100 Chalk Farm Road

Heritage Engineering Report

It a sharing by the

Prepared by

Pell Frischmann

Submitted on behalf of Regal Chalk Farm Limited

January 2024

Pell Frischmann

100 Chalk Farm Road

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Executive Summary						
Site Name	100 Chalk Farm Road					
Location	100 Chalk Farm Road, London, NW1 8EH					
Longitude, Latitude	51.543041, -0.1513118					
Grid Reference	TQ 28297 84302					
Eastings, Northings	528297, 184302					
Summary	This Heritage Engineering Report has been prepared by Pell Frischmann on behalf of Regal Chalk Farm Limited in support of an application for full planning permission for the redevelopment of 100 Chalk Farm Road within London Borough of Camden. A listed building consent application accompanies the application for associated minor remedial works to the adjacent Roundhouse, which is a grade II* listed building. This report has been prepared to explain the engineering decisions that have been taken in order to eliminate or minimise the potential risks to the grade II* listed Roundhouse building.					

1 Introduction

This Heritage Engineering Report has been prepared by Pell Frischmann on behalf of Regal Chalk Farm Limited ('the Applicant') in support of an application for full planning permission for the redevelopment of 100 Chalk Farm Road ('the Site') within London Borough of Camden ('LBC').

A listed building consent application accompanies the application for works to the adjacent Roundhouse, which is a Grade II* listed building. Listed building consent is sought for "removal of existing steel beams in party wall with adjoining Roundhouse and works of repair and making good to brickwork".

A Heritage, Townscape & Visual Impact Assessment (HTVIA) and associated assessment of heritage significance as wider context, has been carried out by Turley Associates Ltd.

The site is located on the south-western side of Chalk Farm Road and borders the mainline railway into Euston, with the Juniper Crescent Housing Estate to the south. It lies within the Regents Canal Conservation Area, to which the existing building on the site is a neutral contributor. To the west, the site is adjacent to the Grade II* listed Roundhouse theatre and live music venue. Beyond that, to the north-west is Chalk Farm Underground Station. To the east is the Petrol Filling Station site, which forms part of the Camden Goods Yard development and is currently in use as a temporary supermarket.

The development comprises demolition of existing buildings and redevelopment of the site to provide two buildings containing purpose-built student accommodation with associated amenity and ancillary space, affordable residential homes (Class C3), ground floor commercial space (Class E) together with public realm, access, servicing, and other associated works. The proposed new buildings will provide 265 student accommodation units, together with 824 sqm (GIA) of commercial space, 24 affordable residential units, with public realm improvements, new areas of landscaping, amenity and play space, and improved accessibility to the site.

Full details and scope of the planning application is described in the submitted Town Planning Statement, prepared by Gerald Eve LLP.

This report has been prepared to explain the engineering decisions that have been taken in order to eliminate or minimise the potential risks to the grade II* listed Roundhouse building.



Figure 1 – 3D View of Site Boundary and Existing Building (3D Google Maps)

1.1 Roundhouse History-Desk Study

Construction of the Roundhouse is known to have begun in 1846 to maintain and store railway engines.



Figure 2 - The Roundhouse during Gibley's Ownership



Figure 3 - The Roundhouse Section (RIBA Library Collection)

Since then, the Roundhouse is known to have taken on many roles within its lifespan. Initially it catered for railway infrastructure, and in the 1860s it was used as shed for corn and potatoes. In 1869 it became a warehouse, leased to W. & A. Gibley Ltd for wines and gins. In 1963 the Gibley vacated the premises, and the building became Grade II* listed. It was decided that it would become a centre for the arts and was renamed "Centre 42". It remains to date an events house for entertainment.

The Roundhouse is built using Gault bricks for the external masonry envelope. This form of construction is known to have a very high life expectancy if maintained properly.

1.2 Sources of Information

The information used in this report has been gathered from a multitude of sources. This includes, but is not limited to:

- > Archived drawings of the existing buildings at 100 Chalk Farm Road
- > Topographical surveys by Cloud 10, dated 2022
- Geotechnical Assessment Report by IDOM, dated 2022
- Documents from Camden Council Planning Portal (related to a previous planning application in 2013)
- > Pre-demolition audit report by Pell Frischmann, dated November 2022.
- Basement Impact Assessment by Pell Frischmann, dated January 2024.

