

Bratton House, Retaining Wall

Structural Report

For Mr I Stourton

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Conley Structural Engineers 2026

Executive Summary

A structural inspection of the garden retaining wall at Bratton House, Bratton, was undertaken to assess its condition, stability, and ongoing performance. The wall retains approximately 2.9m of soil with an additional 0.5m of wall above ground level and is of mixed traditional masonry construction, comprising both stone and brickwork.

The inspection identified a clear variation in condition across the wall. The upper brickwork and the main brick retaining section are generally in satisfactory condition, with only minor defects such as localised mortar deterioration. These areas show no significant signs of structural movement and are considered to be performing adequately at present.

However, the stone masonry section of the wall is exhibiting significant outward lean and horizontal bowing toward the neighbouring property. This deformation appears to be progressive and is indicative of a loss of structural capacity to resist retained ground pressures. Localised areas of loose and displaced stonework were observed, along with evidence of previous patch repairs using brickwork. Although no major cracking was noted, the degree of movement and deterioration presents an increased risk of further displacement or localised collapse if left unaddressed.

The likely causes of the observed condition include the age and traditional construction of the wall, lack of effective drainage leading to increased lateral and hydrostatic pressures, and the influence of ground conditions comprising clay and greensand soils. In addition, nearby vegetation, including mature trees and smaller growth close to the wall, is likely contributing to ground movement and ongoing deterioration.

The wall, as a whole, is therefore considered to be structurally deficient due to the condition of the stone section, which governs its overall stability. Given the extent of movement and deterioration observed, localised repair alone is not considered to be a suitable or reliable solution.

Remedial works are recommended to address the identified issues. The bowing stone section should be demolished and reconstructed to provide adequate structural performance. A partial reconstruction of the affected section is anticipated to cost in the region of £15,000-£30,000, depending on the chosen construction method and site constraints. Additional measures, including the incorporation of appropriate drainage and the management of vegetation, are also strongly advised.

In summary, while parts of the wall remain in acceptable condition, the defective stone section requires replacement. Timely intervention is necessary to prevent further deterioration and to mitigate the risk of structural failure.

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1.0 Introduction

This report presents the findings of a structural inspection and assessment of the garden retaining wall located at Bratton House, Bratton. The purpose of the assessment is to evaluate the current condition, structural integrity, and performance of the retaining structure, and to identify any defects, signs of movement, or areas of concern that may affect its stability and safety.

The retaining wall forms part of the landscaped garden and is intended to support changes in ground level while preventing soil displacement. Over time, such structures can be subject to deterioration due to factors including weathering, ground movement, drainage issues, and vegetation growth. This report has been prepared following a visual inspection of the wall and its immediate surroundings, supplemented by professional judgement and relevant engineering principles.

The scope of this report includes a description of the wall construction (where visible), an assessment of its condition, identification of defects, and recommendations for any necessary remedial works or further investigations. The findings and recommendations are intended to assist the property owner in maintaining the structural performance and longevity of the retaining wall.

2.0 General

We have not inspected any woodwork or structural elements that are covered, concealed, or otherwise inaccessible. As a result, we cannot confirm whether such parts of the property are free from defects.

This report has been prepared solely for your use and that of your professional advisers. We accept responsibility to you only, and only for the purposes stated in this report, to exercise the level of skill and care reasonably expected of a competent Chartered Engineer. We accept no liability whatsoever to any other party. Any third party who relies on this report does so entirely at their own risk.

3.0 Description

The retaining wall is of traditional masonry construction and is understood to retain approximately 2.9m of soil, with an additional 0.5m of wall projecting above the retained ground level. At the top of the wall, the thickness is approximately 440mm; it is assumed that the wall increases in thickness with depth, in line with typical historic retaining wall construction practices.

The uppermost 0.5m of the wall is constructed in brickwork and incorporates a coping detail along its full length, intended to provide protection to the wall head and reduce water ingress. Beneath this, the wall transitions into a retaining structure. At the upper section of the retained height, the wall is formed primarily of stone masonry. However, there are localized areas where stonework has become displaced or has deteriorated, and these sections have been infilled or repaired using brickwork.

From approximately ground level downwards, the wall is predominantly constructed in brickwork, forming the main retaining element. The masonry appears to be of mixed construction overall, reflecting both original build methods and subsequent repair works.

