GROUND MOVEMENT ASSESSMENT REPORT

4 Greenaway Gardens
London
NW3 7DJ

Client: Mr V Israelian

Engineer: Richard Tant Associates

J14381A

April 2015




GEA Geotechnical & Environmental Associates

Document Control

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1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by Richard Tant Associates on behalf of Mr V Israelian to complete a ground movement assessment for the proposed construction of a new basement beneath No 4 Greenaway Gardens, London, NW3 7DJ. The new single level basement will extend beneath part of the rear garden area and existing single storey extension to the side of the house.

A Desk Study, Ground Investigation and Basement Impact Assessment Report has previously been carried out by GEA (report ref J14381, Report Issue 4, dated 1 April 2015), the findings of which have been used in the derivation of parameters for use in this assessment.

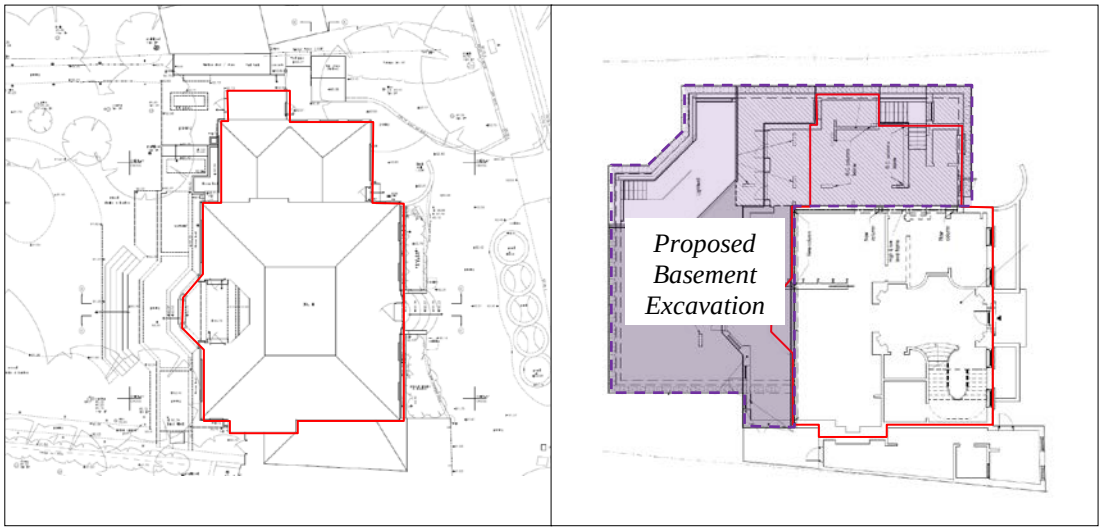
A Structural Methodology Report (ref RT/SMS/4138, dated 30 March 2015) has been completed by Richard Tant Associates and is referred to in this document, where relevant.

The purpose of this assessment has been to determine the effects of the proposed basement construction upon the neighbouring houses of Nos 3 and 5 Greenaway Gardens.

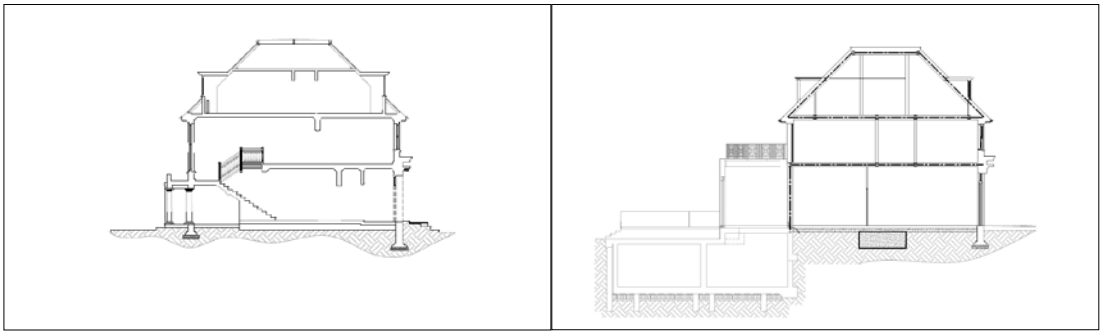
1.1 Proposed Development

It is understood that consideration is being given to the partial demolition of the existing building, and construction of a new single level basement extending to about 4.20 m below the existing single storey extension at the side of the house and partially into the rear garden. The basement formation level will be at approximately 87.0 m OD.

It is understood that beneath the northwestern and southwestern elevations of the existing house the basement will be formed of underpinned retaining walls, with the remainder supported by means of secant piled retaining walls.



Plan: Existing *Plan: Proposed*



Section: Existing *Section: Proposed*

This report is specific to the proposed development and the advice herein should be reviewed if the development proposals are amended.

1.2 Limitations

The conclusions and recommendations made in this report are limited to those that can be made on the basis of the investigation. The results of the work should be viewed in the context of the range of data sources consulted, the number of locations where the ground was sampled and the number of soil, gas or groundwater samples tested; no liability can be accepted for information in other data sources or conditions not revealed by the sampling or testing. Any comments made on the basis of information obtained from the client or other third parties are given in good faith on the assumption that the information is accurate; no independent validation of such information has been made by GEA.

2.0 THE SITE

2.1 Site Description

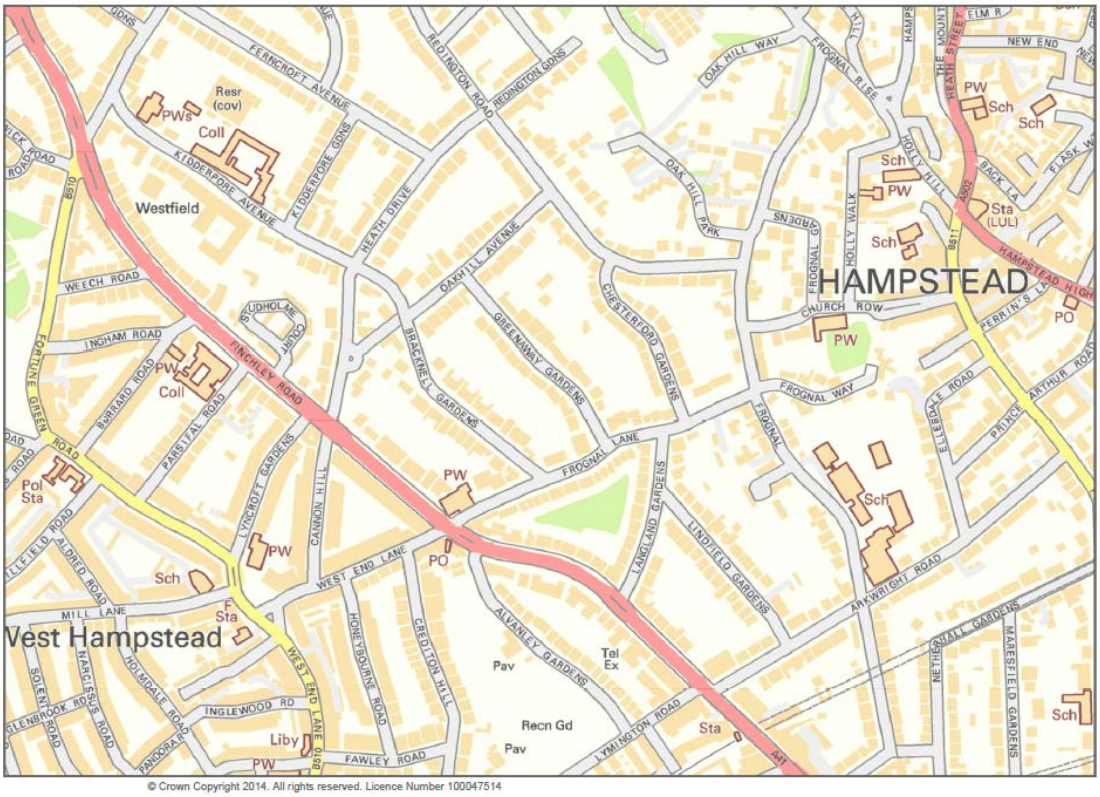
The site is located in a residential area in the London Borough of Camden, approximately 570 m southwest of Hampstead London Underground Station, and 800m northeast of West Hampstead Thameslink Railway Station. It fronts onto Greenaway Gardens to the northeast and is bounded by houses with associated garden areas to the southeast and northwest and to the southwest by the garden of a similar property fronting onto Bracknell Gardens. The site may be additionally located by National Grid Reference 525814, 185518 and is shown on the map extract overleaf.

A walkover of the site was carried out by a geotechnical engineer from GEA at the time of the fieldwork. The site is located on a hill which slopes down towards the south, and is essentially rectangular in shape, measuring approximately 55 m by 26 m, covering an area of approximately 1,372 m^2. The site is occupied by a detached three-storey house with associated areas of soft landscaping and hardstanding. The house also has a 1.2 m deep crawl space beneath the front (eastern) half of the house, and this extends for approximately three-quarters of the width of the house. In addition, the garage that adjoins the southern side of the house is cut into the slope, such that the floor of the garage is at the same level as the floor of the crawl space below the house.

The front garden comprises an area of hardstanding forming the driveway which slopes down towards the south, with a series of small raised ponds running parallel to Greenaway Gardens. The rear garden includes a patio adjacent to the house with a central area of lawn with planted

beds to the north and south and a pond towards the western boundary. A number of small raised planted beds are also present in areas of the patio.

A topographical survey provided by the consulting engineer (drawing ref 227704A/1, dated November 2014) shows that the driveway at the front varies in level from approximately 92.8 m OD in the north, to 91.4 m OD in the south. In the garden to the rear, the raised patio area varies from 92.7 m OD in the north, to 92.4 m OD in the south. The rear garden slopes down to the west: the level of the garden at the base of the patio steps is approximately 91.6 m OD, whilst toward the western boundary fence the level is approximately 90.2 m OD.



3.0 SUMMARY OF GROUND CONDITIONS

The GEA investigation generally confirmed the expected ground conditions in that, below a moderate thickness of made ground, the Claygate Member was encountered over the London Clay, which extended to the maximum depth of the investigation, of 15.00 m.

The made ground extended to depths of between 0.20 m and 0.30 m and generally comprised clayey sand and concrete gravel or slightly sandy gravelly clay with rare cobbles.

The Claygate Member comprised brown mottled orange-brown and grey silty clay and clayey silt, with occasional pockets of fine sand. The strength of the material was generally initially soft to 0.7 m, becoming firm to 3.0 m to 4.0 m, and then stiff. The Claygate Member extended to depths of between 5.9 m and 6.4 m; at the front of the property the boundary was encountered at approximately 86.30 m OD to 87.15 m OD.

The London Clay generally comprised firm becoming stiff fissured grey silty clay with

occasional fine sand partings and shell fragments.

Groundwater was initially encountered at depths of between 4.00 m (88.37 m OD) and 6.00 m (85.60 m OD) below which inflows of groundwater were sporadically encountered to the full depth of the investigation, of 15.00 m. Groundwater has subsequently been measured at depths of between 0.93 m (91.44 m OD) and 2.65 m (89.90 m OD) within the standpipes installed in a selection of the boreholes.

The Geological Survey map of the area (Sheet 256) indicates that the wider area is shown as having a "Head Propensity". The site itself is shown as not being in an area of Head Propensity, although it is located very close to the boundary of such an area. According to the BGS map, dated 2006, the Head propensity is based on the geotechnical properties of the London Clay and head may occur close to the Claygate Member / London Clay boundary. Head propensity is shown on the BGS map as areas denoted as most likely to be covered by Quaternary Head Deposits as interpreted from digital slope analysis and confirmed by borehole data. These are not mapped and have not been verified by fieldwork.

GEA has previously carried out a ground investigation at No 3 Greenaway Gardens, where, beneath a moderate thickness of made ground, the Claygate Member was encountered over the London Clay, which was proved to the maximum depth investigated, of 25.0 m.

4.0 CONSTRUCTION SEQUENCE

The following sequence of operations has been proposed by the consulting engineers to enable analysis of the ground movements around the basement both during and after construction.

In general, the sequence of works for basement construction will comprise the following stages.

1. Construct underpinned retaining walls to boundary with existing building and foundations. These are commonly formed in a 'hit and miss' sequence using a trench box excavation, commonly sheet lined, shored and strutted; all temporary shoring and propping to be inspected by a suitably qualified person;

2. construct secant piled retaining wall to remaining sides of basement; and

3. excavate new basement and temporarily retain and strengthen, with sufficient propping and walling beams, the new retaining walls.

Lowering of the existing ground floor level beneath existing building has not been considered within this assessment.

The underpins will be adequately laterally propped and sufficiently dowelled together, concrete cast and adequately cured prior to excavation of the basement and removal of the formwork and supports.

For the purpose of this assessment the secant wall has been assumed to extend to depths of either 6 m, 8 m or 10 m.

Following the installation of the bored pile wall and capping beams at ground level,

temporary props will be installed and the basement excavation will proceed. The detail of section sizes and spacings will be finalised by the contractor but it is anticipated that the general philosophy adopted will be for diagonal braces to be used across the corners or returns of the basement walls whilst props will be positioned at regular intervals along the long walls of the basement. Where horizontal restraint cannot be provided by other parts of the piled wall the prop forces will be provided by so-called 'flying shores' where the reaction to horizontal forces is provided by pile caps, gravity blocks or basement thickenings in the centre of the excavation.

It is anticipated that steel temporary props will be used with strut forces spread along the wall by steel waling beams fixed to the piles although the detail of the propping is yet to be finalised.

Excavation will proceed in stages and in broad terms the order of operations will be install capping beam props, excavate to a suitable depth, install props and finish the final excavation after which the basement slab will be constructed and can act as a secondary structural prop.

When the final excavation depths have been reached the permanent works will be formed, which in the case of the underpinned retaining walls are likely to comprise reinforced concrete walls with a drained cavity lining the inside of the underpinned walls. Reinforced concrete will be used for floor slabs and it is anticipated that heave protection will be installed beneath the basement slab. Following this, the floor slab will be constructed at basement depth and the temporary props will be removed.

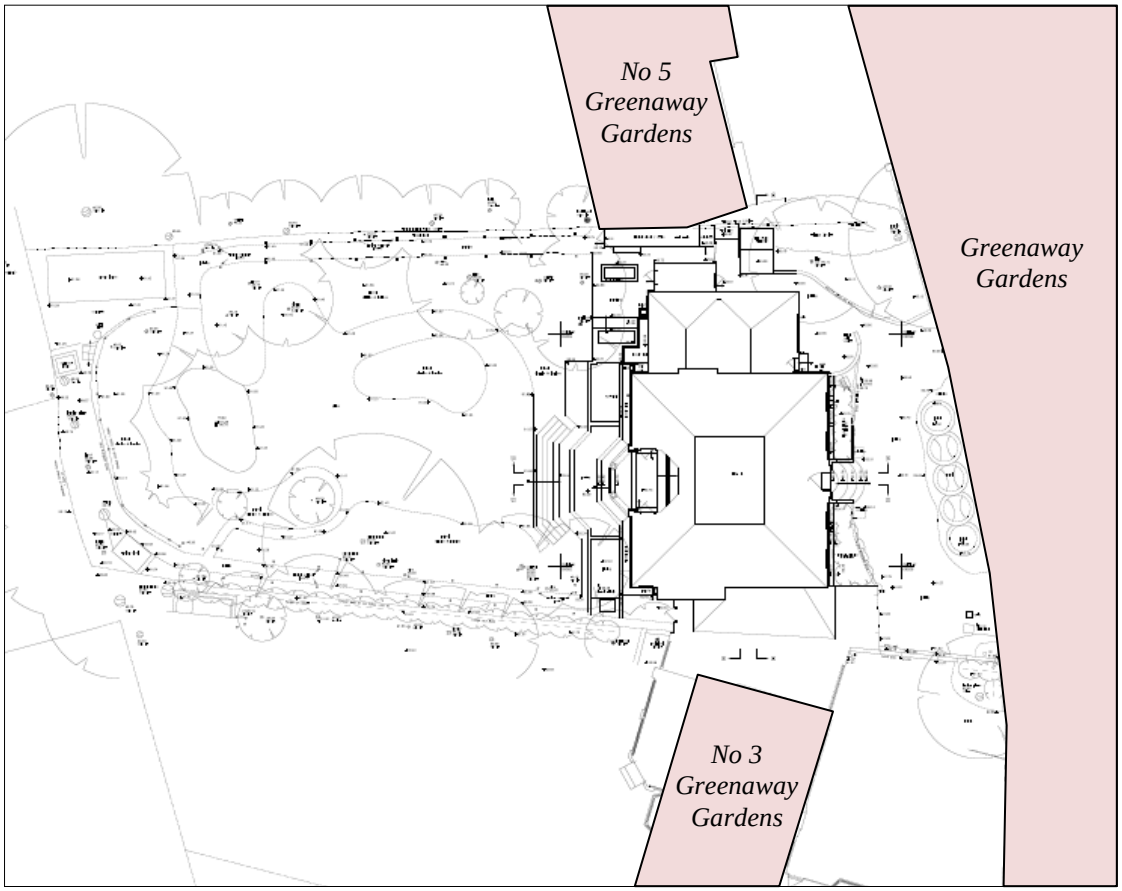
The detail of the support provided to adjacent walls is beyond the scope of this report at this stage and the structural engineer will be best placed to agree a methodology with the underpinning and piling contractors once appointed.

5.0 GROUND MOVEMENTS

An assessment of ground movements within and surrounding the excavation has been undertaken using the X-Disp and P-Disp computer programs licensed from the OASYS suite of geotechnical modelling software from Arup. These programs are commonly used within the ground engineering industry and are considered to be appropriate tools for this analysis.

The X-Disp program has been used to predict ground movements likely to arise from the construction of the proposed basement. This includes the settlement of the ground (vertical movement) and the lateral movement of soil behind the proposed retaining walls (horizontal movement).

The significant structures for which movements have been predicted are shown shaded on the plan overleaf.



The analysis of potential ground movements within the excavation, as a result of unloading of the underlying soils, has been carried out using the Oasys P-Disp software (Version 19.2 – Build 12) and is based on the assumption that the soils behave elastically, which provides a reasonable approximation to soil behaviour at small strains.

For the purpose of these analyses, the corners have been defined by x and y coordinates, with the x-direction parallel with the orientation north-west, whilst the y-direction is parallel with the orientation of south-west. Vertical movement is in the z-direction.

The full outputs of all the analyses can be provided on request and samples of the output movement contour plots are included within the appendix.

5.1 Ground Movements – Surrounding the Basement

5.1.1 Model Used

For the X-Disp analysis, the soil movement relationships used for the embedded retaining walls are the default values within CIRIA report C580[1], which were derived from a number of historic case studies.

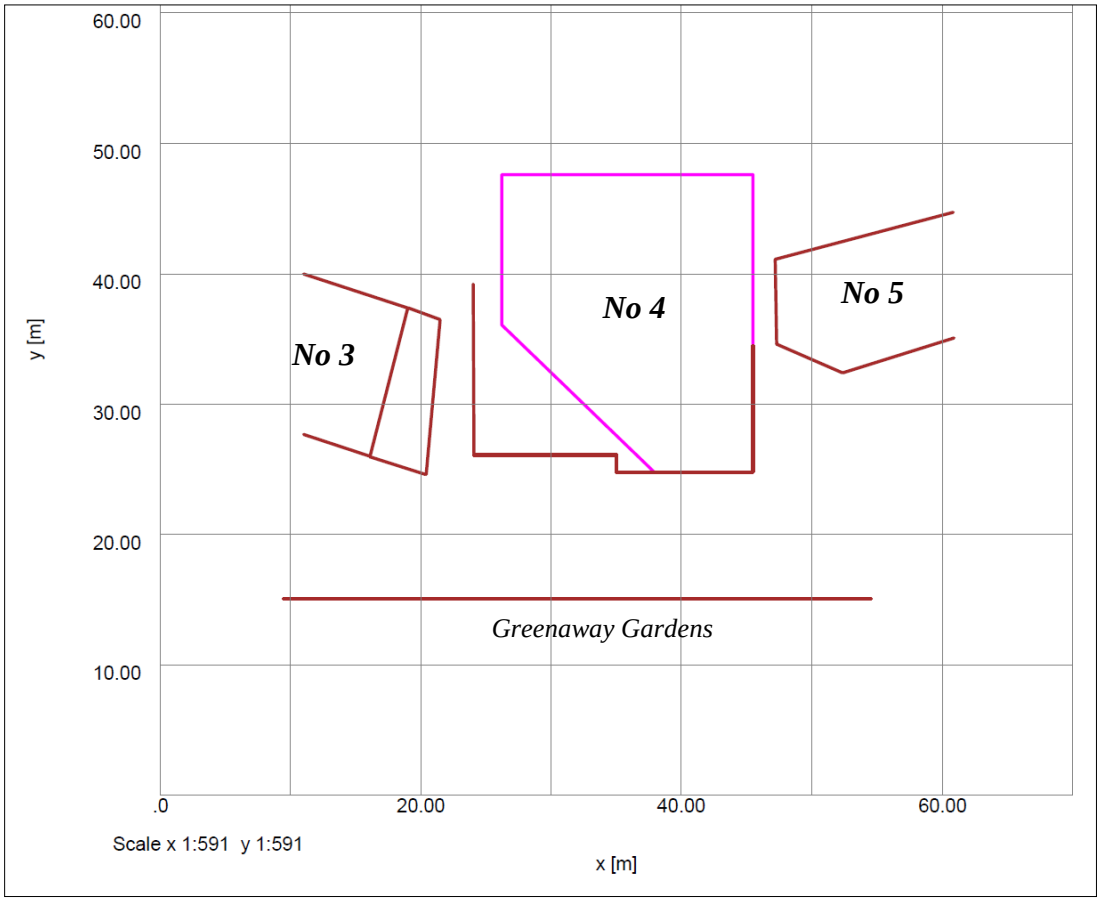
The analysis has adopted the 'installation of a planar diaphragm wall' to represent the installation of underpinned retaining walls on all sides of the excavation. Similarly, the analysis has applied 'installation of a secant wall' to the remainder of the basement walls.

[1] Gaba, A, Simpson, B, Powrie, W and Beadman, D (2003) *Embedded retaining walls – guidance for economic design* .CIRIA Report C580.

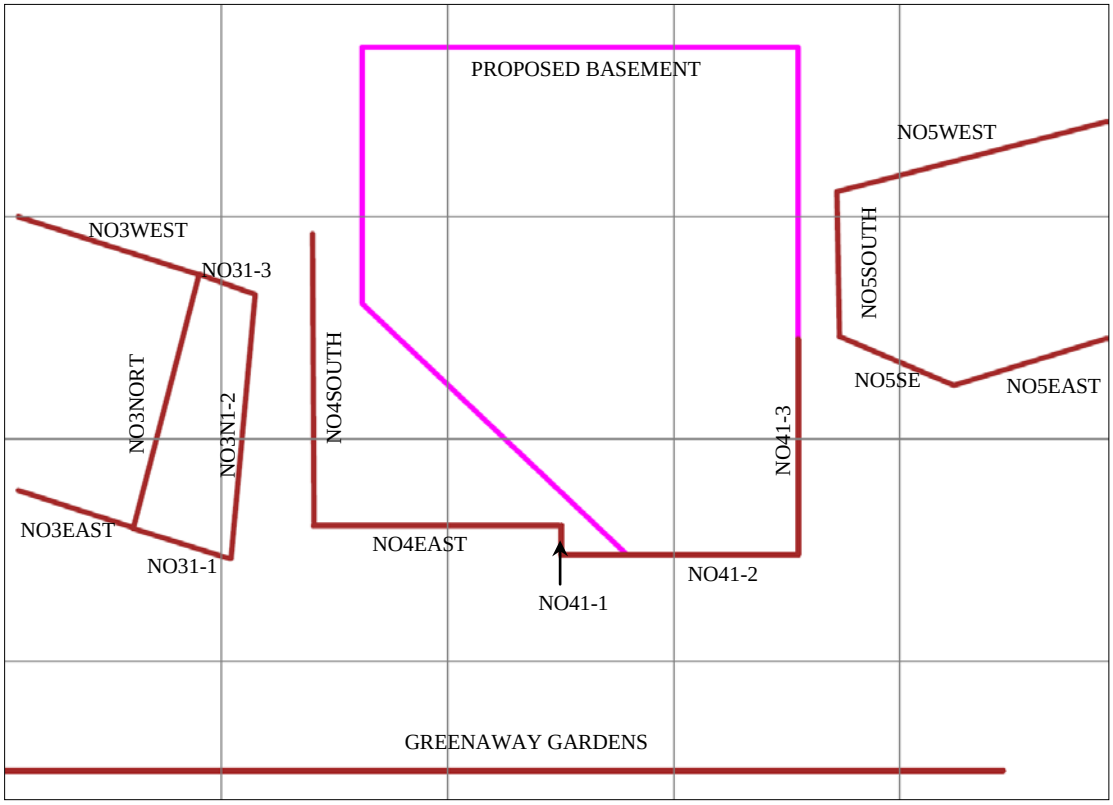
The ground movement curves for 'excavations in front of high stiffness wall in clay' have been adopted as being considered most appropriate for the proposed excavation and its support at this site. The new underpinned retaining walls are assumed to be installed to basement level, at a worst case depth of 4.2 m below existing ground level. The depth of the new secant piled retaining walls is not yet known, however for the purpose of this assessment pile depths of 6 m, 8 m and 10 m have been considered.

5.1.2 Results

The predicted movements are based on the worst case of the individually analysed segments of 'hogging' and 'sagging' and these are summarised in the tables below. It should be noted that the combined effect of segments acting together typically reduces the resultant movements and the values below are deemed to be conservative.



Plan: Displacement Analysis Points



Plan: Specific Displacement Elements

Analysis Results

Ground Movement Assessment (Wall Installation Phase)							
Sensitive Structure	Elevation	6 m Deep Piles		8 m Deep Piles		10 m Deep Piles	
		Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)	Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)	Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)
No 3 Greenaway Gardens	NO3WEST	1	1	2	1	1	1
	NO3EAST	Negligible	1	Negligible	1	Negligible	1
	NO3NORTH	1	1	1	1	1	1
	NO31-1	Negligible	1	Negligible	1	Negligible	1
	NO31-2	1	1	2	1	2	1
	NO31-3	1	1	2	1	2	1
No 4 Greenaway Gardens	NO4SOUTH	2	3	3	3	3	4
	NO4EAST	3	3	4	4	5	5
	NO41-1	3	5	4	4	5	5
	NO41-2	3	5	4	6	5	8
	NO41-3	3	5	4	7	5	8
No 5	NO5WEST	3	4	4	6	5	7

Ground Movement Assessment (Wall Installation Phase)							
Sensitive Structure	Elevation	6 m Deep Piles		8 m Deep Piles		10 m Deep Piles	
		Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)	Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)	Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)
Greenaway Gardens	NO5SOUTH	3	4	4	6	5	7
	NO5SE	3	4	4	6	5	7
	NO5EAST	2	1	3	3	4	4
Greenaway Gardens	N/A	1	1	2	2	3	3

Building Damage Assessment (Wall Installation and Excavation Combined)							
Sensitive Structure	Elevation	6 m Deep Piles		8 m Deep Piles		10 m Deep Piles	
		Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)	Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)	Maximum Vertical Settlement (mm)	Maximum Horizontal Movement (mm)
No 3 Greenaway Gardens	NO3WEST	4	1	3	4	3	4
	NO3EAST	1	1	1	1	1	1
	NO3NORTH	3	1	3	4	3	4
	NO31-1	1	1	1	2	1	1
	NO31-2	4	1	4	5	4	6
	NO31-3	4	1	4	6	4	6
No 4 Greenaway Gardens	NO4SOUTH	5	3	6	9	6	10
	NO4EAST	5	3	6	10	7	11
	NO41-1	5	3	6	10	7	11
	NO41-2	6	5	7	13	8	14
	NO41-3	6	5	7	13	8	14
No 5 Greenaway Gardens	NO5WEST	6	4	7	11	8	13
	NO5SOUTH	6	4	7	12	8	13
	NO5SE	6	4	7	11	8	13
	NO5EAST	4	1	5	6	6	8
Greenaway Gardens	N/A	2	1	3	4	4	5

The analysis has indicated that the maximum vertical and horizontal settlements that will result from new retaining wall construction are less than 15 mm.

There is a wealth of experience with respect to the construction of underpinned retaining wall beneath the existing house, suggesting that ground movements should remain typically within the range of 2 mm to 5 mm following completion of the works and provided that they are

installed by a reputable and experienced contractor in accordance with the guidelines published by the Association of Specialist Underpinning Contractors[2], which indicates that the predicted movements represent a conservative assessment of the likely movements.

5.2 Movements within the Excavation (Heave)

5.2.1 Model Used

At this site unloading of the London Clay will take place as a result of the proposed excavation and the reduction in vertical stress will lead to heave movement. Undrained soil parameters have been used to estimate the potential short term movements, which include the "immediate" or elastic movements as a result of the basement excavation. Drained parameters have been used to provide an estimate of the total long-term movement.

The elastic analysis requires values of soil stiffness at various levels to calculate displacements. Values of stiffness for the soils at this site are readily available from published data and published data[3] indicates undrained stiffness values (E_u) of 750 x Cu for the London Clay and a ratio of E' to Eu of 0.75.

The soil profile assumed in the analysis is based on SPTs and triaxial test results from the ground investigation carried out in December 2014 at No 4 Greenaway Gardens.

The proposed excavation will result in a net unloading of around 85 kN/m^2. Following construction of the new basement, an imposed pressure of 60 kN/m^2 will be applied at basement level by the new underpins, the imposed loading will act over an approximate underpin width of 1.25 m at basement depth.

A rigid boundary for the analysis has been set within the London Clay at a level of 109 m OD, which has been taken from a nearby BGS record located along Willoughby Road in Hampstead. At this site, based on the above level, the base of the London Clay is likely to be around 100 m below ground level. Below this depth the essentially incompressible soils of the Lambeth Group should be present.

5.2.2 Results

The P-Disp analysis indicates that, by the time the basement construction is complete, 5 mm to 10 mm of heave is likely to have taken place at the centre of the proposed excavation, reducing to approximately less than 5 mm at the edges.

In the long term, following completion of the basement construction, a further 5 mm to 10 mm of heave is estimated as a result of long term swelling of the underlying London Clay.

The results of the P-Disp analysis also indicate the likely impact of the proposed basement construction beyond the site boundaries. On the basis of the analysis, total vertical movements outside the proposed basement are unlikely to exceed 5 mm heave at a distance of approximately 5 m, reducing to negligible movements in excess of 10 m away.

[2] Haslam S, O'Connor L (2013) *Guidelines on safe and efficient basement construction directly below or near to existing structures* ASUC

[3] Burland JB, Standing, JR, and Jardine, FM (2001) Building response to tunnelling, case studies from construction of the Jubilee Line Extension.. CIRIA Special Publication 200

The potential movements for the associated structures are summarised in the table below.

