



Rochdale Corner Plot

14834-BKP-V1-XX-RP-S-010

Existing Bulding Condition Report

29-31 Maclure Road, Rochdale

For



RIBA: Stage 2
Status: S1
Revision: P03
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Document Control

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S1	P02	01.12.23	Lee Kierans BEng MStructE	Barry Jefcoate BEng PhD CEng FICE	Issued for Planning Purposes
S1	P03	06.03.24	Lee Kierans BEng MStructE	Barry Jefcoate BEng PhD CEng FICE	Updated architectural scheme

1. Project Overview

1.1. Overview

Booth King Partnership Limited (BKPL) have been appointed by Rochdale Development Agency to act as Civil and Structural Engineers for the development of Rochdale Corner Plot.

The proposed site is located close to Rochdale railway station, on the corner of Station Road and Maclure road (postcode OL11 1DN, grid reference SD 89926 12705)).



Figure 1 – Site Location

1.2. Existing Site Description

The proposed development site currently consists of the following;

- Existing 3-storey brick built building (constructed circa 1900), current containing food outlet / restaurant area at ground floor and residential apartment space at both 1st and 2nd floor levels. This building contains a basement covering part of the building and a number of lean-to structures to the rear of the building provide stair access, bathroom spaces and general storage areas.
- Existing single-storey retail building with curved frontage, currently divided into 3No. separate units. At the time of production of this report, it is noted that former carpet store and café premises to the west of this building are unoccupied; Polish delicatessen premises to the east is currently occupied.



Figure 2 – View on Existing Buildings (Looking North)

The site is bounded to the east by the existing brick build single-storey / 2-storey Deen House and has a number of residential properties in close proximity to the rear of the development site, accessed via Fire Station Yard.

The existing buildings fronts onto the junction of Station Road and Maclure Road. It is noted that the building is in close proximity to Rochdale Railway Station to the south and Rochdale Railway Station Metrolink station to the west.

It is understood that the area to the front of the proposed development is subject to a separate planning application to partially pedestrianize the junction of Station Road and Maclure Road and provide improved external realm local to the existing railway station and Metrolink station.

1.3. Proposed Development

Proposed development of the Rochdale Corner Plot site is due to include the following;

- Demolition of the existing single-storey retail building
- Refurbishment of the existing 3-storey building; consisting reconfiguration of upper floor residential spaces (including connection to adjacent new-build element), internal structural alterations at ground floor to accommodate reconfigured retail space and general repairs / refurbishment of the existing structure. Proposals also include for removal of existing rear lean-to structures and addition of new plant space to the rear of the building.
- Construction of new 6-storey building with curved frontage on the footprint of the former single-storey building; to consist of ground floor commercial and amenity spaces (including cycle storage, refuse storage and residential entrance lobby) and residential space at upper floors (with connection through to the adjacent existing 3-storey building).



Figure 3 – Architect’s Proposed 3D View

Architectural information for the proposed development is contained in Appendix A of this report.

1.4. Project Design Team

Client	Rochdale Borough Council
Principal Designer	Safer Sphere
Principal Contractor	TBC
Project Manager	Cityheart
Architect	Leach Rhode Walker (LRW)
Civil & Structural Engineer	Booth King Partnership Ltd (BKPL)
MEP Consultant	Tace
Fire Engineer	OFR Consultants
Acoustic Engineer	SRL Technical Services Limited
Planning Consultant	Plan Red Ltd

1.5. BKPL Condition Report

BKPL condition report for existing 3-storey building at 29-31 Maclure road is intended to provide review and summary of the structural condition of the existing building, provide recommendations for any required repairs to the existing building structure, review suitability for proposed refurbishment and development of the building and assess impact of proposed adjacent new build elements on the existing structure.

BKPL report is provided based on assessment of available existing building information at the time of production of this report, along with non-intrusive visual inspection of the existing structure as carried out by BKPL on 28.09.23.

BKPL report also includes recommendations for additional surveys required to further inform potential repair works and development of proposed structural designs.

2. Existing Building Information

2.1. Measured Building Survey

Measured building survey for the existing 3-storey building has been provided by Haycock and Todd Land Survey Consultants (survey dated February 2023).

Haycock and Todd surveying includes measured survey information for all internal areas of the building (including existing basement areas and lean-to structures to the rear of the main building), along with all external elevations.

Also included in this survey is information relating to buildings immediately adjacent to the 3-storey building (including adjacent Fire Station Museum, single storey retail units, residential properties to the rear and Deen House); this addition information comprises general building external wall positions relative to the 3-storey building, along with record of external levels and features.

Copy of Haycock and Todd measured building survey information is included in Appendix B of this report.

2.2 Existing Services

Existing service survey and records information has been provided for the areas directly adjacent to the existing building as follows;

- UU sewer record information – indicating the presence of combined public sewers within Station Road (running east-to-west) and Maclure Road (running north-to-south). Note UU sewer records do not provide details of existing sewer depths, connections to third-party land, etc.
- UU watermain record information, indicating presence of existing mains within Station Road and to the unnamed rear access road
- Drainage CCTV survey information provided by Subscan, picking up details of the existing main UU sewers within Station Road and Maclure Road
- Subscan services survey information provided by Malcom Hughes Land Surveyors, identifying a significant number of existing services to the front of the building within both highways and footpaths. Note that this subscan survey doesn't include for the areas to the side and rear of the existing 3-storey building.

At the time of production of this report, additional service surveys are in the process of being procured, including further drainage CCTV survey and subscan services survey to the rear of the building (where information is currently incomplete).

No service information has been provided inside the existing building. For details of internal building services and potential additional surveys, refer to M+E consultant information.

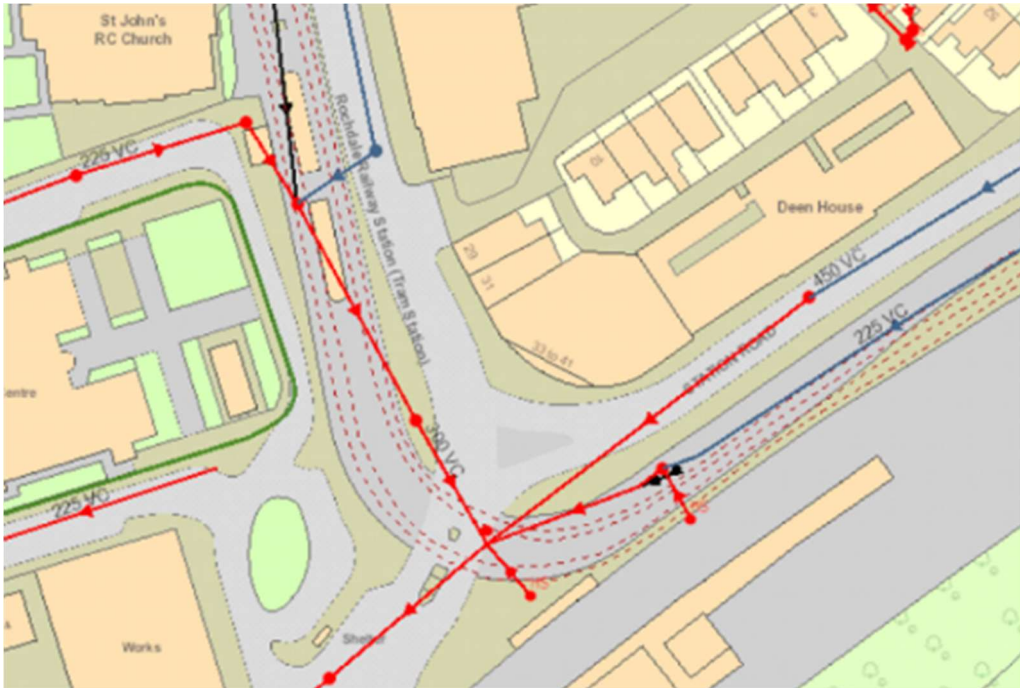


Figure 4 – Extract from UU Sewer Records Information

Survey information above is included in Appendix C of this report.

2.3 Asbestos Survey

At the time of production of this report, no asbestos survey information has been provided for the existing 3-storey building. It is understood that this is to be procured and surveyed is to be carried out by suitably qualified asbestos specialist as soon as access is available to the existing building.

