EXISTING WINDOW CONDITION SURVEY
BOOHOO

REA METAL WINDOWS

Carried Out by:	REA Metal Windows Ltd 126-136 Green Lane Old Swan Liverpool L13 7ED Tel: 0151 228 6373
Date Completed:	22nd October 2020
Ultimate Client:	Boohoo
Contractor:	Hightown Group 2D Stanley Grange Business Village Knowsley Liverpool L34 4AR

Steel Window Association

bsi. ISO 9001 Quality Management

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Historical & Outline Information:

The building surveyed is located on 49/51 Dale Street, Manchester (Front Elevation) and the rear elevation opening out on to Hilton Street, the building bridges Lizard Street and is flanked by Tariff Street and China Lane. It was constructed in circa 1900 as a trade warehouse and is currently Grade II listed.

The exterior windows of the building are a mixture of single glazed timber mainly to the front facing elevations (Dale Street) & the original cast iron windows to the rear Hilton Street, Tariff Street, Lizard Street & China Lane elevations.

Windows Surveyed:

As a specialist in the metal window industry Rea Metal Windows (Est 1906) undertook a general survey of the metal windows along Hilton Street, Tariff Street, Lizard Street & China Lane elevations approximately 180+ windows were surveyed in total.

The windows are distributed over five floors (Ground – 4th Floor) & surveyed via standing scaffold and internally in good day light.

The windows surveyed were generally referenced W298-W337 on Hilton Street, W001-043 Tariff Street, W244-297 on China Lane & W045-051, 068-091, 100-106, 123-129, 146-151 & 164-171 on Lizard Street all as illustrated on architecture:m elevation drawings 112 Rev S to 117 Rev S as issued by Hightown Group refer to Appendix 1 (Extracts of architecture:m elevation drawings 112 Rev S to 117 Rev S).

Test method:

An internal & external visual inspection was carried out to assess the general condition of the existing windows, the presence of existing ironmongery and the decay of the frames/glass and overall impact on the surrounding structure.

A probe test was carried out on areas of exposed decay with a small screwdriver to assess the underlying decay of the cast sections.

An assessment of the operation of the opening casements was undertaken.

A series of photographs were taken to record the condition of the windows and further explain our findings within this report.

Paint Testing:

Paint samples were not undertaken during this survey; a previous condition report undertaken in March 2017 by Quadriga confirm that original paint finishes have traces of lead.

Section A - Condition of the Windows Surveyed:

The overall condition of the original metal windows is very poor. There is significant rust especially to the lower sections of all windows and they are decayed beyond repair (see Photograph 1.0).

Photograph 1.0 Example of steel frame condition (external view).



The composite window shown above was manufactured from a series of cast frames; fixed left and right with a central opening casement (side open in) and combination of fixed and pivoting windows at high level which have been coupled together mechanically with metal strips concealing the joint between the cast frames. There is clear daylight between the casement outer frame and inner working frame and clear and extensive corrosion of all frames that make up the window.

Virtually every frame in all windows surveyed is coated in many layers of paint concealing extensive irreversible corrosion; the layers of paint have also seized shut or slightly ajar all of the high-level pivoting casements.

Photograph 1.1 & 1.2 Examples of steel frame condition (external view Hilton Street).



Photograph 1.1 (left) **& 1.2** (below) These images illustrate the typical condition of the window sills, the flat jointing strip has come away from the face of the window and the window sections are showing clear signs of underlying corrosion.

Photograph 1.2 (External view – Hilton Street)



Photograph 1.3 Example of steel frame condition (external view – Tariff Street).



Photograph 1.3 (left)This image illustrates a window sill where the entire metal sill section has completely corroded away and has been poorly repaired with a timber bead and silicone.

Photograph 1.4 (below) This image shows that a section has become detached from the window and has fallen on to the stone sill. It also shows how the corroding cast frame is having a detrimental impact on the sandstone sill.

The detached section presents a very real danger to property and life should they fall from the building out on to the street below.

Photograph 1.4 Example of steel frame condition (external view – Tariff Street).



Photograph 1.5 (External view – Hilton Street) & 1.6 (External view – Tariff Street)

These images again show the detrimental impact the corroding cast iron is having on the stone sill. There is risk of danger should any of the window sections, glass or stone fall.

