW1-1
OUW1-3
OUW1-4
OUW1-5

OUW3-1
OUW3-3
OUW3-6

OUW1-1
OUW1-2
OUW1-3
OUW1-4
OUW1-5

OUW4-1
OUW6-1

OUW1-2
OUW1-6
OUW6-1

OUW5-1
OUW5-2

OUW5-1
OUW5-2

OUW4-1
OUW6-1

OUW5-1
OUW5-2

OUW5-1
OUW5-2

OUW4-1
OUW6-1

OUW5-1
OUW5-2

BA | BASEMENT LAYOUT
SCALE: 1:200

Opening Up Works

The opening up works cross-referenced on this drawing are to be read in conjunction with Woolgar Hunter's Structural Inspection report V1.50.

Existing manhole

Existing drain

Previous HTA OUW location

REV	AMENDMENTS	DATE	BY	CHK

www.woolgarhunter.com

STATUS: **INFORMATION**

CONTRACT No: 196002

SCALE: AS INDICATED @ A1

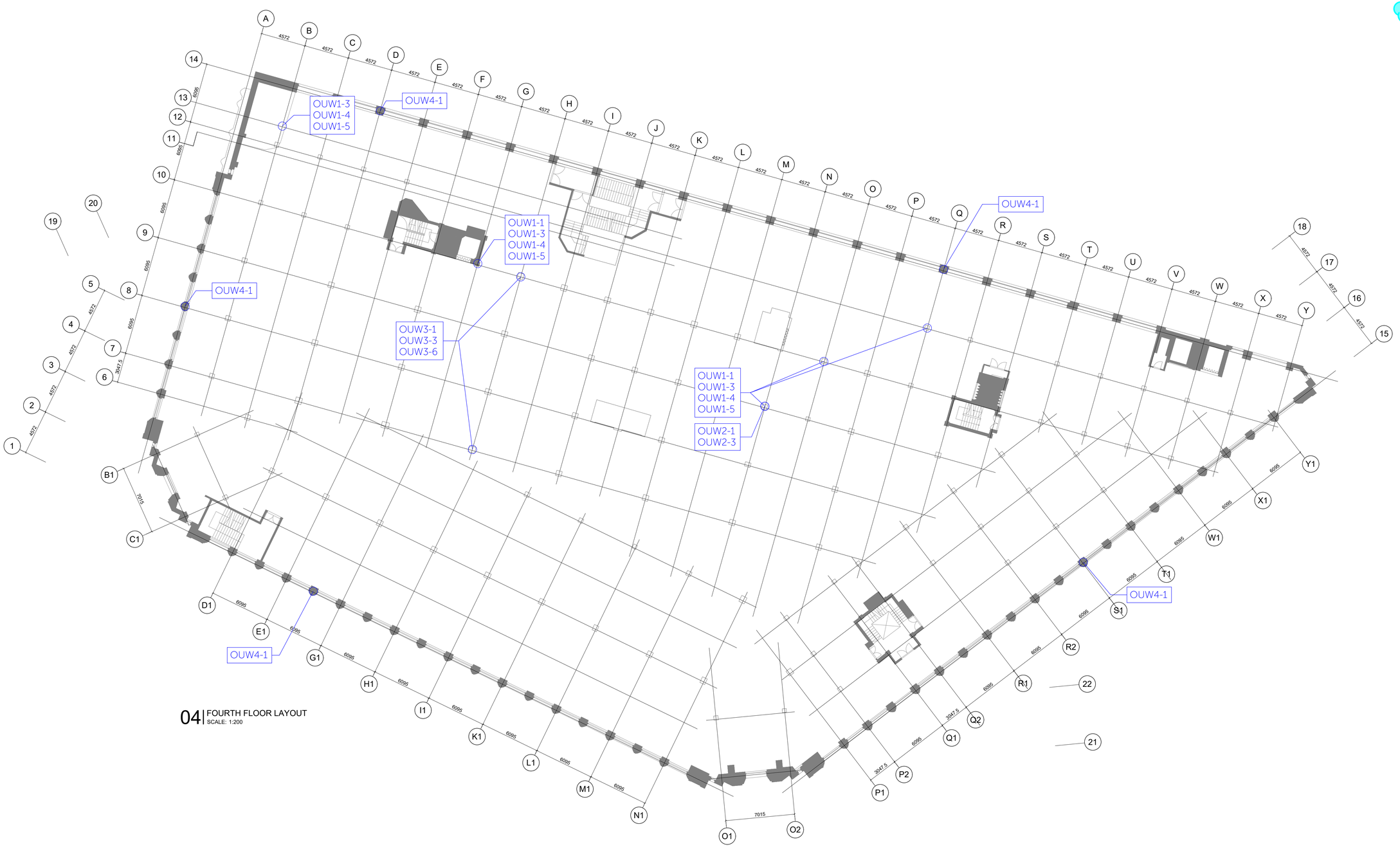
RYLANDS BUILDING
MANCHESTER

BASEMENT EXISTING

Woolgar Hunter engineers

DRAWING No: RYLANDS-WHL-XX-B1-DR-S-2198

REV: P01



04 | FOURTH FLOOR LAYOUT
SCALE: 1:200

Opening Up Works

The opening up works cross-referenced on this drawing are to be read in conjunction with Woolgar Hunter's Structural Inspection report V1.50.