Location		Depth below Ground Level of Analysis (m)	Heave (mm)		
Structure	Elevation		Short-term Heave (Excavation Phase)	Long-term Heave (Post Construction)	Total Heave
No 3 Greenaway Gardens	NO3WEST	0.60	< 2	≈ 1	< 3
	NO3EAST	0.60	< 1	≈ 1	< 2
	NO3NORTH	0.60	< 2	≈ 1	< 3
	NO31-1	0.60	< 1	≈ 1	< 2
	NO31-2	0.60	< 2	≈ 2	< 4
	NO31-3	0.60	< 2	≈ 2	< 4
No 4 Greenaway Gardens	NO4SOUTH	1.80	< 3	≈ 3	< 6
	NO4EAST	1.80	< 3	≈ 2	< 5
	NO41-1	0.86	< 3	≈ 2	< 5
	NO41-2	0.86	< 5	≈ 4	< 9
	NO41-3	0.86	< 6	≈ 6	< 12
No 5 Greenaway Gardens	NO5WEST	0.60	< 4	≈ 4	< 8
	NO5SOUTH	0.60	< 4	≈ 4	< 8
	NO5SE	0.60	< 4	≈ 3	< 7
	NO5EAST	0.60	< 2	≈ 2	< 4
Greenaway Gardens	N/A	0.50	< 1	≈ 1	< 2

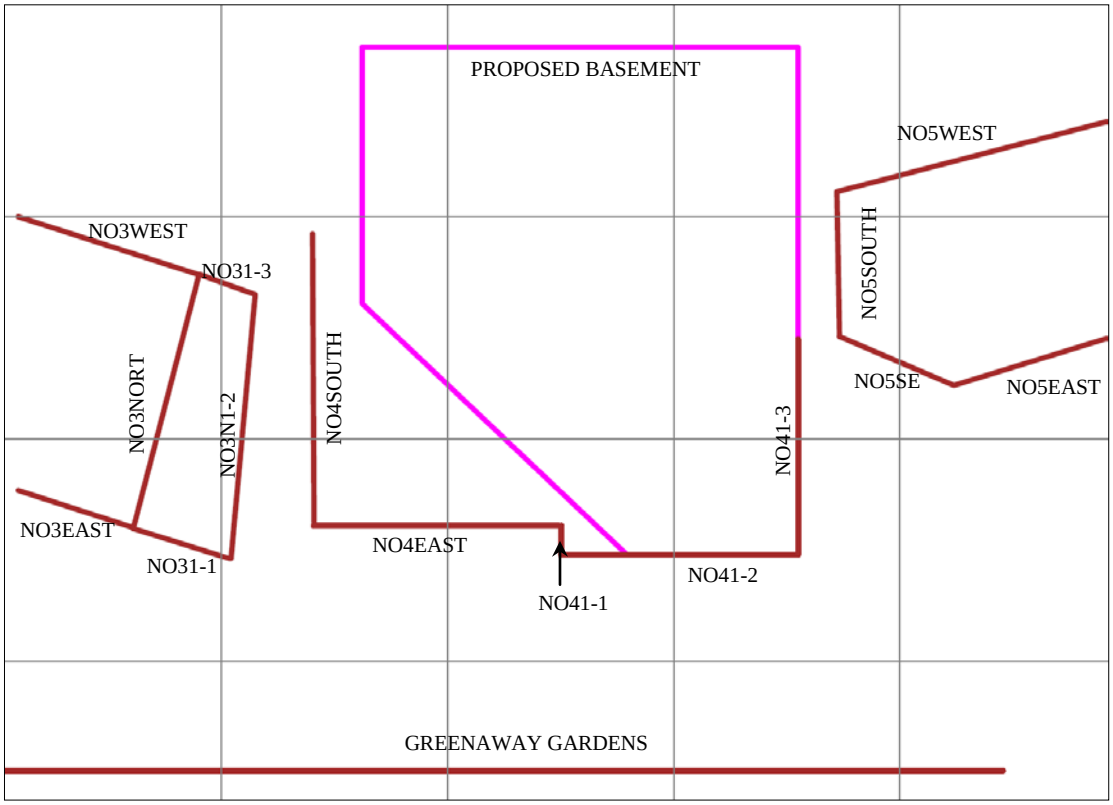
In order to mitigate the effects of heave on the new building, the new basement floor could be designed to transmit heave forces into the wall piles or onto tension piles within the basement.

Alternatively, or in any case, a void or layer of compressible material should be incorporated into the design to accommodate these potential long term movements. If a compressible material is used beneath the slab, it will need to be designed to be able to resist the potential uplift forces generated by the ground movements. In this respect potential heave pressures are typically taken to equate to around 30 % to 50 % of the total unloading pressure.

6.0 DAMAGE ASSESSMENT

In addition to the above assessment of the likely movements that will result from the proposed development, neighbouring structures, Nos 3 and 5 as well as Greenaway Gardens road are considered to be sensitive structures, requiring Building Damage Assessments, on the basis of the classification given in Table 2.5 of C580[1], commonly known as the "Burland" classification.

All structures are shown on the plan below.



Plan: Specific Displacement Elements

The previous GEA investigation at No 3 Greenaway Gardens found the building footing to extend to depths of between 0.60 m and 0.90 m in the northwestern area of the site adjacent to the boundary with No 4 Greenaway Gardens. The local authority planning portal details that planning consent has been granted for a new single level basement below this house, although the exact depth and status of construction is not known. For the purpose of this analysis, a conservative foundation depth of 0.60 m has been adopted. No 3 also appears to extend in plan to the northern site boundary of No 4.

The foundation details of No 5 Greenaway Gardens are not known and for the purpose of this investigation, the footings have been assumed to extend to a depth of 0.60 m below ground level. No 5 Greenaway gardens is roughly 3 m from the southern boundary with No 4.

The sensitive structure heights are summarised in the following table.

Sensitive Structure	Elevation	Structure Height (m)
No 3 Greenaway Gardens	NO3WEST	9.5
	NO3EAST	9.5
	NO3NORTH	9.5
	NO31-1	3.2
	NO31-2	3.2
	NO31-3	3.2

Sensitive Structure	Elevation	Structure Height (m)
No 4 Greenaway Gardens	NO4SOUTH	9.5
	NO4EAST	9.5
	NO41-1	3.2
	NO41-2	3.2
	NO41-3	3.2
No 5 Greenaway Gardens	NO5WEST	9.5
	NO5SOUTH	9.5
	NO5SE	9.5
	NO5EAST	9.5
Greenaway Gardens	N/A	0.5

6.1 Damage to Neighbouring Structures

The combined movements resulting from both retaining wall installation and basement excavation estimated using the X-Disp modelling software have been used to carry out an assessment of the likely damage to adjacent properties and the results are summarised in the table below.

The potential heave movements predicted by P-Disp have not been included in this assessment, which can therefore be considered as conservative, as these movements are likely to have a mitigating effect on the downward settlement predicted by X-Disp.

Building Damage Assessment							
Sensitive Structure	Elevation	Category of Damage*					
		6 m deep piles (uncombined segments)	6 m deep piles (combined segments)	8 m deep piles (uncombined segments)	8 m deep piles (combined segments)	10 m deep piles (uncombined	10 m deep piles (combined segments)
No 3 Greenaway Gardens	NO3WEST	Negligible	N/A (One segment)	Negligible	N/A (One segment)	Negligible	N/A (One segment)
	NO3EAST	Negligible	N/A (One segment)	Negligible	N/A (One segment)	Negligible	N/A (One segment)
	NO3NORTH	Negligible	N/A (One segment)	Negligible	N/A (One segment)	Negligible	N/A (One segment)
	NO31-1	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	NO31-2	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	NO31-3	Slight	N/A (One segment)	Slight	N/A (One segment)	Slight	N/A (One segment)
No 4 Greenaway Gardens	NO4SOUTH	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	NO4EAST	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
	NO41-1	Negligible	N/A (One segment)	Very Slight	N/A (One segment)	Slight	N/A (One segment)

Building Damage Assessment							
Sensitive Structure	Elevation	Category of Damage*					
		6 m deep piles (uncombined segments)	6 m deep piles (combined segments)	8 m deep piles (uncombined segments)	8 m deep piles (combined segments)	10 m deep piles (uncombined	10 m deep piles (combined segments)
	NO41-2	Very Slight	Negligible	Very Slight	Negligible	Slight	Negligible
	NO41-3	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible
No 5 Greenaway Gardens	NO5WEST	Moderate	Slight	Moderate	Slight	Severe	Moderate
	NO5SOUTH	Very Slight	Negligible	Slight	Very Slight	Slight	Very Slight
	NO5SE	Moderate	Slight	Moderate	Moderate	Severe	Moderate
	NO5EAST	Very Slight	N/A (One segment)	Slight	N/A (One segment)	Slight	N/A (One segment)
Greenaway Gardens	N/A	Negligible	Negligible	Negligible	Negligible	Negligible	Negligible

**From Table 2.5 of C580[1]: Classification of visible damage to walls.*

The building damage reports for sensitive structures highlighted in the above table predict that for 6 m piles the damage to the adjoining and nearby structures would generally be Category 0 (negligible) to Category 3 (Moderate) which fall outside tolerable limits. The analysis considers each wall elevation as a series of segments, with the length and number of segments determined by the regions of hogging and sagging along the wall. This is considered to be a conservative approach as in reality a wall is likely to be constructed of brick or concrete with a stiffness that is likely to have a favourable effect on the resultant hogging and sagging movements. In this case, when the wall is considered with the individual segments combined together, the movement falls within the Slight category. However, when the segments are considered individually, the analysis indicates that there is scope for some increased damage where there is increased differential movement along a localised section of the wall.

The analysis has shown that if the pile depth is increased to 8 m the damage falls between 0 (negligible) to Category 3 (Moderate) regardless of whether the element segments are combined or analysed separately. Similarly, if the pile depth is increased to 10 m, the damage falls between 0 (negligible) to Category 4 (Severe) for elements without combined segments, reducing to 0 (negligible) to Category 3 (Moderate) if the segments are combined. The damage classifications for piles installed to depths of 8 m and 10 m therefore fall outside tolerable limits. It would be prudent to use a more specialist retaining wall analysis software, such as WALLAP, to better understand the wall movements once the design has been progressed.

6.2 Monitoring of Ground Movements

The predictions of ground movement based on the ground movement analysis should be checked by monitoring of adjacent properties and structures. The structures to be monitored during the construction stages should include Nos 3 and 5 Greenaway Gardens. Condition surveys of the above existing structures will be carried out before and after the proposed works.

The precise monitoring strategy will be developed at a later stage and it will be subject to discussions and agreements with the owners of the adjacent properties and structures. Contingency measures will be implemented if movements of the adjacent structures exceed

predefined trigger levels. Both contingency measures and trigger levels will need to be developed within a future monitoring specification for the works.

7.0 CONCLUSIONS

The analysis has concluded that the predicted damage to the neighbouring properties for piles installed to a depth of 6 m would be 'Negligible' to 'Slight'. On this basis, the damage that would inevitably occur as a result of such an excavation would fall within the acceptable limits.

The separate phases of work, including formation of the underpins and excavation of the proposed single level basement, will in practice be separated by a number of weeks during which time construction of permanent supports, basement slab and underpin curing will take place. This will provide an opportunity for the ground movements during and immediately after underpin construction to be measured and the data acquired can be fed back into the design and compared with the predicted values. Such a comparison will allow the ground model to be reviewed and the predicted wall movements to be reassessed prior to the main excavation taking place so that propping arrangements can be adjusted if required.

APPENDICES

P-DISP ANALYSIS

Short Term Movement

Total Movement

X-DISP ANALYSIS

Wall Installation

Contour Plots of Vertical Movements and Horizontal Movements

Pile Installation and Basement Excavation

Contour Plots of Combined Vertical Movements and Horizontal Movements

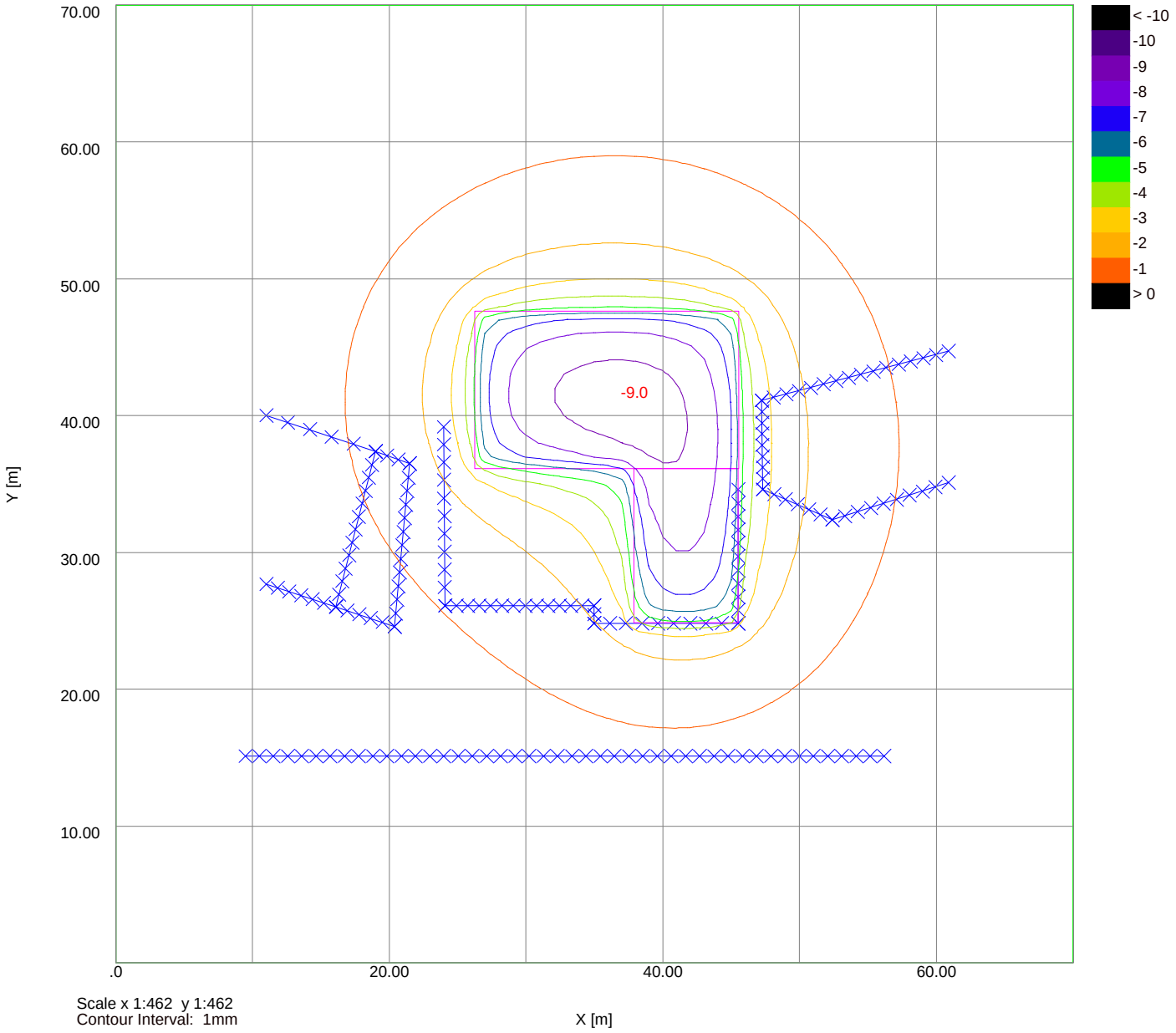
BUILDING DAMAGE ASSESSMENT (X-DISP)

Tabular Output of Results

P-DISP ANALYSIS

Short Term Movement

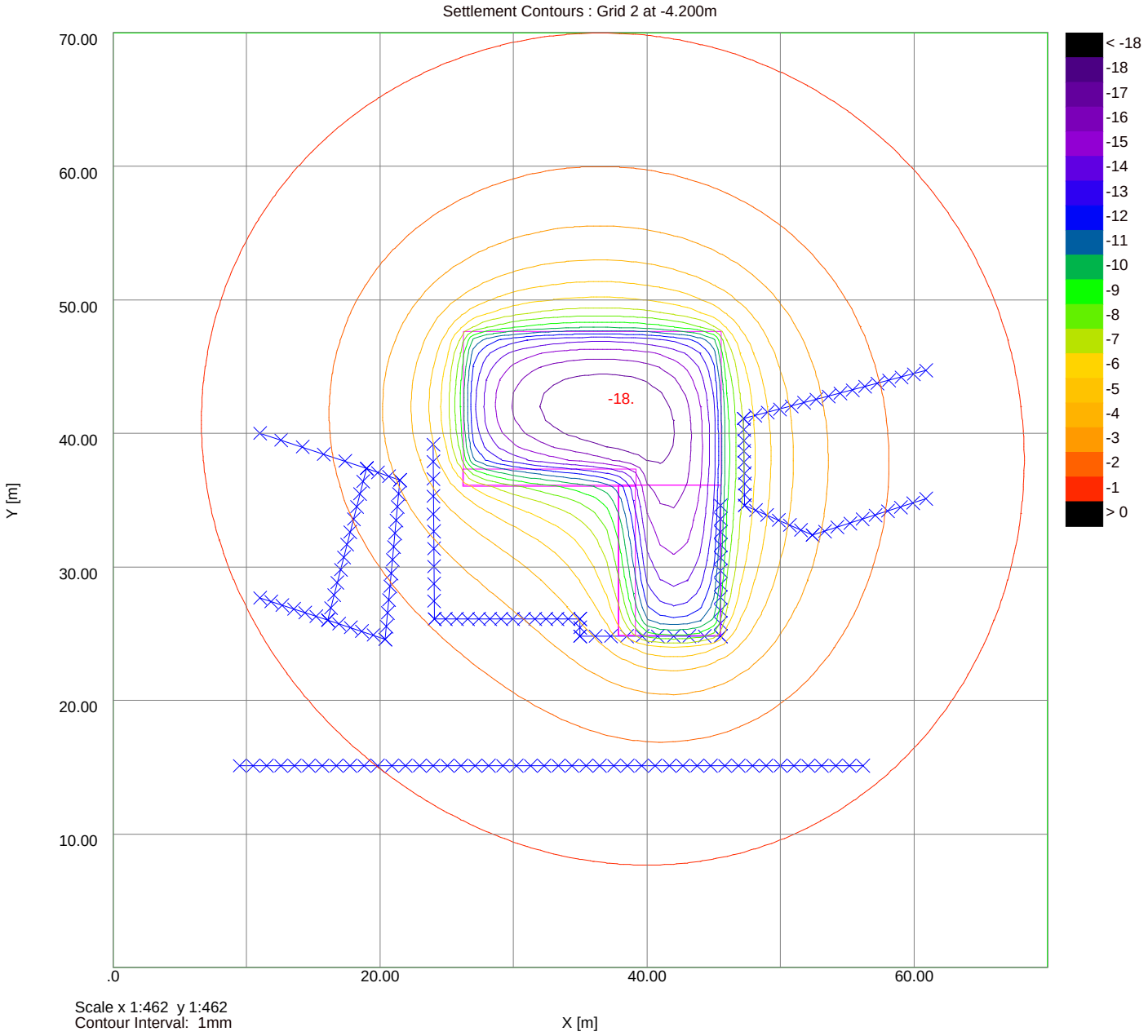
Settlement Contours : Grid 2 at -4.200m



Scale x 1:462 y 1:462
Contour Interval: 1mm

P-DISP ANALYSIS

Total Movement

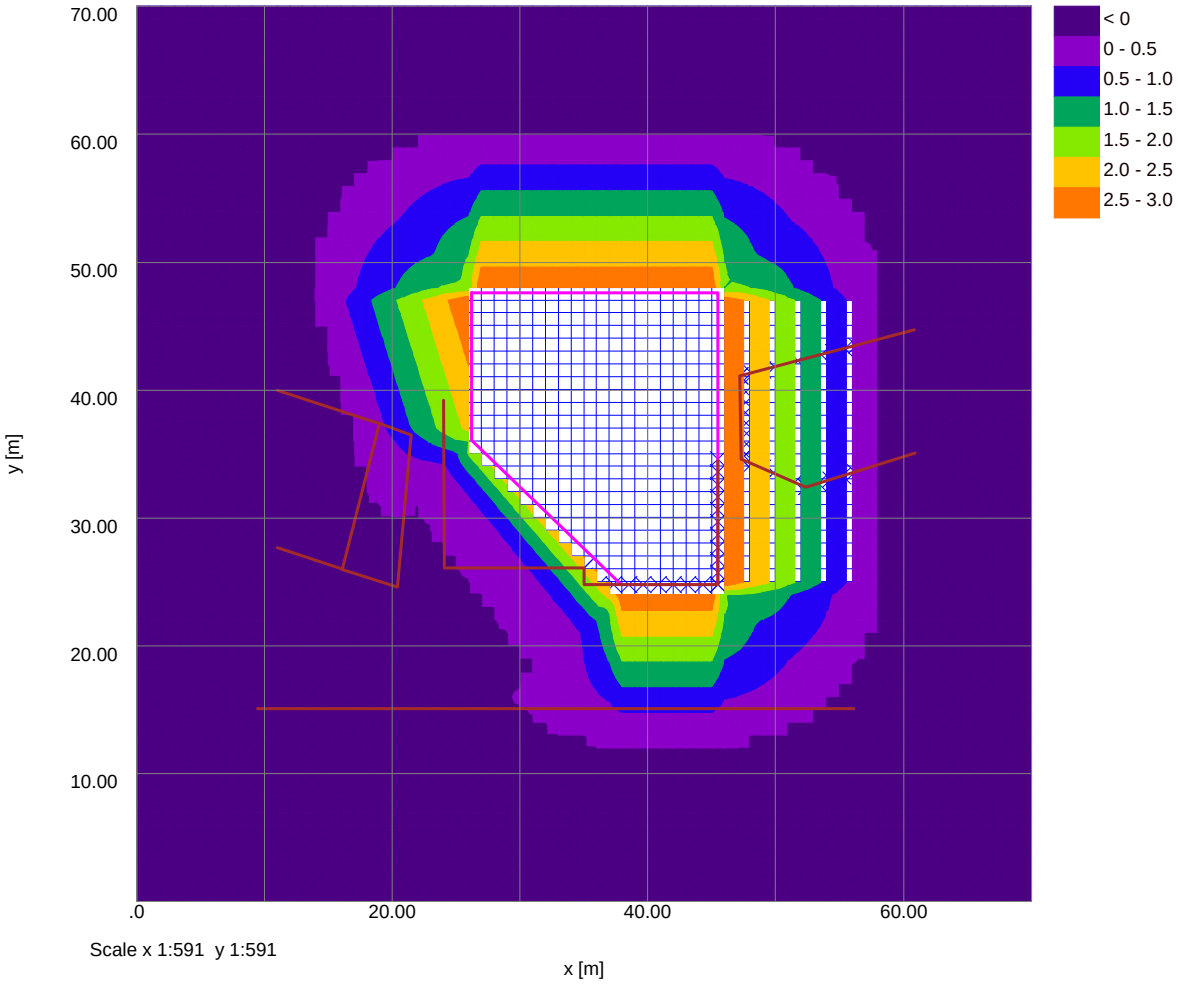

Settlement Contours : Grid 2 at -4.200m
70.00
60.00
50.00
40.00
30.00
20.00
10.00
Y [m]
.0
20.00
40.00
60.00
X [m]
-18.
< -18
-18
-17
-16
-15
-14
-13
-12
-11
-10
-9
-8
-7
-6
-5
-4
-3
-2
-1
> 0
Scale x 1:462 y 1:462
Contour Interval: 1mm

X-DISP ANALYSIS

6 M DEEP PILES

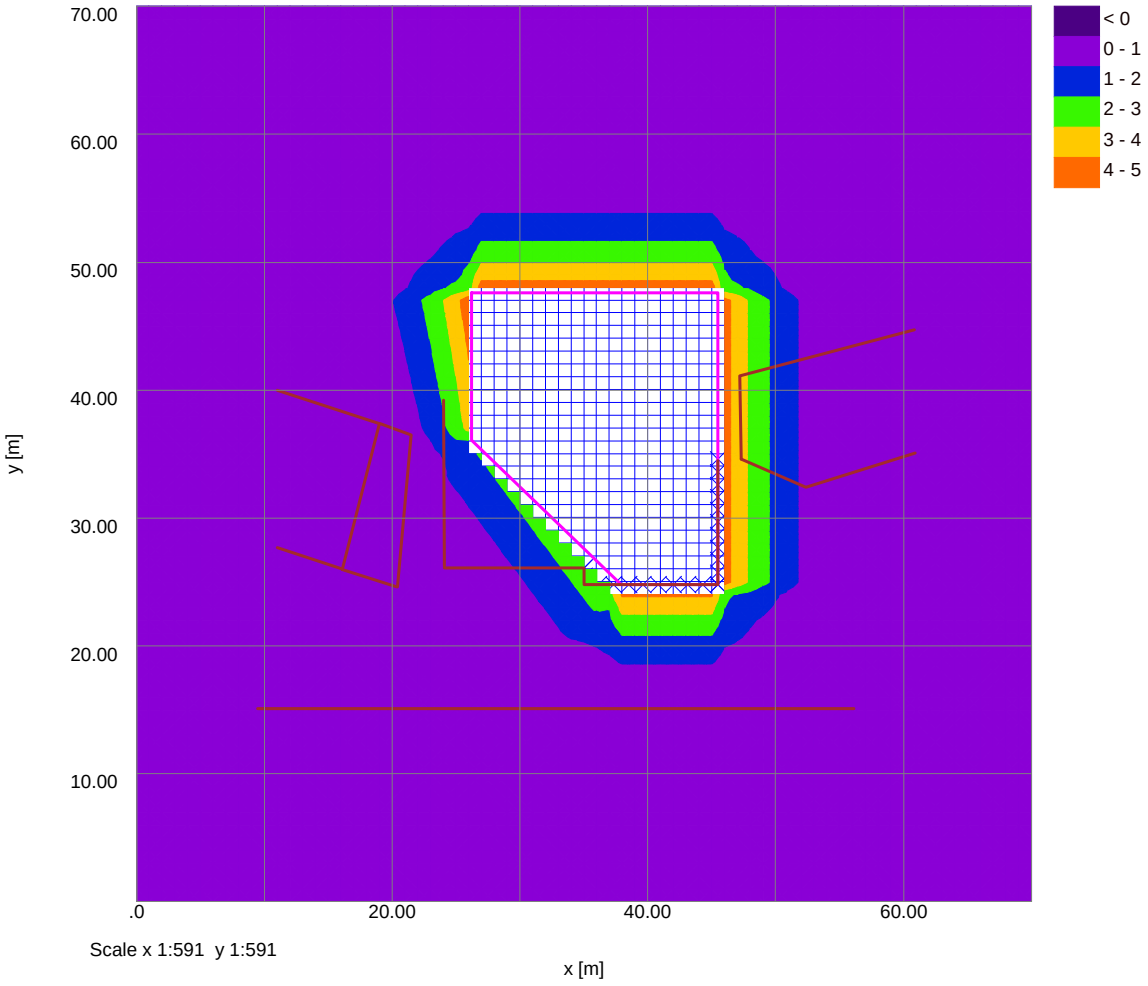
Wall Installation

Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 0.5mm)



Scale x 1:591 y 1:591

Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm

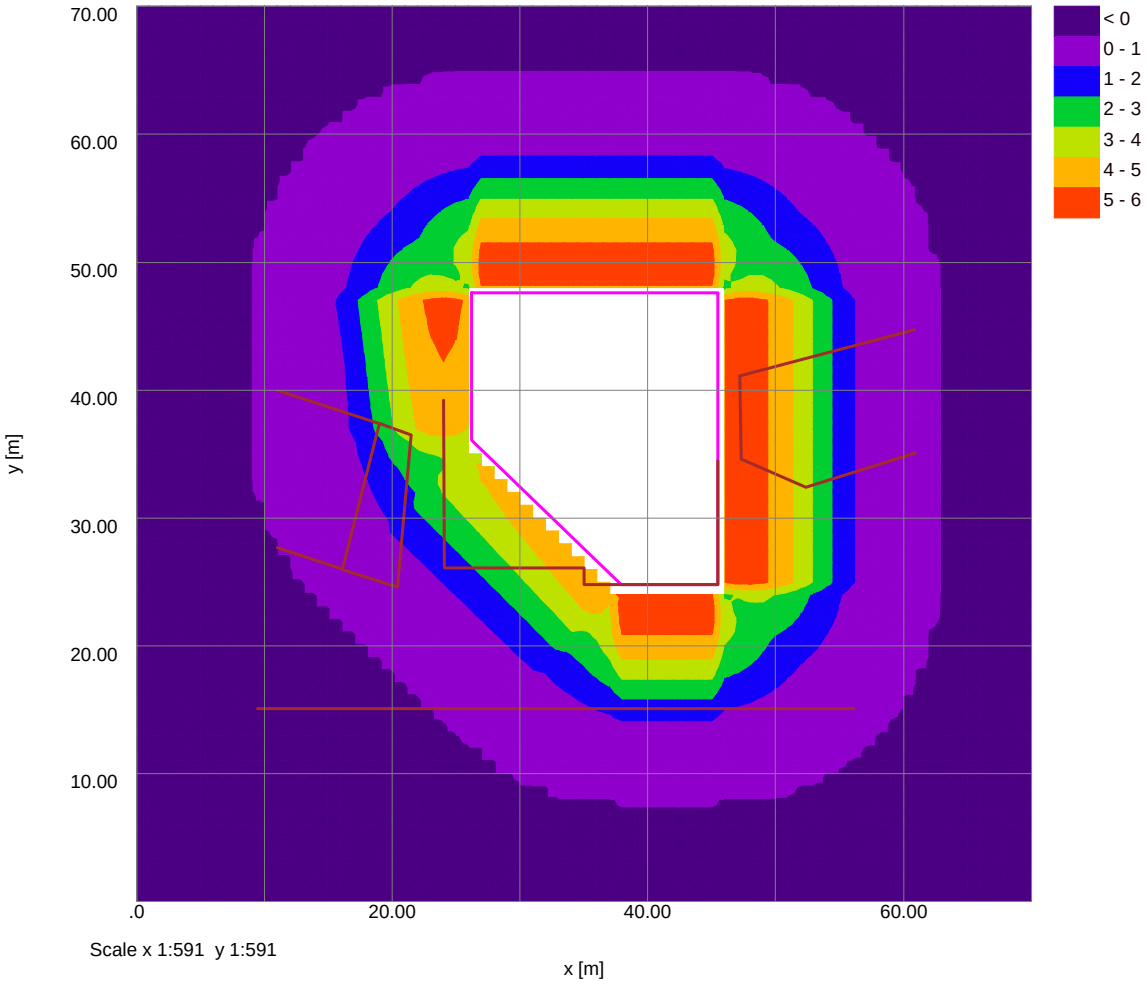


X-DISP ANALYSIS

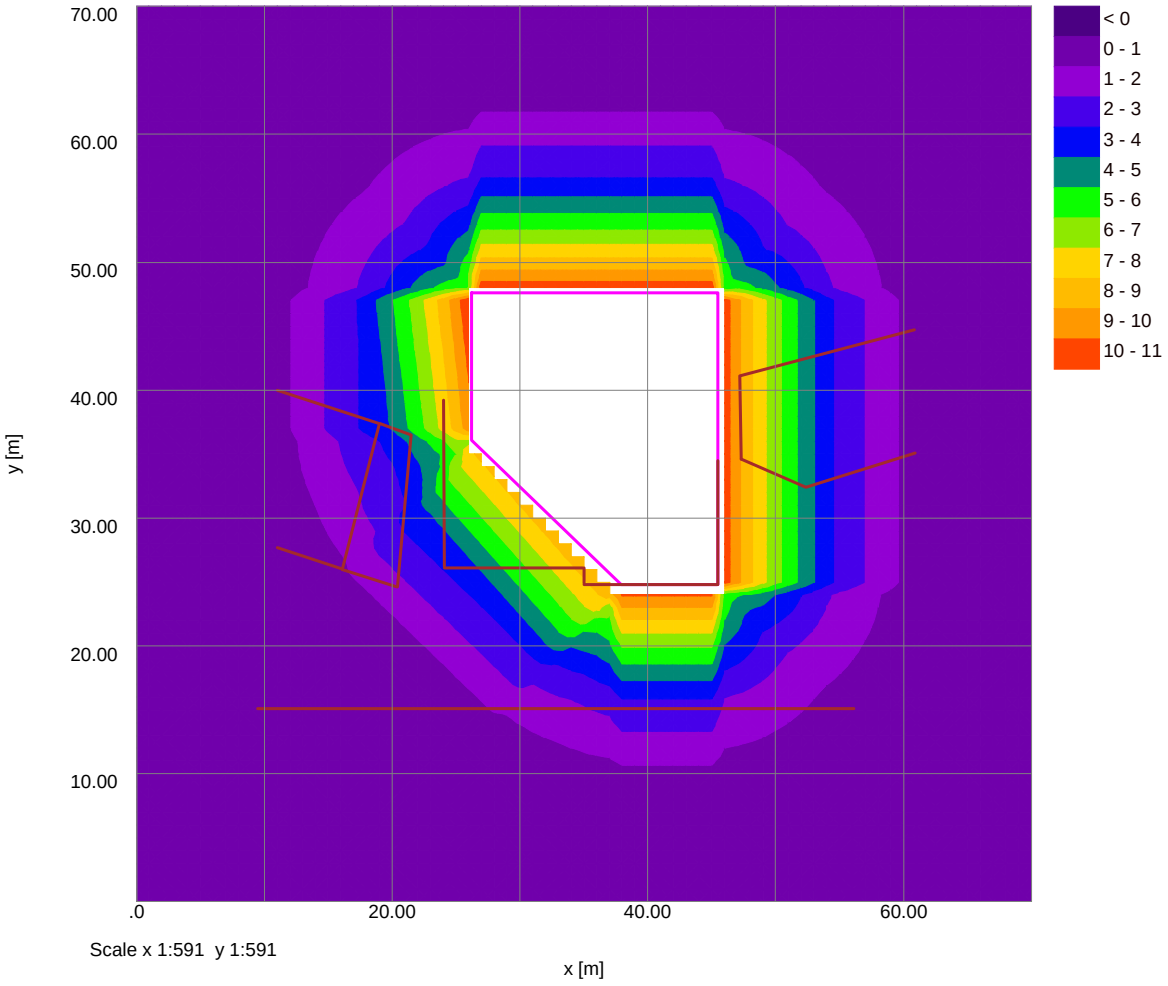
6 M DEEP PILES

Pile Installation and Basement Excavation

Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 1mm)



Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm



Scale x 1:591 y 1:591

Specific Building Damage Results - Horizontal Displacements

Structure: No4south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.00000	39.20000	-1.80000	7.5507	0.0	0.057637	7.5505 d
1.3100	24.01000	37.89000	-1.80000	7.4107	0.0	0.056569	7.4105 d
2.6201	24.02000	36.58000	-1.80000	7.2718	0.0	0.055508	7.2716 d
3.9301	24.03000	35.27000	-1.80000	4.8718	1.8634	-1.8262	4.8859 d
5.2402	24.04000	33.96000	-1.80000	3.6704	3.6364	-3.6083	3.6981 d
6.5502	24.05000	32.65000	-1.80000	3.9121	4.0506	-4.0206	3.9429 d
7.8602	24.06000	31.34000	-1.80000	3.4871	3.6105	-3.5838	3.5145 d
9.1703	24.07000	30.03000	-1.80000	3.0621	3.1705	-3.1470	3.0862 d
10.480	24.08000	28.72000	-1.80000	2.6371	2.7304	-2.7102	2.6578 d
11.790	24.09000	27.41000	-1.80000	2.3664	2.4501	-2.4320	2.3850 d
13.100	24.10000	26.10000	-1.80000	2.1227	2.1979	-2.1816	2.1394 d

d - Displacements include imported displacements.