1.15



1.16



During the site investigation we probed some small areas of corrosion to gain a better understanding of the condition of the underlying cast frames. The thick layers of paint were gently removed, and a small screwdriver was used to pick at the layers of cast frame. The delamination of the underlying cast frame is extensive, and the metal simply crumbled away without any force being applied.

These findings only further confirmed that the cast frame is well beyond repair; the **Photographs 1.7, 1.8, 1.9, 1.10, 1.11, 1.12 & 1.13** below show the aftermath of the small areas tested.

1.7



1.8



1.9



1.10



Photograph 1.12 & 1.13
The same level of dilapidation is evident across all the elevations and levels, images below is from Lizard Street.

1.12



1.13



Photograph 1.14 – Hilton Street (below) Screwdriver driven straight through the corroded window section



Photograph 1.15 –(below) cast flaking away



Photograph 1.16 (below) sections flaking away



Multiple glass failures illustrated below are evident on a large number of the existing window panes; this is a clear indication that the existing windows are distorting/twisting within the openings due to heavy irreversible corrosion concealed by layers of thick paint.

Photographs 1.17 – 1.22 (Widespread glass failures across Hilton & Tariff Street)

1.17



1.18



1.19



1.20



1.21 **1.22**





Photographs 1.23 – 1.27 (Further glass failures Lizard Street & China Lane)



Lizard Street & China Lane

1.24



1.25



1.26



1.27



The images below illustrate poor quality repair/adaptions made to the windows when the existing window has failed.

Photographs 1.28 – 1.31 (Crude timber inserts/repairs/adaptions – Tariff & Hilton Street)

1.28



1.29



1.30



1.31



Photographs 1.32 – 1.35 (Further crude timber inserts/repairs – Lizard Street)

1.32



1.33



1.34



1.35



When inspected internally the windows may appear to be in a better state of repair than is obvious from the outside but on closer inspection it is very clear that the windows have deep underlying corrosion that is masked by more recent layers of white paint.

Photographs 1.36 & 1.37- Thick layer of paint/filler is hiding underlying corrosion.

1.36



1.37



Photographs 1.38 (Hilton Street)
Probe test with a small screwdriver. It can be driven through the frame with very little effort (bottom left).



Photograph 1.39 (Lizard Street) The same heavy filler has concealed holes in the Lizard Street







Photograph 1.40 (left) – Illustrates an internal view of the of a window sill with rust stains on the steel casement putty.

Photograph 1.41 (below) – Illustrates the underlying cast section when the casement putty has been eased away.

The entire cast section has delaminated and is crumbling away. **These sections are beyond all repair.**

There are many visible signs of rust hidden under the paint or when closed casements are opened; **Photographs 1.42 & 1.43** illustrate clear pitting/corrosion in the base iron.

1.42 **1.43**



Photographs 1.44 & 1.45 (Hilton Street)
Most low-level side hung casements are either sealed shut or are warped and non-functional.

1.44 **1.45**



Photographs 1.46 & 1.47 (Lizard Street)
More low-level side hung casements are either sealed shut or are warped and non-functional.

1.46 **1.47**



Some casements that do open should be immediately screwed/sealed shut as they have no friction/restriction and present a risk to the building occupants. Due to the lack friction the windows are free to blow in the wind if the window if opened, and as they are within 1100mm of the finished floor and unrestricted they don't prevent accidental falling from the opening casements as required by building regulations Part K.

Note to client – We recommend that the low-level opening vents are screwed/sealed shut as they present a health and safety risk to the Boohoo occupants.

The image below illustrates an internal view of the poor-quality repair/adaptions made to the windows when the existing has failed.

Photograph 1.48 (Internal view)



Photographs 1.49, 1.50 & 1.51– Hilton Street & Lizard Street (Below) Illustrate missing or broken ironmongery. Very little of the existing ironmongery remains.

1.49



1.50



1.51



Photograph 1.52 (Below) – Illustrates an internal view of a window on Hilton Street. Both high level pivoting casements have seized shut and the original spring catches, pully wheel and cord are missing.

The low-level side hung casement vent is severely warped and stuck in a slightly ajar position. This allows draughts and water egress, and again the existing handle is missing.