Existing manhole

Existing drain

Previous HTA OUW location

REV	AMENDMENTS	DATE	BY	CHK

www.woolgarhunter.com

STATUS: **INFORMATION**

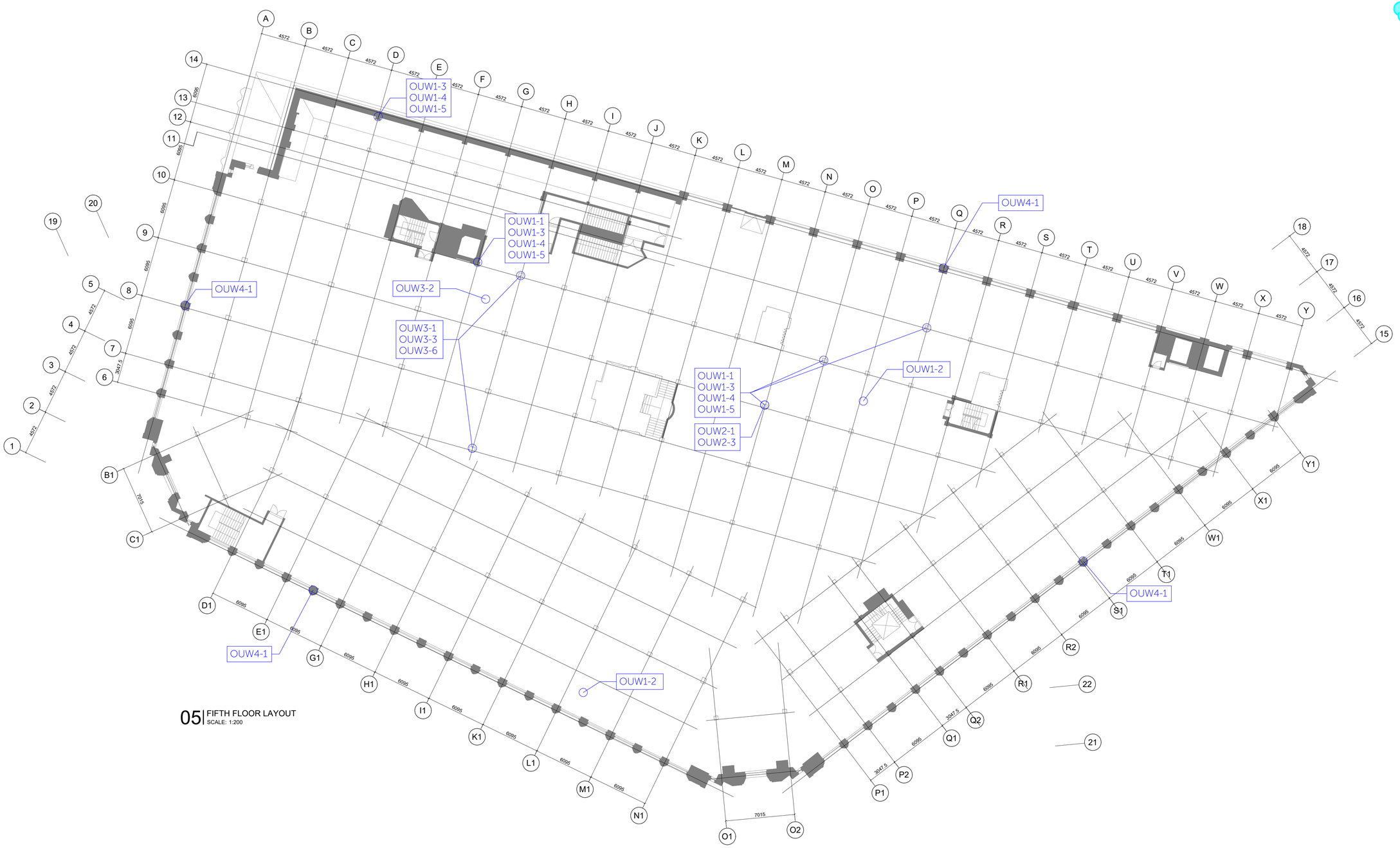
CONTRACT No:	SCALE:
196002	AS INDICATED @ A1

RYLANDS BUILDING
MANCHESTER

FOURTH FLOOR EXISTING

Woolgar Hunter engineers

DRAWING No:	REV:
RYLANDS-WHL-XX-04-DR-S-2104	P01



05 | FIFTH FLOOR LAYOUT
SCALE: 1:200

Opening Up Works

The opening up works cross-referenced on this drawing are to be read in conjunction with Woolgar Hunter's Structural Inspection report V1.50.