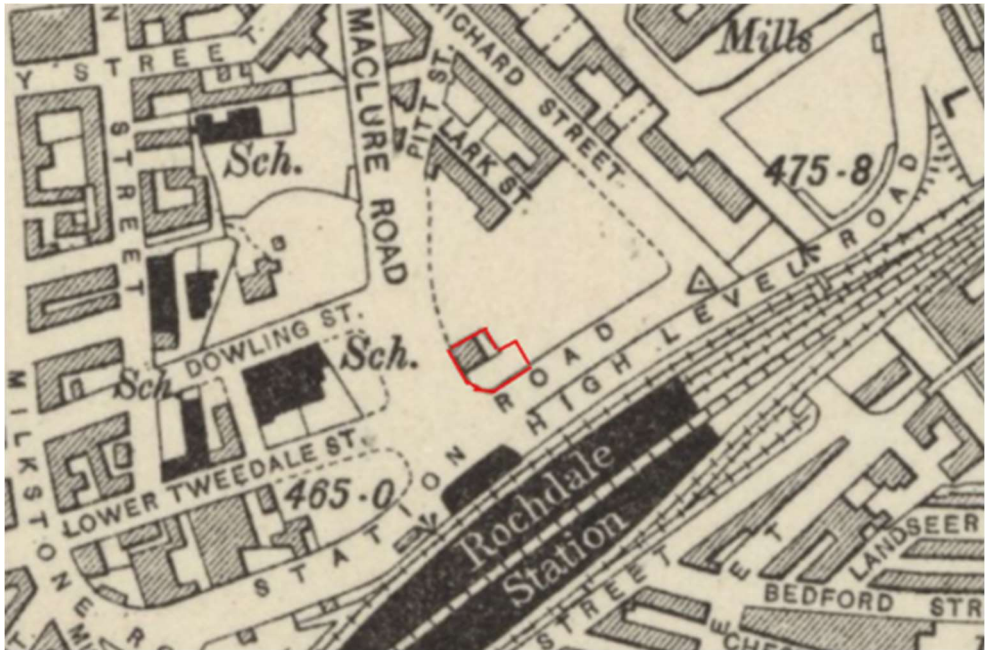
2.4 Heritage Assessment

At the time of production of this report, no formal heritage assessment report has been provided for the existing 3-storey building. This is to be produced as part of the project planning application by Turley.

2.5 Phase 1 Desk Study

Phase 1 desk study information has been provided by NX Consulting. See below summary of key findings of this report.

- Historical map information appears to indicate the proposed site undeveloped, prior to construction of the existing 3-storey building at 29-31 Maclure Road around 1906-1910. Adjacent Deen House appears to have been constructed between 1907-1928. The existing single storey commercial building appears to have been constructed between 1965 and 1985.



*Figure 5 – Extract from Historical Maps Dated 1907-1908
(Approximate Site Location Shown in Red)*

- The site is located within Coal Authority defined coal mining area, however related risks are considered to be low and no further action is required
- Site is considered to be low risk of UXO
- Initial assessment of contaminated land risks suggests these are relatively low and extensive contamination remedial works are considered unlikely (subject to Phase 2 intrusive site investigation works)
- Proposed site is located in Flood Zone 1 (low risk)

For full copy of NX Consulting Phase 1 Refer to Appendix G of this report.

2.6 BKPL Visual Non-Intrusive Survey

BKPL attended site on 28.09.23 and were provided with access to internal and external areas of the existing building to carry out visual non-intrusive structural inspection.

All inspections were carried out from ground level and no finishes were removed as part of this inspection. As such this visual inspection did not allow full assessment of existing structural details, condition, etc, but did allow determination of general structural form, identification of previous structural works / repairs carried out, identification of a number of minor defects and can be used to inform recommendations for further intrusive investigations.

Refer to Section 3.0 of this report for BKPL non-intrusive investigation findings and recommendations for further surveys.

3. BKPL Survey Inspection

3.1 Description of Inspection

BKPL attended site to carry out non-intrusive visual inspection of the existing 3-storey building on 28.09.23. This inspection included the majority of internal spaces to the building at all levels, along with external ground-level inspection of the external building fabric and surrounding areas (including gated unnamed access road to the rear of the building).

Inspection also included non-intrusive visual inspection to part of the adjacent single storey commercial building (existing Polish Delicatessen premises to the east of this building). No access was provided to the remaining two units in the building (including former carpet shop directly adjacent to the 3-storey building).

The below describes observations made during this inspection, along with recommendations for further survey works.

3.2 Basement Observations

Access to the basement area is provided by original stone access stair. Access stair and handrailing are in good condition, albeit it is noted that stone steps are slightly uneven.

Basement area is currently used for general storage and contained a significant amount of debris, including electrical appliances, furniture, boxes, etc at the time of inspection. It is also noted that an existing historic boiler tank was present, with potential asbestos flue – it is recommended that no removal of debris and equipment is carried out from the basement area until formal asbestos survey has been carried out.

Basement Walls - consists of external brickwork basement walls, within internal masonry 'spine' wall (approximately 250mm thick). The basement is divided into 3No. main rooms as shown on measured survey information, with all dividing walls formed in solid brickwork. Masonry walls appeared to be in good condition generally, however the following related observations were recorded;

- Possible localised minor damp / water ingress witnessed to north-east wall of smaller basement room (see below Figure 6); localise removal of plaster finish and inspection is recommended.
- Possible localised minor damp / water ingress witnessed to north-east wall of smaller basement room under assumed steel beam bearing (see below Figure 7); localise removal of plaster finish and inspection is recommended.



Figure 6 – Possible Damp Staining to Basement Wall



Figure 7 – Possible Damp Staining to Basement Wall

Basement Floors - appears to consist of solid concrete basemen slab and is noted to be in generally good condition, however the following related observations were recorded;

- Possible evidence of damp was noted to the ground floor slab to basement room to the north of the building (see below Figure 8); this was dry at the time of inspection and may represent localised staining, as opposed to a water ingress issue. It is recommended that this area is monitored during any further inspections / works on site and any water ingress reported to the engineer.



Figure 8 – Possible Damp Staining to Basement Floor

Basement Timbers and Ground Floor - Existing ground floor structure is partially visible at basement level and was inspected from this level where possible. Exposed timber joists are present at ground floor level to the rooms to the south of the basement. These general consisting timber joists supported on basement walls and appear to be in reasonable condition, however the following related observations were recorded

- Additional mid-span support is provided to timber joisted floor to the larger basement room in the form of timber transfer beam member and timber posts members onto the basement slab (refer to below Figure 9). It is suspected that this may be as a result of historic floor strengthening works. Additional strengthening timbers appear to be in reasonable condition, however it is recommended that the bottom of timber posts is further inspected for any signs of damp / softening of the timber in direct contact with the basement slab
- Historic timber joist end repairs were witnessed to the south gable wall; consisting of joist ends cut back and spliced to new sections following assumed water ingress / timber rot (refer to below Figure 10). Repairs appear to be of reasonable quality, however it is unclear if any rot treatment has been applied locally to masonry wall. No signs of further water ingress were witnessed, however it is unclear if the root cause of ingress has been addressed (likely via interface between gable wall and adjacent single storey building roof). It is suggest that area wall where joist repairs have been carried out is locally cleared of any loose debris, treated with suitable rot treatment and joist ends are mortared into the wall. Root cause of water ingress will be addressed following demolition of existing single storey and construction of new build elements.



Figure 9 – Possible Historic Floor Strengthening Members



Figure 10 – Historic Timber Repairs to South Gable Wall

- Existing steel support beam witnessed to south gable wall supporting repaired timber joist ends noted above (see below Figure 11). Beam is showing some signs of surface rusting, but appears to be in good condition and is showing no signs of distress / damage. It is recommended that this beam is cleaned of surface rusting and end bearings onto masonry walls reviewed



Figure 11 – Steel Beam Supporting Joist Ends

- Relatively new steelwork support members and masonry piers witnessed to front elevation of larger basement room, directly under the main entrance doorways above (refer to Figure 12 below). Steelwork and supporting masonry appeared to be in good condition.



Figure 12 – Steel Support Under Main Entrance Above

- Basement room to the north includes an existing plasterboard ceiling and plasterboard surround to assumed steel transfer beam (picking up masonry wall above). As noted on BKP further investigation drawings, it is recommended that localised intrusive investigations are carried out in this area to verify assumed timber joist arrangements, steel transfer beam details and inspect interfaces between timber joists and supporting masonry walls.

3.3 Ground Floor Observations

General access was available to the ground floor of the building; consisting of kitchen area to the north of the building and restaurant seating area to the south. Access was also available to smaller lean-to sections of the building to the rear, consisting of toilet facilities, store room/ washing facilities and rear entrance.

At the time of inspection, the premises were empty, but the kitchen / restaurant are understood to be occupied during the evening.

Kitchen Area Generally – Kitchen area of the building includes significant kitchen fit out equipment, including large extractor system, aluminium splashback wall coverings, countertops, etc, along with tiled suspended ceiling. Floor has received vinyl covering and appears to be in good condition, with no obvious signs of excessive deflection / bounce witnessed.

Given current usage of the building and significant finishes witnessed on site, inspection of structural elements, including masonry walls, floor structures over, etc, was not possible during this inspection. For details of recommended further intrusive investigations refer to BKP intrusive investigation drawing information (refer to Appendix D of this report).



Figure 13 – View on Rear Wall of Existing Kitchen Area



Figure 14 – View on Front Entrance to Kitchen Area

Restaurant Area Generally- Restaurant area includes significant fixed seating to both sides, along with serving counter to the rear of the building and access to adjacent washroom (part of rear lean-to structures). This area includes plasterboard suspended ceiling, with a number of feature downstands (refer to Figure 15 below) along with decorative wall finishes. Floor has received vinyl covering and appears to be in good condition, with no obvious signs of excessive deflection / bounce witnessed.

