ING Design Limited. Railway House, Railway Road, Chorley.

Structural Report on Boundary Retaining Wall

25, Rochester Drive, Burnley

Job No: 23172

Document Control Sheet

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Distribution

Organisation	Contact	Copies
	Isra Rahman	1

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1 Executive Summary

1.1 ING Design Limited were appointed by Isra Rahman to undertake a structural inspection of the boundary retaining wall at the rear of the property at 25, Rochester Drive, Burnley

1.2 The purpose of the inspection was to assess the structural condition of the retaining wall and make recommendations for any remedial repairs necessary.

1.3 The inspection took place on Wednesday 19th July 2023.

1.4 The structure inspected is a residential boundary retaining wall approximately 1.8m tall.

1.5 The retaining wall has several vertical and horizontal cracks indicating and is bowing outward caused by excessive pressure from the retained earth and several mature trees very close to the back of the retaining wall. Some remedial repair work will be required.

1.6 No online data was consulted.

1.7 This Report is presented to Isra Rahman and may not be used or relied on by any other person or by the client in relation to any other matters not covered specifically by the scope of this Report.

1.8 Notwithstanding anything to the contrary contained in the Report, ING Design Limited is obliged to exercise reasonable skill, care, and diligence in the performance of the services and ING Design Limited shall not be liable except to the extent that it has failed to exercise reasonable skill, care and diligence, and this report shall be read and construed accordingly.

1.9 This Report has been prepared by ING Design Limited. No individual is personally liable in connection with the preparation of this Report. By receiving this Report and acting on it, the client or any other person accepts that no individual is personally liable whether in contract, tort, for breach of statutory duty or otherwise.

2 External Observations:

2.1 The boundary retaining wall is approximately 1.8m tall and assumed to be supporting a retained height of approximately 1m on the property side.

2.2 The wall fronts on to the back of the footpath on the southbound lane of Marsden Road. Photograph 01 gives a general view of the retaining wall and the trees growing immediately behind the top of the wall.

2.3 The retaining wall was checked for verticality using a 1.2m spirit level and found to be leaning outward at the top of the wall as indicated in photograph 02.

2.4 Photograph 03 shows a detailed elevation of that part of the wall most affected by the lateral movement. The vertical crack extends fully down from the coping stones to the surface of the footpath.

2.5 Photograph 04 shows a close-up view of the degree of the differential horizontal movement between the upper half of the wall and the lower half.

2.6 Photograph 05 shows a detail of one of the masonry piers which can be seen to be leaning outward almost as much as the wall panel between the piers.

3 Conclusions:

3.1 The retaining wall is showing all the structural indicators of distress. The excessive pressure on the retaining wall is no doubt caused be the presence of the very large mature trees. Retaining wall of this type would never normally be designed and constructed to withstand the root pressure from such trees.

3.2 Due to the location of the retaining wall and the presence of the public highway we would recommend that the retaining wall isn't taken down and rebuilt as there would be a whole host of red tape involved in getting the proposed new design approved by the local authority highways department.

3.3 We have used our reasonable endeavours to provide information that is correct and accurate and have discussed above the reasonable conclusions that can be reached based on the information available.

3.4 A comment on the anticipated costs of the proposed remedial works. We are unable to estimate the cost of the tree surgery required as we are not aware exactly how many trees are involved and how many of these have Tree Protection Orders on them which need to be revoked. However, we would loosely estimate that the cost of the construction work involved in the regrading of the garden levels, reducing the height of the retaining wall and carrying out the proposed crack repair works could easily be between £10k and £15k. If accurate quotations are required we can obtain these from building contractors we work with who have the necessary skills and experience.

4 Recommendations:

4.1 We would recommend that the tall mature trees at the back of the wall are immediately removed. We understand that one or more of the trees may be subject to TPO's. However, under the circumstances the trees are putting the public at risk from the collapse of the retaining wall and this safety aspect will surely override the TPO if affected.

4.2 We would recommend that the garden levels adjacent to the back face of the retaining wall are reduced to allow the height of the front face of the retaining wall to be reduced by 50%. The garden may be tiered with new retaining structures being introduced remote from the back of the main retaining wall or gradually sloped to meet the top of the retaining wall at its new 50% reduced height.

4.3 Following the reduction in the height of the main retaining wall we would recommend that the cracks are repaired using crack stitching techniques in conjunction with the installation of 'Helibar' bed joint reinforcement along the full length of the wall panel between the masonry piers.

4.4 If the garden is to be made secure from the public then we would recommend the installation of a post and panel garden fence set back from the top of the wall by approximately 0.5m.

4.5 Going forward we would confirm that the growth of mature trees is to be permanently avoided close to the top of the main retaining wall.

5 Appendix A:

Photograph 01 – General view of the front face of the retaining wall.

Photograph 02 – Showing the horizontal movement over the height of the retaining wall.

Photograph 03 – Showing a detail elevation of the area most affected by the lateral movement in the retaining wall.

Photograph 04 – Showing the extent of the differential lateral movement of the upper half of the retaining wall.

Photograph 05 – Showing the lateral movement at the top of the masonry piers.