LIGHTHOUSE BLOCK KINGS CROSS

FAÇADE CONDITION SURVEY REPORT

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SURVEY REPORT **1**

PROVISIONAL SCHEDULE OF REPAIRS
AND BUDGET COSTS

LIGHTHOUSE BLOCK KINGS CROSS
FAÇADE CONDITION SURVEY REPORT

An external visual and hammer test survey of the existing facades was carried out on the 16th and 17th December 2011 the weather was dry.

Access was provided by boarded tubular scaffolding erected by others.

The survey was principally carried out to record visible defects affecting the brickwork and painted architectural features forming cornices, dormer windows, window surrounds and pilasters which may be attributable to natural weathering and lack of appropriate repair and maintenance.

HISTORY

The Grade 11 listed building dating from around 1875 has been vacant for a number of years is to be redeveloped to provide retail and commercial office space. The existing facades are to be retained as part of the development proposal.

OBSERVATIONS

It was apparent that the façades had not had any visible repair or maintenance carried out for some considerable time with sections of masonry missing and in an unstable state of severe deterioration.

From the opening up trials that were carried out in conjunction with the survey it has been confirmed that the majority of the architectural features are painted stucco, cement or lime render applied over brickwork to form moulded detailing combined with pre-cast items for cornice and pediment window corbel brackets, florets and roof level balustrade.

Natural Bath stone has been used for 2nd floor window sills and ground to 1st floor pilasters. Facing brickwork has been built using a brick which has the characteristics of a make known as a Gaunt or Gault which is typically pale white-yellow in colour and similar in hardness to an engineering brick.

The stucco masonry is heavily soiled with dust and exhaust emissions due to the close proximity of the building to Gray's Inn Road and Pentonville Road which are continuously congested with traffic.

The road facingbrickwork shows evidence that it has previously been abrasively cleaned as the surface is rough and pitted in texture. Brickwork to the chimneys and returns over roofs has not been cleaned and remains heavily soiled.

There are a number of embedded corroding sections of steel and redundant fixings in the facades which have caused notable damage to surrounding brickwork and stucco render due to fracturing of the masonry. The brickwork is generally in good condition and the pointing although not original appears sound.

A number of dentil blocks are missing from the cornice that appear to have been damaged due to corrosion of fixing dowels. Other blocks were randomly hammer tested but none were found to be currently unsound.

From the site investigations it would appear that the sky surface of the main cornices has been have been screeded over using a hard dense semi concrete mortar which has de-bonded for the original lime mortar stucco. Removal of this screed exposed the construction of the cornice and condition of the stucco mortar which was damp, loose and friable.

Fracturing of the nosing and upper mouldings to the cornices was also noted indicating that the hard inflexible mortar used for repair was failing and de-bonding from the substrate beneath.

At the left hand end of the 3rd floor cornice North elevation the original detail of the cornice remains in place which includes a front gutter running to an embedded downpipe. The over screeding to the remainder of this and the upper cornice has allowed water to run back to the timber sills potentially causing decay of the sill.

At cornice level on the East West curved elevation there are significant open fractures through the upper cornice and brick parapet above that maybe due to structural or thermal movement of the building.

Further structural movement was noted at the right hand end of the South elevation upper cornice with significant fracturing through the masonry and displacement of the parapet wall.

A number of the plain dormer window surrounds on Grays Inn Road are in an unstable condition the render has failed and exposed brickwork is frost damaged and missing. The dormer surrounds on Pentonville Road show similar problems with render cracked and loose; the curved pediment head dormers also show signs of fracturing.

The roof top balustrade is extensively weathered with the majority of the moulded detailing eroded and missing; these features were probably produced as pre-cast elements and assembled on site.

Moulded stucco to window surrounds and the sky surface of window heads was found to be hollow and de-bonding from the backing substrate. The investigation trials revealed that the stucco surrounds have been formed over brickwork without any sign of keying into the substrate. This form of construction combined with the weight of the material used is likely to be the cause of failure affecting the surrounds.

A number of the window heads are fractured and the stucco hollow sounding when tested, these fractures maybe related to embedded timber lintels which have rotted and dropped.

At 2nd floor level natural Bath stone has been used to manufacture the window sills. Every sill has been previously repaired using a cement mortar which has failed or beginning to fail as the hard mortar is incompatible with the softer natural stone and has de-bonded.