2 Existing Condition

2.1 Existing buildings occupying the site at 100 Chalk Farm Road

The 100 Chalk Farm Road site is currently occupied by five buildings (illustrated in Figure 4) constructed in the 1970s. Out of these, the "Dressing Rooms" and the "Workshop" buildings adjoining the Roundhouse rely on the Roundhouse for structural support.

Steel beams of the Workshop roof structure are supported on the masonry perimeter wall of the Roundhouse and steel beams of the Dressing Rooms roof are supported by the concrete wall of the Roundhouse entrance staircase.

Metal flashing of the existing roof coverings appear to be fixed to the outer surface of the Roundhouse wall.

It is important to note that the Roundhouse does not necessitate any support or lateral restraint from the existing buildings.

The existing connections of the steel beams and the steel staircase are shown in Figures 5 to12.



Figure 4 - Site layout according to archived PF drawings.



Figure 5 - Existing Roof-Workshop Building



Figure 6 - Existing roof steelwork -Workshop Building (Extract from Pell Frischmann archives)



Figure 7 - Existing Dressing Rooms building



Figure 8 - Existing Dressing Rooms building roof steelwork plan (Extract from Pell Frischmann archives)



Figure 9 - Existing steel beam support detail on Roundhouse brick wall_ Extract from Pell Frischmann archives.

2.2 Existing Staircases

There are two staircases of the Roundhouse which interact with the site. One is a concrete staircase located at the northwest corner just outside the property boundary providing access to the Roundhouse users from Chalk Farm Road. The other is a steel framed escape staircase located inside the site boundary near the southwest corner of the site. While the concrete staircase at the Chalk Farm Road front will be retained, the steel escape staircase will be replaced with a new staircase as part of the proposed development. The escape route from the Roundhouse will be kept operational by providing a temporary staircase during the construction works.

The steel staircase is supported on a steel frame bearing on the existing ground near the southern boundary of the site. The steel posts of the frame adjacent to the Roundhouse are laterally restrained by the Roundhouse walls with steel angle cleats and bolts (Figure 11).



Figure 10 - Existing steel escape staircase.

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Figure 11 - Steel stair support restraint to Roundhouse Wall.



Figure 12 - Existing steel escape staircase.

The concrete wall adjacent to the staircase at the northwest corner of the site (Chalk Farm Road end), supports steel beams of the roof structure of Dressing Rooms building (Figs 7 & 8). The concrete wall appears to have been designed as a vertical cantilever and has been cast monolithic with the retaining wall of the Office building running parallel to Chalk Farm Road (Figure 14). Moving up the staircase, the RC wall foundation steps up.



Figure 13 - Existing access staircase from Chalk Farm Road.



Figure 14 - Existing RC wall adjacent to access Roundhouse entrance stairs from Chalk Farm Road (Extract from Pell Frischmann archives).

3 Proposed Works on the Roundhouse

All the existing buildings currently occupying the site at 100 Chalk Farm Road will be removed under the proposed development.

Following works are anticipated on the Roundhouse structure due to the proposed development at 100 Chalk Farm Road:

- Removal of all the existing building elements currently supported by or fixed to the Roundhouse described in Section 2.1, including the steel beams, steel plates and other ancillary items.
- Making good the locally damaged areas of the Roundhouse due to such removals. Repairs will be carried out with matching bricks using a hydraulic lime mortar compatible with the existing.
- Surface cleaning and minor crack repairs anticipated to some (currently hidden) areas of the perimeter masonry wall of the Roundhouse when this wall becomes exposed.
- Underpinning and modification works to the foundations of the concrete staircase structure, providing access from the Chalk Farm Road.

4 Risks

Following risks to the Roundhouse structure have been identified and action will be taken to mitigate them.

- Water infiltration due to poor maintenance can lead to deterioration of brick masonry. Water ingress through poorly maintained roofs, gutters, downpipes can penetrate the porous structure of bricks and cause them to crack or spall over time.
- Corrosion of Metal Supports: If a masonry structure incorporates metal elements, such as ties or anchors, these can corrode over time. Corrosion can weaken the metal and, in turn, compromise the stability of the masonry.
- Uneven settlements of the foundations. These can lead to structural issues in brick masonry buildings. This may result in cracks or shifts in the walls.
- Physical damage from impacts, abrasion, or other external forces from structural elements directly connected to the masonry structure or from moving construction traffic and equipment. Differential thermal expansion from the connected building can also exert forces causing damage.
- > Unsuitable repair efforts using incompatible types of mortar.

