TOPPING ENGINEERS

CONSULTING CIVIL & STRUCTURAL ENGINEERS

STRUCTURAL INSPECTION REPORT

LOCATION:
Dewsbury Library, Dewsbury.

CLIENT:
Orange Design Studio Architectural Practice

DOCUMENT REF:
25343-SIR-001

REVISION/DATE:
Revision B / 01.10.2025

Aire House 12 Victoria Avenue Harrogate HG1 1ED
t: 01423 522 293 w: www.topping-engineers.com e: info@topping-engineers.com

1.0 BRIEF 3
2.0 DESCRIPTION 3
3.0 OBSERVATIONS AND COMMENTS 3
4.0 DISCUSSIONS AND CONCLUSIONS 5
5.0 DISCLAIMER 7
6.0 APPENDICES 9
Appendix A – Photographs 9

Revision	Description	Date	Author	Checked
A	First Issue	30.09.2025	JS	MC
B	Second Issue	01.10.2025	JS	MC

1.0 BRIEF

Acting on instruction from Orange Design Studio Architectural Practice, Topping Engineers Limited Visited Dewsbury Library (Dewsbury), on Monday the 8th of September 2025.

The purpose of the visit was to undertake a visual survey, mainly Internally and externally where possible. The reason for the survey is due to a proposed full renovation, minor alterations and a change of use from a library to Apartments.

2.0 DESCRIPTION

The building visited is a historic library, believed to have been constructed in approximately 1894-1896 with records of alterations in 1931 and 1967 (alterations unknown). The most recent known use of the building is a restaurant which closed in 2014 due to a fire and other legal complications. It appears the building has sat empty and unused since then.

The building is on three stories, consisting of a partial basement, ground and first floor. The roof is Hipped with slate finishes and two glazed lanterns.

What appears to be the original building is constructed using traditional materials and methods, those expected for the time of construction.

The basement contains 4 separate rooms separated with solid brickwork walls and is split over two different levels. Level follows the topography of the site, so the building steps as the land falls.

The ground floor consists of mainly three large areas and some smaller rooms to the north-east consisting of toilets.

The first floor has three small changes in level and consists of a large mezzanine and hall to the rear.

The proposal is to fully renovate, make internal alterations and a change of use to residential (Apartments). Fourteen apartments spread over the three levels.

Proposals include a new staircase, infill to the mezzanine floor and some new window/door openings in the existing walls.

3.0 OBSERVATIONS AND COMMENTS

Externally:

The masonry appeared to look structurally sound, but only the front elevation was accessible due to the site being fenced off, and very overgrown round the side. Therefore, access and further investigation should be carried out the sides and rear of the building. There were some areas where the pointing appears to have dropped out. Also, a large area of the north-east elevation was covered with climbing vegetation. The windows and sills/surrounds are clearly in need of repair.

Basement:

The basement consists of four rooms, three large rooms and one smaller all separated with solid brick walls. The smaller room is at a higher level and still contains plant and ducting. There are clear signs of damp on the walls throughout. The underside of the ground floor appears to

have profiled sheeting (possibly asbestos). This is potentially a permanent formwork. It was not possible to establish the build-up over the sheeting. The suspended floor is supported on a grillage of steel beams. The steel beams are showing signs of corrosion. Likely caused from the damp.

The first room you enter coming down the stairs has a large solid brick pier in the centre. This is carrying steel beams, which in turn are supporting the suspended ground floor. The steel beams are showing signs of corrosion with rust staining likely caused from the damp.

Ground floor:

The ground floor consists of multiple rooms of varying size. Rooms are separated with solid brick walls varying in thickness. Two areas have large roof lanterns over in poor condition leading to water ingress. External walls are approximately 400-450mm assumed to be solid brick internally faced with stone externally.

As you enter through the front gates, there is exposed timber joists and two steel beams above. All of which appear to have been exposed to the elements for a while. The joists are rotten, and the steel beams have oxidised. There is evidence of damp in this area with staining and mould on the walls.