There has been considerable alteration to the original facades between ground and 1st floor level which has resulted in extensive damage to and loss of the 1st floor window sills along with a number of the Bath stone pilasters which have been cut in

half to accommodate shopfronts or that have been tiled over to alter the appearance.

Pilasters which are in line with downpipes originally appeared to have had the pipe fixed through the centre of the stonework. These embedded downpipes have caused significant loss of stone due to corrosion to one of the pilasters on the North elevation and fractured through another. Stonework has been previously mortar repaired and painted which is now flaking and peeling.

RECOMMENDATIONS.

Based on these initial findings it is clear that elements of the existing masonry require extensive repair and replacement in order to maintain the integrity of the facades for the long term.

A number of the dormer window surrounds are in a near state of collapse and will require either complete or part demolishing; associated balustrade may also need to be dismantled to accommodate these works which may be possible to salvage and reuse however allowances should be made to replace these with new as the construction and condition of the units is unclear.

The hard dense cement screed used to re-fluanch the cornices has de-bonded from the original substrate and needs to be removed and replaced with an improved detail to ensure that rainwater runs off and away from the building facades. The condition of the substrate exposed during the investigation trials was found to be in a poor condition which if found to be typical will require extensive re-building of the cornice upper moulded section.

The introduction of a lead or zinc capping and flashing may be considered if practical which would help provide protection to the repaired cornice and a drip detail to aid the water dispersion.

Corroding sections of steel and redundant fixings should be carefully cut out and surrounding stucco and brickwork made good with either new stucco or bricks to match the original.

Severely fractured and displaced masonry will require careful repair, dismantling and re-building. Additional control measures may need to be put in place to prevent further movement if the cause is associated with thermal expansion and contraction.

The second floor natural Bath stone windows sills which have all been repaired using a hard cement mortar require extensive work to ensure that they remain in a stable condition. From the survey it was noted that a number of the sills were in a state of deterioration with missing, loose and fractured mortar and loss of stonework. The cement mortar should be carefully removed from all sills and the condition of the exposed stonework assessed for the most appropriate means of repair or possible replacement.

Subject to further investigation provision should be made to either replace or repair the brackets underneath the sills which may become damaged or loosened during works involving the 2nd floor sills.

Further internal investigation of lintels over windows should be carried out to determine if these have failed resulting in the fracturing and de-bonding of external stucco window heads. Consultation with a suitably qualified structural engineer should be considered in order to specify the most appropriate course of action for their repair or replacement.

Moulded window surrounds which are loose and de-bonding from the brick substrate should be carefully removed and replace with new introducing stainless steel reinforcement as necessary to help improve the strength of the repair.

The 1st floor window sills will require reinstatement which ideally could be manufactured as pre-cast units for ease of installation.

The ground floor pilasters require extensive repair or replacement in order to establish the original architectural detailing. As the original pilasters are in a natural Bath stone and vulnerable to damage at ground levelconsideration should be given

to the introduction of a granite plinth to help provide suitable protection. Dependant on the planning conditions it may be possible to use a pre-cast stone as an alternative in cases of complete replacement.

The existing paint will need to be removed from retained pilasters in order to provide a suitable surface for re-painting if required and to establish the level of repairs required.

Cleaning the brickwork to remove surface soiling using a combination of dilute Neolith 625 and DOFF hot wash would improve the overall appearance, localised use of a low pressure wet abrasive may also be necessary to remove patches of heavy staining as a result of blocked downpipes.

This approach could also be applied to existing matching brickwork due for demolition which could be first cleaned then carefully dismantled for salvage and re-use in the extension and new build facades that form part of the re-development.

Prior to repair and re-decoration the existing painted stucco will also require cleaning to remove heavy atmospheric soiling.

CONCLUSIONS

Due to the poor condition of the facades close monitoring of the masonry should take place during the demolition works and installation of the façade retention system in order to help minimise the risk of further damage and loss of architectural detailing.

In the event removal of architectural masonry is required due to health and safety concerns or to make way for new structural steel we recommend a precise dimensional and photographic survey first takes place to accurately record the detailing for future reproduction.

The use of hard cement mortars for the repair of original stucco has not benefited the substrate material and presents a potential on-going problem that will possibly result in further deterioration and failure of the material in the future.

We would recommend that the retained facades are regularly surveyed and monitored following completion of the re-development to assess the condition of the masonry and to take appropriate action.

