GROUND MOVEMENT ASSESSMENT REPORT

6 Nutley Terrace
London
NW3 5BX

Client: Mrs Shafi

Engineer: KSR Architects

J11158C

November 2015




GEA Geotechnical & Environmental Associates

Document Control

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Report prepared by	Caroline Anderson MEng AUS FGS		
Report checked by	Martin Cooper BEng CEng MICE FGS		
Report approved for issue by	Steve Branch BSc MSc CGeol FGS FRGS		

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This report has been issued by the GEA office indicated below. Any enquiries regarding the report should be directed to the office indicated or to Steve Branch in our Herts office.

☑	Hertfordshire	tel 01727 824666	mail@gea-ltd.co.uk
☐	Nottinghamshire	tel 01509 674888	midlands@gea-ltd.co.uk

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1.0 INTRODUCTION

Geotechnical and Environmental Associates (GEA) has been commissioned by KSR Architects, on behalf of Mrs Shafi, to complete a ground movement assessment for the proposed construction of a new basement beneath No 6 Nutley Terrace, London NW3 5BX. Following the demolition of the existing house, a new four-storey multi-unit dwelling with a double level basement will be constructed.

A Desk Study and Ground Investigation has previously been carried out by GEA (report ref J11158, Report Issue 2, dated 11 October 2011), the findings of which have been used in the derivation of parameters for use in this assessment.

Subsequently, a Basement Impact Assessment (BIA) (ref J11158B, dated April 2015) has recently been carried out and should be read in conjunction with this report.

The purpose of this assessment has been to determine the effects of the proposed basement construction upon nearby sensitive structures, including an adjacent Network Rail tunnel.

The report is based on proposals that have been revised since the original 2011 investigation, which increase the proposed basement from a single level to two levels, and these have been provided by the consulting engineers. A further revision to the ground movement assessment has been made on the basis of new information regarding the adjacent sensitive structures.

1.1 Proposed Development

It is understood that consideration is being given to the demolition of the existing house and the subsequent construction of a new four-storey multi-unit dwelling with a double level basement.

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

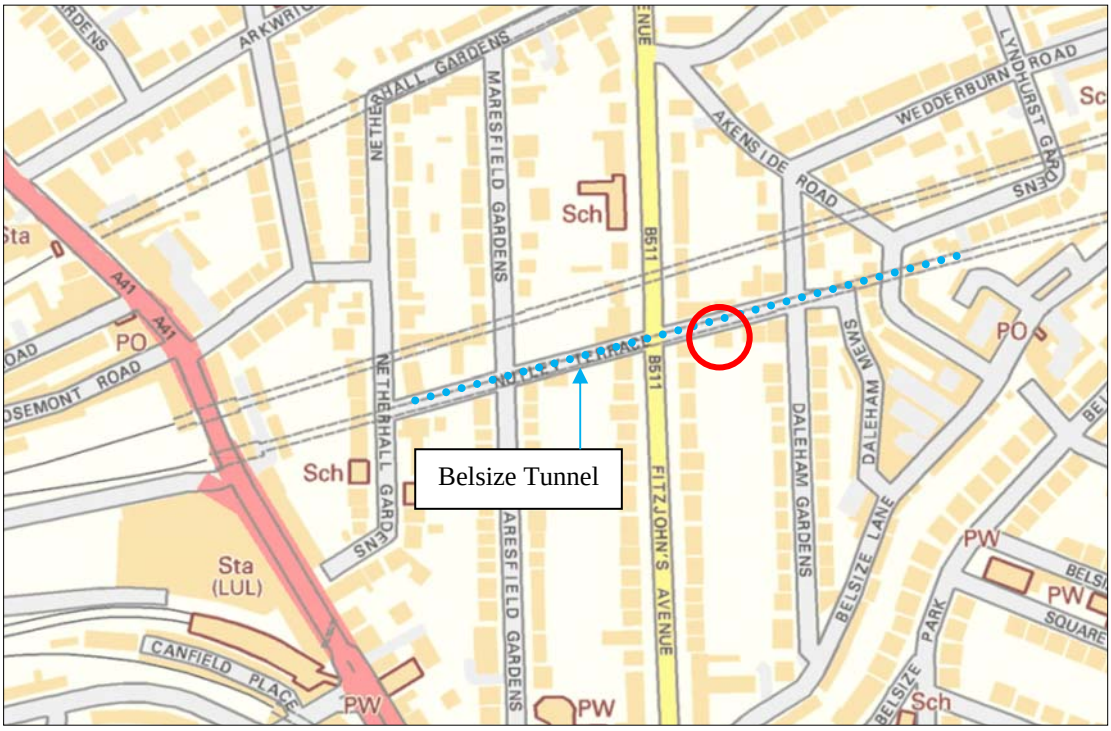
1.2 Limitations

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 approximately 400 m to the north-east of Finchley Road London Underground station. It fronts onto Nutley Terrace to the north and is bounded by private gardens to the south, east and west. The site is located immediately to the south of Network Rail's Belsize Tunnel which carries the Midland Mainline service. It is understood that the tunnel is rectangular in section and the depth to the tunnel crown is 23 m. The site may be additionally located by National Grid Reference 526659, 184995, as shown on the map below.



The site is roughly rectangular in shape, measuring approximately 30 m by 60 m and is occupied by the existing two-storey L-shaped house, located on the northern part of the site. A brick paved parking area is present to the front of the house, adjacent to Nutley Terrace. A small grassed area with planted borders and two deciduous trees approximately 20 m high are present to the east of the house.

To the south of the house the rear garden comprises a terraced lawn with a number of mature trees on the eastern and western boundaries; species include ash, beech and poplar. The site slopes gently down towards the south in a series of terraces, from a level of 75.47 m OD at the northern boundary to 73.58 m OD at the southern boundary.

3.0 SUMMARY OF GROUND CONDITIONS

The ground investigation broadly confirmed the expected ground conditions in that, beneath a variable thickness of topsoil or made ground, London Clay was encountered and proved to the full depth of the investigation, of 20.00 m (55.18 m OD).

The made ground comprised dark brown silty sandy clay with fine gravel, brick and charcoal with variable amounts of rootlets and concrete fragments and was encountered to depths of between 0.20 m (73.10 m OD) and 1.20 m (73.71 m OD).

The London Clay initially comprised a weathered zone of soft becoming firm orange-brown mottled brown and grey silty sandy clay which extended to depths of between 4.75 m (69.57 m OD) and 5.50 m (69.68 m OD). This upper weathered material is sandier than would be expected for London Clay and could represent a soliflucted material derived in part from the overlying Claygate Member to the north of the site, but it is not considered to represent insitu Claygate as it would mean that the base of the Member would be some 10 m lower than that shown by the geology map and found in other investigations in the Hampstead area.

Firm dark brownish grey silty fissured clay then extended to depths of between 14.0 m (60.32 m OD) and 14.30 m (60.88 m OD), whereupon stiff grey fissured silty clay with lenses of fine grey sand was encountered to the full depth of the investigation of 20.00 m (55.18 m OD). Selenite crystals were noted throughout the clay and carbonaceous deposits were recorded in the shallow soils.

Desiccation was observed to a depth of up to 2.50 m (72.41 m OD) in Borehole No 5 in close vicinity of mature deciduous trees.

4.0 CONSTRUCTION SEQUENCE

The following sequence of operations has been derived 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.

- Demolish existing two-storey building;
- construct piled retaining walls to perimeter of proposed basement;
- construct new reinforced concrete slabs and excavate the new basement in a top-down sequence casting floor and basement slabs to provide propping as the excavation proceeds; and
- construct new four-storey building.

At this stage in the design and construction process it has been assumed that concrete slabs will be cast and cured before each stage of excavation. The precise detail of the support systems provided to the adjacent walls is beyond the scope of this report will be agreed the contractor and piling sub-contractor once appointed. When the final excavation depths have been reached the reinforced concrete walls will be cast with a drained cavity lining the inside of the bored pile walls.

5.0 PRELIMINARY RETAINING WALL DESIGN

It is recognised that the final retaining wall design will be undertaken by the successful piling contractor and that it will be tied into elements of both temporary and permanent works undertaken by the principal contractor appointed for the construction. Plainly with planning permission not yet in place a contractor has not been appointed so a preliminary geotechnical design of the piled retaining walls has been undertaken by GEA. The design has been carried out to establish the most likely pile diameter and depths required for the basement and to estimate the movement of the retaining walls both in the short term during construction and also in the long term when different soil properties will govern wall behaviour.

5.1 Basis of Design

The design has been undertaken using the Wallap software (Version 6.05 Revision A42.B57.R48) produced and licensed by Geosolve and commonly used for the design of multi-propped pile retaining walls. This analysis has adopted the BS EN 1997 Eurocode 7 method of analysis although it is understood that some piling contractors may prefer to use the approach set out in CIRIA Report C580[1].

Observation of groundwater during the drilling of the boreholes and the subsequent monitoring have indicated that the long term groundwater level is expected to be at a depth of around 1.0 m OD to 1.5 m OD although groundwater was not encountered during borehole drilling. On this basis it is considered that a contiguous bored pile wall may be suitable for excavation support with perhaps localised grouting or sealing of pile spacings if seepages occur whilst the wall should be designed for the long term groundwater pressures arising from a level of 1.0 m below existing ground level.

The soil parameters adopted are those set out in the GEA Site Investigation Report referenced J11158, Report Issue 2, dated 11 October 2011.

The design case modelled is specific to the adjacent garage / pool extension to No 4 Nutley Terrace which has been modelled in the wall design as a 16 kN/m^2 surcharge bearing at a depth of 1.0 m on a strip footing of 0.6 m width. This is considered to represent the most onerous wall condition and therefore represents a conservative design solution even at this stage.

Permanent propping has been provided by 250 mm thick floor slabs and a 350 mm thick basement slab all of which have been adopted as having a 3 m free length which represents a roughly 6 m wide span at each level.

At this stage in the process, the retaining walls have only been designed for the Serviceability Limit State (SLS). The various load factors, soil parameter factors and output factors are indicated within the results.

The detailed design within each case has been based on undrained soil parameters during temporary works and construction with long term drained soil parameters adopted for the long term permanent case with a reversion to at rest earth pressures. At this stage zero drained cohesion, c', has been used in the calculations and an at-rest earth pressure K_0 of 1.0 has been adopted. The results of the wall design run are appended and comprise a single analysis that is considered to represent the critical case in terms of the magnitude of wall deflection. It is

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

assumed that refinement of the design will be for the piling contractor to establish at a later stage.

5.2 Summary Results and Bored Pile Wall Proposals

The proposed contiguous piled wall comprises 450 mm diameter piles installed at 600 mm spacings and to a depth of 11.0 m.

The maximum unfactored bending moment is given as 162 kNm /m which represents 98 kNm per pile; detailed reinforcement design will be undertaken by the piling contractor but at this stage these values are deemed sufficient to confirm that a 450 mm diameter scheme is appropriate.

6.0 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 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 Version 19.3 – Build 12 software package 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-south, whilst the y-direction is parallel with the orientation of east-west. Vertical movement is in the z-direction. Wall lengths of less than 10 m have been modelled as 1 m long structural elements, while greater than 10 m wall lengths have been modelled as 2 m elements to reflect the greater stiffness of the longer walls.

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.

6.1 Ground Movements – Surrounding the Basement

6.1.1 Model Used

For the X-Disp analysis, the soil movement relationships used for the embedded retaining walls are based on the default values within CIRIA report C580[2], which were derived from a number of historic case studies. However the movements from the preliminary piled wall design have been used to amend the CIRIA C580 curves to provide site specific results.

The analysis has adopted the ‘installation of a contiguous bored pile wall’ to represent the installation of the retaining walls on all sides of the main excavation. The ground movement

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

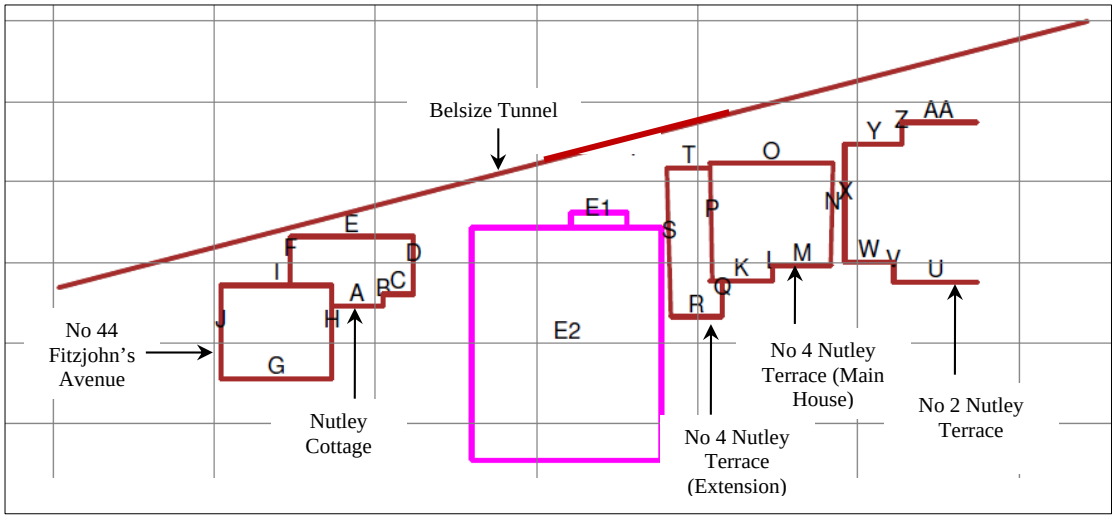
curves for 'excavations in front of high stiffness wall in clay' have been amended and movements reduced by one-third to represent the wall design values. The new basement excavation is assumed to extend to a depth of 7.0 m below Nutley Terrace road level on all sides. The new retaining walls are based on the preliminary design with piles to be installed to a depth of 4.0 m below basement level, at a depth of 11.0 m below existing ground level.

6.1.2 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 improve the resultant movements and the values below are therefore deemed to be conservative.

The results are presented to the degree of accuracy required to allow predicted variations in ground movements around the structure(s) to be illustrated, but may not reflect the anticipated accuracy of the predictions.

Displacement Analysis Points:



The heights and basement depths of each of the nearby sensitive structures are summarised in the table below.

Sensitive Structure	Elevation	Depth below ground level of basement / foundations (m)	Height of building above level of basement / foundations
Nutley Cottage	A to F	1.0	8.0
No 44 Fitzjohn's Avenue	G to J	2.0	19.0
No 4 Nutley Terrace (Main House)	K to P	1.0	11.0
No 4 Nutley Terrace (Extension)	Q to T	1.0	4.0
No 2 Nutley Terrace	U to AA	3.0	17.0
NR Tunnel Crown	NRTunnelTop	23 m	-
NR Tunnel Invert	NRTunnelBase	28 m	5

Wall Installation Phase:

Sensitive Structure	Elevation	Maximum Vertical Movement	Maximum Horizontal Movement
Nutley Cottage	A	3	2
	B	3	2
	C	4	3
	D	4	3
	E	4	3
	F	1	1
No 44 Fitzjohn's Avenue	G to J	2	1
No 4 Nutley Terrace (Main House)	K	4	3
	L	2	1
	M	2	1
	N	1	1
	O	3	2
	P	4	3
No 4 Nutley Terrace (Extension)	Q	4	2
	R	5	5
	S	5	5
	T	4	3
No 2 Nutley Terrace	U to AA	1	1

Wall Installation and Excavation Phases (Combined):

Sensitive Structure	Elevation	Maximum Vertical Movement	Maximum Horizontal Movement
Nutley Cottage	A	5	6
	B	5	6
	C	7	8
	D	7	8
	E	7	8
	F	1	2
No 44 Fitzjohn's Avenue	G to J	2	3
No 4 Nutley Terrace (Main House)	K	7	8
	L	4	5

Sensitive Structure	Elevation	Maximum Vertical Movement	Maximum Horizontal Movement
	M	4	5
	N	1	2
	O	5	4
	P	7	8
No 4 Nutley Terrace (Extension)	Q	7	8
	R	7	11
	S	7	12
	T	6	6
No 2 Nutley Terrace	U to AA	1	2

The analysis has indicated that the maximum vertical and horizontal settlements that will result from new retaining wall construction are generally 5 mm or less. Furthermore, the analysis has indicated that the maximum vertical settlements and horizontal movements that will result from the combined effect of the retaining wall installation and excavation are generally less than 15 mm.

6.2 Movements within the Excavation (Heave)

6.2.1 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 cause heave to take place. 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 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 we have used more recent published data[3] that indicates stiffness values of 750 x Cu for the London Clay and a ratio of E' to Eu of 0.75. It is considered that the use of the less conservative values provides a sensible approach for this stage in the design.

The soil profile assumed in the analysis is based on SPT and laboratory strength test results from three cable percussion boreholes advanced to a depth of 20.0 m during the original ground investigation carried out in 2011.

The proposed excavation will result in a net unloading of 160 kN/m^2. All loading from the proposed building will be supported at a level below the proposed basement level by piled foundations.

A rigid boundary for the analysis has been set within the London Clay at a depth of about 80 m below existing ground level, where nearby BGS records indicate that the base of this formation is likely to be present. Below this depth the essentially incompressible soils of the Lambeth Group should be present.

[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 Belsize Tunnel is assumed to be 23 m deep and is reportedly rectangular in cross-section; the height and width of the tunnel is assumed to be 5 m and 4 m respectively.

6.2.2 Results

The P-Disp analysis indicates that, by the time the basement construction is complete, 40 mm to 45 mm of heave is likely to have taken place at the centre of the proposed excavation, reducing to 20 mm to 25 mm at the edges.

In the long term, following completion of the basement construction, a further 50 mm to 55 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 heave movements outside the proposed basement are unlikely to exceed between 25 mm and 30 mm heave at a distance of approximately 5 m, reducing to less than 15 mm around 20 m away. Total movements acting on the Belsize Tunnel as a result of the proposed basement are unlikely to exceed 10 mm.

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.

7.0 DAMAGE ASSESSMENT

In addition to the above assessment of the likely movements that will result from the proposed development, neighbouring structures, Nos 2 and 4 Nutley Terrace, Nutley Cottage and No 44 Fitzjohn's Avenue are considered to be sensitive structures, requiring Building Damage Assessments, on the basis of the classification given in Table 2.5 of C580.

7.1 Damage to Neighbouring Structures

The movements resulting from the wall installation phase and the combined retaining wall installation and basement excavation phases, have been calculated using the X-Disp modelling software to carry out an assessment of the likely damage to adjacent properties and the results are summarised for the combined wall installation and basement excavation in the table overleaf.

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 (wall installation and basement excavation combined)		
Sensitive Structure	Elevation	Category of Damage*
Nutley Cottage	A	Category 0 - Negligible

Building Damage Assessment (wall installation and basement excavation combined)		
Sensitive Structure	**Elevation**	**Category of Damage***
	B	Category 0 - Negligible
	C	Category 0 – Negligible
	D	Category 0 – Negligible
	E	Category 0 – Negligible
	F	Category 0 – Negligible
No 44 Fitzjohn's Avenue	G to J	Category 0 - Negligible
No 4 Nutley Terrace (Main House)	K	Category 1 – Very Slight
	L	Category 0 - Negligible
	M	Category 0 - Negligible
	N	Category 0 - Negligible
	O	Category 0 - Negligible
	P	Category 0 – Negligible
No 4 Nutley Terrace (Extension)	Q	Category 0 - Negligible
	R	Category 1 – Very Slight
	S	Category 0 - Negligible
	T	Category 0 - Negligible
No 2 Nutley Terrace	U to AA	Category 0 - Negligible

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

The analysis has predicted that the installation of the new retaining walls and excavation of the proposed basements may generally result in the building damage for sensitive structures of between Category 0 (negligible) and Category 1 (very slight).

The Camden Planning Guidance for Basements and Lightwells, CPG4[4], states that "The Council […] will expect […] mitigation measures where any risk of damage is identified of Burland category 1 'very slight' or higher. Following inclusion of mitigation measures into the proposed scheme the changes are to be re-evaluated and new net consequences determined."

The damage categories above are deemed to fall within acceptable limits.

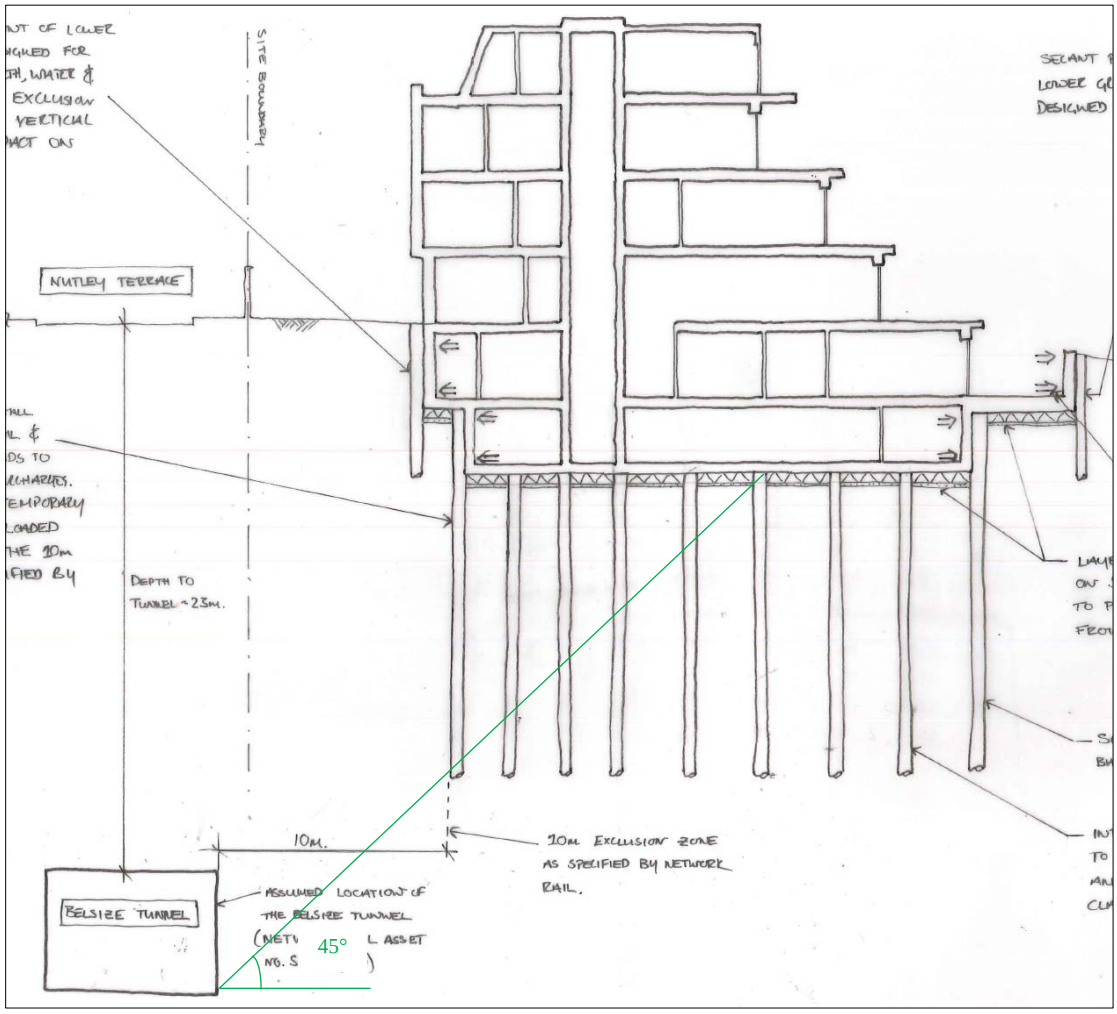
7.2 Monitoring of Ground Movements

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 2 and 4 Nutley Terrace, No 44 Fitzjohn's Avenue and Nutley Cottage. Condition surveys of the above existing structures should be carried out before and after the proposed works.

4 London Borough of Camden Planning Guidance CPG4 *Basements and lightwells (2015)*

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.

8.0 TUNNEL MOVEMENTS



The proposed basement extension will be in close proximity to a Network Rail tunnel.

It is recommended that the piles that are located close to the Network Rail tunnel exclusion zone are permanently sleeved over the upper portion of the pile so that no load can be transferred to the sensitive structures through shedding of shaft friction within the zone of influence of the tunnel. The typical pile detail is shown on the sketch on the previous page; the minimum sleeved length being determined by a 45° line drawn from the intersection of the outside edge and invert level of the structure and extended until it meets the proposed new piles, 10 m away. This is indicated by the green dashed line on the sketch. The typical pile detail indicates that a permanent sleeve in the order of 18 m is likely to be required; thus the pile lengths will need to be increased to take the sleeving into account.

The analysis has been carried out using the Oasys PDisp software. The LU tunnel has been modelled at four discrete reference points; the crown level, invert level, northern side and southern side. The crown and invert depths have been modelled at 23.0 m and 23.8 m below ground level respectively. Similarly, the northern and southern side walls have been modelled at 25.5 m below ground level.

The approximate locations of the four reference points described above have been analysed along the length of the tunnel adjacent to the site based on drawings provided by the consulting engineers. The four points have been modelled as straight lines at roughly 1.3 m intervals.

The analysis will assess the change in vertical movement of the four reference points in order to demonstrate the differential movement, if any, across the tunnel structure. The analysis will also provide an assessment of the vertical stress and strain along the crown level of the tunnel.

Short term movements:

Tunnel Reference Point	Maximum Vertical Displacement (mm)	Maximum Vertical Stress (kN/m^2)	Maximum Vertical Strain (%)
Crown	3 mm heave	4	4.0×10^{-5}
Invert	3 mm heave	6	2.0×10^{-5}
Northern side wall	2 mm heave	4	3.0×10^{-5}
Southern side wall	4 mm heave	2	3.0×10^{-5}

Total movements:

Tunnel Reference Point	Maximum Vertical Displacement (mm)	Maximum Vertical Stress (kN/m^2)	Maximum Vertical Strain (%)
Crown	6 mm heave	4	5.0×10^{-5}
Invert	6 mm heave	6	9.0×10^{-5}
Northern side wall	5 mm heave	4	4.0×10^{-5}
Southern side wall	8 mm heave	8	2.0×10^{-4}

9.0 CONCLUSIONS

The analysis has concluded that the predicted damage to the neighbouring properties from the construction of the contiguous bored pile wall and basement excavation would be 'Negligible' to 'Very Slight', for which the damage that would occur would fall within the acceptable limits. It is recommended that movement monitoring is carried out on all structures prior to and during the proposed basement construction.