5 Impact on the Roundhouse structure

The proposed development next to the Roundhouse has been thoughtfully planned taken into consideration the form and shape of the Roundhouse. There is no risk of structural intervention into the Roundhouse building fabric that has not been previously impacted. Drawings in Appendix A of this report shows the relationship between the proposed structure and the Roundhouse. It can be seen that both the superstructure and the substructure of the proposed development are detached and structurally independent of the Roundhouse. The proposed ground floor and the first-floor slabs do extend up to the Roundhouse wall, but are separated by means of isolation joints.

5.1 Impact from demolition of the existing buildings

The demolition process will be carefully planned to mitigate the risks of damage to existing brick fabric of the Roundhouse wall. The beams inserted within the Roundhouse wall will be propped immediately adjacent to the Roundhouse prior to disconnecting those from the existing building. Subsequently, the beams will be cut, and the current building will be systematically dismantled. The remaining stubs of structural beams can then be delicately released and removed, enabling the repair of the supporting pockets with matching brickwork, constructed using a hydraulic lime mortar compatible with the existing.

The upper part of the stepped footing of the RC wall supporting the Roundhouse staircase (northwest corner of the site), will lie above the proposed ground level for the new development (Figure 14). Therefore, underpinning will be required to the foundation of this concrete wall. Although it is unlikely that the RC wall relies on the steel beams of the Dressing Rooms building for lateral support, a detailed structural assessment of this wall will be carried out and temporary supports will be provided to this RC wall and the staircase during the proposed construction works.

5.2 Impact from the proposed new construction.

The foundations to the Roundhouse are expected to be masonry stepped, spread footings.

The extent and depth of the foundation of the Roundhouse wall is currently unknown. Various historical records and drawings suggest that the perimeter wall of the Roundhouse is founded on London clay, at a depth below the existing ground level near Chalk Farm Road. Addition of load onto or above these foundations is likely to cause movements in the Roundhouse structure. Therefore, it is proposed to use piled foundations for the new development which will transfer the loads of the new buildings to the subsoil strata well below the Roundhouse foundation level, thus eliminating the effect of loading the Roundhouse foundations from the new buildings. The method of piling will be continuous flight augured (CFA), which minimises vibration and the method of placing concrete down the piling drive tube prevents lateral displacement of unsupported soil.

Upon removal of the existing buildings, the site will be levelled down to the existing level at Chalk Farm Road boundary. This will expose the perimeter brick wall of the

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Roundhouse adjacent to the site, which has stood hidden by the basement walls of the existing buildings (and possibly by ground near the southwest corner of the site) for a long period of time. This will create an opportunity to identify any defects or damages in this part of the Roundhouse wall. Although removal of a large volume of fill from the site could induce a "load relief" to the Roundhouse foundations, it is anticipated that the impact on the heavy and structurally substantial Roundhouse building currently sitting on well consolidated clay, will be negligible.

At the newly formed ground level, a series of columns are proposed 2 to 3m away from the Roundhouse wall, supported on individual pile caps. These pile caps will be located at a sufficient distance from the Roundhouse wall and its projecting foundations, to allow safe access for the construction plant.

It is anticipated that all excavation works in the vicinity of the Roundhouse will be confined to an area that remains above and outside the load distribution zone of the Roundhouse foundations.

A single storey basement below the new ground level is proposed approximately 9m away from the Roundhouse wall. A basement impact assessment (BIA) carried out by Pell Frischmann shows that the impact on the Roundhouse foundations due to this basement is negligible.

6 SAFEGUARDS

Excavation works of the proposed development will induce ground movements that could damage the brick wall. Other construction activities such as mobilisation of HGV's, vibrators etc., could also create damage to sensitive areas of the Roundhouse structure. The following precautionary measure are intended to safeguard the historic brick structure of the Roundhouse from potential harm.

A pre-condition survey will be conducted (and agreed by Part Wall Surveyors).

The pre-condition survey will identify the elements or areas that are at high risk and locations that are suitable for fixing movement monitoring targets.

> Movement Monitoring.

The implementation of a movement monitoring regime, complete with "trigger levels" and an "action plan", will be imperative. Implementation of movement monitoring will commence well in advance of the initiation of on-site activities and is expected to remain operational throughout the entire project duration. Action will be defined by trigger levels set by the project structural engineer to safeguard the adjacent buildings and infrastructure

Crack width monitoring and vertical precise levelling will be installed at least one month before work starts on site to ensure reliable baseline data has been recorded.

A process of regular assessment and review is to be included in the method of working.