Moving to the location of the lantern, which is boarded up, there is pooling water on the floor, where the water is pooling the floor appears to be very uneven.

The construction/build-up of the ground floor is likely to vary. With the presence of a basement below the floor is clearly suspended over but could possibly be solid/ground bearing where there is no basement below.

It is clear alterations have been made to the layout internally with large openings, isolated masonry piers and downstand beams. Also, different types of construction methods and materials are present in different areas. For example, Over the toilets appears to be traditional large spans with timber joists over sitting onto brick walls. There are several locations above the toilets and service area where the joist ends are rotten. Likely from the water ingress from the roof above (lantern).

Whereas below the first-floor hall there is six downstand beams, these look as though they may have been installed to strengthen the original floor, assumed to be breaking up the span of the first-floor joists above. Also, there is a mezzanine at the front of the library with a spiral staircase leading to the first floor. The mezzanine appears to be a composite deck supported on steel beams which are in turn supported on columns. Both these examples are not a typical construction method for the period when the library was constructed.

To the rear of the library is the second larger lantern, again in poor condition. Leading to water ingress and the rafters are in poor condition where they bear onto the brickwork.

First floor:

The existing floor has two types of construction, the mezzanine which is a composite deck and traditional timber joists. Both were covered with boarding/finishes. One location the boards had been lifted, joists in this location measured 250x75mm at approximately 400mm centres.

The existing floor felt sturdy and didn't have obvious signs of bowing/deflection. But there appears to be a lot of damp. Therefore, its possible joists could be suffering from rot where they cannot currently be seen.

Walking from the hall towards the original staircase there is some existing steel beams. These are not original, suggesting that an existing wall has been removed at some point. The steelwork is heavily corroded. In the area of the steelwork there is clear signs of water ingress with mould and staining to the finishes. This would suggest an issue with the roof above.

The roof is a traditional hipped roof, this consists of timber members, such as rafters, purlins and hips supported off existing masonry. Throughout the first floor its clear there are issues with water ingress, there is lots of damp, water staining and mould. The roof was not assessable or visible due to finishes, except in one location at the front of the building over the front entrance. The rafters were exposed and are in poor condition with new timbers placed alongside. This suggests that other areas could be in similar poor condition.

Over the mezzanine the hipped roof appears to be formed by large trusses sitting on solid masonry piers, the exact construction of the roof can not be established due the finishes. The masonry at the bearing for one of the trusses at the top was in poor condition and appeared loose.

4.0 DISCUSSIONS AND CONCLUSIONS

Overall, the building is in a state of disrepair, it has been sat derelict for several years. This neglect has led to issues with the existing structure highlighted in the observations section above. It's likely the cause for the issues with the existing structure is due to water ingress. The damp, mould, rotten timber members and corroded steelwork all suggest this.

The building in its current state is not stripped out; therefore, it is not possible to establish the full extent of the damage caused. But a sensible assumption can be made that areas covered up will be in a similar state to those exposed during the survey. Recommendations for remedial works can be made on those affected areas; further investigation is recommended for areas not currently accessible.

It would be beneficial to carry out a full strip out of the building, this way a full understanding of the existing load paths, rafter spans, width, depth and centres can be noted, first-floor joist depth, width and centres. Where existing steel beams are located, the depth, width and gauge of the beams. Also to confirm the external wall build-up. This will allow for structural analysis of any areas which cause concern to accommodate the renovation and change of use.

Due to the poor condition of the existing timber members which were accessible, we would recommend having a full timber survey carried out following the stirp out. A timber specialist will be able to identify specific issues with any timber members. Such as joists, rafters, hips etc and specify whether these items need to be replaced or if they can be treated. This may omit the need to replace everything that is of concern. For example, if woodworm was found they may be able to propose a treatment which means the members can be retained rather than replaced.

The existing ground floor build up is unknown, this will need to be investigated to identify what the build up is over the existing basement, also to identify the build-up where the basement is not present. Especially where the floor has sunk/bowed below the lantern near the main entrance.