APPENDICES

X-DISP ANALYSIS

Wall Installation

Contour Plots of Vertical Movements and Horizontal Movements

Tabular Output of Results

Pile Installation and Basement Excavation

Contour Plots of Combined Vertical Movements and Horizontal Movements

Tabular Output of Results

BUILDING DAMAGE ASSESSMENT (X-DISP)

Tabular Output of Results

WALLAP OUTPUT

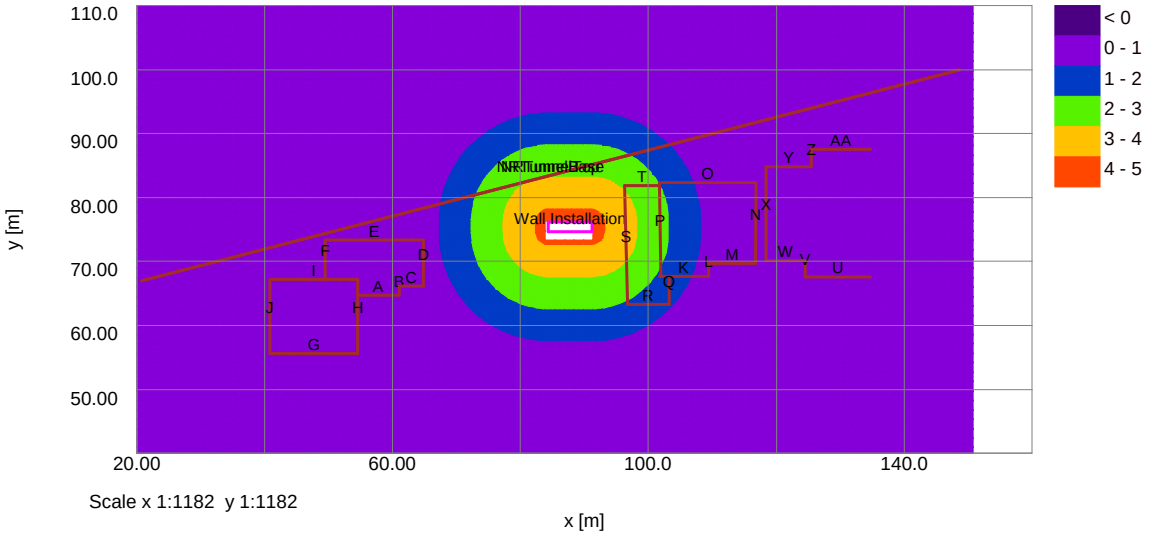
P-DISP ANALYSIS

Short Term Movement

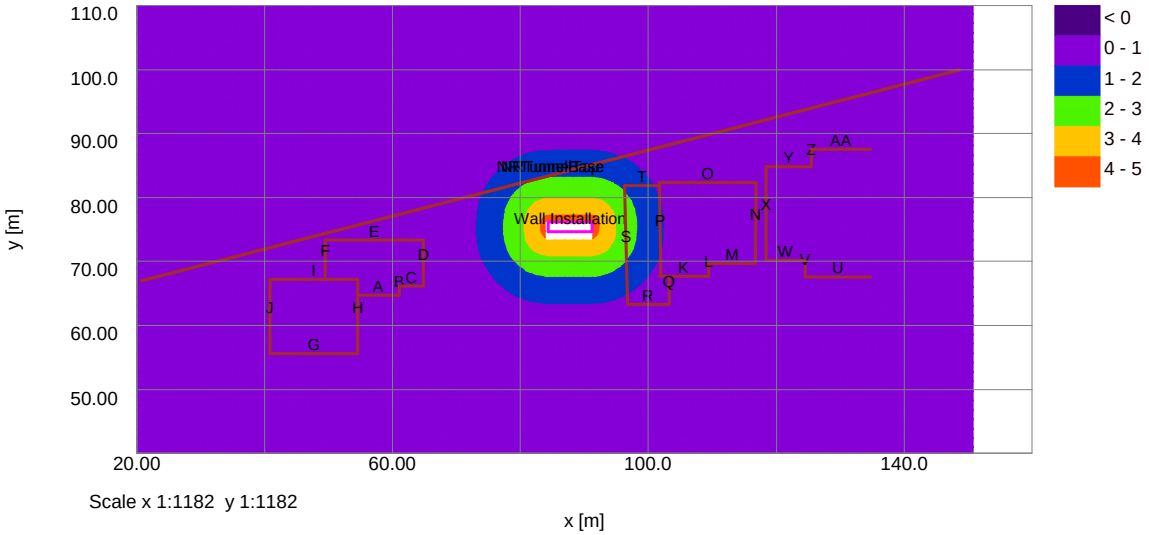
Total Movement

Displacement / Stress /
Strain Plots

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

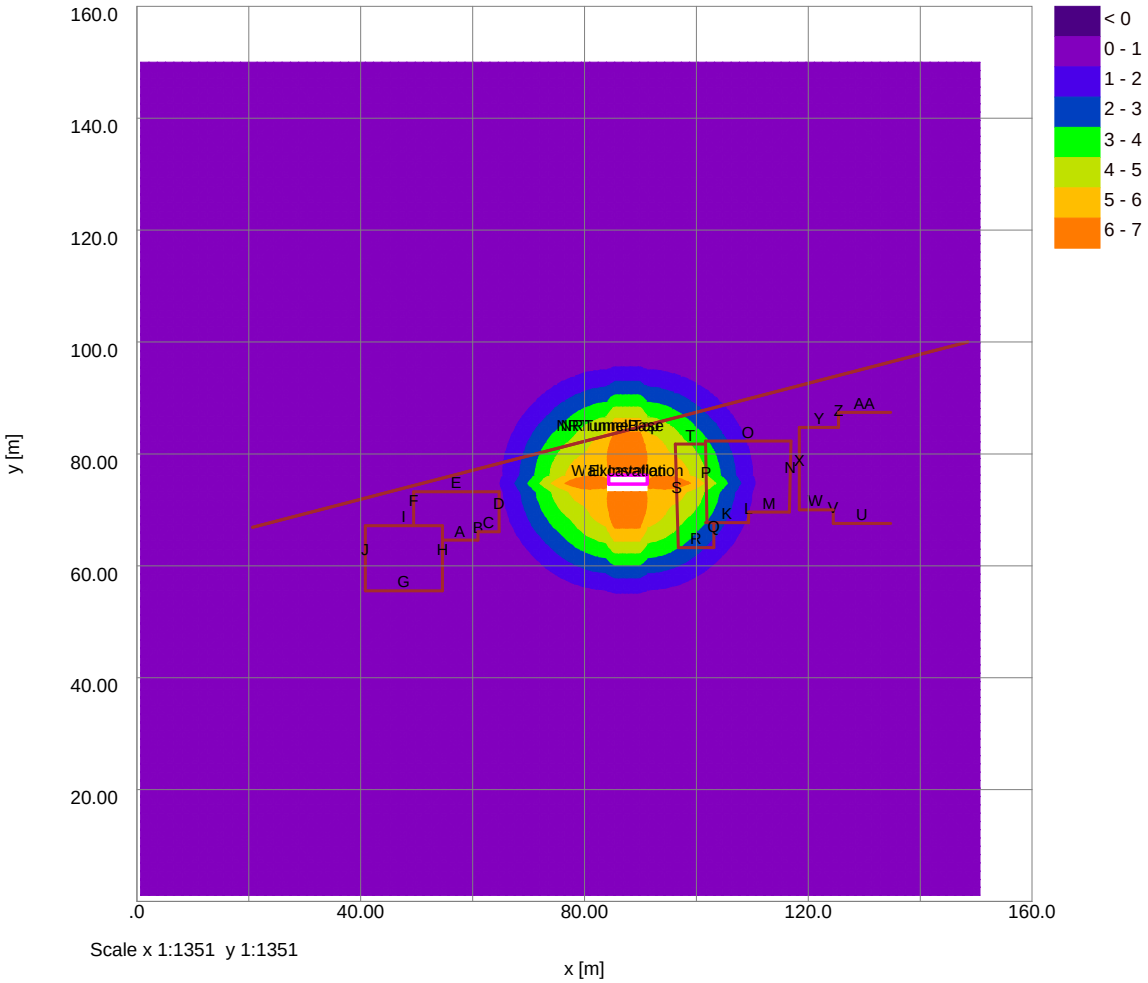


Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm

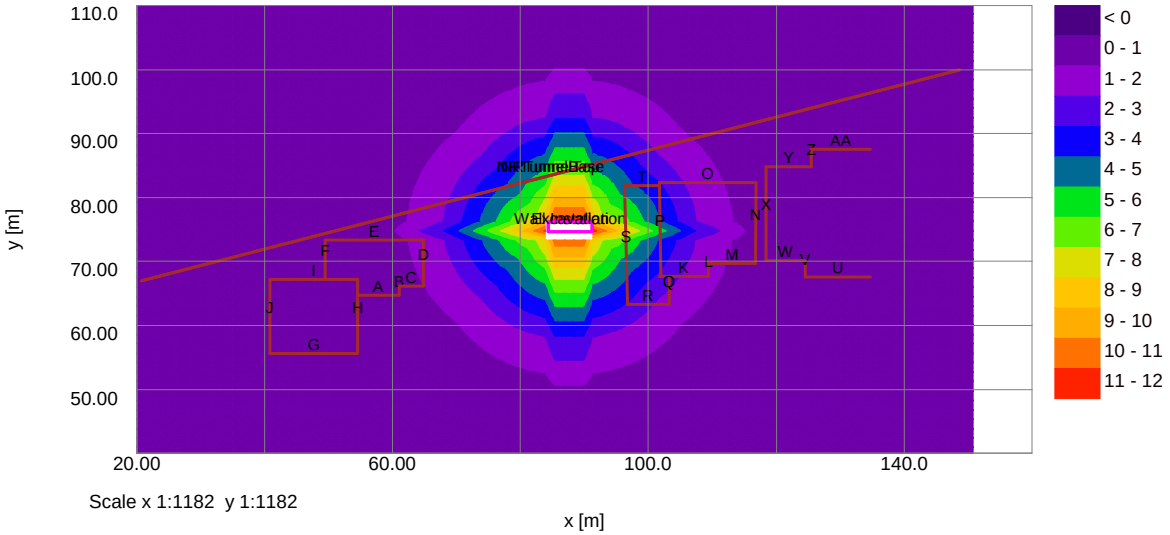


Scale x 1:1182 y 1:1182

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



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



Specific Building Damage Results - Horizontal Displacements

Structure: A | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	54.60000	64.70000	-1.00000	0.0	0.0	0.0	0.0
0.91429	55.51429	64.70000	-1.00000	0.0	0.0	0.0	0.0
1.8286	56.42857	64.70000	-1.00000	0.0	0.0	0.0	0.0
2.7429	57.34286	64.70000	-1.00000	0.0	0.0	0.0	0.0
3.6571	58.25714	64.70000	-1.00000	0.019196	0.0072974	0.019196	0.0072974
4.5714	59.17143	64.70000	-1.00000	0.13579	0.053499	0.13579	0.053499
5.4857	60.08571	64.70000	-1.00000	0.24952	0.10202	0.24952	0.10202
6.4000	61.00000	64.70000	-1.00000	0.36006	0.15299	0.36006	0.15299

Structure: B | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	61.00000	64.70000	-1.00000	0.36006	0.15299	0.15299	-0.36006
0.70000	61.00000	65.40000	-1.00000	0.40368	0.15939	0.15939	-0.40368
1.4000	61.00000	66.10000	-1.00000	0.44635	0.16283	0.16283	-0.44635

Structure: C | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	61.00000	66.10000	-1.00000	0.44635	0.16283	0.44635	0.16283
0.95000	61.95000	66.10000	-1.00000	0.56491	0.21484	0.56491	0.21484
1.9000	62.90000	66.10000	-1.00000	0.67969	0.26997	0.67969	0.26997
2.8500	63.85000	66.10000	-1.00000	0.79020	0.32844	0.79020	0.32844
3.8000	64.80000	66.10000	-1.00000	0.89587	0.39051	0.89587	0.39051

Structure: D | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	64.80000	66.10000	-1.00000	0.89587	0.39051	0.39051	-0.89587
0.90000	64.80000	67.00000	-1.00000	0.97109	0.37848	0.37848	-0.97109
1.8000	64.80000	67.90000	-1.00000	1.0442	0.35879	0.35879	-1.0442
2.7000	64.80000	68.80000	-1.00000	1.1143	0.33144	0.33144	-1.1143
3.6000	64.80000	69.70000	-1.00000	1.1804	0.29660	0.29660	-1.1804
4.5000	64.80000	70.60000	-1.00000	1.2413	0.25462	0.25462	-1.2413
5.4000	64.80000	71.50000	-1.00000	1.2960	0.20604	0.20604	-1.2960
6.3000	64.80000	72.40000	-1.00000	1.3436	0.15158	0.15158	-1.3436
7.2000	64.80000	73.30000	-1.00000	1.3830	0.092198	0.092198	-1.3830

Structure: E | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	64.80000	73.30000	-1.00000	1.3830	0.092198	-1.3830	-0.092198
1.9125	62.88750	73.30000	-1.00000	1.0733	0.065165	-1.0733	-0.065165
3.8250	60.97500	73.30000	-1.00000	0.76184	0.042461	-0.76184	-0.042461
5.7375	59.06250	73.30000	-1.00000	0.44892	0.023124	-0.44892	-0.023124
7.6500	57.15000	73.30000	-1.00000	0.13489	0.0064588	-0.13489	-0.0064588
9.5625	55.23750	73.30000	-1.00000	0.0	0.0	0.0	0.0
11.475	53.32500	73.30000	-1.00000	0.0	0.0	0.0	0.0
13.387	51.41250	73.30000	-1.00000	0.0	0.0	0.0	0.0
15.300	49.50000	73.30000	-1.00000	0.0	0.0	0.0	0.0

Structure: F | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	49.50000	73.30000	-1.00000	0.0	0.0	0.0	0.0
0.87143	49.50000	72.42857	-1.00000	0.0	0.0	0.0	0.0
1.7429	49.50000	71.55714	-1.00000	0.0	0.0	0.0	0.0
2.6143	49.50000	70.68571	-1.00000	0.0	0.0	0.0	0.0
3.4857	49.50000	69.81429	-1.00000	0.0	0.0	0.0	0.0
4.3571	49.50000	68.94286	-1.00000	0.0	0.0	0.0	0.0
5.2286	49.50000	68.07143	-1.00000	0.0	0.0	0.0	0.0
6.1000	49.50000	67.20000	-1.00000	0.0	0.0	0.0	0.0

Structure: G | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	40.80000	55.60000	-2.00000	0.0	0.0	0.0	0.0
1.9714	42.77143	55.60000	-2.00000	0.0	0.0	0.0	0.0
3.9429	44.74286	55.60000	-2.00000	0.0	0.0	0.0	0.0
5.9143	46.71429	55.60000	-2.00000	0.0	0.0	0.0	0.0
7.8857	48.68571	55.60000	-2.00000	0.0	0.0	0.0	0.0
9.8571	50.65714	55.60000	-2.00000	0.0	0.0	0.0	0.0
11.829	52.62857	55.60000	-2.00000	0.0	0.0	0.0	0.0
13.800	54.60000	55.60000	-2.00000	0.0	0.0	0.0	0.0

Structure: H | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	54.60000	55.60000	-2.00000	0.0	0.0	0.0	0.0
1.9333	54.60000	57.53333	-2.00000	0.0	0.0	0.0	0.0
3.8667	54.60000	59.46667	-2.00000	0.0	0.0	0.0	0.0
5.8000	54.60000	61.40000	-2.00000	0.0	0.0	0.0	0.0
7.7333	54.60000	63.33333	-2.00000	0.0	0.0	0.0	0.0
9.6667	54.60000	65.26667	-2.00000	0.0	0.0	0.0	0.0

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
11.600	54.60000	67.20000	-2.00000	0.0	0.0	0.0

Structure: I | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	54.60000	67.20000	-2.00000	0.0	0.0	0.0
1.9714	52.62857	67.20000	-2.00000	0.0	0.0	0.0
3.9429	50.65714	67.20000	-2.00000	0.0	0.0	0.0
5.9143	48.68571	67.20000	-2.00000	0.0	0.0	0.0
7.8857	46.71429	67.20000	-2.00000	0.0	0.0	0.0
9.8571	44.74286	67.20000	-2.00000	0.0	0.0	0.0
11.829	42.77143	67.20000	-2.00000	0.0	0.0	0.0
13.800	40.80000	67.20000	-2.00000	0.0	0.0	0.0

Structure: J | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	40.80000	67.20000	-2.00000	0.0	0.0	0.0
1.9333	40.80000	65.26667	-2.00000	0.0	0.0	0.0
3.8667	40.80000	63.33333	-2.00000	0.0	0.0	0.0
5.8000	40.80000	61.40000	-2.00000	0.0	0.0	0.0
7.7333	40.80000	59.46667	-2.00000	0.0	0.0	0.0
9.6667	40.80000	57.53333	-2.00000	0.0	0.0	0.0
11.600	40.80000	55.60000	-2.00000	0.0	0.0	0.0

Structure: K | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	101.70000	67.70000	-1.00000	-2.3540	1.5469	-2.3540
0.96250	102.66250	67.70000	-1.00000	-2.2130	1.3322	-2.2130
1.9250	103.62500	67.70000	-1.00000	-2.0464	1.1365	-2.0464
2.8875	104.58750	67.70000	-1.00000	-1.8588	0.95801	-1.8588
3.8500	105.55000	67.70000	-1.00000	-1.6532	0.79492	-1.6532
4.8125	106.51250	67.70000	-1.00000	-1.4771	0.66558	-1.4771
5.7750	107.47500	67.70000	-1.00000	-1.3857	0.58748	-1.3857
6.7375	108.43750	67.70000	-1.00000	-1.2864	0.51494	-1.2864
7.7000	109.40000	67.70000	-1.00000	-1.1804	0.44751	-1.1804

Structure: L | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	109.40000	67.70000	-1.00000	-1.1804	0.44751	0.44751
1.0000	109.40000	68.70000	-1.00000	-1.2698	0.41165	0.41165
2.0000	109.40000	69.70000	-1.00000	-1.3545	0.36467	0.36467

Structure: M | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	109.40000	69.70000	-1.00000	-1.3545	0.36467	-1.3545
0.91250	110.31250	69.70000	-1.00000	-1.2329	0.31610	-1.2329
1.8250	111.22500	69.70000	-1.00000	-1.1083	0.27119	-1.1083
2.7375	112.13750	69.70000	-1.00000	-0.98089	0.22956	-0.98089
3.6500	113.05000	69.70000	-1.00000	-0.85115	0.19088	-0.85115
4.5625	113.96250	69.70000	-1.00000	-0.71935	0.15485	-0.71935
5.4750	114.87500	69.70000	-1.00000	-0.58576	0.12123	-0.58576
6.3875	115.78750	69.70000	-1.00000	-0.45057	0.089793	-0.45057
7.3000	116.70000	69.70000	-1.00000	-0.31397	0.060332	-0.31397

Structure: N | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	116.70000	69.70000	-1.00000	-0.31397	0.060332	0.055342
1.8002	116.72857	71.50000	-1.00000	-0.36494	0.044315	0.038518
3.6005	116.75714	73.30000	-1.00000	-0.39650	0.020169	0.013873
5.4007	116.78571	75.10000	-1.00000	-0.60357	0.0	-0.0095793
7.2009	116.81429	76.90000	-1.00000	-0.39435	-0.010777	-0.017034
9.0011	116.84286	78.70000	-1.00000	-0.36099	-0.035194	-0.040919
10.801	116.87143	80.50000	-1.00000	-0.30814	-0.051614	-0.056498
12.602	116.90000	82.30000	-1.00000	-0.23901	-0.056731	-0.060517

Structure: O | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	116.90000	82.30000	-1.00000	-0.23901	-0.056731	0.23901
1.9000	115.00000	82.30000	-1.00000	-0.51153	-0.13111	0.51153
3.8000	113.10000	82.30000	-1.00000	-0.77519	-0.21592	0.77519
5.7000	111.20000	82.30000	-1.00000	-1.0273	-0.31334	1.0273
7.6000	109.30000	82.30000	-1.00000	-1.2643	-0.42609	1.2643
9.5000	107.40000	82.30000	-1.00000	-1.4807	-0.55755	1.4807
11.400	105.50000	82.30000	-1.00000	-1.8258	-0.77885	1.8258
13.300	103.60000	82.30000	-1.00000	-2.2485	-1.1061	2.2485
15.200	101.70000	82.30000	-1.00000	-2.5966	-1.5085	2.5966

Structure: P | Sub-structure:

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]
0.0	101.70000	82.30000	-1.00000	-2.5966	-1.5085	1.4728
1.8252	101.72500	80.47500	-1.00000	-3.1452	-1.2775	1.2343
3.6503	101.75000	78.65000	-1.00000	-3.6316	-0.84336	0.79353
5.4755	101.77500	76.82500	-1.00000	-3.9676	-0.23449	0.18012

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
7.3007	101.80000	75.00000	-1.00000	-5.4631	0.0	-0.074830	-5.4626
9.1259	101.82500	73.17500	-1.00000	-3.8231	0.51275	-0.56507	-3.8158
10.951	101.85000	71.35000	-1.00000	-3.4009	1.0378	-1.0843	-3.3864
12.776	101.87500	69.52500	-1.00000	-2.8756	1.3671	-1.4063	-2.8566
14.601	101.90000	67.70000	-1.00000	-2.3271	1.5006	-1.5324	-2.3063

Structure: Q | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	103.20000	67.70000	-1.00000	-2.1228	1.2206	-1.2206	-2.1228
0.88000	103.20000	66.82000	-1.00000	-1.8977	1.2303	-1.2303	-1.8977
1.7600	103.20000	65.94000	-1.00000	-1.6774	1.2106	-1.2106	-1.6774
2.6400	103.20000	65.06000	-1.00000	-1.4645	1.1643	-1.1643	-1.4645
3.5200	103.20000	64.18000	-1.00000	-1.2603	1.0944	-1.0944	-1.2603
4.4000	103.20000	63.30000	-1.00000	-1.0658	1.0036	-1.0036	-1.0658

Structure: R | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	103.20000	63.30000	-1.00000	-1.0658	1.0036	1.0658	-1.0036
0.91429	102.28571	63.30000	-1.00000	-1.1543	1.1766	1.1543	-1.1766
1.8286	101.37143	63.30000	-1.00000	-1.2495	1.3881	1.2495	-1.3881
2.7429	100.45714	63.30000	-1.00000	-1.3207	1.6121	1.3207	-1.6121
3.6571	99.54286	63.30000	-1.00000	-1.3643	1.8479	1.3643	-1.8479
4.5714	98.62857	63.30000	-1.00000	-1.3762	2.0934	1.3762	-2.0934
5.4857	97.71429	63.30000	-1.00000	-1.3523	2.3458	1.3523	-2.3458
6.4000	96.80000	63.30000	-1.00000	-1.2887	2.6004	1.2887	-2.6004

Structure: S | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	96.80000	63.30000	-1.00000	-1.2887	2.6004	2.6343	1.2180
1.8507	96.75000	65.15000	-1.00000	-1.7229	2.9337	2.9791	1.6431
3.7014	96.70000	67.00000	-1.00000	-2.2685	3.1347	3.1948	2.1830
5.5520	96.65000	68.85000	-1.00000	-2.9389	3.1007	3.1789	2.8540
7.4027	96.60000	70.70000	-1.00000	-3.9884	2.8805	2.9872	3.9091
9.2534	96.55000	72.55000	-1.00000	-5.2528	2.0127	2.1539	5.1965
11.104	96.50000	74.40000	-1.00000	-6.2155	0.23455	0.40239	6.2069
12.955	96.45000	76.25000	-1.00000	-6.2797	-0.059807	0.10988	6.2791
14.805	96.40000	78.10000	-1.00000	-5.3826	-1.9667	-1.8206	5.4337
16.656	96.35000	79.95000	-1.00000	-4.0708	-2.9642	-2.8531	4.1494
18.507	96.30000	81.80000	-1.00000	-2.9811	-3.2734	-3.1917	3.0685

Structure: T | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	96.30000	81.80000	-1.00000	-2.9811	-3.2734	-2.9811	-3.2734
0.90000	97.20000	81.80000	-1.00000	-3.0506	-2.8473	-3.0506	-2.8473
1.8000	98.10000	81.80000	-1.00000	-3.1009	-2.5166	-3.1009	-2.5166
2.7000	99.00000	81.80000	-1.00000	-3.0815	-2.2124	-3.0815	-2.2124
3.6000	99.90000	81.80000	-1.00000	-3.0086	-1.9366	-3.0086	-1.9366
4.5000	100.80000	81.80000	-1.00000	-2.8948	-1.6886	-2.8948	-1.6886
5.4000	101.70000	81.80000	-1.00000	-2.7498	-1.4665	-2.7498	-1.4665

Structure: U | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	134.70000	67.60000	-3.00000	0.0	0.0	0.0	0.0
1.7000	133.00000	67.60000	-3.00000	0.0	0.0	0.0	0.0
3.4000	131.30000	67.60000	-3.00000	0.0	0.0	0.0	0.0
5.1000	129.60000	67.60000	-3.00000	0.0	0.0	0.0	0.0
6.8000	127.90000	67.60000	-3.00000	0.0	0.0	0.0	0.0
8.5000	126.20000	67.60000	-3.00000	0.0	0.0	0.0	0.0
10.200	124.50000	67.60000	-3.00000	0.0	0.0	0.0	0.0

Structure: V | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	124.50000	67.60000	-3.00000	0.0	0.0	0.0	0.0
0.83333	124.50000	68.43333	-3.00000	0.0	0.0	0.0	0.0
1.6667	124.50000	69.26667	-3.00000	0.0	0.0	0.0	0.0
2.5000	124.50000	70.10000	-3.00000	0.0	0.0	0.0	0.0

Structure: W | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	124.50000	70.10000	-3.00000	0.0	0.0	0.0	0.0
0.87143	123.62857	70.10000	-3.00000	0.0	0.0	0.0	0.0
1.7429	122.75714	70.10000	-3.00000	0.0	0.0	0.0	0.0
2.6143	121.88571	70.10000	-3.00000	0.0	0.0	0.0	0.0
3.4857	121.01429	70.10000	-3.00000	0.0	0.0	0.0	0.0
4.3571	120.14286	70.10000	-3.00000	0.0	0.0	0.0	0.0
5.2286	119.27143	70.10000	-3.00000	0.0	0.0	0.0	0.0
6.1000	118.40000	70.10000	-3.00000	-0.067338	0.011140	0.067338	-0.011140

Structure: X | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	118.40000	70.10000	-3.00000	-0.067338	0.011140	0.011140	0.067338
1.8375	118.40000	71.93750	-3.00000	-0.10817	0.010588	0.010588	0.10817

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
						[mm]	[mm]
3.6750	118.40000	73.77500	-3.00000	-0.13055	0.0039598	0.0039598	0.13055
5.5125	118.40000	75.61250	-3.00000	-0.20000	0.0	0.0	0.20000
7.3500	118.40000	77.45000	-3.00000	-0.12714	-0.0058429	-0.0058429	0.12714
9.1875	118.40000	79.28750	-3.00000	-0.10027	-0.011382	-0.011382	0.10027
11.025	118.40000	81.12500	-3.00000	-0.055548	-0.010058	-0.010058	0.055548
12.862	118.40000	82.96250	-3.00000	0.0	0.0	0.0	0.0
14.700	118.40000	84.80000	-3.00000	0.0	0.0	0.0	0.0

Structure: Y | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	118.40000	84.80000	-3.00000	0.0	0.0	0.0	0.0
0.88750	119.28750	84.80000	-3.00000	0.0	0.0	0.0	0.0
1.7750	120.17500	84.80000	-3.00000	0.0	0.0	0.0	0.0
2.6625	121.06250	84.80000	-3.00000	0.0	0.0	0.0	0.0
3.5500	121.95000	84.80000	-3.00000	0.0	0.0	0.0	0.0
4.4375	122.83750	84.80000	-3.00000	0.0	0.0	0.0	0.0
5.3250	123.72500	84.80000	-3.00000	0.0	0.0	0.0	0.0
6.2125	124.61250	84.80000	-3.00000	0.0	0.0	0.0	0.0
7.1000	125.50000	84.80000	-3.00000	0.0	0.0	0.0	0.0

Structure: Z | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	125.50000	84.80000	-3.00000	0.0	0.0	0.0	0.0
0.90000	125.50000	85.70000	-3.00000	0.0	0.0	0.0	0.0
1.8000	125.50000	86.60000	-3.00000	0.0	0.0	0.0	0.0
2.7000	125.50000	87.50000	-3.00000	0.0	0.0	0.0	0.0

Structure: AA | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	125.50000	87.50000	-3.00000	0.0	0.0	0.0	0.0
0.92000	126.42000	87.50000	-3.00000	0.0	0.0	0.0	0.0
1.8400	127.34000	87.50000	-3.00000	0.0	0.0	0.0	0.0
2.7600	128.26000	87.50000	-3.00000	0.0	0.0	0.0	0.0
3.6800	129.18000	87.50000	-3.00000	0.0	0.0	0.0	0.0
4.6000	130.10000	87.50000	-3.00000	0.0	0.0	0.0	0.0
5.5200	131.02000	87.50000	-3.00000	0.0	0.0	0.0	0.0
6.4400	131.94000	87.50000	-3.00000	0.0	0.0	0.0	0.0
7.3600	132.86000	87.50000	-3.00000	0.0	0.0	0.0	0.0
8.2800	133.78000	87.50000	-3.00000	0.0	0.0	0.0	0.0
9.2000	134.70000	87.50000	-3.00000	0.0	0.0	0.0	0.0