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Project: Lighthouse Block Kings Cross **Date: 12.12.11**

Title: Provisional schedule of repairs and budget costs subject to final specification and issue of detailed drawings **Ref: 11224**

Item	Schedule of works	Qty	Unit	Rate	£
1.01	Clean down existing retained brickwork using a combination of mild chemical and DOFF hot wash to remove surface soiling.		Item		4,875.00
	Isolated use of low pressure wet abrasive to remove staining caused by blocked downpipe.		Item		1,320.00
1.02	Cut back defective sky surface and nosing detail to upper cornice and repair using lime mortar. 850mm girth	30	m	282.68	8,480.40
1.03	Cut back defective sky surface and nosing detail to lower cornice and repair using lime mortar. 1200mm girth	81	m	423.47	34,301.07
1.04	Take down and re-build defective plain stucco dormer window surrounds using lime mortars.				
	1450mm x 300mm x 2000mm	7	Nr	863.00	6,041.00
1.05	Carefully remove damaged curved stucco pediment heads to dormer window surrounds and re-build using lime mortars.				
	1850mm x 400mm x 350mm	4	Nr	1828.00	7,312.00
1.06	Dismantle sections of defective and eroded balustrade and replace using pre-cast to match original details.				
	Shafts. 400mm x 120mm x 100mm	44	Nr	95.32	4,194.08
	Arched top. 180mm x 110mm	14	m	512.00	7,168.00
	Coping. 220mm x 100mm	14	m	105.12	1,471.68
1.07	Cut back loose and de-bonded sky surface to window head pediments. 410mm girth	71	m	35.50	2,520.50
1.08	Cut back loose and fractured stucco window heads and repair using lime mortars. 1100mm x 175mm x 570mm	9	Nr	474.38	4,269.42
1.09	Cut back loose and de-bonded moulded stucco window surround detail and repair using lime mortars. 350mm girth	24	m	115.00	2,760.00
1.10	Cut back loose and de-bonded stucco to winow reveals and repair using lime mortar. 175mm girth	16	m	35.00	560.00
1.11	Cut out defective 2nd flr Bath stone window sills and replace with new in pre-cast stone.				
	1850mm x 380mm x 150mm	25	Nr	558.89	13,972.25
1.12	Supply and fix new 1st flr pre-cast stone window sills.				
	1850mm x 380mm x 150mm	25	Nr	323.45	8,086.25
1.13	Carefully remove fractured and displaced section of South elevation upper cornice and re-build to original detail.				
	1000mm x 650mm x 550mm		Item		1,573.00
1.14	Flush out fractures through stucco and repair using lime mortar.				
	175mm - 500mm	30	Nr	58.60	1,758.00
1.15	Cut back and repair fractures to East West elevation upper cornice using lime mortars.	8	m	42.00	336.00

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1.16	Cut out corroded sections of embeded steel and redundant fixings in brickwork and stucco. Repair using new matching bricks and lime mortars.	37	Nr	73.28	2,711.36
1.17	Carefully rake out loose and friable brick pointing and re-point using lime mortar.	100	m2	56.68	5,668.00
1.18	Remove damaged ground floor Bath stone pilasters and replace with new including hand carved heads.				
	Pilaster shafts. 3600mmx 380mm x 240mm	10	Nr	3,100.00	31,000.00
	Carved heads. 1330mm x 570mm x 380mm	10	Nr	4,800.00	48,000.00
1.19	Reinstatement of No 283 Pentonville Road façade using a combination of natural stone for the ground level pilaster together with pre-cast elements and hand run stucco to match existing adjacent detailing and new Gault brickwork		Item		45,000.00
	Foundations and suitable backing structure by others.				
				TOTAL £	243,378.01

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ANNOTATED ELEVATION DRAWINGS **2**

PENTONVILLE ROAD
NORTH ELEVATION

GRAY'S INN ROAD
SOUTH ELEVATION

EUSTON ROAD
EAST WEST ELEVATION

THE LIGHTHOUSE BLOCK KINGS CROSS
FACADE CONDITION SURVEY NORTH ELEVATION

Dismantle defective hi-lighted brick and stucco window dormers and rebuild to original detail PH.N01

Cut off loose flaunching to cornice sky surface and fractured nosing, repair with revised detail. PH. N02