Given current usage of the building and significant finishes witnessed on site, inspection of structural elements, including masonry walls, floor structures over, etc, was not possible during this inspection. For details of recommended further intrusive investigations refer to BKP intrusive investigation drawing information (refer to Appendix D of this report).

Particular attention is drawn to the following;

- South gable wall to the building has received timber repairs to ground floor structure (witnessed from basement level, as noted in section 3.2 above), likely required following historic water ingress. Whilst exact cause of historic water ingress is unknown, it is likely this has originated from the junction between the south gable wall and the adjacent single storey commercial unit roof. Given that the flat roof to the adjacent building coincides with approximate 1st floor level to the 3-storey building, it is recommended that intrusive investigations are carried out to expose underside of 1st floor joists at interface with the south gable wall and investigate potential water ingress / timber damage at this location.



Figure 15 – View on Main Entrance to Restaurant Area

3.4 First Floor Observations

General access was available to the first floor of the building; consisting of existing residential space (with some existing storage), including access to all rooms at this level.

1st floor area included plasterboard ceiling, plastered walls and decorative floor finishes at the time of inspection. Given current usage of the building and significant finishes witnessed on site, inspection of structural elements, including masonry walls, floor structures over, etc, was not possible during this inspection, however attention is drawing to the following observations;

- Evidence of historic structural alterations witnessed to the main spine wall towards the front of the building, appearing to consist of significant opening formed through the load-bearing masonry wall and apparent steelwork support over (refer to Figure 16 below). This opening has since been infilled with non-load bearing studwork. Intrusive investigation works are to be carried out to determine details of this structural alterations, including steel beam details, review of end bearing arrangements, etc.
- Minor cracking of finishes and possible staining witnessed to top-left hand corner of existing front window (refer to Figure 17 below); further investigation and possible repairs to be carried out to prevent further water ingress



Figure 16 – View on Historic Spine Wall Structural Alterations



Figure 17 – View on Front Window with Minor Cracking / Staining to Top Left Corner

- Possible water ingress damage witnessed to corner of rear wall (refer to Figure 18 below); further investigation and possible repairs to be carried out to prevent further water ingress



Figure 18 – View on Rear Wall with Potential Water Damage to Top Left Corner

For details of recommended further intrusive investigations refer to BKP intrusive investigation drawing information (refer to Appendix D of this report).

3.5 Second Floor Observations

General access was available to the second floor of the building; consisting of existing residential space, including access to living room, kitchen and foyer only (no access to bedroom).

2nd floor area included plasterboard ceiling, plastered walls and decorative floor finishes at the time of inspection. Given current usage of the building and significant finishes witnessed on site, inspection of structural elements, including masonry walls, roof structures over, etc, was not possible during this inspection, however attention is drawing to the following observations;

- Minor cracking witnessed at junction between wall and ceiling to south gable (refer to Figure 19 below); given location of this cracking, this is anticipated to be minor shrinkage cracking of plaster finishes only



Figure 19 – Minor Cracking at Junction Between Wall and Ceiling (Non-Structural Shrinkage Cracking)

- Minor cracking and staining witnessed to top of front dormer window within main living space (refer to Figure 20 below); given relatively even staining pattern, it is anticipated that this is likely a result of internal condensation from kitchen area, as opposed to water ingress via the existing roof coverings. External inspection of roof coverings at high level is recommended however.



Figure 20 – Minor Cracking Above Front Dormer Between Wall and Ceiling

- Access to roof space not available during inspection, however it is noted that ceiling hatch access is present within the living space. Visual inspection of internal roof space is recommended.

For details of recommended further intrusive investigations refer to BKP intrusive investigation drawing information (refer to Appendix D of this report).

3.6 External Building Fabric Observations

Ground level visual inspection of the building has been carried out and no obvious signs of significant defects identified.

Areas of apparent poor quality masonry pointing has been observed to the front elevation of the building.

High level visual inspection of the external building fabric is recommended, including all external walls, roof structure and interface with adjacent single storey commercial building.

3.7 External Surroundings Observations

Visual inspection of the part of the rear courtyard to the building has been carried out, consisting of stone flag paving and free-standing brickwork yard walls. It is noted that significant debris is present within the rear yard area (including timber pallets, bins, etc).



Figure 21 – View on Rear Access Door Via Yard Area

Full access to the rear courtyard (including external access to basement) was not available during this inspection due to presence of significantly leaning / potentially dangerous existing yard wall. This was witnessed as leaning significantly into the yard area and removal of this section of wall should be considered prior to any further inspection works.



Figure 22 – View on Leaning Section of Yard Wall

Inspection of the unnamed access road to the rear of the building was carried out, consisting of poor quality concrete paving with significant weed growth, spalling / cracking of concrete surfaces, etc. As noted above, existing masonry wall between the building yard and this unnamed access road was witnessed to be in poor condition, with significant leaning into the yard area observed.

Interface between the existing 3-storey building rear wall and the adjacent single storey commercial unit was observed to be in relatively poor condition.



Figure 23 – View on Unnamed Access Road to Rear



Figure 24 – View on Junction with Adjacent Singlet Storey Building

A number of existing drainage features were noted within the unnamed access road to the rear of the building and within Fire Station Yard to the north of the building (including possible manhole covers, gulleys and downpipes from the adjacent single storey building). It is recommended that these drainage features are further investigated, along with additional services searches carried out in this area.



Figure 25 – View on Fire Station Yard to the North of the Existing Building

3.8 Adjacent Single Storey Commercial Building Observations

Internal visual inspection of the adjacent single storey was carried out from within the existing Polish Delicatessen property (to the east of the existing building). It is noted that the existing building appears to consist of relatively lightweight steel frame construction supporting possible precast concrete roof units.

Inspection of the interface between this unit and the adjacent Deen House noted that the single storey building steel frame appears to have been built tight to the existing, with no formal party wall formed between the two properties.



Figure 26 – View on Single Storey Building Interface with Deen House

Inspection of the two further units to the west of the building (including unit directly adjacent to the existing 3-storey building) was not possible. It is anticipated that party wall details between this building and the adjacent 3-storey building will likely be similar to interface with Deen House, however this should be further investigated on site when access to these units becomes available.

3.9 Further Surveys / Investigations Recommendations

Based on the above, the following additional surveys/ investigation works are recommended to further inform structural design for the propped building alterations and allow schedule of repair works to be developed where required;

- Specialist asbestos survey to be carried out prior to any intrusive works within the building. Intrusive investigations to be designed to avoid disturbing asbestos where possible / specialist asbestos removal to be carried out where recommended by specialist survey report
- Phase 1 Desk Top study; note we understand that this is being procured at the time of writing this report
- Phase 2 Ground Investigation (including determination of existing building foundation details at interface with new built elements); note we understand that this is being procured and details finalised at the time of writing this report
- Intrusive surveys to be carried out to allow key structural interfaces to be further inspected and assessed to inform the proposed design and any repair works. Refer to Appendix D of this report for BKPL recommendations for additional intrusive survey works
- Further visual high-level inspection of external building fabric (including roof) where possible
- Specialist timber condition survey may potentially be required (subject to findings of intrusive investigations noted above)
- Further services subscan survey to areas to the side / rear of the existing building; note we understand that this is being procured at the time of writing this report



- Further drainage CCTV survey to the areas to the side / rear of the existing building; note we understand that this is being procured at the time of writing this report
- Internal service survey to inform M+E consultant design for the building
- Further inspection of adjacent single storey building is recommended, notably within former carpet shop directly adjacent to south elevation of the 3-storey building

4. Proposed Development Alterations

4.1 Architects' Proposals

Architectural proposals for the existing 3-storey building as included in Appendix A of this report, summarised as follows;

- Removal of existing load-bearing spine walls at ground floor level to provide open-plan commercial
- Formation of significant new opening to south gable wall at ground floor level to provide access to adjacent new build commercial space
- Removal of existing outhouse / lean-to structures to rear of building and construction of new M+E plant space / substation space
- Remodelling of existing wall layouts at 1st and 2nd floor levels to provide new residential space – including adjustments to existing main spine wall to accommodate new doorway openings, new doorway access to adjacent new build residential space, removal of external rear stair access areas, etc.
- Minor repairs / remedial works to the existing building structure and fabric where required (to be informed by further intrusive investigations)
- Existing basement access stair to be blocked-off from new ground floor commercial unit; alternative access for maintenance / inspection to be provided (from adjacent new plant space, subject to design development)



Figure 27 – Extract From Architectural Info Showing GF Demolitions (in Red)