Structure: NRTunnelTop | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	20.70000	67.00000	-23.00000	0.0	0.0	0.0	0.0
0.99315	21.66165	67.24812	-23.00000	0.0	0.0	0.0	0.0
1.9863	22.62331	67.49624	-23.00000	0.0	0.0	0.0	0.0
2.9794	23.58496	67.74436	-23.00000	0.0	0.0	0.0	0.0
3.9726	24.54662	67.99248	-23.00000	0.0	0.0	0.0	0.0
4.9657	25.50827	68.24060	-23.00000	0.0	0.0	0.0	0.0
5.9589	26.46992	68.48872	-23.00000	0.0	0.0	0.0	0.0
6.9520	27.43158	68.73684	-23.00000	0.0	0.0	0.0	0.0
7.9452	28.39323	68.98496	-23.00000	0.0	0.0	0.0	0.0
8.9383	29.35489	69.23308	-23.00000	0.0	0.0	0.0	0.0
9.9315	30.31654	69.48120	-23.00000	0.0	0.0	0.0	0.0
10.925	31.27820	69.72932	-23.00000	0.0	0.0	0.0	0.0
11.918	32.23985	69.97744	-23.00000	0.0	0.0	0.0	0.0
12.911	33.20150	70.22556	-23.00000	0.0	0.0	0.0	0.0
13.904	34.16316	70.47368	-23.00000	0.0	0.0	0.0	0.0
14.897	35.12481	70.72180	-23.00000	0.0	0.0	0.0	0.0
15.890	36.08647	70.96992	-23.00000	0.0	0.0	0.0	0.0
16.884	37.04812	71.21805	-23.00000	0.0	0.0	0.0	0.0
17.877	38.00977	71.46617	-23.00000	0.0	0.0	0.0	0.0
18.870	38.97143	71.71429	-23.00000	0.0	0.0	0.0	0.0
19.863	39.93308	71.96241	-23.00000	0.0	0.0	0.0	0.0
20.856	40.89474	72.21053	-23.00000	0.0	0.0	0.0	0.0
21.849	41.85639	72.45865	-23.00000	0.0	0.0	0.0	0.0
22.842	42.81805	72.70677	-23.00000	0.0	0.0	0.0	0.0
23.836	43.77970	72.95489	-23.00000	0.0	0.0	0.0	0.0
24.829	44.74135	73.20301	-23.00000	0.0	0.0	0.0	0.0
25.822	45.70301	73.45113	-23.00000	0.0	0.0	0.0	0.0
26.815	46.66466	73.69925	-23.00000	0.0	0.0	0.0	0.0
27.808	47.62632	73.94737	-23.00000	0.0	0.0	0.0	0.0
28.801	48.58797	74.19549	-23.00000	0.0	0.0	0.0	0.0
29.794	49.54962	74.44361	-23.00000	0.0	0.0	0.0	0.0
30.788	50.51128	74.69173	-23.00000	0.0	0.0	0.0	0.0
31.781	51.47293	74.93985	-23.00000	0.0	0.0	0.0	0.0
32.774	52.43459	75.18797	-23.00000	0.0	0.0	0.0	0.0
33.767	53.39624	75.43609	-23.00000	0.0	0.0	0.0	0.0
34.760	54.35789	75.68421	-23.00000	0.0	0.0	0.0	0.0
35.753	55.31955	75.93233	-23.00000	0.0	0.0	0.0	0.0
36.746	56.28120	76.18045	-23.00000	0.0	0.0	0.0	0.0
37.740	57.24286	76.42857	-23.00000	0.0	0.0	0.0	0.0
38.733	58.20451	76.67669	-23.00000	0.0	0.0	0.0	0.0
39.726	59.16617	76.92481	-23.00000	0.0	0.0	0.0	0.0
40.719	60.12782	77.17293	-23.00000	0.0	0.0	0.0	0.0
41.712	61.08947	77.42105	-23.00000	0.0	0.0	0.0	0.0
42.705	62.05113	77.66917	-23.00000	0.0	0.0	0.0	0.0
43.698	63.01278	77.91729	-23.00000	0.0	0.0	0.0	0.0
44.692	63.97444	78.16541	-23.00000	0.0	0.0	0.0	0.0
45.685	64.93609	78.41353	-23.00000	0.0	0.0	0.0	0.0
46.678	65.89774	78.66165	-23.00000	0.0	0.0	0.0	0.0
47.671	66.85940	78.90977	-23.00000	0.0	0.0	0.0	0.0
48.664	67.82105	79.15789	-23.00000	0.0	0.0	0.0	0.0
49.657	68.78271	79.40602	-23.00000	0.0	0.0	0.0	0.0
50.651	69.74436	79.65414	-23.00000	0.0	0.0	0.0	0.0
51.644	70.70602	79.90226	-23.00000	0.0	0.0	0.0	0.0
52.637	71.66767	80.15038	-23.00000	0.0	0.0	0.0	0.0
53.630	72.62932	80.39850	-23.00000	0.0	0.0	0.0	0.0
54.623	73.59098	80.64662	-23.00000	0.0	0.0	0.0	0.0
55.616	74.55263	80.89474	-23.00000	0.0	0.0	0.0	0.0
56.609	75.51429	81.14286	-23.00000	0.0	0.0	0.0	0.0
57.603	76.47594	81.39098	-23.00000	0.0	0.0	0.0	0.0
58.596	77.43759	81.63910	-23.00000	0.0	0.0	0.0	0.0
59.589	78.39925	81.88722	-23.00000	0.0	0.0	0.0	0.0
60.582	79.36090	82.13534	-23.00000	0.0	0.0	0.0	0.0
61.575	80.32256	82.38346	-23.00000	0.0	0.0	0.0	0.0
62.568	81.28421	82.63158	-23.00000	0.0	0.0	0.0	0.0
63.561	82.24586	82.87970	-23.00000	0.0	0.0	0.0	0.0
64.555	83.20752	83.12782	-23.00000	0.0	0.0	0.0	0.0
65.548	84.16917	83.37594	-23.00000	0.0	0.0	0.0	0.0
66.541	85.13083	83.62406	-23.00000	0.0	0.0	0.0	0.0
67.534	86.09248	83.87218	-23.00000	0.0	0.0	0.0	0.0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the	Horizontal displacement perpendicular
68.527	87.05414	84.12030	-23.00000	0.0	0.0	0.0	0.0
69.520	88.01579	84.36842	-23.00000	0.0	0.0	0.0	0.0
70.513	88.97744	84.61654	-23.00000	0.0	0.0	0.0	0.0
71.507	89.93910	84.86466	-23.00000	0.0	0.0	0.0	0.0
72.500	90.90075	85.11278	-23.00000	0.0	0.0	0.0	0.0
73.493	91.86241	85.36090	-23.00000	0.0	0.0	0.0	0.0
74.486	92.82406	85.60902	-23.00000	0.0	0.0	0.0	0.0
75.479	93.78571	85.85714	-23.00000	0.0	0.0	0.0	0.0
76.472	94.74737	86.10526	-23.00000	0.0	0.0	0.0	0.0
77.466	95.70902	86.35338	-23.00000	0.0	0.0	0.0	0.0
78.459	96.67068	86.60150	-23.00000	0.0	0.0	0.0	0.0
79.452	97.63233	86.84962	-23.00000	0.0	0.0	0.0	0.0
80.445	98.59398	87.09774	-23.00000	0.0	0.0	0.0	0.0
81.438	99.55564	87.34586	-23.00000	0.0	0.0	0.0	0.0
82.431	100.51729	87.59398	-23.00000	0.0	0.0	0.0	0.0
83.424	101.47895	87.84211	-23.00000	0.0	0.0	0.0	0.0
84.418	102.44060	88.09023	-23.00000	0.0	0.0	0.0	0.0
85.411	103.40226	88.33835	-23.00000	0.0	0.0	0.0	0.0
86.404	104.36391	88.58647	-23.00000	0.0	0.0	0.0	0.0
87.397	105.32556	88.83459	-23.00000	0.0	0.0	0.0	0.0
88.390	106.28722	89.08271	-23.00000	0.0	0.0	0.0	0.0
89.383	107.24887	89.33083	-23.00000	0.0	0.0	0.0	0.0
90.376	108.21053	89.57895	-23.00000	0.0	0.0	0.0	0.0
91.370	109.17218	89.82707	-23.00000	0.0	0.0	0.0	0.0
92.363	110.13383	90.07519	-23.00000	0.0	0.0	0.0	0.0
93.356	111.09549	90.32331	-23.00000	0.0	0.0	0.0	0.0
94.349	112.05714	90.57143	-23.00000	0.0	0.0	0.0	0.0
95.342	113.01880	90.81955	-23.00000	0.0	0.0	0.0	0.0
96.335	113.98045	91.06767	-23.00000	0.0	0.0	0.0	0.0
97.328	114.94211	91.31579	-23.00000	0.0	0.0	0.0	0.0
98.322	115.90376	91.56391	-23.00000	0.0	0.0	0.0	0.0
99.315	116.86541	91.81203	-23.00000	0.0	0.0	0.0	0.0
100.31	117.82707	92.06015	-23.00000	0.0	0.0	0.0	0.0
101.30	118.78872	92.30827	-23.00000	0.0	0.0	0.0	0.0
102.29	119.75038	92.55639	-23.00000	0.0	0.0	0.0	0.0
103.29	120.71203	92.80451	-23.00000	0.0	0.0	0.0	0.0
104.28	121.67368	93.05263	-23.00000	0.0	0.0	0.0	0.0
105.27	122.63534	93.30075	-23.00000	0.0	0.0	0.0	0.0
106.27	123.59699	93.54887	-23.00000	0.0	0.0	0.0	0.0
107.26	124.55865	93.79699	-23.00000	0.0	0.0	0.0	0.0
108.25	125.52030	94.04511	-23.00000	0.0	0.0	0.0	0.0
109.25	126.48195	94.29323	-23.00000	0.0	0.0	0.0	0.0
110.24	127.44361	94.54135	-23.00000	0.0	0.0	0.0	0.0
111.23	128.40526	94.78947	-23.00000	0.0	0.0	0.0	0.0
112.23	129.36692	95.03759	-23.00000	0.0	0.0	0.0	0.0
113.22	130.32857	95.28571	-23.00000	0.0	0.0	0.0	0.0
114.21	131.29023	95.53383	-23.00000	0.0	0.0	0.0	0.0
115.21	132.25188	95.78195	-23.00000	0.0	0.0	0.0	0.0
116.20	133.21353	96.03008	-23.00000	0.0	0.0	0.0	0.0
117.19	134.17519	96.27820	-23.00000	0.0	0.0	0.0	0.0
118.18	135.13684	96.52632	-23.00000	0.0	0.0	0.0	0.0
119.18	136.09850	96.77444	-23.00000	0.0	0.0	0.0	0.0
120.17	137.06015	97.02256	-23.00000	0.0	0.0	0.0	0.0
121.16	138.02180	97.27068	-23.00000	0.0	0.0	0.0	0.0
122.16	138.98346	97.51880	-23.00000	0.0	0.0	0.0	0.0
123.15	139.94511	97.76692	-23.00000	0.0	0.0	0.0	0.0
124.14	140.90677	98.01504	-23.00000	0.0	0.0	0.0	0.0
125.14	141.86842	98.26316	-23.00000	0.0	0.0	0.0	0.0
126.13	142.83008	98.51128	-23.00000	0.0	0.0	0.0	0.0
127.12	143.79173	98.75940	-23.00000	0.0	0.0	0.0	0.0
128.12	144.75338	99.00752	-23.00000	0.0	0.0	0.0	0.0
129.11	145.71504	99.25564	-23.00000	0.0	0.0	0.0	0.0
130.10	146.67669	99.50376	-23.00000	0.0	0.0	0.0	0.0
131.10	147.63835	99.75188	-23.00000	0.0	0.0	0.0	0.0
132.09	148.60000	100.00000	-23.00000	0.0	0.0	0.0	0.0

Structure: NRTunnelBase | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	20.70000	67.00000	-28.00000	0.0	0.0	0.0	0.0
0.99315	21.66165	67.24812	-28.00000	0.0	0.0	0.0	0.0
1.9863	22.62331	67.49624	-28.00000	0.0	0.0	0.0	0.0
2.9794	23.58496	67.74436	-28.00000	0.0	0.0	0.0	0.0
3.9726	24.54662	67.99248	-28.00000	0.0	0.0	0.0	0.0
4.9657	25.50827	68.24060	-28.00000	0.0	0.0	0.0	0.0
5.9589	26.46992	68.48872	-28.00000	0.0	0.0	0.0	0.0
6.9520	27.43158	68.73684	-28.00000	0.0	0.0	0.0	0.0
7.9452	28.39323	68.98496	-28.00000	0.0	0.0	0.0	0.0
8.9383	29.35489	69.23308	-28.00000	0.0	0.0	0.0	0.0
9.9315	30.31654	69.48120	-28.00000	0.0	0.0	0.0	0.0
10.925	31.27820	69.72932	-28.00000	0.0	0.0	0.0	0.0
11.918	32.23985	69.97744	-28.00000	0.0	0.0	0.0	0.0
12.911	33.20150	70.22556	-28.00000	0.0	0.0	0.0	0.0
13.904	34.16316	70.47368	-28.00000	0.0	0.0	0.0	0.0
14.897	35.12481	70.72180	-28.00000	0.0	0.0	0.0	0.0
15.890	36.08647	70.96992	-28.00000	0.0	0.0	0.0	0.0
16.884	37.04812	71.21805	-28.00000	0.0	0.0	0.0	0.0
17.877	38.00977	71.46617	-28.00000	0.0	0.0	0.0	0.0
18.870	38.97143	71.71429	-28.00000	0.0	0.0	0.0	0.0
19.863	39.93308	71.96241	-28.00000	0.0	0.0	0.0	0.0
20.856	40.89474	72.21053	-28.00000	0.0	0.0	0.0	0.0
21.849	41.85639	72.45865	-28.00000	0.0	0.0	0.0	0.0
22.842	42.81805	72.70677	-28.00000	0.0	0.0	0.0	0.0
23.836	43.77970	72.95489	-28.00000	0.0	0.0	0.0	0.0
24.829	44.74135	73.20301	-28.00000	0.0	0.0	0.0	0.0
25.822	45.70301	73.45113	-28.00000	0.0	0.0	0.0	0.0
26.815	46.66466	73.69925	-28.00000	0.0	0.0	0.0	0.0
27.808	47.62632	73.94737	-28.00000	0.0	0.0	0.0	0.0
28.801	48.58797	74.19549	-28.00000	0.0	0.0	0.0	0.0
29.794	49.54962	74.44361	-28.00000	0.0	0.0	0.0	0.0
30.788	50.51128	74.69173	-28.00000	0.0	0.0	0.0	0.0
31.781	51.47293	74.93985	-28.00000	0.0	0.0	0.0	0.0
32.774	52.43459	75.18797	-28.00000	0.0	0.0	0.0	0.0
33.767	53.39624	75.43609	-28.00000	0.0	0.0	0.0	0.0
34.760	54.35789	75.68421	-28.00000	0.0	0.0	0.0	0.0
35.753	55.31955	75.93233	-28.00000	0.0	0.0	0.0	0.0
36.746	56.28120	76.18045	-28.00000	0.0	0.0	0.0	0.0
37.740	57.24286	76.42857	-28.00000	0.0	0.0	0.0	0.0
38.733	58.20451	76.67669	-28.00000	0.0	0.0	0.0	0.0
39.726	59.16617	76.92481	-28.00000	0.0	0.0	0.0	0.0
40.719	60.12782	77.17293	-28.00000	0.0	0.0	0.0	0.0
41.712	61.08947	77.42105	-28.00000	0.0	0.0	0.0	0.0
42.705	62.05113	77.66917	-28.00000	0.0	0.0	0.0	0.0
43.698	63.01278	77.91729	-28.00000	0.0	0.0	0.0	0.0
44.692	63.97444	78.16541	-28.00000	0.0	0.0	0.0	0.0
45.685	64.93609	78.41353	-28.00000	0.0	0.0	0.0	0.0
46.678	65.89774	78.66165	-28.00000	0.0	0.0	0.0	0.0
47.671	66.85940	78.90977	-28.00000	0.0	0.0	0.0	0.0
48.664	67.82105	79.15789	-28.00000	0.0	0.0	0.0	0.0
49.657	68.78271	79.40602	-28.00000	0.0	0.0	0.0	0.0
50.651	69.74436	79.65414	-28.00000	0.0	0.0	0.0	0.0
51.644	70.70602	79.90226	-28.00000	0.0	0.0	0.0	0.0
52.637	71.66767	80.15038	-28.00000	0.0	0.0	0.0	0.0
53.630	72.62932	80.39850	-28.00000	0.0	0.0	0.0	0.0
54.623	73.59098	80.64662	-28.00000	0.0	0.0	0.0	0.0
55.616	74.55263	80.89474	-28.00000	0.0	0.0	0.0	0.0
56.609	75.51429	81.14286	-28.00000	0.0	0.0	0.0	0.0
57.603	76.47594	81.39098	-28.00000	0.0	0.0	0.0	0.0
58.596	77.43759	81.63910	-28.00000	0.0	0.0	0.0	0.0
59.589	78.39925	81.88722	-28.00000	0.0	0.0	0.0	0.0
60.582	79.36090	82.13534	-28.00000	0.0	0.0	0.0	0.0
61.575	80.32256	82.38346	-28.00000	0.0	0.0	0.0	0.0
62.568	81.28421	82.63158	-28.00000	0.0	0.0	0.0	0.0
63.561	82.24586	82.87970	-28.00000	0.0	0.0	0.0	0.0
64.555	83.20752	83.12782	-28.00000	0.0	0.0	0.0	0.0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the	Horizontal displacement perpendicular
65.548	84.16917	83.37594	-28.00000	0.0	0.0	0.0	0.0
66.541	85.13083	83.62406	-28.00000	0.0	0.0	0.0	0.0
67.534	86.09248	83.87218	-28.00000	0.0	0.0	0.0	0.0
68.527	87.05414	84.12030	-28.00000	0.0	0.0	0.0	0.0
69.520	88.01579	84.36842	-28.00000	0.0	0.0	0.0	0.0
70.513	88.97744	84.61654	-28.00000	0.0	0.0	0.0	0.0
71.507	89.93910	84.86466	-28.00000	0.0	0.0	0.0	0.0
72.500	90.90075	85.11278	-28.00000	0.0	0.0	0.0	0.0
73.493	91.86241	85.36090	-28.00000	0.0	0.0	0.0	0.0
74.486	92.82406	85.60902	-28.00000	0.0	0.0	0.0	0.0
75.479	93.78571	85.85714	-28.00000	0.0	0.0	0.0	0.0
76.472	94.74737	86.10526	-28.00000	0.0	0.0	0.0	0.0
77.466	95.70902	86.35338	-28.00000	0.0	0.0	0.0	0.0
78.459	96.67068	86.60150	-28.00000	0.0	0.0	0.0	0.0
79.452	97.63233	86.84962	-28.00000	0.0	0.0	0.0	0.0
80.445	98.59398	87.09774	-28.00000	0.0	0.0	0.0	0.0
81.438	99.55564	87.34586	-28.00000	0.0	0.0	0.0	0.0
82.431	100.51729	87.59398	-28.00000	0.0	0.0	0.0	0.0
83.424	101.47895	87.84211	-28.00000	0.0	0.0	0.0	0.0
84.418	102.44060	88.09023	-28.00000	0.0	0.0	0.0	0.0
85.411	103.40226	88.33835	-28.00000	0.0	0.0	0.0	0.0
86.404	104.36391	88.58647	-28.00000	0.0	0.0	0.0	0.0
87.397	105.32556	88.83459	-28.00000	0.0	0.0	0.0	0.0
88.390	106.28722	89.08271	-28.00000	0.0	0.0	0.0	0.0
89.383	107.24887	89.33083	-28.00000	0.0	0.0	0.0	0.0
90.376	108.21053	89.57895	-28.00000	0.0	0.0	0.0	0.0
91.370	109.17218	89.82707	-28.00000	0.0	0.0	0.0	0.0
92.363	110.13383	90.07519	-28.00000	0.0	0.0	0.0	0.0
93.356	111.09549	90.32331	-28.00000	0.0	0.0	0.0	0.0
94.349	112.05714	90.57143	-28.00000	0.0	0.0	0.0	0.0
95.342	113.01880	90.81955	-28.00000	0.0	0.0	0.0	0.0
96.335	113.98045	91.06767	-28.00000	0.0	0.0	0.0	0.0
97.328	114.94211	91.31579	-28.00000	0.0	0.0	0.0	0.0
98.322	115.90376	91.56391	-28.00000	0.0	0.0	0.0	0.0
99.315	116.86541	91.81203	-28.00000	0.0	0.0	0.0	0.0
100.31	117.82707	92.06015	-28.00000	0.0	0.0	0.0	0.0
101.30	118.78872	92.30827	-28.00000	0.0	0.0	0.0	0.0
102.29	119.75038	92.55639	-28.00000	0.0	0.0	0.0	0.0
103.29	120.71203	92.80451	-28.00000	0.0	0.0	0.0	0.0
104.28	121.67368	93.05263	-28.00000	0.0	0.0	0.0	0.0
105.27	122.63534	93.30075	-28.00000	0.0	0.0	0.0	0.0
106.27	123.59699	93.54887	-28.00000	0.0	0.0	0.0	0.0
107.26	124.55865	93.79699	-28.00000	0.0	0.0	0.0	0.0
108.25	125.52030	94.04511	-28.00000	0.0	0.0	0.0	0.0
109.25	126.48195	94.29323	-28.00000	0.0	0.0	0.0	0.0
110.24	127.44361	94.54135	-28.00000	0.0	0.0	0.0	0.0
111.23	128.40526	94.78947	-28.00000	0.0	0.0	0.0	0.0
112.23	129.36692	95.03759	-28.00000	0.0	0.0	0.0	0.0
113.22	130.32857	95.28571	-28.00000	0.0	0.0	0.0	0.0
114.21	131.29023	95.53383	-28.00000	0.0	0.0	0.0	0.0
115.21	132.25188	95.78195	-28.00000	0.0	0.0	0.0	0.0
116.20	133.21353	96.03008	-28.00000	0.0	0.0	0.0	0.0
117.19	134.17519	96.27820	-28.00000	0.0	0.0	0.0	0.0
118.18	135.13684	96.52632	-28.00000	0.0	0.0	0.0	0.0
119.18	136.09850	96.77444	-28.00000	0.0	0.0	0.0	0.0
120.17	137.06015	97.02256	-28.00000	0.0	0.0	0.0	0.0
121.16	138.02180	97.27068	-28.00000	0.0	0.0	0.0	0.0
122.16	138.98346	97.51880	-28.00000	0.0	0.0	0.0	0.0
123.15	139.94511	97.76692	-28.00000	0.0	0.0	0.0	0.0
124.14	140.90677	98.01504	-28.00000	0.0	0.0	0.0	0.0
125.14	141.86842	98.26316	-28.00000	0.0	0.0	0.0	0.0
126.13	142.83008	98.51128	-28.00000	0.0	0.0	0.0	0.0
127.12	143.79173	98.75940	-28.00000	0.0	0.0	0.0	0.0
128.12	144.75338	99.00752	-28.00000	0.0	0.0	0.0	0.0
129.11	145.71504	99.25564	-28.00000	0.0	0.0	0.0	0.0
130.10	146.67669	99.50376	-28.00000	0.0	0.0	0.0	0.0
131.10	147.63835	99.75188	-28.00000	0.0	0.0	0.0	0.0
132.09	148.60000	100.00000	-28.00000	0.0	0.0	0.0	0.0

Specific Building Damage Results - Vertical Displacements

Structure: A | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.60000	64.70000	-1.00000	0.0
0.91429	55.51429	64.70000	-1.00000	0.0
1.8286	56.42857	64.70000	-1.00000	0.0
2.7429	57.34286	64.70000	-1.00000	0.0
3.6571	58.25714	64.70000	-1.00000	0.0065673
4.5714	59.17143	64.70000	-1.00000	0.027182
5.4857	60.08571	64.70000	-1.00000	0.041815
6.4000	61.00000	64.70000	-1.00000	0.054006

Structure: B | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	61.00000	64.70000	-1.00000	0.054006
0.70000	61.00000	65.40000	-1.00000	0.058494
1.4000	61.00000	66.10000	-1.00000	0.062967

Structure: C | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	61.00000	66.10000	-1.00000	0.062967
0.95000	61.95000	66.10000	-1.00000	0.078823
1.9000	62.90000	66.10000	-1.00000	0.099919
2.8500	63.85000	66.10000	-1.00000	0.12833
3.8000	64.80000	66.10000	-1.00000	0.31113

Structure: D | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	64.80000	66.10000	-1.00000	0.31113
0.90000	64.80000	67.00000	-1.00000	0.40030
1.8000	64.80000	67.90000	-1.00000	0.48311
2.7000	64.80000	68.80000	-1.00000	0.55870
3.6000	64.80000	69.70000	-1.00000	0.62622
4.5000	64.80000	70.60000	-1.00000	0.68484
5.4000	64.80000	71.50000	-1.00000	0.73375
6.3000	64.80000	72.40000	-1.00000	0.77225
7.2000	64.80000	73.30000	-1.00000	0.79971

Structure: E | Sub-structure:

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

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	64.80000	73.30000	-1.00000	0.79971
1.9125	62.88750	73.30000	-1.00000	0.28697
3.8250	60.97500	73.30000	-1.00000	0.10177
5.7375	59.06250	73.30000	-1.00000	0.061775
7.6500	57.15000	73.30000	-1.00000	0.026424
9.5625	55.23750	73.30000	-1.00000	0.0
11.475	53.32500	73.30000	-1.00000	0.0
13.387	51.41250	73.30000	-1.00000	0.0
15.300	49.50000	73.30000	-1.00000	0.0

Structure: F | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	49.50000	73.30000	-1.00000	0.0
0.87143	49.50000	72.42857	-1.00000	0.0
1.7429	49.50000	71.55714	-1.00000	0.0
2.6143	49.50000	70.68571	-1.00000	0.0
3.4857	49.50000	69.81429	-1.00000	0.0
4.3571	49.50000	68.94286	-1.00000	0.0
5.2286	49.50000	68.07143	-1.00000	0.0
6.1000	49.50000	67.20000	-1.00000	0.0

Structure: G | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	40.80000	55.60000	-2.00000	0.0
1.9714	42.77143	55.60000	-2.00000	0.0
3.9429	44.74286	55.60000	-2.00000	0.0
5.9143	46.71429	55.60000	-2.00000	0.0
7.8857	48.68571	55.60000	-2.00000	0.0
9.8571	50.65714	55.60000	-2.00000	0.0
11.829	52.62857	55.60000	-2.00000	0.0
13.800	54.60000	55.60000	-2.00000	0.0

Structure: H | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.60000	55.60000	-2.00000	0.0
1.9333	54.60000	57.53333	-2.00000	0.0
3.8667	54.60000	59.46667	-2.00000	0.0
5.8000	54.60000	61.40000	-2.00000	0.0
7.7333	54.60000	63.33333	-2.00000	0.0
9.6667	54.60000	65.26667	-2.00000	0.0
11.600	54.60000	67.20000	-2.00000	0.0

Structure: I | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.60000	67.20000	-2.00000	0.0
1.9714	52.62857	67.20000	-2.00000	0.0
3.9429	50.65714	67.20000	-2.00000	0.0
5.9143	48.68571	67.20000	-2.00000	0.0
7.8857	46.71429	67.20000	-2.00000	0.0
9.8571	44.74286	67.20000	-2.00000	0.0
11.829	42.77143	67.20000	-2.00000	0.0
13.800	40.80000	67.20000	-2.00000	0.0

Structure: J | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	40.80000	67.20000	-2.00000	0.0
1.9333	40.80000	65.26667	-2.00000	0.0
3.8667	40.80000	63.33333	-2.00000	0.0
5.8000	40.80000	61.40000	-2.00000	0.0
7.7333	40.80000	59.46667	-2.00000	0.0
9.6667	40.80000	57.53333	-2.00000	0.0
11.600	40.80000	55.60000	-2.00000	0.0

Structure: K | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	101.70000	67.70000	-1.00000	2.9645
0.96250	102.66250	67.70000	-1.00000	2.6961
1.9250	103.62500	67.70000	-1.00000	2.4195
2.8875	104.58750	67.70000	-1.00000	2.1389
3.8500	105.55000	67.70000	-1.00000	1.8582
4.8125	106.51250	67.70000	-1.00000	1.5807
5.7750	107.47500	67.70000	-1.00000	1.3091
6.7375	108.43750	67.70000	-1.00000	1.0455
7.7000	109.40000	67.70000	-1.00000	0.79160

Structure: L | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	109.40000	67.70000	-1.00000	0.79160
1.0000	109.40000	68.70000	-1.00000	0.89042
2.0000	109.40000	69.70000	-1.00000	0.97847

Structure: M | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	109.40000	69.70000	-1.00000	0.97847
0.91250	110.31250	69.70000	-1.00000	0.72872
1.8250	111.22500	69.70000	-1.00000	0.49074
2.7375	112.13750	69.70000	-1.00000	0.26427
3.6500	113.05000	69.70000	-1.00000	0.12697
4.5625	113.96250	69.70000	-1.00000	0.098623
5.4750	114.87500	69.70000	-1.00000	0.077834

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
6.3875	115.78750	69.70000	-1.00000	0.062020
7.3000	116.70000	69.70000	-1.00000	0.048029