Original cornice front gutter detail. PH.N04

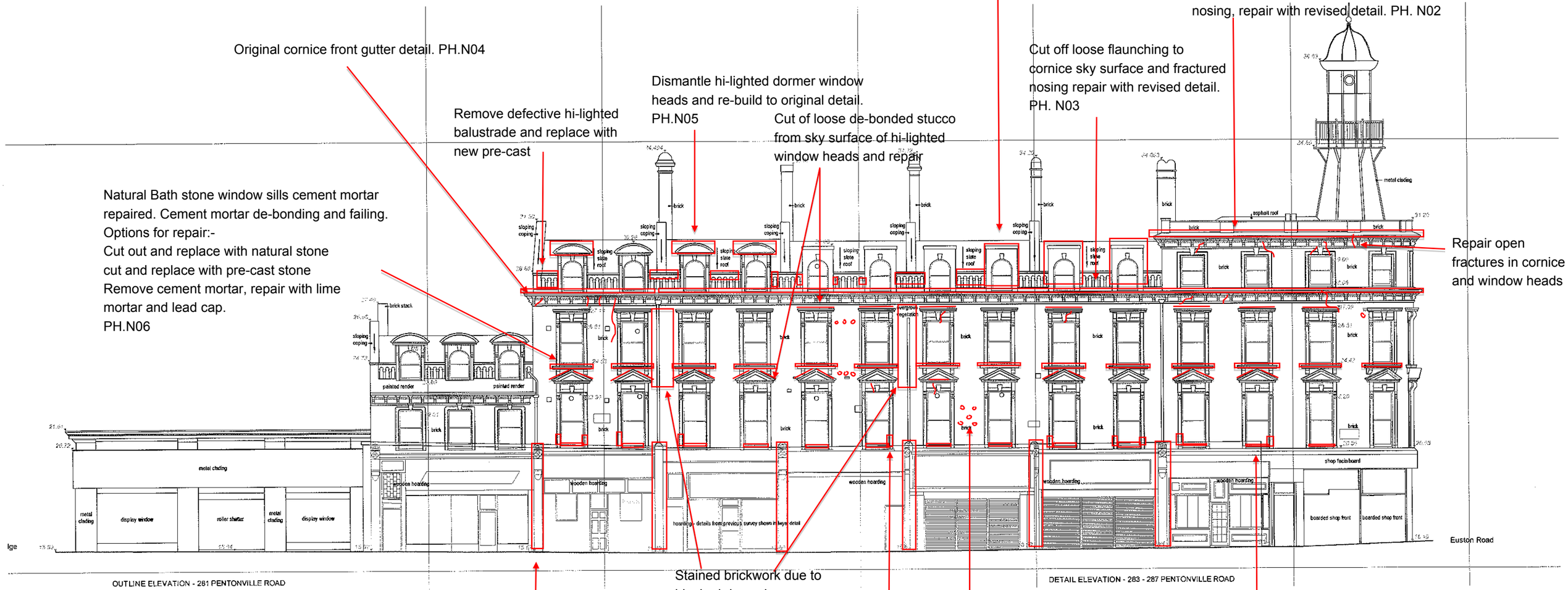
Cut off loose flaunching to cornice sky surface and fractured nosing repair with revised detail. PH. N03

Dismantle hi-lighted dormer window heads and re-build to original detail. PH.N05

Remove defective hi-lighted balustrade and replace with new pre-cast

Cut of loose de-bonded stucco from sky surface of hi-lighted window heads and repair

Natural Bath stone window sills cement mortar repaired. Cement mortar de-bonding and failing.
Options for repair:-
Cut out and replace with natural stone
cut and replace with pre-cast stone
Remove cement mortar, repair with lime mortar and lead cap.
PH.N06



Repair open fractures in cornice and window heads

Stained brickwork due to blocked downpipe

Paint strip and repair damaged Bath stone pilasters. Replace missing and severely damaged pilasters with new. PH.N07 N08 N09

Cut out corroded redundant fixings in all locations and damaged facing bricks, install new bricks to match existing

Window sills missing or defective renew in pre-cast stone.