1.52



The original ironmongery is no longer available and corded pulley systems are considered dangerous in modern office buildings. The possibility of retro fitting new ironmongery to these windows is very limited and would likely lead to further damage to the existing frames.

The existing windows also have no weather-stripping, nor do they have the capacity to have new weather strip retro fitted. The lack of weatherstrip has led to daylight being visible through fully closed vents. This has also led to and will continue to lead to problems with draughts and water egress and therefore the existing windows will never achieve acceptable weather-tightness.

Clear evidence of draught problem is obvious by the amount of tape applied to the internal surface of the windows by the building occupants. Refer to Photographs 1.39 & 1.40 on pages 18.

Photographs 1.53 & 1.54 – Tape covering warped casement & window intersections





General condition photographs: Photographs 1.41 to 1.77. These photographs further demonstrate the general condition of the windows surveyed.

1.55



1.56



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1.58



General condition photographs – Tariff Street

1.59



1.60



1.61



1.62



General condition photographs – Tariff Street

1.63



1.64



1.65



1.66



General condition photographs – China Lane & Lizard Street

1.67



1.68



1.69



1.70



General condition photographs – China Lane & Lizard Street

1.71



1.72



1.73



1.74



General condition photographs – China Lane & Lizard Street

Broken glass and poor condition windows China Lane.

1.75



1.76



Windows boarded over on China Lane

1.77



Section B - Factors for Consideration/General notes:

90% of windows surveyed in our opinion are completely beyond repair due to the decay of the base metal, as highlighted in the photographs within this report and as outlined in detail below.

There is only a small amount of the original ironmongery remaining across the windows; this turn of the century ironmongery which remains no longer opens/closes the vents with the vast majority seized shut. In many cases the vents have seized in a slightly ajar position and to release the vent is likely to cause further irreversible damage to the already fragile sections.

The removal of glass & steel casement putty beads to replace broken panes is likely to cause further damage and distortion to the window sections. The underlying corrosion cannot be reversed and reglazing of the existing windows is only going to be a temporary fix and the original frames will continue to distort and lead to failure of any new glass (the extent of the corrosion is evident in all the pictures of this report, but images 1.40 & 1.41 (Page 17) clearly illustrate how the underlying corrosion is often concealed giving a false impression of the window condition).

The complete removal of the existing windows intact would be virtually impossible as this will in our opinion cause further irreparable damage. Once the paint is removed and the rust /corrosion is ground back to reveal the base metal vast swathes of each window will have been cut away. These sections cannot be repaired or have new sections welded in & would require entire new die cast sections and almost certainly completely new window elements.

85-90% of the windows have visible unprotected sections which are delaminating due to prolonged exposure to the elements which will continue to corrode and any on-site decoration to conceal the underlying corrosion will simply be cosmetic. This would just be a further temporary fix and would create an unsustainable & very costly maintenance program for the building owner. Many previous quick fixes / repairs such as the introduction of timber vents, sealing shut vents, replacing missing sill sections with timber and body filling large holes of corroded steel illustrates how difficult and costly it can be to repair/refurbish the existing windows. These repeated short-term solutions have not addressed the underlying problem of the unprotected metal decay which has led to the situation where the windows are now unsalvageable.

Even the small quantity of existing windows (<10%) that appear on the face of it to be in a reasonable condition will be concealing underlining corrosion and are generally non-functional.

Section C - Energy Efficiency of the Existing Windows:

The original windows are glazed with 3/4mm single glass this will offer a centre pane U-value of 5.8W/m²k, such high energy losses of heat from the windows alone will add significant cost to the heating of the building, adding to the overall running cost & reducing the economic sustainability of the building for the occupier/landlord & local community. Draughts will also be present on opening casements which will reduce the thermal comfort for users of the building. No matter what other insulation measures are taken to reduce the heat losses of the building fabric they will not be able to compensate for windows that are not energy efficient or offer acceptable air tightness.

Under current building regulations Approved document Part L, the document explains where there is a need to maintain the external appearance of the façade or the character of the building, replacement windows should meet a centre pane U-value of 1.2 W/m²K. If the windows are ultimately replaced any new windows should achieve this U-value where possible.

The existing cast windows were only ever designed to accommodate single glass. Therefore, the depth of glazing rebate/glazing platform needed to protect a double-glazed unit is not sufficient and the existing windows could not accommodate any upgraded slimline glazed unit options.