Structure: No4east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.10000	26.10000	-1.80000	2.1227	2.1979	2.1227	2.1979 d
0.83846	24.93846	26.10000	-1.80000	2.2745	2.3550	2.2745	2.3550 d
1.6769	25.77692	26.10000	-1.80000	2.4262	2.5121	2.4262	2.5121 d
2.5154	26.61538	26.10000	-1.80000	2.7165	2.8127	2.7165	2.8127 d
3.3538	27.45385	26.10000	-1.80000	3.0263	3.1334	3.0263	3.1334 d
4.1923	28.29231	26.10000	-1.80000	3.3361	3.4542	3.3361	3.4542 d
5.0308	29.13077	26.10000	-1.80000	3.6459	3.7750	3.6459	3.7750 d
5.8692	29.96923	26.10000	-1.80000	3.9558	4.0958	3.9558	4.0958 d
6.7077	30.80769	26.10000	-1.80000	4.2656	4.4166	4.2656	4.4166 d
7.5462	31.64615	26.10000	-1.80000	4.5754	4.7373	4.5754	4.7373 d
8.3846	32.48462	26.10000	-1.80000	4.8852	5.0581	4.8852	5.0581 d
9.2231	33.32308	26.10000	-1.80000	5.1950	5.3789	5.1950	5.3789 d
10.062	34.16154	26.10000	-1.80000	5.5048	5.6997	5.5048	5.6997 d
10.900	35.00000	26.10000	-1.80000	5.8146	6.0205	5.8146	6.0205 d

d - Displacements include imported displacements.

Structure: No41-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.00000	26.10000	-0.86000	5.8146	6.0205	-6.0205	5.8146 d
0.65000	35.00000	25.45000	-0.86000	5.6019	5.8002	-5.8002	5.6019 d
1.3000	35.00000	24.80000	-0.86000	6.9266	7.1718	-7.1718	6.9266 d

d - Displacements include imported displacements.

Structure: No41-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.00000	24.80000	-0.86000	6.9266	7.1718	6.9266	7.1718 d
1.1667	36.16667	24.80000	-0.86000	5.8203	6.0263	5.8203	6.0263 d
2.3333	37.33333	24.80000	-0.86000	6.2514	6.4727	6.2514	6.4727 d
3.5000	38.50000	24.80000	-0.86000	0.0	11.154	0.0	11.154 d
4.6667	39.66667	24.80000	-0.86000	0.0	11.154	0.0	11.154 d
5.8333	40.83333	24.80000	-0.86000	0.0	11.154	0.0	11.154 d
7.0000	42.00000	24.80000	-0.86000	0.0	11.154	0.0	11.154 d
8.1667	43.16667	24.80000	-0.86000	0.0	11.154	0.0	11.154 d
9.3333	44.33333	24.80000	-0.86000	0.0	11.154	0.0	11.154 d
10.500	45.50000	24.80000	-0.86000	-10.725	0.0	-10.725	0.0 d

d - Displacements include imported displacements.

Structure: No41-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	45.50000	24.80000	-0.86000	-10.725	0.0	0.0	10.725 d
0.98000	45.50000	25.78000	-0.86000	-11.154	0.0	0.0	11.154 d
1.9600	45.50000	26.76000	-0.86000	-11.154	0.0	0.0	11.154 d
2.9400	45.50000	27.74000	-0.86000	-11.154	0.0	0.0	11.154 d
3.9200	45.50000	28.72000	-0.86000	-11.154	0.0	0.0	11.154 d
4.9000	45.50000	29.70000	-0.86000	-11.154	0.0	0.0	11.154 d
5.8800	45.50000	30.68000	-0.86000	-11.154	0.0	0.0	11.154 d
6.8600	45.50000	31.66000	-0.86000	-11.154	0.0	0.0	11.154 d
7.8400	45.50000	32.64000	-0.86000	-11.154	0.0	0.0	11.154 d
8.8200	45.50000	33.62000	-0.86000	-11.154	0.0	0.0	11.154 d
9.8000	45.50000	34.60000	-0.86000	-11.154	0.0	0.0	11.154 d

d - Displacements include imported displacements.

Structure: No3east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.00000	27.70000	-0.60000	0.0	0.0	0.0	0.0 d
0.89598	11.85000	27.41667	-0.60000	0.0067964	0.0041126	0.0051471	0.0060507 d
1.7920	12.70000	27.13333	-0.60000	0.14544	0.096598	0.10743	0.13763 d
2.6879	13.55000	26.85000	-0.60000	0.27140	0.19845	0.19472	0.27410 d
3.5839	14.40000	26.56667	-0.60000	0.38263	0.30913	0.26524	0.41426 d
4.4799	15.25000	26.28333	-0.60000	0.47695	0.42759	0.31726	0.55647 d
5.3759	16.10000	26.00000	-0.60000	0.55222	0.55222	0.34926	0.69851 d

d - Displacements include imported displacements.

Structure: No3north | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	16.10000	26.00000	-0.60000	0.55222	0.55222	0.67132	-0.39904 d
0.98026	16.34167	26.95000	-0.60000	0.75453	0.70032	0.86472	-0.55859 d
1.9605	16.58333	27.90000	-0.60000	0.96245	0.82066	1.0326	-0.73042 d
2.9408	16.82500	28.85000	-0.60000	1.1745	0.90828	1.1698	-0.91433 d
3.9210	17.06667	29.80000	-0.60000	1.3881	0.95750	1.2702	-1.1092 d
4.9013	17.30833	30.75000	-0.60000	1.5991	0.96215	1.3267	-1.3125 d
5.8815	17.55000	31.70000	-0.60000	1.8010	0.91613	1.3319	-1.5196 d
6.8618	17.79167	32.65000	-0.60000	1.9987	0.82006	1.2875	-1.7348 d
7.8421	18.03333	33.60000	-0.60000	2.2717	0.69540	1.2340	-2.0301 d
8.8223	18.27500	34.55000	-0.60000	2.5352	0.49584	1.1056	-2.3347 d
9.8026	18.51667	35.50000	-0.60000	2.7689	0.21623	0.89219	-2.6301 d
10.783	18.75833	36.45000	-0.60000	3.5094	0.0	0.86518	-3.4011 d
11.763	19.00000	37.40000	-0.60000	3.6000	0.0	0.88752	-3.4889 d

d - Displacements include imported displacements.

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]

Structure: No3west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.00000	40.00000	-0.60000	0.60000	0.0	0.57062	0.18545 d
1.6824	12.60000	39.48000	-0.60000	1.2000	0.0	1.1412	0.37090 d
3.3648	14.20000	38.96000	-0.60000	1.8000	0.0	1.7119	0.55635 d
5.0471	15.80000	38.44000	-0.60000	2.4000	0.0	2.2825	0.74181 d
6.7295	17.40000	37.92000	-0.60000	3.0000	0.0	2.8531	0.92726 d
8.4119	19.00000	37.40000	-0.60000	3.6000	0.0	3.4237	1.1127 d

d - Displacements include imported displacements.

Structure: No31-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	16.10000	26.00000	-0.60000	0.55222	0.55222	0.35413	0.69605 d
0.90443	16.96000	25.72000	-0.60000	0.75931	0.78618	0.47861	0.98263 d
1.8089	17.82000	25.44000	-0.60000	0.86248	0.89301	0.54364	1.1162 d
2.7133	18.68000	25.16000	-0.60000	0.96566	0.99984	0.60868	1.2497 d
3.6177	19.54000	24.88000	-0.60000	1.0688	1.1067	0.67371	1.3832 d
4.5222	20.40000	24.60000	-0.60000	1.1720	1.2135	0.73875	1.5167 d

d - Displacements include imported displacements.

Structure: No31-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	20.40000	24.60000	-0.60000	1.1720	1.2135	1.3162	-1.0553 d
0.99589	20.49167	25.59167	-0.60000	1.3744	1.4231	1.5435	-1.2376 d
1.9918	20.58333	26.58333	-0.60000	1.5768	1.6327	1.7709	-1.4199 d
2.9877	20.67500	27.57500	-0.60000	1.7792	1.8422	1.9982	-1.6021 d
3.9836	20.76667	28.56667	-0.60000	1.9817	2.0518	2.2255	-1.7844 d
4.9795	20.85833	29.55833	-0.60000	2.1841	2.2614	2.4528	-1.9667 d
5.9754	20.95000	30.55000	-0.60000	2.3865	2.4710	2.6801	-2.1489 d
6.9713	21.04167	31.54167	-0.60000	2.2689	2.0049	2.2053	-2.0747 d
7.9672	21.13333	32.53333	-0.60000	2.5926	1.8251	2.0560	-2.4136 d
8.9630	21.22500	33.52500	-0.60000	2.9986	1.5520	1.8214	-2.8430 d
9.9589	21.31667	34.51667	-0.60000	3.4697	1.1250	1.4396	-3.3514 d
10.955	21.40833	35.50833	-0.60000	3.9991	0.49380	0.85980	-3.9366 d
11.951	21.50000	36.50000	-0.60000	5.7458	0.0	0.52887	-5.7214 d

d - Displacements include imported displacements.

Structure: No31-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	21.50000	36.50000	-0.60000	5.7458	0.0	-5.4062	-1.9462 d
0.88569	20.66667	36.80000	-0.60000	4.5523	0.0	-4.2832	-1.5420 d
1.7714	19.83333	37.10000	-0.60000	3.9723	0.0	-3.7375	-1.3455 d
2.6571	19.00000	37.40000	-0.60000	3.6000	0.0	-3.3872	-1.2194 d

d - Displacements include imported displacements.

Structure: No5south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	47.30000	34.60000	-0.60000	-12.307	0.0	0.18932	12.306 d
0.81260	47.28750	35.41250	-0.60000	-8.9799	0.0	0.13814	8.9789 d
1.6252	47.27500	36.22500	-0.60000	-8.9937	0.0	0.13835	8.9927 d
2.4378	47.26250	37.03750	-0.60000	-9.0075	0.0	0.13856	9.0065 d
3.2504	47.25000	37.85000	-0.60000	-9.0214	0.0	0.13877	9.0203 d
4.0630	47.23750	38.66250	-0.60000	-9.0352	0.0	0.13899	9.0342 d
4.8756	47.22500	39.47500	-0.60000	-9.0491	0.0	0.13920	9.0480 d
5.6882	47.21250	40.28750	-0.60000	-9.0630	0.0	0.13941	9.0619 d
6.5008	47.20000	41.10000	-0.60000	-12.491	0.0	0.19215	12.490 d

d - Displacements include imported displacements.

Structure: No5west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	47.20000	41.10000	-0.60000	-12.491	0.0	-12.081	3.1746 d
0.94434	48.11333	41.34000	-0.60000	-8.1065	0.0	-7.8403	2.0602 d
1.8887	49.02667	41.58000	-0.60000	-7.2204	0.0	-6.9833	1.8350 d
2.8330	49.94000	41.82000	-0.60000	-6.4052	0.0	-6.1949	1.6278 d
3.7774	50.85333	42.06000	-0.60000	-5.6474	0.0	-5.4619	1.4353 d
4.7217	51.76667	42.30000	-0.60000	-4.9335	0.0	-4.7715	1.2538 d
5.6660	52.68000	42.54000	-0.60000	-4.2501	0.0	-4.1106	1.0802 d
6.6104	53.59333	42.78000	-0.60000	-3.5838	0.0	-3.4661	0.91080 d
7.5547	54.50667	43.02000	-0.60000	-2.9225	0.0	-2.8265	0.74274 d
8.4991	55.42000	43.26000	-0.60000	-2.5800	0.0	-2.4953	0.65570 d
9.4434	56.33333	43.50000	-0.60000	-2.2375	0.0	-2.1640	0.56865 d
10.388	57.24667	43.74000	-0.60000	-1.8950	0.0	-1.8328	0.48161 d
11.332	58.16000	43.98000	-0.60000	-1.5525	0.0	-1.5015	0.39456 d
12.276	59.07333	44.22000	-0.60000	-1.2100	0.0	-1.1703	0.30752 d
13.221	59.98667	44.46000	-0.60000	-0.86750	0.0	-0.83902	0.22047 d
14.165	60.90000	44.70000	-0.60000	-0.52500	0.0	-0.50776	0.13343 d

d - Displacements include imported displacements.

Structure: No5SE | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	47.30000	34.60000	-0.60000	-12.307	0.0	-11.301	4.8748 d
0.92571	48.15000	34.23333	-0.60000	-8.0694	0.0	-7.4094	3.1962 d
1.8514	49.00000	33.86667	-0.60000	-7.2452	0.0	-6.6526	2.8697 d
2.7771	49.85000	33.50000	-0.60000	-6.4827	0.0	-5.9525	2.5677 d
3.7029	50.70000	33.13333	-0.60000	-5.7712	0.0	-5.2991	2.2859 d
4.6286	51.55000	32.76667	-0.60000	-5.0996	0.0	-4.6825	2.0199 d
5.5543	52.40000	32.40000	-0.60000	-5.2019	0.0	-4.7765	2.0604 d

d - Displacements include imported displacements.

Structure: No5east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	52.40000	32.40000	-0.60000	-5.2019	0.0	-4.9578	1.5748 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	Along the Line [mm]	Perpendicular to Line [mm]	
0.99095	53.34444	32.70000	-0.60000	-3.7644	0.0	-3.5878	1.1396	d
1.9819	54.28889	33.00000	-0.60000	-3.0794	0.0	-2.9348	0.93225	d
2.9728	55.23333	33.30000	-0.60000	-2.6500	0.0	-2.5256	0.80226	d
3.9638	56.17778	33.60000	-0.60000	-2.2958	0.0	-2.1881	0.69504	d
4.9547	57.12222	33.90000	-0.60000	-1.9417	0.0	-1.8505	0.58782	d
5.9457	58.06667	34.20000	-0.60000	-1.5875	0.0	-1.5130	0.48060	d
6.9366	59.01111	34.50000	-0.60000	-1.2333	0.0	-1.1755	0.37338	d
7.9276	59.95556	34.80000	-0.60000	-0.87917	0.0	-0.83791	0.26616	d
8.9185	60.90000	35.10000	-0.60000	-0.52500	0.0	-0.50036	0.15894	d

d - Displacements include imported displacements.

Structure: Greenaway gardens | Sub-structure: Sub 16

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	Along the Line [mm]	Perpendicular to Line [mm]	
0.0	9.50000	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
1.0378	10.53778	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
2.0756	11.57556	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
3.1133	12.61333	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
4.1511	13.65111	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
5.1889	14.68889	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
6.2267	15.72667	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
7.2644	16.76444	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
8.3022	17.80222	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
9.3400	18.84000	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
10.378	19.87778	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
11.416	20.91556	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
12.453	21.95333	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
13.491	22.99111	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
14.529	24.02889	15.10000	-0.50000	0.048590	0.050310	0.048590	0.050310	d
15.567	25.06667	15.10000	-0.50000	0.23641	0.24478	0.23641	0.24478	d
16.604	26.10444	15.10000	-0.50000	0.42422	0.43924	0.42422	0.43924	d
17.642	27.14222	15.10000	-0.50000	0.61204	0.63371	0.61204	0.63371	d
18.680	28.18000	15.10000	-0.50000	0.79986	0.82817	0.79986	0.82817	d
19.718	29.21778	15.10000	-0.50000	0.78548	0.87756	0.78548	0.87756	d
20.756	30.25556	15.10000	-0.50000	0.84373	1.0706	0.84373	1.0706	d
21.793	31.29333	15.10000	-0.50000	0.85714	1.2585	0.85714	1.2585	d
22.831	32.33111	15.10000	-0.50000	0.82322	1.4339	0.82322	1.4339	d
23.869	33.36889	15.10000	-0.50000	0.74182	1.5881	0.74182	1.5881	d
24.907	34.40667	15.10000	-0.50000	0.62990	1.7490	0.62990	1.7490	d
25.944	35.44444	15.10000	-0.50000	0.49081	1.9388	0.49081	1.9388	d
26.982	36.48222	15.10000	-0.50000	0.30633	2.0958	0.30633	2.0958	d
28.020	37.52000	15.10000	-0.50000	0.086434	2.2063	0.086434	2.2063	d
29.058	38.55778	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
30.096	39.59556	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
31.133	40.63333	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
32.171	41.67111	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
33.209	42.70889	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
34.247	43.74667	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
35.284	44.78444	15.10000	-0.50000	0.0	2.6625	0.0	2.6625	d
36.322	45.82222	15.10000	-0.50000	-0.058546	1.7624	-0.058546	1.7624	d
37.360	46.86000	15.10000	-0.50000	-0.23338	1.6646	-0.23338	1.6646	d
38.398	47.89778	15.10000	-0.50000	-0.37834	1.5305	-0.37834	1.5305	d
39.436	48.93556	15.10000	-0.50000	-0.48599	1.3722	-0.48599	1.3722	d
40.473	49.97333	15.10000	-0.50000	-0.55389	1.2010	-0.55389	1.2010	d
41.511	51.01111	15.10000	-0.50000	-0.58355	1.0271	-0.58355	1.0271	d
42.549	52.04889	15.10000	-0.50000	-0.57902	0.85762	-0.57902	0.85762	d
43.587	53.08667	15.10000	-0.50000	-0.54542	0.69735	-0.54542	0.69735	d
44.624	54.12444	15.10000	-0.50000	-0.48804	0.54891	-0.48804	0.54891	d
45.662	55.16222	15.10000	-0.50000	-0.41172	0.41333	-0.41172	0.41333	d
46.700	56.20000	15.10000	-0.50000	-0.33446	0.30321	-0.33446	0.30321	d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: No4south | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	24.00000	39.20000	-1.80000	4.7608	d
1.3100	24.01000	37.89000	-1.80000	4.6586	d
2.6201	24.02000	36.58000	-1.80000	4.5563	d
3.9301	24.03000	35.27000	-1.80000	3.1298	d
5.2402	24.04000	33.96000	-1.80000	2.9239	d
6.5502	24.05000	32.65000	-1.80000	3.2112	d
7.8602	24.06000	31.34000	-1.80000	2.8667	d
9.1703	24.07000	30.03000	-1.80000	2.4935	d
10.480	24.08000	28.72000	-1.80000	2.0900	d
11.790	24.09000	27.41000	-1.80000	1.6994	d
13.100	24.10000	26.10000	-1.80000	1.3280	d

d - Displacements include imported displacements.

Structure: No4east | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	24.10000	26.10000	-1.80000	1.3280	d
0.83846	24.93846	26.10000	-1.80000	1.5570	d
1.6769	25.77692	26.10000	-1.80000	1.7932	d
2.5154	26.61538	26.10000	-1.80000	2.0635	d
3.3538	27.45385	26.10000	-1.80000	2.3323	d
4.1923	28.29231	26.10000	-1.80000	2.6090	d
5.0308	29.13077	26.10000	-1.80000	2.8993	d
5.8692	29.96923	26.10000	-1.80000	3.2027	d
6.7077	30.80769	26.10000	-1.80000	3.5130	d
7.5462	31.64615	26.10000	-1.80000	3.8193	d
8.3846	32.48462	26.10000	-1.80000	4.1065	d
9.2231	33.32308	26.10000	-1.80000	4.3559	d
10.062	34.16154	26.10000	-1.80000	4.5459	d
10.900	35.00000	26.10000	-1.80000	4.6518	d

d - Displacements include imported displacements.

Structure: No41-1 | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	35.00000	26.10000	-0.86000	4.6518	d
0.65000	35.00000	25.45000	-0.86000	4.6250	d
1.3000	35.00000	24.80000	-0.86000	6.1548	d

d - Displacements include imported displacements.

Structure: No41-2 | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	35.00000	24.80000	-0.86000	6.1548	d
1.1667	36.16667	24.80000	-0.86000	4.7401	d
2.3333	37.33333	24.80000	-0.86000	4.7357	d
3.5000	38.50000	24.80000	-0.86000	4.6376	d
4.6667	39.66667	24.80000	-0.86000	4.6376	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
5.8333	40.83333	24.80000	-0.86000	4.6376 d
7.0000	42.00000	24.80000	-0.86000	4.6376 d
8.1667	43.16667	24.80000	-0.86000	4.6376 d
9.3333	44.33333	24.80000	-0.86000	4.6376 d
10.500	45.50000	24.80000	-0.86000	5.1172 d

d - Displacements include imported displacements.

Structure: No41-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	45.50000	24.80000	-0.86000	5.1172 d
0.98000	45.50000	25.78000	-0.86000	4.6376 d
1.9600	45.50000	26.76000	-0.86000	4.6376 d
2.9400	45.50000	27.74000	-0.86000	4.6376 d
3.9200	45.50000	28.72000	-0.86000	4.6376 d
4.9000	45.50000	29.70000	-0.86000	4.6376 d
5.8800	45.50000	30.68000	-0.86000	4.6376 d
6.8600	45.50000	31.66000	-0.86000	4.6376 d
7.8400	45.50000	32.64000	-0.86000	4.6376 d
8.8200	45.50000	33.62000	-0.86000	4.6376 d
9.8000	45.50000	34.60000	-0.86000	4.6376 d

d - Displacements include imported displacements.

Structure: No3east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	11.00000	27.70000	-0.60000	-0.0020000 d
0.89598	11.85000	27.41667	-0.60000	0.0034418 d
1.7920	12.70000	27.13333	-0.60000	0.031375 d
2.6879	13.55000	26.85000	-0.60000	0.050526 d
3.5839	14.40000	26.56667	-0.60000	0.066344 d
4.4799	15.25000	26.28333	-0.60000	0.082395 d
5.3759	16.10000	26.00000	-0.60000	0.098601 d

d - Displacements include imported displacements.

Structure: No3north | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	16.10000	26.00000	-0.60000	0.098601 d
0.98026	16.34167	26.95000	-0.60000	0.14769 d
1.9605	16.58333	27.90000	-0.60000	0.21903 d
2.9408	16.82500	28.85000	-0.60000	0.31691 d
3.9210	17.06667	29.80000	-0.60000	0.43868 d
4.9013	17.30833	30.75000	-0.60000	0.57754 d
5.8815	17.55000	31.70000	-0.60000	0.72360 d
6.8618	17.79167	32.65000	-0.60000	0.87116 d
7.8421	18.03333	33.60000	-0.60000	1.0518 d
8.8223	18.27500	34.55000	-0.60000	1.2778 d
9.8026	18.51667	35.50000	-0.60000	1.5169 d
10.783	18.75833	36.45000	-0.60000	2.0797 d
11.763	19.00000	37.40000	-0.60000	3.1170 d

d - Displacements include imported displacements.

Structure: No3west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	11.00000	40.00000	-0.60000	0.081562 d
1.6824	12.60000	39.48000	-0.60000	0.16768 d
3.3648	14.20000	38.96000	-0.60000	0.36943 d
5.0471	15.80000	38.44000	-0.60000	0.73912 d
6.7295	17.40000	37.92000	-0.60000	1.3163 d
8.4119	19.00000	37.40000	-0.60000	3.1170 d

d - Displacements include imported displacements.

Structure: No31-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	16.10000	26.00000	-0.60000	0.098601 d
0.90443	16.96000	25.72000	-0.60000	0.14623 d
1.8089	17.82000	25.44000	-0.60000	0.17700 d
2.7133	18.68000	25.16000	-0.60000	0.21545 d
3.6177	19.54000	24.88000	-0.60000	0.26265 d
4.5222	20.40000	24.60000	-0.60000	0.31843 d

d - Displacements include imported displacements.

Structure: No31-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	20.40000	24.60000	-0.60000	0.31843 d
0.99589	20.49167	25.59167	-0.60000	0.46091 d
1.9918	20.58333	26.58333	-0.60000	0.64396 d
2.9877	20.67500	27.57500	-0.60000	0.86786 d
3.9836	20.76667	28.56667	-0.60000	1.1288 d
4.9795	20.85833	29.55833	-0.60000	1.4198 d
5.9754	20.95000	30.55000	-0.60000	1.7309 d
6.9713	21.04167	31.54167	-0.60000	1.6897 d
7.9672	21.13333	32.53333	-0.60000	1.9308 d
8.9630	21.22500	33.52500	-0.60000	2.1575 d
9.9589	21.31667	34.51667	-0.60000	2.4610 d
10.955	21.40833	35.50833	-0.60000	2.8690 d
11.951	21.50000	36.50000	-0.60000	4.7345 d

d - Displacements include imported displacements.

Structure: No31-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]	
Vertical Offset 1				
0.0	21.50000	36.50000	-0.60000	4.7345 d
0.88569	20.66667	36.80000	-0.60000	3.3325 d
1.7714	19.83333	37.10000	-0.60000	2.8354 d
2.6571	19.00000	37.40000	-0.60000	3.1170 d

d - Displacements include imported displacements.

Structure: No5south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	47.30000	34.60000	-0.60000	7.9552 d
0.81260	47.28750	35.41250	-0.60000	5.4040 d
1.6252	47.27500	36.22500	-0.60000	5.4027 d
2.4378	47.26250	37.03750	-0.60000	5.4014 d
3.2504	47.25000	37.85000	-0.60000	5.4001 d
4.0630	47.23750	38.66250	-0.60000	5.3987 d
4.8756	47.22500	39.47500	-0.60000	5.3972 d
5.6882	47.21250	40.28750	-0.60000	5.3957 d
6.5008	47.20000	41.10000	-0.60000	7.9692 d

d - Displacements include imported displacements.

Structure: No5west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	47.20000	41.10000	-0.60000	7.9692 d
0.94434	48.11333	41.34000	-0.60000	5.3837 d
1.8887	49.02667	41.58000	-0.60000	5.1604 d
2.8330	49.94000	41.82000	-0.60000	4.7780 d
3.7774	50.85333	42.06000	-0.60000	4.2844 d
4.7217	51.76667	42.30000	-0.60000	3.7214 d
5.6660	52.68000	42.54000	-0.60000	3.1250 d
6.6104	53.59333	42.78000	-0.60000	2.5251 d
7.5547	54.50667	43.02000	-0.60000	1.9456 d
8.4991	55.42000	43.26000	-0.60000	1.4047 d
9.4434	56.33333	43.50000	-0.60000	0.91428 d
10.388	57.24667	43.74000	-0.60000	0.48054 d
11.332	58.16000	43.98000	-0.60000	0.26757 d
12.276	59.07333	44.22000	-0.60000	0.16987 d
13.221	59.98667	44.46000	-0.60000	0.11131 d
14.165	60.90000	44.70000	-0.60000	0.074138 d

d - Displacements include imported displacements.

Structure: No5SE | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	47.30000	34.60000	-0.60000	7.9552 d
0.92571	48.15000	34.23333	-0.60000	5.3784 d
1.8514	49.00000	33.86667	-0.60000	5.1694 d
2.7771	49.85000	33.50000	-0.60000	4.8213 d
3.7029	50.70000	33.13333	-0.60000	4.3731 d
4.6286	51.55000	32.76667	-0.60000	3.8592 d
5.5543	52.40000	32.40000	-0.60000	4.5845 d

d - Displacements include imported displacements.

