



# KNAPP HICKS & PARTNERS LTD

CONSULTING STRUCTURAL, CIVIL & GEOTECHNICAL ENGINEERS



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37740A/L/001A/DALC/dalc  
4<sup>th</sup> November 2021

Philip Settingington  
MacCarthy Partnership  
6<sup>th</sup> Floor – Central House  
1 Ballards Lane  
London  
N3 1LQ

Dear Philip,

**RE: COMMUNAL STAIRCASE TO 4 HANDEL STREET, LONDON,  
WC1N 1PB.**

Thank you for your instruction to visit 4 Handel Street to survey the Communal Staircase. The reported issue with the stairs was the slightly springy nature when trafficked and the slope away from the walls of some of the treads

Our survey was carried out on 2<sup>nd</sup> November 2021. Our survey was visual only and no finishes were removed to view hidden structure. As such responsibility cannot be taken for the condition or adequacy of hidden structure

4 Handel Street is a five storey Georgian town house located in a terrace to the south of Handel Street. The accommodation comprises a Basement, Ground Floor and three upper floors. The property has been sub-divided into a number of flats. There is a flat located on each floor, and two further flats at half landing level between the Ground and First Floor and the First and Second Floor.

The communal staircase is located to the rear left of the property. The staircase connects the Ground Floor to the Second Floor only. It is probable the staircase originally extended the full height of the building extending both down to the Basement and up to the Third Floor. The flight down to the basement is located inside one of the flats, so could not be surveyed at the time of our visit. It is thought the original flight between the Second and Third Floor was removed and replaced with a steep flight located in front of the main staircase. A basic plan is appended to this report.

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The staircase comprises four straight flights with 180 degree winders at half landing level. At the left and rear of the stairs the supporting walls were masonry. At the right side of the stairs there was a hollow sound when the wall was knocked suggesting timber stud construction.

It was possible to view the structure to the straight flights as the finishes to the underside of the flight from First Floor to Second Floor had been partially removed to carry out an asbestos survey. We viewed twin 100x50 stringers located below the treads. A basic arrangement has been sketched on the plan drawing appended to the report. At First and Second Floor, the stringers will be connected directly to the timber floor joist spanning across the landings. At the ends with the winder treads the support arrangement was not clear as the structure is completely obscured by the plaster finishes on the underside. The plaster finish on the underside of the winder treads is a complex helix shape, which would preclude any of the supporting elements being single straight lengths of timber spanning wall to wall. It is thought therefore that there may be either cantilever timber elements, or jointed sections providing support.

As reported, there was a slight, but not excessive bounce in the stairs when trafficked. There was also a noticeable slope on the treads, particularly those adjacent to the timber stud wall to the right side. In all cases the dip was from the wall to the inside of the stairs.

## **Discussion.**

It is evident that there has been significant movement in the stairs since the original construction. Whether this is evidence of significant weakening of the staircase cannot be fully determined without removing the finishes to the underside to allow a full view and assessment of the structural arrangement.

At the main landing levels, it is clear how the stair stringers are supported. A timber element will span across the landing and the stair stringers will fix to this member. At the ends with the winders, the complex helix shape of the ceiling beneath means single straight joists could not have been used. The supporting structure will therefore either be several timber elements bolted or nailed together, or single or multiple sections cantilevering from the walls, or a combination of the two.

Depending on the applied loading, a cantilever timber joist embedded in a heavy masonry party wall is likely to be adequate as there would likely be sufficient mass in the wall to prevent the section rotating. A timber element fixed with either nails or bolts onto a timber stud wall is unlikely to be justifiable as the fixings would be subject to both the shear from the vertical loading and couple forces from the bending forces on the cantilever. Given the limited depth it is unlikely we would be able to justify fixings made in this way to any current standards.

The same applies to any sections that are spliced. The couple action of fixings subjected to bending forces means the connections can rarely be justified unless the connections are either long with joists either side or steel connection plates which would not have been used for the original construction.

The structure is almost entirely hidden beneath the plaster finishes. In the absence of being able to see the structural arrangement, we are not able to determine fully on whether the staircase is structurally adequate or not.

If formal confirmation is necessary, we can either remove the finishes and carry out a direct inspection or all elements, or we can introduce some additional structure to ensure further deformation does not occur.

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With respect to additional structure, a simple method of providing additional support would be to add a newel post on the inside of the winders. Simple beams could be added spanning to the adjacent walls to provide support to the top and bottom of the stringers on the adjacent straight flights. This would halt any further rotation of the treads away from the walls. A further survey would however be required to establish whether this detail could be used as the post would need to extend to the Basement.

## **Conclusions.**

The stairs have deformed significantly since their original construction with many of the treads sloping from the walls to the inside of the stairs.

There is a noticeable (but not excessive) bounce on some of the treads on the right side of the stairs adjacent to the stud wall separating the Stairwell from the Flats at each level.