The foundations were not exposed or inspected as part of this assessment. However, given the apparent age and form of the structure, it is considered likely that the wall is founded on mass stone footings, potentially thickened to distribute loads from the retained soil. The exact depth, width, and condition of the foundation remain unknown.

Overall, the wall comprises a combination of stone and brick masonry, with a thicker section at depth assumed, and includes a continuous coping detail at the top.

Below is a screenshot using Google Earth, depicting the location of the wall.



4.0 Observations

4.1 Inspection

Date of Inspection: 29th March 2026

Time of Inspection 10.00am

Weather Conditions Sunny, clear

4.2 Observations

A detailed visual inspection of the retaining wall was undertaken from all accessible vantage points, including both the garden side and, where visible, the neighbouring side. The wall displays differing performance characteristics depending on the construction material and location, with the most significant concerns associated with the stone masonry section.

The lower portion of the wall, formed predominantly of irregular stone masonry, is observed to be leaning outward into the neighbouring garden. This lean is accompanied by a pronounced horizontal bowing along the length of the wall, indicating lateral displacement consistent with sustained earth pressure from the retained soil. The deformation appears to be progressive rather than localised, suggesting that the wall is acting as a flexible mass rather than a rigid element. While no major through-cracks or open fractures were identified within this section, the absence of cracking should not be taken as an indication of stability, as movement in mass masonry walls can often occur through joint deformation and internal rearrangement rather than discrete cracking.



There are several areas within the stonework where the masonry appears loose and poorly bonded, with mortar joints significantly deteriorated or missing altogether. Individual stones appear to have become dislodged or are at risk of displacement, particularly in zones where previous failures have occurred. Evidence of historic localised repairs is visible, with sections of stonework having been replaced or infilled with brickwork. These repairs appear to have been undertaken in an ad hoc manner and do not provide uniform structural continuity with the surrounding stone masonry. The interface between original stonework and later brick infill may represent planes of weakness within the wall. It was reported to Conley that the outward movement and deformation of this section have increased over time, which is consistent with the observed condition and suggests an ongoing mechanism of instability, potentially exacerbated by factors such as poor drainage, increased surcharge loading, or seasonal moisture variation.



Vegetation growth is also noted within joints of the stone and brickwork, including small plants and rooted material. This vegetation can contribute to further deterioration by widening joints, retaining moisture, and introducing root action that may displace masonry units over time.

In contrast, the upper section of the wall, comprising approximately 0.5m of brickwork above the retained ground level, appears to be in generally good condition. The brick courses are relatively uniform, and the masonry shows no significant signs of distortion, bowing, or structural cracking. Mortar joints in this section are generally intact, with only minor weathering observed. The coping detail along the top of the wall appears continuous and largely undisturbed, providing an element of protection against direct water ingress into the wall core. No significant displacement or failure of the coping units was observed.



The main retaining section constructed in brickwork (below the upper stone transition and extending toward ground level on the exposed face) is also observed to be in comparatively sound condition. This section does not exhibit the same degree of deformation as the stonework, and no notable bowing or structural cracking was identified. The wall face appears relatively plumb in this area. However, there are isolated zones where mortar joints have deteriorated, receded, or “blown.” This is likely attributable to long-term weathering and freeze-thaw cycles, particularly in areas exposed to moisture ingress. While these defects are currently minor and localised, they may allow increased water penetration into the wall, which could contribute to longer-term deterioration if not addressed.



Staining, biological growth (including lichen and moss), and general weathering are evident across much of the wall surface, indicating prolonged exposure to moisture. No obvious drainage provisions, such as weep holes, were observed within the inspected sections, which may contribute to the build-up of hydrostatic pressure behind the wall, particularly within the more deforming stone section.

In summary, the inspection identifies a clear distinction in performance between the different construction types within the wall. The stone masonry section is exhibiting significant outward lean, bowing, and localised instability, with evidence suggesting that this condition is progressive. Conversely, the brickwork sections, both at the top and within the main retaining height, are generally performing satisfactorily, with only minor defects noted. The overall condition of the wall is therefore governed by the behaviour of the stone section, which currently represents the principal structural concern.

5.0 Discussion

The inspection findings indicate that the primary structural concern relates to the stone masonry section of the retaining wall, which is exhibiting outward lean and pronounced bowing. This behaviour is characteristic of a retaining structure that is no longer adequately resisting lateral earth pressures and is undergoing progressive deformation.

A number of contributing factors are considered likely to be influencing the observed condition.