Cut back loose and fractured hi-lighted moulded stucco window surrounds and repair to march original detailing. PH. N010

THE LIGHTHOUSE BLOCK KINGS CROSS
FACADE CONDITION SURVEY SOUTH ELEVATION

Cut off loose flaunching
to cornice sky surface and fractured
nosing repair with revised detail. PH.S01

Carefully dismantle displaced
cornice and re-build to original
detail. PH.S02

Remove defective hi-lighted balustrade
and replace with new pre-cast. PH.S03

Dentil blocks missing due
to corroded fixings repair in
accordance with structural
engineers specification.
PH.S04

Dismantle defective hi-lighted brick and stucco
window dormers and rebuild to
original detail. PH.S05

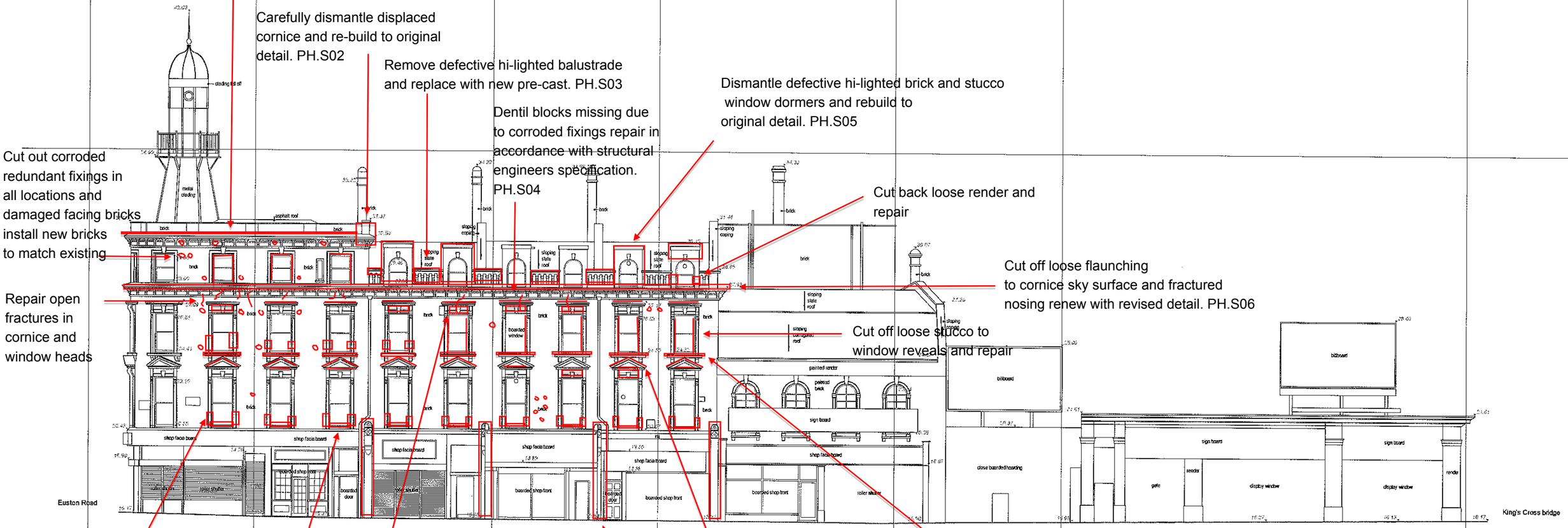
Cut back loose render and
repair

Cut out corroded
redundant fixings in
all locations and
damaged facing bricks
install new bricks
to match existing

Repair open
fractures in
cornice and
window heads

Cut off loose flaunching
to cornice sky surface and fractured
nosing renew with revised detail. PH.S06

Cut off loose stucco to
window reveals and repair



Cut back loose and fractured hi-lighted
moulded stucco window surrounds
and repair to match original detailing

Cut back loose de-bonded stucco to hi-lighted
window heads and repair to original
detail