It was not possible to view the structure to the stairs, other than for a small area of a straight flight. The complex arrangement of the timber in the areas where there are winders mid-height between floors was completely hidden from view by the plaster finishes on the underside. With the complex helical profile on the underside, we can be sure that simple straight timber members spanning from wall to wall could not have been used. Either cantilever or jointed members will be providing support.

If a formal confirmation is necessary to justify the adequacy of the stairs, we can adopt either of the following approaches:

1. Remove all the finishes from the underside and carry out a survey of all elements of structure. We would be able then to confirm adequacy or recommend further measures on how this might be achieved.
2. Add some additional structure to prevent further deformation from occurring. This proposal would likely be the addition of a newel post extending floor to floor from the inside of the winder treads. This option would require some further investigation both in the Lower Ground Floor Flat and on the underside of the stair ceiling in the areas where the winder treads start and finish.

We trust we have interpreted your requirements correctly, however should further information be required, please do not hesitate to contact the undersigned.

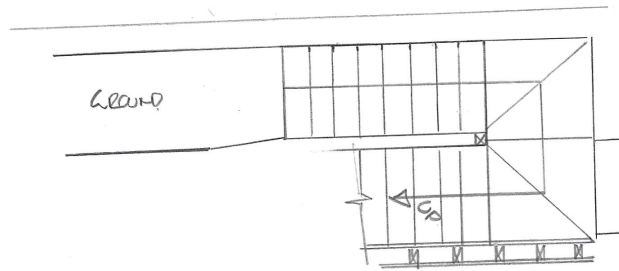
Yours sincerely



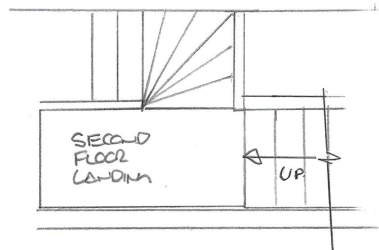
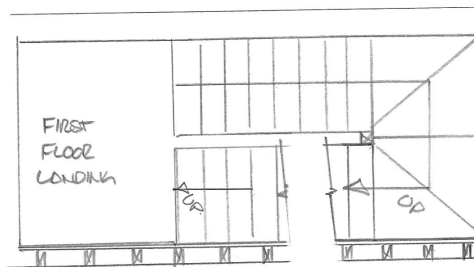
David Chrystal

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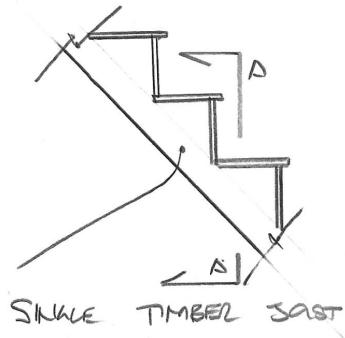
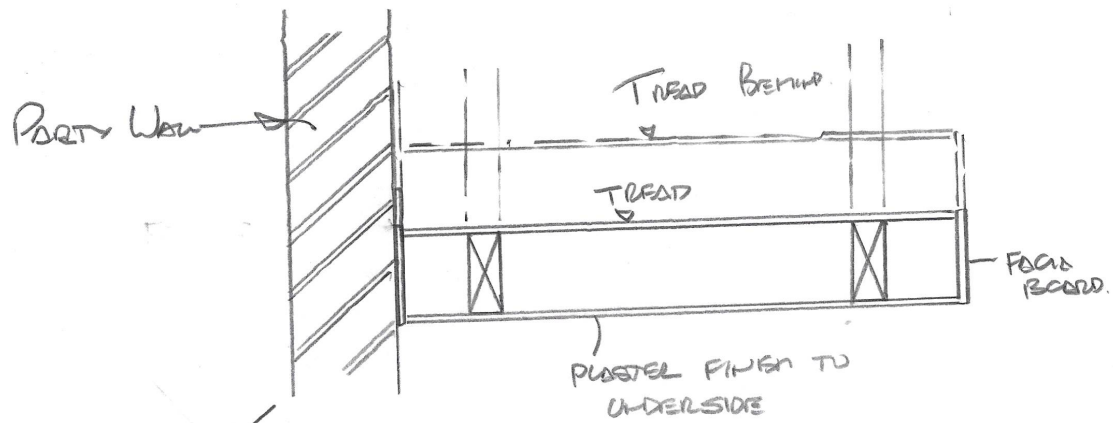
## Arrangement of Stairs



Arrangement of  
Stairs.  
4 Handel Street  
London



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SECTION THROUGH  
STAIRS A-A

ELEVATION ON STAIRS

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## Photographs



View From Main Entrance Hallway and First Flight



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Flight from Half Landing to First Floor

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Flight from First Floor to Half Landing



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Flight from Half Landing to Second Floor.

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Flight from Second Floor to Third.