Structure: No5east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	52.40000	32.40000	-0.60000	4.5845 d
0.99095	53.34444	32.70000	-0.60000	2.6874 d
1.9819	54.28889	33.00000	-0.60000	2.0809 d
2.9728	55.23333	33.30000	-0.60000	1.5114 d
3.9638	56.17778	33.60000	-0.60000	0.99389 d
4.9547	57.12222	33.90000	-0.60000	0.53624 d
5.9457	58.06667	34.20000	-0.60000	0.28027 d
6.9366	59.01111	34.50000	-0.60000	0.17512 d
7.9276	59.95556	34.80000	-0.60000	0.11284 d
8.9185	60.90000	35.10000	-0.60000	0.074138 d

d - Displacements include imported displacements.

Structure: Greenaway gardens | Sub-structure: Sub 16

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset 1

0.0	9.50000	15.10000	-0.50000	-0.0020000 d
1.0378	10.53778	15.10000	-0.50000	-0.0020000 d
2.0756	11.57556	15.10000	-0.50000	-0.0020000 d
3.1133	12.61333	15.10000	-0.50000	-0.0020000 d
4.1511	13.65111	15.10000	-0.50000	-0.0020000 d
5.1889	14.68889	15.10000	-0.50000	-0.0020000 d
6.2267	15.72667	15.10000	-0.50000	-0.0020000 d
7.2644	16.76444	15.10000	-0.50000	-0.0020000 d
8.3022	17.80222	15.10000	-0.50000	-0.0020000 d
9.3400	18.84000	15.10000	-0.50000	-0.0020000 d
10.378	19.87778	15.10000	-0.50000	-0.0020000 d
11.416	20.91556	15.10000	-0.50000	-0.0020000 d
12.453	21.95333	15.10000	-0.50000	-0.0020000 d
13.491	22.99111	15.10000	-0.50000	-0.0020000 d
14.529	24.02889	15.10000	-0.50000	0.016257 d
15.567	25.06667	15.10000	-0.50000	0.054870 d
16.604	26.10444	15.10000	-0.50000	0.082626 d
17.642	27.14222	15.10000	-0.50000	0.11308 d
18.680	28.18000	15.10000	-0.50000	0.15749 d
19.718	29.21778	15.10000	-0.50000	0.18561 d
20.756	30.25556	15.10000	-0.50000	0.25457 d
21.793	31.29333	15.10000	-0.50000	0.34719 d
22.831	32.33111	15.10000	-0.50000	0.47091 d
23.869	33.36889	15.10000	-0.50000	0.60833 d
24.907	34.40667	15.10000	-0.50000	0.76425 d
25.944	35.44444	15.10000	-0.50000	0.94301 d
26.982	36.48222	15.10000	-0.50000	1.1093 d
28.020	37.52000	15.10000	-0.50000	1.2451 d
29.058	38.55778	15.10000	-0.50000	1.5307 d
30.096	39.59556	15.10000	-0.50000	1.5307 d
31.133	40.63333	15.10000	-0.50000	1.5307 d
32.171	41.67111	15.10000	-0.50000	1.5307 d
33.209	42.70889	15.10000	-0.50000	1.5307 d
34.247	43.74667	15.10000	-0.50000	1.5307 d
35.284	44.78444	15.10000	-0.50000	1.5307 d
36.322	45.82222	15.10000	-0.50000	1.0125 d
37.360	46.86000	15.10000	-0.50000	0.94441 d
38.398	47.89778	15.10000	-0.50000	0.84238 d
39.436	48.93556	15.10000	-0.50000	0.71511 d
40.473	49.97333	15.10000	-0.50000	0.57175 d
41.511	51.01111	15.10000	-0.50000	0.42103 d
42.549	52.04889	15.10000	-0.50000	0.27053 d
43.587	53.08667	15.10000	-0.50000	0.16656 d
44.624	54.12444	15.10000	-0.50000	0.11644 d
45.662	55.16222	15.10000	-0.50000	0.079784 d
46.700	56.20000	15.10000	-0.50000	0.057462 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: No4south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	0.65496	None	0.0	-81.566E-6	16.344E-6	0.0	78.066E-6	5172.9	0 (Negligible)
	2	0.65496	2.5802	Sagging	0.018264	-0.034304	0.013572	0.0014384	0.0010905	4805.1	0 (Negligible)
	3	3.2352	2.8755	Hogging	0.019844	-0.10622	0.024227	0.0014384	0.0010905	4251.0	0 (Negligible)
	4	6.1107	4.1505	Sagging	0.0047452	0.026479	0.029520	-333.31E-6	307.88E-6	8614.5	0 (Negligible)
	5	10.261	2.7387	Hogging	391.88E-6	0.021268	0.021354	-333.31E-6	307.88E-6	79894.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	6.3142	Hogging	0.0012470	0.031634	0.032254	-369.36E-6	-369.93E-6	38326.	0 (Negligible)
	2	6.3142	4.4858	Sagging	0.0036482	0.036950	0.039457	-369.36E-6	-369.93E-6	7304.5	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	1.2000	Hogging	0.059152	-0.078361	0.043804	0.0021146	-0.0023585	249.83	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	5.8333	Hogging	0.019020	-0.11874	0.025453	0.0053872	0.0012137	761.06	0 (Negligible)
	2	5.8333	1.1667	None	0.0	0.0	0.0	0.0	0.0 -		0 (Negligible)
	3	7.0000	3.4000	Hogging	0.0088840	-0.28842	0.057881	0.0092785	-414.90E-6	2165.1	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	2.9400	Hogging	0.010875	0.0	0.010317	0.0	489.38E-6	1602.0	0 (Negligible)
	2	2.9400	3.9200	None	0.0	0.0	0.0	0.0	0.0 -		0 (Negligible)
	3	6.8600	2.8400	Sagging	0.0	0.0	0.0	0.0	0.0	763.05E+15	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	All settlements are less than the Settlement Trough Limit Sensitivity.										

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.98026	10.720	Hogging	0.0094987	199.33E-6	0.0088625	217.71E-6	-0.0010582	1811.5	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	1.6824	6.7176	Hogging	0.015703	0.033917	0.042194	-339.06E-6	-0.0010699	1911.2	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.90443	0.77361	None	0.0	0.0071906	0.0071906	-137.61E-6	-52.658E-6	76291.	0 (Negligible)
	2	1.6780	2.8220	Hogging	357.62E-6	0.0071906	0.0074216	-71.900E-6	-61.671E-6	93996.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-2 | Sub-structure:

Vertical Offset	Segment	Start	Length	Curvature	Deflection	Average	Max.	Maximum	Maximum	Min.	Damage

from Line for Vertical Movement Calculations					Ratio	Horizontal Strain	Tensile Strain	Gradient of Horizontal Displacement Curve	Gradient of Vertical Displacement Curve	Radius of Curvature	Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	4.2758	Hogging	0.0021423	0.022826	0.024802	-228.21E-6	-292.17E-6	24418.	0 (Negligible)
	2	4.2758	2.3665	Sagging	0.0069764	0.0029532	0.0099145	477.06E-6	-312.27E-6	9877.5	0 (Negligible)
	3	6.6424	5.2576	Hogging	0.023612	-0.034547	0.015075	582.52E-6	-0.0018738	540.32	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6000	Hogging	0.032440	0.076784	0.096236	-0.0012663	0.0015809	845.93	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.4377	Hogging	0.069737	-0.0020822	0.068622	62.992E-6	0.0031398	207.14	1 (Very Slight)
	2	2.4377	1.6253	Sagging	1.5330E-6	26.214E-6	26.643E-6	0.0	1.7872E-6	13.079E+6	0 (Negligible)
	3	4.0630	2.4370	Hogging	0.070373	0.0021795	0.070961	-64.896E-6	-0.0031667	205.09	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6533	Hogging	0.054899	0.21619	0.22793	-0.0044708	0.0027256	300.12	3 (Moderate)
	2	2.6533	3.2100	Sagging	0.0025413	0.073799	0.075082	-834.22E-6	634.85E-6	7969.4	2 (Slight)
	3	5.8633	7.3574	Hogging	0.010073	0.042636	0.048415	-682.02E-6	634.85E-6	5829.6	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6197	Hogging	0.056584	0.19961	0.21219	-0.0041860	0.0027719	288.08	3 (Moderate)
	2	2.6197	0.41584	Sagging	0.0025224	0.072491	0.072661	-755.70E-6	483.81E-6	8545.9	1 (Very Slight)
	3	3.0355	2.4645	Hogging	0.029897	0.040543	0.054661	-705.30E-6	-783.53E-6	535.22	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	7.9276	Hogging	0.017595	0.051969	0.062781	-0.0013806	0.0019117	613.89	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	17.642	7.9011	Hogging	0.0020964	-853.94E-6	644.41E-6	-180.95E-6	-172.28E-6	36132.	0 (Negligible)
	2	25.543	0.71134	Sagging	294.91E-6	-0.015310	0.0030640	177.79E-6	-172.28E-6	132740.	0 (Negligible)
	3	26.255	1.5813	Sagging	722.29E-6	-0.019619	0.0039255	211.93E-6	-160.24E-6	56843.	0 (Negligible)
	4	27.836	3.2974	Sagging	0.0058821	-0.0038042	0.0011070	211.93E-6	-275.23E-6	10255.	0 (Negligible)
	5	31.133	2.0756	Hogging	0.0	0.0	0.0	0.0	0.0 -		0 (Negligible)
	6	33.209	2.7267	Sagging	0.0090332	-0.0013472	0.0074393	56.418E-6	499.35E-6	7355.9	0 (Negligible)
	7	35.936	2.2343	Hogging	0.0059552	-0.013864	0.0031733	168.50E-6	499.35E-6	12066.	0 (Negligible)
	8	38.170	2.7556	Sagging	543.46E-6	-0.0079951	0.0015994	139.70E-6	145.24E-6	43197.	0 (Negligible)
	9	40.925	3.6991	Hogging	0.0017423	0.0021293	0.0043285	-73.543E-6	145.24E-6	25715.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: No4south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.019844	-0.10622	0.0010905	4.7608	0.029520	0.0014384	0.0010905	4251.0	4805.1	0 (Negligible)

Structure: No4east | Sub-structure:

Vertical Offset from	Deflection Ratio	Average Horizontal	Maximum Slope	Maximum Settlement	Max. Tensile	Maximum Gradient of	Maximum Gradient of	Min. Radius of	Min. Radius of	Damage Category

Line for Vertical Movement Calculations	Strain		Strain	Horizontal Displacement Curve	Vertical Displacement Curve	Curvature (Hogging)	Curvature (Sagging)	
[m]	[%]	[%]	[mm]	[%]		[m]	[m]	
0	0.0036482	0.036950	-369.93E-6	4.6392	0.039457	-369.36E-6	-369.93E-6	38326. 7304.5 0 (Negligible)

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.059152	-0.078361	-0.0023585	5.9194	0.043804	0.0021146	-0.0023585	249.83		- 0 (Negligible)

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.019020	-0.28842	0.0012137	6.1548	0.057881	0.0092785	0.0012137	761.06		- 1 (Very Slight)

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.010875	0.0	489.38E-6	5.1172	0.010317	0.0	489.38E-6	1602.0	763.05E+15	0 (Negligible)

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.0094987	199.33E-6	-0.0010582	3.0502	0.0088625	217.71E-6	-0.0010582	1811.5		- 0 (Negligible)

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.015703	0.033917	-0.0010699	3.1043	0.042194	-339.06E-6	-0.0010699	1911.2		- 0 (Negligible)

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	357.62E-6	0.0071906	-61.671E-6	0.31706	0.0074216	-137.61E-6	-61.671E-6	93996.		- 0 (Negligible)

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.023612	-0.034547	-0.0018738	4.6394	0.024802	582.52E-6	-0.0018738	540.32	9877.5	0 (Negligible)

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.032440	0.076784	0.0015809	4.7345	0.096236	-0.0012663	0.0015809	845.93		- 2 (Slight)

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.070373	0.0021795	-0.0031667	7.9667	0.070961	-64.896E-6	-0.0031667	205.09	13.079E+6	1 (Very Slight)

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.054899	0.21619	0.0027256	7.9692	0.22793	-0.0044708	0.0027256	300.12	7969.4	3 (Moderate)

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.056584	0.19961	0.0027719	7.9552	0.21219	-0.0041860	0.0027719	288.08	8545.9	3 (Moderate)

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.056584	0.19961	0.0027719	7.9552	0.21219	-0.0041860	0.0027719	288.08	8545.9	3 (Moderate)

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.017595	0.051969	0.0019117	4.5845	0.062781	-0.0013806	0.0019117	613.89		- 1 (Very Slight)

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations										
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.0090332	-0.019619	499.35E-6	1.5307	0.0074393	211.93E-6	499.35E-6	12066.	7355.9	0 (Negligible)

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start [m]	End [m]	Curvature	Maximum Slope	Maximum Settlement [mm]	Max. Tensile Strain [%]	Min. Radius of Curvature (Hogging) [m]	Min. Radius of Curvature (Sagging) [m]	Damage Category
No4south	Maximum Slope		2	0.65496	3.2352	Sagging	**0.0010905**	4.7097	0.013572	-	4805.1	0 (Negligible)
	Maximum Settlement		1	0.0	0.65496	Sagging	78.066E-6	**4.7608**	16.344E-6	-	5172.9	0 (Negligible)
	Max. Tensile Strain		4	6.1107	10.261	Sagging	307.88E-6	3.2069	**0.029520**	-	8614.5	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	3.2352	6.1107	Hogging	0.0010905	3.8865	0.024227	**4251.0**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	0.65496	3.2352	Sagging	0.0010905	4.7097	0.013572	-	**4805.1**	0 (Negligible)
No4east	Maximum Slope		1	0.0	6.3142	Hogging	**369.93E-6**	3.3674	0.032254	38326.	-	0 (Negligible)
	Maximum Settlement		2	6.3142	10.800	Sagging	369.93E-6	**4.6392**	0.039457	-	7304.5	0 (Negligible)
	Max. Tensile Strain		2	6.3142	10.800	Sagging	369.93E-6	4.6392	**0.039457**	-	7304.5	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	6.3142	Hogging	369.93E-6	3.3674	0.032254	**38326.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	6.3142	10.800	Sagging	369.93E-6	4.6392	0.039457	-	**7304.5**	0 (Negligible)
No41-1	Maximum Slope		1	0.0	1.2000	Hogging	**0.0023585**	5.9194	0.043804	249.83	-	0 (Negligible)
	Maximum Settlement		1	0.0	1.2000	Hogging	0.0023585	**5.9194**	0.043804	249.83	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	1.2000	Hogging	0.0023585	5.9194	**0.043804**	249.83	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	1.2000	Hogging	0.0023585	5.9194	0.043804	**249.83**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No41-2	Maximum Slope		1	0.0	5.8333	Hogging	**0.0012137**	6.1548	0.025453	761.06	-	0 (Negligible)
	Maximum Settlement		1	0.0	5.8333	Hogging	0.0012137	**6.1548**	0.025453	761.06	-	0 (Negligible)
	Max. Tensile Strain		3	7.0000	10.400	Hogging	414.90E-6	5.0761	**0.057881**	2165.1	-	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	5.8333	Hogging	0.0012137	6.1548	0.025453	**761.06**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No41-3	Maximum Slope		1	0.0	2.9400	Hogging	**489.38E-6**	5.1172	0.010317	1602.0	-	0 (Negligible)
	Maximum Settlement		1	0.0	2.9400	Hogging	489.38E-6	**5.1172**	0.010317	1602.0	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	2.9400	Hogging	489.38E-6	5.1172	**0.010317**	1602.0	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	2.9400	Hogging	489.38E-6	5.1172	0.010317	**1602.0**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		3	6.8600	9.7000	Sagging	0.0	4.6376	0.0	-	**763.05E+15**	0 (Negligible)
No3east	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
No3north	Maximum Slope		1	0.98026	11.700	Hogging	**0.0010582**	3.0502	0.0088625	1811.5	-	0 (Negligible)
	Maximum Settlement		1	0.98026	11.700	Hogging	0.0010582	**3.0502**	0.0088625	1811.5	-	0 (Negligible)
	Max. Tensile Strain		1	0.98026	11.700	Hogging	0.0010582	3.0502	**0.0088625**	1811.5	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.98026	11.700	Hogging	0.0010582	3.0502	0.0088625	**1811.5**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No3west	Maximum Slope		1	1.6824	8.4000	Hogging	**0.0010699**	3.1043	0.042194	1911.2	-	0 (Negligible)
	Maximum Settlement		1	1.6824	8.4000	Hogging	0.0010699	**3.1043**	0.042194	1911.2	-	0 (Negligible)
	Max. Tensile Strain		1	1.6824	8.4000	Hogging	0.0010699	3.1043	**0.042194**	1911.2	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	1.6824	8.4000	Hogging	0.0010699	3.1043	0.042194	**1911.2**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No31-1	Maximum Slope		2	1.6780	4.5000	Hogging	**61.671E-6**	0.31706	0.0074216	93996.	-	0 (Negligible)
	Maximum Settlement		2	1.6780	4.5000	Hogging	61.671E-6	**0.31706**	0.0074216	93996.	-	0 (Negligible)
	Max. Tensile Strain		2	1.6780	4.5000	Hogging	61.671E-6	0.31706	**0.0074216**	93996.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	1.6780	4.5000	Hogging	61.671E-6	0.31706	0.0074216	**93996.**	-	0 (Negligible)
	Min. Radius of Curvature		-	-	-	-	-	-	-	-	-	-

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start [m]	End [m]	Curvature	Maximum Slope	Maximum Settlement [mm]	Max. Tensile Strain [%]	Min. Radius of Curvature (Hogging) [m]	Min. Radius of Curvature (Sagging) [m]	Damage Category
	(Sagging)											
No31-2	Maximum Slope		3	6.6424	11.900	Hogging	**0.0018738**	4.6394	0.015075	540.32	-	0 (Negligible)
	Maximum Settlement		3	6.6424	11.900	Hogging	0.0018738	**4.6394**	0.015075	540.32	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	4.2758	Hogging	292.17E-6	1.2142	**0.024802**	24418.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	6.6424	11.900	Hogging	0.0018738	4.6394	0.015075	**540.32**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	4.2758	6.6424	Sagging	312.27E-6	1.7301	0.0099145	-	**9877.5**	0 (Negligible)
No31-3	Maximum Slope		1	0.0	2.6000	Hogging	**0.0015809**	4.7345	0.096236	845.93	-	2 (Slight)
	Maximum Settlement		1	0.0	2.6000	Hogging	0.0015809	**4.7345**	0.096236	845.93	-	2 (Slight)
	Max. Tensile Strain		1	0.0	2.6000	Hogging	0.0015809	4.7345	**0.096236**	845.93	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6000	Hogging	0.0015809	4.7345	0.096236	**845.93**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No5south	Maximum Slope		3	4.0630	6.5000	Hogging	**0.0031667**	7.9667	0.070961	205.09	-	1 (Very Slight)
	Maximum Settlement		3	4.0630	6.5000	Hogging	0.0031667	**7.9667**	0.070961	205.09	-	1 (Very Slight)
	Max. Tensile Strain		3	4.0630	6.5000	Hogging	0.0031667	7.9667	**0.070961**	205.09	-	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		3	4.0630	6.5000	Hogging	0.0031667	7.9667	0.070961	**205.09**	-	1 (Very Slight)
	Min. Radius of Curvature (Sagging)		2	2.4377	4.0630	Sagging	1.7872E-6	5.4014	26.643E-6	-	**13.079E+6**	0 (Negligible)
No5west	Maximum Slope		1	0.0	2.6533	Hogging	**0.0027256**	7.9692	0.22793	300.12	-	3 (Moderate)
	Maximum Settlement		1	0.0	2.6533	Hogging	0.0027256	**7.9692**	0.22793	300.12	-	3 (Moderate)
	Max. Tensile Strain		1	0.0	2.6533	Hogging	0.0027256	7.9692	**0.22793**	300.12	-	3 (Moderate)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6533	Hogging	0.0027256	7.9692	0.22793	**300.12**	-	3 (Moderate)
	Min. Radius of Curvature (Sagging)		2	2.6533	5.8633	Sagging	634.85E-6	4.8507	0.075082	-	**7969.4**	2 (Slight)
No5SE	Maximum Slope		1	0.0	2.6197	Hogging	**0.0027719**	7.9552	0.21219	288.08	-	3 (Moderate)
	Maximum Settlement		1	0.0	2.6197	Hogging	0.0027719	**7.9552**	0.21219	288.08	-	3 (Moderate)
	Max. Tensile Strain		1	0.0	2.6197	Hogging	0.0027719	7.9552	**0.21219**	288.08	-	3 (Moderate)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6197	Hogging	0.0027719	7.9552	0.21219	**288.08**	-	3 (Moderate)
	Min. Radius of Curvature (Sagging)		2	2.6197	3.0355	Sagging	483.81E-6	4.8805	0.072661	-	**8545.9**	1 (Very Slight)
No5east	Maximum Slope		1	0.0	7.9276	Hogging	**0.0019117**	4.5845	0.062781	613.89	-	1 (Very Slight)
	Maximum Settlement		1	0.0	7.9276	Hogging	0.0019117	**4.5845**	0.062781	613.89	-	1 (Very Slight)
	Max. Tensile Strain		1	0.0	7.9276	Hogging	0.0019117	4.5845	**0.062781**	613.89	-	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	7.9276	Hogging	0.0019117	4.5845	0.062781	**613.89**	-	1 (Very Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
Greenaway gardens	Maximum Slope	Sub 16	6	33.209	35.936	Sagging	**499.35E-6**	1.5307	0.0074393	-	7355.9	0 (Negligible)
	Maximum Settlement	Sub 16	4	27.836	31.133	Sagging	275.23E-6	**1.5307**	0.0011070	-	10255.	0 (Negligible)
	Max. Tensile Strain	Sub 16	6	33.209	35.936	Sagging	499.35E-6	1.5307	**0.0074393**	-	7355.9	0 (Negligible)
	Min. Radius of Curvature (Hogging)	Sub 16	7	35.936	38.170	Hogging	499.35E-6	1.2056	0.0031733	**12066.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)	Sub 16	6	33.209	35.936	Sagging	499.35E-6	1.5307	0.0074393	-	**7355.9**	0 (Negligible)

Specific Building Damage Results - All Combined Segments

Structure: No4south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	13.000	Sagging	0.0046245	-0.017372	0.0039327	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	10.800	Sagging	0.0019227	0.033842	0.036368	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	10.400	Hogging	0.012369	-0.16089	0.032460	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	9.7000	Hogging	0.0044438	0.0	0.0065210	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.90443	3.5956	Hogging	464.07E-6	0.0071906	0.0075616	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	11.900	Hogging	0.012380	-0.0064747	0.012298	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	6.5000	Hogging	0.039529	42.792E-6	0.038395	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	13.221	Hogging	0.015073	0.085034	0.099388	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	5.5000	Hogging	0.036216	0.11872	0.13451	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical	Combined Segment	Start	Length	Curvature Ratio	Deflection	Average Horizontal Strain	Max. Tensile Strain	Damage Category
Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature Ratio	Deflection	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	17.642	26.982	Sagging	0.0052489	-0.0040771	815.43E-6	0 (Negligible)

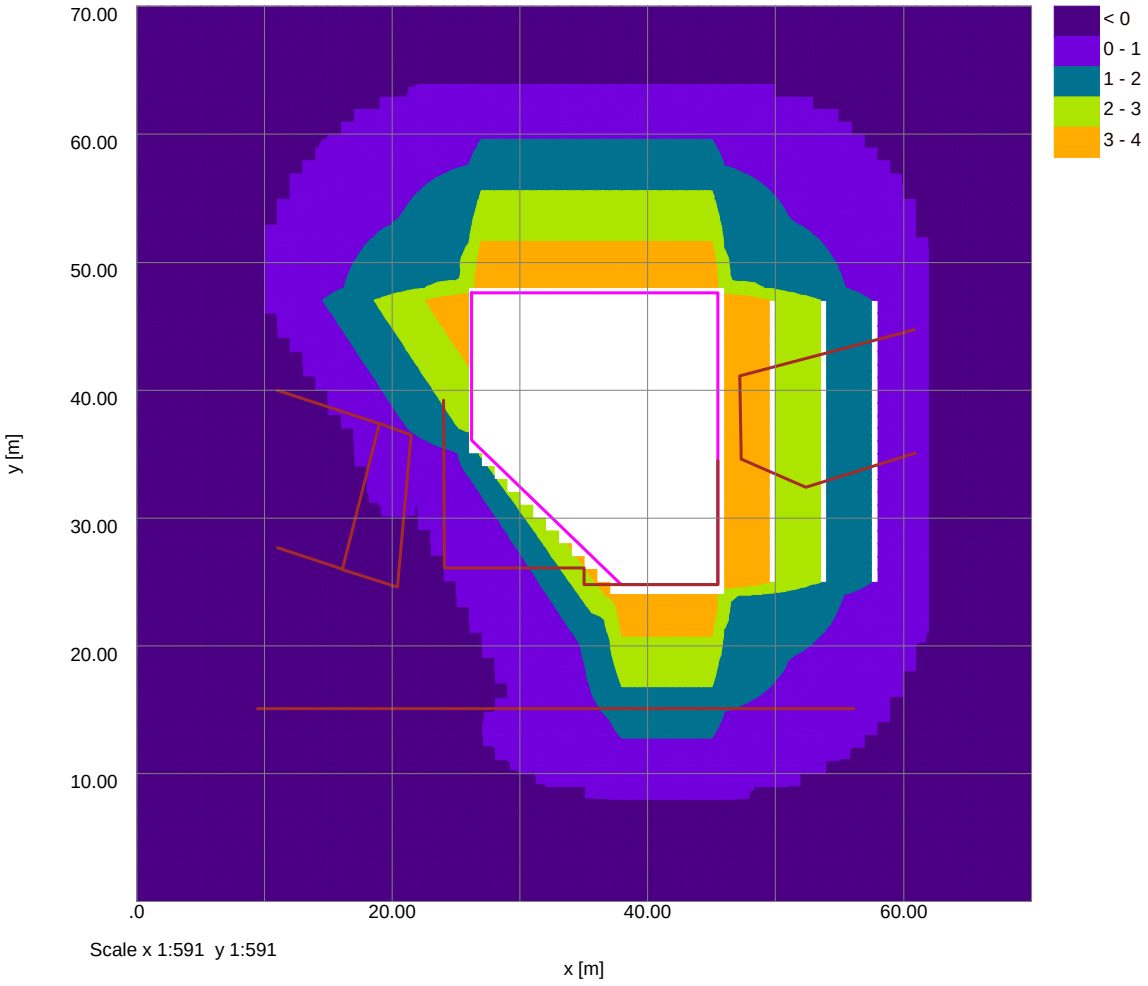
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

X-DISP ANALYSIS

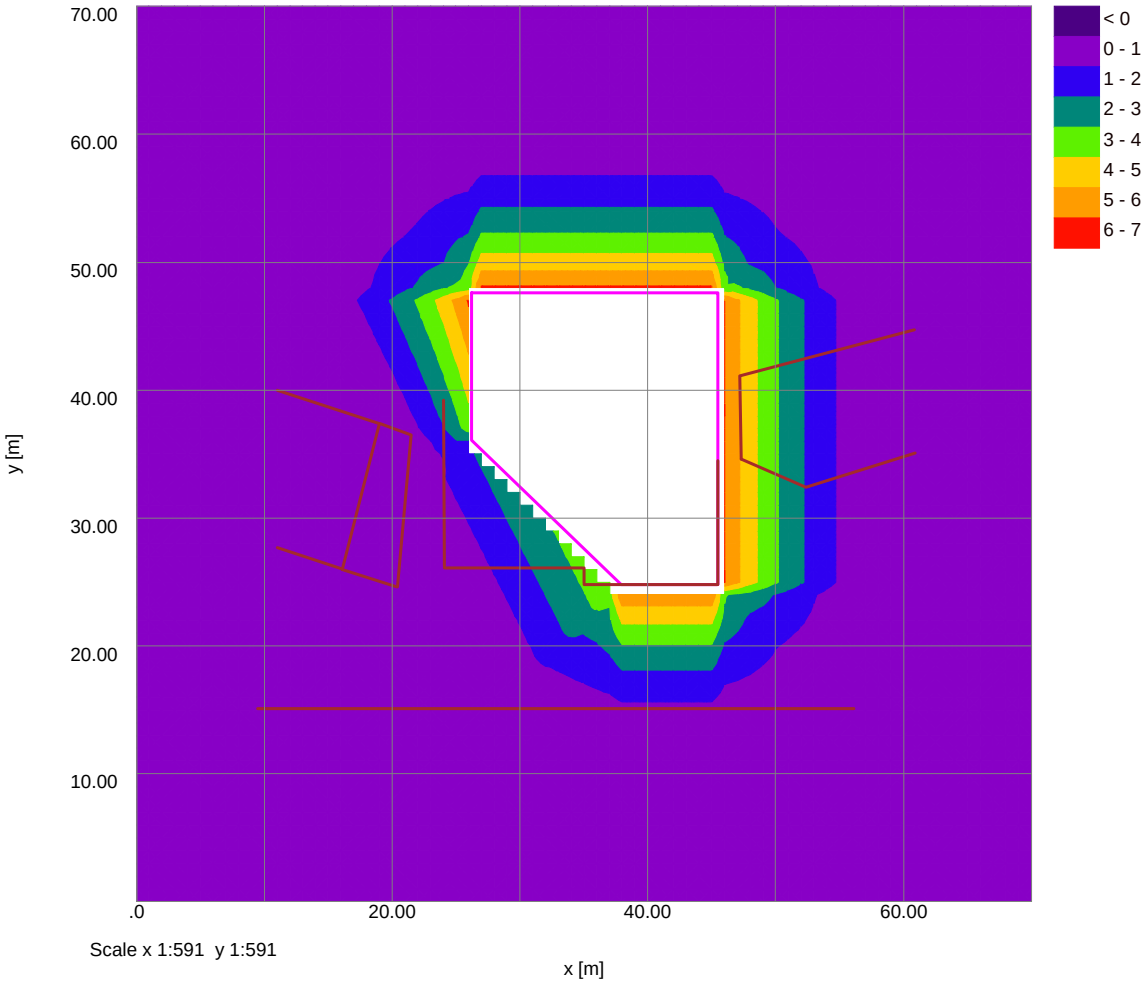
8 M DEEP PILES

Wall Installation

Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 1mm)



Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm

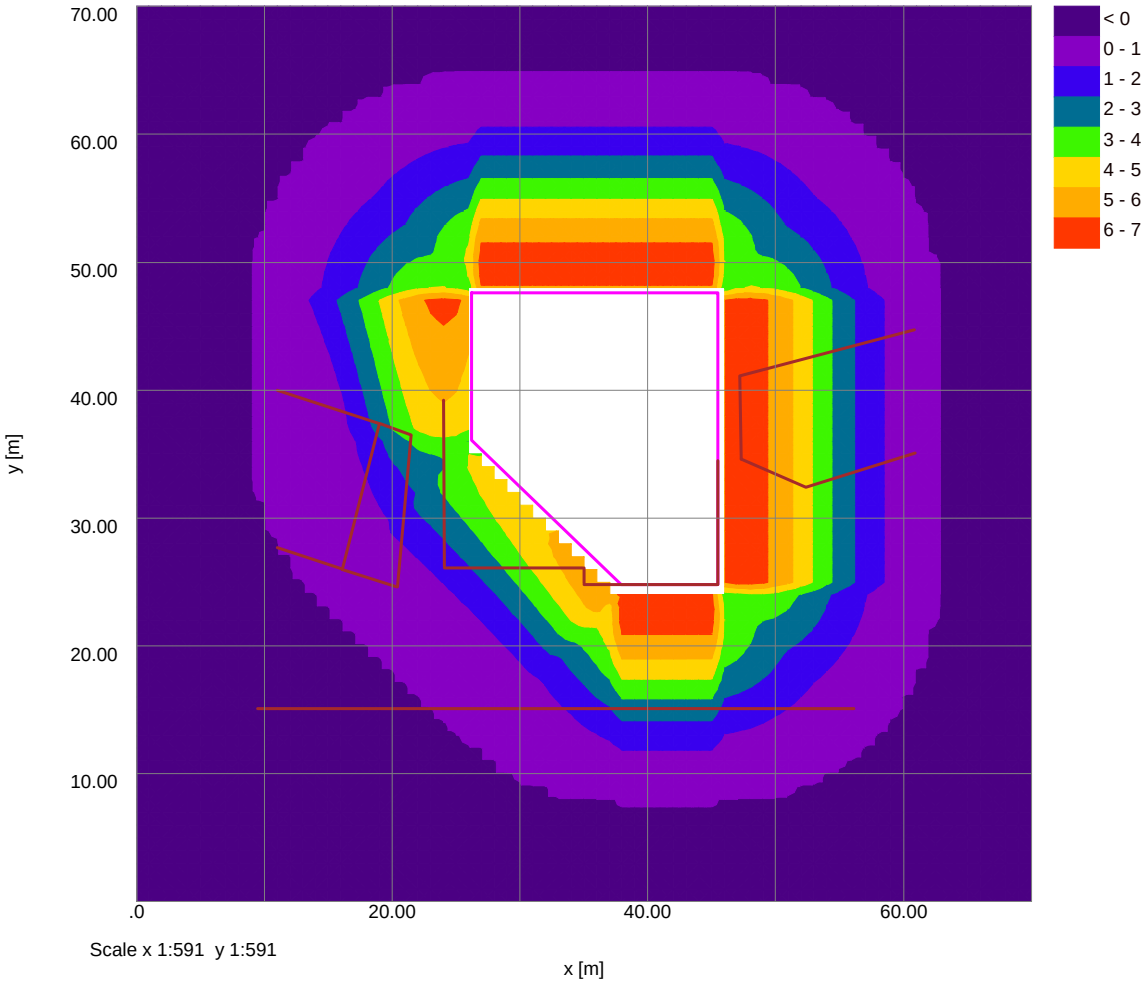


X-DISP ANALYSIS

8 M DEEP PILES

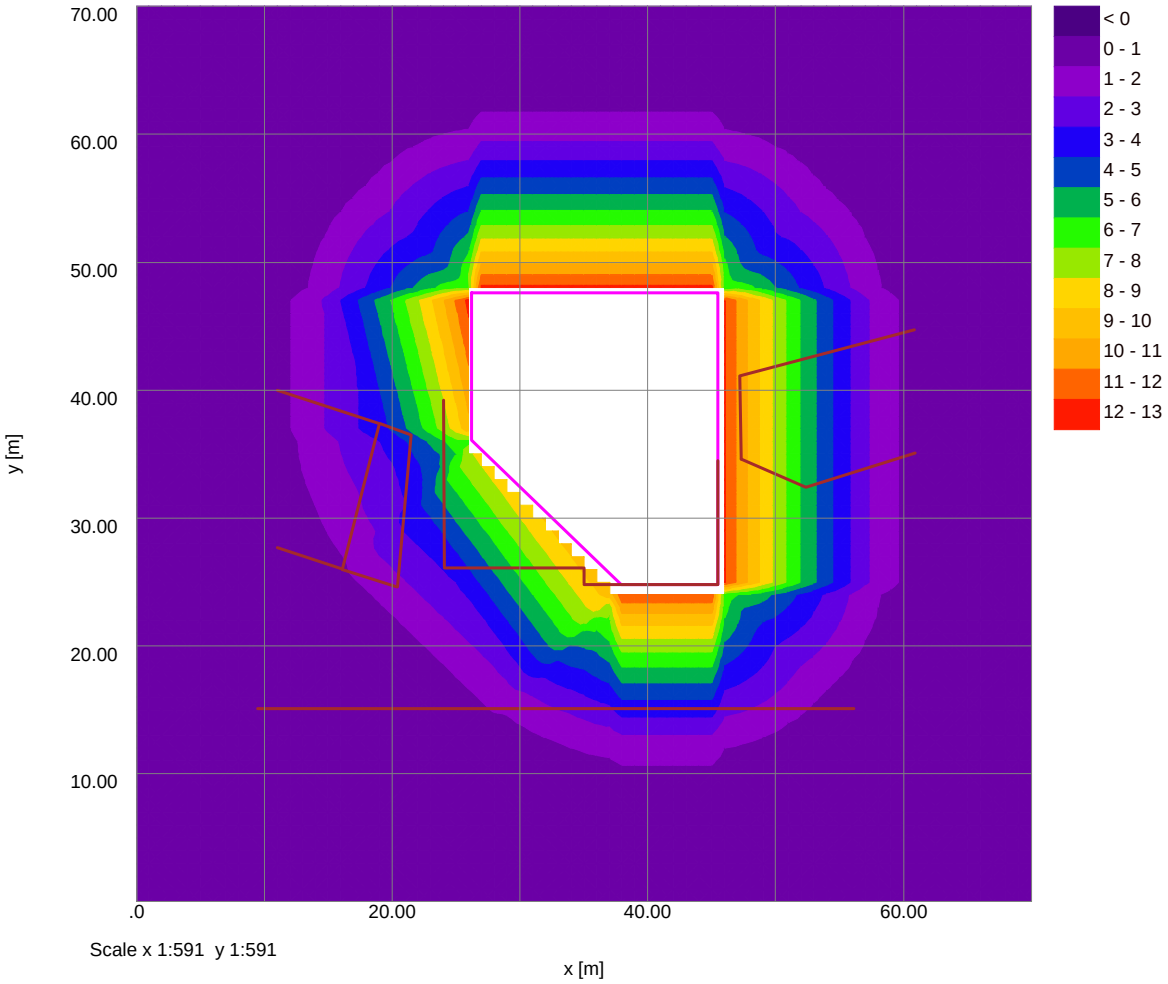
Pile Installation and Basement Excavation

Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 1mm)



Scale x 1:591 y 1:591

Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm



Scale x 1:591 y 1:591

Specific Building Damage Results - Horizontal Displacements

Structure: No4south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.00000	39.20000	-1.80000	7.9498	0.0	0.060684	7.9496 d
1.3100	24.01000	37.89000	-1.80000	7.6388	0.0	0.058310	7.6386 d
2.6201	24.02000	36.58000	-1.80000	7.3322	0.0	0.055969	7.3320 d
3.9301	24.03000	35.27000	-1.80000	4.8718	1.8634	-1.8262	4.8859 d
5.2402	24.04000	33.96000	-1.80000	3.6704	3.6364	-3.6083	3.6981 d
6.5502	24.05000	32.65000	-1.80000	3.9484	4.0882	-4.0579	3.9795 d
7.8602	24.06000	31.34000	-1.80000	3.5626	3.6887	-3.6614	3.5906 d
9.1703	24.07000	30.03000	-1.80000	3.1767	3.2892	-3.2648	3.2018 d
10.480	24.08000	28.72000	-1.80000	2.7909	2.8897	-2.8683	2.8129 d
11.790	24.09000	27.41000	-1.80000	2.4051	2.4902	-2.4718	2.4240 d
13.100	24.10000	26.10000	-1.80000	2.1227	2.1979	-2.1816	2.1394 d

d - Displacements include imported displacements.

Structure: No4east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.10000	26.10000	-1.80000	2.1227	2.1979	2.1227	2.1979 d
0.83846	24.93846	26.10000	-1.80000	2.3548	2.4382	2.3548	2.4382 d
1.6769	25.77692	26.10000	-1.80000	2.6904	2.7856	2.6904	2.7856 d
2.5154	26.61538	26.10000	-1.80000	3.0260	3.1331	3.0260	3.1331 d
3.3538	27.45385	26.10000	-1.80000	3.3615	3.4805	3.3615	3.4805 d
4.1923	28.29231	26.10000	-1.80000	3.6971	3.8280	3.6971	3.8280 d
5.0308	29.13077	26.10000	-1.80000	4.0327	4.1754	4.0327	4.1754 d
5.8692	29.96923	26.10000	-1.80000	4.3682	4.5229	4.3682	4.5229 d
6.7077	30.80769	26.10000	-1.80000	4.7038	4.8703	4.7038	4.8703 d
7.5462	31.64615	26.10000	-1.80000	5.0394	5.2178	5.0394	5.2178 d
8.3846	32.48462	26.10000	-1.80000	5.3750	5.5652	5.3750	5.5652 d
9.2231	33.32308	26.10000	-1.80000	5.7105	5.9127	5.7105	5.9127 d
10.062	34.16154	26.10000	-1.80000	6.0461	6.2601	6.0461	6.2601 d
10.900	35.00000	26.10000	-1.80000	6.3817	6.6076	6.3817	6.6076 d

d - Displacements include imported displacements.

Structure: No41-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.00000	26.10000	-0.86000	6.3817	6.6076	-6.6076	6.3817 d
0.65000	35.00000	25.45000	-0.86000	6.1882	6.4073	-6.4073	6.1882 d
1.3000	35.00000	24.80000	-0.86000	8.1378	8.4259	-8.4259	8.1378 d

d - Displacements include imported displacements.

Structure: No41-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.00000	24.80000	-0.86000	8.1378	8.4259	8.1378	8.4259 d
1.1667	36.16667	24.80000	-0.86000	6.4617	6.6905	6.4617	6.6905 d
2.3333	37.33333	24.80000	-0.86000	6.9287	7.1739	6.9287	7.1739 d
3.5000	38.50000	24.80000	-0.86000	0.0	12.772	0.0	12.772 d
4.6667	39.66667	24.80000	-0.86000	0.0	12.772	0.0	12.772 d
5.8333	40.83333	24.80000	-0.86000	0.0	12.772	0.0	12.772 d
7.0000	42.00000	24.80000	-0.86000	0.0	12.772	0.0	12.772 d
8.1667	43.16667	24.80000	-0.86000	0.0	12.772	0.0	12.772 d
9.3333	44.33333	24.80000	-0.86000	0.0	12.772	0.0	12.772 d
10.500	45.50000	24.80000	-0.86000	-12.894	0.0	-12.894	0.0 d

d - Displacements include imported displacements.

Structure: No41-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	45.50000	24.80000	-0.86000	-12.894	0.0	0.0	12.894 d
0.98000	45.50000	25.78000	-0.86000	-12.772	0.0	0.0	12.772 d
1.9600	45.50000	26.76000	-0.86000	-12.772	0.0	0.0	12.772 d
2.9400	45.50000	27.74000	-0.86000	-12.772	0.0	0.0	12.772 d
3.9200	45.50000	28.72000	-0.86000	-12.772	0.0	0.0	12.772 d
4.9000	45.50000	29.70000	-0.86000	-12.772	0.0	0.0	12.772 d
5.8800	45.50000	30.68000	-0.86000	-12.772	0.0	0.0	12.772 d
6.8600	45.50000	31.66000	-0.86000	-12.772	0.0	0.0	12.772 d
7.8400	45.50000	32.64000	-0.86000	-12.772	0.0	0.0	12.772 d
8.8200	45.50000	33.62000	-0.86000	-12.772	0.0	0.0	12.772 d
9.8000	45.50000	34.60000	-0.86000	-12.772	0.0	0.0	12.772 d

d - Displacements include imported displacements.

Structure: No3east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.00000	27.70000	-0.60000	0.0	0.0	0.0	0.0 d
0.89598	11.85000	27.41667	-0.60000	0.0067964	0.0041126	0.0051471	0.0060507 d
1.7920	12.70000	27.13333	-0.60000	0.14544	0.096598	0.10743	0.13763 d
2.6879	13.55000	26.85000	-0.60000	0.27140	0.19845	0.19472	0.27410 d
3.5839	14.40000	26.56667	-0.60000	0.38263	0.30913	0.26524	0.41426 d
4.4799	15.25000	26.28333	-0.60000	0.47695	0.42759	0.31726	0.55647 d
5.3759	16.10000	26.00000	-0.60000	0.55222	0.55222	0.34926	0.69851 d

d - Displacements include imported displacements.

Structure: No3north | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	16.10000	26.00000	-0.60000	0.55222	0.55222	0.67132	-0.39904 d
0.98026	16.34167	26.95000	-0.60000	0.75453	0.70032	0.86472	-0.55859 d
1.9605	16.58333	27.90000	-0.60000	0.96245	0.82066	1.0326	-0.73042 d
2.9408	16.82500	28.85000	-0.60000	1.1745	0.90828	1.1698	-0.91433 d
3.9210	17.06667	29.80000	-0.60000	1.3881	0.95750	1.2702	-1.1092 d
4.9013	17.30833	30.75000	-0.60000	1.5991	0.96215	1.3267	-1.3125 d
5.8815	17.55000	31.70000	-0.60000	1.8010	0.91613	1.3319	-1.5196 d
6.8618	17.79167	32.65000	-0.60000	1.9987	0.82006	1.2875	-1.7348 d
7.8421	18.03333	33.60000	-0.60000	2.2717	0.69540	1.2340	-2.0301 d
8.8223	18.27500	34.55000	-0.60000	2.5352	0.49584	1.1056	-2.3347 d
9.8026	18.51667	35.50000	-0.60000	2.7689	0.21623	0.89219	-2.6301 d
10.783	18.75833	36.45000	-0.60000	3.5094	0.0	0.86518	-3.4011 d
11.763	19.00000	37.40000	-0.60000	3.6000	0.0	0.88752	-3.4889 d

d - Displacements include imported displacements.

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	11.00000	40.00000	-0.60000	0.60000	0.0	0.57062	0.18545	d
1.6824	12.60000	39.48000	-0.60000	1.2000	0.0	1.1412	0.37090	d
3.3648	14.20000	38.96000	-0.60000	1.8000	0.0	1.7119	0.55635	d
5.0471	15.80000	38.44000	-0.60000	2.4000	0.0	2.2825	0.74181	d
6.7295	17.40000	37.92000	-0.60000	3.0000	0.0	2.8531	0.92726	d
8.4119	19.00000	37.40000	-0.60000	3.6000	0.0	3.4237	1.1127	d

d - Displacements include imported displacements.

Structure: No31-1 | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	16.10000	26.00000	-0.60000	0.55222	0.55222	0.35413	0.69605	d
0.90443	16.96000	25.72000	-0.60000	0.75931	0.78618	0.47861	0.98263	d
1.8089	17.82000	25.44000	-0.60000	0.86248	0.89301	0.54364	1.1162	d
2.7133	18.68000	25.16000	-0.60000	0.96566	0.99984	0.60868	1.2497	d
3.6177	19.54000	24.88000	-0.60000	1.0688	1.1067	0.67371	1.3832	d
4.5222	20.40000	24.60000	-0.60000	1.1720	1.2135	0.73875	1.5167	d

d - Displacements include imported displacements.

Structure: No31-2 | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	20.40000	24.60000	-0.60000	1.1720	1.2135	1.3162	-1.0553	d
0.99589	20.49167	25.59167	-0.60000	1.3744	1.4231	1.5435	-1.2376	d
1.9918	20.58333	26.58333	-0.60000	1.5768	1.6327	1.7709	-1.4199	d
2.9877	20.67500	27.57500	-0.60000	1.7792	1.8422	1.9982	-1.6021	d
3.9836	20.76667	28.56667	-0.60000	1.9817	2.0518	2.2255	-1.7844	d
4.9795	20.85833	29.55833	-0.60000	2.1841	2.2614	2.4528	-1.9667	d
5.9754	20.95000	30.55000	-0.60000	2.3865	2.4710	2.6801	-2.1489	d
6.9713	21.04167	31.54167	-0.60000	2.2689	2.0049	2.2053	-2.0747	d
7.9672	21.13333	32.53333	-0.60000	2.5926	1.8251	2.0560	-2.4136	d
8.9630	21.22500	33.52500	-0.60000	2.9986	1.5520	1.8214	-2.8430	d
9.9589	21.31667	34.51667	-0.60000	3.4697	1.1250	1.4396	-3.3514	d
10.955	21.40833	35.50833	-0.60000	3.9991	0.49380	0.85980	-3.9366	d
11.951	21.50000	36.50000	-0.60000	5.8234	0.0	0.53601	-5.7987	d

d - Displacements include imported displacements.

Structure: No31-3 | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	21.50000	36.50000	-0.60000	5.8234	0.0	-5.4792	-1.9725	d
0.88569	20.66667	36.80000	-0.60000	4.6170	0.0	-4.3440	-1.5639	d
1.7714	19.83333	37.10000	-0.60000	4.0638	0.0	-3.8235	-1.3765	d
2.6571	19.00000	37.40000	-0.60000	3.6000	0.0	-3.3872	-1.2194	d

d - Displacements include imported displacements.

Structure: No5south | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	47.30000	34.60000	-0.60000	-15.439	0.0	0.23750	15.437	d
0.81260	47.28750	35.41250	-0.60000	-10.546	0.0	0.16223	10.545	d
1.6252	47.27500	36.22500	-0.60000	-10.561	0.0	0.16246	10.560	d
2.4378	47.26250	37.03750	-0.60000	-10.575	0.0	0.16268	10.574	d
3.2504	47.25000	37.85000	-0.60000	-10.590	0.0	0.16290	10.589	d
4.0630	47.23750	38.66250	-0.60000	-10.604	0.0	0.16313	10.603	d
4.8756	47.22500	39.47500	-0.60000	-10.619	0.0	0.16335	10.618	d
5.6882	47.21250	40.28750	-0.60000	-10.633	0.0	0.16357	10.632	d
6.5008	47.20000	41.10000	-0.60000	-15.634	0.0	0.24049	15.632	d

d - Displacements include imported displacements.

Structure: No5west | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	47.20000	41.10000	-0.60000	-15.634	0.0	-15.120	3.9732	d
0.94434	48.11333	41.34000	-0.60000	-9.6217	0.0	-9.3058	2.4453	d
1.8887	49.02667	41.58000	-0.60000	-8.6659	0.0	-8.3813	2.2024	d
2.8330	49.94000	41.82000	-0.60000	-7.7730	0.0	-7.5177	1.9755	d
3.7774	50.85333	42.06000	-0.60000	-6.9354	0.0	-6.7077	1.7626	d
4.7217	51.76667	42.30000	-0.60000	-6.1456	0.0	-5.9438	1.5619	d
5.6660	52.68000	42.54000	-0.60000	-5.3959	0.0	-5.2188	1.3714	d
6.6104	53.59333	42.78000	-0.60000	-4.6789	0.0	-4.5253	1.1891	d
7.5547	54.50667	43.02000	-0.60000	-3.9869	0.0	-3.8560	1.0133	d
8.4991	55.42000	43.26000	-0.60000	-3.3124	0.0	-3.2036	0.84183	d
9.4434	56.33333	43.50000	-0.60000	-2.6477	0.0	-2.5608	0.67291	d
10.388	57.24667	43.74000	-0.60000	-1.9853	0.0	-1.9202	0.50457	d
11.332	58.16000	43.98000	-0.60000	-1.5525	0.0	-1.5015	0.39456	d
12.276	59.07333	44.22000	-0.60000	-1.2100	0.0	-1.1703	0.30752	d
13.221	59.98667	44.46000	-0.60000	-0.86750	0.0	-0.83902	0.22047	d
14.165	60.90000	44.70000	-0.60000	-0.52500	0.0	-0.50776	0.13343	d

d - Displacements include imported displacements.

Structure: No5SE | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	47.30000	34.60000	-0.60000	-15.439	0.0	-14.176	-6.1153	d
0.92571	48.15000	34.23333	-0.60000	-9.5820	0.0	-8.7983	-3.7954	d
1.8514	49.00000	33.86667	-0.60000	-8.6929	0.0	-7.9819	-3.4432	d
2.7771	49.85000	33.50000	-0.60000	-7.8584	0.0	-7.2156	-3.1126	d
3.7029	50.70000	33.13333	-0.60000	-7.0725	0.0	-6.4940	-2.8013	d
4.6286	51.55000	32.76667	-0.60000	-6.3290	0.0	-5.8114	-2.5069	d
5.5543	52.40000	32.40000	-0.60000	-7.5314	0.0	-6.9154	-2.9831	d

d - Displacements include imported displacements.

Structure: No5east | Sub-structure:

Dist.	Coordinates			Displacements				
	x	y	z	x	y	Along the Line	Perpendicular to Line	
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	
0.0	52.40000	32.40000	-0.60000	-7.5314	0.0	-7.1780	2.2801	d

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.99095	53.34444	32.70000	-0.60000	-4.8715	0.0	-4.6429	1.4748 d
1.9819	54.28889	33.00000	-0.60000	-4.1501	0.0	-3.9553	1.2564 d
2.9728	55.23333	33.30000	-0.60000	-3.4492	0.0	-3.2873	1.0442 d
3.9638	56.17778	33.60000	-0.60000	-2.7606	0.0	-2.6310	0.83573 d
4.9547	57.12222	33.90000	-0.60000	-2.0757	0.0	-1.9783	0.62841 d
5.9457	58.06667	34.20000	-0.60000	-1.5875	0.0	-1.5130	0.48060 d
6.9366	59.01111	34.50000	-0.60000	-1.2333	0.0	-1.1755	0.37338 d
7.9276	59.95556	34.80000	-0.60000	-0.87917	0.0	-0.83791	0.26616 d
8.9185	60.90000	35.10000	-0.60000	-0.52500	0.0	-0.50036	0.15894 d

d - Displacements include imported displacements.

Structure: Greenaway gardens | Sub-structure: Sub 16

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	9.50000	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
1.0378	10.53778	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
2.0756	11.57556	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
3.1133	12.61333	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
4.1511	13.65111	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
5.1889	14.68889	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
6.2267	15.72667	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
7.2644	16.76444	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
8.3022	17.80222	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
9.3400	18.84000	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
10.378	19.87778	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
11.416	20.91556	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
12.453	21.95333	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
13.491	22.99111	15.10000	-0.50000	0.0	0.0	0.0	0.0 d
14.529	24.02889	15.10000	-0.50000	0.048590	0.050310	0.048590	0.050310 d
15.567	25.06667	15.10000	-0.50000	0.23641	0.24478	0.23641	0.24478 d
16.604	26.10444	15.10000	-0.50000	0.42422	0.43924	0.42422	0.43924 d
17.642	27.14222	15.10000	-0.50000	0.61204	0.63371	0.61204	0.63371 d
18.680	28.18000	15.10000	-0.50000	0.79986	0.82817	0.79986	0.82817 d
19.718	29.21778	15.10000	-0.50000	0.78548	0.87756	0.78548	0.87756 d
20.756	30.25556	15.10000	-0.50000	0.84373	1.0706	0.84373	1.0706 d
21.793	31.29333	15.10000	-0.50000	0.89741	1.3176	0.89741	1.3176 d
22.831	32.33111	15.10000	-0.50000	0.93132	1.6222	0.93132	1.6222 d
23.869	33.36889	15.10000	-0.50000	0.88506	1.8947	0.88506	1.8947 d
24.907	34.40667	15.10000	-0.50000	0.78012	2.1662	0.78012	2.1662 d
25.944	35.44444	15.10000	-0.50000	0.62377	2.4641	0.62377	2.4641 d
26.982	36.48222	15.10000	-0.50000	0.39585	2.7083	0.39585	2.7083 d
28.020	37.52000	15.10000	-0.50000	0.11264	2.8753	0.11264	2.8753 d
29.058	38.55778	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
30.096	39.59556	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
31.133	40.63333	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
32.171	41.67111	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
33.209	42.70889	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
34.247	43.74667	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
35.284	44.78444	15.10000	-0.50000	0.0	3.4737	0.0	3.4737 d
36.322	45.82222	15.10000	-0.50000	-0.076354	2.2985	-0.076354	2.2985 d
37.360	46.86000	15.10000	-0.50000	-0.30242	2.1570	-0.30242	2.1570 d
38.398	47.89778	15.10000	-0.50000	-0.48307	1.9542	-0.48307	1.9542 d
39.436	48.93556	15.10000	-0.50000	-0.60563	1.7100	-0.60563	1.7100 d
40.473	49.97333	15.10000	-0.50000	-0.66574	1.4436	-0.66574	1.4436 d
41.511	51.01111	15.10000	-0.50000	-0.66551	1.1714	-0.66551	1.1714 d
42.549	52.04889	15.10000	-0.50000	-0.61096	0.90494	-0.61096	0.90494 d
43.587	53.08667	15.10000	-0.50000	-0.54542	0.69735	-0.54542	0.69735 d
44.624	54.12444	15.10000	-0.50000	-0.48804	0.54891	-0.48804	0.54891 d
45.662	55.16222	15.10000	-0.50000	-0.41172	0.41333	-0.41172	0.41333 d
46.700	56.20000	15.10000	-0.50000	-0.33446	0.30321	-0.33446	0.30321 d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: No4south | Sub-structure:

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	24.00000	39.20000	-1.80000	5.0304 d
1.3100	24.01000	37.89000	-1.80000	4.8142 d
2.6201	24.02000	36.58000	-1.80000	4.5980 d
3.9301	24.03000	35.27000	-1.80000	3.1298 d
5.2402	24.04000	33.96000	-1.80000	2.9239 d
6.5502	24.05000	32.65000	-1.80000	3.2374 d
7.8602	24.06000	31.34000	-1.80000	2.9005 d
9.1703	24.07000	30.03000	-1.80000	2.5229 d
10.480	24.08000	28.72000	-1.80000	2.1221 d
11.790	24.09000	27.41000	-1.80000	1.7106 d
13.100	24.10000	26.10000	-1.80000	1.3280 d

d - Displacements include imported displacements.

Structure: No4east | Sub-structure:

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	24.10000	26.10000	-1.80000	1.3280 d
0.83846	24.93846	26.10000	-1.80000	1.5774 d
1.6769	25.77692	26.10000	-1.80000	1.8513 d
2.5154	26.61538	26.10000	-1.80000	2.1418 d
3.3538	27.45385	26.10000	-1.80000	2.4606 d
4.1923	28.29231	26.10000	-1.80000	2.8107 d
5.0308	29.13077	26.10000	-1.80000	3.1885 d
5.8692	29.96923	26.10000	-1.80000	3.5853 d
6.7077	30.80769	26.10000	-1.80000	3.9884 d
7.5462	31.64615	26.10000	-1.80000	4.3818 d
8.3846	32.48462	26.10000	-1.80000	4.7472 d
9.2231	33.32308	26.10000	-1.80000	5.0642 d
10.062	34.16154	26.10000	-1.80000	5.3110 d
10.900	35.00000	26.10000	-1.80000	5.4642 d

d - Displacements include imported displacements.

Structure: No41-1 | Sub-structure:

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	35.00000	26.10000	-0.86000	5.4642 d
0.65000	35.00000	25.45000	-0.86000	5.4576 d
1.3000	35.00000	24.80000	-0.86000	7.8487 d

d - Displacements include imported displacements.

Structure: No41-2 | Sub-structure:

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	35.00000	24.80000	-0.86000	7.8487 d
1.1667	36.16667	24.80000	-0.86000	5.6582 d
2.3333	37.33333	24.80000	-0.86000	5.7104 d
3.5000	38.50000	24.80000	-0.86000	5.6376 d
4.6667	39.66667	24.80000	-0.86000	5.6376 d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
5.8333	40.83333	24.80000	-0.86000	5.6376 d
7.0000	42.00000	24.80000	-0.86000	5.6376 d
8.1667	43.16667	24.80000	-0.86000	5.6376 d
9.3333	44.33333	24.80000	-0.86000	5.6376 d
10.500	45.50000	24.80000	-0.86000	6.4572 d

d - Displacements include imported displacements.

Structure: No41-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	45.50000	24.80000	-0.86000	6.4572 d
0.98000	45.50000	25.78000	-0.86000	5.6376 d
1.9600	45.50000	26.76000	-0.86000	5.6376 d
2.9400	45.50000	27.74000	-0.86000	5.6376 d
3.9200	45.50000	28.72000	-0.86000	5.6376 d
4.9000	45.50000	29.70000	-0.86000	5.6376 d
5.8800	45.50000	30.68000	-0.86000	5.6376 d
6.8600	45.50000	31.66000	-0.86000	5.6376 d
7.8400	45.50000	32.64000	-0.86000	5.6376 d
8.8200	45.50000	33.62000	-0.86000	5.6376 d
9.8000	45.50000	34.60000	-0.86000	5.6376 d

d - Displacements include imported displacements.

Structure: No3east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	11.00000	27.70000	-0.60000	-0.0020000 d
0.89598	11.85000	27.41667	-0.60000	0.0034418 d
1.7920	12.70000	27.13333	-0.60000	0.031375 d
2.6879	13.55000	26.85000	-0.60000	0.050526 d
3.5839	14.40000	26.56667	-0.60000	0.066344 d
4.4799	15.25000	26.28333	-0.60000	0.082395 d
5.3759	16.10000	26.00000	-0.60000	0.098601 d

d - Displacements include imported displacements.

Structure: No3north | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	16.10000	26.00000	-0.60000	0.098601 d
0.98026	16.34167	26.95000	-0.60000	0.14769 d
1.9605	16.58333	27.90000	-0.60000	0.21903 d
2.9408	16.82500	28.85000	-0.60000	0.31691 d
3.9210	17.06667	29.80000	-0.60000	0.43868 d
4.9013	17.30833	30.75000	-0.60000	0.57754 d
5.8815	17.55000	31.70000	-0.60000	0.72360 d
6.8618	17.79167	32.65000	-0.60000	0.87116 d
7.8421	18.03333	33.60000	-0.60000	1.0518 d
8.8223	18.27500	34.55000	-0.60000	1.2778 d
9.8026	18.51667	35.50000	-0.60000	1.5169 d
10.783	18.75833	36.45000	-0.60000	2.1101 d
11.763	19.00000	37.40000	-0.60000	3.4561 d

d - Displacements include imported displacements.

Structure: No3west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	11.00000	40.00000	-0.60000	0.081562 d
1.6824	12.60000	39.48000	-0.60000	0.16768 d
3.3648	14.20000	38.96000	-0.60000	0.36943 d
5.0471	15.80000	38.44000	-0.60000	0.73912 d
6.7295	17.40000	37.92000	-0.60000	1.4746 d
8.4119	19.00000	37.40000	-0.60000	3.4561 d

d - Displacements include imported displacements.

Structure: No31-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	16.10000	26.00000	-0.60000	0.098601 d
0.90443	16.96000	25.72000	-0.60000	0.14623 d
1.8089	17.82000	25.44000	-0.60000	0.17700 d
2.7133	18.68000	25.16000	-0.60000	0.21545 d
3.6177	19.54000	24.88000	-0.60000	0.26265 d
4.5222	20.40000	24.60000	-0.60000	0.31843 d

d - Displacements include imported displacements.