Structure: N | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	116.70000	69.70000	-1.00000	0.048029
1.8002	116.72857	71.50000	-1.00000	0.053229
3.6005	116.75714	73.30000	-1.00000	0.056545
5.4007	116.78571	75.10000	-1.00000	0.085915
7.2009	116.81429	76.90000	-1.00000	0.056426
9.0011	116.84286	78.70000	-1.00000	0.052869
10.801	116.87143	80.50000	-1.00000	0.047407
12.602	116.90000	82.30000	-1.00000	0.039941

Structure: O | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	116.90000	82.30000	-1.00000	0.039941
1.9000	115.00000	82.30000	-1.00000	0.069230
3.8000	113.10000	82.30000	-1.00000	0.11291
5.7000	111.20000	82.30000	-1.00000	0.41038
7.6000	109.30000	82.30000	-1.00000	0.89829
9.5000	107.40000	82.30000	-1.00000	1.4298
11.400	105.50000	82.30000	-1.00000	1.9948
13.300	103.60000	82.30000	-1.00000	2.5734
15.200	101.70000	82.30000	-1.00000	3.1366

Structure: P | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	101.70000	82.30000	-1.00000	3.1366
1.8252	101.72500	80.47500	-1.00000	3.4827
3.6503	101.75000	78.65000	-1.00000	3.7561
5.4755	101.77500	76.82500	-1.00000	3.9348
7.3007	101.80000	75.00000	-1.00000	4.7941
9.1259	101.82500	73.17500	-1.00000	3.8475
10.951	101.85000	71.35000	-1.00000	3.6096
12.776	101.87500	69.52500	-1.00000	3.2896
14.601	101.90000	67.70000	-1.00000	2.9097

Structure: Q | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	103.20000	67.70000	-1.00000	2.5424
0.88000	103.20000	66.82000	-1.00000	2.3664
1.7600	103.20000	65.94000	-1.00000	2.1833
2.6400	103.20000	65.06000	-1.00000	1.9948
3.5200	103.20000	64.18000	-1.00000	1.8029
4.4000	103.20000	63.30000	-1.00000	1.6092

Structure: R | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	103.20000	63.30000	-1.00000	1.6092
0.91429	102.28571	63.30000	-1.00000	1.8078
1.8286	101.37143	63.30000	-1.00000	2.0190
2.7429	100.45714	63.30000	-1.00000	2.2280
3.6571	99.54286	63.30000	-1.00000	2.4328
4.5714	98.62857	63.30000	-1.00000	2.6312
5.4857	97.71429	63.30000	-1.00000	2.8210
6.4000	96.80000	63.30000	-1.00000	2.9997

Structure: S | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	96.80000	63.30000	-1.00000	2.9997
1.8507	96.75000	65.15000	-1.00000	3.5505
3.7014	96.70000	67.00000	-1.00000	4.0319
5.5520	96.65000	68.85000	-1.00000	4.4010
7.4027	96.60000	70.70000	-1.00000	4.8465
9.2534	96.55000	72.55000	-1.00000	5.2659
11.104	96.50000	74.40000	-1.00000	5.6019
12.955	96.45000	76.25000	-1.00000	5.6339
14.805	96.40000	78.10000	-1.00000	5.3208
16.656	96.35000	79.95000	-1.00000	4.9183
18.507	96.30000	81.80000	-1.00000	4.5156

Structure: T | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	96.30000	81.80000	-1.00000	4.5156
0.90000	97.20000	81.80000	-1.00000	4.3216
1.8000	98.10000	81.80000	-1.00000	4.1569
2.7000	99.00000	81.80000	-1.00000	3.9615
3.6000	99.90000	81.80000	-1.00000	3.7402
4.5000	100.80000	81.80000	-1.00000	3.4979
5.4000	101.70000	81.80000	-1.00000	3.2394

Structure: U | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	134.70000	67.60000	-3.00000	0.0
1.7000	133.00000	67.60000	-3.00000	0.0
3.4000	131.30000	67.60000	-3.00000	0.0
5.1000	129.60000	67.60000	-3.00000	0.0
6.8000	127.90000	67.60000	-3.00000	0.0
8.5000	126.20000	67.60000	-3.00000	0.0
10.200	124.50000	67.60000	-3.00000	0.0

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

Structure: V | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	124.50000	67.60000	-3.00000	0.0
0.83333	124.50000	68.43333	-3.00000	0.0
1.6667	124.50000	69.26667	-3.00000	0.0
2.5000	124.50000	70.10000	-3.00000	0.0

Structure: W | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	124.50000	70.10000	-3.00000	0.0
0.87143	123.62857	70.10000	-3.00000	0.0
1.7429	122.75714	70.10000	-3.00000	0.0
2.6143	121.88571	70.10000	-3.00000	0.0
3.4857	121.01429	70.10000	-3.00000	0.0
4.3571	120.14286	70.10000	-3.00000	0.0
5.2286	119.27143	70.10000	-3.00000	0.0
6.1000	118.40000	70.10000	-3.00000	0.015597

Structure: X | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	118.40000	70.10000	-3.00000	0.015597
1.8375	118.40000	71.93750	-3.00000	0.022342
3.6750	118.40000	73.77500	-3.00000	0.025808
5.5125	118.40000	75.61250	-3.00000	0.039364
7.3500	118.40000	77.45000	-3.00000	0.025279
9.1875	118.40000	79.28750	-3.00000	0.021092
11.025	118.40000	81.12500	-3.00000	0.013501
12.862	118.40000	82.96250	-3.00000	0.0
14.700	118.40000	84.80000	-3.00000	0.0

Structure: Y | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	118.40000	84.80000	-3.00000	0.0
0.88750	119.28750	84.80000	-3.00000	0.0
1.7750	120.17500	84.80000	-3.00000	0.0
2.6625	121.06250	84.80000	-3.00000	0.0
3.5500	121.95000	84.80000	-3.00000	0.0
4.4375	122.83750	84.80000	-3.00000	0.0
5.3250	123.72500	84.80000	-3.00000	0.0
6.2125	124.61250	84.80000	-3.00000	0.0
7.1000	125.50000	84.80000	-3.00000	0.0

Structure: Z | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	125.50000	84.80000	-3.00000	0.0
0.90000	125.50000	85.70000	-3.00000	0.0
1.8000	125.50000	86.60000	-3.00000	0.0
2.7000	125.50000	87.50000	-3.00000	0.0

Structure: AA | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	125.50000	87.50000	-3.00000	0.0
0.92000	126.42000	87.50000	-3.00000	0.0
1.8400	127.34000	87.50000	-3.00000	0.0
2.7600	128.26000	87.50000	-3.00000	0.0
3.6800	129.18000	87.50000	-3.00000	0.0
4.6000	130.10000	87.50000	-3.00000	0.0
5.5200	131.02000	87.50000	-3.00000	0.0
6.4400	131.94000	87.50000	-3.00000	0.0
7.3600	132.86000	87.50000	-3.00000	0.0
8.2800	133.78000	87.50000	-3.00000	0.0
9.2000	134.70000	87.50000	-3.00000	0.0

Structure: NRTunnelTop | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	20.70000	67.00000	-23.00000	0.0
0.99315	21.66165	67.24812	-23.00000	0.0
1.9863	22.62331	67.49624	-23.00000	0.0
2.9794	23.58496	67.74436	-23.00000	0.0
3.9726	24.54662	67.99248	-23.00000	0.0
4.9657	25.50827	68.24060	-23.00000	0.0
5.9589	26.46992	68.48872	-23.00000	0.0
6.9520	27.43158	68.73684	-23.00000	0.0
7.9452	28.39323	68.98496	-23.00000	0.0
8.9383	29.35489	69.23308	-23.00000	0.0
9.9315	30.31654	69.48120	-23.00000	0.0
10.925	31.27820	69.72932	-23.00000	0.0
11.918	32.23985	69.97744	-23.00000	0.0
12.911	33.20150	70.22556	-23.00000	0.0
13.904	34.16316	70.47368	-23.00000	0.0
14.897	35.12481	70.72180	-23.00000	0.0
15.890	36.08647	70.96992	-23.00000	0.0
16.884	37.04812	71.21805	-23.00000	0.0
17.877	38.00977	71.46617	-23.00000	0.0
18.870	38.97143	71.71429	-23.00000	0.0
19.863	39.93308	71.96241	-23.00000	0.0
20.856	40.89474	72.21053	-23.00000	0.0
21.849	41.85639	72.45865	-23.00000	0.0
22.842	42.81805	72.70677	-23.00000	0.0
23.836	43.77970	72.95489	-23.00000	0.0
24.829	44.74135	73.20301	-23.00000	0.0
25.822	45.70301	73.45113	-23.00000	0.0
26.815	46.66466	73.69925	-23.00000	0.0
27.808	47.62632	73.94737	-23.00000	0.0
28.801	48.58797	74.19549	-23.00000	0.0
29.794	49.54962	74.44361	-23.00000	0.0
30.788	50.51128	74.69173	-23.00000	0.0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
31.781	51.47293	74.93985	-23.00000	0.0
32.774	52.43459	75.18797	-23.00000	0.0
33.767	53.39624	75.43609	-23.00000	0.0
34.760	54.35789	75.68421	-23.00000	0.0
35.753	55.31955	75.93233	-23.00000	0.0
36.746	56.28120	76.18045	-23.00000	0.0
37.740	57.24286	76.42857	-23.00000	0.0
38.733	58.20451	76.67669	-23.00000	0.0
39.726	59.16617	76.92481	-23.00000	0.0
40.719	60.12782	77.17293	-23.00000	0.0
41.712	61.08947	77.42105	-23.00000	0.0
42.705	62.05113	77.66917	-23.00000	0.0
43.698	63.01278	77.91729	-23.00000	0.0
44.692	63.97444	78.16541	-23.00000	0.0
45.685	64.93609	78.41353	-23.00000	0.0
46.678	65.89774	78.66165	-23.00000	0.0
47.671	66.85940	78.90977	-23.00000	0.0
48.664	67.82105	79.15789	-23.00000	0.0
49.657	68.78271	79.40602	-23.00000	0.0
50.651	69.74436	79.65414	-23.00000	0.0
51.644	70.70602	79.90226	-23.00000	0.0
52.637	71.66767	80.15038	-23.00000	0.0
53.630	72.62932	80.39850	-23.00000	0.0
54.623	73.59098	80.64662	-23.00000	0.0
55.616	74.55263	80.89474	-23.00000	0.0
56.609	75.51429	81.14286	-23.00000	0.0
57.603	76.47594	81.39098	-23.00000	0.0
58.596	77.43759	81.63910	-23.00000	0.0
59.589	78.39925	81.88722	-23.00000	0.0
60.582	79.36090	82.13534	-23.00000	0.0
61.575	80.32256	82.38346	-23.00000	0.0
62.568	81.28421	82.63158	-23.00000	0.0
63.561	82.24586	82.87970	-23.00000	0.0
64.555	83.20752	83.12782	-23.00000	0.0
65.548	84.16917	83.37594	-23.00000	0.0
66.541	85.13083	83.62406	-23.00000	0.0
67.534	86.09248	83.87218	-23.00000	0.0
68.527	87.05414	84.12030	-23.00000	0.0
69.520	88.01579	84.36842	-23.00000	0.0
70.513	88.97744	84.61654	-23.00000	0.0
71.507	89.93910	84.86466	-23.00000	0.0
72.500	90.90075	85.11278	-23.00000	0.0
73.493	91.86241	85.36090	-23.00000	0.0
74.486	92.82406	85.60902	-23.00000	0.0
75.479	93.78571	85.85714	-23.00000	0.0
76.472	94.74737	86.10526	-23.00000	0.0
77.466	95.70902	86.35338	-23.00000	0.0
78.459	96.67068	86.60150	-23.00000	0.0
79.452	97.63233	86.84962	-23.00000	0.0
80.445	98.59398	87.09774	-23.00000	0.0
81.438	99.55564	87.34586	-23.00000	0.0
82.431	100.51729	87.59398	-23.00000	0.0
83.424	101.47895	87.84211	-23.00000	0.0
84.418	102.44060	88.09023	-23.00000	0.0
85.411	103.40226	88.33835	-23.00000	0.0
86.404	104.36391	88.58647	-23.00000	0.0
87.397	105.32556	88.83459	-23.00000	0.0
88.390	106.28722	89.08271	-23.00000	0.0
89.383	107.24887	89.33083	-23.00000	0.0
90.376	108.21053	89.57895	-23.00000	0.0
91.370	109.17218	89.82707	-23.00000	0.0
92.363	110.13383	90.07519	-23.00000	0.0
93.356	111.09549	90.32331	-23.00000	0.0
94.349	112.05714	90.57143	-23.00000	0.0
95.342	113.01880	90.81955	-23.00000	0.0
96.335	113.98045	91.06767	-23.00000	0.0
97.328	114.94211	91.31579	-23.00000	0.0
98.322	115.90376	91.56391	-23.00000	0.0
99.315	116.86541	91.81203	-23.00000	0.0
100.31	117.82707	92.06015	-23.00000	0.0
101.30	118.78872	92.30827	-23.00000	0.0
102.29	119.75038	92.55639	-23.00000	0.0
103.29	120.71203	92.80451	-23.00000	0.0
104.28	121.67368	93.05263	-23.00000	0.0
105.27	122.63534	93.30075	-23.00000	0.0
106.27	123.59699	93.54887	-23.00000	0.0
107.26	124.55865	93.79699	-23.00000	0.0
108.25	125.52030	94.04511	-23.00000	0.0
109.25	126.48195	94.29323	-23.00000	0.0
110.24	127.44361	94.54135	-23.00000	0.0
111.23	128.40526	94.78947	-23.00000	0.0
112.23	129.36692	95.03759	-23.00000	0.0
113.22	130.32857	95.28571	-23.00000	0.0
114.21	131.29023	95.53383	-23.00000	0.0
115.21	132.25188	95.78195	-23.00000	0.0
116.20	133.21353	96.03008	-23.00000	0.0
117.19	134.17519	96.27820	-23.00000	0.0
118.18	135.13684	96.52632	-23.00000	0.0
119.18	136.09850	96.77444	-23.00000	0.0
120.17	137.06015	97.02256	-23.00000	0.0
121.16	138.02180	97.27068	-23.00000	0.0
122.16	138.98346	97.51880	-23.00000	0.0
123.15	139.94511	97.76692	-23.00000	0.0
124.14	140.90677	98.01504	-23.00000	0.0
125.14	141.86842	98.26316	-23.00000	0.0
126.13	142.83008	98.51128	-23.00000	0.0
127.12	143.79173	98.75940	-23.00000	0.0
128.12	144.75338	99.00752	-23.00000	0.0
129.11	145.71504	99.25564	-23.00000	0.0
130.10	146.67669	99.50376	-23.00000	0.0
131.10	147.63835	99.75188	-23.00000	0.0
132.09	148.60000	100.00000	-23.00000	0.0

Structure: NRTunnelBase | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	20.70000	67.00000	-28.00000	0.0
0.99315	21.66165	67.24812	-28.00000	0.0
1.9863	22.62331	67.49624	-28.00000	0.0
2.9794	23.58496	67.74436	-28.00000	0.0
3.9726	24.54662	67.99248	-28.00000	0.0
4.9657	25.50827	68.24060	-28.00000	0.0
5.9589	26.46992	68.48872	-28.00000	0.0
6.9520	27.43158	68.73684	-28.00000	0.0
7.9452	28.39323	68.98496	-28.00000	0.0
8.9383	29.35489	69.23308	-28.00000	0.0
9.9315	30.31654	69.48120	-28.00000	0.0
10.925	31.27820	69.72932	-28.00000	0.0
11.918	32.23985	69.97744	-28.00000	0.0
12.911	33.20150	70.22556	-28.00000	0.0
13.904	34.16316	70.47368	-28.00000	0.0
14.897	35.12481	70.72180	-28.00000	0.0
15.890	36.08647	70.96992	-28.00000	0.0
16.884	37.04812	71.21805	-28.00000	0.0
17.877	38.00977	71.46617	-28.00000	0.0
18.870	38.97143	71.71429	-28.00000	0.0
19.863	39.93308	71.96241	-28.00000	0.0
20.856	40.89474	72.21053	-28.00000	0.0
21.849	41.85639	72.45865	-28.00000	0.0
22.842	42.81805	72.70677	-28.00000	0.0
23.836	43.77970	72.95489	-28.00000	0.0
24.829	44.74135	73.20301	-28.00000	0.0
25.822	45.70301	73.45113	-28.00000	0.0
26.815	46.66466	73.69925	-28.00000	0.0
27.808	47.62632	73.94737	-28.00000	0.0
28.801	48.58797	74.19549	-28.00000	0.0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
29.794	49.54962	74.44361	-28.00000	0.0
30.788	50.51128	74.69173	-28.00000	0.0
31.781	51.47293	74.93985	-28.00000	0.0
32.774	52.43459	75.18797	-28.00000	0.0
33.767	53.39624	75.43609	-28.00000	0.0
34.760	54.35789	75.68421	-28.00000	0.0
35.753	55.31955	75.93233	-28.00000	0.0
36.746	56.28120	76.18045	-28.00000	0.0
37.740	57.24286	76.42857	-28.00000	0.0
38.733	58.20451	76.67669	-28.00000	0.0
39.726	59.16617	76.92481	-28.00000	0.0
40.719	60.12782	77.17293	-28.00000	0.0
41.712	61.08947	77.42105	-28.00000	0.0
42.705	62.05113	77.66917	-28.00000	0.0
43.698	63.01278	77.91729	-28.00000	0.0
44.692	63.97444	78.16541	-28.00000	0.0
45.685	64.93609	78.41353	-28.00000	0.0
46.678	65.89774	78.66165	-28.00000	0.0
47.671	66.85940	78.90977	-28.00000	0.0
48.664	67.82105	79.15789	-28.00000	0.0
49.657	68.78271	79.40602	-28.00000	0.0
50.651	69.74436	79.65414	-28.00000	0.0
51.644	70.70602	79.90226	-28.00000	0.0
52.637	71.66767	80.15038	-28.00000	0.0
53.630	72.62932	80.39850	-28.00000	0.0
54.623	73.59098	80.64662	-28.00000	0.0
55.616	74.55263	80.89474	-28.00000	0.0
56.609	75.51429	81.14286	-28.00000	0.0
57.603	76.47594	81.39098	-28.00000	0.0
58.596	77.43759	81.63910	-28.00000	0.0
59.589	78.39925	81.88722	-28.00000	0.0
60.582	79.36090	82.13534	-28.00000	0.0
61.575	80.32256	82.38346	-28.00000	0.0
62.568	81.28421	82.63158	-28.00000	0.0
63.561	82.24586	82.87970	-28.00000	0.0
64.555	83.20752	83.12782	-28.00000	0.0
65.548	84.16917	83.37594	-28.00000	0.0
66.541	85.13083	83.62406	-28.00000	0.0
67.534	86.09248	83.87218	-28.00000	0.0
68.527	87.05414	84.12030	-28.00000	0.0
69.520	88.01579	84.36842	-28.00000	0.0
70.513	88.97744	84.61654	-28.00000	0.0
71.507	89.93910	84.86466	-28.00000	0.0
72.500	90.90075	85.11278	-28.00000	0.0
73.493	91.86241	85.36090	-28.00000	0.0
74.486	92.82406	85.60902	-28.00000	0.0
75.479	93.78571	85.85714	-28.00000	0.0
76.472	94.74737	86.10526	-28.00000	0.0
77.466	95.70902	86.35338	-28.00000	0.0
78.459	96.67068	86.60150	-28.00000	0.0
79.452	97.63233	86.84962	-28.00000	0.0
80.445	98.59398	87.09774	-28.00000	0.0
81.438	99.55564	87.34586	-28.00000	0.0
82.431	100.51729	87.59398	-28.00000	0.0
83.424	101.47895	87.84211	-28.00000	0.0
84.418	102.44060	88.09023	-28.00000	0.0
85.411	103.40226	88.33835	-28.00000	0.0
86.404	104.36391	88.58647	-28.00000	0.0
87.397	105.32556	88.83459	-28.00000	0.0
88.390	106.28722	89.08271	-28.00000	0.0
89.383	107.24887	89.33083	-28.00000	0.0
90.376	108.21053	89.57895	-28.00000	0.0
91.370	109.17218	89.82707	-28.00000	0.0
92.363	110.13383	90.07519	-28.00000	0.0
93.356	111.09549	90.32331	-28.00000	0.0
94.349	112.05714	90.57143	-28.00000	0.0
95.342	113.01880	90.81955	-28.00000	0.0
96.335	113.98045	91.06767	-28.00000	0.0
97.328	114.94211	91.31579	-28.00000	0.0
98.322	115.90376	91.56391	-28.00000	0.0
99.315	116.86541	91.81203	-28.00000	0.0
100.31	117.82707	92.06015	-28.00000	0.0
101.30	118.78872	92.30827	-28.00000	0.0
102.29	119.75038	92.55639	-28.00000	0.0
103.29	120.71203	92.80451	-28.00000	0.0
104.28	121.67368	93.05263	-28.00000	0.0
105.27	122.63534	93.30075	-28.00000	0.0
106.27	123.59699	93.54887	-28.00000	0.0
107.26	124.55865	93.79699	-28.00000	0.0
108.25	125.52030	94.04511	-28.00000	0.0
109.25	126.48195	94.29323	-28.00000	0.0
110.24	127.44361	94.54135	-28.00000	0.0
111.23	128.40526	94.78947	-28.00000	0.0
112.23	129.36692	95.03759	-28.00000	0.0
113.22	130.32857	95.28571	-28.00000	0.0
114.21	131.29023	95.53383	-28.00000	0.0
115.21	132.25188	95.78195	-28.00000	0.0
116.20	133.21353	96.03008	-28.00000	0.0
117.19	134.17519	96.27820	-28.00000	0.0
118.18	135.13684	96.52632	-28.00000	0.0
119.18	136.09850	96.77444	-28.00000	0.0
120.17	137.06015	97.02256	-28.00000	0.0
121.16	138.02180	97.27068	-28.00000	0.0
122.16	138.98346	97.51880	-28.00000	0.0
123.15	139.94511	97.76692	-28.00000	0.0
124.14	140.90677	98.01504	-28.00000	0.0
125.14	141.86842	98.26316	-28.00000	0.0
126.13	142.83008	98.51128	-28.00000	0.0
127.12	143.79173	98.75940	-28.00000	0.0
128.12	144.75338	99.00752	-28.00000	0.0
129.11	145.71504	99.25564	-28.00000	0.0
130.10	146.67669	99.50376	-28.00000	0.0
131.10	147.63835	99.75188	-28.00000	0.0
132.09	148.60000	100.00000	-28.00000	0.0

Specific Building Damage Results - All Segments

Structure: A | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: B | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: C | 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]	
0.0	1	2.8500	0.94900 Sagging	0.0	0.011123	0.011123	-116.31E-6	-192.39E-6	4720.6	0 (Negligible)

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

Structure: D | 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]	
0.0	1	0.0	7.1990	Sagging	981.90E-6	-0.0041428	958.19E-6	65.989E-6	-99.086E-6	72351.	0 (Negligible)

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

Structure: E | 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]	
0.0	1	0.0	3.8250	Hogging	0.0042376	0.016239	0.017775	-163.59E-6	268.06E-6	9806.1	0 (Negligible)

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

Structure: F | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: G | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: H | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: I | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: J | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: K | 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]	
0.0	1	0.0	2.9604	Sagging	232.90E-6	0.017254	0.017348	-213.52E-6	291.58E-6	99720.	0 (Negligible)
	2	2.9604	4.7386	Hogging	443.42E-6	0.013985	0.014130	-213.52E-6	291.58E-6	92857.	0 (Negligible)

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

Structure: L | 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]	
0.0	1	0.0	1.9990	Sagging	266.83E-6	-0.0041422	842.46E-6	46.986E-6	-98.829E-6	92744.	0 (Negligible)

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

Structure: M | 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]	
0.0	1	0.0	3.6500	Hogging	0.0020667	0.013790	0.014314	-144.41E-6	273.67E-6	10589.	0 (Negligible)

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

Structure: N | Sub-structure:

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

Movement Calculations							Displacement Curve	Displacement Curve		
[m]		[m]	[m]	[%]	[%]	[%]			[m]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.									

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

Structure: O | 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]	
0.0	1	3.8000	8.7058	Hogging	0.0021438	0.014894	0.016149	-222.41E-6	-304.43E-6	20275.	0 (Negligible)
	2	12.506	2.6932	Sagging	166.40E-6	0.019478	0.019539	-222.41E-6	-304.43E-6	160350.	0 (Negligible)

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

Structure: P | 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]	
0.0	1	0.0	2.6061	Sagging	833.16E-6	-0.016387	0.0033117	241.56E-6	-189.69E-6	42579.	0 (Negligible)
	2	2.6061	1.8418	Sagging	0.0012702	-0.028246	0.0056960	336.20E-6	-149.79E-6	31898.	0 (Negligible)
	3	4.4479	5.5767	Sagging	0.017991	-0.024141	0.012585	336.20E-6	518.79E-6	6045.4	0 (Negligible)
	4	10.025	2.1112	Sagging	0.0010969	-0.022385	0.0045209	284.58E-6	175.35E-6	27757.	0 (Negligible)
	5	12.136	2.4645	Sagging	629.28E-6	-0.0096948	0.0019721	176.46E-6	208.19E-6	50876.	0 (Negligible)

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

Structure: Q | 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]	
0.0	1	0.0	4.3990	Sagging	321.00E-6	0.0049310	0.0053456	-103.14E-6	220.16E-6	100710.	0 (Negligible)

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

Structure: R | 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]	
0.0	1	0.0	2.0011	Hogging	328.41E-6	0.0098499	0.0099743	-104.03E-6	-230.95E-6	51623.	0 (Negligible)
	2	2.0011	4.3979	Sagging	516.66E-6	588.40E-6	0.0012555	-77.892E-6	-228.53E-6	71195.	0 (Negligible)

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

Structure: S | 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]	
0.0	1	0.0	5.4359	Sagging	0.0017216	0.010038	0.012480	-186.30E-6	-297.57E-6	42906.	0 (Negligible)
	2	5.4359	0.48335	Hogging	750.52E-6	-0.0080763	0.0016729	103.59E-6	-240.71E-6	944230.	0 (Negligible)
	3	5.9193	11.661	Sagging	0.0086741	-0.052852	0.010688	0.0010442	-240.71E-6	12651.	0 (Negligible)
	4	17.580	0.92546	None	0.0	-0.018293	0.0036586	182.96E-6	217.60E-6	153260.	0 (Negligible)

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

Structure: T | 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]	
0.0	1	0.0	1.3478	Hogging	722.53E-6	-0.0070115	0.0014630	77.235E-6	215.60E-6	18253.	0 (Negligible)
	2	1.3478	4.0512	Sagging	0.0013933	0.0080399	0.0097588	-161.15E-6	287.20E-6	31346.	0 (Negligible)

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

Structure: U | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: V | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: W | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

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

Structure: X | Sub-structure:

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

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

Structure: Y | Sub-structure:

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

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

Structure: Z | Sub-structure:

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

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

Structure: AA | Sub-structure:

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

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

Structure: NRTunnelTop | Sub-structure:

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

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

Structure: NRTunnelBase | Sub-structure:

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

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

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

Structure: A | 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	Maximum Gradient of Vertical Displacement	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations						Curve	Curve			
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: B | 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	Maximum Gradient of Vertical Displacement	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations						Curve	Curve			
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	

Structure: C | 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	Maximum Gradient of Vertical Displacement	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations						Curve	Curve			
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0	0.011123	-192.39E-6	0.31094	0.011123	-116.31E-6	-192.39E-6	-	4720.6	0 (Negligible)

Structure: D | 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	Maximum Gradient of Vertical Displacement	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations						Curve	Curve			
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	981.90E-6	-0.0041428	-99.086E-6	0.79968	958.19E-6	65.989E-6	-99.086E-6	-	72351.	0 (Negligible)

Structure: E | 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	Maximum Gradient of Vertical Displacement	Min. Radius of Curvature (Hogging)	Min. Radius of Curvature (Sagging)	Damage Category
Calculations						Curve	Curve			
[m]	[%]	[%]		[mm]	[%]			[m]	[m]	
0.0	0.0042376	0.016239	268.06E-6	0.79971	0.017775	-163.59E-6	268.06E-6	9806.1	-	0 (Negligible)

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: F | Sub-structure:

Structure: G | Sub-structure:

Structure: H | Sub-structure:

Structure: I | Sub-structure:

Structure: J | Sub-structure:

Structure: K | 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	443.42E-6	0.017254	291.58E-6	2.9645	0.017348	-213.52E-6	291.58E-6	92857.	99720.	0 (Negligible)

Structure: L | 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	266.83E-6	-0.0041422	-98.829E-6	0.97838	842.46E-6	46.986E-6	-98.829E-6	-	92744.	0 (Negligible)

Structure: M | 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	0.0020667	0.013790	273.67E-6	0.97847	0.014314	-144.41E-6	273.67E-6	10589.	-	0 (Negligible)

Structure: N | Sub-structure:

Structure: O | 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	0.0021438	0.019478	-304.43E-6	3.1363	0.019539	-222.41E-6	-304.43E-6	20275.	160350.	0 (Negligible)

Structure: P | 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	0.017991	-0.028246	518.79E-6	4.7837	0.012585	336.20E-6	518.79E-6	-	6045.4	0 (Negligible)

Structure: Q | 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	321.00E-6	0.0049310	220.16E-6	2.5424	0.0053456	-103.14E-6	220.16E-6	-	100710.	0 (Negligible)

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]	

Structure: R | 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	516.66E-6	0.0098499	-230.95E-6	2.9995	0.0099743	-104.03E-6	-230.95E-6	51623.	71195.	0 (Negligible)

Structure: S | 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	0.0086741	-0.052852	-297.57E-6	5.6324	0.012480	0.0010442	-297.57E-6	944230.	12651.	0 (Negligible)

Structure: T | 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	0.0013933	0.0080399	287.20E-6	4.5156	0.0097588	-161.15E-6	287.20E-6	18253.	31346.	0 (Negligible)

Structure: U | 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]	

Structure: V | 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]	

Structure: W | 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]	

Structure: X | 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]	

Structure: Y | 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]	

Structure: Z | 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]	

Structure: AA | 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]	

Structure: NRTunnelTop | 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]	

Structure: NRTunnelBase | 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]	

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
A	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.											
B	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.											
C	Maximum Slope		1	2.8500	3.7990	Sagging	**192.39E-6**	0.31094	0.011123	-	4720.6	0 (Negligible)
	Maximum Settlement		1	2.8500	3.7990	Sagging	192.39E-6	**0.31094**	0.011123	-	4720.6	0 (Negligible)
	Max. Tensile Strain		1	2.8500	3.7990	Sagging	192.39E-6	0.31094	**0.011123**	-	4720.6	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	2.8500	3.7990	Sagging	192.39E-6	0.31094	0.011123	-	**4720.6**	0 (Negligible)
D	Maximum Slope		1	0.0	7.1990	Sagging	**99.086E-6**	0.79968	958.19E-6	-	72351.	0 (Negligible)
	Maximum Settlement		1	0.0	7.1990	Sagging	99.086E-6	**0.79968**	958.19E-6	-	72351.	0 (Negligible)
	Max. Tensile Strain		1	0.0	7.1990	Sagging	99.086E-6	0.79968	**958.19E-6**	-	72351.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	0.0	7.1990	Sagging	99.086E-6	0.79968	958.19E-6	-	**72351.**	0 (Negligible)
E	Maximum Slope		1	0.0	3.8250	Hogging	**268.06E-6**	0.79971	0.017775	9806.1	-	0 (Negligible)
	Maximum Settlement		1	0.0	3.8250	Hogging	268.06E-6	**0.79971**	0.017775	9806.1	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	3.8250	Hogging	268.06E-6	0.79971	**0.017775**	9806.1	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	3.8250	Hogging	268.06E-6	0.79971	0.017775	**9806.1**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
F	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.											
G	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.											
H	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.											
I	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.											
J	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.											
K	Maximum Slope		1	0.0	2.9604	Sagging	**291.58E-6**	2.9645	0.017348	-	99720.	0 (Negligible)
	Maximum Settlement		1	0.0	2.9604	Sagging	291.58E-6	**2.9645**	0.017348	-	99720.	0 (Negligible)
	Max. Tensile Strain		1	0.0	2.9604	Sagging	291.58E-6	2.9645	**0.017348**	-	99720.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	2.9604	7.6990	Hogging	291.58E-6	2.1177	0.014130	**92857.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		1	0.0	2.9604	Sagging	291.58E-6	2.9645	0.017348	-	**99720.**	0 (Negligible)
L	Maximum Slope		1	0.0	1.9990	Sagging	**98.829E-6**	0.97838	842.46E-6	-	92744.	0 (Negligible)
	Maximum Settlement		1	0.0	1.9990	Sagging	98.829E-6	**0.97838**	842.46E-6	-	92744.	0 (Negligible)
	Max. Tensile Strain		1	0.0	1.9990	Sagging	98.829E-6	0.97838	**842.46E-6**	-	92744.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	0.0	1.9990	Sagging	98.829E-6	0.97838	842.46E-6	-	**92744.**	0 (Negligible)
M	Maximum Slope		1	0.0	3.6500	Hogging	**273.67E-6**	0.97847	0.014314	10589.	-	0 (Negligible)
	Maximum Settlement		1	0.0	3.6500	Hogging	273.67E-6	**0.97847**	0.014314	10589.	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	3.6500	Hogging	273.67E-6	0.97847	**0.014314**	10589.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	3.6500	Hogging	273.67E-6	0.97847	0.014314	**10589.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
N	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.											
O	Maximum Slope		1	3.8000	12.506	Hogging	**304.43E-6**	2.3315	0.016149	20275.	-	0 (Negligible)
	Maximum Settlement		2	12.506	15.199	Sagging	304.43E-6	**3.1363**	0.019539	-	160350.	0 (Negligible)
	Max. Tensile Strain		2	12.506	15.199	Sagging	304.43E-6	3.1363	**0.019539**	-	160350.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	3.8000	12.506	Hogging	304.43E-6	2.3315	0.016149	**20275.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	12.506	15.199	Sagging	304.43E-6	3.1363	0.019539	-	**160350.**	0 (Negligible)
P	Maximum Slope		3	4.4479	10.025	Sagging	**518.79E-6**	4.7837	0.012585	-	6045.4	0 (Negligible)
	Maximum Settlement		3	4.4479	10.025	Sagging	518.79E-6	**4.7837**	0.012585	-	6045.4	0 (Negligible)
	Max. Tensile Strain		3	4.4479	10.025	Sagging	518.79E-6	4.7837	**0.012585**	-	6045.4	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		3	4.4479	10.025	Sagging	518.79E-6	4.7837	0.012585	-	**6045.4**	0 (Negligible)
Q	Maximum Slope		1	0.0	4.3990	Sagging	**220.16E-6**	2.5424	0.0053456	-	100710.	0 (Negligible)
	Maximum		1	0.0	4.3990	Sagging	220.16E-6	**2.5424**	0.0053456	-	100710.	0 (Negligible)

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
	Settlement											
	Max. Tensile Strain		1	0.0	4.3990	Sagging	220.16E-6	2.5424	**0.0053456**	-	100710.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	0.0	4.3990	Sagging	220.16E-6	2.5424	0.0053456	-	**100710.**	0 (Negligible)
R	Maximum Slope		1	0.0	2.0011	Hogging	**230.95E-6**	2.0584	0.0099743	51623.	-	0 (Negligible)
	Maximum Settlement		2	2.0011	6.3990	Sagging	228.53E-6	**2.9995**	0.0012555	-	71195.	0 (Negligible)
	Max. Tensile Strain		1	0.0	2.0011	Hogging	230.95E-6	2.0584	**0.0099743**	51623.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	2.0011	Hogging	230.95E-6	2.0584	0.0099743	**51623.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	2.0011	6.3990	Sagging	228.53E-6	2.9995	0.0012555	-	**71195.**	0 (Negligible)
S	Maximum Slope		1	0.0	5.4359	Sagging	**297.57E-6**	4.3779	0.012480	-	42906.	0 (Negligible)
	Maximum Settlement		3	5.9193	17.580	Sagging	240.71E-6	**5.6324**	0.010688	-	12651.	0 (Negligible)
	Max. Tensile Strain		1	0.0	5.4359	Sagging	297.57E-6	4.3779	**0.012480**	-	42906.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	5.4359	5.9193	Hogging	240.71E-6	4.4894	0.0016729	**944230.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		3	5.9193	17.580	Sagging	240.71E-6	5.6324	0.010688	-	**12651.**	0 (Negligible)
T	Maximum Slope		2	1.3478	5.3990	Sagging	**287.20E-6**	4.2396	0.0097588	-	31346.	0 (Negligible)
	Maximum Settlement		1	0.0	1.3478	Hogging	215.60E-6	**4.5156**	0.0014630	18253.	-	0 (Negligible)
	Max. Tensile Strain		2	1.3478	5.3990	Sagging	287.20E-6	4.2396	**0.0097588**	-	31346.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	1.3478	Hogging	215.60E-6	4.5156	0.0014630	**18253.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	1.3478	5.3990	Sagging	287.20E-6	4.2396	0.0097588	-	**31346.**	0 (Negligible)
U	All settlements are less than the Settlement Trough Limit Sensitivity.											
V	All settlements are less than the Settlement Trough Limit Sensitivity.											
W	All settlements are less than the Settlement Trough Limit Sensitivity.											
X	All settlements are less than the Settlement Trough Limit Sensitivity.											
Y	All settlements are less than the Settlement Trough Limit Sensitivity.											
Z	All settlements are less than the Settlement Trough Limit Sensitivity.											
AA	All settlements are less than the Settlement Trough Limit Sensitivity.											
NRTunnelTop	All settlements are less than the Settlement Trough Limit Sensitivity.											
NRTunnelBase	All settlements are less than the Settlement Trough Limit Sensitivity.											

Specific Building Damage Results - All Combined Segments

Structure: A | 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: B | 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: C | 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: D | 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.								

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

Structure: E | Sub-structure:

No structures have segments combined.

Structure: F | Sub-structure:

No structures have segments combined.

Structure: G | Sub-structure:

No structures have segments combined.

Structure: H | Sub-structure:

No structures have segments combined.

Structure: I | Sub-structure:

No structures have segments combined.

Structure: J | Sub-structure:

No structures have segments combined.

Structure: K | Sub-structure:

No structures have segments combined.

Structure: L | Sub-structure:

No structures have segments combined.

Structure: M | Sub-structure:

No structures have segments combined.

Structure: N | Sub-structure:

No structures have segments combined.

Structure: O | Sub-structure:

No structures have segments combined.

Structure: P | Sub-structure:

Offset from Line for Vertical Movement Calculations	Segment	Ratio	Horizontal Strain	Tensile Strain
[m]	[m] [m]	[%]	[%]	[%]

No structures have segments combined.

Structure: Q | Sub-structure:

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

No structures have segments combined.

Structure: R | Sub-structure:

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

No structures have segments combined.

Structure: S | Sub-structure:

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

No structures have segments combined.

Structure: T | Sub-structure:

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

No structures have segments combined.

Structure: U | Sub-structure:

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

No structures have segments combined.

Structure: V | Sub-structure:

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

No structures have segments combined.

Structure: W | Sub-structure:

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

No structures have segments combined.

Structure: X | Sub-structure:

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

No structures have segments combined.

Structure: Y | Sub-structure:

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

No structures have segments combined.

Structure: Z | Sub-structure:

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

No structures have segments combined.

Structure: AA | Sub-structure:

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

Calculations

[m]	[m]	[m]	[%]	[%]	[%]

No structures have segments combined.

Structure: NRTunnelTop | 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]		[%]	[%]	[%]	

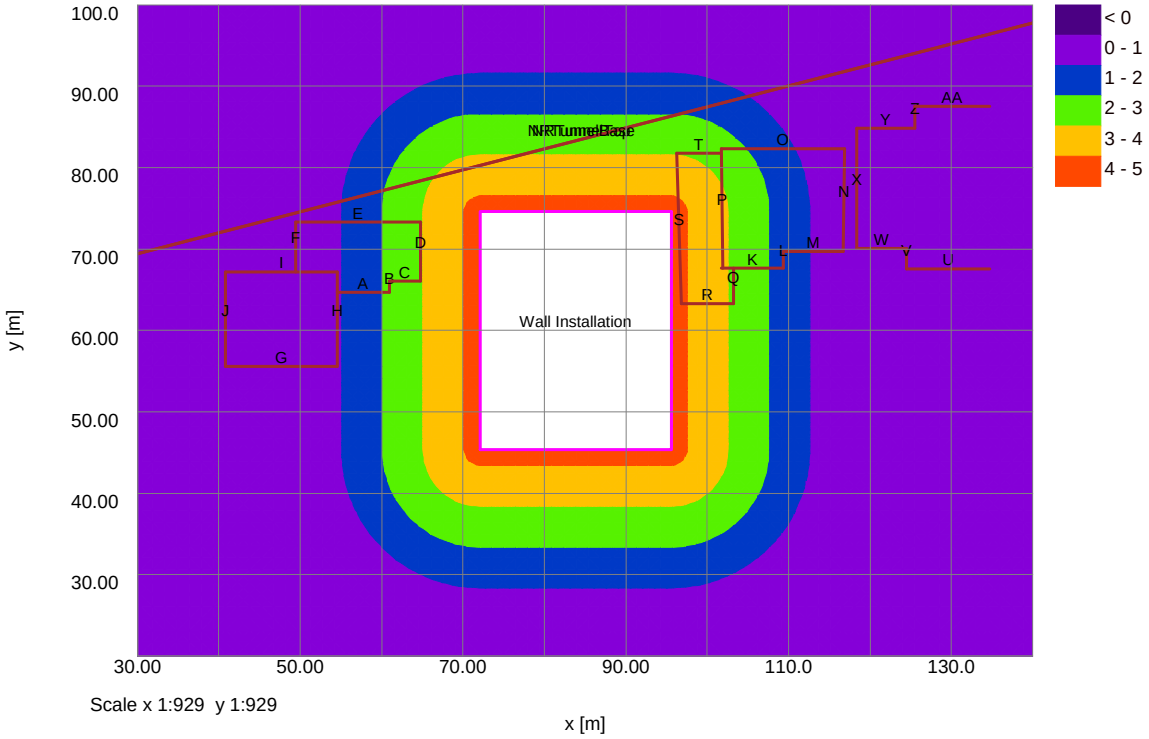
No structures have segments combined.

Structure: NRTunnelBase | 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]		[%]	[%]	[%]	

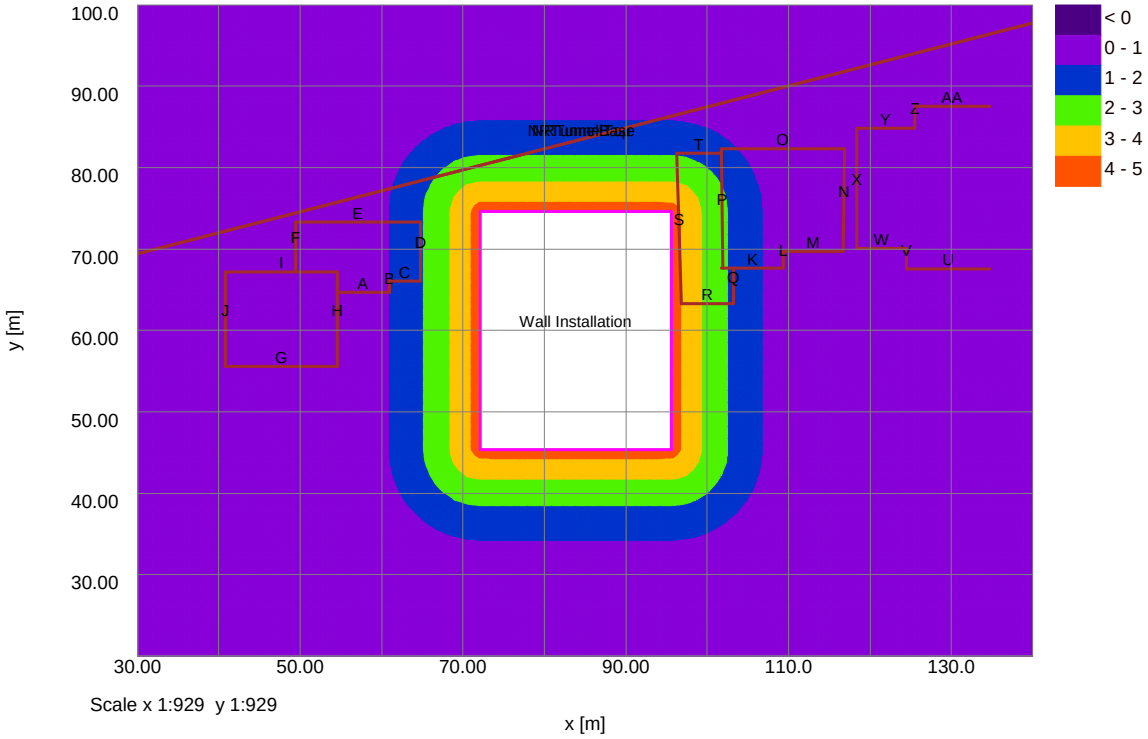
No structures have segments combined.

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

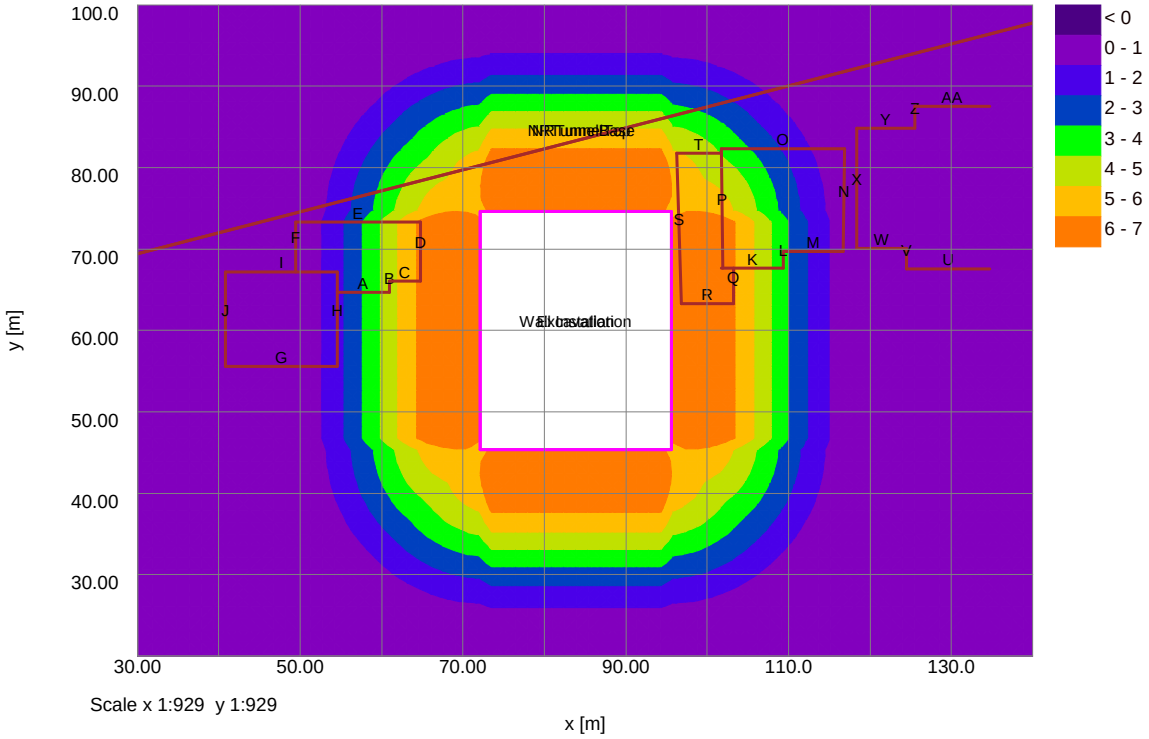


Scale x 1:929 y 1:929

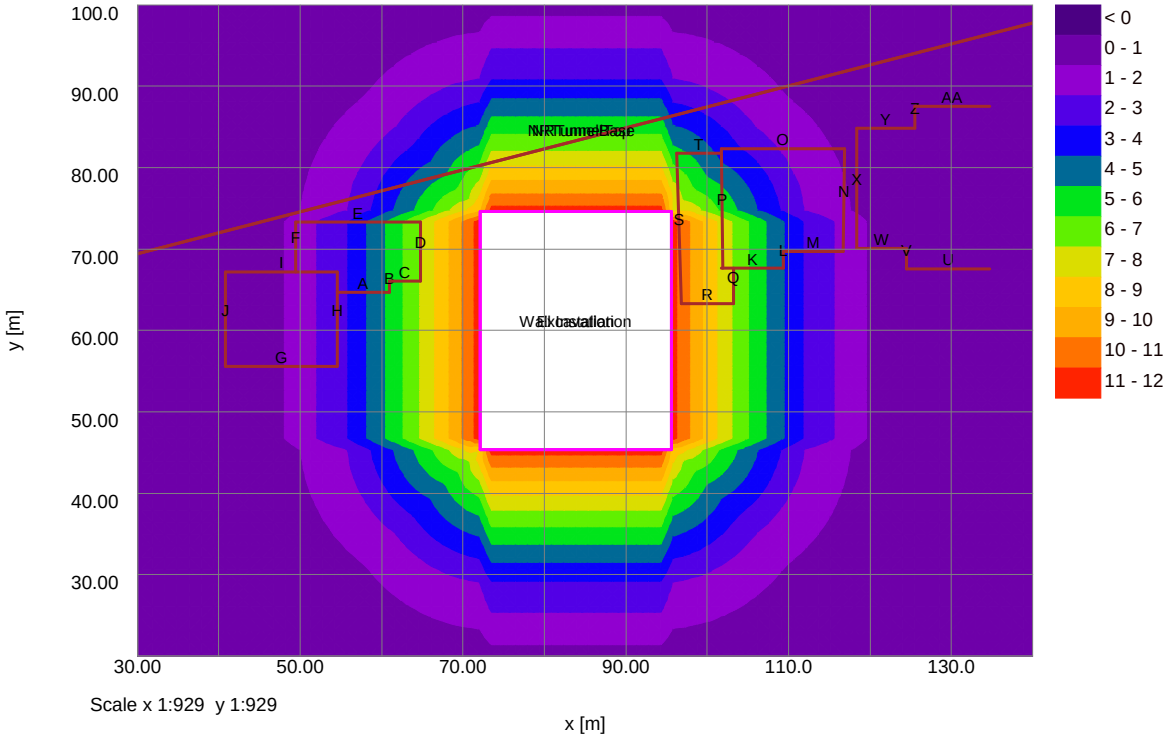
Horizontal Displacement Contours: Grid 1 (level 0.000m) Interval 1mm



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



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



Specific Building Damage Results - Horizontal Displacements

Structure: A | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	54.60000	64.70000	-1.00000	2.6250	0.0	2.6250	0.0
0.91429	55.51429	64.70000	-1.00000	2.8536	0.0	2.8536	0.0
1.8286	56.42857	64.70000	-1.00000	3.2309	0.0	3.2309	0.0
2.7429	57.34286	64.70000	-1.00000	3.6221	0.0	3.6221	0.0
3.6571	58.25714	64.70000	-1.00000	4.0163	0.0	4.0163	0.0
4.5714	59.17143	64.70000	-1.00000	4.4152	0.0	4.4152	0.0
5.4857	60.08571	64.70000	-1.00000	4.8203	0.0	4.8203	0.0
6.4000	61.00000	64.70000	-1.00000	5.2333	0.0	5.2333	0.0

Structure: B | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	61.00000	64.70000	-1.00000	5.2333	0.0	0.0	-5.2333
0.70000	61.00000	65.40000	-1.00000	5.2333	0.0	0.0	-5.2333
1.4000	61.00000	66.10000	-1.00000	5.2333	0.0	0.0	-5.2333

Structure: C | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	61.00000	66.10000	-1.00000	5.2333	0.0	5.2333	0.0
0.95000	61.95000	66.10000	-1.00000	5.6725	0.0	5.6725	0.0
1.9000	62.90000	66.10000	-1.00000	6.1238	0.0	6.1238	0.0
2.8500	63.85000	66.10000	-1.00000	6.5888	0.0	6.5888	0.0
3.8000	64.80000	66.10000	-1.00000	7.0695	0.0	7.0695	0.0

Structure: D | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	64.80000	66.10000	-1.00000	7.0695	0.0	0.0	-7.0695
0.90000	64.80000	67.00000	-1.00000	7.0695	0.0	0.0	-7.0695
1.8000	64.80000	67.90000	-1.00000	7.0695	0.0	0.0	-7.0695
2.7000	64.80000	68.80000	-1.00000	7.0695	0.0	0.0	-7.0695
3.6000	64.80000	69.70000	-1.00000	7.0695	0.0	0.0	-7.0695
4.5000	64.80000	70.60000	-1.00000	7.0695	0.0	0.0	-7.0695
5.4000	64.80000	71.50000	-1.00000	7.0695	0.0	0.0	-7.0695
6.3000	64.80000	72.40000	-1.00000	7.0695	0.0	0.0	-7.0695
7.2000	64.80000	73.30000	-1.00000	7.0695	0.0	0.0	-7.0695

Structure: E | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	64.80000	73.30000	-1.00000	7.0695	0.0	-7.0695	0.0
1.9125	62.88750	73.30000	-1.00000	6.1177	0.0	-6.1177	0.0
3.8250	60.97500	73.30000	-1.00000	5.2219	0.0	-5.2219	0.0
5.7375	59.06250	73.30000	-1.00000	4.3674	0.0	-4.3674	0.0
7.6500	57.15000	73.30000	-1.00000	3.5394	0.0	-3.5394	0.0
9.5625	55.23750	73.30000	-1.00000	2.7844	0.0	-2.7844	0.0
11.475	53.32500	73.30000	-1.00000	2.3063	0.0	-2.3063	0.0
13.387	51.41250	73.30000	-1.00000	1.8281	0.0	-1.8281	0.0
15.300	49.50000	73.30000	-1.00000	1.3500	0.0	-1.3500	0.0

Structure: F | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	49.50000	73.30000	-1.00000	1.3500	0.0	0.0	1.3500
0.87143	49.50000	72.42857	-1.00000	1.3500	0.0	0.0	1.3500
1.7429	49.50000	71.55714	-1.00000	1.3500	0.0	0.0	1.3500
2.6143	49.50000	70.68571	-1.00000	1.3500	0.0	0.0	1.3500
3.4857	49.50000	69.81429	-1.00000	1.3500	0.0	0.0	1.3500
4.3571	49.50000	68.94286	-1.00000	1.3500	0.0	0.0	1.3500
5.2286	49.50000	68.07143	-1.00000	1.3500	0.0	0.0	1.3500
6.1000	49.50000	67.20000	-1.00000	1.3500	0.0	0.0	1.3500

Structure: G | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	40.80000	55.60000	-2.00000	0.0	0.0	0.0	0.0
1.9714	42.77143	55.60000	-2.00000	0.0	0.0	0.0	0.0
3.9429	44.74286	55.60000	-2.00000	0.16071	0.0	0.16071	0.0
5.9143	46.71429	55.60000	-2.00000	0.65357	0.0	0.65357	0.0
7.8857	48.68571	55.60000	-2.00000	1.1464	0.0	1.1464	0.0
9.8571	50.65714	55.60000	-2.00000	1.6393	0.0	1.6393	0.0
11.829	52.62857	55.60000	-2.00000	2.1321	0.0	2.1321	0.0
13.800	54.60000	55.60000	-2.00000	2.6250	0.0	2.6250	0.0

Structure: H | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	54.60000	55.60000	-2.00000	2.6250	0.0	0.0	-2.6250
1.9333	54.60000	57.53333	-2.00000	2.6250	0.0	0.0	-2.6250
3.8667	54.60000	59.46667	-2.00000	2.6250	0.0	0.0	-2.6250
5.8000	54.60000	61.40000	-2.00000	2.6250	0.0	0.0	-2.6250
7.7333	54.60000	63.33333	-2.00000	2.6250	0.0	0.0	-2.6250
9.6667	54.60000	65.26667	-2.00000	2.6250	0.0	0.0	-2.6250

Dist.	Coordinates			Displacements		
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
11.600	54.60000	67.20000	-2.00000	2.6250	0.0	0.0	-2.6250

Structure: I | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	54.60000	67.20000	-2.00000	2.6250	0.0	-2.6250	0.0
1.9714	52.62857	67.20000	-2.00000	2.1321	0.0	-2.1321	0.0
3.9429	50.65714	67.20000	-2.00000	1.6393	0.0	-1.6393	0.0
5.9143	48.68571	67.20000	-2.00000	1.1464	0.0	-1.1464	0.0
7.8857	46.71429	67.20000	-2.00000	0.65357	0.0	-0.65357	0.0
9.8571	44.74286	67.20000	-2.00000	0.16071	0.0	-0.16071	0.0
11.829	42.77143	67.20000	-2.00000	0.0	0.0	0.0	0.0
13.800	40.80000	67.20000	-2.00000	0.0	0.0	0.0	0.0