Existing manhole

Existing drain

Previous HTA OUW location

REV	AMENDMENTS	DATE	BY	CHK

www.woolgarhunter.com

STATUS: **INFORMATION**

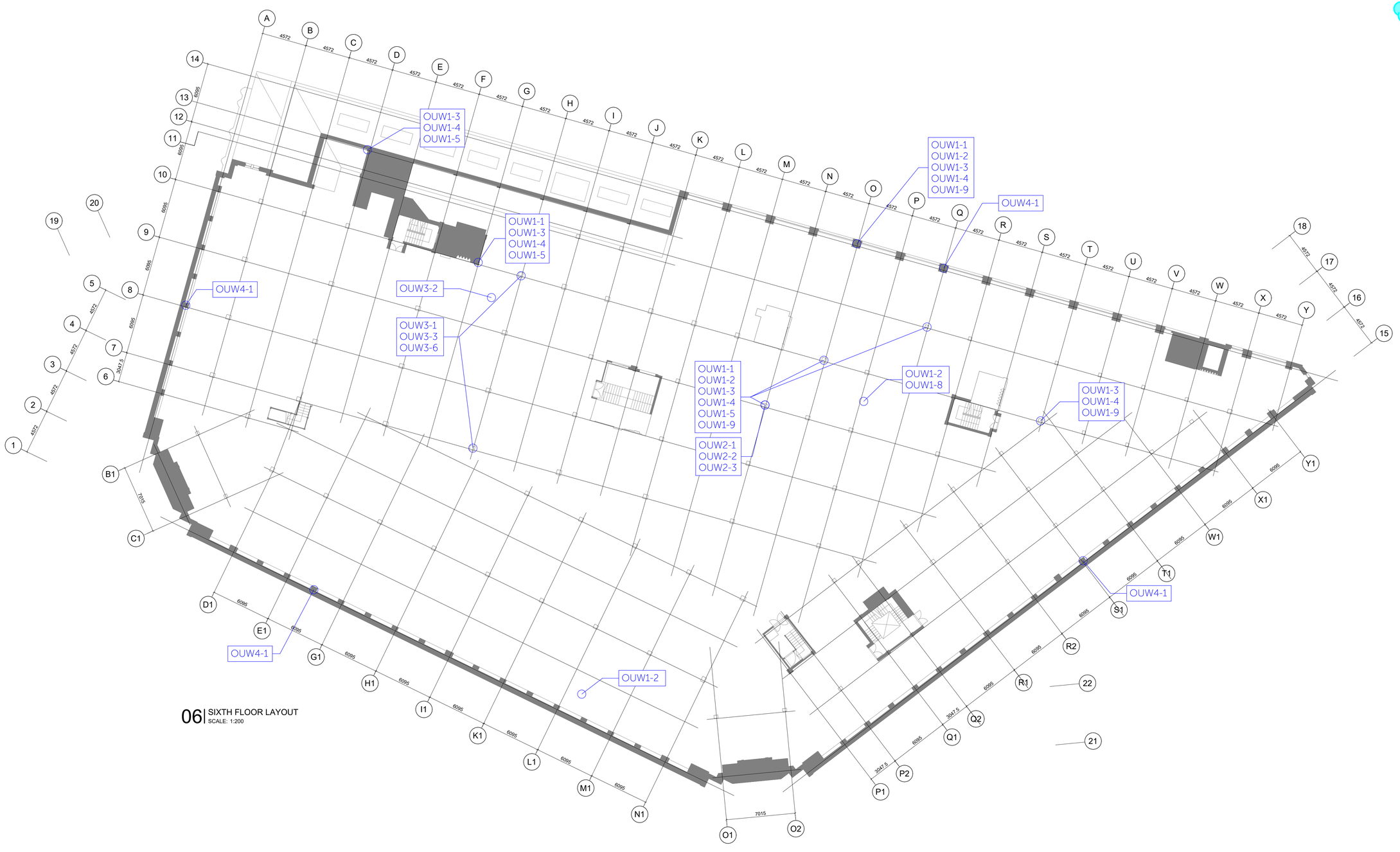
CONTRACT No:	SCALE:
196002	AS INDICATED @ A1

RYLANDS BUILDING
MANCHESTER

FIFTH FLOOR EXISTING

Woolgar**Hunter** engineers

DRAWING No:	REV:
RYLANDS-WHL-XX-05-DR-S-2105	**P01**



06 | SIXTH FLOOR LAYOUT
SCALE: 1:200

Opening Up Works

The opening up works cross-referenced on this drawing are to be read in conjunction with Woolgar Hunter's Structural Inspection report V1.50.

