

51 Werrington Street, NW1 1QN

Report on Vault Structures

Ref: 150234/TA

Date: 12 May 2015

Rev No: 0

1.0 INTRODUCTION

- 1.1 51 Werrington Street is an existing five storey former public house being converted to residential use. The proposals include two duplex flats at ground and basement floors. To provide the basement rooms requires opening up the pavement vaults to provide three lightwells.
- 1.2 We have been appointed Werrington Development Ltd to report on the condition of the pavement vault structures around 51 Werrington Street and advise on the work required to alter the vaults to form the three lightwells.
- 1.3 This report is intended to supplement the report titled Basement Impact Assessment - Screening and Scoping Study prepared by Conisbee and dated 12th May 2015.
- 1.4 Section 4.6 in that report discussed the work required to the pavement vaults and the potential impact on the street retaining wall. This report will describe the condition of the existing structure and set out the work required to repair, strengthen and alter the vaults to meet the proposed plans.

2.0 EXISTING VAULTS

- 2.1 The vaults run round both street elevations of the building. They vary in width but are generally around 1.7m wide and 2.0m high. The street retaining wall comprises 13" brick. There are full or part cross walls at various centres. The vaults are currently roofed with a 5" unreinforced brick aggregate concrete structure spanning between steel joists. There are three main openings through the roof. Above the concrete slab is about 50mm of paving and bedding. The layout of the vaults and roof structure is shown on drawing S100 appended.
- 2.2 The 13" wall which forms the retaining wall to the street could not be proved as a freestanding brick wall and relies on the buttressing effect of the cross walls and the main building and the restraint provided by the pavement slab at the top to provide stability. Without providing a completely different structure all of these elements are necessary to maintain the retaining wall as a viable structure.
- 2.3 The condition of the roof structure is poor with a large number of leaks, voids in the concrete and severe corrosion to the steel joists. The areas of corrosion are noted on S100 and typical examples shown below. The vaults were originally inspected in October 2012. A follow up survey in March 2015 found that corrosion and spalling of the concrete from the embedded steel had increased over that time period.

- 2.4 The life expectancy of the roof is very limited. It has limited ability to support heavy loads, is potentially unsafe and is not adequate as a pavement structure. We recommend that it should be replaced.



Typical view of vaults showing leaks, honeycombing to concrete and corrosion of steels



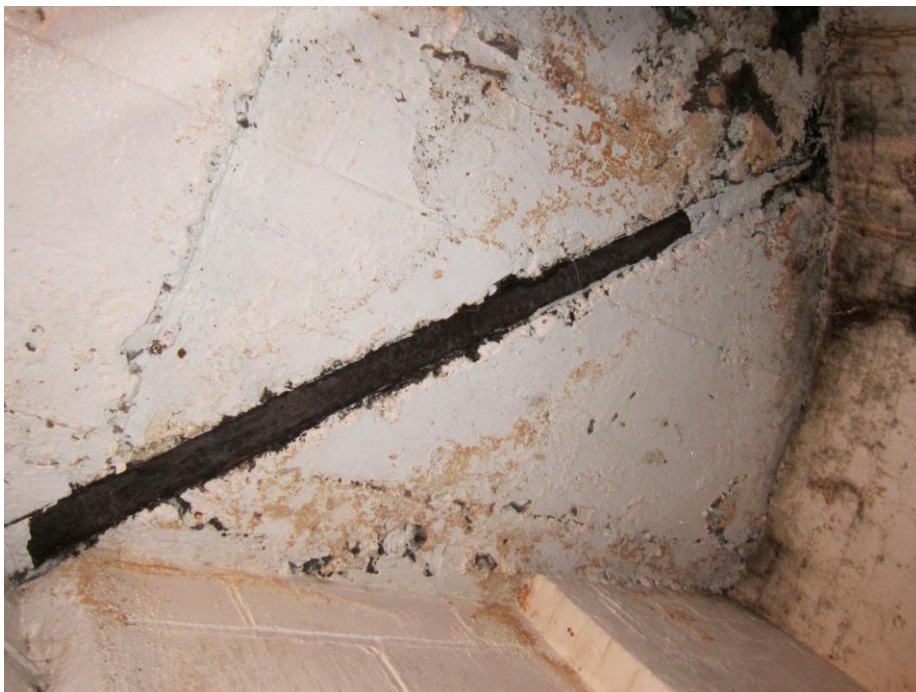
Heavy corrosion to steels around openings