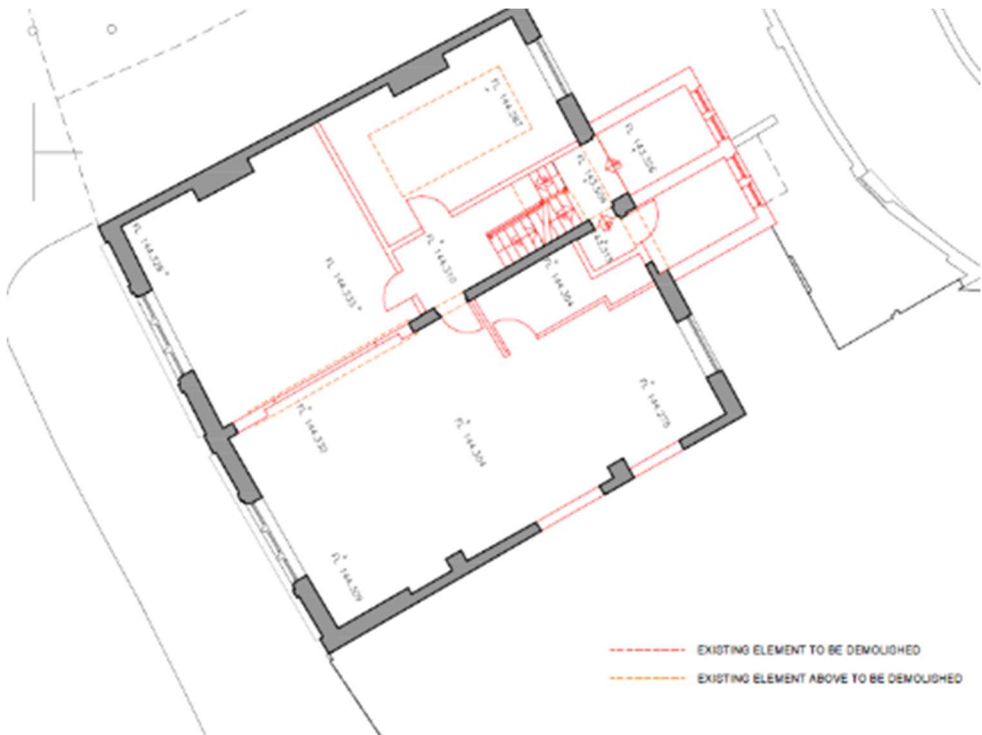


Figure 28 – Extract From Architectural Info Showing FF Demolitions (in Red)

4.2 Structural Overview of Proposals

Given the condition of the building as witnessed during non-intrusive visual inspection, it is noted that the existing structure is in relatively good condition, with no signs of any significant structural defects. This is to be verified by further investigation works in key areas as noted above and any defects found are to be suitably and sympathetically repaired as part of the project.

Where renovation / alteration works are to be carried out to the existing building as described in above section 4.1, it is considered that the proposed alterations are feasible and that these will not be detrimental to the existing building as described below.

4.3 Building Loading Assessment

The current building usage comprises of commercial restaurant / kitchen space at ground floor level, with upper floors consisting of residential space. The existing basement area is currently used for storage only and single-storey rear lean-to buildings are currently used for additional storage / toilets / kitchen washing spaces. As such, existing building loadings are summarised below (in accordance with BS EN 1991-1-1-2002);

- | | |
|--|--|
| • Ground Floor Commercial = 3-4kN/m ² | (Category C2 – Areas where people may congregate, with fixed seating) |
| • Upper Floor Residential = 1.5 + 1.0kN/m ² | (Category A1 – Self-contained dwelling units, plus allowance for partitions) |

Based on BKPL non-intrusive visual survey of the existing building, the above existing loadings applied to the structure have not resulted in any obvious signs of excessive deflection of floor joists, related cracking of finishes, etc.

Proposed development of the existing building is to include general commercial usage at ground floor (with flexibility for potential use as retail space, restaurant, etc), with upper floor areas reconfigured to form new residential units. Basement level is not intended to be used as part of the proposed development, however it is anticipated that access will be provided for general maintenance and possible minor storage. Rear lean-to structures are to be demolished and replaced with new single storey plant room spaces.

Proposed building loadings are summarised below (in accordance with BS EN 1991-1-1:2002);

- Ground Floor Retail = 4kN/m² (Category D1 – Areas in general retail shops – considered worst case proposed loading)
- Upper Floor Residential = 1.5 + 1.0kN/m² (Category A1 – Self-contained dwelling units, plus allowance for partitions)

It is noted that proposed works to the existing building do not include for significant additional finishes to be added to ground floor commercial or upper floor residential spaces. Increase in service distribution is anticipated within the existing building, with related minor increase in service loadings applied to the structure.

Based on the above assessment, it is noted that existing floor structures to the building are to be subject to minor increase in loadings as part of the new development. Whilst it is anticipated that the existing structure is adequate to support these increased loadings, further intrusive investigation works are required to verify details of existing floor structures (including timber joist sizes, spacings, etc) and full assessment of joist capacities are to be carried out as part of the detailed design for the building. Where required, minor strengthening of floor structures is to be carried out sympathetically with minimal disturbance to the existing building fabric.

4.4 Building Stability Assessment

Current building arrangement includes external masonry walls (possible cavity wall or solid masonry arrangement – subject to further intrusive surveys), along with a main masonry spine wall running from front-to-back of the building (from basement to roof level). Internal masonry cross-walls are also present (notably at upper floor levels, however these are not continuous through to ground floor / basement levels). Refer to Appendix E of this report for BKPL existing building structural arrangement drawings.

Stability of the existing structure is provided by diaphragm action of the existing timber floor structures transferring lateral wind loadings to the existing masonry external walls and internal spine wall. These masonry walls in turn transfer lateral loads down to foundation level.

Architectural proposals include for a number of new openings to be formed in both the existing external walls and to the internal spine wall (proposed structural works for these described in sections 4.5-4.7 below), summarised as follows;

- External south wall – minor doorway openings to be formed at both 1st and 2nd floor levels (new corridor access route and new opening within apartments at each level)
- External south wall – significant ground floor level opening to be formed within new commercial unit

- Internal spine wall - minor doorway openings to be formed at both 1st and 2nd floor levels (new corridor access route and new opening within apartments at each level)
- Internal spine wall – full removal of spine wall and adjacent masonry wall at ground floor level to allow opening-up of proposed commercial space
- Full removal of existing single storey rear lean-to structures
- Removal secondary internal masonry walls at 1st and 2nd floor

In terms of overall building stability, new structural alterations to external perimeter walls, along with minor openings formed in the main spine wall at upper floor level are considered to have minimal impact on existing load paths and overall stability of the structure. Removal of the existing rear lean-to structures is also considered to have minimal impact on overall building stability.

Where full removal of the internal spine wall is to be carried out at ground floor level, as described in below section 4.5, this will require significant new steel structure to be provided to support wall / floor structure above (consisting of new steel columns and supporting beam members, supported onto basement walls). Nominal moment capacity of connections between the new steel beam members and column members is to be considered in order to adequately transfer lateral loads from the supported spine wall down into basement walls below.

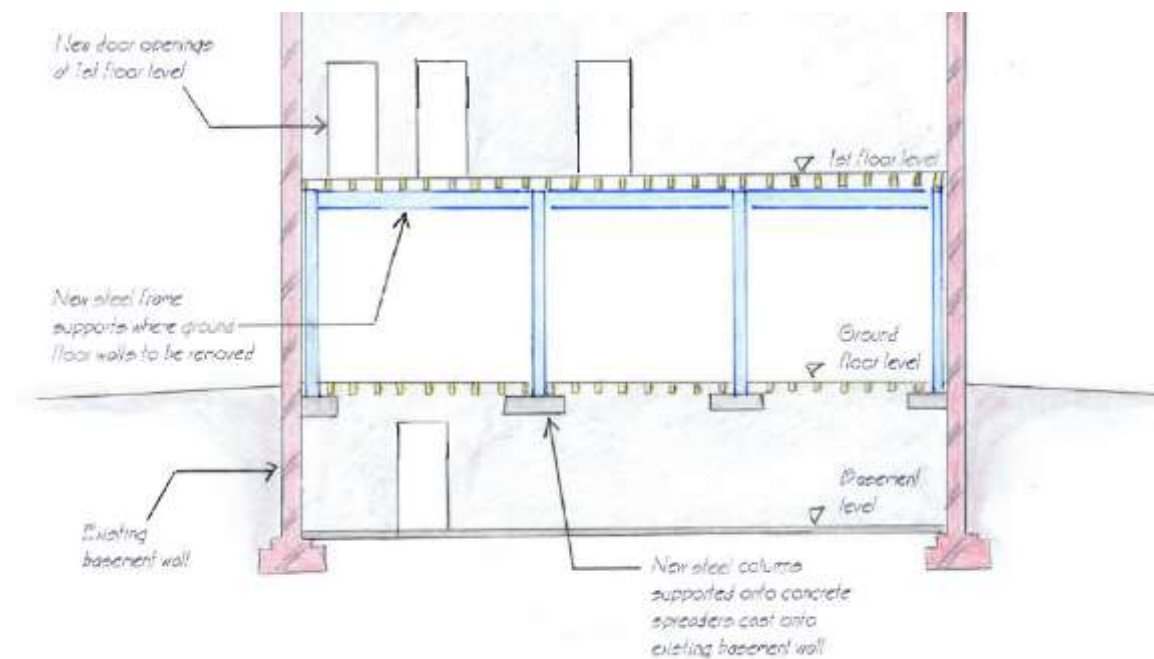


Figure 29 – Proposed Structure Support Arrangement GF Spine Wall

Based on the above, it is considered that the proposed structural alterations do not have any detrimental affect on overall building stability, provided new steel frame support at ground floor level takes due consideration of lateral loads within the main spine wall above.