Structure: No31-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	20.40000	24.60000	-0.60000	0.31843 d
0.99589	20.49167	25.59167	-0.60000	0.46091 d
1.9918	20.58333	26.58333	-0.60000	0.64396 d
2.9877	20.67500	27.57500	-0.60000	0.86786 d
3.9836	20.76667	28.56667	-0.60000	1.1288 d
4.9795	20.85833	29.55833	-0.60000	1.4198 d
5.9754	20.95000	30.55000	-0.60000	1.7309 d
6.9713	21.04167	31.54167	-0.60000	1.6897 d
7.9672	21.13333	32.53333	-0.60000	1.9308 d
8.9630	21.22500	33.52500	-0.60000	2.1575 d
9.9589	21.31667	34.51667	-0.60000	2.4610 d
10.955	21.40833	35.50833	-0.60000	2.8690 d
11.951	21.50000	36.50000	-0.60000	4.8040 d

d - Displacements include imported displacements.

Structure: No31-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	21.50000	36.50000	-0.60000	4.8040 d
0.88569	20.66667	36.80000	-0.60000	3.3933 d
1.7714	19.83333	37.10000	-0.60000	2.9223 d
2.6571	19.00000	37.40000	-0.60000	3.4561 d

d - Displacements include imported displacements.

Structure: No5south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	47.30000	34.60000	-0.60000	9.9552 d
0.81260	47.28750	35.41250	-0.60000	6.4040 d
1.6252	47.27500	36.22500	-0.60000	6.4027 d
2.4378	47.26250	37.03750	-0.60000	6.4014 d
3.2504	47.25000	37.85000	-0.60000	6.4001 d
4.0630	47.23750	38.66250	-0.60000	6.3987 d
4.8756	47.22500	39.47500	-0.60000	6.3972 d
5.6882	47.21250	40.28750	-0.60000	6.3957 d
6.5008	47.20000	41.10000	-0.60000	9.9692 d

d - Displacements include imported displacements.

Structure: No5west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	47.20000	41.10000	-0.60000	9.9692 d
0.94434	48.11333	41.34000	-0.60000	6.3837 d
1.8887	49.02667	41.58000	-0.60000	6.1604 d
2.8330	49.94000	41.82000	-0.60000	5.7780 d
3.7774	50.85333	42.06000	-0.60000	5.2844 d
4.7217	51.76667	42.30000	-0.60000	4.7214 d
5.6660	52.68000	42.54000	-0.60000	4.1250 d
6.6104	53.59333	42.78000	-0.60000	3.5251 d
7.5547	54.50667	43.02000	-0.60000	2.9456 d
8.4991	55.42000	43.26000	-0.60000	2.4047 d
9.4434	56.33333	43.50000	-0.60000	1.9143 d
10.388	57.24667	43.74000	-0.60000	1.4805 d
11.332	58.16000	43.98000	-0.60000	1.1036 d
12.276	59.07333	44.22000	-0.60000	0.77754 d
13.221	59.98667	44.46000	-0.60000	0.49065 d
14.165	60.90000	44.70000	-0.60000	0.22514 d

d - Displacements include imported displacements.

Structure: No5SE | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	47.30000	34.60000	-0.60000	9.9552 d
0.92571	48.15000	34.23333	-0.60000	6.3784 d
1.8514	49.00000	33.86667	-0.60000	6.1694 d
2.7771	49.85000	33.50000	-0.60000	5.8213 d
3.7029	50.70000	33.13333	-0.60000	5.3731 d
4.6286	51.55000	32.76667	-0.60000	4.8592 d
5.5543	52.40000	32.40000	-0.60000	6.5845 d

d - Displacements include imported displacements.

Structure: No5east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	52.40000	32.40000	-0.60000	6.5845 d
0.99095	53.34444	32.70000	-0.60000	3.6874 d
1.9819	54.28889	33.00000	-0.60000	3.0809 d
2.9728	55.23333	33.30000	-0.60000	2.5114 d
3.9638	56.17778	33.60000	-0.60000	1.9939 d
4.9547	57.12222	33.90000	-0.60000	1.5362 d
5.9457	58.06667	34.20000	-0.60000	1.1396 d
6.9366	59.01111	34.50000	-0.60000	0.79834 d
7.9276	59.95556	34.80000	-0.60000	0.49995 d
8.9185	60.90000	35.10000	-0.60000	0.22514 d

d - Displacements include imported displacements.

Structure: Greenaway gardens | Sub-structure: Sub 16

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	9.50000	15.10000	-0.50000	-0.0020000 d
1.0378	10.53778	15.10000	-0.50000	-0.0020000 d
2.0756	11.57556	15.10000	-0.50000	-0.0020000 d
3.1133	12.61333	15.10000	-0.50000	-0.0020000 d
4.1511	13.65111	15.10000	-0.50000	-0.0020000 d
5.1889	14.68889	15.10000	-0.50000	-0.0020000 d
6.2267	15.72667	15.10000	-0.50000	-0.0020000 d
7.2644	16.76444	15.10000	-0.50000	-0.0020000 d
8.3022	17.80222	15.10000	-0.50000	-0.0020000 d
9.3400	18.84000	15.10000	-0.50000	-0.0020000 d
10.378	19.87778	15.10000	-0.50000	-0.0020000 d
11.416	20.91556	15.10000	-0.50000	-0.0020000 d
12.453	21.95333	15.10000	-0.50000	-0.0020000 d
13.491	22.99111	15.10000	-0.50000	-0.0020000 d
14.529	24.02889	15.10000	-0.50000	0.016257 d
15.567	25.06667	15.10000	-0.50000	0.054870 d
16.604	26.10444	15.10000	-0.50000	0.082626 d
17.642	27.14222	15.10000	-0.50000	0.11308 d
18.680	28.18000	15.10000	-0.50000	0.15749 d
19.718	29.21778	15.10000	-0.50000	0.21442 d
20.756	30.25556	15.10000	-0.50000	0.34585 d
21.793	31.29333	15.10000	-0.50000	0.52459 d
22.831	32.33111	15.10000	-0.50000	0.73698 d
23.869	33.36889	15.10000	-0.50000	0.96262 d
24.907	34.40667	15.10000	-0.50000	1.2169 d
25.944	35.44444	15.10000	-0.50000	1.5090 d
26.982	36.48222	15.10000	-0.50000	1.7902 d
28.020	37.52000	15.10000	-0.50000	2.0415 d
29.058	38.55778	15.10000	-0.50000	2.5307 d
30.096	39.59556	15.10000	-0.50000	2.5307 d
31.133	40.63333	15.10000	-0.50000	2.5307 d
32.171	41.67111	15.10000	-0.50000	2.5307 d
33.209	42.70889	15.10000	-0.50000	2.5307 d
34.247	43.74667	15.10000	-0.50000	2.5307 d
35.284	44.78444	15.10000	-0.50000	2.5307 d
36.322	45.82222	15.10000	-0.50000	1.6753 d
37.360	46.86000	15.10000	-0.50000	1.5843 d
38.398	47.89778	15.10000	-0.50000	1.4599 d
39.436	48.93556	15.10000	-0.50000	1.3114 d
40.473	49.97333	15.10000	-0.50000	1.1482 d
41.511	51.01111	15.10000	-0.50000	0.97920 d
42.549	52.04889	15.10000	-0.50000	0.81199 d
43.587	53.08667	15.10000	-0.50000	0.65250 d
44.624	54.12444	15.10000	-0.50000	0.50456 d
45.662	55.16222	15.10000	-0.50000	0.36963 d
46.700	56.20000	15.10000	-0.50000	0.25730 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: No4south | Sub-structure:

Dist.	Coordinates			Displacements
	x	y	z	z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	0.65496	None	0.0	-181.22E-6	36.228E-6	1.8122E-6	165.02E-6	5470.4	0 (Negligible)
	2	0.65496	2.5008	Sagging	0.015962	-0.030917	0.011925	0.0014388	0.0011224	5469.5	0 (Negligible)
	3	3.1558	2.9603	Hogging	0.021691	-0.10794	0.025081	0.0014388	0.0011224	3820.8	0 (Negligible)
	4	6.1161	4.5633	Sagging	0.0045007	0.024124	0.027265	343.30E-6	314.02E-6	8373.7	0 (Negligible)
	5	10.679	2.3206	Hogging	545.60E-6	0.026038	0.026140	-302.59E-6	314.02E-6	43141.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	6.1603	Hogging	0.0027964	0.038343	0.039701	-400.06E-6	-480.53E-6	23745.	0 (Negligible)
	2	6.1603	4.6397	Sagging	0.0043731	0.040022	0.043118	-400.06E-6	-480.53E-6	6623.1	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	1.2000	Hogging	0.091245	-0.12565	0.067474	0.0031152	-0.0036900	161.95	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	5.8333	Hogging	0.029926	-0.13951	0.031461	0.0059743	0.0018803	479.34	0 (Negligible)
	2	5.8333	1.1667	None	0.0	0.0	0.0	0.0	0.0 -		0 (Negligible)
	3	7.0000	3.4000	Hogging	0.015191	-0.34672	0.069825	0.011175	-710.36E-6	1263.7	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	2.9400	Hogging	0.018585	0.0	0.017631	0.0	836.32E-6	937.44	0 (Negligible)
	2	2.9400	6.7600	Sagging	0.0	0.0	0.0	0.0	0.0 -		0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	All settlements are less than the Settlement Trough Limit Sensitivity.										

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.98026	10.720	Hogging	0.011935	199.33E-6	0.011115	217.71E-6	-0.0013731	1091.8	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	1.6824	6.7176	Hogging	0.017142	0.033917	0.042952	-339.06E-6	-0.0011774	1925.6	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.90443	0.77361	None	0.0	0.0071906	0.0071906	-137.61E-6	-52.658E-6	76291.	0 (Negligible)
	2	1.6780	2.8220	Hogging	357.62E-6	0.0071906	0.0074216	-71.900E-6	-61.671E-6	93996.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical	Segment	Start [m]	Length [m]	Curvature	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal	Maximum Gradient of Vertical	Min. Radius of Curvature [m]	Damage Category

Movement Calculations								Displacement Curve	Displacement Curve		
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	4.2758	Hogging	0.0021423	0.022826	0.024802	-228.21E-6	-292.17E-6	24418.	0 (Negligible)
	2	4.2758	2.3665	Sagging	0.0069764	0.0029532	0.0099145	477.06E-6	-312.27E-6	9877.5	0 (Negligible)
	3	6.6424	5.2576	Hogging	0.024640	-0.034418	0.015689	582.52E-6	-0.0019437	515.38	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6000	Hogging	0.036117	0.079380	0.10104	-0.0012800	0.0015907	739.20	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.4377	Hogging	0.097085	-0.0030691	0.095467	92.627E-6	0.0043706	148.79	2 (Slight)
	2	2.4377	1.6253	Sagging	1.5330E-6	27.459E-6	27.859E-6	0.0	1.7872E-6	13.079E+6	0 (Negligible)
	3	4.0630	2.4370	Hogging	0.097701	0.0031716	0.098578	-94.645E-6	-0.0043972	147.73	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.7061	Hogging	0.078275	0.27665	0.29401	-0.0061195	0.0037736	212.20	3 (Moderate)
	2	2.7061	3.1572	Sagging	0.0023939	0.081081	0.082271	-913.66E-6	634.81E-6	7926.3	2 (Slight)
	3	5.8633	8.2367	Hogging	0.0055260	0.055159	0.058675	-733.81E-6	634.81E-6	16167.	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6658	Hogging	0.079814	0.25765	0.27686	-0.0057760	0.0038414	203.70	3 (Moderate)
	2	2.6658	0.26215	Sagging	0.0026385	0.080000	0.080112	-827.04E-6	483.78E-6	8484.6	2 (Slight)
	3	2.9280	2.5720	Hogging	0.053044	0.0096188	0.056958	0.0011940	-0.0018659	297.12	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	8.9000	Hogging	0.024474	0.074958	0.091656	-0.0025517	0.0029161	345.64	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	17.642	8.1676	Hogging	0.0034870	391.99E-6	0.0028121	-180.95E-6	-281.57E-6	20671.	0 (Negligible)
	2	25.810	0.21451	Sagging	246.52E-6	-0.017634	0.0035293	219.68E-6	-281.57E-6	309690.	0 (Negligible)
	3	26.024	1.7827	Sagging	714.08E-6	-0.024427	0.0048864	272.97E-6	-271.00E-6	25861.	0 (Negligible)
	4	27.807	3.3263	Sagging	0.010077	-0.0051336	0.0032185	272.97E-6	-471.48E-6	5856.5	0 (Negligible)
	5	31.133	2.0756	Hogging	0.0	0.0	0.0	0.0	0.0 -		0 (Negligible)
	6	33.209	2.6946	Sagging	0.014536	-0.0016902	0.012578	73.580E-6	824.30E-6	4554.6	0 (Negligible)
	7	35.903	2.3645	Hogging	0.010449	-0.017548	0.0043516	217.89E-6	824.30E-6	6396.6	0 (Negligible)
	8	38.268	3.0508	Sagging	454.65E-6	-0.0067219	0.0013446	174.11E-6	162.88E-6	45138.	0 (Negligible)
	9	41.319	5.2812	Hogging	781.15E-6	0.0061283	0.0069069	-74.435E-6	162.88E-6	40951.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: No4south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.021691	-0.10794	0.0011224	5.0304	0.027265	0.0014388	0.0011224	3820.8	5469.5	0 (Negligible)

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category

[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.0043731	0.040022	-480.53E-6	5.4459	0.043118	-400.06E-6	-480.53E-6	23745.	6623.1	0 (Negligible)

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.091245	-0.12565	-0.0036900	7.4808	0.067474	0.0031152	-0.0036900	161.95		- 1 (Very Slight)

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.029926	-0.34672	0.0018803	7.8487	0.069825	0.011175	0.0018803	479.34		- 1 (Very Slight)

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.018585		0.0	836.32E-6	6.4572	0.017631	0.0	836.32E-6	937.44	- 0 (Negligible)

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.011935	199.33E-6	-0.0013731	3.3695	0.011115	217.71E-6	-0.0013731	1091.8		- 0 (Negligible)

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.017142	0.033917	-0.0011774	3.4421	0.042952	-339.06E-6	-0.0011774	1925.6		- 0 (Negligible)

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	357.62E-6	0.0071906	-61.671E-6	0.31706	0.0074216	-137.61E-6	-61.671E-6	93996.		- 0 (Negligible)

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.024640	-0.034418	-0.0019437	4.7054	0.024802	582.52E-6	-0.0019437	515.38	9877.5	0 (Negligible)

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.036117	0.079380	0.0015907	4.8040	0.10104	-0.0012800	0.0015907	739.20		- 2 (Slight)

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.097701	0.0031716	-0.0043972	9.9658	0.098578	-94.645E-6	-0.0043972	147.73	13.079E+6	2 (Slight)

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.078275	0.27665	0.0037736	9.9692	0.29401	-0.0061195	0.0037736	212.20	7926.3	3 (Moderate)

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.079814	0.25765	0.0038414	9.9552	0.27686	-0.0057760	0.0038414	203.70	8484.6	3 (Moderate)

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.024474	0.074958	0.0029161	6.5845	0.091656	-0.0025517	0.0029161	345.64		- 2 (Slight)

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.014536	-0.024427	824.30E-6	2.5307	0.012578	272.97E-6	824.30E-6	6396.6	4554.6	0 (Negligible)

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
				[m]	[m]			[mm]	[%]	[m]	[m]	
No4south	Maximum Slope		2	0.65496	3.1558	Sagging	**0.0011224**	4.9223	0.011925	-	5469.5	0 (Negligible)
	Maximum Settlement		1	0.0	0.65496	Sagging	165.02E-6	**5.0304**	36.228E-6	-	5470.4	0 (Negligible)
	Max. Tensile Strain		4	6.1161	10.679	Sagging	314.02E-6	3.2329	**0.027265**	-	8373.7	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	3.1558	6.1161	Hogging	0.0011224	3.9976	0.025081	**3820.8**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	0.65496	3.1558	Sagging	0.0011224	4.9223	0.011925	-	**5469.5**	0 (Negligible)
No4east	Maximum Slope		1	0.0	6.1603	Hogging	**480.53E-6**	3.7252	0.039701	23745.	-	0 (Negligible)
	Maximum Settlement		2	6.1603	10.800	Sagging	480.53E-6	**5.4459**	0.043118	-	6623.1	0 (Negligible)
	Max. Tensile Strain		2	6.1603	10.800	Sagging	480.53E-6	5.4459	**0.043118**	-	6623.1	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	6.1603	Hogging	480.53E-6	3.7252	0.039701	**23745.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	6.1603	10.800	Sagging	480.53E-6	5.4459	0.043118	-	**6623.1**	0 (Negligible)
No41-1	Maximum Slope		1	0.0	1.2000	Hogging	**0.0036900**	7.4808	0.067474	161.95	-	1 (Very Slight)
	Maximum Settlement		1	0.0	1.2000	Hogging	0.0036900	**7.4808**	0.067474	161.95	-	1 (Very Slight)
	Max. Tensile Strain		1	0.0	1.2000	Hogging	0.0036900	7.4808	**0.067474**	161.95	-	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	1.2000	Hogging	0.0036900	7.4808	0.067474	**161.95**	-	1 (Very Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No41-2	Maximum Slope		1	0.0	5.8333	Hogging	**0.0018803**	7.8487	0.031461	479.34	-	0 (Negligible)
	Maximum Settlement		1	0.0	5.8333	Hogging	0.0018803	**7.8487**	0.031461	479.34	-	0 (Negligible)
	Max. Tensile Strain		3	7.0000	10.400	Hogging	710.36E-6	6.3869	**0.069825**	1263.7	-	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	5.8333	Hogging	0.0018803	7.8487	0.031461	**479.34**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No41-3	Maximum Slope		1	0.0	2.9400	Hogging	**836.32E-6**	6.4572	0.017631	937.44	-	0 (Negligible)
	Maximum Settlement		1	0.0	2.9400	Hogging	836.32E-6	**6.4572**	0.017631	937.44	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	2.9400	Hogging	836.32E-6	6.4572	**0.017631**	937.44	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	2.9400	Hogging	836.32E-6	6.4572	0.017631	**937.44**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No3east	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
No3north	Maximum Slope		1	0.98026	11.700	Hogging	**0.0013731**	3.3695	0.011115	1091.8	-	0 (Negligible)
	Maximum Settlement		1	0.98026	11.700	Hogging	0.0013731	**3.3695**	0.011115	1091.8	-	0 (Negligible)
	Max. Tensile Strain		1	0.98026	11.700	Hogging	0.0013731	3.3695	**0.011115**	1091.8	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.98026	11.700	Hogging	0.0013731	3.3695	0.011115	**1091.8**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No3west	Maximum Slope		1	1.6824	8.4000	Hogging	**0.0011774**	3.4421	0.042952	1925.6	-	0 (Negligible)
	Maximum Settlement		1	1.6824	8.4000	Hogging	0.0011774	**3.4421**	0.042952	1925.6	-	0 (Negligible)
	Max. Tensile Strain		1	1.6824	8.4000	Hogging	0.0011774	3.4421	**0.042952**	1925.6	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	1.6824	8.4000	Hogging	0.0011774	3.4421	0.042952	**1925.6**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No31-1	Maximum Slope		2	1.6780	4.5000	Hogging	**61.671E-6**	0.31706	0.0074216	93996.	-	0 (Negligible)
	Maximum Settlement		2	1.6780	4.5000	Hogging	61.671E-6	**0.31706**	0.0074216	93996.	-	0 (Negligible)
	Max. Tensile Strain		2	1.6780	4.5000	Hogging	61.671E-6	0.31706	**0.0074216**	93996.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	1.6780	4.5000	Hogging	61.671E-6	0.31706	0.0074216	**93996.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No31-2	Maximum Slope		3	6.6424	11.900	Hogging	**0.0019437**	4.7054	0.015689	515.38	-	0 (Negligible)
	Maximum Settlement		3	6.6424	11.900	Hogging	0.0019437	**4.7054**	0.015689	515.38	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
	Max. Tensile Strain		1	0.0	4.2758	Hogging	292.17E-6	1.2142	**0.024802**	24418.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	6.6424	11.900	Hogging	0.0019437	4.7054	0.015689	**515.38**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	4.2758	6.6424	Sagging	312.27E-6	1.7301	0.0099145	-	**9877.5**	0 (Negligible)
No31-3	Maximum Slope		1	0.0	2.6000	Hogging	**0.0015907**	4.8040	0.10104	739.20	-	2 (Slight)
	Maximum Settlement		1	0.0	2.6000	Hogging	0.0015907	**4.8040**	0.10104	739.20	-	2 (Slight)
	Max. Tensile Strain		1	0.0	2.6000	Hogging	0.0015907	4.8040	**0.10104**	739.20	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6000	Hogging	0.0015907	4.8040	0.10104	**739.20**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No5south	Maximum Slope		3	4.0630	6.5000	Hogging	**0.0043972**	9.9658	0.098578	147.73	-	2 (Slight)
	Maximum Settlement		3	4.0630	6.5000	Hogging	0.0043972	**9.9658**	0.098578	147.73	-	2 (Slight)
	Max. Tensile Strain		3	4.0630	6.5000	Hogging	0.0043972	9.9658	**0.098578**	147.73	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		3	4.0630	6.5000	Hogging	0.0043972	9.9658	0.098578	**147.73**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		2	2.4377	4.0630	Sagging	1.7872E-6	6.4014	27.859E-6	-	**13.079E+6**	0 (Negligible)
No5west	Maximum Slope		1	0.0	2.7061	Hogging	**0.0037736**	9.9692	0.29401	212.20	-	3 (Moderate)
	Maximum Settlement		1	0.0	2.7061	Hogging	0.0037736	**9.9692**	0.29401	212.20	-	3 (Moderate)
	Max. Tensile Strain		1	0.0	2.7061	Hogging	0.0037736	9.9692	**0.29401**	212.20	-	3 (Moderate)
	Min. Radius of Curvature (Hogging)		1	0.0	2.7061	Hogging	0.0037736	9.9692	0.29401	**212.20**	-	3 (Moderate)
	Min. Radius of Curvature (Sagging)		2	2.7061	5.8633	Sagging	634.81E-6	5.8294	0.082271	-	**7926.3**	2 (Slight)
No5SE	Maximum Slope		1	0.0	2.6658	Hogging	**0.0038414**	9.9552	0.27686	203.70	-	3 (Moderate)
	Maximum Settlement		1	0.0	2.6658	Hogging	0.0038414	**9.9552**	0.27686	203.70	-	3 (Moderate)
	Max. Tensile Strain		1	0.0	2.6658	Hogging	0.0038414	9.9552	**0.27686**	203.70	-	3 (Moderate)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6658	Hogging	0.0038414	9.9552	0.27686	**203.70**	-	3 (Moderate)
	Min. Radius of Curvature (Sagging)		2	2.6658	2.9280	Sagging	483.78E-6	5.8632	0.080112	-	**8484.6**	2 (Slight)
No5east	Maximum Slope		1	0.0	8.9000	Hogging	**0.0029161**	6.5845	0.091656	345.64	-	2 (Slight)
	Maximum Settlement		1	0.0	8.9000	Hogging	0.0029161	**6.5845**	0.091656	345.64	-	2 (Slight)
	Max. Tensile Strain		1	0.0	8.9000	Hogging	0.0029161	6.5845	**0.091656**	345.64	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	8.9000	Hogging	0.0029161	6.5845	0.091656	**345.64**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
Greenaway gardens	Maximum Slope	Sub 16	6	33.209	35.903	Sagging	**824.30E-6**	2.5307	0.012578	-	4554.6	0 (Negligible)
	Maximum Settlement	Sub 16	5	31.133	33.209	Hogging	0.0	**2.5307**	0.0	-	-	0 (Negligible)
	Max. Tensile Strain	Sub 16	6	33.209	35.903	Sagging	824.30E-6	2.5307	**0.012578**	-	4554.6	0 (Negligible)
	Min. Radius of Curvature (Hogging)	Sub 16	7	35.903	38.268	Hogging	824.30E-6	2.0205	0.0043516	**6396.6**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)	Sub 16	6	33.209	35.903	Sagging	824.30E-6	2.5307	0.012578	-	**4554.6**	0 (Negligible)

Specific Building Damage Results - All Combined Segments

Structure: No4south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	0.0	13.000	Sagging	0.0060719	-0.017419	0.0042601	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	0.0	10.800	Hogging	0.0020563	0.039064	0.040725	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	

No structures have segments combined.

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	0.0	10.400	Hogging	0.019356	-0.19160	0.038898	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	9.7000	Hogging 0.0075942		0.0	0.011144	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.90443	3.5956	Hogging 464.07E-6		0.0071906	0.0075616	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	11.900	Hogging 0.012845		-0.0064177	0.013060	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	6.5000	Hogging 0.054901		44.930E-6	0.053320	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	14.100	Hogging 0.020611		0.10347	0.12409	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
0	1	0.0	5.5000	Hogging 0.054180		0.13319	0.15681	3 (Moderate)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category

No structures have segments combined.

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for	Combined Segment	Start	Length	Curvature Ratio	Deflection	Average Horizontal Strain	Max. Tensile Strain	Damage Category

Vertical Movement Calculations

[m]		[m]	[m]		[%]	[%]	[%]	
0	1	17.642	28.958	Sagging	0.0081327	-0.0032943	658.86E-6	0 (Negligible)

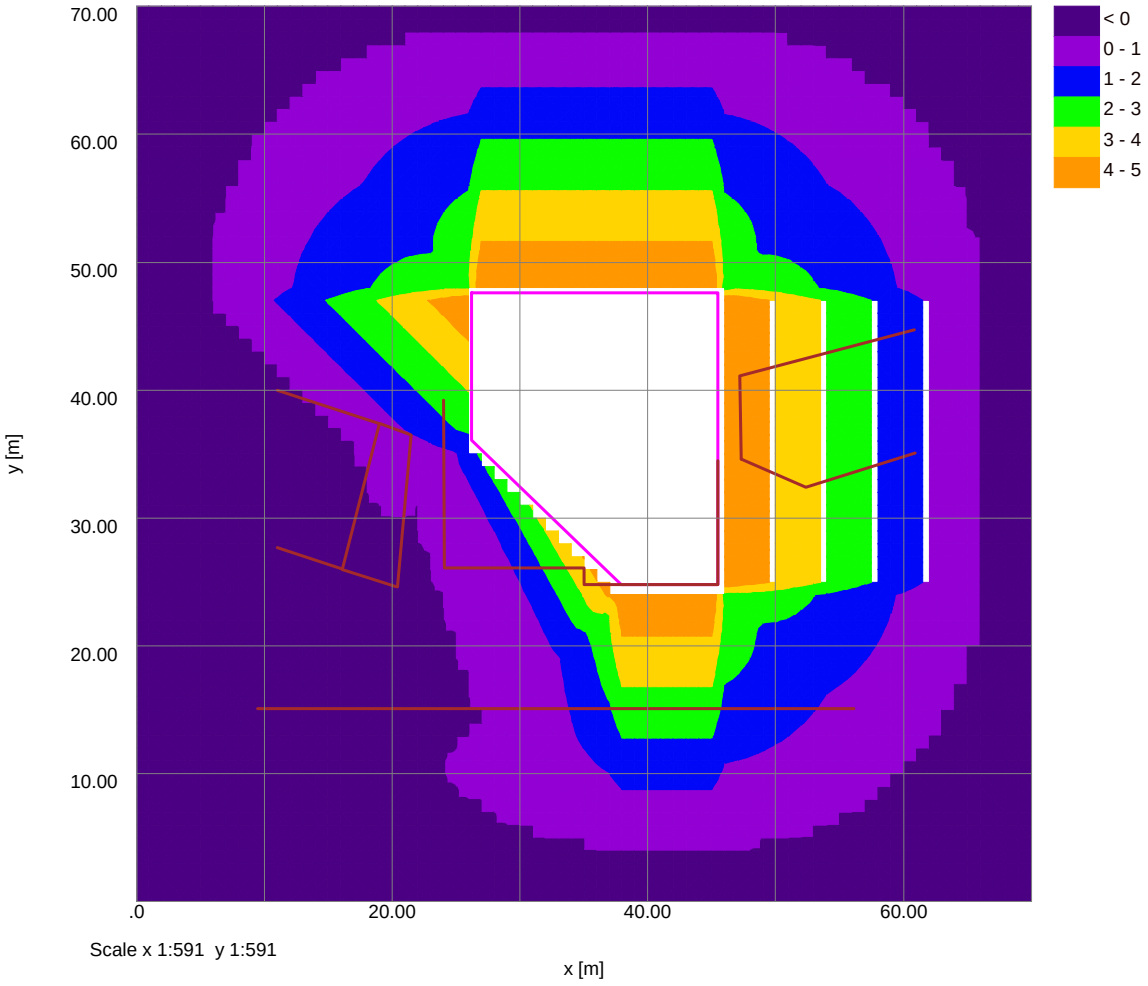
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

X-DISP ANALYSIS

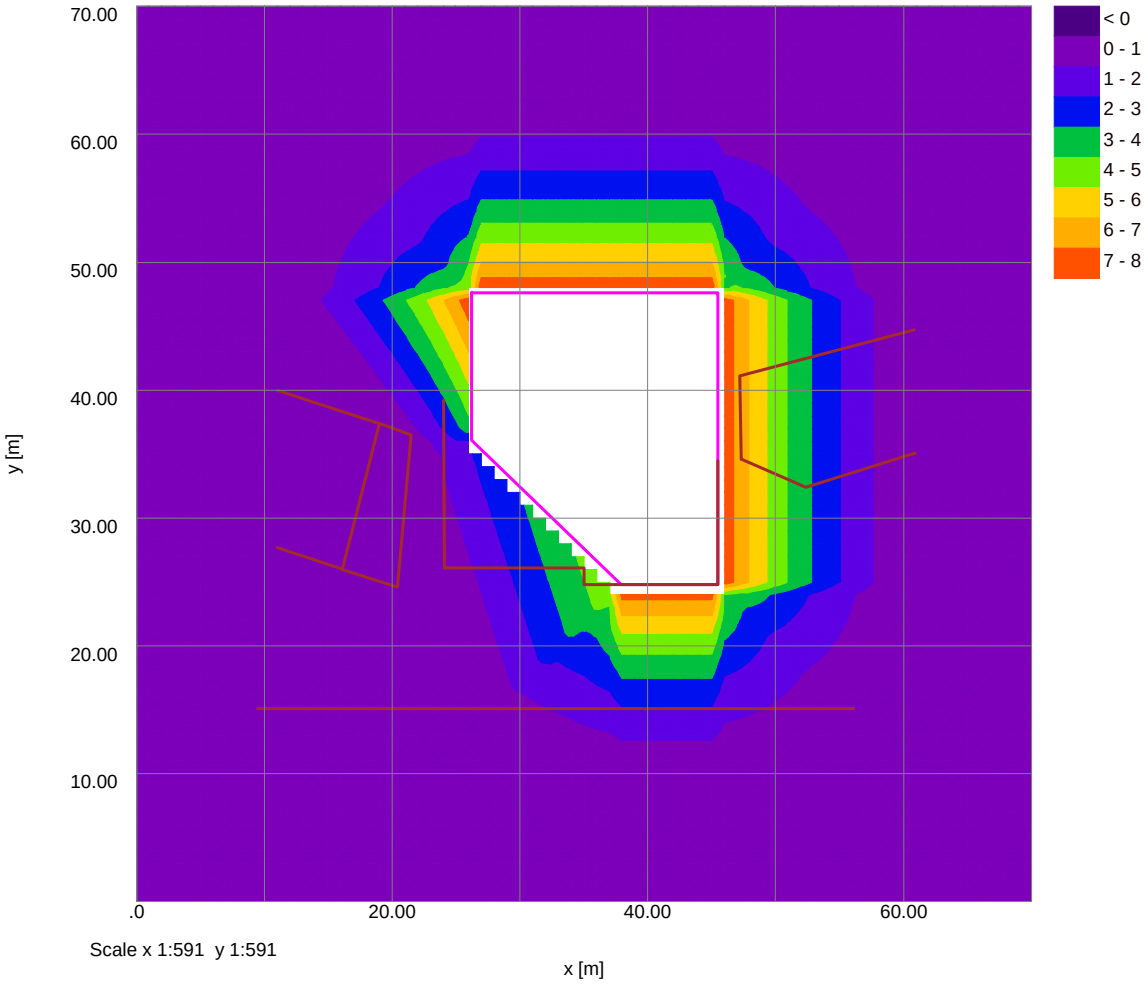
10 M DEEP PILES

Wall Installation

Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 1mm)



Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm



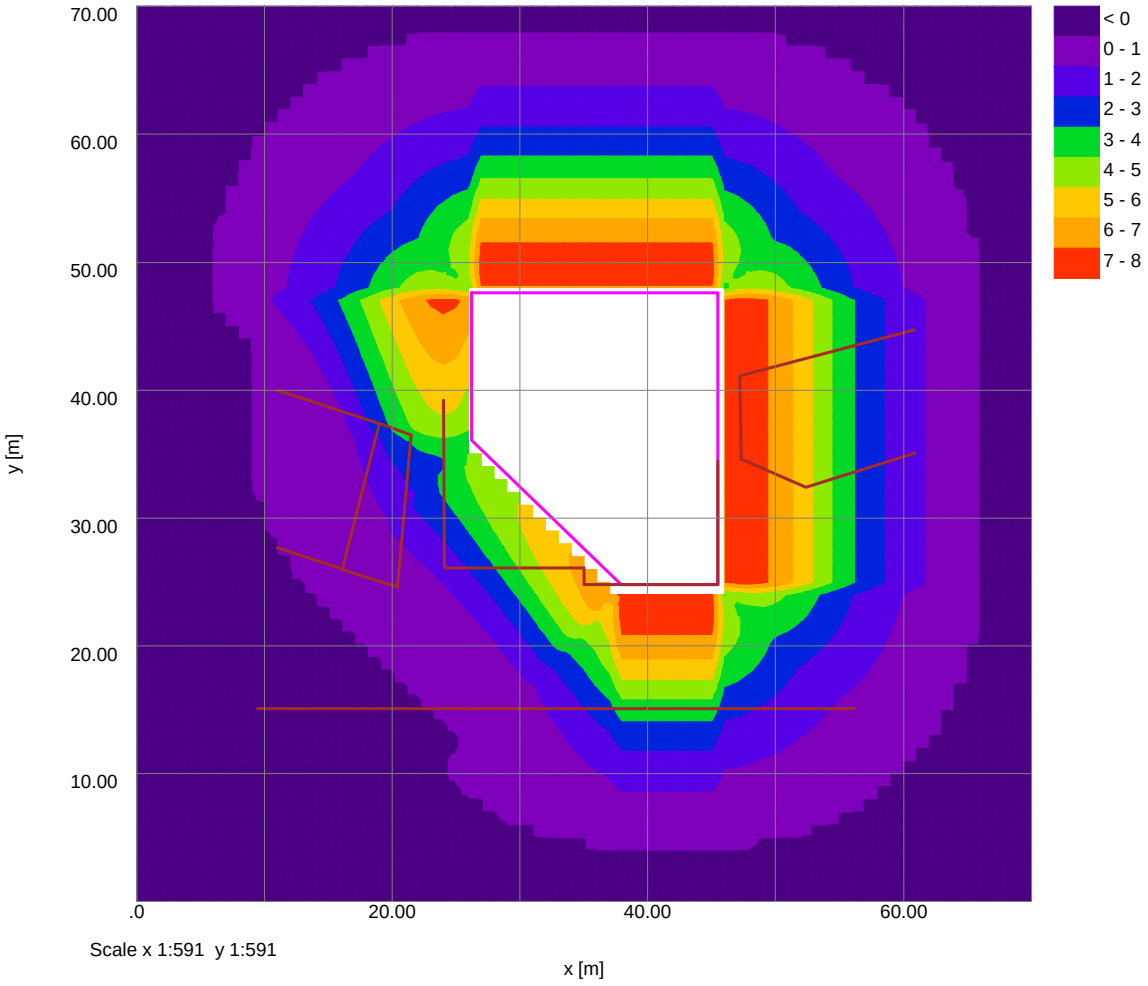
Scale x 1:591 y 1:591

X-DISP ANALYSIS

10 M DEEP PILES

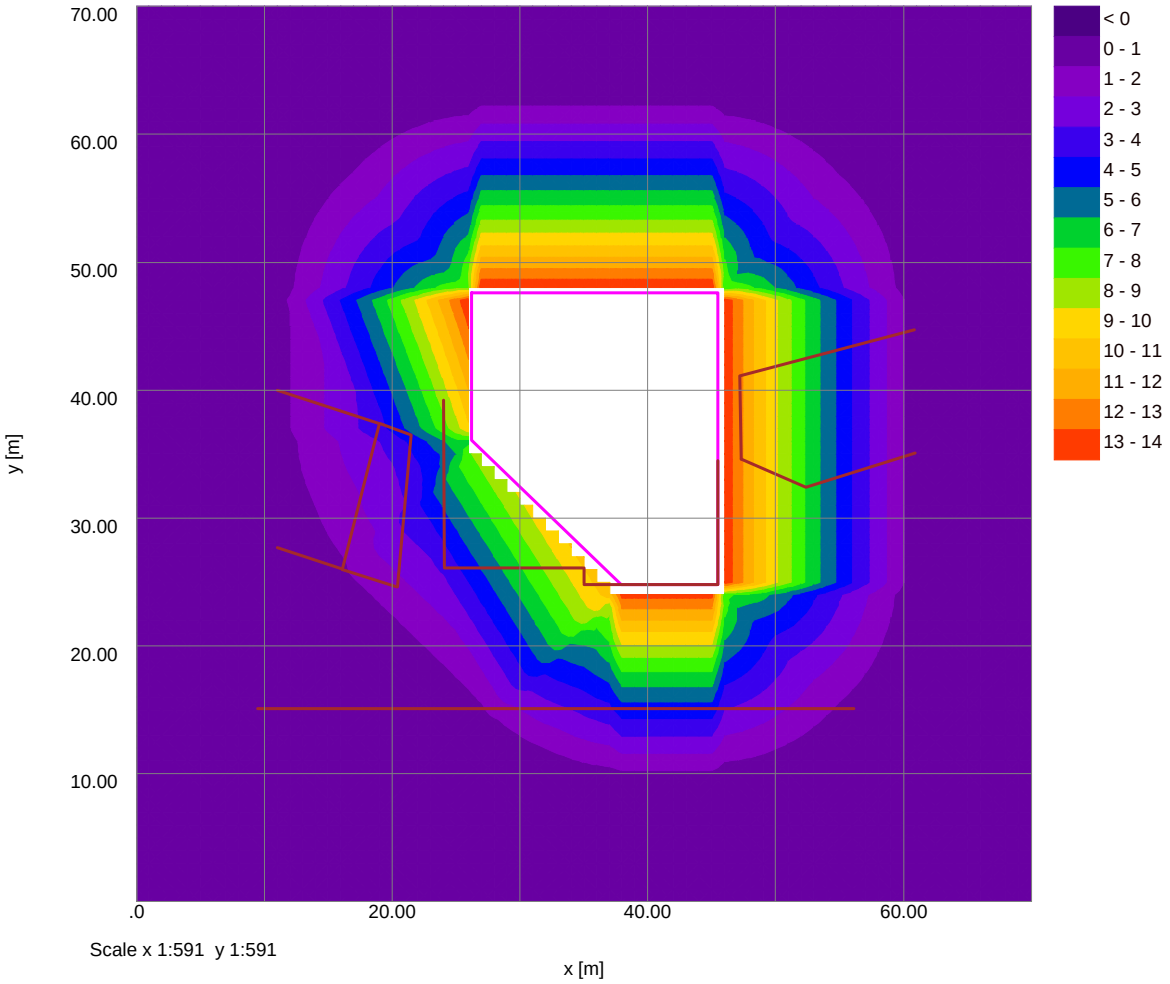
Pile Installation and Basement Excavation

Vertical Settlement Contours: Grid 1 (level 0.000m) (Interval 1mm)



Scale x 1:591 y 1:591

Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm



Scale x 1:591 y 1:591

Specific Building Damage Results - Horizontal Displacements

Structure: No4south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.00000	39.20000	-1.80000	8.3550	0.0	0.063777	8.3548 d
1.3100	24.01000	37.89000	-1.80000	7.8694	0.0	0.060070	7.8692 d
2.6201	24.02000	36.58000	-1.80000	7.3928	0.0	0.056432	7.3926 d
3.9301	24.03000	35.27000	-1.80000	4.8718	1.8634	-1.8262	4.8859 d
5.2402	24.04000	33.96000	-1.80000	3.6704	3.6364	-3.6083	3.6981 d
6.5502	24.05000	32.65000	-1.80000	3.9847	4.1258	-4.0952	4.0161 d
7.8602	24.06000	31.34000	-1.80000	3.6381	3.7668	-3.7390	3.6667 d
9.1703	24.07000	30.03000	-1.80000	3.2914	3.4079	-3.3827	3.3173 d
10.480	24.08000	28.72000	-1.80000	2.9448	3.0490	-3.0264	2.9679 d
11.790	24.09000	27.41000	-1.80000	2.5981	2.6901	-2.6702	2.6186 d
13.100	24.10000	26.10000	-1.80000	2.3802	2.4644	-2.4462	2.3989 d

d - Displacements include imported displacements.

Structure: No4east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	24.10000	26.10000	-1.80000	2.3802	2.4644	2.3802	2.4644 d
0.83846	24.93846	26.10000	-1.80000	2.6128	2.7053	2.6128	2.7053 d
1.6769	25.77692	26.10000	-1.80000	2.9741	3.0794	2.9741	3.0794 d
2.5154	26.61538	26.10000	-1.80000	3.3354	3.4535	3.3354	3.4535 d
3.3538	27.45385	26.10000	-1.80000	3.6968	3.8276	3.6968	3.8276 d
4.1923	28.29231	26.10000	-1.80000	4.0581	4.2017	4.0581	4.2017 d
5.0308	29.13077	26.10000	-1.80000	4.4194	4.5759	4.4194	4.5759 d
5.8692	29.96923	26.10000	-1.80000	4.7807	4.9500	4.7807	4.9500 d
6.7077	30.80769	26.10000	-1.80000	5.1421	5.3241	5.1421	5.3241 d
7.5462	31.64615	26.10000	-1.80000	5.5034	5.6982	5.5034	5.6982 d
8.3846	32.48462	26.10000	-1.80000	5.8647	6.0723	5.8647	6.0723 d
9.2231	33.32308	26.10000	-1.80000	6.2261	6.4464	6.2261	6.4464 d
10.062	34.16154	26.10000	-1.80000	6.5874	6.8206	6.5874	6.8206 d
10.900	35.00000	26.10000	-1.80000	6.9487	7.1947	6.9487	7.1947 d

d - Displacements include imported displacements.

Structure: No41-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.00000	26.10000	-0.86000	6.9487	7.1947	-7.1947	6.9487 d
0.65000	35.00000	25.45000	-0.86000	6.7746	7.0144	-7.0144	6.7746 d
1.3000	35.00000	24.80000	-0.86000	9.3491	9.6800	-9.6800	9.3491 d

d - Displacements include imported displacements.

Structure: No41-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	35.00000	24.80000	-0.86000	9.3491	9.6800	9.3491	9.6800 d
1.1667	36.16667	24.80000	-0.86000	7.1032	7.3546	7.1032	7.3546 d
2.3333	37.33333	24.80000	-0.86000	7.6060	7.8752	7.6060	7.8752 d
3.5000	38.50000	24.80000	-0.86000	0.0	14.390	0.0	14.390 d
4.6667	39.66667	24.80000	-0.86000	0.0	14.390	0.0	14.390 d
5.8333	40.83333	24.80000	-0.86000	0.0	14.390	0.0	14.390 d
7.0000	42.00000	24.80000	-0.86000	0.0	14.390	0.0	14.390 d
8.1667	43.16667	24.80000	-0.86000	0.0	14.390	0.0	14.390 d
9.3333	44.33333	24.80000	-0.86000	0.0	14.390	0.0	14.390 d
10.500	45.50000	24.80000	-0.86000	-15.062	0.0	-15.062	0.0 d

d - Displacements include imported displacements.

Structure: No41-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	45.50000	24.80000	-0.86000	-15.062	0.0	0.0	15.062 d
0.98000	45.50000	25.78000	-0.86000	-14.390	0.0	0.0	14.390 d
1.9600	45.50000	26.76000	-0.86000	-14.390	0.0	0.0	14.390 d
2.9400	45.50000	27.74000	-0.86000	-14.390	0.0	0.0	14.390 d
3.9200	45.50000	28.72000	-0.86000	-14.390	0.0	0.0	14.390 d
4.9000	45.50000	29.70000	-0.86000	-14.390	0.0	0.0	14.390 d
5.8800	45.50000	30.68000	-0.86000	-14.390	0.0	0.0	14.390 d
6.8600	45.50000	31.66000	-0.86000	-14.390	0.0	0.0	14.390 d
7.8400	45.50000	32.64000	-0.86000	-14.390	0.0	0.0	14.390 d
8.8200	45.50000	33.62000	-0.86000	-14.390	0.0	0.0	14.390 d
9.8000	45.50000	34.60000	-0.86000	-14.390	0.0	0.0	14.390 d

d - Displacements include imported displacements.

Structure: No3east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.00000	27.70000	-0.60000	0.0	0.0	0.0	0.0 d
0.89598	11.85000	27.41667	-0.60000	0.0067964	0.0041126	0.0051471	0.0060507 d
1.7920	12.70000	27.13333	-0.60000	0.14544	0.096598	0.10743	0.13763 d
2.6879	13.55000	26.85000	-0.60000	0.27140	0.19845	0.19472	0.27410 d
3.5839	14.40000	26.56667	-0.60000	0.38263	0.30913	0.26524	0.41426 d
4.4799	15.25000	26.28333	-0.60000	0.47695	0.42759	0.31726	0.55647 d
5.3759	16.10000	26.00000	-0.60000	0.55222	0.55222	0.34926	0.69851 d

d - Displacements include imported displacements.

Structure: No3north | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	16.10000	26.00000	-0.60000	0.55222	0.55222	0.67132	-0.39904 d
0.98026	16.34167	26.95000	-0.60000	0.75453	0.70032	0.86472	-0.55859 d
1.9605	16.58333	27.90000	-0.60000	0.96245	0.82066	1.0326	-0.73042 d
2.9408	16.82500	28.85000	-0.60000	1.1745	0.90828	1.1698	-0.91433 d
3.9210	17.06667	29.80000	-0.60000	1.3881	0.95750	1.2702	-1.1092 d
4.9013	17.30833	30.75000	-0.60000	1.5991	0.96215	1.3267	-1.3125 d
5.8815	17.55000	31.70000	-0.60000	1.8010	0.91613	1.3319	-1.5196 d
6.8618	17.79167	32.65000	-0.60000	1.9987	0.82006	1.2875	-1.7348 d
7.8421	18.03333	33.60000	-0.60000	2.2717	0.69540	1.2340	-2.0301 d
8.8223	18.27500	34.55000	-0.60000	2.5352	0.49584	1.1056	-2.3347 d
9.8026	18.51667	35.50000	-0.60000	2.7689	0.21623	0.89219	-2.6301 d
10.783	18.75833	36.45000	-0.60000	3.5094	0.0	0.86518	-3.4011 d
11.763	19.00000	37.40000	-0.60000	3.6903	0.0	0.90978	-3.5764 d

d - Displacements include imported displacements.

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]

Structure: No3west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	11.00000	40.00000	-0.60000	0.60000	0.0	0.57062	0.18545 d
1.6824	12.60000	39.48000	-0.60000	1.2000	0.0	1.1412	0.37090 d
3.3648	14.20000	38.96000	-0.60000	1.8000	0.0	1.7119	0.55635 d
5.0471	15.80000	38.44000	-0.60000	2.4000	0.0	2.2825	0.74181 d
6.7295	17.40000	37.92000	-0.60000	3.0000	0.0	2.8531	0.92726 d
8.4119	19.00000	37.40000	-0.60000	3.6903	0.0	3.5096	1.1406 d

d - Displacements include imported displacements.

Structure: No31-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	16.10000	26.00000	-0.60000	0.55222	0.55222	0.35413	0.69605 d
0.90443	16.96000	25.72000	-0.60000	0.75931	0.78618	0.47861	0.98263 d
1.8089	17.82000	25.44000	-0.60000	0.86248	0.89301	0.54364	1.1162 d
2.7133	18.68000	25.16000	-0.60000	0.96566	0.99984	0.60868	1.2497 d
3.6177	19.54000	24.88000	-0.60000	1.0688	1.1067	0.67371	1.3832 d
4.5222	20.40000	24.60000	-0.60000	1.1720	1.2135	0.73875	1.5167 d

d - Displacements include imported displacements.

Structure: No31-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	20.40000	24.60000	-0.60000	1.1720	1.2135	1.3162	-1.0553 d
0.99589	20.49167	25.59167	-0.60000	1.3744	1.4231	1.5435	-1.2376 d
1.9918	20.58333	26.58333	-0.60000	1.5768	1.6327	1.7709	-1.4199 d
2.9877	20.67500	27.57500	-0.60000	1.7792	1.8422	1.9982	-1.6021 d
3.9836	20.76667	28.56667	-0.60000	1.9817	2.0518	2.2255	-1.7844 d
4.9795	20.85833	29.55833	-0.60000	2.1841	2.2614	2.4528	-1.9667 d
5.9754	20.95000	30.55000	-0.60000	2.3865	2.4710	2.6801	-2.1489 d
6.9713	21.04167	31.54167	-0.60000	2.2689	2.0049	2.2053	-2.0747 d
7.9672	21.13333	32.53333	-0.60000	2.5926	1.8251	2.0560	-2.4136 d
8.9630	21.22500	33.52500	-0.60000	2.9986	1.5520	1.8214	-2.8430 d
9.9589	21.31667	34.51667	-0.60000	3.4697	1.1250	1.4396	-3.3514 d
10.955	21.40833	35.50833	-0.60000	3.9991	0.49380	0.85980	-3.9366 d
11.951	21.50000	36.50000	-0.60000	5.9015	0.0	0.54321	-5.8765 d

d - Displacements include imported displacements.

Structure: No31-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	21.50000	36.50000	-0.60000	5.9015	0.0	-5.5527	-1.9990 d
0.88569	20.66667	36.80000	-0.60000	4.6821	0.0	-4.4053	-1.5859 d
1.7714	19.83333	37.10000	-0.60000	4.1551	0.0	-3.9094	-1.4074 d
2.6571	19.00000	37.40000	-0.60000	3.6903	0.0	-3.4721	-1.2500 d

d - Displacements include imported displacements.

Structure: No5south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	47.30000	34.60000	-0.60000	-18.610	0.0	0.28628	18.608 d
0.81260	47.28750	35.41250	-0.60000	-12.133	0.0	0.18663	12.131 d
1.6252	47.27500	36.22500	-0.60000	-12.147	0.0	0.18686	12.146 d
2.4378	47.26250	37.03750	-0.60000	-12.162	0.0	0.18709	12.161 d
3.2504	47.25000	37.85000	-0.60000	-12.177	0.0	0.18732	12.176 d
4.0630	47.23750	38.66250	-0.60000	-12.192	0.0	0.18755	12.191 d
4.8756	47.22500	39.47500	-0.60000	-12.207	0.0	0.18778	12.206 d
5.6882	47.21250	40.28750	-0.60000	-12.222	0.0	0.18801	12.221 d
6.5008	47.20000	41.10000	-0.60000	-18.812	0.0	0.28938	18.809 d

d - Displacements include imported displacements.

Structure: No5west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	47.20000	41.10000	-0.60000	-18.812	0.0	-18.194	4.7809 d
0.94434	48.11333	41.34000	-0.60000	-11.175	0.0	-10.808	2.8401 d
1.8887	49.02667	41.58000	-0.60000	-10.173	0.0	-9.8386	2.5853 d
2.8330	49.94000	41.82000	-0.60000	-9.2254	0.0	-8.9225	2.3446 d
3.7774	50.85333	42.06000	-0.60000	-8.3283	0.0	-8.0548	2.1166 d
4.7217	51.76667	42.30000	-0.60000	-7.4765	0.0	-7.2310	1.9001 d
5.6660	52.68000	42.54000	-0.60000	-6.6652	0.0	-6.4463	1.6939 d
6.6104	53.59333	42.78000	-0.60000	-5.8895	0.0	-5.6961	1.4968 d
7.5547	54.50667	43.02000	-0.60000	-5.1446	0.0	-4.9756	1.3075 d
8.4991	55.42000	43.26000	-0.60000	-4.4256	0.0	-4.2802	1.1247 d
9.4434	56.33333	43.50000	-0.60000	-3.7276	0.0	-3.6052	0.94736 d
10.388	57.24667	43.74000	-0.60000	-3.0459	0.0	-2.9459	0.77410 d
11.332	58.16000	43.98000	-0.60000	-2.3755	0.0	-2.2975	0.60373 d
12.276	59.07333	44.22000	-0.60000	-1.7117	0.0	-1.6555	0.43502 d
13.221	59.98667	44.46000	-0.60000	-1.0495	0.0	-1.0151	0.26673 d
14.165	60.90000	44.70000	-0.60000	-0.52500	0.0	-0.50776	0.13343 d

d - Displacements include imported displacements.

Structure: No5SE | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	47.30000	34.60000	-0.60000	-18.610	0.0	-17.088	7.3714 d
0.92571	48.15000	34.23333	-0.60000	-11.134	0.0	-10.223	4.4099 d
1.8514	49.00000	33.86667	-0.60000	-10.201	0.0	-9.3668	4.0406 d
2.7771	49.85000	33.50000	-0.60000	-9.3164	0.0	-8.5544	3.6901 d
3.7029	50.70000	33.13333	-0.60000	-8.4756	0.0	-7.7824	3.3571 d
4.6286	51.55000	32.76667	-0.60000	-7.6747	0.0	-7.0470	3.0399 d
5.5543	52.40000	32.40000	-0.60000	-10.107	0.0	-9.2806	4.0034 d

d - Displacements include imported displacements.

Structure: No5east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Along the Line	Perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	52.40000	32.40000	-0.60000	-10.107	0.0	-9.6330	3.0599 d

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	Along the Line [mm]	Perpendicular to Line [mm]	
0.99095	53.34444	32.70000	-0.60000	-6.0976	0.0	-5.8115	1.8460	d
1.9819	54.28889	33.00000	-0.60000	-5.3197	0.0	-5.0700	1.6105	d
2.9728	55.23333	33.30000	-0.60000	-4.5706	0.0	-4.3562	1.3837	d
3.9638	56.17778	33.60000	-0.60000	-3.8452	0.0	-3.6648	1.1641	d
4.9547	57.12222	33.90000	-0.60000	-3.1380	0.0	-2.9907	0.95000	d
5.9457	58.06667	34.20000	-0.60000	-2.4437	0.0	-2.3290	0.73980	d
6.9366	59.01111	34.50000	-0.60000	-1.7568	0.0	-1.6744	0.53186	d
7.9276	59.95556	34.80000	-0.60000	-1.0721	0.0	-1.0218	0.32457	d
8.9185	60.90000	35.10000	-0.60000	-0.52500	0.0	-0.50036	0.15894	d

d - Displacements include imported displacements.

Structure: Greenaway gardens | Sub-structure: Sub 16

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements x [mm]	y [mm]	Along the Line [mm]	Perpendicular to Line [mm]	
0.0	9.50000	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
1.0378	10.53778	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
2.0756	11.57556	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
3.1133	12.61333	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
4.1511	13.65111	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
5.1889	14.68889	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
6.2267	15.72667	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
7.2644	16.76444	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
8.3022	17.80222	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
9.3400	18.84000	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
10.378	19.87778	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
11.416	20.91556	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
12.453	21.95333	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
13.491	22.99111	15.10000	-0.50000	0.0	0.0	0.0	0.0	d
14.529	24.02889	15.10000	-0.50000	0.048590	0.050310	0.048590	0.050310	d
15.567	25.06667	15.10000	-0.50000	0.23641	0.24478	0.23641	0.24478	d
16.604	26.10444	15.10000	-0.50000	0.42422	0.43924	0.42422	0.43924	d
17.642	27.14222	15.10000	-0.50000	0.61547	0.63726	0.61547	0.63726	d
18.680	28.18000	15.10000	-0.50000	1.0627	1.1003	1.0627	1.1003	d
19.718	29.21778	15.10000	-0.50000	1.1523	1.2873	1.1523	1.2873	d
20.756	30.25556	15.10000	-0.50000	1.2934	1.6412	1.2934	1.6412	d
21.793	31.29333	15.10000	-0.50000	1.3545	1.9887	1.3545	1.9887	d
22.831	32.33111	15.10000	-0.50000	1.3308	2.3180	1.3308	2.3180	d
23.869	33.36889	15.10000	-0.50000	1.2212	2.6143	1.2212	2.6143	d
24.907	34.40667	15.10000	-0.50000	1.0529	2.9237	1.0529	2.9237	d
25.944	35.44444	15.10000	-0.50000	0.83096	3.2825	0.83096	3.2825	d
26.982	36.48222	15.10000	-0.50000	0.52396	3.5848	0.52396	3.5848	d
28.020	37.52000	15.10000	-0.50000	0.14894	3.8019	0.14894	3.8019	d
29.058	38.55778	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
30.096	39.59556	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
31.133	40.63333	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
32.171	41.67111	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
33.209	42.70889	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
34.247	43.74667	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
35.284	44.78444	15.10000	-0.50000	0.0	4.5966	0.0	4.5966	d
36.322	45.82222	15.10000	-0.50000	-0.10106	3.0423	-0.10106	3.0423	d
37.360	46.86000	15.10000	-0.50000	-0.40181	2.8658	-0.40181	2.8658	d
38.398	47.89778	15.10000	-0.50000	-0.64758	2.6197	-0.64758	2.6197	d
39.436	48.93556	15.10000	-0.50000	-0.82426	2.3272	-0.82426	2.3272	d
40.473	49.97333	15.10000	-0.50000	-0.92756	2.0113	-0.92756	2.0113	d
41.511	51.01111	15.10000	-0.50000	-0.96091	1.6913	-0.96091	1.6913	d
42.549	52.04889	15.10000	-0.50000	-0.93245	1.3811	-0.93245	1.3811	d
43.587	53.08667	15.10000	-0.50000	-0.85218	1.0896	-0.85218	1.0896	d
44.624	54.12444	15.10000	-0.50000	-0.72994	0.82097	-0.72994	0.82097	d
45.662	55.16222	15.10000	-0.50000	-0.57433	0.57658	-0.57433	0.57658	d
46.700	56.20000	15.10000	-0.50000	-0.40921	0.37097	-0.40921	0.37097	d

d - Displacements include imported displacements.

Specific Building Damage Results - Vertical Displacements

Structure: No4south | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	24.00000	39.20000	-1.80000	5.3000	d
1.3100	24.01000	37.89000	-1.80000	4.9699	d
2.6201	24.02000	36.58000	-1.80000	4.6398	d
3.9301	24.03000	35.27000	-1.80000	3.1298	d
5.2402	24.04000	33.96000	-1.80000	2.9239	d
6.5502	24.05000	32.65000	-1.80000	3.2649	d
7.8602	24.06000	31.34000	-1.80000	2.9399	d
9.1703	24.07000	30.03000	-1.80000	2.5621	d
10.480	24.08000	28.72000	-1.80000	2.1579	d
11.790	24.09000	27.41000	-1.80000	1.7505	d
13.100	24.10000	26.10000	-1.80000	1.3893	d

d - Displacements include imported displacements.

Structure: No4east | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	24.10000	26.10000	-1.80000	1.3893	d
0.83846	24.93846	26.10000	-1.80000	1.6319	d
1.6769	25.77692	26.10000	-1.80000	1.9349	d
2.5154	26.61538	26.10000	-1.80000	2.2807	d
3.3538	27.45385	26.10000	-1.80000	2.6717	d
4.1923	28.29231	26.10000	-1.80000	3.1031	d
5.0308	29.13077	26.10000	-1.80000	3.5651	d
5.8692	29.96923	26.10000	-1.80000	4.0442	d
6.7077	30.80769	26.10000	-1.80000	4.5246	d
7.5462	31.64615	26.10000	-1.80000	4.9884	d
8.3846	32.48462	26.10000	-1.80000	5.4164	d
9.2231	33.32308	26.10000	-1.80000	5.7882	d
10.062	34.16154	26.10000	-1.80000	6.0829	d
10.900	35.00000	26.10000	-1.80000	6.2786	d

d - Displacements include imported displacements.

Structure: No41-1 | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	35.00000	26.10000	-0.86000	6.2786	d
0.65000	35.00000	25.45000	-0.86000	6.2960	d
1.3000	35.00000	24.80000	-0.86000	9.5677	d

d - Displacements include imported displacements.

Structure: No41-2 | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]	
Vertical Offset 1					
0.0	35.00000	24.80000	-0.86000	9.5677	d
1.1667	36.16667	24.80000	-0.86000	6.5790	d
2.3333	37.33333	24.80000	-0.86000	6.6850	d
3.5000	38.50000	24.80000	-0.86000	6.6376	d
4.6667	39.66667	24.80000	-0.86000	6.6376	d

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
5.8333	40.83333	24.80000	-0.86000	6.6376 d
7.0000	42.00000	24.80000	-0.86000	6.6376 d
8.1667	43.16667	24.80000	-0.86000	6.6376 d
9.3333	44.33333	24.80000	-0.86000	6.6376 d
10.500	45.50000	24.80000	-0.86000	7.7972 d

d - Displacements include imported displacements.

Structure: No41-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	45.50000	24.80000	-0.86000	7.7972 d
0.98000	45.50000	25.78000	-0.86000	6.6376 d
1.9600	45.50000	26.76000	-0.86000	6.6376 d
2.9400	45.50000	27.74000	-0.86000	6.6376 d
3.9200	45.50000	28.72000	-0.86000	6.6376 d
4.9000	45.50000	29.70000	-0.86000	6.6376 d
5.8800	45.50000	30.68000	-0.86000	6.6376 d
6.8600	45.50000	31.66000	-0.86000	6.6376 d
7.8400	45.50000	32.64000	-0.86000	6.6376 d
8.8200	45.50000	33.62000	-0.86000	6.6376 d
9.8000	45.50000	34.60000	-0.86000	6.6376 d

d - Displacements include imported displacements.