Section D - Conclusion:

It is the opinion of REA Metal Windows Ltd that the existing metal windows surveyed at Boohoo (49/51 Dale Street, Manchester) should be replaced with a new metal windows to closely match the fenestration of the existing windows on this Grade II listed building.

Given the high percentage of windows that are beyond repair, any cosmetic refurbishment will compromise the final finish & longevity of the whole building refurbishment works. The lack of servicing, neglect & exposure to the elements have resulted in the very poor condition of the existing metal windows & surrounding structure which in some instances is now unsafe to the general public & building occupants. Opening casements in particular have suffered & the majority don't function correctly & have no working ironmongery.

The fitting of new windows would allow for more practical design applications that are more user friendly. It would be suggested that the existing pivot windows which require an awkward pole operation, be replaced with more accessible/safer ironmongery options (sill handles or Teleflex gearing, etc).

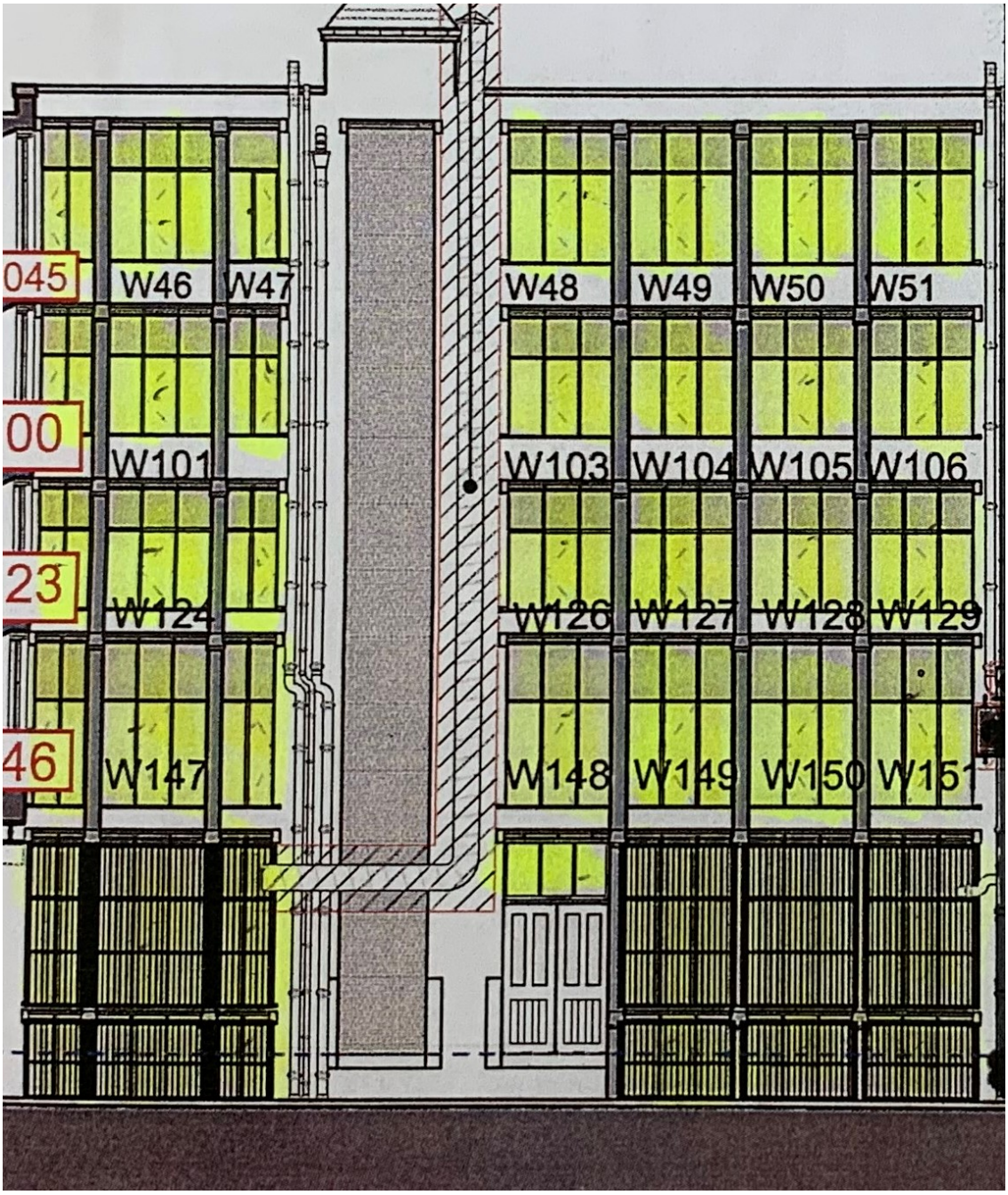
It would also be possible to incorporate into the design of new windows such items as restrictors, locking devices, integral vents/lourve panels & toughened safety glass; particularly important considering the proposed use of the building (high traffic office space). It should be noted that the quality of new windows will surpass that of the original windows & provide greater weather tightness, which is not achievable with the present windows.