4.5 Proposed Structural Alterations Ground Floor Level

Proposed structural alterations at ground floor level include for removal of main spine wall at this level, removal of adjacent masonry wall (assumed to be load-bearing – subject to intrusive investigation works) and formation of new opening to the existing external south wall (to suit proposed commercial unit layouts).



Figure 30 – Architect's GF Demolitions Plan

Removal of the main spine wall and adjacent (assumed load-bearing) walls at ground floor will require significant new steelwork frame to be introduced to provide support to upper floor spine wall and floor structures over. This is to consist of a line of new steel beams and internal column supports provided where existing walls are to be removed. These new column members are to be taken down onto existing basement walls below and provided with significant load spreading concrete padstone / steel spreader members to prevent localised excessive loadings being applied to the existing masonry. Proposed sequence is to be developed by the main contractor, however should consider the following;

- Provide temporary propping of the existing masonry spine wall nominally above proposed steelwork installation level (back-propped down to basement slab level, with sufficient spreader plates onto the basement slab)
- Provide temporary propping to 1st floor joists (back-propped to basement slab level)
- Careful removal of the existing walls (involving saw cutting at junction with existing front and rear walls, hand removal of walls down to approximate underside of ground floor structure)
- Installation of new spreader members to top of basement wall under proposed column positions (to comprise of bespoke reinforced cast insitu concrete padstones or steel spreader members)
- Installation of new steel frame members, including reinstatement of support to ends of existing 1st floor joist members onto new steel frame beam members
- Reinstatement of ground floor joist supports onto basement wall

- Careful removal of temporary propping measures (including monitoring of deflections of new steel members as props are gradually released to ensure deflections are as anticipated)

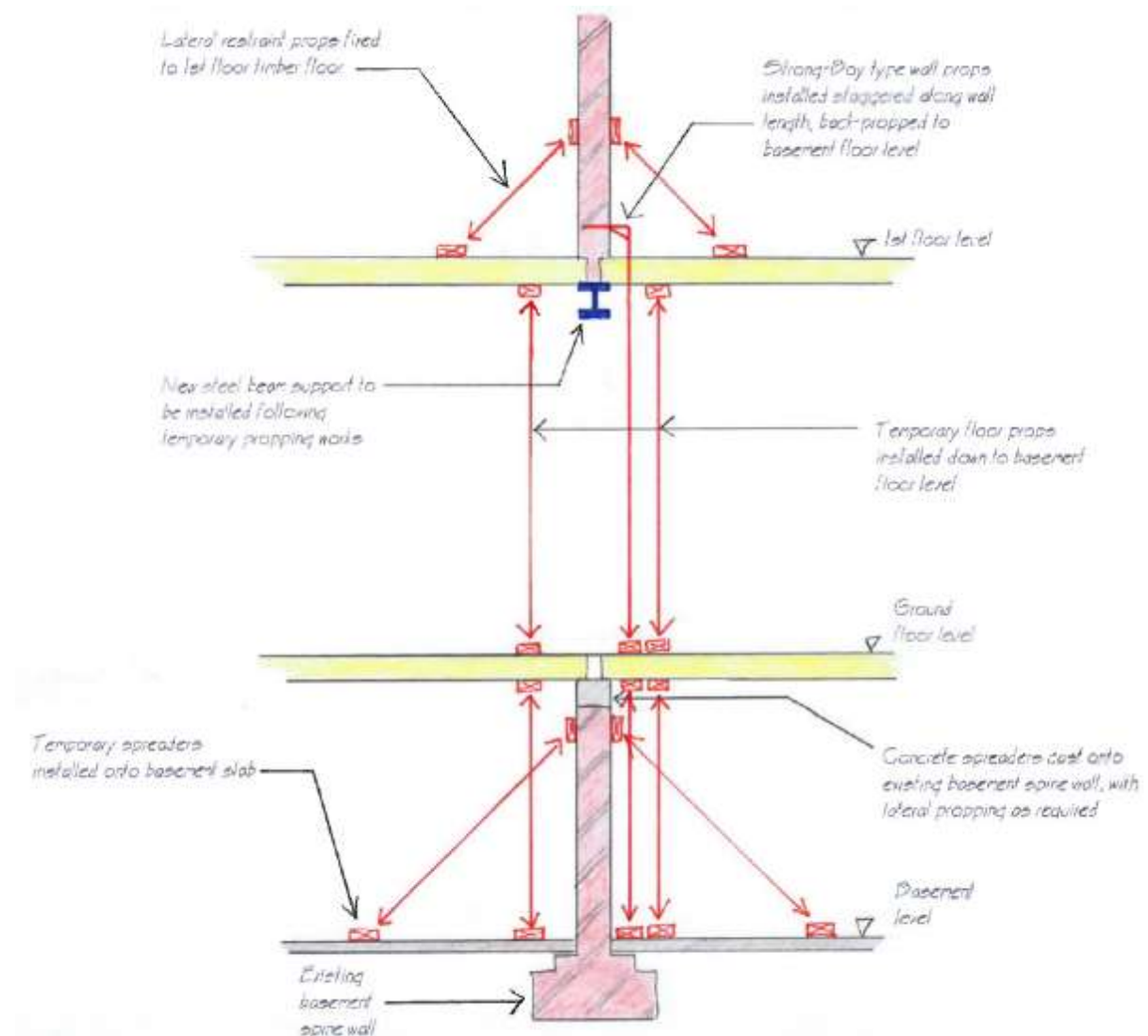


Figure 31 – Suggested GF Spine Wall Temporary Works Arrangement

Further structural alterations to the external south wall of the building are to comprise of new steelwork lintel supports with concrete padstones to form new openings. Temporary propping of the existing wall is to be provided (back-propped down to basement level, with suitable spreaders).

For further details of proposed structural alterations at ground floor level, refer to Appendix F of this report.

4.6 Proposed Structural Alterations First Floor Level

Proposed structural alterations at first floor level include for formation of 3No. minor doorway openings with the existing spine wall. It is noted that significant previous structural alterations appear to have been carried out to the existing spine wall at 1st floor level (as noted in above section 3.4); these alterations appear to consist of approximately 4m wide opening being formed in the existing spine wall, with steelwork support installed over (to be confirmed by further intrusive investigations). This opening has since been infilled with non-load bearing studwork, however it is noted that the extents of this existing opening clashes with proposed new doorway openings (notably beam end bearing and assumed padstones sit directly above proposed doorway openings). In order to simplify proposed structural alterations in this location, it is proposed to carry out the following;

- Provide temporary propping of existing spine wall directly above assumed existing steelwork support (with suitable back-propping taken down to basement slab level)
- Careful removal of the existing steel beam and related concrete padstones
- Reconstruct masonry spine wall to this opening tight to underside of propped masonry over, including coursing in of masonry to provide full load transfer into reinstated masonry)
- Careful removal of temporary propping
- Install new lintel members (with related minor temporary propping) to form new door openings

Further structural works relating to removal of secondary masonry walls at 1st floor level is subject to further intrusive investigations to determine whether these walls are load-bearing. Where load-bearing walls are encountered, it is proposed to provide suitable steelwork supports onto concrete padstones (with suitable temporary propping strategy).

New doorway openings to the existing external south wall of the building are to be formed in new precast concrete lintel members (with suitable temporary propping strategy).