Structure: No3east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	11.00000	27.70000	-0.60000	-0.0020000 d
0.89598	11.85000	27.41667	-0.60000	0.0034418 d
1.7920	12.70000	27.13333	-0.60000	0.031375 d
2.6879	13.55000	26.85000	-0.60000	0.050526 d
3.5839	14.40000	26.56667	-0.60000	0.066344 d
4.4799	15.25000	26.28333	-0.60000	0.082395 d
5.3759	16.10000	26.00000	-0.60000	0.098601 d

d - Displacements include imported displacements.

Structure: No3north | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	16.10000	26.00000	-0.60000	0.098601 d
0.98026	16.34167	26.95000	-0.60000	0.14769 d
1.9605	16.58333	27.90000	-0.60000	0.21903 d
2.9408	16.82500	28.85000	-0.60000	0.31691 d
3.9210	17.06667	29.80000	-0.60000	0.43868 d
4.9013	17.30833	30.75000	-0.60000	0.57754 d
5.8815	17.55000	31.70000	-0.60000	0.72360 d
6.8618	17.79167	32.65000	-0.60000	0.87116 d
7.8421	18.03333	33.60000	-0.60000	1.0518 d
8.8223	18.27500	34.55000	-0.60000	1.2778 d
9.8026	18.51667	35.50000	-0.60000	1.5169 d
10.783	18.75833	36.45000	-0.60000	2.1406 d
11.763	19.00000	37.40000	-0.60000	3.7953 d

d - Displacements include imported displacements.

Structure: No3west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	11.00000	40.00000	-0.60000	0.081562 d
1.6824	12.60000	39.48000	-0.60000	0.16768 d
3.3648	14.20000	38.96000	-0.60000	0.36943 d
5.0471	15.80000	38.44000	-0.60000	0.83021 d
6.7295	17.40000	37.92000	-0.60000	1.6329 d
8.4119	19.00000	37.40000	-0.60000	3.7953 d

d - Displacements include imported displacements.

Structure: No31-1 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	16.10000	26.00000	-0.60000	0.098601 d
0.90443	16.96000	25.72000	-0.60000	0.14623 d
1.8089	17.82000	25.44000	-0.60000	0.17700 d
2.7133	18.68000	25.16000	-0.60000	0.21545 d
3.6177	19.54000	24.88000	-0.60000	0.26265 d
4.5222	20.40000	24.60000	-0.60000	0.31843 d

d - Displacements include imported displacements.

Structure: No31-2 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	20.40000	24.60000	-0.60000	0.31843 d
0.99589	20.49167	25.59167	-0.60000	0.46091 d
1.9918	20.58333	26.58333	-0.60000	0.64396 d
2.9877	20.67500	27.57500	-0.60000	0.86786 d
3.9836	20.76667	28.56667	-0.60000	1.1288 d
4.9795	20.85833	29.55833	-0.60000	1.4198 d
5.9754	20.95000	30.55000	-0.60000	1.7309 d
6.9713	21.04167	31.54167	-0.60000	1.6897 d
7.9672	21.13333	32.53333	-0.60000	1.9308 d
8.9630	21.22500	33.52500	-0.60000	2.1575 d
9.9589	21.31667	34.51667	-0.60000	2.4610 d
10.955	21.40833	35.50833	-0.60000	2.8690 d
11.951	21.50000	36.50000	-0.60000	4.8736 d

d - Displacements include imported displacements.

Structure: No31-3 | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	21.50000	36.50000	-0.60000	4.8736 d
0.88569	20.66667	36.80000	-0.60000	3.4542 d
1.7714	19.83333	37.10000	-0.60000	3.0093 d
2.6571	19.00000	37.40000	-0.60000	3.7953 d

d - Displacements include imported displacements.

Structure: No5south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	47.30000	34.60000	-0.60000	11.955 d
0.81260	47.28750	35.41250	-0.60000	7.4040 d
1.6252	47.27500	36.22500	-0.60000	7.4027 d
2.4378	47.26250	37.03750	-0.60000	7.4014 d
3.2504	47.25000	37.85000	-0.60000	7.4001 d
4.0630	47.23750	38.66250	-0.60000	7.3987 d
4.8756	47.22500	39.47500	-0.60000	7.3972 d
5.6882	47.21250	40.28750	-0.60000	7.3957 d
6.5008	47.20000	41.10000	-0.60000	11.969 d

d - Displacements include imported displacements.

Structure: No5west | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	47.20000	41.10000	-0.60000	11.969 d
0.94434	48.11333	41.34000	-0.60000	7.3837 d
1.8887	49.02667	41.58000	-0.60000	7.1604 d
2.8330	49.94000	41.82000	-0.60000	6.7780 d
3.7774	50.85333	42.06000	-0.60000	6.2844 d
4.7217	51.76667	42.30000	-0.60000	5.7214 d
5.6660	52.68000	42.54000	-0.60000	5.1250 d
6.6104	53.59333	42.78000	-0.60000	4.5251 d
7.5547	54.50667	43.02000	-0.60000	3.9456 d
8.4991	55.42000	43.26000	-0.60000	3.4047 d
9.4434	56.33333	43.50000	-0.60000	2.9143 d
10.388	57.24667	43.74000	-0.60000	2.4805 d
11.332	58.16000	43.98000	-0.60000	2.1036 d
12.276	59.07333	44.22000	-0.60000	1.7775 d
13.221	59.98667	44.46000	-0.60000	1.4906 d
14.165	60.90000	44.70000	-0.60000	1.2251 d

d - Displacements include imported displacements.

Structure: No5SE | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	47.30000	34.60000	-0.60000	11.955 d
0.92571	48.15000	34.23333	-0.60000	7.3784 d
1.8514	49.00000	33.86667	-0.60000	7.1694 d
2.7771	49.85000	33.50000	-0.60000	6.8213 d
3.7029	50.70000	33.13333	-0.60000	6.3731 d
4.6286	51.55000	32.76667	-0.60000	5.8592 d
5.5543	52.40000	32.40000	-0.60000	8.5845 d

d - Displacements include imported displacements.

Structure: No5east | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	52.40000	32.40000	-0.60000	8.5845 d
0.99095	53.34444	32.70000	-0.60000	4.6874 d
1.9819	54.28889	33.00000	-0.60000	4.0809 d
2.9728	55.23333	33.30000	-0.60000	3.5114 d
3.9638	56.17778	33.60000	-0.60000	2.9939 d
4.9547	57.12222	33.90000	-0.60000	2.5362 d
5.9457	58.06667	34.20000	-0.60000	2.1396 d
6.9366	59.01111	34.50000	-0.60000	1.7983 d
7.9276	59.95556	34.80000	-0.60000	1.5000 d
8.9185	60.90000	35.10000	-0.60000	1.2251 d

d - Displacements include imported displacements.

Structure: Greenaway gardens | Sub-structure: Sub 16

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	9.50000	15.10000	-0.50000	-0.0020000 d
1.0378	10.53778	15.10000	-0.50000	-0.0020000 d
2.0756	11.57556	15.10000	-0.50000	-0.0020000 d
3.1133	12.61333	15.10000	-0.50000	-0.0020000 d
4.1511	13.65111	15.10000	-0.50000	-0.0020000 d
5.1889	14.68889	15.10000	-0.50000	-0.0020000 d
6.2267	15.72667	15.10000	-0.50000	-0.0020000 d
7.2644	16.76444	15.10000	-0.50000	-0.0020000 d
8.3022	17.80222	15.10000	-0.50000	-0.0020000 d
9.3400	18.84000	15.10000	-0.50000	-0.0020000 d
10.378	19.87778	15.10000	-0.50000	-0.0020000 d
11.416	20.91556	15.10000	-0.50000	-0.0020000 d
12.453	21.95333	15.10000	-0.50000	-0.0020000 d
13.491	22.99111	15.10000	-0.50000	-0.0020000 d
14.529	24.02889	15.10000	-0.50000	0.016257 d
15.567	25.06667	15.10000	-0.50000	0.054870 d
16.604	26.10444	15.10000	-0.50000	0.082626 d
17.642	27.14222	15.10000	-0.50000	0.11602 d
18.680	28.18000	15.10000	-0.50000	0.21729 d
19.718	29.21778	15.10000	-0.50000	0.33038 d
20.756	30.25556	15.10000	-0.50000	0.54377 d
21.793	31.29333	15.10000	-0.50000	0.79830 d
22.831	32.33111	15.10000	-0.50000	1.0844 d
23.869	33.36889	15.10000	-0.50000	1.3882 d
24.907	34.40667	15.10000	-0.50000	1.7294 d
25.944	35.44444	15.10000	-0.50000	2.1210 d
26.982	36.48222	15.10000	-0.50000	2.4992 d
28.020	37.52000	15.10000	-0.50000	2.8455 d
29.058	38.55778	15.10000	-0.50000	3.5307 d
30.096	39.59556	15.10000	-0.50000	3.5307 d
31.133	40.63333	15.10000	-0.50000	3.5307 d
32.171	41.67111	15.10000	-0.50000	3.5307 d
33.209	42.70889	15.10000	-0.50000	3.5307 d
34.247	43.74667	15.10000	-0.50000	3.5307 d
35.284	44.78444	15.10000	-0.50000	3.5307 d
36.322	45.82222	15.10000	-0.50000	2.3381 d
37.360	46.86000	15.10000	-0.50000	2.2241 d
38.398	47.89778	15.10000	-0.50000	2.0775 d
39.436	48.93556	15.10000	-0.50000	1.9078 d
40.473	49.97333	15.10000	-0.50000	1.7247 d
41.511	51.01111	15.10000	-0.50000	1.5374 d
42.549	52.04889	15.10000	-0.50000	1.3534 d
43.587	53.08667	15.10000	-0.50000	1.1788 d
44.624	54.12444	15.10000	-0.50000	1.0173 d
45.662	55.16222	15.10000	-0.50000	0.87005 d
46.700	56.20000	15.10000	-0.50000	0.76791 d

d - Displacements include imported displacements.

Specific Building Damage Results - All Segments

Structure: No4south | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	0.65496	Hogging	0.0	-282.98E-6	56.612E-6	2.8298E-6	251.97E-6	5804.2	0 (Negligible)
	2	0.65496	2.4210	Sagging	0.013714	-0.027288	0.010299	0.0014391	0.0011543	5805.4	0 (Negligible)
	3	3.0760	3.0484	Hogging	0.023455	-0.10951	0.025911	0.0014391	0.0011543	3469.0	0 (Negligible)
	4	6.1244	4.1945	Sagging	0.0049093	0.020662	0.023838	371.81E-6	308.46E-6	8213.4	0 (Negligible)
	5	10.319	2.6811	Hogging	858.18E-6	0.022638	0.022824	-271.88E-6	310.85E-6	28559.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	5.9052	Hogging	0.0041948	0.040914	0.042871	-430.76E-6	-572.68E-6	10897.	0 (Negligible)
	2	5.9052	4.8948	Sagging	0.0049384	0.043094	0.046759	-430.76E-6	-572.68E-6	6289.2	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	1.2000	Hogging	0.12402	-0.17294	0.091682	0.0041179	-0.0050540	119.15	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	3.4762	Hogging	0.057392	-0.26449	0.061627	0.0065622	0.0025666	347.59	1 (Very Slight)
	2	3.4762	0.66685	Hogging	139.02E-6	-0.023222	0.0046450	0.0065622	40.931E-6	93001.	0 (Negligible)
	3	4.1431	1.6902	None	0.0	0.0	0.0	0.0	0.0	114200.	0 (Negligible)
	4	5.8333	1.1667	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)
	5	7.0000	3.4000	Hogging	0.021505	-0.40502	0.081830	0.013079	-0.0010069	890.84	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.0	2.9400	Hogging	0.026295	0.0	0.024945	0.0	0.0011833	662.58	0 (Negligible)
	2	2.9400	6.7600	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	All settlements are less than the Settlement Trough Limit Sensitivity.										

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.98026	10.720	Hogging	0.014372	393.57E-6	0.013447	217.71E-6	-0.0016880	781.44	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	1.6824	6.7176	Hogging	0.018560	0.035186	0.044968	-390.05E-6	-0.0012848	1749.3	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations [m]	Segment	Start [m]	Length [m]	Curvature [%]	Deflection Ratio [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature [m]	Damage Category
0	1	0.90443	0.77361	None	0.0	0.0071906	0.0071906	-137.61E-6	-52.658E-6	76291.	0 (Negligible)
	2	1.6780	2.8220	Hogging	357.62E-6	0.0071906	0.0074216	-71.900E-6	-61.671E-6	93996.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	4.2758	Hogging	0.0021423	0.022826	0.024802	-228.21E-6	-292.17E-6	24418.	0 (Negligible)
	2	4.2758	2.3665	Sagging	0.0069764	0.0029532	0.0099145	477.06E-6	-312.27E-6	9877.5	0 (Negligible)
	3	6.6424	5.2576	Hogging	0.025668	-0.034289	0.016319	582.52E-6	-0.0020135	492.65	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6000	Hogging	0.042051	0.078938	0.10415	-0.0012938	0.0016005	584.26	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.4378	Hogging	0.12443	-0.0040689	0.12231	122.64E-6	0.0056015	116.08	2 (Slight)
	2	2.4378	1.6253	Sagging	1.5329E-6	28.245E-6	28.646E-6	0.0	1.7872E-6	13.079E+6	0 (Negligible)
	3	4.0630	2.4370	Hogging	0.12503	0.0041744	0.12620	-124.73E-6	-0.0056275	115.44	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.7348	Hogging	0.10099	0.33553	0.35921	-0.0077606	0.0048181	164.29	4 (Severe)
	2	2.7348	3.1286	Sagging	0.0023156	0.087202	0.088343	-969.22E-6	634.77E-6	8014.2	2 (Slight)
	3	5.8634	8.2366	Hogging	0.0055278	0.069772	0.073289	-793.81E-6	634.77E-6	16156.	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	2.6909	Hogging	0.10364	0.31432	0.34067	-0.0073617	0.0049076	157.72	4 (Severe)
	2	2.6909	0.19256	Sagging	0.0026537	0.085348	0.085431	-876.75E-6	483.75E-6	8537.4	2 (Slight)
	3	2.8835	2.6165	Hogging	0.076932	-0.026140	0.067694	0.0024187	-0.0029511	205.42	1 (Very Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	0.0	8.9000	Hogging	0.034356	0.10250	0.12594	-0.0038416	0.0039175	240.82	2 (Slight)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement Calculations	Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]			[m]	
0	1	17.642	8.2386	Hogging	0.0038933	0.0027806	0.0054619	-430.76E-6	-377.45E-6	17002.	0 (Negligible)
	2	25.881	0.094946	Sagging	284.41E-6	-0.024095	0.0048217	295.91E-6	-377.45E-6	530380.	0 (Negligible)
	3	25.976	1.9087	Sagging	761.89E-6	-0.032681	0.0065368	361.50E-6	-364.53E-6	16520.	0 (Negligible)
	4	27.885	3.2488	Sagging	0.014307	-0.0060915	0.0060029	361.50E-6	-660.33E-6	4186.6	0 (Negligible)
	5	31.133	2.0756	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)
	6	33.209	2.6812	Sagging	0.019927	-0.0021996	0.017434	97.391E-6	0.0011493	3301.9	0 (Negligible)
	7	35.890	2.4194	Hogging	0.014968	-0.023464	0.0059121	289.88E-6	0.0011493	4350.0	0 (Negligible)
	8	38.309	2.7942	Sagging	387.70E-6	-0.011493	0.0022987	236.89E-6	180.52E-6	47232.	0 (Negligible)
	9	41.104	5.4963	Hogging	0.0010894	0.0095100	0.010563	-159.09E-6	180.52E-6	19531.	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Specific Building Damage Results - Critical Values for All Segments within Each Sub-Structure

Structure: No4south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.023455	-0.10951	0.0011543	5.3000	0.025911	0.0014391	0.0011543	3469.0	5805.4	0 (Negligible)

Structure: No4east | Sub-structure:

Vertical	Deflection	Average	Maximum	Maximum	Max.	Maximum	Maximum	Min.	Min.	Damage Category

Offset from Line for Vertical Movement Calculations	Ratio	Horizontal Strain	Slope	Settlement	Tensile Strain	Gradient of Horizontal Displacement Curve	Gradient of Vertical Displacement Curve	Radius of Curvature (Hogging)	Radius of Curvature (Sagging)	
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.0049384	0.043094	-572.68E-6	6.2552	0.046759	-430.76E-6	-572.68E-6	10897.	6289.2	0 (Negligible)

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.12402	-0.17294	-0.0050540	9.0643	0.091682	0.0041179	-0.0050540	119.15		- 2 (Slight)

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.057392	-0.40502	0.0025666	9.5677	0.081830	0.013079	0.0025666	347.59		- 2 (Slight)

Structure: No41-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.026295	0.0	0.0011833	7.7972	0.024945	0.0	0.0011833	662.58		- 0 (Negligible)

Structure: No3east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: No3north | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.014372	393.57E-6	-0.0016880	3.6888	0.013447	217.71E-6	-0.0016880	781.44		- 0 (Negligible)

Structure: No3west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.018560	0.035186	-0.0012848	3.7800	0.044968	-390.05E-6	-0.0012848	1749.3		- 0 (Negligible)

Structure: No31-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	357.62E-6	0.0071906	-61.671E-6	0.31706	0.0074216	-137.61E-6	-61.671E-6	93996.		- 0 (Negligible)

Structure: No31-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.025668	-0.034289	-0.0020135	4.7715	0.024802	582.52E-6	-0.0020135	492.65	9877.5	0 (Negligible)

Structure: No31-3 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.042051	0.078938	0.0016005	4.8736	0.10415	-0.0012938	0.0016005	584.26		- 2 (Slight)

Structure: No5south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.12503	0.0041744	-0.0056275	11.965	0.12620	-124.73E-6	-0.0056275	115.44	13.079E+6	2 (Slight)

Structure: No5west | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category

[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.10099	0.33553	0.0048181	11.969	0.35921	-0.0077606	0.0048181	164.29	8014.2	4 (Severe)

Structure: No5SE | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.10364	0.31432	0.0049076	11.955	0.34067	-0.0073617	0.0049076	157.72	8537.4	4 (Severe)

Structure: No5east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.034356	0.10250	0.0039175	8.5845	0.12594	-0.0038416	0.0039175	240.82	-	2 (Slight)

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement Calculations	Deflection Ratio	Average Horizontal Strain	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Maximum Gradient of Horizontal Displacement Curve	Maximum Gradient of Vertical Displacement Curve	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0	0.019927	-0.032681	0.0011493	3.5307	0.017434	-430.76E-6	0.0011493	4350.0	3301.9	0 (Negligible)

Specific Building Damage Results - Critical Segments within Each Structure

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start [m]	End [m]	Curvature	Maximum Slope	Maximum Settlement [mm]	Max. Tensile Strain [%]	Min. Radius of Curvature (Hogging) [m]	Min. Radius of Curvature (Sagging) [m]	Damage Category
No4south	Maximum Slope		2	0.65496	3.0760	Sagging	**0.0011543**	5.1349	0.010299	-	5805.4	0 (Negligible)
	Maximum Settlement		1	0.0	0.65496	Hogging	251.97E-6	**5.3000**	56.612E-6	5804.2	-	0 (Negligible)
	Max. Tensile Strain		3	3.0760	6.1244	Hogging	0.0011543	4.1143	**0.025911**	3469.0	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	3.0760	6.1244	Hogging	0.0011543	4.1143	0.025911	**3469.0**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	0.65496	3.0760	Sagging	0.0011543	5.1349	0.010299	-	**5805.4**	0 (Negligible)
No4east	Maximum Slope		1	0.0	5.9052	Hogging	**572.68E-6**	4.0648	0.042871	10897.	-	0 (Negligible)
	Maximum Settlement		2	5.9052	10.800	Sagging	572.68E-6	**6.2552**	0.046759	-	6289.2	0 (Negligible)
	Max. Tensile Strain		2	5.9052	10.800	Sagging	572.68E-6	6.2552	**0.046759**	-	6289.2	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	5.9052	Hogging	572.68E-6	4.0648	0.042871	**10897.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	5.9052	10.800	Sagging	572.68E-6	6.2552	0.046759	-	**6289.2**	0 (Negligible)
No41-1	Maximum Slope		1	0.0	1.2000	Hogging	**0.0050540**	9.0643	0.091682	119.15	-	2 (Slight)
	Maximum Settlement		1	0.0	1.2000	Hogging	0.0050540	**9.0643**	0.091682	119.15	-	2 (Slight)
	Max. Tensile Strain		1	0.0	1.2000	Hogging	0.0050540	9.0643	**0.091682**	119.15	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	1.2000	Hogging	0.0050540	9.0643	0.091682	**119.15**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No41-2	Maximum Slope		1	0.0	3.4762	Hogging	**0.0025666**	9.5677	0.061627	347.59	-	1 (Very Slight)
	Maximum Settlement		1	0.0	3.4762	Hogging	0.0025666	**9.5677**	0.061627	347.59	-	1 (Very Slight)
	Max. Tensile Strain		5	7.0000	10.400	Hogging	0.0010069	7.6978	**0.081830**	890.84	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	3.4762	Hogging	0.0025666	9.5677	0.061627	**347.59**	-	1 (Very Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No41-3	Maximum Slope		1	0.0	2.9400	Hogging	**0.0011833**	7.7972	0.024945	662.58	-	0 (Negligible)
	Maximum Settlement		1	0.0	2.9400	Hogging	0.0011833	**7.7972**	0.024945	662.58	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	2.9400	Hogging	0.0011833	7.7972	**0.024945**	662.58	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	2.9400	Hogging	0.0011833	7.7972	0.024945	**662.58**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No3east	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
	All settlements are less than the Settlement Trough Limit Sensitivity.											
No3north	Maximum Slope		1	0.98026	11.700	Hogging	**0.0016880**	3.6888	0.013447	781.44	-	0 (Negligible)
	Maximum Settlement		1	0.98026	11.700	Hogging	0.0016880	**3.6888**	0.013447	781.44	-	0 (Negligible)
	Max. Tensile Strain		1	0.98026	11.700	Hogging	0.0016880	3.6888	**0.013447**	781.44	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.98026	11.700	Hogging	0.0016880	3.6888	0.013447	**781.44**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No3west	Maximum Slope		1	1.6824	8.4000	Hogging	**0.0012848**	3.7800	0.044968	1749.3	-	0 (Negligible)
	Maximum Settlement		1	1.6824	8.4000	Hogging	0.0012848	**3.7800**	0.044968	1749.3	-	0 (Negligible)
	Max. Tensile Strain		1	1.6824	8.4000	Hogging	0.0012848	3.7800	**0.044968**	1749.3	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	1.6824	8.4000	Hogging	0.0012848	3.7800	0.044968	**1749.3**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No31-1	Maximum Slope		2	1.6780	4.5000	Hogging	**61.671E-6**	0.31706	0.0074216	93996.	-	0 (Negligible)
	Maximum Settlement		2	1.6780	4.5000	Hogging	61.671E-6	**0.31706**	0.0074216	93996.	-	0 (Negligible)
	Max. Tensile Strain		2	1.6780	4.5000	Hogging	61.671E-6	0.31706	**0.0074216**	93996.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	1.6780	4.5000	Hogging	61.671E-6	0.31706	0.0074216	**93996.**	-	0 (Negligible)

Structure Name	Parameter	Critical Sub-Structure	Critical Segment	Start	End	Curvature	Maximum Slope	Maximum Settlement	Max. Tensile Strain	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No31-2	Maximum Slope		3	6.6424	11.900	Hogging	**0.0020135**	4.7715	0.016319	492.65	-	0 (Negligible)
	Maximum Settlement		3	6.6424	11.900	Hogging	0.0020135	**4.7715**	0.016319	492.65	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	4.2758	Hogging	292.17E-6	1.2142	**0.024802**	24418.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	6.6424	11.900	Hogging	0.0020135	4.7715	0.016319	**492.65**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	4.2758	6.6424	Sagging	312.27E-6	1.7301	0.0099145	-	**9877.5**	0 (Negligible)
No31-3	Maximum Slope		1	0.0	2.6000	Hogging	**0.0016005**	4.8736	0.10415	584.26	-	2 (Slight)
	Maximum Settlement		1	0.0	2.6000	Hogging	0.0016005	**4.8736**	0.10415	584.26	-	2 (Slight)
	Max. Tensile Strain		1	0.0	2.6000	Hogging	0.0016005	4.8736	**0.10415**	584.26	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6000	Hogging	0.0016005	4.8736	0.10415	**584.26**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
No5south	Maximum Slope		3	4.0630	6.5000	Hogging	**0.0056275**	11.965	0.12620	115.44	-	2 (Slight)
	Maximum Settlement		3	4.0630	6.5000	Hogging	0.0056275	**11.965**	0.12620	115.44	-	2 (Slight)
	Max. Tensile Strain		3	4.0630	6.5000	Hogging	0.0056275	11.965	**0.12620**	115.44	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		3	4.0630	6.5000	Hogging	0.0056275	11.965	0.12620	**115.44**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		2	2.4378	4.0630	Sagging	1.7872E-6	7.4014	28.646E-6	-	**13.079E+6**	0 (Negligible)
No5west	Maximum Slope		1	0.0	2.7348	Hogging	**0.0048181**	11.969	0.35921	164.29	-	4 (Severe)
	Maximum Settlement		1	0.0	2.7348	Hogging	0.0048181	**11.969**	0.35921	164.29	-	4 (Severe)
	Max. Tensile Strain		1	0.0	2.7348	Hogging	0.0048181	11.969	**0.35921**	164.29	-	4 (Severe)
	Min. Radius of Curvature (Hogging)		1	0.0	2.7348	Hogging	0.0048181	11.969	0.35921	**164.29**	-	4 (Severe)
	Min. Radius of Curvature (Sagging)		2	2.7348	5.8634	Sagging	634.77E-6	6.8177	0.088343	-	**8014.2**	2 (Slight)
No5SE	Maximum Slope		1	0.0	2.6909	Hogging	**0.0049076**	11.955	0.34067	157.72	-	4 (Severe)
	Maximum Settlement		1	0.0	2.6909	Hogging	0.0049076	**11.955**	0.34067	157.72	-	4 (Severe)
	Max. Tensile Strain		1	0.0	2.6909	Hogging	0.0049076	11.955	**0.34067**	157.72	-	4 (Severe)
	Min. Radius of Curvature (Hogging)		1	0.0	2.6909	Hogging	0.0049076	11.955	0.34067	**157.72**	-	4 (Severe)
	Min. Radius of Curvature (Sagging)		2	2.6909	2.8835	Sagging	483.75E-6	6.8537	0.085431	-	**8537.4**	2 (Slight)
No5east	Maximum Slope		1	0.0	8.9000	Hogging	**0.0039175**	8.5845	0.12594	240.82	-	2 (Slight)
	Maximum Settlement		1	0.0	8.9000	Hogging	0.0039175	**8.5845**	0.12594	240.82	-	2 (Slight)
	Max. Tensile Strain		1	0.0	8.9000	Hogging	0.0039175	8.5845	**0.12594**	240.82	-	2 (Slight)
	Min. Radius of Curvature (Hogging)		1	0.0	8.9000	Hogging	0.0039175	8.5845	0.12594	**240.82**	-	2 (Slight)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
Greenaway gardens	Maximum Slope	Sub 16	6	33.209	35.890	Sagging	**0.0011493**	3.5307	0.017434	-	3301.9	0 (Negligible)
	Maximum Settlement	Sub 16	4	27.885	31.133	Sagging	660.33E-6	**3.5307**	0.0060029	-	4186.6	0 (Negligible)
	Max. Tensile Strain	Sub 16	6	33.209	35.890	Sagging	0.0011493	3.5307	**0.017434**	-	3301.9	0 (Negligible)
	Min. Radius of Curvature (Hogging)	Sub 16	7	35.890	38.309	Hogging	0.0011493	2.8348	0.0059121	**4350.0**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)	Sub 16	6	33.209	35.890	Sagging	0.0011493	3.5307	0.017434	-	**3301.9**	0 (Negligible)

Specific Building Damage Results - All Combined Segments

Structure: No4south | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	0.0	13.000	Hogging	0.0076566	-0.019440	0.0057435	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No4east | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	0.0	10.800	Hogging	0.0023073	0.041902	0.043765	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Structure: No41-1 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	

No structures have segments combined.

Structure: No41-2 | Sub-structure:

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]		[%]	[%]	[%]	
0	1	0.0	10.400	Hogging	0.026535	-0.22231	0.045396	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Vertical Offset from Line for Vertical Movement Calculations [m]	Combined Segment [m]	Start [m]	Length [m]	Curvature Ratio [%]	Deflection [%]	Average Horizontal Strain [%]	Max. Tensile Strain [%]	Damage Category
Structure: No41-3 | Sub-structure:								
0	1	0.0	9.7000	Hogging	0.010745	0.0	0.015767	0 (Negligible)
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.								
Structure: No3east | Sub-structure:								
No structures have segments combined.								
Structure: No3north | Sub-structure:								
No structures have segments combined.								
Structure: No3west | Sub-structure:								
No structures have segments combined.								
Structure: No31-1 | Sub-structure:								
0	1	0.90443	3.5956	Hogging	464.07E-6	0.0071906	0.0075616	0 (Negligible)
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.								
Structure: No31-2 | Sub-structure:								
0	1	0.0	11.900	Hogging	0.013310	-0.0063604	0.013823	0 (Negligible)
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.								
Structure: No31-3 | Sub-structure:								
No structures have segments combined.								
Structure: No5south | Sub-structure:								
0	1	0.0	6.5000	Hogging	0.070273	46.145E-6	0.068244	1 (Very Slight)
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.								
Structure: No5west | Sub-structure:								
0	1	0.0	14.100	Hogging	0.027186	0.12519	0.15238	3 (Moderate)
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.								
Structure: No5SE | Sub-structure:								
0	1	0.0	5.5000	Hogging	0.072141	0.14434	0.17579	3 (Moderate)
Tensile horizontal strains are +ve, compressive horizontal strains are -ve.								
Structure: No5east | Sub-structure:								
No structures have segments combined.								

Vertical Offset from Line for Vertical	Combined Segment	Start	Length	Curvature Ratio	Deflection	Average Horizontal Strain	Max. Tensile Strain	Damage Category

Structure: Greenaway gardens | Sub-structure: Sub 16

Vertical Offset from Line for Vertical Movement Calculations	Combined Segment	Start	Length	Curvature Ratio	Deflection	Average Horizontal Strain	Max. Tensile Strain	Damage Category
[m]		[m]	[m]	[%]		[%]	[%]	
0	1	17.642	28.958	Sagging	0.010874	-0.0035935	718.72E-6	0 (Negligible)

Tensile horizontal strains are +ve, compressive horizontal strains are -ve.

Geotechnical & Environmental Associates (GEA)
is an engineer-led and client-focused independent specialist providing a complete range of geotechnical and contaminated land investigation, analytical and consultancy services to the property and construction industries.

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