Firstly, the age of the wall is a significant factor. The construction appears to be of traditional mass masonry, built without modern design standards, reinforcement, or engineered drainage provisions. Over time, such walls are susceptible to gradual deterioration of mortar joints, internal loss of cohesion, and redistribution of loads within the wall mass. The observed loosening of stonework and loss of bonding are consistent with long-term degradation.

Secondly, the absence of effective drainage behind the wall is likely to be contributing to increased lateral loading. Without adequate drainage measures such as weep holes or granular backfill, water can accumulate within the retained soil, generating hydrostatic pressure in addition to earth pressure. This can significantly increase the forces acting on the wall, particularly during prolonged wet periods, accelerating outward movement and bowing.

The presence of clay soils in the area is also a key consideration. Clay is known to undergo volumetric changes in response to moisture variation, expanding when wet and shrinking when dry. This cyclical movement can impose additional lateral pressures on retaining structures and lead to progressive displacement over time. Furthermore, softened clay under saturated conditions may reduce the effective bearing capacity at foundation level, potentially contributing to rotation or sliding of the wall.

Vegetation is another important factor influencing the wall's performance. There are a number of mature trees located approximately 8m behind the wall, as well as smaller trees and vegetation in close proximity to the rear face. Tree roots can extend significant distances and may interact with the retained soil and the wall structure itself. Roots can exert pressure within the soil mass, disturb the backfill, and in some cases physically displace masonry units. Additionally, trees contribute to seasonal moisture variation in clay soils through water uptake, which can exacerbate shrink-swell cycles and associated ground movement.

Smaller vegetation growing directly behind and within the wall is also of concern. Root systems from these plants can penetrate joints and voids within the masonry, widening existing defects and accelerating deterioration. The presence of vegetation within the wall face indicates prolonged moisture retention and lack of maintenance, both of which contribute to material degradation.

The historic repairs observed within the stone section, where brickwork has been used to infill areas of lost masonry, may also be contributing to the current condition. These repairs are likely to have different stiffness and bonding characteristics compared to the original stonework, creating zones of differential behaviour and potential weakness. Such inconsistencies can lead to uneven load distribution and localised instability.

6.0 Conclusions & Recommendations

The retaining wall at Bratton House is of traditional masonry construction and exhibits varied performance across its length. The upper brickwork and the main brick retaining section are generally in satisfactory condition, with only minor and localised defects noted, primarily relating to mortar deterioration.

However, the stone masonry section of the wall is exhibiting significant outward lean and bowing, indicating a loss of structural adequacy in resisting retained ground pressures. The condition appears to be progressive, with evidence of prior localised failure and repair, as well as reports that the movement has worsened over time. Although no major cracking is currently visible, the deformation and presence of loose masonry units indicate an increased risk of localised collapse, particularly if deterioration continues.

The overall stability of the retaining wall is therefore governed by the condition of the stone section, which must be considered structurally deficient in its current state. Contributing factors are likely to include the age of the structure, lack of effective drainage, the presence of clay and greensand soils, and the influence of nearby vegetation.

Given the extent of deformation and loss of integrity within the stone masonry, remedial repair works alone are not considered sufficient to restore the wall to an acceptable level of stability. Measures such as localised repairs, ground anchors, or the introduction of intermediate buttresses are unlikely to provide a reliable or durable solution due to the overall condition and behaviour of the wall. The defective section should therefore be considered beyond economical repair and require replacement.

Partial Reconstruction (Targeted Section Replacement)

Demolish and reconstruct the affected stone section of the retaining wall.

Rebuild using either mass masonry or reinforced concrete backing with a masonry facing to match existing appearance.

Incorporate proper drainage (weep holes, land drain, granular backfill).

Improve local ground conditions if required.

Indicative cost: £15,000 - £30,000

Comment: Provides a more robust and longer-term solution for the defective section while retaining the remainder of the wall.

Additional Recommendations:

Remove or manage vegetation directly behind the wall, particularly smaller trees and shrubs.

Seek advice from an arboriculturist regarding the influence of larger trees within approximately 8m of the wall.

Monitor the wall for further movement if immediate works are not undertaken (e.g. install tell-tales or undertake periodic surveys).

Ensure surface water is directed away from the wall to reduce saturation of retained soils.

Overall, timely intervention is recommended to prevent further deterioration and reduce the risk of localised failure of the stone masonry section.