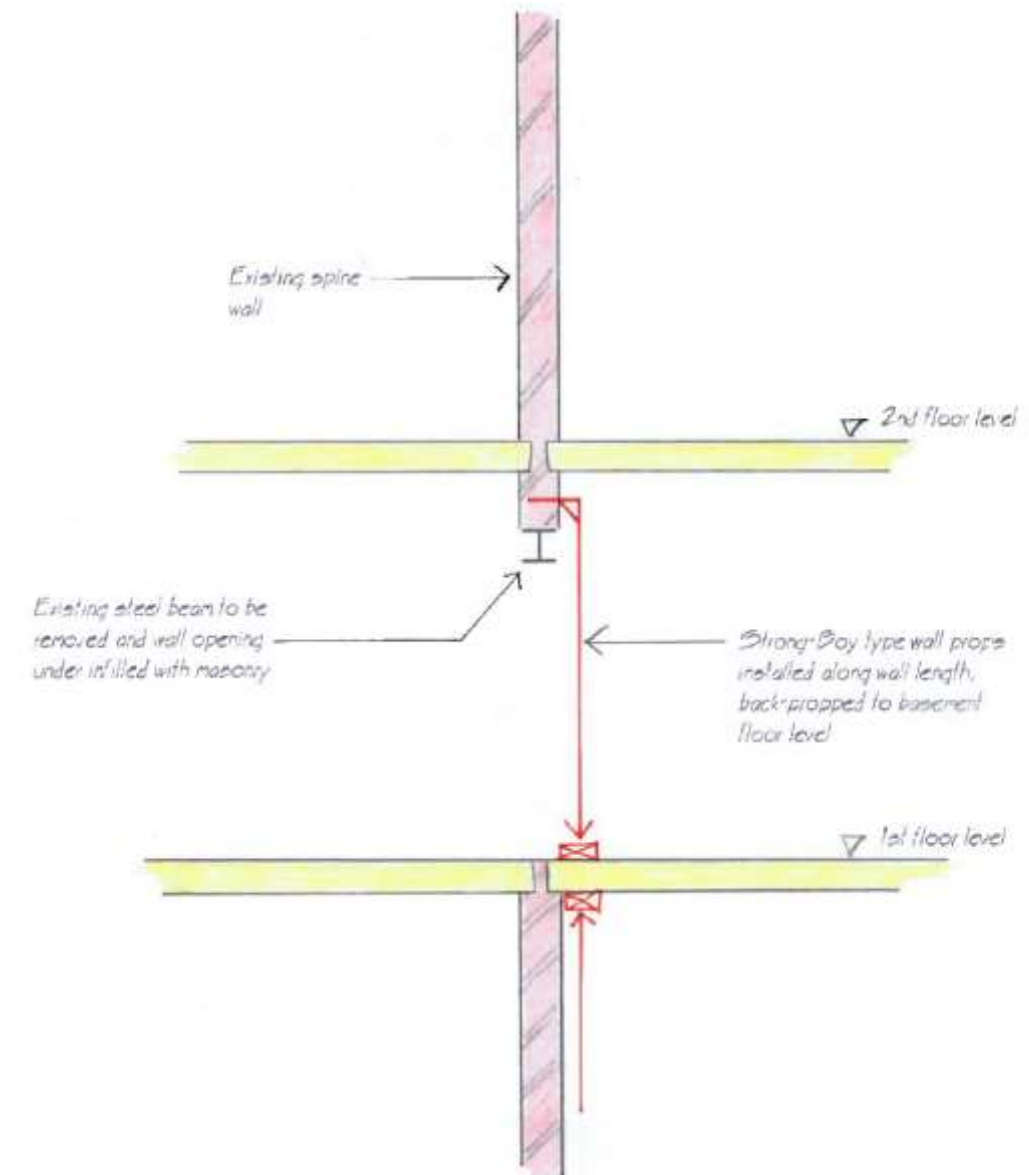


Figure 32 – Suggested FF Spine Wall Temporary Works Arrangement

It is noted that previous structural alterations have been carried out to provide half-landing level access to rear lean-to bathroom area within the existing building (assumed to consist of timber trimming of the original floor structure and installation of small section of new floor at half-landing level. Subject to further investigations, it is proposed to infill the opening within the existing 1st floor structure with new timber joists.

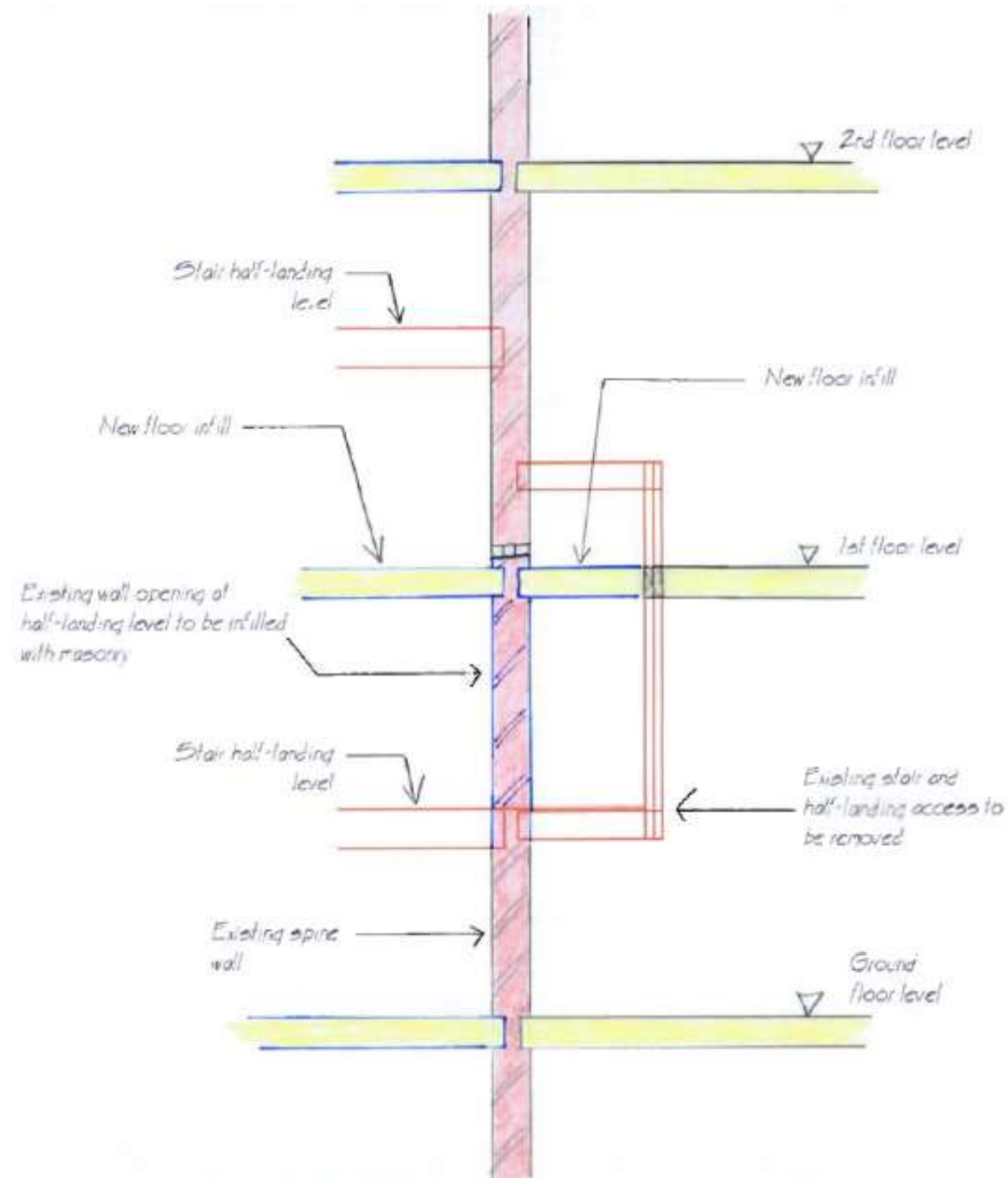


Figure 33 – FF Floor Infill Proposals

4.7 Proposed Structural Alterations Second Floor Level

Proposed structural alterations at first floor level include for formation of 3No. minor doorway openings with the existing spine wall. These new openings are to be formed in new precast concrete lintel members (with suitable temporary propping strategy).

New doorway openings to the existing external south wall of the building are to be formed in new precast concrete lintel members (with suitable temporary propping strategy).

For further details of proposed structural alterations at second floor level, refer to Appendix F of this report.

4.8 Structural Robustness

In accordance with Approved Document A, Table 11, the proposed redevelopment of the existing 3-storey building would classify as a Building Consequence Class 2a (flats, apartments and other residential buildings not exceeding 4 storeys). For the purposes of robustness, the existing 3-storey building should not be considered as part of the adjacent 6-storey new concrete frame building, given that the two buildings are structurally independent.

In order to provide suitably robust structural interfaces to meet Class 2a, it will be necessary to provide effective horizontal ties / anchorage of floors to walls. Where new structural works are to be carried out, it is intended that all new joists / re-supported joists will be provided with adequate anchorage to supporting walls / steelwork members (consisting of suitable strapping of timber members to masonry wall, positive fixings between joists and supporting steelwork members, etc).

Where existing timber floor members are to remain in place, all joist supports are to be reviewed on site to ensure these are suitable robust and provide sufficient bearing onto existing walls in accordance with Approved Document A. Where insufficiently robust connections are encountered, these are to be locally improved to include suitable strapping to masonry walls / positive fixings in order to comply with Approved Document A requirements.

4.9 Fire Protection

Details of fire strategy for the development, including existing 3-storey building, are included in OFR 'RIBA Stage 2 Fire Strategy' report for Corner Plot Rochdale.

In summary, all fire compartment walls (including existing masonry and new non-load-bearing studwork walls) and floors within the existing building are to provide 60 minutes fire resistance. Proposed 60-minute fire protection to existing floor structures is provided by installation of new fire-rated ceilings to provide sufficient fire resistance (to specialist design and details). It is noted that fire rated ceiling installation will also be required to basement areas of the existing building.