Heavy corrosion to steel



Delaminating flange of steel joist



Corner showing leaks, honeycombing to concrete and heavy corrosion to steel



Steel trimmer virtually disintegrated

3.0 PROPOSED WORKS

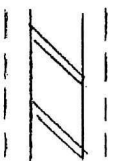
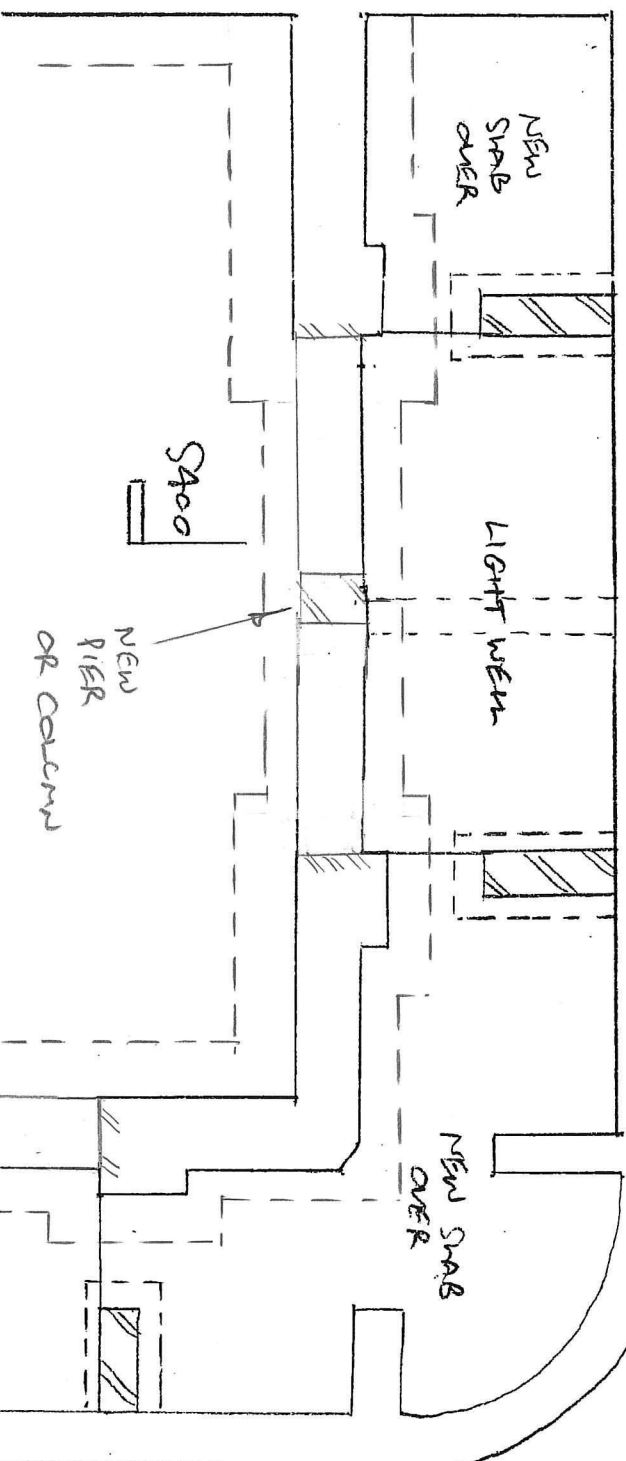
- 3.1 To create the light wells will require sections of slab to be removed. The remaining slabs will also be replaced to provide a new permanent structure. The restraining effect of the slabs will be replaced by adding a reinforced concrete ring beam to the top of the brick retaining wall. Where buttressing walls need to be removed to create the light wells their effect will be reproduced by constructing new buttressing walls in alternative locations. Drawing S101 shows the proposed layout with typical sections shown on S400 and S401.
- 3.2 It is proposed to underpin the main walls of the existing building to allow the floor to be lowered. This work should be carried out before the vault works commence. This will provide a sound base from which to prop the vault wall.
- 3.3 Alterations are proposed to the existing openings to the main walls of the existing building, to provide the proposed room layout. These alterations can be carried out following completion of the underpinning. To help provide access to allow these works to be carried out more easily, it may be appropriate to carry out the works once the existing pavement slab is removed but before the new slabs are cast.