Existing manhole

Existing drain

Previous HTA OUW location

REV	AMENDMENTS	DATE	BY	CHK

www.woolgarhunter.com

STATUS: **INFORMATION**

CONTRACT No: 196002

SCALE: AS INDICATED @ A1

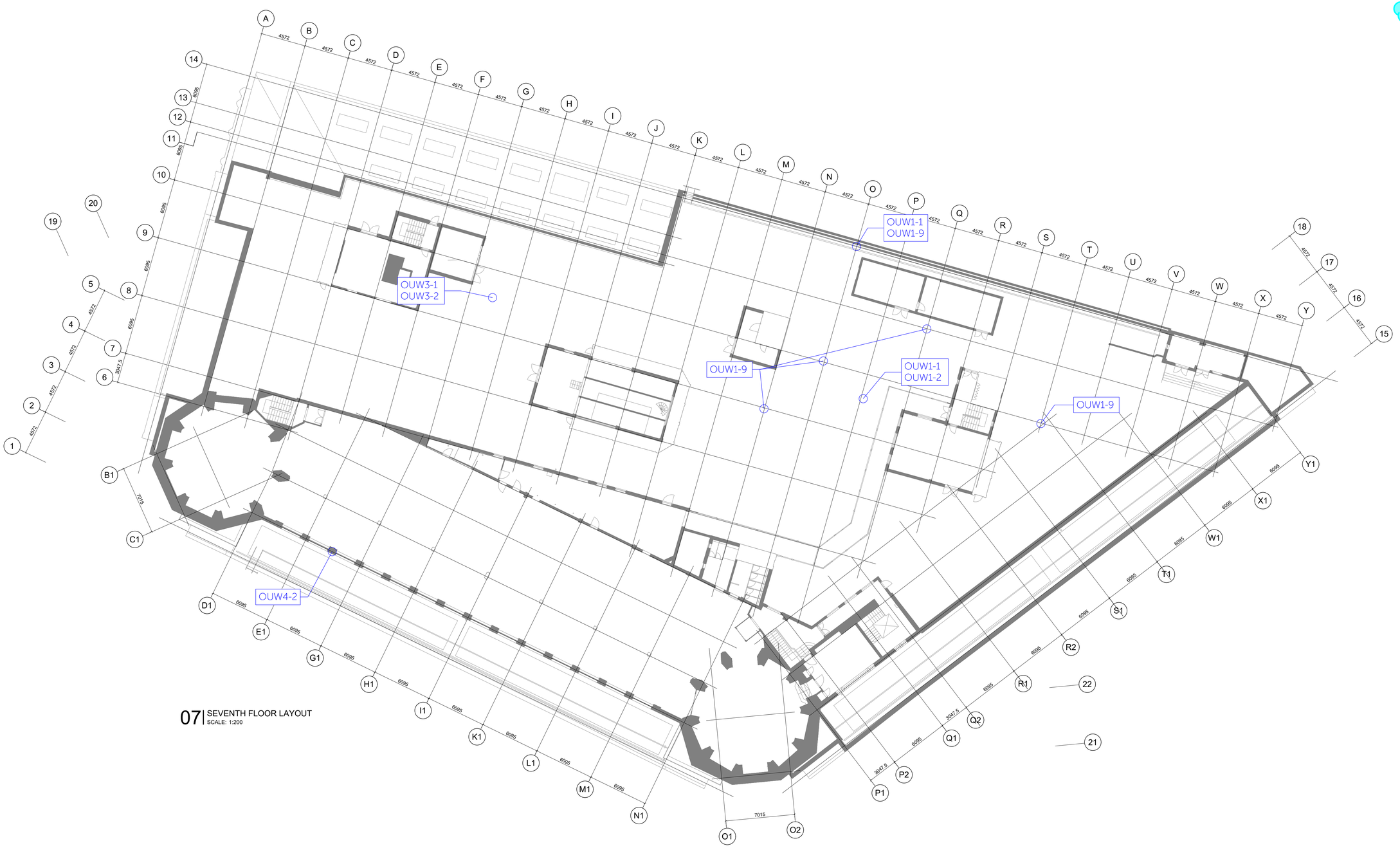
RYLANDS BUILDING
MANCHESTER

SIXTH FLOOR EXISTING

Woolgar Hunter engineers

DRAWING No: RYLANDS-WHL-XX-06-DR-S-2106

REV: P01



07 | SEVENTH FLOOR LAYOUT
SCALE: 1:200

Opening Up Works

The opening up works cross-referenced on this drawing are to be read in conjunction with Woolgar Hunter's Structural Inspection report V1.50.

Existing manhole

Existing drain

Previous HTA OUW location

REV	AMENDMENTS	DATE	BY	CHK

www.woolgarhunter.com

STATUS: **INFORMATION**

CONTRACT No:	SCALE:
196002	AS INDICATED @ A1

RYLANDS BUILDING
MANCHESTER

SEVENTH FLOOR EXISTING

Woolgar Hunter engineers

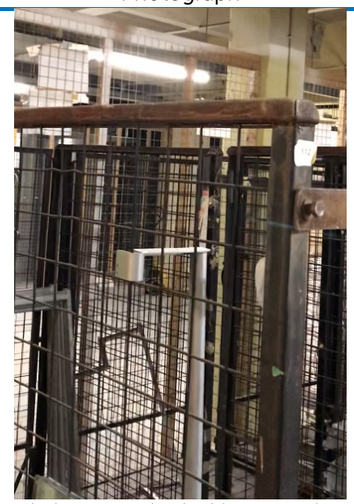
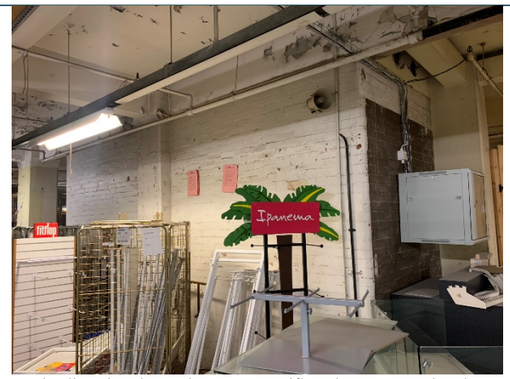
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RYLANDS-WHL-XX-07-DR-S-2107	P01