In conclusion, the existing windows are beyond repair, and servicing/refurbishing them will not achieve an end product that will have a life expectancy of over 40 years. The design of the existing does not facilitate double glazed units & subsequently the windows cannot achieve an acceptable U-value. New powder coated metal windows can be designed & glazed in such a manner that they will not diminish the visual authenticity of the fenestration of the building. New metal windows will also improve the efficiency, safety & functionality of the windows without compromising the historical significance of this Grade II listed building.

Section E - Appendix 1 – Window location model

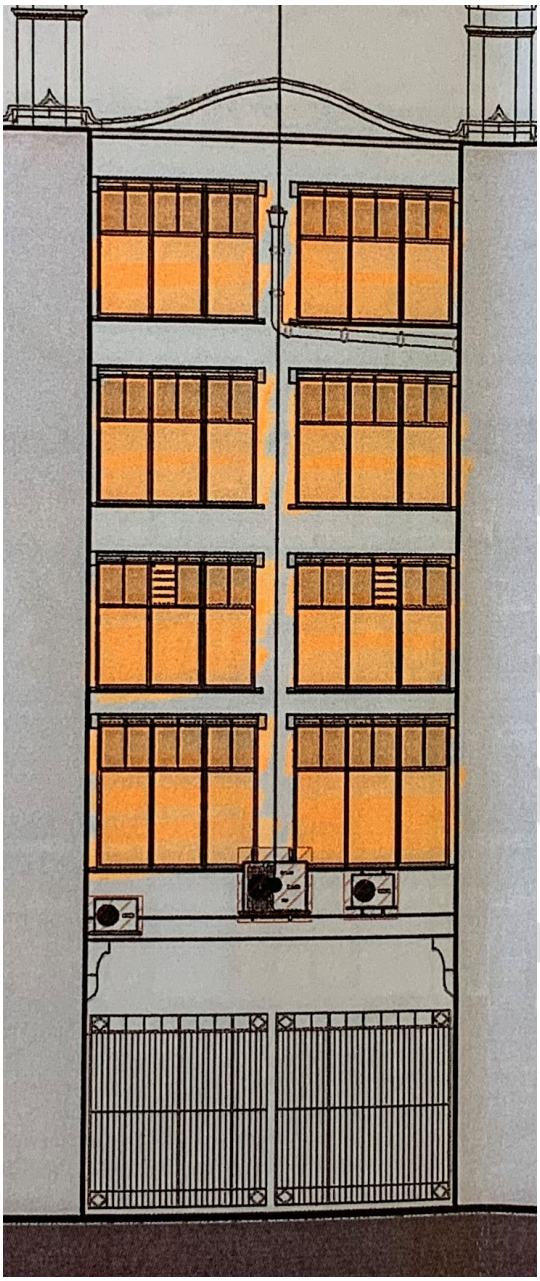
Lizard Street Elevation – Extract from architecture:m elevation drawings 112 Rev S

Windows highlight in yellow (W045-051, 068-091, 100-106, 123-129, 146-151)



Lizard Street Elevation – Extract from architecture:m elevation drawings 113 Rev S