For further details of proposed structural alterations at first floor level, refer to Appendix F of this report.

5. Proposed Adjacent New-Build Review

5.1 Architects' Proposals

Architectural proposals for the adjacent new-build structure are included in Appendix A of this report, summarised as follows;

- New 6-storey curved building, comprising ground floor commercial / plant / amenity space and upper floor residential space
- Building generally consisting of traditional brickwork cladding (including feature curved brickwork reveals), with upper storey metal cladding system.
- Building frame likely to consist of reinforced concrete flat slab and column arrangement, with reinforced concrete stair / lift core providing stability to the new structure, upper storey likely to consist of lightweight steel frame / cold-rolled SFS type frame. Alternatively, frame may consist of light-gauge steel frame system (LGSF) to upper storeys supported on 1st floor podium deck formed in traditional hot-rolled steelwork / insitu concrete. Final frame solution subject to detailed design and costing.
- Building foundations likely to consist of CFA piles foundation supporting main concrete frame elements, with traditional ground bearing concrete ground floor slab. Foundation and ground floor slab strategy subject to detailed ground investigation works.

It is noted that the proposed 6-storey building is to be constructed in close proximity to the existing 3-storey building, with key interfaces between the two structures noted below.

5.2 New Build Substructure Interface

Proposed new build structure will include construction of new main column elements in close proximity to the external south wall of the existing 3-storey building. New foundations in this area are to take into consideration close proximity of the existing building basement wall and no additional loading / surcharge loadings are to be applied to this wall in both the temporary case (during construction works) and permanent case (due to new building foundation loads).

In order to provide sufficient clearance for installation of new piles in close proximity to the existing basement wall, it is proposed to carry out trial pitting works to determine exact details of the existing basement wall and related foundation (including foundation type, size, depth and condition). These ground investigation works are due to be carried out following demolition of the existing single-storey building currently on the proposed development plot. At this stage, a number of assumptions have been made regarding existing foundations and interface with new foundations as follows;

- Assumed existing basement foundation to consist of traditional masonry wall with corbelled type foundation
- New CFA piles (low vibration) to be installed at safe distance from the existing basement wall foundation (to avoid any potential impact on the existing foundation and minimise effects of vibration during the piling works). Vibration monitoring to be carried out during all piling works.
- New superstructure column members to be supported on cantilevered ground beam members (with related back-span beams) onto piled foundations to avoid any transfer of new building loadings onto the existing basement wall
- Permanent loads from the new ground floor slab are considered to be the same as existing loadings applied to the current single-storey retail premises; as such, the existing basement wall is considered adequate to support these ground floor slab loadings

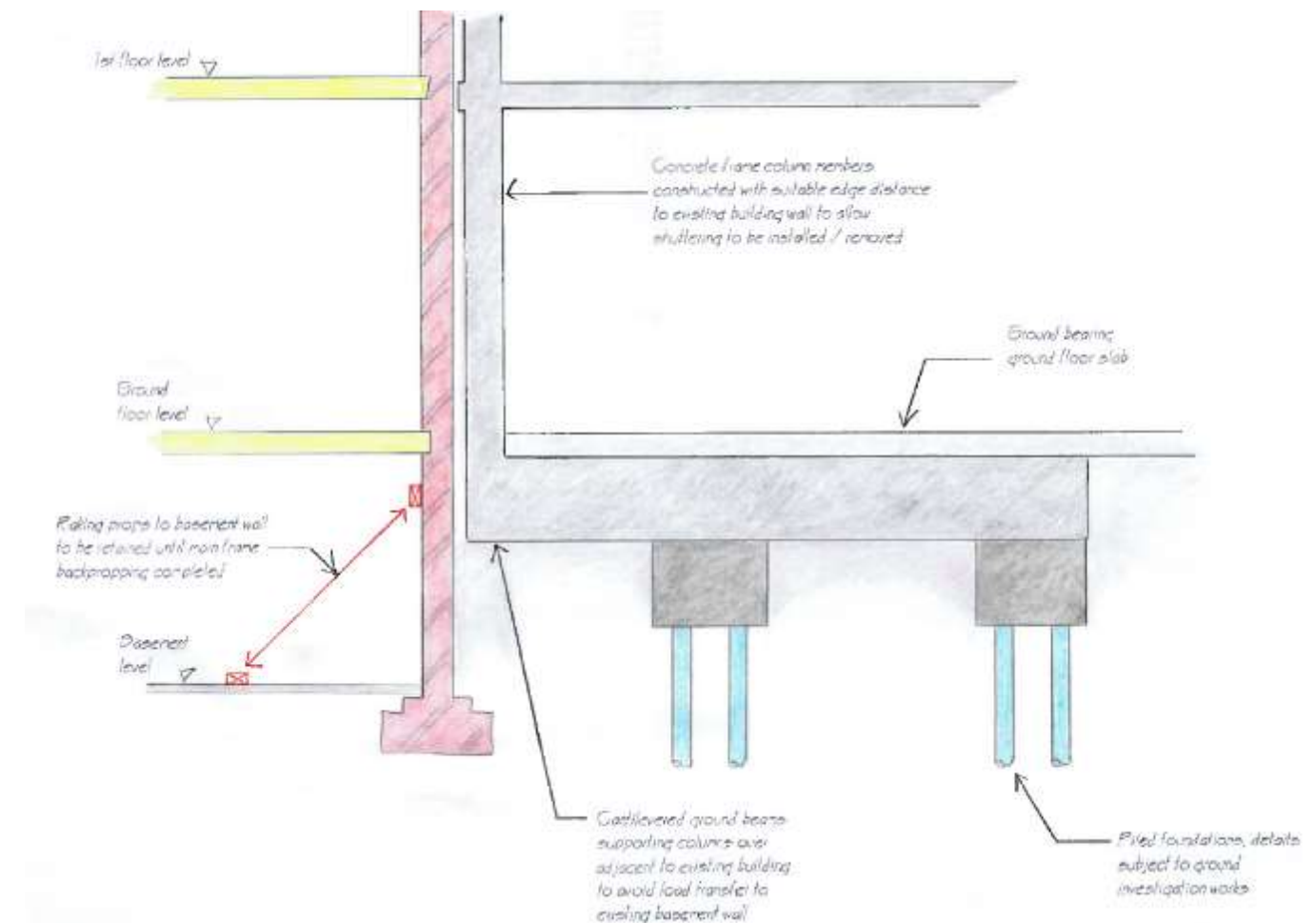


Figure 34 – New Building Foundation Interface Proposals
(Concrete Frame Option, Alternative LGSF with Podium Frame Similar)

Proposed temporary works in close proximity to the existing building south elevation are to comprise of installation of temporary piling mat, new piling works and installation of new building foundations. Given that piles are to be offset from the existing building basement wall / foundations, it is anticipated that piling mat is to be installed with a clear non-accessible strip directly adjacent to the existing building (exact width of non-accessible strip to be determined); as such, no temporary loads from the piling mat installation and piling operation are anticipated to impact on the existing basement wall. Where new foundations are to be excavated in close proximity to the existing wall, it is anticipated that these would be formed via use of long-reach excavation plant / by hand to avoid plant loadings impacting on the existing basement wall.