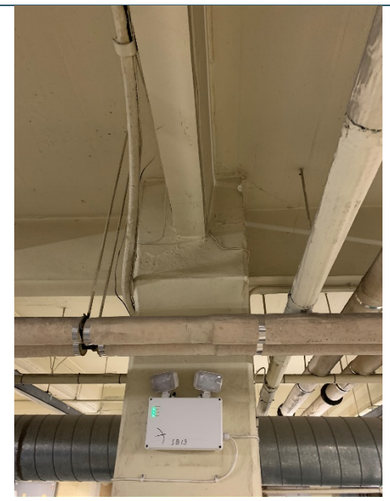
appendix b
schedule of works

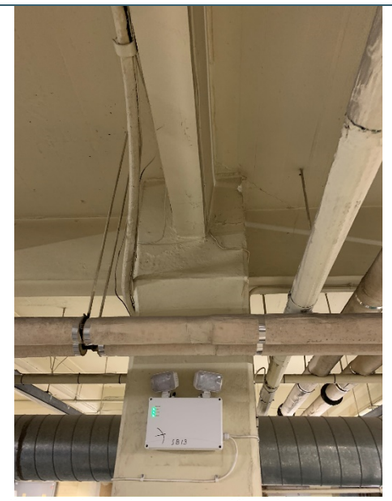
opening up works schedule

Subject: OUW
Project: Rylands Building, Manchester
Reference: OUW Schedule 05.02.21
Author: EAJC
Reviewer: NGRC

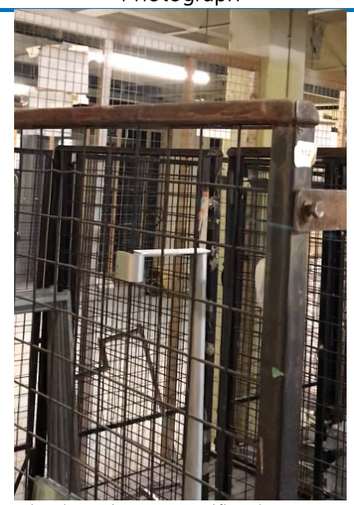
Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
1	-2	Drainage	C10 C8 R1/17 T10-V12	OUW5-1 (Low level) OUW5-2 (Low level)	The site visits undertaken by Woolgar Hunter have identified a number of manholes, some of which are numbered up to MH14. A full drainage survey is required to determine the condition of the drainage network, as well as the exits from the structure. This will also enable the PDE with United Utilities to progress, for example.	N/A	 Indicative location – specific photos required.
2	-2	Basement Wall/ Foundations	K12 L12 Q14 S1/17	OUW1-6 (Low level) OUW6-1 (Full height) OUW6-2 (Mid level, only for S1/17)	Information on the existing foundations is required to develop the Stage 2 proposed foundation enhancement details, which will be required with the additional load from the proposed extension. This will be done using non-intrusive or minimal intrusive works wherever possible. As the building has been poorly maintained for a period of time and there will be a change in load on the basement walls, non-intrusive techniques will be used to determine the wall's properties as described in the report, which will aid the development of any remedial details. Chemical and strength testing will allow for the structural properties of the basement wall to be verified, with the change in load that will be experienced.	Type 5 Type 8	 Indicative location – specific photos required.

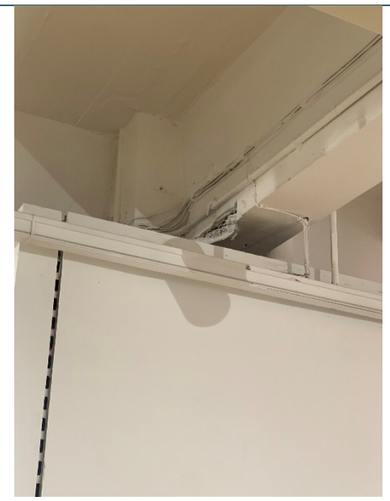
Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
3	-2	Slab	H8-I9	OUW3-4 (Low level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab.	N/A	 Updated photo required without stock present.
4	-2	Slab/ Foundations	R9/S12	OUW3-4 (Low level) OUW3-5 (Low level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. With the increased height of the building, the enhanced core will require existing foundation to be enhanced. The arrangement of the existing core foundations must be understood to develop appropriate enhancement of the foundations.	Type 5	 Indicative location – specific photo required.
5	-2	Column/ Incoming Beams/ Slab/ Foundations	F10	OUW1-1 (High level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height) OUW1-6 (Low level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4 Type 5	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
					With the increased height of the building, the proposed core will require construction adjacent to existing foundations. Integration of the new core will require an understanding of the existing foundations to develop proposed foundations.		Correct location – additional photos required.
6	-2	Column/ Incoming Beams/ Slab/ Foundations	N9	OUW1-1 (High level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height) OUW1-6 (Low level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. As the foundations under the roof extension will experience a change in load, the capacity of the existing foundations must be understood to develop a suitable enhancement detail.	Type 1 Type 2 Type 4 Type 5	 Indicative location – specific photo required.
7	-2	Column/ Incoming Beams/ Slab/ Foundations	O10	OUW1-1 (High level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height) OUW1-6 (Low level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved	Type 1 Type 2 Type 4 Type 5	