7 HERITAGE BENEFIT

The proposed development will create an opportunity to repair any existing defects in a substantial portion of the Roundhouse perimeter wall which has been hidden from outside, for a long period of time. Repairs will be traditional and sympathetic to the existing brick fabric, using matching bricks and a suitable hydraulic lime mortar compatible with the existing.

The Roundhouse wall adjacent to southwest corner of the proposed development appears to be currently partially buried in the ground. Removal of the earth fill that has been placed against this part of the wall will be benefited from the reduced horizontal thrust and being removed from contact with damp ground.

Removal of the steel beams will eliminate the asymmetric loading from the adjacent buildings acting on the Roundhouse wall and will benefit the stable and balanced circular form of the Roundhouse structure.

Removal of other ancillary items such as metal flashing on the existing building roofs, steel restraints plates of the steel staircase support frame and other traces of existing steel beams will be advantageous for the Roundhouse, as it will eliminate the risk of corrosive expansion and masonry cracking.

As work proceeds there will be the opportunity to remove any redundant insertions that have been added over the years to the original brick fabric.

100 Chalk Farm Road Heritage Engineering Report

Appendix A

Drawing Schedule

Record Description	Record Number
Basement General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00801
Ground General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00802
First Floor General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00803
Levels 2 – 5 General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00804
Level 6 General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00805
Level 10 General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00806
Level 11 General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00807
Level 12 General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00808
Roof Level General Arrangement	106885-PEF-ZZ-ZZ-SK-S-00809
Section -East-West	106885-PEF-ZZ-ZZ-SK-S-00810







	Beam Schedule		Column Schedule		
Beam Reference	Beam Dimensions	Beam Material	Column Reference	Column Dimensions (mm x mm)	Column Material
S2	150x90x24PFC	Steel(S355)	C1 C2 C3 C4 C5 C6 C7 S1	225x500 225x750 250x900 250x1000 250x1250 250x500 300x1300 203x203 UKC46	Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Steel (S355)

All proposed RC walls to be 225mm thick C35/45 concrete

Denotes a proposed movement/isolation joint

Denotes 250mm Thick Concrete Flat Slabs.

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S2	150x90x24PFC	Steel(S355)	C1 C2 C3 C4 C5 C6 C7 S1	225x500 225x750 250x900 250x1000 250x1250 250x500 300x1300 203x203 UKC46	Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Steel (S355)	
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				Denotes 225mm thick con	crete flat slab,u.n.o	
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Beam Reference	Beam Dimensions	Beam Material	Column Reference	Column Dimensions (mm x mm)	Column Material	
S2	150x90x24PFC	Steel(S355)	C1 C2 C3 C4 C5 C6 C7 S1 All proposed C35/45 con	225x500 225x750 250x900 250x1000 250x1250 250x500 300x1300 203x203 UKC46 d RC walls to be 223	Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Steel (S355)	
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			C2	225x750	Concrete C35/45
			C3	250x900	Concrete C35/45
			C4	250x1000	Concrete C35/45
			C5	250x1250	Concrete C35/45
			C6	250x500	Concrete C35/45
			C7	300x1300	Concrete C35/45
			S1	203x203 UKC46	Steel (S355)
			All propose	d RC walls to be 225	imm thick

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Beam Schedule			Column Schedule		
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S2	150x90x24PFC	Steel(S355)	C1 C2 C3 C4 C5 C6 C7 S1	225x500 225x750 250x900 250x1000 250x1250 250x500 300x1300 203x203 UKC46	Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Steel (S355)

All proposed RC walls to be 225mm thick C35/45 concrete

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Farm Ltd				
Project 100 Chalk Farm				
Road				
Sketch Title				
Level 12				
General				
Arrangement				
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All proposed RC walls to be 225mm thick C35/45 concrete

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Description

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Outer perimeter of sealing ring of the tunnel (approx. 2.92m diameter)

	Column Schedule				
Beam Material	Column Reference	Column Dimensions (mm x mm)	Column Material		
Steel(S355)	C1 C2 C3 C4 C5 C6 S1	225x500 225x750 225x1000 250x1000 250x1250 250x500 203x203 UKC46	Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Concrete C35/45 Steel (S355)		
	All proposed RC walls to be 225mm thick C35/45 concrete				
		Thames Lee	Tunnel		

Proposed new piles not to _ extend into Thames Lee Tunnel

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Project			
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Sketch 1	South Site Section	Э	
Sketch §	Status S1 - For Information	Revision F	P01
Sketch N	™ 6885-PEF-ZZ-ZZ-SK	-S-00810	

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