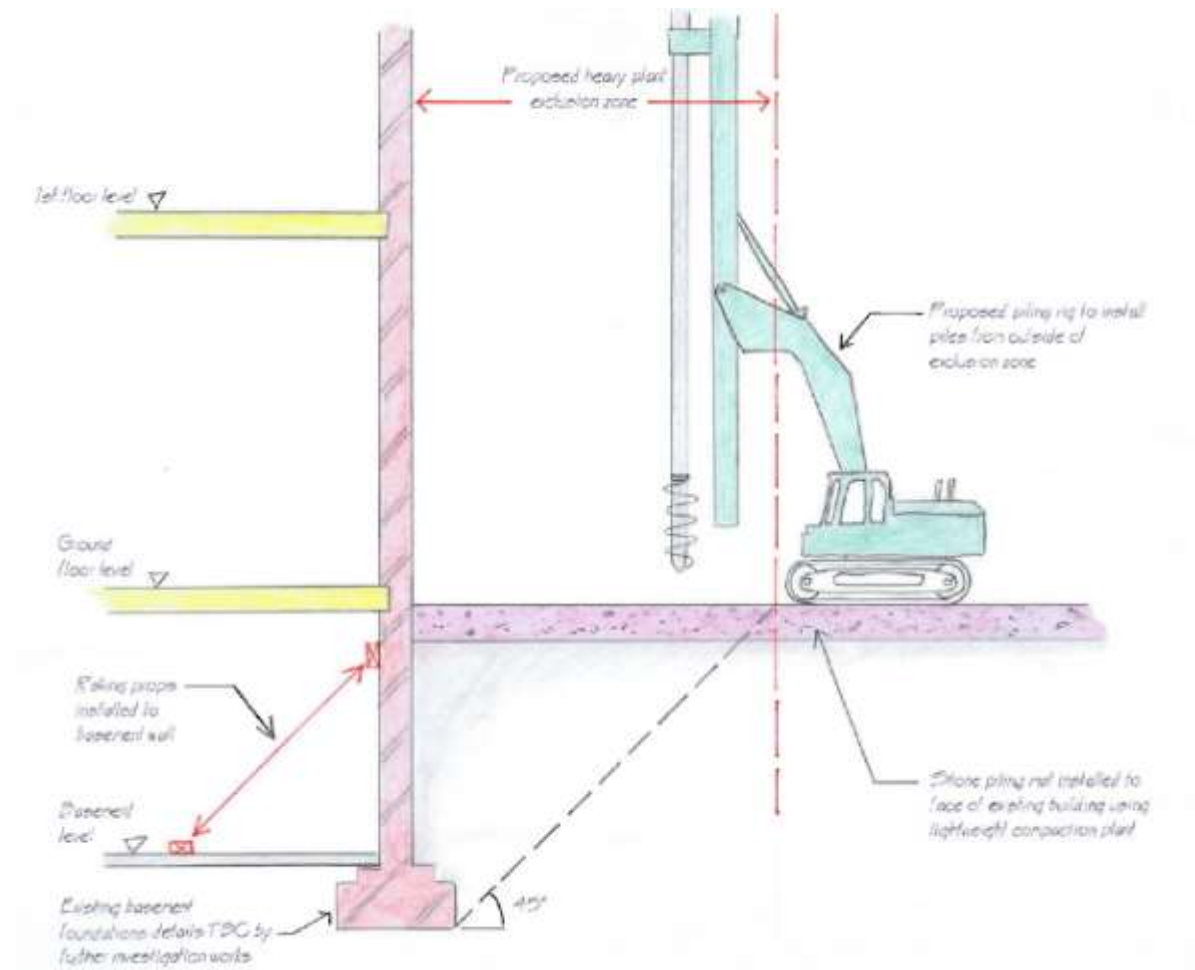


Figure 35 – New Building Suggested Temporary Works Arrangements

5.3 New Build Superstructure Interface

Proposed new building frame is to be constructed in close proximity to the existing building south elevation, consisting of column members and new floor slabs / alternative 1st floor podium deck with LGSF frame over. The new building is to be fully self-supporting (including support of external brickwork cladding system) and does not rely on any additional support of vertical or horizontal loadings from the existing 3-storey building.

Construction of the new frame to the south elevation wall will require consideration of the close proximity of the existing building and will need to avoid transfer of temporary loadings to the existing building. Construction sequence in this area is anticipated to include the following (subject to detailed review by main contractor / concrete frame contractor on appointment);

- New column members to be inset from existing wall sufficiently to allow column shuttering to be installed and removed without impacting on existing building wall / sufficient working space for installation of steel frame podium members

- New slab edge adjacent to existing building to include 25mm soft joint between slab edge and existing masonry. It is anticipated that flexible joint is to be supported onto slab shuttering and pinned to the existing wall prior to casting of concrete slabs to ensure soft joint is continuous and no transfer of loading to the existing wall is possible for concrete frame option
- For new floor slabs / LGSF frame members and floors above the existing building roof line, detailed design of temporary works/ access strategy is to be developed by the main contractor (likely consisting of significant scaffolding bridge / mast climber arrangement over the existing roof, with no support taken onto the existing building).
- New masonry cladding system is to be supported onto the concrete frame edge, via proprietary masonry support angle system (with cast in fixings to the slab edge)
- New waterproofing flashing detail at junction of existing building roof and new building masonry cladding system is to be developed by architect (with due allowance made for likely building movement, thermal expansion / contraction, etc).

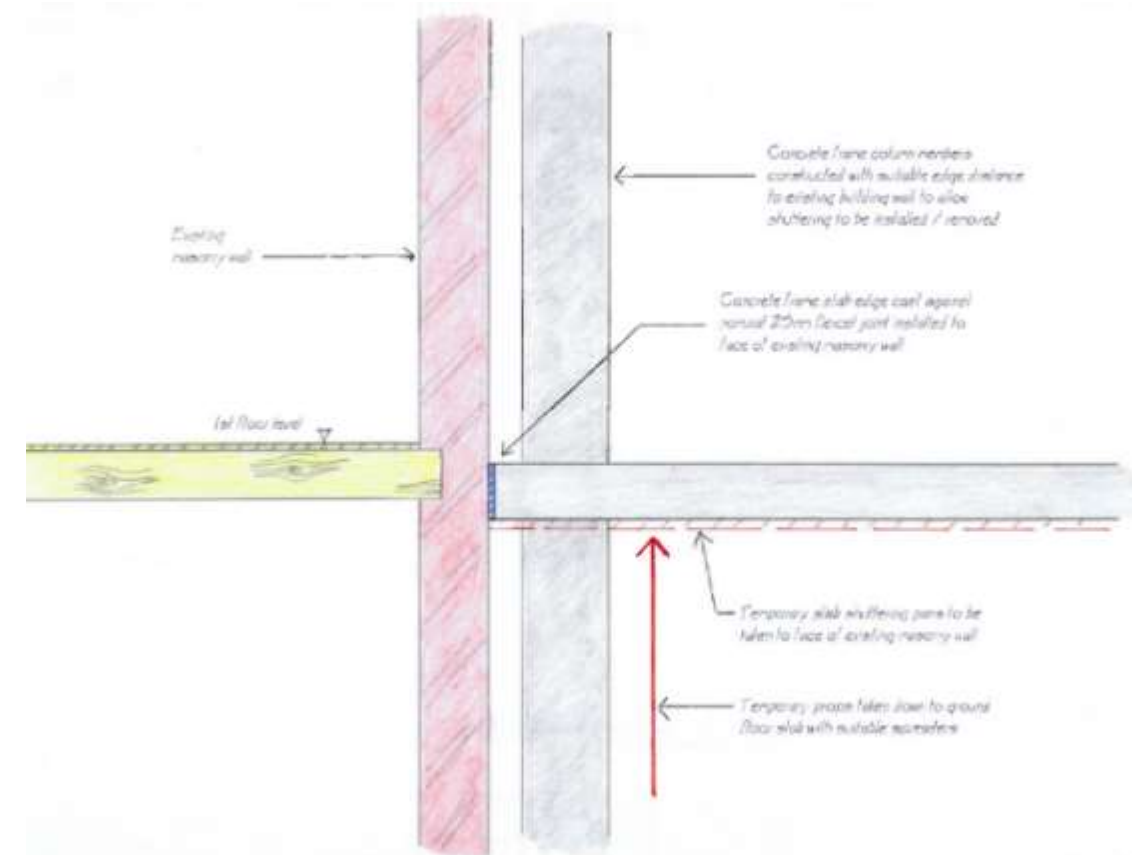


Figure 36 – New Building Concrete Frame Interface Proposals
(Concrete Frame Option, Alternative LGSF with Podium Frame Similar)

For consideration of future maintenance and access over the existing building roof, refer to architects info.



6. Conclusions and Recommendations

Initial non-intrusive visual survey of the existing 3-storey building was carried out by BKPL on 28.09.23; in general the building appears to be in reasonable condition, with no signs of significant structural defects. Where previous structural alterations and repairs have been carried these appear to be of reasonable quality (subject to further intrusive investigation works).

Further intrusive investigation works are recommended to further inform the structural design for alterations to the existing building and to further investigate area of potential minor defects as witnessed during non-intrusive visual survey. These intrusive works should be carried out prior to detailed design for proposed alterations and suggested locations / extents of intrusive works have been provided in Appendix D of this report.

Proposals for renovation of the existing building include alterations to existing internal spine wall (including full removal of this wall at ground floor), along with a number of minor structural openings to be formed in existing walls at all floor levels. Based on review of existing building information available at time of production of this report and findings of non-intrusive visual inspection, proposed structural alterations to the existing building are considered feasible as described in section 4 of this report and will have no detrimental impact on the existing building structure, providing these are designed in accordance with the recommendations of this report. All structural alterations are to be further informed by additional intrusive investigations and should be sympathetic with the existing building fabric.

Proposed new 6-storey building directly adjacent to the south elevation of the existing building is to be designed to avoid any transfer of loadings to the existing building, both in the permanent case and in the temporary case as described in section 5 of this report. This includes consideration of cantilevered foundation system to avoid works in close proximity to the existing building basement wall. Temporary works relating to the new building construction is to be developed by the appointed main contractor and should be designed to avoid additional temporary loadings being applied to the existing structure.

APPENDIX A – Architectural Information





APPENDIX B – Existing Building Measured Survey



APPENDIX C – Existing Services Information



APPENDIX D – BKP Further Investigation Sketches



APPENDIX E – BKP Inspection Drawings



APPENDIX F – BKP Structural Scheme Drawings



APPENDIX G – NX Consulting Phase 1 Desk Top Report



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