Structure: J | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	40.80000	67.20000	-2.00000	0.0	0.0	0.0	0.0
1.9333	40.80000	65.26667	-2.00000	0.0	0.0	0.0	0.0
3.8667	40.80000	63.33333	-2.00000	0.0	0.0	0.0	0.0
5.8000	40.80000	61.40000	-2.00000	0.0	0.0	0.0	0.0
7.7333	40.80000	59.46667	-2.00000	0.0	0.0	0.0	0.0
9.6667	40.80000	57.53333	-2.00000	0.0	0.0	0.0	0.0
11.600	40.80000	55.60000	-2.00000	0.0	0.0	0.0	0.0

Structure: K | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.70000	67.70000	-1.00000	-7.7019	0.0	-7.7019	0.0
0.96250	102.66250	67.70000	-1.00000	-7.1924	0.0	-7.1924	0.0
1.9250	103.62500	67.70000	-1.00000	-6.7012	0.0	-6.7012	0.0
2.8875	104.58750	67.70000	-1.00000	-6.2265	0.0	-6.2265	0.0
3.8500	105.55000	67.70000	-1.00000	-5.7665	0.0	-5.7665	0.0
4.8125	106.51250	67.70000	-1.00000	-5.3191	0.0	-5.3191	0.0
5.7750	107.47500	67.70000	-1.00000	-4.8827	0.0	-4.8827	0.0
6.7375	108.43750	67.70000	-1.00000	-4.4552	0.0	-4.4552	0.0
7.7000	109.40000	67.70000	-1.00000	-4.0349	0.0	-4.0349	0.0

Structure: L | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	109.40000	67.70000	-1.00000	-4.0349	0.0	0.0	4.0349
1.0000	109.40000	68.70000	-1.00000	-4.0349	0.0	0.0	4.0349
2.0000	109.40000	69.70000	-1.00000	-4.0349	0.0	0.0	4.0349

Structure: M | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	109.40000	69.70000	-1.00000	-4.0349	0.0	-4.0349	0.0
0.91250	110.31250	69.70000	-1.00000	-3.6412	0.0	-3.6412	0.0
1.8250	111.22500	69.70000	-1.00000	-3.2507	0.0	-3.2507	0.0
2.7375	112.13750	69.70000	-1.00000	-2.8656	0.0	-2.8656	0.0
3.6500	113.05000	69.70000	-1.00000	-2.6375	0.0	-2.6375	0.0
4.5625	113.96250	69.70000	-1.00000	-2.4094	0.0	-2.4094	0.0
5.4750	114.87500	69.70000	-1.00000	-2.1812	0.0	-2.1812	0.0
6.3875	115.78750	69.70000	-1.00000	-1.9531	0.0	-1.9531	0.0
7.3000	116.70000	69.70000	-1.00000	-1.7250	0.0	-1.7250	0.0

Structure: N | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	116.70000	69.70000	-1.00000	-1.7250	0.0	-0.027378	1.7248
1.8002	116.72857	71.50000	-1.00000	-1.7179	0.0	-0.027264	1.7176
3.6005	116.75714	73.30000	-1.00000	-1.7107	0.0	-0.027151	1.7105
5.4007	116.78571	75.10000	-1.00000	-1.1314	-0.026702	-0.044655	1.1308
7.2009	116.81429	76.90000	-1.00000	-1.0706	-0.11607	-0.13305	1.0686
9.0011	116.84286	78.70000	-1.00000	-0.98235	-0.18960	-0.20517	0.97922
10.801	116.87143	80.50000	-1.00000	-0.87281	-0.24209	-0.25591	0.86886
12.602	116.90000	82.30000	-1.00000	-0.74844	-0.27056	-0.28241	0.74405

Structure: O | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	116.90000	82.30000	-1.00000	-0.74844	-0.27056	0.74844	0.27056
1.9000	115.00000	82.30000	-1.00000	-0.97424	-0.38668	0.97424	0.38668
3.8000	113.10000	82.30000	-1.00000	-1.1792	-0.51887	1.1792	0.51887
5.7000	111.20000	82.30000	-1.00000	-1.3567	-0.66965	1.3567	0.66965
7.6000	109.30000	82.30000	-1.00000	-1.6199	-0.91043	1.6199	0.91043
9.5000	107.40000	82.30000	-1.00000	-1.9484	-1.2714	1.9484	1.2714
11.400	105.50000	82.30000	-1.00000	-2.1766	-1.6929	2.1766	1.6929
13.300	103.60000	82.30000	-1.00000	-2.2602	-2.1755	2.2602	2.1755
15.200	101.70000	82.30000	-1.00000	-2.2775	-2.8748	2.2775	2.8748

Structure: P | Sub-structure:

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	101.70000	82.30000	-1.00000	-2.2775	-2.8748	2.8434	-2.3166
1.8252	101.72500	80.47500	-1.00000	-2.9259	-2.8064	2.7661	-2.9640
3.6503	101.75000	78.65000	-1.00000	-3.9119	-2.5761	2.5223	-3.9468
5.4755	101.77500	76.82500	-1.00000	-4.9715	-1.7914	1.7231	-4.9956

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
7.3007	101.80000	75.00000	-1.00000	-5.7558	-0.37134	0.29247	-5.7604
9.1259	101.82500	73.17500	-1.00000	-7.6347	0.0	-0.10457	-7.6340
10.951	101.85000	71.35000	-1.00000	-7.6213	0.0	-0.10439	-7.6205
12.776	101.87500	69.52500	-1.00000	-7.6078	0.0	-0.10421	-7.6071
14.601	101.90000	67.70000	-1.00000	-7.5945	0.0	-0.10402	-7.5937

Structure: Q | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	103.20000	67.70000	-1.00000	-6.9159	0.0	0.0	-6.9159
0.88000	103.20000	66.82000	-1.00000	-6.9159	0.0	0.0	-6.9159
1.7600	103.20000	65.94000	-1.00000	-6.9159	0.0	0.0	-6.9159
2.6400	103.20000	65.06000	-1.00000	-6.9159	0.0	0.0	-6.9159
3.5200	103.20000	64.18000	-1.00000	-6.9159	0.0	0.0	-6.9159
4.4000	103.20000	63.30000	-1.00000	-6.9159	0.0	0.0	-6.9159

Structure: R | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	103.20000	63.30000	-1.00000	-6.9159	0.0	6.9159	0.0
0.91429	102.28571	63.30000	-1.00000	-7.3896	0.0	7.3896	0.0
1.8286	101.37143	63.30000	-1.00000	-7.8804	0.0	7.8804	0.0
2.7429	100.45714	63.30000	-1.00000	-8.3902	0.0	8.3902	0.0
3.6571	99.54286	63.30000	-1.00000	-8.9204	0.0	8.9204	0.0
4.5714	98.62857	63.30000	-1.00000	-9.4727	0.0	9.4727	0.0
5.4857	97.71429	63.30000	-1.00000	-10.049	0.0	10.049	0.0
6.4000	96.80000	63.30000	-1.00000	-10.650	0.0	10.650	0.0

Structure: S | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	96.80000	63.30000	-1.00000	-10.650	0.0	0.28773	10.646
1.8507	96.75000	65.15000	-1.00000	-10.684	0.0	0.28864	10.680
3.7014	96.70000	67.00000	-1.00000	-10.717	0.0	0.28955	10.713
5.5520	96.65000	68.85000	-1.00000	-10.751	0.0	0.29046	10.747
7.4027	96.60000	70.70000	-1.00000	-10.785	0.0	0.29138	10.781
9.2534	96.55000	72.55000	-1.00000	-10.819	0.0	0.29230	10.815
11.104	96.50000	74.40000	-1.00000	-10.853	0.0	0.29322	10.849
12.955	96.45000	76.25000	-1.00000	-3.3825	-6.5659	-6.4722	3.5586
14.805	96.40000	78.10000	-1.00000	-1.5197	-6.6486	-6.6051	1.6987
16.656	96.35000	79.95000	-1.00000	-0.83981	-5.9907	-5.9658	1.0014
18.507	96.30000	81.80000	-1.00000	-0.51107	-5.2567	-5.2410	0.65290

Structure: T | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	96.30000	81.80000	-1.00000	-0.51107	-5.2567	-0.51107	-5.2567
0.90000	97.20000	81.80000	-1.00000	-1.1031	-4.9640	-1.1031	-4.9640
1.8000	98.10000	81.80000	-1.00000	-1.5926	-4.5865	-1.5926	-4.5865
2.7000	99.00000	81.80000	-1.00000	-1.9647	-4.1606	-1.9647	-4.1606
3.6000	99.90000	81.80000	-1.00000	-2.2210	-3.7189	-2.2210	-3.7189
4.5000	100.80000	81.80000	-1.00000	-2.3734	-3.2862	-2.3734	-3.2862
5.4000	101.70000	81.80000	-1.00000	-2.4387	-2.8784	-2.4387	-2.8784

Structure: U | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	134.70000	67.60000	-3.00000	0.0	0.0	0.0	0.0
1.7000	133.00000	67.60000	-3.00000	0.0	0.0	0.0	0.0
3.4000	131.30000	67.60000	-3.00000	0.0	0.0	0.0	0.0
5.1000	129.60000	67.60000	-3.00000	0.0	0.0	0.0	0.0
6.8000	127.90000	67.60000	-3.00000	0.0	0.0	0.0	0.0
8.5000	126.20000	67.60000	-3.00000	0.0	0.0	0.0	0.0
10.200	124.50000	67.60000	-3.00000	0.0	0.0	0.0	0.0

Structure: V | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	124.50000	67.60000	-3.00000	0.0	0.0	0.0	0.0
0.83333	124.50000	68.43333	-3.00000	0.0	0.0	0.0	0.0
1.6667	124.50000	69.26667	-3.00000	0.0	0.0	0.0	0.0
2.5000	124.50000	70.10000	-3.00000	0.0	0.0	0.0	0.0

Structure: W | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	124.50000	70.10000	-3.00000	0.0	0.0	0.0	0.0
0.87143	123.62857	70.10000	-3.00000	0.0	0.0	0.0	0.0
1.7429	122.75714	70.10000	-3.00000	-0.21071	0.0	0.21071	0.0
2.6143	121.88571	70.10000	-3.00000	-0.42857	0.0	0.42857	0.0
3.4857	121.01429	70.10000	-3.00000	-0.64643	0.0	0.64643	0.0
4.3571	120.14286	70.10000	-3.00000	-0.86429	0.0	0.86429	0.0
5.2286	119.27143	70.10000	-3.00000	-1.0821	0.0	1.0821	0.0
6.1000	118.40000	70.10000	-3.00000	-1.3000	0.0	1.3000	0.0

Structure: X | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	118.40000	70.10000	-3.00000	-1.3000	0.0	0.0	1.3000
1.8375	118.40000	71.93750	-3.00000	-1.3000	0.0	0.0	1.3000

Dist.	Coordinates			Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
3.6750	118.40000	73.77500	-3.00000	-1.3000	0.0	0.0	-1.3000
5.5125	118.40000	75.61250	-3.00000	-0.85396	-0.037923	-0.037923	0.85396
7.3500	118.40000	77.45000	-3.00000	-0.80125	-0.10016	-0.10016	0.80125
9.1875	118.40000	79.28750	-3.00000	-0.72416	-0.14888	-0.14888	0.72416
11.025	118.40000	81.12500	-3.00000	-0.62786	-0.17968	-0.17968	0.62786
12.862	118.40000	82.96250	-3.00000	-0.51783	-0.18993	-0.18993	0.51783
14.700	118.40000	84.80000	-3.00000	-0.39932	-0.17864	-0.17864	0.39932

Structure: Y | Sub-structure:

Dist.	Coordinates				Displacements			
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	118.40000	84.80000	-3.00000	-0.39932	-0.17864	-0.39932	-0.17864
0.88750	119.28750	84.80000	-3.00000	-0.29530	-0.12716	-0.29530	-0.12716
1.7750	120.17500	84.80000	-3.00000	-0.18802	-0.078037	-0.18802	-0.078037
2.6625	121.06250	84.80000	-3.00000	-0.077784	-0.031159	-0.077784	-0.031159
3.5500	121.95000	84.80000	-3.00000	0.0	0.0	0.0	0.0
4.4375	122.83750	84.80000	-3.00000	0.0	0.0	0.0	0.0
5.3250	123.72500	84.80000	-3.00000	0.0	0.0	0.0	0.0
6.2125	124.61250	84.80000	-3.00000	0.0	0.0	0.0	0.0
7.1000	125.50000	84.80000	-3.00000	0.0	0.0	0.0	0.0

Structure: Z | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	125.50000	84.80000	-3.00000	0.0	0.0	0.0	0.0
0.90000	125.50000	85.70000	-3.00000	0.0	0.0	0.0	0.0
1.8000	125.50000	86.60000	-3.00000	0.0	0.0	0.0	0.0
2.7000	125.50000	87.50000	-3.00000	0.0	0.0	0.0	0.0

Structure: AA | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	125.50000	87.50000	-3.00000	0.0	0.0	0.0	0.0
0.92000	126.42000	87.50000	-3.00000	0.0	0.0	0.0	0.0
1.8400	127.34000	87.50000	-3.00000	0.0	0.0	0.0	0.0
2.7600	128.26000	87.50000	-3.00000	0.0	0.0	0.0	0.0
3.6800	129.18000	87.50000	-3.00000	0.0	0.0	0.0	0.0
4.6000	130.10000	87.50000	-3.00000	0.0	0.0	0.0	0.0
5.5200	131.02000	87.50000	-3.00000	0.0	0.0	0.0	0.0
6.4400	131.94000	87.50000	-3.00000	0.0	0.0	0.0	0.0
7.3600	132.86000	87.50000	-3.00000	0.0	0.0	0.0	0.0
8.2800	133.78000	87.50000	-3.00000	0.0	0.0	0.0	0.0
9.2000	134.70000	87.50000	-3.00000	0.0	0.0	0.0	0.0

Structure: NRTunnelTop | Sub-structure:

Dist.	Coordinates					Displacements	
	x	y	z	x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	20.70000	67.00000	-23.00000	0.0	0.0	0.0	0.0
0.99315	21.66165	67.24812	-23.00000	0.0	0.0	0.0	0.0
1.9863	22.62331	67.49624	-23.00000	0.0	0.0	0.0	0.0
2.9794	23.58496	67.74436	-23.00000	0.0	0.0	0.0	0.0
3.9726	24.54662	67.99248	-23.00000	0.0	0.0	0.0	0.0
4.9657	25.50827	68.24060	-23.00000	0.0	0.0	0.0	0.0
5.9589	26.46992	68.48872	-23.00000	0.0	0.0	0.0	0.0
6.9520	27.43158	68.73684	-23.00000	0.0	0.0	0.0	0.0
7.9452	28.39323	68.98496	-23.00000	0.0	0.0	0.0	0.0
8.9383	29.35489	69.23308	-23.00000	0.0	0.0	0.0	0.0
9.9315	30.31654	69.48120	-23.00000	0.0	0.0	0.0	0.0
10.925	31.27820	69.72932	-23.00000	0.0	0.0	0.0	0.0
11.918	32.23985	69.97744	-23.00000	0.0	0.0	0.0	0.0
12.911	33.20150	70.22556	-23.00000	0.0	0.0	0.0	0.0
13.904	34.16316	70.47368	-23.00000	0.0	0.0	0.0	0.0
14.897	35.12481	70.72180	-23.00000	0.0	0.0	0.0	0.0
15.890	36.08647	70.96992	-23.00000	0.0	0.0	0.0	0.0
16.884	37.04812	71.21805	-23.00000	0.0	0.0	0.0	0.0
17.877	38.00977	71.46617	-23.00000	0.0	0.0	0.0	0.0
18.870	38.97143	71.71429	-23.00000	0.0	0.0	0.0	0.0
19.863	39.93308	71.96241	-23.00000	0.0	0.0	0.0	0.0
20.856	40.89474	72.21053	-23.00000	0.0	0.0	0.0	0.0
21.849	41.85639	72.45865	-23.00000	0.0	0.0	0.0	0.0
22.842	42.81805	72.70677	-23.00000	0.0	0.0	0.0	0.0
23.836	43.77970	72.95489	-23.00000	0.0	0.0	0.0	0.0
24.829	44.74135	73.20301	-23.00000	0.0	0.0	0.0	0.0
25.822	45.70301	73.45113	-23.00000	0.0	0.0	0.0	0.0
26.815	46.66466	73.69925	-23.00000	0.0	0.0	0.0	0.0
27.808	47.62632	73.94737	-23.00000	0.0	0.0	0.0	0.0
28.801	48.58797	74.19549	-23.00000	0.0	0.0	0.0	0.0
29.794	49.54962	74.44361	-23.00000	0.0	0.0	0.0	0.0
30.788	50.51128	74.69173	-23.00000	0.0	0.0	0.0	0.0
31.781	51.47293	74.93985	-23.00000	0.0	0.0	0.0	0.0
32.774	52.43459	75.18797	-23.00000	0.0	0.0	0.0	0.0
33.767	53.39624	75.43609	-23.00000	0.0	0.0	0.0	0.0
34.760	54.35789	75.68421	-23.00000	0.0	0.0	0.0	0.0
35.753	55.31955	75.93233	-23.00000	0.0	0.0	0.0	0.0
36.746	56.28120	76.18045	-23.00000	0.0	0.0	0.0	0.0
37.740	57.24286	76.42857	-23.00000	0.0	0.0	0.0	0.0
38.733	58.20451	76.67669	-23.00000	0.0	0.0	0.0	0.0
39.726	59.16617	76.92481	-23.00000	0.0	0.0	0.0	0.0
40.719	60.12782	77.17293	-23.00000	0.0	0.0	0.0	0.0
41.712	61.08947	77.42105	-23.00000	0.0	0.0	0.0	0.0
42.705	62.05113	77.66917	-23.00000	0.0	0.0	0.0	0.0
43.698	63.01278	77.91729	-23.00000	0.0	0.0	0.0	0.0
44.692	63.97444	78.16541	-23.00000	0.0	0.0	0.0	0.0
45.685	64.93609	78.41353	-23.00000	0.0	0.0	0.0	0.0
46.678	65.89774	78.66165	-23.00000	0.0	0.0	0.0	0.0
47.671	66.85940	78.90977	-23.00000	0.0	0.0	0.0	0.0
48.664	67.82105	79.15789	-23.00000	0.0	0.0	0.0	0.0
49.657	68.78271	79.40602	-23.00000	0.0	0.0	0.0	0.0
50.651	69.74436	79.65414	-23.00000	0.0	0.0	0.0	0.0
51.644	70.70602	79.90226	-23.00000	0.0	0.0	0.0	0.0
52.637	71.66767	80.15038	-23.00000	0.0	0.0	0.0	0.0
53.630	72.62932	80.39850	-23.00000	0.0	0.0	0.0	0.0
54.623	73.59098	80.64662	-23.00000	0.0	0.0	0.0	0.0
55.616	74.55263	80.89474	-23.00000	0.0	0.0	0.0	0.0
56.609	75.51429	81.14286	-23.00000	0.0	0.0	0.0	0.0
57.603	76.47594	81.39098	-23.00000	0.0	0.0	0.0	0.0
58.596	77.43759	81.63910	-23.00000	0.0	0.0	0.0	0.0
59.589	78.39925	81.88722	-23.00000	0.0	0.0	0.0	0.0
60.582	79.36090	82.13534	-23.00000	0.0	0.0	0.0	0.0
61.575	80.32256	82.38346	-23.00000	0.0	0.0	0.0	0.0
62.568	81.28421	82.63158	-23.00000	0.0	0.0	0.0	0.0
63.561	82.24586	82.87970	-23.00000	0.0	0.0	0.0	0.0
64.555	83.20752	83.12782	-23.00000	0.0	0.0	0.0	0.0
65.548	84.16917	83.37594	-23.00000	0.0	0.0	0.0	0.0
66.541	85.13083	83.62406	-23.00000	0.0	0.0	0.0	0.0
67.534	86.09248	83.87218	-23.00000	0.0	0.0	0.0	0.0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the	Horizontal displacement perpendicular
68.527	87.05414	84.12030	-23.00000	0.0	0.0	0.0	0.0
69.520	88.01579	84.36842	-23.00000	0.0	0.0	0.0	0.0
70.513	88.97744	84.61654	-23.00000	0.0	0.0	0.0	0.0
71.507	89.93910	84.86466	-23.00000	0.0	0.0	0.0	0.0
72.500	90.90075	85.11278	-23.00000	0.0	0.0	0.0	0.0
73.493	91.86241	85.36090	-23.00000	0.0	0.0	0.0	0.0
74.486	92.82406	85.60902	-23.00000	0.0	0.0	0.0	0.0
75.479	93.78571	85.85714	-23.00000	0.0	0.0	0.0	0.0
76.472	94.74737	86.10526	-23.00000	0.0	0.0	0.0	0.0
77.466	95.70902	86.35338	-23.00000	0.0	0.0	0.0	0.0
78.459	96.67068	86.60150	-23.00000	0.0	0.0	0.0	0.0
79.452	97.63233	86.84962	-23.00000	0.0	0.0	0.0	0.0
80.445	98.59398	87.09774	-23.00000	0.0	0.0	0.0	0.0
81.438	99.55564	87.34586	-23.00000	0.0	0.0	0.0	0.0
82.431	100.51729	87.59398	-23.00000	0.0	0.0	0.0	0.0
83.424	101.47895	87.84211	-23.00000	0.0	0.0	0.0	0.0
84.418	102.44060	88.09023	-23.00000	0.0	0.0	0.0	0.0
85.411	103.40226	88.33835	-23.00000	0.0	0.0	0.0	0.0
86.404	104.36391	88.58647	-23.00000	0.0	0.0	0.0	0.0
87.397	105.32556	88.83459	-23.00000	0.0	0.0	0.0	0.0
88.390	106.28722	89.08271	-23.00000	0.0	0.0	0.0	0.0
89.383	107.24887	89.33083	-23.00000	0.0	0.0	0.0	0.0
90.376	108.21053	89.57895	-23.00000	0.0	0.0	0.0	0.0
91.370	109.17218	89.82707	-23.00000	0.0	0.0	0.0	0.0
92.363	110.13383	90.07519	-23.00000	0.0	0.0	0.0	0.0
93.356	111.09549	90.32331	-23.00000	0.0	0.0	0.0	0.0
94.349	112.05714	90.57143	-23.00000	0.0	0.0	0.0	0.0
95.342	113.01880	90.81955	-23.00000	0.0	0.0	0.0	0.0
96.335	113.98045	91.06767	-23.00000	0.0	0.0	0.0	0.0
97.328	114.94211	91.31579	-23.00000	0.0	0.0	0.0	0.0
98.322	115.90376	91.56391	-23.00000	0.0	0.0	0.0	0.0
99.315	116.86541	91.81203	-23.00000	0.0	0.0	0.0	0.0
100.31	117.82707	92.06015	-23.00000	0.0	0.0	0.0	0.0
101.30	118.78872	92.30827	-23.00000	0.0	0.0	0.0	0.0
102.29	119.75038	92.55639	-23.00000	0.0	0.0	0.0	0.0
103.29	120.71203	92.80451	-23.00000	0.0	0.0	0.0	0.0
104.28	121.67368	93.05263	-23.00000	0.0	0.0	0.0	0.0
105.27	122.63534	93.30075	-23.00000	0.0	0.0	0.0	0.0
106.27	123.59699	93.54887	-23.00000	0.0	0.0	0.0	0.0
107.26	124.55865	93.79699	-23.00000	0.0	0.0	0.0	0.0
108.25	125.52030	94.04511	-23.00000	0.0	0.0	0.0	0.0
109.25	126.48195	94.29323	-23.00000	0.0	0.0	0.0	0.0
110.24	127.44361	94.54135	-23.00000	0.0	0.0	0.0	0.0
111.23	128.40526	94.78947	-23.00000	0.0	0.0	0.0	0.0
112.23	129.36692	95.03759	-23.00000	0.0	0.0	0.0	0.0
113.22	130.32857	95.28571	-23.00000	0.0	0.0	0.0	0.0
114.21	131.29023	95.53383	-23.00000	0.0	0.0	0.0	0.0
115.21	132.25188	95.78195	-23.00000	0.0	0.0	0.0	0.0
116.20	133.21353	96.03008	-23.00000	0.0	0.0	0.0	0.0
117.19	134.17519	96.27820	-23.00000	0.0	0.0	0.0	0.0
118.18	135.13684	96.52632	-23.00000	0.0	0.0	0.0	0.0
119.18	136.09850	96.77444	-23.00000	0.0	0.0	0.0	0.0
120.17	137.06015	97.02256	-23.00000	0.0	0.0	0.0	0.0
121.16	138.02180	97.27068	-23.00000	0.0	0.0	0.0	0.0
122.16	138.98346	97.51880	-23.00000	0.0	0.0	0.0	0.0
123.15	139.94511	97.76692	-23.00000	0.0	0.0	0.0	0.0
124.14	140.90677	98.01504	-23.00000	0.0	0.0	0.0	0.0
125.14	141.86842	98.26316	-23.00000	0.0	0.0	0.0	0.0
126.13	142.83008	98.51128	-23.00000	0.0	0.0	0.0	0.0
127.12	143.79173	98.75940	-23.00000	0.0	0.0	0.0	0.0
128.12	144.75338	99.00752	-23.00000	0.0	0.0	0.0	0.0
129.11	145.71504	99.25564	-23.00000	0.0	0.0	0.0	0.0
130.10	146.67669	99.50376	-23.00000	0.0	0.0	0.0	0.0
131.10	147.63835	99.75188	-23.00000	0.0	0.0	0.0	0.0
132.09	148.60000	100.00000	-23.00000	0.0	0.0	0.0	0.0

Structure: NRTunnelBase | Sub-structure:

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the Line	Horizontal displacement perpendicular to Line
[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]
0.0	20.70000	67.00000	-28.00000	0.0	0.0	0.0	0.0
0.99315	21.66165	67.24812	-28.00000	0.0	0.0	0.0	0.0
1.9863	22.62331	67.49624	-28.00000	0.0	0.0	0.0	0.0
2.9794	23.58496	67.74436	-28.00000	0.0	0.0	0.0	0.0
3.9726	24.54662	67.99248	-28.00000	0.0	0.0	0.0	0.0
4.9657	25.50827	68.24060	-28.00000	0.0	0.0	0.0	0.0
5.9589	26.46992	68.48872	-28.00000	0.0	0.0	0.0	0.0
6.9520	27.43158	68.73684	-28.00000	0.0	0.0	0.0	0.0
7.9452	28.39323	68.98496	-28.00000	0.0	0.0	0.0	0.0
8.9383	29.35489	69.23308	-28.00000	0.0	0.0	0.0	0.0
9.9315	30.31654	69.48120	-28.00000	0.0	0.0	0.0	0.0
10.925	31.27820	69.72932	-28.00000	0.0	0.0	0.0	0.0
11.918	32.23985	69.97744	-28.00000	0.0	0.0	0.0	0.0
12.911	33.20150	70.22556	-28.00000	0.0	0.0	0.0	0.0
13.904	34.16316	70.47368	-28.00000	0.0	0.0	0.0	0.0
14.897	35.12481	70.72180	-28.00000	0.0	0.0	0.0	0.0
15.890	36.08647	70.96992	-28.00000	0.0	0.0	0.0	0.0
16.884	37.04812	71.21805	-28.00000	0.0	0.0	0.0	0.0
17.877	38.00977	71.46617	-28.00000	0.0	0.0	0.0	0.0
18.870	38.97143	71.71429	-28.00000	0.0	0.0	0.0	0.0
19.863	39.93308	71.96241	-28.00000	0.0	0.0	0.0	0.0
20.856	40.89474	72.21053	-28.00000	0.0	0.0	0.0	0.0
21.849	41.85639	72.45865	-28.00000	0.0	0.0	0.0	0.0
22.842	42.81805	72.70677	-28.00000	0.0	0.0	0.0	0.0
23.836	43.77970	72.95489	-28.00000	0.0	0.0	0.0	0.0
24.829	44.74135	73.20301	-28.00000	0.0	0.0	0.0	0.0
25.822	45.70301	73.45113	-28.00000	0.0	0.0	0.0	0.0
26.815	46.66466	73.69925	-28.00000	0.0	0.0	0.0	0.0
27.808	47.62632	73.94737	-28.00000	0.0	0.0	0.0	0.0
28.801	48.58797	74.19549	-28.00000	0.0	0.0	0.0	0.0
29.794	49.54962	74.44361	-28.00000	0.0	0.0	0.0	0.0
30.788	50.51128	74.69173	-28.00000	0.0	0.0	0.0	0.0
31.781	51.47293	74.93985	-28.00000	0.0	0.0	0.0	0.0
32.774	52.43459	75.18797	-28.00000	0.0	0.0	0.0	0.0
33.767	53.39624	75.43609	-28.00000	0.0	0.0	0.0	0.0
34.760	54.35789	75.68421	-28.00000	0.0	0.0	0.0	0.0
35.753	55.31955	75.93233	-28.00000	0.0	0.0	0.0	0.0
36.746	56.28120	76.18045	-28.00000	0.0	0.0	0.0	0.0
37.740	57.24286	76.42857	-28.00000	0.0	0.0	0.0	0.0
38.733	58.20451	76.67669	-28.00000	0.0	0.0	0.0	0.0
39.726	59.16617	76.92481	-28.00000	0.0	0.0	0.0	0.0
40.719	60.12782	77.17293	-28.00000	0.0	0.0	0.0	0.0
41.712	61.08947	77.42105	-28.00000	0.0	0.0	0.0	0.0
42.705	62.05113	77.66917	-28.00000	0.0	0.0	0.0	0.0
43.698	63.01278	77.91729	-28.00000	0.0	0.0	0.0	0.0
44.692	63.97444	78.16541	-28.00000	0.0	0.0	0.0	0.0
45.685	64.93609	78.41353	-28.00000	0.0	0.0	0.0	0.0
46.678	65.89774	78.66165	-28.00000	0.0	0.0	0.0	0.0
47.671	66.85940	78.90977	-28.00000	0.0	0.0	0.0	0.0
48.664	67.82105	79.15789	-28.00000	0.0	0.0	0.0	0.0
49.657	68.78271	79.40602	-28.00000	0.0	0.0	0.0	0.0
50.651	69.74436	79.65414	-28.00000	0.0	0.0	0.0	0.0
51.644	70.70602	79.90226	-28.00000	0.0	0.0	0.0	0.0
52.637	71.66767	80.15038	-28.00000	0.0	0.0	0.0	0.0
53.630	72.62932	80.39850	-28.00000	0.0	0.0	0.0	0.0
54.623	73.59098	80.64662	-28.00000	0.0	0.0	0.0	0.0
55.616	74.55263	80.89474	-28.00000	0.0	0.0	0.0	0.0
56.609	75.51429	81.14286	-28.00000	0.0	0.0	0.0	0.0
57.603	76.47594	81.39098	-28.00000	0.0	0.0	0.0	0.0
58.596	77.43759	81.63910	-28.00000	0.0	0.0	0.0	0.0
59.589	78.39925	81.88722	-28.00000	0.0	0.0	0.0	0.0
60.582	79.36090	82.13534	-28.00000	0.0	0.0	0.0	0.0
61.575	80.32256	82.38346	-28.00000	0.0	0.0	0.0	0.0
62.568	81.28421	82.63158	-28.00000	0.0	0.0	0.0	0.0
63.561	82.24586	82.87970	-28.00000	0.0	0.0	0.0	0.0
64.555	83.20752	83.12782	-28.00000	0.0	0.0	0.0	0.0

Dist.	Coordinates x	y	z	Displacements x	y	Horizontal displacement along the	Horizontal displacement perpendicular
65.548	84.16917	83.37594	-28.00000	0.0	0.0	0.0	0.0
66.541	85.13083	83.62406	-28.00000	0.0	0.0	0.0	0.0
67.534	86.09248	83.87218	-28.00000	0.0	0.0	0.0	0.0
68.527	87.05414	84.12030	-28.00000	0.0	0.0	0.0	0.0
69.520	88.01579	84.36842	-28.00000	0.0	0.0	0.0	0.0
70.513	88.97744	84.61654	-28.00000	0.0	0.0	0.0	0.0
71.507	89.93910	84.86466	-28.00000	0.0	0.0	0.0	0.0
72.500	90.90075	85.11278	-28.00000	0.0	0.0	0.0	0.0
73.493	91.86241	85.36090	-28.00000	0.0	0.0	0.0	0.0
74.486	92.82406	85.60902	-28.00000	0.0	0.0	0.0	0.0
75.479	93.78571	85.85714	-28.00000	0.0	0.0	0.0	0.0
76.472	94.74737	86.10526	-28.00000	0.0	0.0	0.0	0.0
77.466	95.70902	86.35338	-28.00000	0.0	0.0	0.0	0.0
78.459	96.67068	86.60150	-28.00000	0.0	0.0	0.0	0.0
79.452	97.63233	86.84962	-28.00000	0.0	0.0	0.0	0.0
80.445	98.59398	87.09774	-28.00000	0.0	0.0	0.0	0.0
81.438	99.55564	87.34586	-28.00000	0.0	0.0	0.0	0.0
82.431	100.51729	87.59398	-28.00000	0.0	0.0	0.0	0.0
83.424	101.47895	87.84211	-28.00000	0.0	0.0	0.0	0.0
84.418	102.44060	88.09023	-28.00000	0.0	0.0	0.0	0.0
85.411	103.40226	88.33835	-28.00000	0.0	0.0	0.0	0.0
86.404	104.36391	88.58647	-28.00000	0.0	0.0	0.0	0.0
87.397	105.32556	88.83459	-28.00000	0.0	0.0	0.0	0.0
88.390	106.28722	89.08271	-28.00000	0.0	0.0	0.0	0.0
89.383	107.24887	89.33083	-28.00000	0.0	0.0	0.0	0.0
90.376	108.21053	89.57895	-28.00000	0.0	0.0	0.0	0.0
91.370	109.17218	89.82707	-28.00000	0.0	0.0	0.0	0.0
92.363	110.13383	90.07519	-28.00000	0.0	0.0	0.0	0.0
93.356	111.09549	90.32331	-28.00000	0.0	0.0	0.0	0.0
94.349	112.05714	90.57143	-28.00000	0.0	0.0	0.0	0.0
95.342	113.01880	90.81955	-28.00000	0.0	0.0	0.0	0.0
96.335	113.98045	91.06767	-28.00000	0.0	0.0	0.0	0.0
97.328	114.94211	91.31579	-28.00000	0.0	0.0	0.0	0.0
98.322	115.90376	91.56391	-28.00000	0.0	0.0	0.0	0.0
99.315	116.86541	91.81203	-28.00000	0.0	0.0	0.0	0.0
100.31	117.82707	92.06015	-28.00000	0.0	0.0	0.0	0.0
101.30	118.78872	92.30827	-28.00000	0.0	0.0	0.0	0.0
102.29	119.75038	92.55639	-28.00000	0.0	0.0	0.0	0.0
103.29	120.71203	92.80451	-28.00000	0.0	0.0	0.0	0.0
104.28	121.67368	93.05263	-28.00000	0.0	0.0	0.0	0.0
105.27	122.63534	93.30075	-28.00000	0.0	0.0	0.0	0.0
106.27	123.59699	93.54887	-28.00000	0.0	0.0	0.0	0.0
107.26	124.55865	93.79699	-28.00000	0.0	0.0	0.0	0.0
108.25	125.52030	94.04511	-28.00000	0.0	0.0	0.0	0.0
109.25	126.48195	94.29323	-28.00000	0.0	0.0	0.0	0.0
110.24	127.44361	94.54135	-28.00000	0.0	0.0	0.0	0.0
111.23	128.40526	94.78947	-28.00000	0.0	0.0	0.0	0.0
112.23	129.36692	95.03759	-28.00000	0.0	0.0	0.0	0.0
113.22	130.32857	95.28571	-28.00000	0.0	0.0	0.0	0.0
114.21	131.29023	95.53383	-28.00000	0.0	0.0	0.0	0.0
115.21	132.25188	95.78195	-28.00000	0.0	0.0	0.0	0.0
116.20	133.21353	96.03008	-28.00000	0.0	0.0	0.0	0.0
117.19	134.17519	96.27820	-28.00000	0.0	0.0	0.0	0.0
118.18	135.13684	96.52632	-28.00000	0.0	0.0	0.0	0.0
119.18	136.09850	96.77444	-28.00000	0.0	0.0	0.0	0.0
120.17	137.06015	97.02256	-28.00000	0.0	0.0	0.0	0.0
121.16	138.02180	97.27068	-28.00000	0.0	0.0	0.0	0.0
122.16	138.98346	97.51880	-28.00000	0.0	0.0	0.0	0.0
123.15	139.94511	97.76692	-28.00000	0.0	0.0	0.0	0.0
124.14	140.90677	98.01504	-28.00000	0.0	0.0	0.0	0.0
125.14	141.86842	98.26316	-28.00000	0.0	0.0	0.0	0.0
126.13	142.83008	98.51128	-28.00000	0.0	0.0	0.0	0.0
127.12	143.79173	98.75940	-28.00000	0.0	0.0	0.0	0.0
128.12	144.75338	99.00752	-28.00000	0.0	0.0	0.0	0.0
129.11	145.71504	99.25564	-28.00000	0.0	0.0	0.0	0.0
130.10	146.67669	99.50376	-28.00000	0.0	0.0	0.0	0.0
131.10	147.63835	99.75188	-28.00000	0.0	0.0	0.0	0.0
132.09	148.60000	100.00000	-28.00000	0.0	0.0	0.0	0.0

Specific Building Damage Results - Vertical Displacements

Structure: A | Sub-structure:

Dist. [m]	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	54.60000	64.70000	-1.00000	1.6949
0.91429	55.51429	64.70000	-1.00000	2.0597
1.8286	56.42857	64.70000	-1.00000	2.4450
2.7429	57.34286	64.70000	-1.00000	2.8484
3.6571	58.25714	64.70000	-1.00000	3.2664
4.5714	59.17143	64.70000	-1.00000	3.6947
5.4857	60.08571	64.70000	-1.00000	4.1280
6.4000	61.00000	64.70000	-1.00000	4.5605

Structure: B | Sub-structure:

Dist. [m]	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	61.00000	64.70000	-1.00000	4.5605
0.70000	61.00000	65.40000	-1.00000	4.5605
1.4000	61.00000	66.10000	-1.00000	4.5605

Structure: C | Sub-structure:

Dist. [m]	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	61.00000	66.10000	-1.00000	4.5605
0.95000	61.95000	66.10000	-1.00000	5.0013
1.9000	62.90000	66.10000	-1.00000	5.4250
2.8500	63.85000	66.10000	-1.00000	5.8217
3.8000	64.80000	66.10000	-1.00000	6.1806

Structure: D | Sub-structure:

Dist. [m]	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	64.80000	66.10000	-1.00000	6.1806
0.90000	64.80000	67.00000	-1.00000	6.1806
1.8000	64.80000	67.90000	-1.00000	6.1806
2.7000	64.80000	68.80000	-1.00000	6.1806
3.6000	64.80000	69.70000	-1.00000	6.1806
4.5000	64.80000	70.60000	-1.00000	6.1806
5.4000	64.80000	71.50000	-1.00000	6.1806
6.3000	64.80000	72.40000	-1.00000	6.1806
7.2000	64.80000	73.30000	-1.00000	6.1806

Structure: E | Sub-structure:

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

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	64.80000	73.30000	-1.00000	6.1806
1.9125	62.88750	73.30000	-1.00000	5.4196
3.8250	60.97500	73.30000	-1.00000	4.5487
5.7375	59.06250	73.30000	-1.00000	3.6433
7.6500	57.15000	73.30000	-1.00000	2.7620
9.5625	55.23750	73.30000	-1.00000	1.9470
11.475	53.32500	73.30000	-1.00000	1.2238
13.387	51.41250	73.30000	-1.00000	0.60137
15.300	49.50000	73.30000	-1.00000	0.19204

Structure: F | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	49.50000	73.30000	-1.00000	0.19204
0.87143	49.50000	72.42857	-1.00000	0.19204
1.7429	49.50000	71.55714	-1.00000	0.19204
2.6143	49.50000	70.68571	-1.00000	0.19204
3.4857	49.50000	69.81429	-1.00000	0.19204
4.3571	49.50000	68.94286	-1.00000	0.19204
5.2286	49.50000	68.07143	-1.00000	0.19204
6.1000	49.50000	67.20000	-1.00000	0.19204

Structure: G | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	40.80000	55.60000	-2.00000	0.0
1.9714	42.77143	55.60000	-2.00000	0.0
3.9429	44.74286	55.60000	-2.00000	0.033367
5.9143	46.71429	55.60000	-2.00000	0.090886
7.8857	48.68571	55.60000	-2.00000	0.15243
9.8571	50.65714	55.60000	-2.00000	0.38216
11.829	52.62857	55.60000	-2.00000	0.98552
13.800	54.60000	55.60000	-2.00000	1.6949

Structure: H | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.60000	55.60000	-2.00000	1.6949
1.9333	54.60000	57.53333	-2.00000	1.6949
3.8667	54.60000	59.46667	-2.00000	1.6949
5.8000	54.60000	61.40000	-2.00000	1.6949
7.7333	54.60000	63.33333	-2.00000	1.6949
9.6667	54.60000	65.26667	-2.00000	1.6949
11.600	54.60000	67.20000	-2.00000	1.6949

Structure: I | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	54.60000	67.20000	-2.00000	1.6949
1.9714	52.62857	67.20000	-2.00000	0.98552
3.9429	50.65714	67.20000	-2.00000	0.38216
5.9143	48.68571	67.20000	-2.00000	0.15243
7.8857	46.71429	67.20000	-2.00000	0.090886
9.8571	44.74286	67.20000	-2.00000	0.033367
11.829	42.77143	67.20000	-2.00000	0.0
13.800	40.80000	67.20000	-2.00000	0.0

Structure: J | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	40.80000	67.20000	-2.00000	0.0
1.9333	40.80000	65.26667	-2.00000	0.0
3.8667	40.80000	63.33333	-2.00000	0.0
5.8000	40.80000	61.40000	-2.00000	0.0
7.7333	40.80000	59.46667	-2.00000	0.0
9.6667	40.80000	57.53333	-2.00000	0.0
11.600	40.80000	55.60000	-2.00000	0.0

Structure: K | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	101.70000	67.70000	-1.00000	6.5615
0.96250	102.66250	67.70000	-1.00000	6.2630
1.9250	103.62500	67.70000	-1.00000	5.9105
2.8875	104.58750	67.70000	-1.00000	5.5164
3.8500	105.55000	67.70000	-1.00000	5.0923
4.8125	106.51250	67.70000	-1.00000	4.6484
5.7750	107.47500	67.70000	-1.00000	4.1941
6.7375	108.43750	67.70000	-1.00000	3.7377
7.7000	109.40000	67.70000	-1.00000	3.2863

Structure: L | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	109.40000	67.70000	-1.00000	3.2863
1.0000	109.40000	68.70000	-1.00000	3.2863
2.0000	109.40000	69.70000	-1.00000	3.2863

Structure: M | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	109.40000	69.70000	-1.00000	3.2863
0.91250	110.31250	69.70000	-1.00000	2.8685
1.8250	111.22500	69.70000	-1.00000	2.4651
2.7375	112.13750	69.70000	-1.00000	2.0795
3.6500	113.05000	69.70000	-1.00000	1.7143
4.5625	113.96250	69.70000	-1.00000	1.3713
5.4750	114.87500	69.70000	-1.00000	1.0514

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
6.3875	115.78750	69.70000	-1.00000	0.75450
7.3000	116.70000	69.70000	-1.00000	0.47990

Structure: N | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	116.70000	69.70000	-1.00000	0.47990
1.8002	116.72857	71.50000	-1.00000	0.47165
3.6005	116.75714	73.30000	-1.00000	0.46341
5.4007	116.78571	75.10000	-1.00000	0.35571
7.2009	116.81429	76.90000	-1.00000	0.31288
9.0011	116.84286	78.70000	-1.00000	0.23373
10.801	116.87143	80.50000	-1.00000	0.13708
12.602	116.90000	82.30000	-1.00000	0.11263

Structure: O | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	116.90000	82.30000	-1.00000	0.11263
1.9000	115.00000	82.30000	-1.00000	0.41430
3.8000	113.10000	82.30000	-1.00000	0.88268
5.7000	111.20000	82.30000	-1.00000	1.3854
7.6000	109.30000	82.30000	-1.00000	1.9106
9.5000	107.40000	82.30000	-1.00000	2.4375
11.400	105.50000	82.30000	-1.00000	2.9381
13.300	103.60000	82.30000	-1.00000	3.3789
15.200	101.70000	82.30000	-1.00000	3.8602

Structure: P | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	101.70000	82.30000	-1.00000	3.8602
1.8252	101.72500	80.47500	-1.00000	4.2278
3.6503	101.75000	78.65000	-1.00000	4.6846
5.4755	101.77500	76.82500	-1.00000	5.0739
7.3007	101.80000	75.00000	-1.00000	5.3699
9.1259	101.82500	73.17500	-1.00000	6.5263
10.951	101.85000	71.35000	-1.00000	6.5191
12.776	101.87500	69.52500	-1.00000	6.5119
14.601	101.90000	67.70000	-1.00000	6.5046

Structure: Q | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	103.20000	67.70000	-1.00000	6.0720
0.88000	103.20000	66.82000	-1.00000	6.0720
1.7600	103.20000	65.94000	-1.00000	6.0720
2.6400	103.20000	65.06000	-1.00000	6.0720
3.5200	103.20000	64.18000	-1.00000	6.0720
4.4000	103.20000	63.30000	-1.00000	6.0720

Structure: R | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	103.20000	63.30000	-1.00000	6.0720
0.91429	102.28571	63.30000	-1.00000	6.3870
1.8286	101.37143	63.30000	-1.00000	6.6487
2.7429	100.45714	63.30000	-1.00000	6.8449
3.6571	99.54286	63.30000	-1.00000	6.9630
4.5714	98.62857	63.30000	-1.00000	6.9891
5.4857	97.71429	63.30000	-1.00000	6.9087
6.4000	96.80000	63.30000	-1.00000	6.7065

Structure: S | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	96.80000	63.30000	-1.00000	6.7065
1.8507	96.75000	65.15000	-1.00000	6.6916
3.7014	96.70000	67.00000	-1.00000	6.6763
5.5520	96.65000	68.85000	-1.00000	6.6606
7.4027	96.60000	70.70000	-1.00000	6.6444
9.2534	96.55000	72.55000	-1.00000	6.6278
11.104	96.50000	74.40000	-1.00000	6.6108
12.955	96.45000	76.25000	-1.00000	5.6368
14.805	96.40000	78.10000	-1.00000	5.7342
16.656	96.35000	79.95000	-1.00000	5.5059
18.507	96.30000	81.80000	-1.00000	5.0629

Structure: T | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	96.30000	81.80000	-1.00000	5.0629
0.90000	97.20000	81.80000	-1.00000	4.9353
1.8000	98.10000	81.80000	-1.00000	4.7812
2.7000	99.00000	81.80000	-1.00000	4.6042
3.6000	99.90000	81.80000	-1.00000	4.4075
4.5000	100.80000	81.80000	-1.00000	4.1943
5.4000	101.70000	81.80000	-1.00000	3.9673

Structure: U | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	134.70000	67.60000	-3.00000	0.0
1.7000	133.00000	67.60000	-3.00000	0.0
3.4000	131.30000	67.60000	-3.00000	0.0
5.1000	129.60000	67.60000	-3.00000	0.0
6.8000	127.90000	67.60000	-3.00000	0.0
8.5000	126.20000	67.60000	-3.00000	0.0
10.200	124.50000	67.60000	-3.00000	0.0

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

Structure: V | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	124.50000	67.60000	-3.00000	0.0
0.83333	124.50000	68.43333	-3.00000	0.0
1.6667	124.50000	69.26667	-3.00000	0.0
2.5000	124.50000	70.10000	-3.00000	0.0

Structure: W | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	124.50000	70.10000	-3.00000	0.0
0.87143	123.62857	70.10000	-3.00000	0.0
1.7429	122.75714	70.10000	-3.00000	0.040932
2.6143	121.88571	70.10000	-3.00000	0.067998
3.4857	121.01429	70.10000	-3.00000	0.090174
4.3571	120.14286	70.10000	-3.00000	0.11320
5.2286	119.27143	70.10000	-3.00000	0.14212
6.1000	118.40000	70.10000	-3.00000	0.18123

Structure: X | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	118.40000	70.10000	-3.00000	0.18123
1.8375	118.40000	71.93750	-3.00000	0.18123
3.6750	118.40000	73.77500	-3.00000	0.18123
5.5125	118.40000	75.61250	-3.00000	0.11891
7.3500	118.40000	77.45000	-3.00000	0.11078
9.1875	118.40000	79.28750	-3.00000	0.099134
11.025	118.40000	81.12500	-3.00000	0.085630
12.862	118.40000	82.96250	-3.00000	0.071823
14.700	118.40000	84.80000	-3.00000	0.058634

Structure: Y | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	118.40000	84.80000	-3.00000	0.058634
0.88750	119.28750	84.80000	-3.00000	0.047037
1.7750	120.17500	84.80000	-3.00000	0.034444
2.6625	121.06250	84.80000	-3.00000	0.017900
3.5500	121.95000	84.80000	-3.00000	0.0
4.4375	122.83750	84.80000	-3.00000	0.0
5.3250	123.72500	84.80000	-3.00000	0.0
6.2125	124.61250	84.80000	-3.00000	0.0
7.1000	125.50000	84.80000	-3.00000	0.0

Structure: Z | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	125.50000	84.80000	-3.00000	0.0
0.90000	125.50000	85.70000	-3.00000	0.0
1.8000	125.50000	86.60000	-3.00000	0.0
2.7000	125.50000	87.50000	-3.00000	0.0

Structure: AA | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	125.50000	87.50000	-3.00000	0.0
0.92000	126.42000	87.50000	-3.00000	0.0
1.8400	127.34000	87.50000	-3.00000	0.0
2.7600	128.26000	87.50000	-3.00000	0.0
3.6800	129.18000	87.50000	-3.00000	0.0
4.6000	130.10000	87.50000	-3.00000	0.0
5.5200	131.02000	87.50000	-3.00000	0.0
6.4400	131.94000	87.50000	-3.00000	0.0
7.3600	132.86000	87.50000	-3.00000	0.0
8.2800	133.78000	87.50000	-3.00000	0.0
9.2000	134.70000	87.50000	-3.00000	0.0

Structure: NRTunnelTop | Sub-structure:

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
Vertical Offset 1				
0.0	20.70000	67.00000	-23.00000	0.0
0.99315	21.66165	67.24812	-23.00000	0.0
1.9863	22.62331	67.49624	-23.00000	0.0
2.9794	23.58496	67.74436	-23.00000	0.0
3.9726	24.54662	67.99248	-23.00000	0.0
4.9657	25.50827	68.24060	-23.00000	0.0
5.9589	26.46992	68.48872	-23.00000	0.0
6.9520	27.43158	68.73684	-23.00000	0.0
7.9452	28.39323	68.98496	-23.00000	0.0
8.9383	29.35489	69.23308	-23.00000	0.0
9.9315	30.31654	69.48120	-23.00000	0.0
10.925	31.27820	69.72932	-23.00000	0.0
11.918	32.23985	69.97744	-23.00000	0.0
12.911	33.20150	70.22556	-23.00000	0.0
13.904	34.16316	70.47368	-23.00000	0.0
14.897	35.12481	70.72180	-23.00000	0.0
15.890	36.08647	70.96992	-23.00000	0.0
16.884	37.04812	71.21805	-23.00000	0.0
17.877	38.00977	71.46617	-23.00000	0.0
18.870	38.97143	71.71429	-23.00000	0.0
19.863	39.93308	71.96241	-23.00000	0.0
20.856	40.89474	72.21053	-23.00000	0.0
21.849	41.85639	72.45865	-23.00000	0.0
22.842	42.81805	72.70677	-23.00000	0.0
23.836	43.77970	72.95489	-23.00000	0.0
24.829	44.74135	73.20301	-23.00000	0.0
25.822	45.70301	73.45113	-23.00000	0.0
26.815	46.66466	73.69925	-23.00000	0.0
27.808	47.62632	73.94737	-23.00000	0.0
28.801	48.58797	74.19549	-23.00000	0.0
29.794	49.54962	74.44361	-23.00000	0.0
30.788	50.51128	74.69173	-23.00000	0.0

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
31.781	51.47293	74.93985	-23.00000	0.0
32.774	52.43459	75.18797	-23.00000	0.0
33.767	53.39624	75.43609	-23.00000	0.0
34.760	54.35789	75.68421	-23.00000	0.0
35.753	55.31955	75.93233	-23.00000	0.0
36.746	56.28120	76.18045	-23.00000	0.0
37.740	57.24286	76.42857	-23.00000	0.0
38.733	58.20451	76.67669	-23.00000	0.0
39.726	59.16617	76.92481	-23.00000	0.0
40.719	60.12782	77.17293	-23.00000	0.0
41.712	61.08947	77.42105	-23.00000	0.0
42.705	62.05113	77.66917	-23.00000	0.0
43.698	63.01278	77.91729	-23.00000	0.0
44.692	63.97444	78.16541	-23.00000	0.0
45.685	64.93609	78.41353	-23.00000	0.0
46.678	65.89774	78.66165	-23.00000	0.0
47.671	66.85940	78.90977	-23.00000	0.0
48.664	67.82105	79.15789	-23.00000	0.0
49.657	68.78271	79.40602	-23.00000	0.0
50.651	69.74436	79.65414	-23.00000	0.0
51.644	70.70602	79.90226	-23.00000	0.0
52.637	71.66767	80.15038	-23.00000	0.0
53.630	72.62932	80.39850	-23.00000	0.0
54.623	73.59098	80.64662	-23.00000	0.0
55.616	74.55263	80.89474	-23.00000	0.0
56.609	75.51429	81.14286	-23.00000	0.0
57.603	76.47594	81.39098	-23.00000	0.0
58.596	77.43759	81.63910	-23.00000	0.0
59.589	78.39925	81.88722	-23.00000	0.0
60.582	79.36090	82.13534	-23.00000	0.0
61.575	80.32256	82.38346	-23.00000	0.0
62.568	81.28421	82.63158	-23.00000	0.0
63.561	82.24586	82.87970	-23.00000	0.0
64.555	83.20752	83.12782	-23.00000	0.0
65.548	84.16917	83.37594	-23.00000	0.0
66.541	85.13083	83.62406	-23.00000	0.0
67.534	86.09248	83.87218	-23.00000	0.0
68.527	87.05414	84.12030	-23.00000	0.0
69.520	88.01579	84.36842	-23.00000	0.0
70.513	88.97744	84.61654	-23.00000	0.0
71.507	89.93910	84.86466	-23.00000	0.0
72.500	90.90075	85.11278	-23.00000	0.0
73.493	91.86241	85.36090	-23.00000	0.0
74.486	92.82406	85.60902	-23.00000	0.0
75.479	93.78571	85.85714	-23.00000	0.0
76.472	94.74737	86.10526	-23.00000	0.0
77.466	95.70902	86.35338	-23.00000	0.0
78.459	96.67068	86.60150	-23.00000	0.0
79.452	97.63233	86.84962	-23.00000	0.0
80.445	98.59398	87.09774	-23.00000	0.0
81.438	99.55564	87.34586	-23.00000	0.0
82.431	100.51729	87.59398	-23.00000	0.0
83.424	101.47895	87.84211	-23.00000	0.0
84.418	102.44060	88.09023	-23.00000	0.0
85.411	103.40226	88.33835	-23.00000	0.0
86.404	104.36391	88.58647	-23.00000	0.0
87.397	105.32556	88.83459	-23.00000	0.0
88.390	106.28722	89.08271	-23.00000	0.0
89.383	107.24887	89.33083	-23.00000	0.0
90.376	108.21053	89.57895	-23.00000	0.0
91.370	109.17218	89.82707	-23.00000	0.0
92.363	110.13383	90.07519	-23.00000	0.0
93.356	111.09549	90.32331	-23.00000	0.0
94.349	112.05714	90.57143	-23.00000	0.0
95.342	113.01880	90.81955	-23.00000	0.0
96.335	113.98045	91.06767	-23.00000	0.0
97.328	114.94211	91.31579	-23.00000	0.0
98.322	115.90376	91.56391	-23.00000	0.0
99.315	116.86541	91.81203	-23.00000	0.0
100.31	117.82707	92.06015	-23.00000	0.0
101.30	118.78872	92.30827	-23.00000	0.0
102.29	119.75038	92.55639	-23.00000	0.0
103.29	120.71203	92.80451	-23.00000	0.0
104.28	121.67368	93.05263	-23.00000	0.0
105.27	122.63534	93.30075	-23.00000	0.0
106.27	123.59699	93.54887	-23.00000	0.0
107.26	124.55865	93.79699	-23.00000	0.0
108.25	125.52030	94.04511	-23.00000	0.0
109.25	126.48195	94.29323	-23.00000	0.0
110.24	127.44361	94.54135	-23.00000	0.0
111.23	128.40526	94.78947	-23.00000	0.0
112.23	129.36692	95.03759	-23.00000	0.0
113.22	130.32857	95.28571	-23.00000	0.0
114.21	131.29023	95.53383	-23.00000	0.0
115.21	132.25188	95.78195	-23.00000	0.0
116.20	133.21353	96.03008	-23.00000	0.0
117.19	134.17519	96.27820	-23.00000	0.0
118.18	135.13684	96.52632	-23.00000	0.0
119.18	136.09850	96.77444	-23.00000	0.0
120.17	137.06015	97.02256	-23.00000	0.0
121.16	138.02180	97.27068	-23.00000	0.0
122.16	138.98346	97.51880	-23.00000	0.0
123.15	139.94511	97.76692	-23.00000	0.0
124.14	140.90677	98.01504	-23.00000	0.0
125.14	141.86842	98.26316	-23.00000	0.0
126.13	142.83008	98.51128	-23.00000	0.0
127.12	143.79173	98.75940	-23.00000	0.0
128.12	144.75338	99.00752	-23.00000	0.0
129.11	145.71504	99.25564	-23.00000	0.0
130.10	146.67669	99.50376	-23.00000	0.0
131.10	147.63835	99.75188	-23.00000	0.0
132.09	148.60000	100.00000	-23.00000	0.0