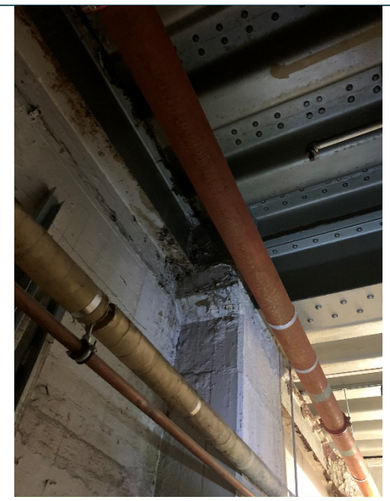
Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
					through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. As the foundations under the roof extension will experience a change in load, the capacity of the existing foundations must be understood to develop a suitable enhancement detail.		Indicative location – specific photo required.
8	-2	Column/ Incoming Beams/ Slab/ Foundations	O12	OUW1-1 (High level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height) OUW1-6 (Low level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. As the foundations under the roof extension will experience a change in load, the capacity of the existing foundations must be understood to develop a suitable enhancement detail.	Type 1 Type 2 Type 4 Type 5	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
9	-2	Column/ Incoming Beams/ Slab/ Foundations	H7	OUW3-3 (Full height/ high level) OUW3-4 (Low level) OUW3-5 (Low level) OUW3-6 (Full height)	The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. With the increased height of the building, the proposed core will require construction adjacent to existing foundations. Integration of the new core will require an understanding of the existing foundations to develop proposed foundations.	Type 1 Type 2 Type 4 Type 5	
10	-2	Column/ Incoming Beams/ Slab/ Foundations	H10	OUW3-3 (Full height/ high level) OUW3-4 (Low level) OUW3-5 (Low level) OUW3-6 (Full height)	The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. With the increased height of the building, the proposed core will require construction adjacent to existing foundations. Integration of the new core will require an understanding of the existing foundations to develop proposed foundations.	Type 1 Type 2 Type 4 Type 5	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
11	-2	Slab/ Foundations	L8-L9 N8-N9	OUW1-2 (Low level) OUW1-6 (Low level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. As a new line of columns will be threaded between gridline 8 and 9, the existing foundation arrangement must be understood, which will allow for the proposed foundation detail to be developed. This will primarily be achieved through Ferroscanning and coring. The capacity of slabs have been calculated based off archive information. Small samples of the concrete slabs will be required for mechanical and chemical testing to verify the capacity of the slabs.	Type 5	 Indicative location – specific photo required.
12	-1	Drainage	A8-A9 E12-F12 D1/1-E1/1 T14 Q2/15-R1/15 W10-X12 O1-O2	OUW5-1 (Low level) OUW5-2 (Low level)	The site visits undertaken by Woolgar Hunter have identified a number of manholes, some of which are numbered up to MH14. A full drainage survey is required to determine the condition of the drainage network, as well as the exits from the structure. This will also enable the PDE with United Utilities to progress, for example.	N/A	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
							 Indicative location – specific photos required.
13	-1	Column/ Incoming Beams/ Slab	H10	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
14	-1	Column/ Incoming Beams/ Slab	G10	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.
15	-1	Column/ Incoming Beams/ Slab	O12	OUW1-1 (Low level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
16	-1	Column/ Basement Wall	A8 D14 G1/1 Q14 S1/15	OUW4-1 (High level) OUW6-1 (Full height)	As the building has been poorly maintained for a period of time and there will be a change in load on the basement walls, non-intrusive techniques will be used to determine the wall's properties as described in the report, which will aid the development of any remedial details. As the building has been poorly maintained for a period of time and there will be a change in load on the basement walls, non-intrusive techniques will be used to determine the wall's properties as described in the report, which will aid the development of any remedial details. Additionally, the perimeter columns transfer out at high level in the basement. The associated steel and fixings will need to be inspected to determine condition and potential loss of section.	Type 8	 Indicative location – specific photos required.
17	-1	Column/ Basement Wall/ Slab	S14	OUW1-2 (Low level) OUW1-6 (Low level) OUW6-1 (Full height)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. Information on the existing foundations is required to develop the Stage 2 proposed foundation enhancement details, which will be required with the additional load from the proposed extension. This will be done using non-intrusive or minimal intrusive works wherever possible. As the building has been poorly maintained for a period of time and there will be a change in load on the basement walls, non-intrusive techniques will be used to determine the wall's properties as described in the report, which will aid the development of any remedial details. Additionally, the perimeter columns transfer out at high level in the basement. The associated steel and fixings will need to be inspected to determine condition and potential loss of section.	Type 8	 Indicative location – specific location required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
18	4	Column/ Incoming Beams/ Slab	H7	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	
19	4	Column/ Incoming Beams/ Slab	H10	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
20	4	Column/ Incoming Beams/ Slab	G10	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	
21	4	Column/ Incoming Beams/ Slab	N9	OUW1-1/ OUW2-1 (Low level) OUW1-3/ OUW2-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. It should be noted that undertaking OUW1-1 and OUW1-3, also completes OUW2-1, and OUW2-3. The OUW on the same structure serves two purposes to minimise works on the structure.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
22	4	Column/ Incoming Beams/ Slab	O10	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.
23	4	Column/ Incoming Beams/ Slab	Q12	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
24	4	Column	15/S1	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of façade OUW will be used to develop column enhancement details for supporting the extension and will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.
25	4	Column	Q14	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of façade OUW will be used to develop column enhancement details for supporting the extension and will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

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Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
26	4	Column	A8	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.
27	4	Column	1/E1-G1	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
28	4	Column	D14	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	
29	4	Beams	B12-B14	OUW1-3 (High level) OUW1-4 (High level) OUW1-5 (High level)	Previous surveys have noted movement on the external face of the façade at the corner of High Street and Bridgewater Place. The photo shown the internal dilapidation below the movement in the façade. OUW are proposed to investigate the condition of the steel columns and steel beams in disrepair, which might be part of the cause of the façade movement.	Type 1 Type 2 Type 3	
30	5	Column/ Incoming Beams/ Slab	H7	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	