3.4 To maintain the retaining wall during the work the sequence of construction will be;

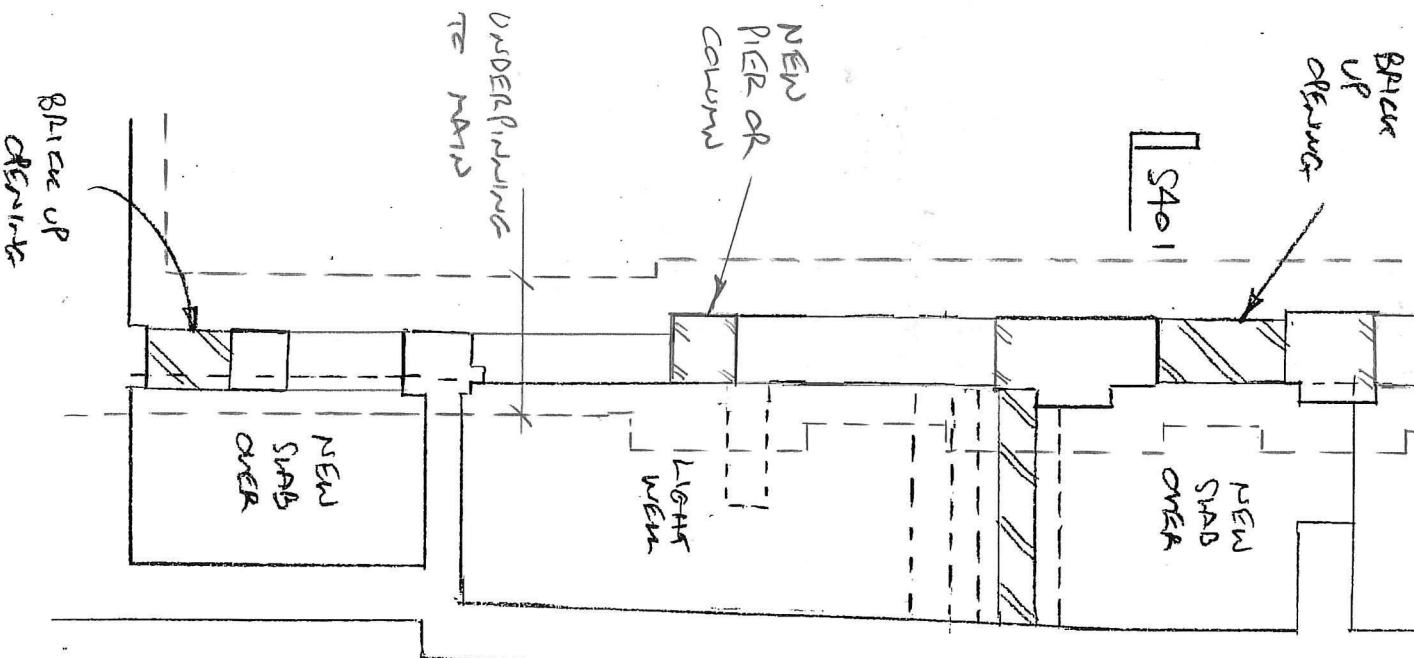
- Underpin main walls of existing building
- Construct the new buttressing walls on new foundations
- Provide temporary propping to the top of the wall
- Remove the existing slab
- As noted above carry out structural alterations to main walls
- Construct the new slab and ring beam
- Remove the cross walls and complete other works
- Remove the propping

3.5 The new buttressing walls and new slab will provide much better restraint to the existing wall than is currently being provided and will provide a long term solution for the vaults.

Sto



NEW 330 PIER
IN CROSS & BRICKWORK
PIER TIED TO EXISTING
WALL. BUILT @ 600W
x 450DP CASTING
FOUNDATION



UNDERPINNING STOUND
IS INDICATIVE ONLY
FINAL WIDTHS WILL
BE DETERMINED AT
DETAIL DESIGN STAGE

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project

SI WERRINGTON STREET

title

PROPOSED ALTERATIONS AND
SPECIFICATIONS TO UNITS

rev.

date

drawing status

scale

1:50

date

12.5.15

drawn TPA

checked

job no.

