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Structural Appraisal of Rockmount Pimlico Road, Clitheroe, BB7 4PZ

RCE4421

Client:
Darwen Estates Ltd
13 Preston New Road
Blackburn
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BB2 1AR

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RoseConsultingEngineers

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Brief

Mr F Duffin of Darwen Estates Ltd appointed Rose Consulting Engineers to inspect, report and appraise the existing retaining wall structures to Rockmount, Pimlico Road, Clitheroe, BB7 4PZ.

This report is solely for the use of the named client and their professional advisers, no liability to other parties is accepted. Should the client not act upon specific, reasonable advice contained in the report, no responsibility is accepted for the consequences.

Limitations and Scope of Report

The inspection was visual only. No additional investigatory holes were made. No finishes were removed.

Judgement is used in the assessment of the structural condition of the property; to determine the age of any defects, the cause of the defects, and the risk of future defects. It is never possible to state with certainty that a property will not move in future, all buildings move under the influence of many factors, some cyclic and some progressive, some which are dormant for many years yet may be reactivated under certain conditions.

The general structural condition of the property is covered, but the report focuses on the matters which are judged to be urgent or significant. Urgent matters are defects judged to be an actual or developing threat to the structure of the building and safety of occupants or users; it will be advisable to have these put right as soon as possible. Significant matters are those, which will develop into urgent matters if not dealt with within, say, 2 years.

Matters assessed as not urgent or not significant are outside the scope of the structural appraisal report, and are generally not reported. Matters which are judged to be a future risk are identified as such and should be specifically brought to the attention of insurers.

This report covers the condition of the structural elements of the property only and does not deal with other specialist elements (e.g. mechanical / electrical services; plumbing; drains; decorative finishes; etc.) unless they exhibit visible defects or are having an adverse effect on the structure.

A large area of the retaining walls are obscured by foliage.

Site Visit

The property was inspected on 23rd February 2018.

Description

It is proposed to develop the existing site by construction of apartments. The site currently is surrounded by retaining walls from previous buildings and developments which have occupied the site.

Generally, the retaining walls are solid, being constructed of coursed stone. The principals to which the retaining wall have been designed uses gravity affecting the mass of the stone structure.

Refer to photographs in Appendix 1.

Defects Evident, Possible Causes and Required Remedial Works

Generally, the retaining walls are in a reasonable structural condition, being plumb, straight and level. There are however, a small number of points which require addressing as follows.

Retaining Wall 'A'

The retaining wall retains approximately 2.5m, and (from what can be seen) is approximately 600mm thick. The wall continues another 3.0m above the upper ground level and is presumably the rear wall from a previous property on the site. Refer to photographs 1 to 4, 17 and 20.

It appears that the retaining wall has been underpinned at some point, possibly to allow a reduction in levels to the lower side of the retaining wall. Refer to photograph 4.

There is an old doorway through the upper section of wall which is accessed by an old set of steps.

As part of the development of the site it is proposed to remove the upper section of the retaining wall to allow access, the removal of the upper section of wall should not adversely affect the stability of the retaining wall.

There is a small bow along the length to retaining wall 'A' which is probably due to a combination of lateral earth and water pressures. To relieve the lateral pressures, it is recommended that a series of weep-holes are installed by core drilling 50mm holes at 900mm centres 150mm above the underpinning level.

Retaining Wall 'B'

The retaining wall retains approximately 4.5m reducing to 3.0m at the top of the steps, and (from what can be seen) is approximately 450mm thick. The retaining wall has a parapet of approximately 600mm. Refer to photographs 2, 3, 7, 8 and 20.

An old set of steps and retaining wall 'A' provides a buttressing effect to retaining wall 'B'. It is recommended that to retain the stability, the steps are kept, and a masonry buttress formed to the position where retaining wall 'A' is in place. The buttress should be a minimum of 900mm length.

Again, to relieve the lateral water pressures, it is recommended that a series of weep-holes are installed by core drilling 50mm holes at 900mm centres 150mm above ground level.