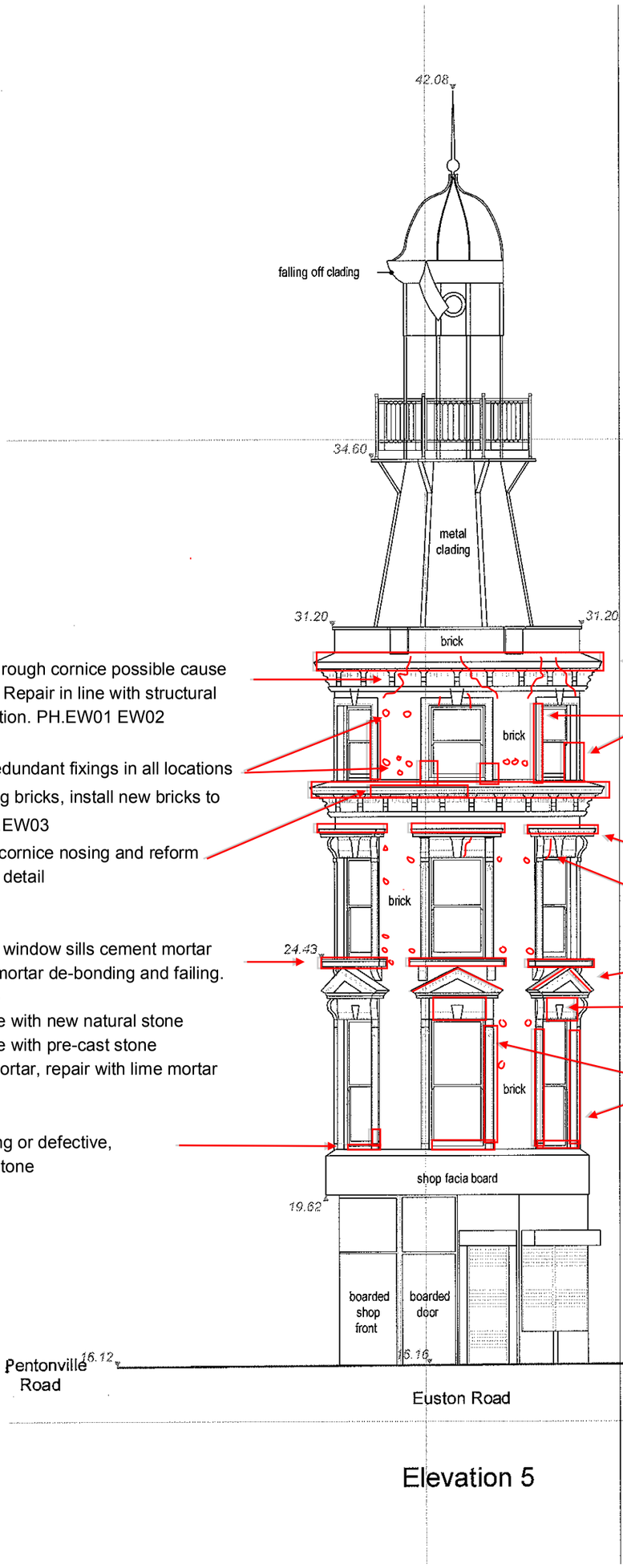
Window sills missing or defective
renew in pre-cast stone

Paint strip and repair damaged Bath stone pilasters.
Replace missing and severely damaged pilasters
with new. PH.S08

Cut off loose de-bonded stucco
from sky surface of hi-lighted
window heads and repair

Natural Bath stone window sills cement
mortar repaired. Cement mortar de-bonding and failing.
Options for repair:-
Cut out and replace with new natural stone
Cut out and replace with pre-cast stone
Remove cement mortar, repair with lime mortar and lead cap.
PH.S07

THE LIGHTHOUSE BLOCK KINGS CROSS
FACADE CONDITION SURVEY EAST WEST ELEVATION



Notable fractures through cornice possible cause thermal movement. Repair in line with structural engineers specification. PH.EW01 EW02

Cut out corroded redundant fixings in all locations and damaged facing bricks, install new bricks to match existing. PH.EW03

Cut back fractured cornice nosing and reform to original moulded detail

Natural Bath stone window sills cement mortar repaired. Cement mortar de-bonding and failing. Options for repair:-
Cut out and replace with new natural stone
Cut out and replace with pre-cast stone
Remove cement mortar, repair with lime mortar and lead cap

Window sills missing or defective, renew in pre-cast stone

Cut off loose flaunching to cornice sky surface and fractured nosing repair with revised detail.

Cut back loose and fractured moulded stucco window surrounds and renew to match original detailing

Cut off loose fluanching to cornice sky surface repair with revised detail.

Cut off loose de-bonded stucco to sky surface of window heads and renew

Repair open fractures in moulded stucco window heads

Cut off loose de-bonded stucco from sky surface of window heads and repair

Cut back loose de-bonded stucco to window heads and repair to original detailing

Cut back loose and fractured moulded stucco window surrounds and repair to match original detailing

Elevation 5

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LIGHTHOUSE BLOCK KINGS CROSS
PENTONVILLE ROAD NORTH ELEVATION

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PH. N01. Dormer windows render loose and de-bonding, brickwork substrate frost damaged. Take down and re-build

PH. N02. Cement mortar repair to upper cornice loose and de-bonding from the original substrate, continuous fracture through nosing. Remove complete and repair.

