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Our Ref: CAS / 25536

12<sup>th</sup> June 2024

Dear Jack & David,

### Re: External inspection to Derby Lodge, Wicklow Street, London. WC1X

Further to our site visit on the 6<sup>th</sup> June 2024 to inspect the structure following further exploratory works we have the following comments to make:-

#### Block :- 85 - 102 Wicklow Street.

On the day of out visit the temporary propping was installed and the brickwork within the ends of the PFC support beams was removed on the fourth floor and the bearing of the feature steel arches was exposed on the 4<sup>th</sup> and 5<sup>th</sup> floor (roof over). We found the following defects:

The piers are formed from solid construction as originally thought. The pier is hollow. The • pier is constructed from 102mm brickwork. We believe that they are hollow down to the ground floor.



## Void within the pier.

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• The concrete padstone which has the rendered feature to it is not solid across the area of the pier.

The concrete corbels out to support the base of the steel arch. The base of the steel arch only bears onto brickwork approximately 25mm. The steel arch are supporting the edge of roof over the fifth floor landing. The arches on the lower floors are not supporting the landings as the steel channels have been added into the structure.

The top of the arch is tied into the pier. The concrete has cracked in various locations. The ends of the arches where they bear onto the structure are corroded.



Cracked concrete under the steel arch. Corroded steel arches. The concrete is formed from clinker concrete with steel reinforcement which has corroded (see picture below from neighbouring block)







Corroded steel arches.

Distorted brickwork and cracked pattress plates.

• The ends of steel channel which was exposed (under the fifth floor landing) was bearing 100mm onto the brickwork. The end of the PFC is corroded.



Concrete cast into the web of the beam. End of beam is corroded along whole length of its bearing where it has not been treated / painted.

• The brickwork behind the split pattress plate on the fourth floor has cracked and is distorted. The plate needs to be replaced and the brickwork behind it needs to be reconstructed.





Similar defects are noted at lower level down the structure.

Failed Patress plates cracked brickwork (underside of fourth floor)



Patress plates is starting to fail cracked brickwork (underside of 3<sup>rd</sup> floor)





Patress plates is starting to fail cracked brickwork (underside of 2nd floor).



Pattress plates are starting to fail. Cracked concrete supporting feature arch.



### Summary of required works, Block 85 - 102.

Following site visit and discussions the following works need to be completed as soon as possible.

The defects within the piers are beyond temporary repairs.

- The split pattress plate cannot be repaired. They need to be removed and replaced as soon as possible.
- The cracked brickwork will need to be removed and replaced. To replace the brickwork and pattress plates the remaining sections of the piers need to be propped and supported.
- We recommend that remedial wall ties are installed within the piers to tie them together.
- The concrete padstones under the feature steel arches cannot be repaired as the reinforcement within them is severely corroded and the cracks pass through them. The integrity of them cannot be guaranteed. They need to be recast in mass concrete incorporating a bracket to support the base of the steel arches.

Corrosion to steel arches to be removed with a wire brush and repainted with zinc rich paint to prevent further corrosion.

- The temporary works to do this will be complex and the works completed in stages to ensure access to the structure etc is retained.
- It may be more cost effective to prop each landing, take down the pier and rebuild it in engineering bricks with new ties back into the structure.
- Drainage to landings to be rectified to ensure surface water drains away from the building and not into the landing structures / piers. This is the main cause of the deterioration within the steel pattress plates and beams.
- The beams which support the edge of the landings may be able to be repaired, i.e. remove surface corrosion with a wire brush and re treat the steel with a zinc rich paint. The existing lead paint may be covering severe corrosion. Each beam to be checked on a case-by-case basis. However, if the piers are going to be taken down and reconstructed it will be easier to install a new beam which is galvanised and painted to suit.



### Block 68 - 84 Wicklow Street.

Block 68 – 84 is constructed in an equivalent way to block 85 – 102. There are defects within the piers although not as extensive as block 85 – 102.

# Defects to central piers noted below.



Pier under roof. Pattress plate condition is adequate. Corrosion to steel arches evident and cracking to padstone which could as this stage be repaired.



Cracked padstone and brickwork under the fifth floor landing.





Cracked padstone and brickwork under the fourth floor landing.



Cracked padstone and brickwork under the third floor landing.





Second floor landing. No major defects on the day of visit.



Repairs required to base of column.

## Summary of works : Block 69 - 84.

The structure to block 69 – 84 has not deteriorated as much as block 85 – 102, however the defects cannot be ignored. Repair works need to be conducted as soon as possible:-

Padstone under the fifth floor landing to be replaced to ensure the load is transferred down the column. This could be repaired with Sika products; however, we believe that it will need to be replaced within five years if it is repaired.

Padstones with minor cracking can be repaired with Sika Products. If the cracks is greater then 25mm or down to the reinforcement within them we recommend the padstone is replaced.

Cracked pattress plates to be replaced before they fail and lead to further structural damage. The piers will need to be temporally restrained whilst the pattress plates are replaced. Temporary works will be required.



Ends of corroded beams & steel arches to be cleaned and treated to prevent further corrosion. If they are not treated the beams will lose their structural integrity and the brickwork around them will crack as the beams expand due to the corrosion.



### Block 1 - 18 - Britannia Street .

Block 1 – 18 is constructed in an equivalent way to the blocks on Wicklow Streett. There are defects within the central piers to the landing which need to be addressed.



Pier under roof. Minor corrosion to pattress plates. Brickwork in good condition.



Cracked padstones under the fifth floor landing. Remove vegetation.



Cracked padstones and split pattress plate under fourth floor landing.







Plate is corroded and the padstone has cracked under third floor landing. Severely corroded steel beam due to water ingress down the column.





Corroded plates split brickwork under the second floor landing.



Pier at ground floor level.



# Block 19-36 -Britannia Street.

Block 19 – 36 is constructed in a similar way to the blocks on Wicklow Streett. There are defects within the central pier which need to be addressed.



Pier under roof level. Corroded pattress plates.



Cracked padstones under the fifth floor landing.





Signs of water ingress under the fourth floor landing



No major issued under the third floor landing.





Cracked brick work and concrete padstone under the second floor landing. Patress plate is starting split.



Brickwork to the piers at first floor level has cracked.



Pier at ground floor level.



### Summary for the two blocks on Britania Street.

They are showing defects consistent with the two blocks on Wicklow Street. The structure needs to be repaired properly to prevent major structural works in the future.

Repair works to consist of :-

- Cracked / heavily corroded pattress plates to be replaced before they fail and lead to further structural damage to the piers.
- Ends of corroded beams & steel arches to be cleaned and treated to prevent further corrosion. If not, they will continue to corrode. The beams will lose their structural integrity and the brickwork around them will crack as the beams expand due to the corrosion. Each beam will need to be checked due to the water ingress down the structure.
- Drainage to landings to be rectified to ensure surface water drains away from the building and not into the landing structures / piers. This is the main cause of the deterioration within the steel pattress plates and beams.
- Cracked brickwork to be replaced and remedial wall ties to be installed to tie the piers together. Helifix can be used a temporary fix, but they will not be a long term solution. We cannot guarantee how long they will last or when the cracks will re appear.

As mentioned previously the remedial works noted above will require the structure to be propped / restrained whilst the works are completed.

If you have any queries, please do not hesitate to contact us.

Yours Sincerely,

Christopher Seaman (Bsc Hons)