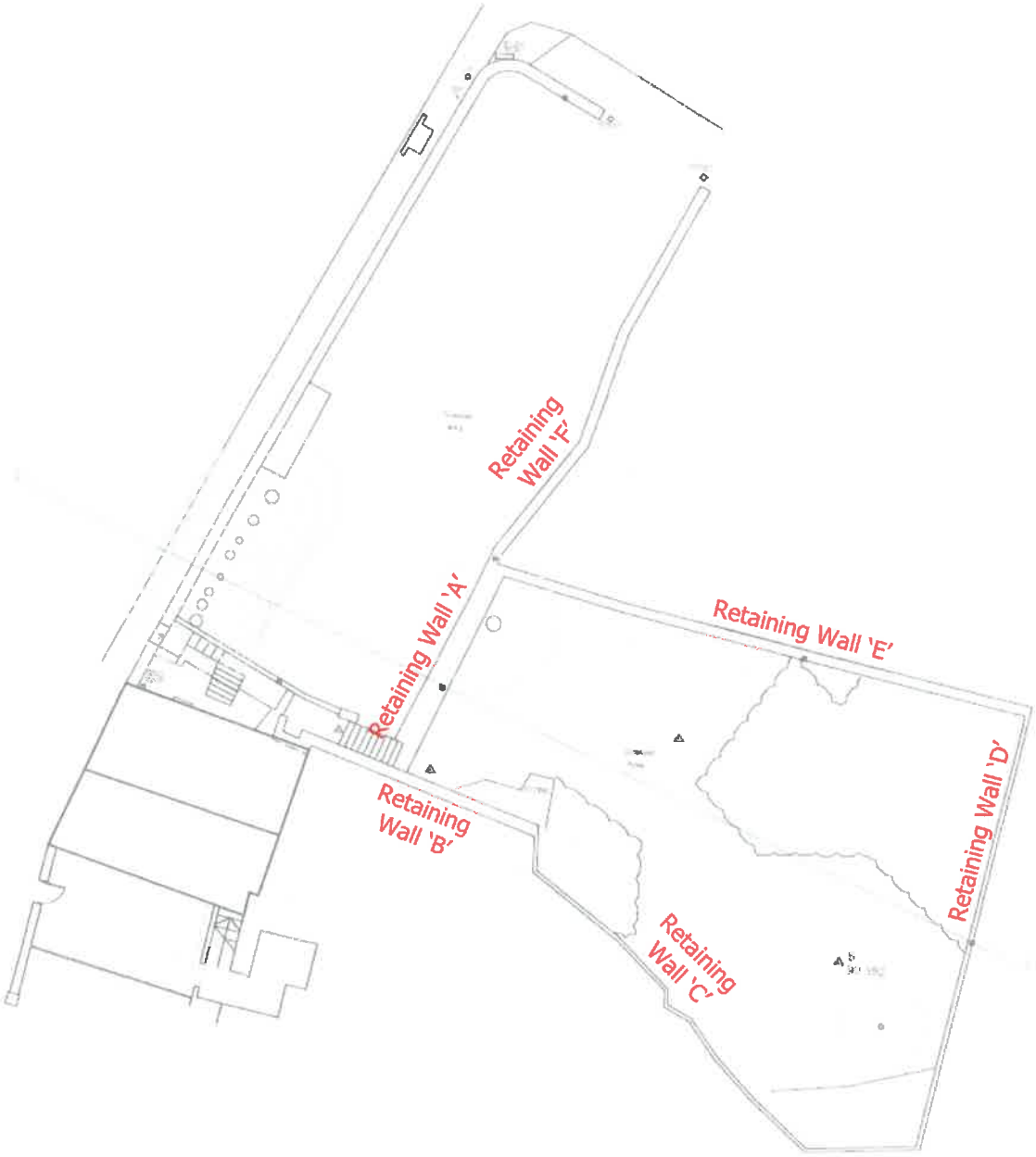

Figure 1 – Location of retaining walls

Retaining Wall 'C'

The retaining wall largely consists large outcrops of bedrock infilled with small sections of random dry stone retaining wall.