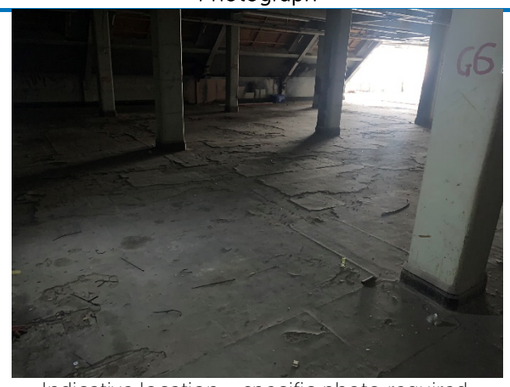
Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
31	5	Column/ Incoming Beams/ Slab	H10	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	
32	5	Column/ Incoming Beams/ Slab	G10	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
33	5	Column/ Incoming Beams/ Slab	N9	OUW1-1/ OUW2-1 (Low level) OUW1-3/ OUW2-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. It should be noted that undertaking OUW1-1 and OUW1-3, also completes OUW2-1, and OUW2-3. The OUW on the same structure serves two purposes to minimise works on the structure.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.
34	5	Column/ Incoming Beams/ Slab	O10	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.

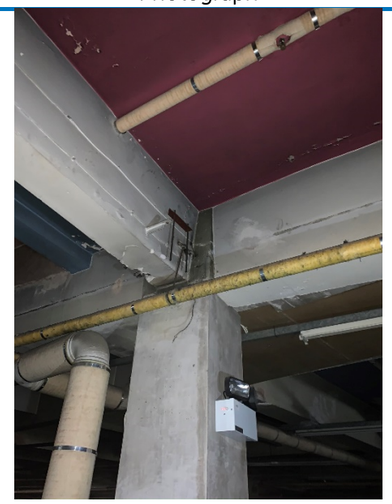
Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
35	5	Column/ Incoming Beams/ Slab	Q12	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4	 Indicative location – specific photo required.
36	5	Column	15/S1	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of façade OUW will be used to develop column enhancement details for supporting the extension and will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
37	5	Column	Q14	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of façade OUW will be used to develop column enhancement details for supporting the extension and will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.
38	5	Column	A8	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
39	5	Column	1/E1-G1	OUW4-1 (Low/ high level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.
40	5	Column/ Beams	D14	OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height)	The mansard roof is known to be in disrepair after external inspections from independent surveyors, as well as internal surveys from members of the design team. OUW to inspect the condition of the structure as well as the connectivity to the primary structural frame is proposed. The OUW will aid the understanding of the disrepair of the roof as well as the developing enhancement details to support the proposed extension.	Type 7	
41	5	Slab	P9-P10	OUW1-2 (High level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The ferroscanning should be undertaken at high level to capture bottom reinforcement of the floor above.	N/A	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
42	5	Slab	L1/1-M1/2	OUW1-2 (High level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The ferroscanning should be undertaken at high level to capture bottom reinforcement of the floor above.	N/A	 Indicative location – specific photo required.
43	5	Slab	G9-H10	OUW3-2 (High level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The ferroscanning should be undertaken at high level to capture bottom reinforcement of the floor above.	N/A	 Indicative location – specific photo required.
44	6	Column/ Incoming Beams/ Slab	O14	OUW1-1 (High level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-9 (High level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The columns for the proposed roof extension will be positioned slightly off gridline 14. The enhancement detail has been theorised at Stage 2, based off information to date. Intrusive works will be required to develop the enhancement detail. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through	Type 1 Type 3 Type 6	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
					understanding the capping detail at the uppermost stack of the column. However, this may be required to be undertaken at low level at seventh.		
45	6	Slab	P9-P10	OUW1-2 (High/ low level) OUW1-8 (Low level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The ferroscanning should be undertaken at low level and high level to capture top and bottom reinforcement of the respective floors. Petrographic and compressive testing of the floor slab will enable a greater understanding of the mechanical properties and construction of the slab. This will enable verification of the slab capacities, which have been back-calculated at Stage 2.	Type 4	
46	6	Slab	G9-H10	OUW3-2 (High/ low level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The ferroscanning should be undertaken at low level and high level to capture top and bottom reinforcement of the respective floors.	N/A	
47	6	Slab	L1/1-M1/2	OUW1-2 (Low level)	Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab.	N/A	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
48	6	Column/ Incoming Beams/ Slab	H7	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4 Type 6	
49	6	Column/ Incoming Beams/ Slab	H10	OUW3-1 (Low level) OUW3-3 (Full height/ high level) OUW3-6 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4 Type 6	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
50	6	Column/ Incoming Beams/ Slab	G10	OUW1-1 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns.	Type 1 Type 2 Type 4 Type 6	
51	6	Column/ Incoming Beams/ Slab	N9	OUW1-1/ OUW2-1 (Low level) OUW1-2/ OUW2-2 (Low level) OUW1-3/ OUW2-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height) OUW1-9 (High level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The OUW results will be cross-checked against the drawings from Manchester Central Library archive. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. It should be noted that undertaking OUW1-1, OUW1-2, and OUW1-3, also completes OUW2-1, OUW2-2, and OUW2-3. The OUW on the same structure serves two purposes to minimise works on the structure. With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through	Type 1 Type 2 Type 4 Type 6	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
					understanding the capping detail at the uppermost stack of the column. However, this may be required to be undertaken at low level at seventh.		
52	6	Column/ Incoming Beams/ Slab	O10	OUW1-1 (Low level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height) OUW1-9 (High level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The OUW results will be cross-checked against the drawings from Manchester Central Library archive. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. However, this may be required to be undertaken at low level at seventh.	Type 1 Type 2 Type 4 Type 6	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
53	6	Column/ Incoming Beams/ Slab	Q12	OUW1-1 (Low level) OUW1-2 (Low level) OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 Full height) OUW1-9 (High level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The OUW results will be cross-checked against the drawings from Manchester Central Library archive. The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. The non-intrusive void scanning of the columns will provide insight into the level of compaction and quality of construction. The presence of voids will affect the suitability of the proposed enhancement details for columns. With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. However, this may be required to be undertaken at low level at seventh.	Type 1 Type 2 Type 4 Type 6	 Indicative location – specific photo required.
54	6	Column	15/S1	OUW4-1 (Low/ mid level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of façade OUW will be used to develop column enhancement details for supporting the extension and will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
55	6	Column	Q14	OUW4-1 (Low/ mid level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of façade OUW will be used to develop column enhancement details for supporting the extension and will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.
56	6	Column	A8	OUW4-1 (Low/ mid level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
57	6	Column	1/E1-G1	OUW4-1 (Low/ mid level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.
58	6	Column/ Beams	D13	OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-5 (Full height)	The mansard roof is known to be in disrepair after external inspections from independent surveyors, as well as internal surveys from members of the design team. OUW to inspect the condition of the structure as well as the connectivity to the primary structural frame is proposed. The OUW will aid the understanding of the disrepair of the roof as well as the developing enhancement details to support the proposed extension.	Type 7	 Indicative location – specific photo required.
59	6	Column/ Incoming Beams/ Slab	T10	OUW1-3 (Full height/ high level) OUW1-4 (High level) OUW1-9 (High level)	The column/ beam attributes, as described in the report, are required to verify existing capacities of structure and develop enhancement details where possible. This will be undertaking using non-intrusive works where possible. The structure must be investigated to assess its potential for disproportionate collapse and nominal tying. This will only be achieved through intrusive works but will be kept to a minimum. With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must	Type 1 Type 2 Type 6	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
					be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. However, this may be required to be undertaken at low level at seventh.		Indicative location – specific photo required.
60	7	Slab/ Column/ Incoming Beams	O14	OUW1-1 (Low level) OUW1-9 (Low level)	OUW are required to understand the connection between the perimeter steelwork and roof steelwork to develop an enhancement detail, due to the increased load from the proposed extension. With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. OUW at high level at sixth have been specified at a high level as well. If the OUW at sixth determine the required information at O14, this OUW at O14 at seventh are not required.	Type 1 Type 3 Type 6	 Indicative location – specific photo required.
61	7	Slab/ Column/ Incoming Beams	N9	OUW1-9 (Low level)	With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. OUW at high level at sixth have been specified at a high level as well. If the OUW at sixth determine the required information at N9, this OUW at N9 at seventh are not required.	Type 6	 Indicative location – specific photo required.
62	7	Slab/ Column/ Incoming Beams	O10	OUW1-9 (Low level)	With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. OUW at high level at sixth have been specified at a high level as well. If the OUW at sixth determine the required information at O10, this OUW at O10 at seventh are not required.	Type 6	 Indicative location – specific photo required.