Initial thoughts are that the existing arrangement, and structural members should be sufficient to carry the loads required for residential apartments. Unless they are defective. Live loads for the apartments will be 1.5kN/m², corridors, stairs and hallways will be 3.0kN/m². The loads in which the building will have been subjected to during its previous use will be greater than those

of the proposed. Therefore, only defective members should need to be either improved or replaced. Any areas which cause concern can be analysed and remedial works proposed.

To accommodate the proposals, there is a requirement for a knock-through opening in a solid brick wall in the basement. This will require either lintels or steel beams. On the ground floor there is one knock-though opening in the room at the far north-east (front of the building). This will require either lintels or steel beams. It's proposed for two solid walls in the toilets to also be removed. They don't appear to be loadbearing but this needs to be confirmed during opening-up works. The walls are solid and could be providing a buttressing effect to the external wall. The external wall will need to be checked for lateral stability. If the existing walls are required for stability, then windposts will need to be installed. A new staircase is to be installed for access from ground to first floor. This will be within the existing mezzanine floor. A void will need to be formed requiring alterations to the existing steelwork and the introduction of new steelwork. Where the existing mezzanine is located, the existing void is to be infilled. This will require new steel beams, analysis of the existing columns, bearing checks, specification of padstones and the design of new floor joists. Finally at first floor there is a solid loadbearing wall to be removed. This wall is supporting an existing purlin so this will require a steel beam.

To conclude, the biggest issue with the building is the damp, neglect and poor condition throughout. This is what has led to the problems with the existing structure. The proposal for the renovation and change of use is very much an achievable project. Most of the work will be in investigation works and identifying what needs to be repaired or replaced.

The proposal and changes required to accommodate the new apartments are certainly achievable but will certainly require input from a structural engineer for reasons mentioned above.

Recommended investigation:

- Full strip out and structural survey to establish load paths, location of all structural members, obtain all details of the structural members. Size, width and depth.
- Identification of ground floor construction where basement is and is not located.
- Timber survey to identify all items which need to either be treated or replaced.

Recommended remedial works:

- Where steelwork is heavily corroded it is to be replaced.
- Where steelwork has surface corrosion and no loss of section, then they are to be fully exposed, cleaned and prepared for painting.
- Where existing timber members are defective, they are to be replaced.

Works required for alterations:

- Analysis of any existing floor joists which cause concern/look as though they will not be sufficient for the span/proposed loads.
- Design of lintels and beams at basement, ground and first floor.
- Analysis of existing beams and columns for stair void alterations.
- Design of steel beams, floor joists and analysis of existing columns for existing mezzanine void infill.
- Wind analysis and masonry panel checks for removal of solid (possibly buttressing walls)

Report prepared by

J. Smith
BEng (Hons.)

5.0 DISCLAIMER

This report is produced solely for the benefit of Edward Gribbin of orange design Studio Ltd and no third-party reliance or assignation is accepted. Observations noted herein are only applicable at the time of inspection, and to the areas visible only. There was no recourse to carry out intrusive investigation during this inspection.

Information

All information supplied by the client and the client's staff and professional advisers, local authorities, other statutory bodies and investigation agencies is accepted as being correct unless otherwise specified and is relied upon.

Condition of Buildings

Unless specifically requested we do not arrange for an investigation to be carried out to determine whether or not High Alumina Cement, Calcium Chloride Additive, Fibrous Asbestos any other deleterious material or permanent woodwool shuttering has been used in the construction of this property.

Inspection

We do not inspect those parts of the building or its services which are built in, covered up or otherwise made inaccessible in the normal course of construction, fitting out or occupation and we are therefore unable to report that any such parts of a property are free from rot or infestation, corrosion or other defects.

Enquiries of Local Authorities and Statutory Undertakers

Unless otherwise stated, we assume that all necessary permanent planning and other consents, approvals and permissions have been obtained for the construction and current use of the premises, and that there are no outstanding enforcement or other notices. Any non-compliance with Building Regulations, Offices, Shops and Railways Premises Act, Fire Precautions Act, Defective Premises Act, Health and Safety Acts, Disability Discrimination Act is not established.