The overall stability of retaining wall 'C' appears to be reasonable.

Retaining Wall 'D'

The retaining wall retains approximately 1.0m, and (from what can be seen) is approximately 300mm thick. The retaining wall has a parapet of approximately 750mm. Refer to photographs 12 and 13.

Retaining wall 'D' was difficult to inspect due to the amount of vegetation growing over it. However, from the areas that could be inspected, the retaining wall appeared to be in a good structural condition.

Retaining Wall 'E'

The retaining wall retains approximately 1.5m, and (from what can be seen) is approximately 450mm thick. The retaining wall has a parapet of approximately 750mm. Refer to photographs 14 to 19.

Retaining wall 'E' was difficult to inspect due to the amount of vegetation growing over it. However, from the areas that could be inspected, the retaining wall appeared to be in a reasonable structural condition.

A lean to the retaining wall of approximately 150mm was noted when measured from top to bottom. Using the 'middle-third' rule-of-thumb, this is the maximum allowable rotation of the retaining wall before there will be significant stability issues and as a result, it is recommended that to relieve the lateral water pressures, it is recommended that a series of weep-holes are installed by core drilling 50mm holes at 900mm centres 150mm above ground level.

There is a tension masonry crack to the western end of retaining wall 'E' of approximately 50mm. This masonry crack is due to the bow which has occurred to retaining wall 'A'.

Retaining Wall 'F'

The retaining wall retains approximately 3.0m, and (from what can be seen) is approximately 450mm thick. The retaining wall has a parapet of approximately 750mm. Refer to photograph 5.

Retaining wall 'F' was difficult to inspect due to the amount of vegetation growing over it. However, from the areas that could be inspected, the retaining wall appeared to be in a good structural condition with no bulges or cracks.

For the proposed development of the site, it is recommended that the foundations interacting with the retaining walls are carefully considered by the designer and the methods of installation are carefully considered by the contractor. The new foundations should be designed and installed in such a manner that no loadings from the foundation should be exerted onto the retaining walls so that their stability is not adversely affected.

It is recommended that following re-pointing work to the masonry, a regular programme of maintenance is put in place by the owner where the property is observed on a regular basis.

Summary

Generally, the retaining walls are in a reasonable state of structural repair. A number of minor points require addressing as follows:

- Weep-holes should be installed to retaining walls 'A', 'B' and 'E'.
- To retaining wall 'B', the steps should be left in place and a buttress should be formed to maintain stability.

For the proposed development of the site, it is recommended that the foundations interacting with the retaining walls are carefully considered by the designer and the methods of installation are carefully considered by the contractor. The new foundations should be designed and installed in such a manner that no loadings from the foundation should be exerted onto the retaining walls so that their stability is not adversely affected.

It is recommended that following re-pointing work to the masonry, a regular programme of maintenance is put in place by the owner where the property is observed on a regular basis.

Appendix 1 – Photographs

Figure 2 – Location of photographs

Photograph 1 – Retaining Wall 'A'

Photograph 2 – Retaining Walls 'A' & 'B'

Photograph 3 – Retaining Walls 'A' & 'B'

Photograph 4 – Retaining Wall 'A'

Photograph 5 – Retaining Wall 'F'

Photograph 6 – Retaining Wall 'E'

Photograph 7 – Retaining Wall 'B'

Photograph 8 – Retaining Wall 'B'

Photograph 9 – Retaining Wall 'C'

Photograph 10 – Retaining Wall 'C'

Photograph 11 – Retaining Wall 'C'

Photograph 12 – Retaining Wall 'D'

Photograph 13 – Retaining Wall 'D'

Photograph 14 – Retaining Wall 'E'

Photograph 15 – Retaining Wall 'E'

Photograph 16 – Retaining Wall 'E'

Photograph 17 – Retaining Walls 'A' & 'E'

Photograph 18 – Retaining Wall 'E'

Photograph 19 – Retaining Wall 'E'

Photograph 20 – Retaining Walls 'A' & 'B'