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
63	7	Slab/ Column/ Incoming Beams	Q12	OUW1-9 (Low level)	With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. OUW at high level at sixth have been specified at a high level as well. If the OUW at sixth determine the required information at Q12, this OUW at Q12 at seventh are not required.	Type 6	 Indicative location – specific photo required.
64	7	Slab/ Column/ Incoming Beams	T10	OUW1-9 (Low level)	With additional storeys being added directly above existing columns, the connection detail between the existing and new structure must be developed. This will be achieved through understanding the capping detail at the uppermost stack of the column. OUW at high level at sixth have been specified at a high level as well. If the OUW at sixth determine the required information at T10, this OUW at T10 at seventh are not required.	Type 6	 Indicative location – specific photo required.
65	7	Slab	P9-P10	OUW1-1 (Low level) OUW1-2 (Low level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the roof slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The OUW results will be cross-checked against the drawings from Manchester Central Library archive.	Type 6	

Item	Level	Element	Grid Location	OUW	Value	Reinstatement	Photograph
66	7	Slab	G9-H10	OUW3-1 (Low level) OUW3-2 (Low level)	The connection of the slab to the steel grillage must be known to develop diaphragm action, which is critical for wind loading. Ferroscanning of the roof slab, which is non-intrusive work and will minimise disruption, will allow for a greater understanding of the composition of the reinforced concrete slab, which will be required to verify the capacity of the slab. The OUW results will be cross-checked against the drawings from Manchester Central Library archive.	Type 6	 Indicative location – specific photo required.
67	7	Column	2/E1-G1	OUW4-2 (Low level)	Works to date have surveyed the external face of the façade but not the internal face. It is known from other locations that the façade steelwork has deteriorated. OUW area required to determine the condition of the steelwork and associated bracketry, as well as the potential loss of the section. The selected locations have identified perimeter columns of different types, based on the stone façade. One of each column has been selected to minimise the façade OUW. The results of the OUW will be fed into the remediation strategy for the façade steelwork for anodic/ cathodic protection.	Type 3	 Indicative location – specific photo required.

end

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