Except to the extent noted in this Report we do not make any enquiries of any statutory authorities concerning the present arrangements in the building or the likely effect of the proposed occupation, and ask clients to note that the complexity of the building regulations and other statutory enactments often has a material effect on the way in which a building is planned and used and the cost of consequential work.

It is assumed that professional advice will be sought at the appropriate stage to determine any works that may be necessary due to the planned occupation.

Environmental Inspection

Within our report, as appropriate, we may pass comment upon the apparent existence of contamination or pollution at or in the area of the property, the impact of the past, existing or

proposed uses of the property on its immediate environment or other environmental issues such as the energy efficiency of the building or the property. Our report does not however constitute an environmental audit or survey and nothing contained in it should be treated as a statement that there are no contamination or pollution problems relating to the property or confirmation that the property or any process carried out therein complies with existing or proposed legislation or environmental matters. We have not considered whether there is any current liability to carry out work needed to comply with environmental legislation or any liability which may arise in the future as a result of proposed legislation.

Soil Report

No searches are made with the Coal Authority or other statutory bodies, unless specified to establish that a property is not likely to be affected by subsidence as a result of mining or tunnelling operations.

Unless otherwise specified, mining, geological and soil investigation reports are not undertaken or inspected. We are therefore unable to certify that any land is capable of development or redevelopment at a reasonable cost.

Unless we are instructed to the contrary, we assume that the ground is not contaminated by dangerous materials, and no tests or investigations have been instigated in respect of heavy metal or toxic materials.

Repairs

Unless otherwise stated, we do not ascertain whether or not any structural repairs have been carried out, including timber treatment underpinning and strengthening, nor are we able to ascertain whether or not any guarantees exist.

Limitations

Unless otherwise stated, we are unable to ascertain whether a property has ever been flooded, and we are not able to ascertain the existence of any concealed access hatches or voids.

English Law

The formulation, construction, performance, validity and all aspects whatsoever of the inspection, shall be governed by the Laws of England and the parties hereby agreed to submit to the exclusive jurisdiction of the English Courts.

Reproduction and Use

Reports are for the use only of the party to whom they are addressed and should only be used within the context of the instructions under which they are prepared. They may only be disclosed to other professional advisers assisting in respect of that purpose. No responsibility is accepted to any third party for the whole or any part of the contents.

Neither the whole nor any part of the Report or any reference thereto may be included in any published document, circular or statement, or published in any way without written approval from Topping Engineers Limited of the form and context in which it may appear.

6.0 APPENDICES

Appendix A – Photographs

Appendix A

Front elevation, boarded up windows, weathers sills and missing mortar.

North East elevation, climbing vegetation.

Basement – Location of proposed window.

Steelwork gillage and sheeting to underside of suspended ground floor.

Masonry column supporting steelwork which in turn supports the suspended ground floor.

Signs of damp at low level on basement walls.

Steelwork grillage & sheeting to underside of ground floor.

Corroded steelwork grillage in plant/extraction room.

Rotten joists and corroded steelwork over entrance.

Rotten joists over entrance.

Signs of damp in entrance hallway.

Boarded up lantern & water pooling on the ground floor.

Sunk/bowing ground floor where water is pooling.

Rotten timber lintel over door opening into small store near toilets.

First floor joists over toilets.

Rotten perimeter joists and rotten joist ends to first floor joists over toilets/store area.

Close centre downstand beams under first floor hall.

Downstand beams, likely from previous internal alterations.

Corroded RSJ with rivets at first floor level.

Large damaged lantern and rotten rafters where they bear onto brickwork.

Mezzanine floor with downstand beams and columns.

Trusses over first floor mezzanine in hipped roof.

Masonry piers for truss bearing.

Poor quality masonry to masonry pier supporting truss.

Downstand beams and damp over north-east of first floor hall.

Heavily corroded steel beams over north-east of first floor hall.

Rotten rafters over front of the building (over entrance).

Purlin supporting rafters, sitting on wall to be removed.