150234

drg no.

5101

rev

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TYPICAL SECTION
THROUGH LIGHTWELL

job no.

150234

drg. no.

S400

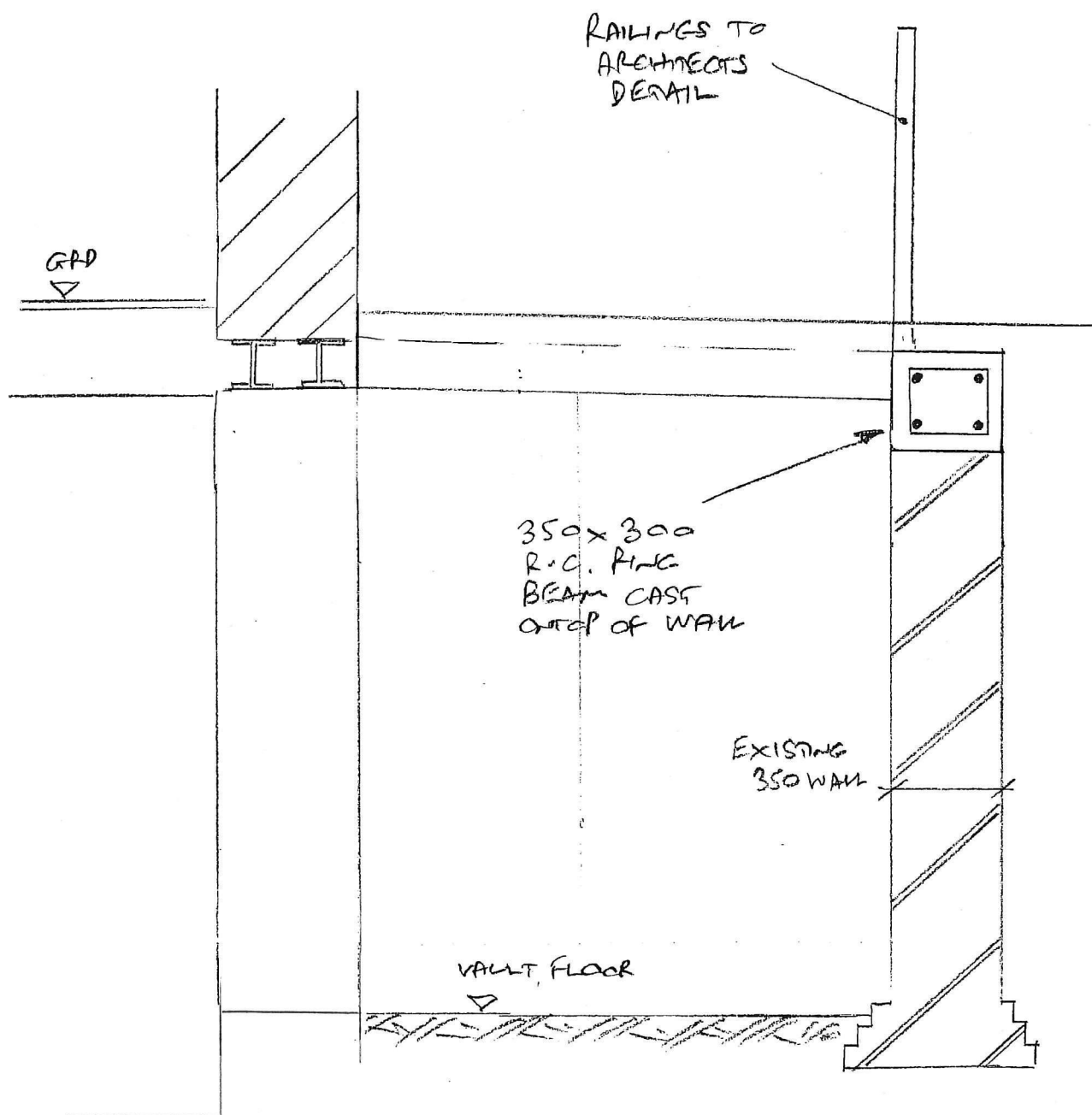
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TYPICAL SECTION
THROUGH NEW SLABS

job no.

150234

drg. no.

S401

scale 1:20

date 2.5.15

drawn TPA

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