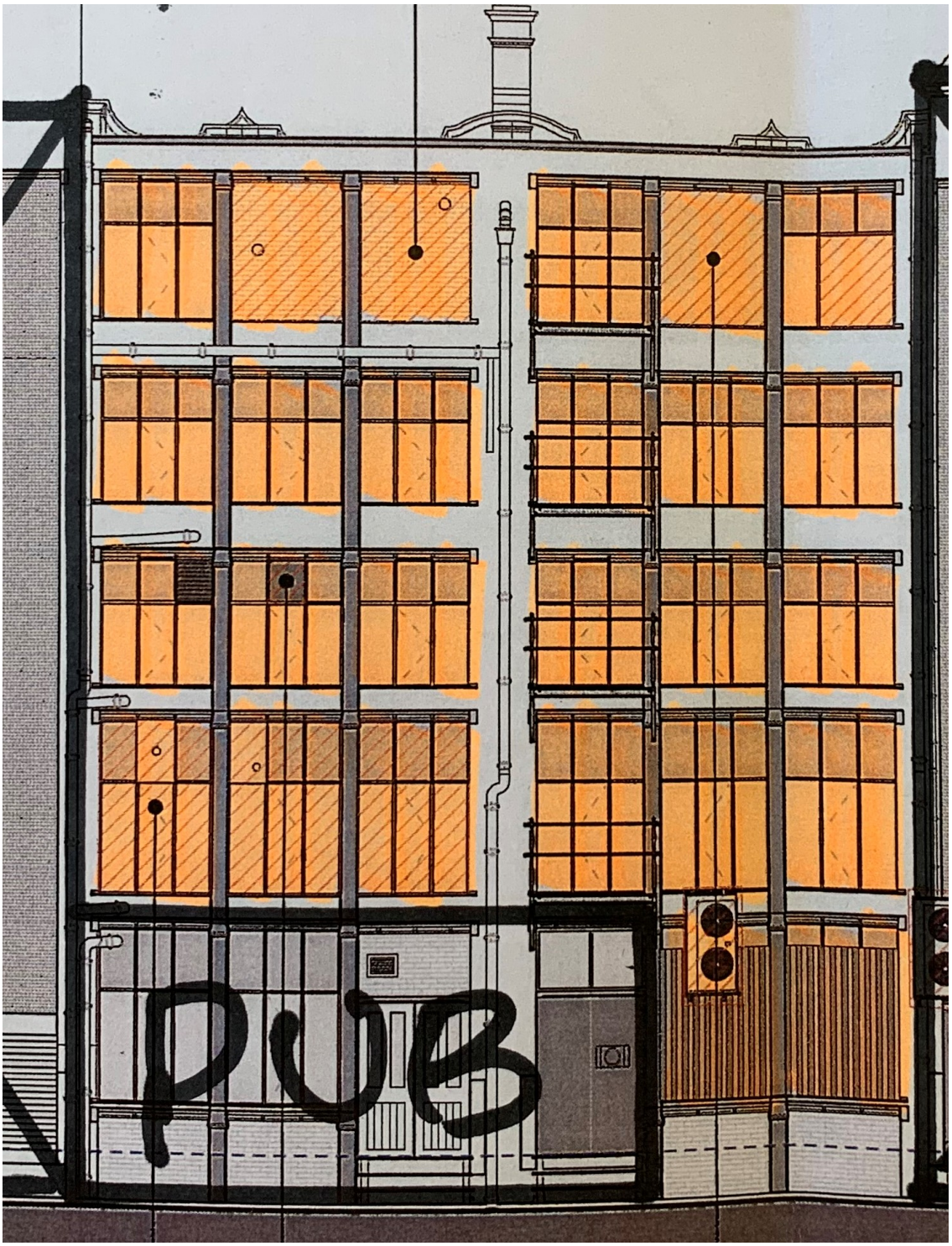
Windows – highlighted in orange (W164-171)



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Lizard Street Elevation – Extract from architecture:m elevation drawings 114 Rev S

Windows – highlight in orange (excluding the public house windows/doors)



Hilton Street Elevation – Extract from architecture:m elevation drawings 115 Rev S

Windows highlighted in orange (Generally W001-043, excluding the Public House)



Tariff Street Elevation – Extract from architecture:m elevation drawings 116 Rev S

Windows highlighted in orange (Generally W298-337, excluding the Public House)



China Lane Elevation – Extract from architecture:m elevation drawings 117 Rev S

Windows highlighted in orange (Generally W244 to 297)



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