LIGHTHOUSE BLOCK KINGS CROSS
PENTONVILLE ROAD NORTH ELEVATION

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PH. N03. Cement mortar repair to lower cornice loose and de-bonding from original substrate, fracture through nosing, downpipe outlets blocked, weathering detail to window sills ineffective. Remove complete, repair substrate and revise weathering detail.

PH. N04. Original cornice detail with front gutter running to downpipe outlet. Flaunching below window sills and less built up to the base of balustrade.

LIGHTHOUSE BLOCK KINGS CROSS
PENTONVILLE ROAD NORTH ELEVATION

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PH. N05. Curved pediment dormer window heads fractured and loose stucco, frost damaged brick and tile substrate. Take down and re-build new.

PH. N06. All natural Bath stone window sills cement mortar repaired. Repairs are loose and failing. Remove mortar and assess condition of exposed stone for most appropriate option on repair or replacement.

LIGHTHOUSE BLOCK KINGS CROSS
PENTONVILLE ROAD NORTH ELEVATION

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PH. N07. Natural Bath stone ground level pilasters. Stonework has been damaged by corroding embedded downpipes and inappropriate cement mortar repairs.

PH. N08. Top section of pilaster fractured and displaced. Carved detailing painted and mortar repaired.

LIGHTHOUSE BLOCK KINGS CROSS
PENTONVILLE ROAD NORTH ELEVATION

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PH. N09. Lower section of pilaster which has been previously cut and altered to accommodate a change in shopfront.

Stonework has also been tiled and painted over.

PH. N010. Moulded stucco window surrounds loose and de-bonded from the brick substrate. Carefully remove and repair to match original detailing.

LIGHTHOUSE BLOCK KINGS CROSS
GRAY'S INN ROAD SOUTH ELEVATION

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PH. S01. Cement mortar repair to upper cornice loose and de-bonding from the original substrate, continuous fracture through nosing. Remove complete and repair.

PH. S02. Significant fracture and displacement of stucco cornice. Carefully take down and re-build incorporating pre-cast corbel and dentil blocks

LIGHTHOUSE BLOCK KINGS CROSS
GRAY'S INN ROAD SOUTH ELEVATION

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PH. S03. Sections of balustrade are fractured and extensively eroded. Remove and replace using pre-cast units.

PH. S04. Dentil blocks missing from cornice damaged due to corrosion of embedded fixing dowel. Cut out corroded fixing and replace with new pre-cast block secured using stainless steel threaded rod.

LIGHTHOUSE BLOCK KINGS CROSS
GRAY'S INN ROAD SOUTH ELEVATION

PAYE

PH. S05. Dormer windows render loose and de-bonding, brickwork substrate frost damaged. Take down and re-build

PH. S06. Cement mortar repair to lower cornice loose and de-bonding from original substrate, fracture through nosing, downpipe outlets blocked, weathering detail to window sills ineffective. Remove complete, repair substrate and revise weathering detail.

LIGHTHOUSE BLOCK KINGS CROSS
GRAY'S INN ROAD SOUTH ELEVATION

PAYE

PH. N07. All natural Bath stone window sills cement mortar repaired. Repairs are loose and failing. Remove mortar and assess condition of exposed stone for most appropriate option on repair or replacement.

PH. N08. Natural Bath stone pilasters have been dramatically altered to accommodate previous change in shopfront. Remove and replace with new to match original carved detailing.

LIGHTHOUSE BLOCK KINGS CROSS
EUSTON ROAD EAST WEST ELEVATION

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PH. EW01 EW02. Significant fractures through upper cornice and parapet wall possibly due to thermal movement. Replace and repair sky surface and nosing as previous.
Introduce control measures as necessary in accordance with structural engineers specification to prevent further possible movement.

LIGHTHOUSE BLOCK KINGS CROSS
EUSTON ROAD EAST WEST ELEVATION

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PH. EW03. Corroding sections of embedded steel and redundant fixings are causing damage to brickwork and stucco. Carefully cut out and repair using new matching bricks and stucco render