Structure: NRTunnelBase | Sub-structure:

Dist.	Coordinates x [m]	y [m]	z [m]	Displacements z [mm]
Vertical Offset 1				
0.0	20.70000	67.00000	-28.00000	0.0
0.99315	21.66165	67.24812	-28.00000	0.0
1.9863	22.62331	67.49624	-28.00000	0.0
2.9794	23.58496	67.74436	-28.00000	0.0
3.9726	24.54662	67.99248	-28.00000	0.0
4.9657	25.50827	68.24060	-28.00000	0.0
5.9589	26.46992	68.48872	-28.00000	0.0
6.9520	27.43158	68.73684	-28.00000	0.0
7.9452	28.39323	68.98496	-28.00000	0.0
8.9383	29.35489	69.23308	-28.00000	0.0
9.9315	30.31654	69.48120	-28.00000	0.0
10.925	31.27820	69.72932	-28.00000	0.0
11.918	32.23985	69.97744	-28.00000	0.0
12.911	33.20150	70.22556	-28.00000	0.0
13.904	34.16316	70.47368	-28.00000	0.0
14.897	35.12481	70.72180	-28.00000	0.0
15.890	36.08647	70.96992	-28.00000	0.0
16.884	37.04812	71.21805	-28.00000	0.0
17.877	38.00977	71.46617	-28.00000	0.0
18.870	38.97143	71.71429	-28.00000	0.0
19.863	39.93308	71.96241	-28.00000	0.0
20.856	40.89474	72.21053	-28.00000	0.0
21.849	41.85639	72.45865	-28.00000	0.0
22.842	42.81805	72.70677	-28.00000	0.0
23.836	43.77970	72.95489	-28.00000	0.0
24.829	44.74135	73.20301	-28.00000	0.0
25.822	45.70301	73.45113	-28.00000	0.0
26.815	46.66466	73.69925	-28.00000	0.0
27.808	47.62632	73.94737	-28.00000	0.0
28.801	48.58797	74.19549	-28.00000	0.0

Dist.	Coordinates x	y	z	Displacements z
[m]	[m]	[m]	[m]	[mm]
29.794	49.54962	74.44361	-28.00000	0.0
30.788	50.51128	74.69173	-28.00000	0.0
31.781	51.47293	74.93985	-28.00000	0.0
32.774	52.43459	75.18797	-28.00000	0.0
33.767	53.39624	75.43609	-28.00000	0.0
34.760	54.35789	75.68421	-28.00000	0.0
35.753	55.31955	75.93233	-28.00000	0.0
36.746	56.28120	76.18045	-28.00000	0.0
37.740	57.24286	76.42857	-28.00000	0.0
38.733	58.20451	76.67669	-28.00000	0.0
39.726	59.16617	76.92481	-28.00000	0.0
40.719	60.12782	77.17293	-28.00000	0.0
41.712	61.08947	77.42105	-28.00000	0.0
42.705	62.05113	77.66917	-28.00000	0.0
43.698	63.01278	77.91729	-28.00000	0.0
44.692	63.97444	78.16541	-28.00000	0.0
45.685	64.93609	78.41353	-28.00000	0.0
46.678	65.89774	78.66165	-28.00000	0.0
47.671	66.85940	78.90977	-28.00000	0.0
48.664	67.82105	79.15789	-28.00000	0.0
49.657	68.78271	79.40602	-28.00000	0.0
50.651	69.74436	79.65414	-28.00000	0.0
51.644	70.70602	79.90226	-28.00000	0.0
52.637	71.66767	80.15038	-28.00000	0.0
53.630	72.62932	80.39850	-28.00000	0.0
54.623	73.59098	80.64662	-28.00000	0.0
55.616	74.55263	80.89474	-28.00000	0.0
56.609	75.51429	81.14286	-28.00000	0.0
57.603	76.47594	81.39098	-28.00000	0.0
58.596	77.43759	81.63910	-28.00000	0.0
59.589	78.39925	81.88722	-28.00000	0.0
60.582	79.36090	82.13534	-28.00000	0.0
61.575	80.32256	82.38346	-28.00000	0.0
62.568	81.28421	82.63158	-28.00000	0.0
63.561	82.24586	82.87970	-28.00000	0.0
64.555	83.20752	83.12782	-28.00000	0.0
65.548	84.16917	83.37594	-28.00000	0.0
66.541	85.13083	83.62406	-28.00000	0.0
67.534	86.09248	83.87218	-28.00000	0.0
68.527	87.05414	84.12030	-28.00000	0.0
69.520	88.01579	84.36842	-28.00000	0.0
70.513	88.97744	84.61654	-28.00000	0.0
71.507	89.93910	84.86466	-28.00000	0.0
72.500	90.90075	85.11278	-28.00000	0.0
73.493	91.86241	85.36090	-28.00000	0.0
74.486	92.82406	85.60902	-28.00000	0.0
75.479	93.78571	85.85714	-28.00000	0.0
76.472	94.74737	86.10526	-28.00000	0.0
77.466	95.70902	86.35338	-28.00000	0.0
78.459	96.67068	86.60150	-28.00000	0.0
79.452	97.63233	86.84962	-28.00000	0.0
80.445	98.59398	87.09774	-28.00000	0.0
81.438	99.55564	87.34586	-28.00000	0.0
82.431	100.51729	87.59398	-28.00000	0.0
83.424	101.47895	87.84211	-28.00000	0.0
84.418	102.44060	88.09023	-28.00000	0.0
85.411	103.40226	88.33835	-28.00000	0.0
86.404	104.36391	88.58647	-28.00000	0.0
87.397	105.32556	88.83459	-28.00000	0.0
88.390	106.28722	89.08271	-28.00000	0.0
89.383	107.24887	89.33083	-28.00000	0.0
90.376	108.21053	89.57895	-28.00000	0.0
91.370	109.17218	89.82707	-28.00000	0.0
92.363	110.13383	90.07519	-28.00000	0.0
93.356	111.09549	90.32331	-28.00000	0.0
94.349	112.05714	90.57143	-28.00000	0.0
95.342	113.01880	90.81955	-28.00000	0.0
96.335	113.98045	91.06767	-28.00000	0.0
97.328	114.94211	91.31579	-28.00000	0.0
98.322	115.90376	91.56391	-28.00000	0.0
99.315	116.86541	91.81203	-28.00000	0.0
100.31	117.82707	92.06015	-28.00000	0.0
101.30	118.78872	92.30827	-28.00000	0.0
102.29	119.75038	92.55639	-28.00000	0.0
103.29	120.71203	92.80451	-28.00000	0.0
104.28	121.67368	93.05263	-28.00000	0.0
105.27	122.63534	93.30075	-28.00000	0.0
106.27	123.59699	93.54887	-28.00000	0.0
107.26	124.55865	93.79699	-28.00000	0.0
108.25	125.52030	94.04511	-28.00000	0.0
109.25	126.48195	94.29323	-28.00000	0.0
110.24	127.44361	94.54135	-28.00000	0.0
111.23	128.40526	94.78947	-28.00000	0.0
112.23	129.36692	95.03759	-28.00000	0.0
113.22	130.32857	95.28571	-28.00000	0.0
114.21	131.29023	95.53383	-28.00000	0.0
115.21	132.25188	95.78195	-28.00000	0.0
116.20	133.21353	96.03008	-28.00000	0.0
117.19	134.17519	96.27820	-28.00000	0.0
118.18	135.13684	96.52632	-28.00000	0.0
119.18	136.09850	96.77444	-28.00000	0.0
120.17	137.06015	97.02256	-28.00000	0.0
121.16	138.02180	97.27068	-28.00000	0.0
122.16	138.98346	97.51880	-28.00000	0.0
123.15	139.94511	97.76692	-28.00000	0.0
124.14	140.90677	98.01504	-28.00000	0.0
125.14	141.86842	98.26316	-28.00000	0.0
126.13	142.83008	98.51128	-28.00000	0.0
127.12	143.79173	98.75940	-28.00000	0.0
128.12	144.75338	99.00752	-28.00000	0.0
129.11	145.71504	99.25564	-28.00000	0.0
130.10	146.67669	99.50376	-28.00000	0.0
131.10	147.63835	99.75188	-28.00000	0.0
132.09	148.60000	100.00000	-28.00000	0.0

Specific Building Damage Results - All Segments

Structure: A | 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]	
0.0	1	0.0	5.6557	Hogging	0.0011567	0.040174	0.040783	-451.52E-6	-473.78E-6	39479.	0 (Negligible)
	2	5.6557	0.74331	None	0.0	0.045172	0.045172	-451.52E-6	-472.75E-6	340200.	0 (Negligible)

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

Structure: B | 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]	
0.0	1	0.0	1.3990	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)

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

Structure: C | Sub-structure:

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

from Line for Vertical Movement Calculations [m]		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
0.0	1	0.0	3.7990	Sagging	0.0014288	0.048321	0.049308	-505.77E-6	-463.88E-6	22320.	0 (Negligible)

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

Structure: D | 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
0.0	1	0.0	1.3500	Hogging	0.0	0.0	0.0	0.0	0.0	533.64E+15	0 (Negligible)
	2	1.3500	1.3500	None	0.0	0.0	0.0	0.0	0.0	3.7355E+18	0 (Negligible)
	3	2.7000	0.0	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)
	4	2.7000	1.3500	Sagging	0.0	0.0	0.0	0.0	0.0	3.7355E+18	0 (Negligible)
	5	4.0500	1.4995	Sagging	0.0	0.0	0.0	0.0	0.0	3.7355E+18	0 (Negligible)
	6	5.5495	1.6495	Sagging	0.0	0.0	0.0	0.0	0.0	339.30E+15	0 (Negligible)

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

Structure: E | 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
0.0	1	0.0	5.0865	Sagging	0.0015070	0.047406	0.048741	-497.43E-6	473.22E-6	28441.	0 (Negligible)
	2	5.0865	10.213	Hogging	0.0036774	0.032392	0.035661	-446.62E-6	473.22E-6	15168.	0 (Negligible)

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

Structure: F | 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
0.0	1	0.0	6.0990	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)

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

Structure: G | 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
0.0	1	7.8857	5.9133	Hogging	0.0048076	0.025000	0.026144	-249.94E-6	-359.76E-6	15227.	0 (Negligible)

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

Structure: H | 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
0.0	1	0.0	11.599	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)

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

Structure: I | 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
0.0	1	0.0	5.9143	Hogging	0.0048081	0.025000	0.026144	-249.94E-6	359.76E-6	15226.	0 (Negligible)

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

Structure: J | 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
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: K | 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
0.0	1	0.0	6.1886	Sagging	0.0024382	0.048524	0.050476	-529.14E-6	474.01E-6	16224.	1 (Very Slight)
	2	6.1886	1.5104	Hogging	120.50E-6	0.043941	0.043954	-443.92E-6	474.01E-6	136060.	0 (Negligible)

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

Structure: L | 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
0.0	1	0.0	1.9990	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)

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

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
0.0	1	0.0	7.2990	Hogging	0.0023055	0.031643	0.032788	-431.21E-6	457.63E-6	36415.	0 (Negligible)

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

Structure: N | 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
0.0	1	0.0	0.90084	Sagging	0.0	6.2972E-6	6.3300E-6	0.0	4.5855E-6	130190.	0 (Negligible)
	2	0.90084	8.0389	Sagging	839.83E-6	-0.0021817	630.39E-6	49.103E-6	59.827E-6	96989.	0 (Negligible)
	3	8.9398	3.6608	Hogging	987.56E-6	-0.0021766	762.50E-6	40.064E-6	53.691E-6	34238.	0 (Negligible)

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

Structure: O | 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
0.0	1	0.0	7.5892	Hogging	0.0019440	0.011463	0.012464	-138.49E-6	-276.36E-6	18073.	0 (Negligible)
	2	7.5892	5.0071	Sagging	697.28E-6	0.012201	0.012664	-172.90E-6	-277.28E-6	130550.	0 (Negligible)
	3	12.596	2.6027	Hogging	419.52E-6	0.0018522	0.0019283	-44.031E-6	-253.31E-6	55021.	0 (Negligible)

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

Structure: P | 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
0.0	1	0.0	2.9028	Hogging	0.0011358	-0.0076209	0.0016619	133.59E-6	-250.29E-6	25963.	0 (Negligible)
	2	2.9028	1.0874	Sagging	791.50E-6	-0.022868	0.0045963	438.08E-6	-250.29E-6	96043.	0 (Negligible)
	3	3.9902	3.7496	Hogging	0.0046082	-0.058047	0.011909	784.45E-6	-633.74E-6	22035.	0 (Negligible)
	4	7.7398	6.8606	Sagging	0.010279	-0.0043869	0.0079556	217.58E-6	-633.74E-6	9083.2	0 (Negligible)

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

Structure: Q | 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
0.0	1	0.0	4.3990	None	0.0	0.0	0.0	0.0	0.0	-	0 (Negligible)

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

Structure: R | 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
0.0	1	0.0	6.3990	Sagging	0.0082326	0.058342	0.070576	-657.21E-6	-344.41E-6	6651.6	1 (Very Slight)

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

Structure: S | 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
0.0	1	0.0	12.019	Sagging	0.0036251	-0.027791	0.0055941	0.0036690	528.23E-6	14304.	0 (Negligible)
	2	12.019	3.1178	Hogging	0.011546	-0.11027	0.022980	0.0036690	528.23E-6	15917.	0 (Negligible)
	3	15.137	3.3686	Sagging	0.0028517	0.037081	0.040208	-391.49E-6	239.25E-6	14158.	0 (Negligible)

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

Structure: T | 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
0.0	1	0.0	5.3990	Sagging	0.0016446	-0.035702	0.0071697	658.26E-6	252.24E-6	29498.	0 (Negligible)

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

Structure: U | 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
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: V | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: W | 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]	
0.0	1	4.3571	1.7419	Hogging	289.76E-6	0.025000	0.025023	-249.94E-6	-44.875E-6	67323.	0 (Negligible)

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

Structure: X | 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]	
0.0	1	0.0	0.91875	None	0.0	0.0	0.0	0.0	0.0	216710.	0 (Negligible)
	2	0.91875	3.9020	Sagging	701.79E-6	-605.99E-6	539.70E-6	20.639E-6	33.916E-6	192120.	0 (Negligible)
	3	4.8207	2.5293	Hogging	584.23E-6	-0.0030250	696.48E-6	33.870E-6	33.916E-6	298040.	0 (Negligible)

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

Structure: Y | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: Z | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: AA | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: NRTunnelTop | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

Structure: NRTunnelBase | 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]	
0.0	All settlements are less than the Settlement Trough Limit Sensitivity.										

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

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

Structure: A | 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	0.0011567	0.045172	-473.78E-6	4.5600	0.045172	-451.52E-6	-473.78E-6	39479.		- 0 (Negligible)

Structure: B | 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	0.0	0.0	0.0	4.5605	0.0	0.0	0.0	-		- 0 (Negligible)

Structure: C | 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]	

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	0.0014288	0.048321	-463.88E-6	6.1802	0.049308	-505.77E-6	-463.88E-6	-	22320.	0 (Negligible)

Structure: D | 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	0.0	0.0	0.0	6.1806	0.0	0.0	0.0	533.64E+15	339.30E+15	0 (Negligible)

Structure: E | 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	0.0036774	0.047406	473.22E-6	6.1806	0.048741	-497.43E-6	473.22E-6	15168.	28441.	0 (Negligible)

Structure: F | 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	0.0	0.0	0.0	0.19204	0.0	0.0	0.0	-	-	0 (Negligible)

Structure: G | 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	0.0048076	0.025000	-359.76E-6	1.6946	0.026144	-249.94E-6	-359.76E-6	15227.	-	0 (Negligible)

Structure: H | 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	0.0	0.0	0.0	1.6949	0.0	0.0	0.0	-	-	0 (Negligible)

Structure: I | 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	0.0048081	0.025000	359.76E-6	1.6949	0.026144	-249.94E-6	359.76E-6	15226.	-	0 (Negligible)

Structure: J | 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: K | 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	0.0024382	0.048524	474.01E-6	6.5615	0.050476	-529.14E-6	474.01E-6	136060.	16224.	1 (Very Slight)

Structure: L | 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	0.0	0.0	0.0	3.2863	0.0	0.0	0.0	-	-	0 (Negligible)

Structure: M | 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	0.0023055	0.031643	457.63E-6	3.2863	0.032788	-431.21E-6	457.63E-6	36415.	-	0 (Negligible)

Structure: N | 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	987.56E-6	-0.0021817	59.827E-6	0.47990	762.50E-6	49.103E-6	59.827E-6	34238.	96989.	0 (Negligible)

Structure: O | 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

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	0.0019440	0.012201	-277.28E-6	3.8599	0.012664	-172.90E-6	-277.28E-6	18073.	130550.	0 (Negligible)

Structure: P | 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	0.010279	-0.058047	-633.74E-6	6.5263	0.011909	784.45E-6	-633.74E-6	22035.	9083.2	0 (Negligible)

Structure: Q | 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	0.0	0.0	0.0	6.0720	0.0	0.0	0.0	-		0 (Negligible)

Structure: R | 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	0.0082326	0.058342	-344.41E-6	6.9878	0.070576	-657.21E-6	-344.41E-6	-	6651.6	1 (Very Slight)

Structure: S | 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	0.011546	-0.11027	528.23E-6	6.7065	0.040208	0.0036690	528.23E-6	15917.	14158.	0 (Negligible)

Structure: T | 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	0.0016446	-0.035702	252.24E-6	5.0629	0.0071697	658.26E-6	252.24E-6	-	29498.	0 (Negligible)

Structure: U | 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: V | 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: W | 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	289.76E-6	0.025000	-44.875E-6	0.18119	0.025023	-249.94E-6	-44.875E-6	67323.		0 (Negligible)

Structure: X | 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	701.79E-6	-0.0030250	33.916E-6	0.18123	696.48E-6	33.870E-6	33.916E-6	298040.	192120.	0 (Negligible)

Structure: Y | 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: Z | 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: AA | 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: NRTunnelTop | 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: NRTunnelBase | 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]	

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
A	Maximum Slope		1	0.0	5.6557	Hogging	**473.78E-6**	4.2084	0.040783	39479.	-	0 (Negligible)
	Maximum Settlement		2	5.6557	6.3990	Sagging	472.75E-6	**4.5600**	0.045172	-	340200.	0 (Negligible)
	Max. Tensile Strain		2	5.6557	6.3990	Sagging	472.75E-6	4.5600	**0.045172**	-	340200.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	5.6557	Hogging	473.78E-6	4.2084	0.040783	**39479.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
B	Maximum Slope		-	-	-	-	-	-	-	-	-	-
	Maximum Settlement		1	0.0	1.3990	Sagging	0.0	**4.5605**	0.0	-	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	1.3990	Sagging	0.0	4.5605	**0.0**	-	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
C	Maximum Slope		1	0.0	3.7990	Sagging	**463.88E-6**	6.1802	0.049308	-	22320.	0 (Negligible)
	Maximum Settlement		1	0.0	3.7990	Sagging	463.88E-6	**6.1802**	0.049308	-	22320.	0 (Negligible)
	Max. Tensile Strain		1	0.0	3.7990	Sagging	463.88E-6	6.1802	**0.049308**	-	22320.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	0.0	3.7990	Sagging	463.88E-6	6.1802	0.049308	-	**22320.**	0 (Negligible)
D	Maximum Slope		6	5.5495	7.1990	Sagging	**0.0**	6.1806	0.0	-	339.30E+15	0 (Negligible)
	Maximum Settlement		2	1.3500	2.7000	Sagging	0.0	**6.1806**	0.0	-	3.7355E+18	0 (Negligible)
	Max. Tensile Strain		1	0.0	1.3500	Hogging	0.0	6.1806	**0.0**	533.64E+15	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	1.3500	Hogging	0.0	6.1806	0.0	**533.64E+15**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		6	5.5495	7.1990	Sagging	0.0	6.1806	0.0	-	**339.30E+15**	0 (Negligible)
E	Maximum Slope		1	0.0	5.0865	Sagging	**473.22E-6**	6.1806	0.048741	-	28441.	0 (Negligible)
	Maximum Settlement		1	0.0	5.0865	Sagging	473.22E-6	**6.1806**	0.048741	-	28441.	0 (Negligible)
	Max. Tensile Strain		1	0.0	5.0865	Sagging	473.22E-6	6.1806	**0.048741**	-	28441.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	5.0865	15.299	Hogging	473.22E-6	3.9515	0.035661	**15168.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		1	0.0	5.0865	Sagging	473.22E-6	6.1806	0.048741	-	**28441.**	0 (Negligible)
F	Maximum Slope		-	-	-	-	-	-	-	-	-	-
	Maximum Settlement		1	0.0	6.0990	Sagging	0.0	**0.19204**	0.0	-	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	6.0990	Sagging	0.0	0.19204	**0.0**	-	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
G	Maximum Slope		1	7.8857	13.799	Hogging	**359.76E-6**	1.6946	0.026144	15227.	-	0 (Negligible)
	Maximum Settlement		1	7.8857	13.799	Hogging	359.76E-6	**1.6946**	0.026144	15227.	-	0 (Negligible)
	Max. Tensile Strain		1	7.8857	13.799	Hogging	359.76E-6	1.6946	**0.026144**	15227.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	7.8857	13.799	Hogging	359.76E-6	1.6946	0.026144	**15227.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
H	Maximum Slope		-	-	-	-	-	-	-	-	-	-
	Maximum Settlement		1	0.0	11.599	Sagging	0.0	**1.6949**	0.0	-	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	11.599	Sagging	0.0	1.6949	**0.0**	-	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
I	Maximum Slope		1	0.0	5.9143	Hogging	**359.76E-6**	1.6949	0.026144	15226.	-	0 (Negligible)
	Maximum Settlement		1	0.0	5.9143	Hogging	359.76E-6	**1.6949**	0.026144	15226.	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	5.9143	Hogging	359.76E-6	1.6949	**0.026144**	15226.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	5.9143	Hogging	359.76E-6	1.6949	0.026144	**15226.**	-	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)	-	-	-	-	-	-	-	-	-	-	-
J	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.											
K	Maximum Slope		1	0.0	6.1886	Sagging	**474.01E-6**	6.5615	0.050476	-	16224.	1 (Very Slight)
	Maximum Settlement		1	0.0	6.1886	Sagging	474.01E-6	**6.5615**	0.050476	-	16224.	1 (Very Slight)
	Max. Tensile Strain		1	0.0	6.1886	Sagging	474.01E-6	6.5615	**0.050476**	-	16224.	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		2	6.1886	7.6990	Hogging	474.01E-6	3.9980	0.043954	**136060.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		1	0.0	6.1886	Sagging	474.01E-6	6.5615	0.050476	-	**16224.**	1 (Very Slight)
L	Maximum Slope		-	-	-	-	-	-	-	-	-	-
	Maximum Settlement		1	0.0	1.9990	Sagging	0.0	**3.2863**	0.0	-	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	1.9990	Sagging	0.0	3.2863	**0.0**	-	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
M	Maximum Slope		1	0.0	7.2990	Hogging	**457.63E-6**	3.2863	0.032788	36415.	-	0 (Negligible)
	Maximum Settlement		1	0.0	7.2990	Hogging	457.63E-6	**3.2863**	0.032788	36415.	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	7.2990	Hogging	457.63E-6	3.2863	**0.032788**	36415.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	7.2990	Hogging	457.63E-6	3.2863	0.032788	**36415.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
N	Maximum Slope		2	0.90084	8.9398	Sagging	**59.827E-6**	0.47577	630.39E-6	-	96989.	0 (Negligible)
	Maximum Settlement		1	0.0	0.90084	Sagging	4.5855E-6	**0.47990**	6.3300E-6	-	130190.	0 (Negligible)
	Max. Tensile Strain		3	8.9398	12.601	Hogging	53.691E-6	0.23643	**762.50E-6**	34238.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	8.9398	12.601	Hogging	53.691E-6	0.23643	762.50E-6	**34238.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	0.90084	8.9398	Sagging	59.827E-6	0.47577	630.39E-6	-	**96989.**	0 (Negligible)
O	Maximum Slope		2	7.5892	12.596	Sagging	**277.28E-6**	3.2156	0.012664	-	130550.	0 (Negligible)
	Maximum Settlement		3	12.596	15.199	Hogging	253.31E-6	**3.8599**	0.0019283	55021.	-	0 (Negligible)
	Max. Tensile Strain		2	7.5892	12.596	Sagging	277.28E-6	3.2156	**0.012664**	-	130550.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	0.0	7.5892	Hogging	276.36E-6	1.9076	0.012464	**18073.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	7.5892	12.596	Sagging	277.28E-6	3.2156	0.012664	-	**130550.**	0 (Negligible)
P	Maximum Slope		3	3.9902	7.7398	Hogging	**633.74E-6**	5.6481	0.011909	22035.	-	0 (Negligible)
	Maximum Settlement		4	7.7398	14.600	Sagging	633.74E-6	**6.5263**	0.0079556	-	9083.2	0 (Negligible)
	Max. Tensile Strain		3	3.9902	7.7398	Hogging	633.74E-6	5.6481	**0.011909**	22035.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	3.9902	7.7398	Hogging	633.74E-6	5.6481	0.011909	**22035.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		4	7.7398	14.600	Sagging	633.74E-6	6.5263	0.0079556	-	**9083.2**	0 (Negligible)
Q	Maximum Slope		-	-	-	-	-	-	-	-	-	-
	Maximum Settlement		1	0.0	4.3990	Sagging	0.0	**6.0720**	0.0	-	-	0 (Negligible)
	Max. Tensile Strain		1	0.0	4.3990	Sagging	0.0	6.0720	**0.0**	-	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		-	-	-	-	-	-	-	-	-	-
R	Maximum Slope		1	0.0	6.3990	Sagging	**344.41E-6**	6.9878	0.070576	-	6651.6	1 (Very Slight)
	Maximum Settlement		1	0.0	6.3990	Sagging	344.41E-6	**6.9878**	0.070576	-	6651.6	1 (Very Slight)
	Max. Tensile Strain		1	0.0	6.3990	Sagging	344.41E-6	6.9878	**0.070576**	-	6651.6	1 (Very Slight)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	0.0	6.3990	Sagging	344.41E-6	6.9878	0.070576	-	**6651.6**	1 (Very Slight)
S	Maximum Slope		1	0.0	12.019	Sagging	**528.23E-6**	6.7065	0.0055941	-	14304.	0 (Negligible)
	Maximum Settlement		1	0.0	12.019	Sagging	528.23E-6	**6.7065**	0.0055941	-	14304.	0 (Negligible)
	Max. Tensile Strain		3	15.137	18.506	Sagging	239.25E-6	5.6932	**0.040208**	-	14158.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		2	12.019	15.137	Hogging	528.23E-6	6.1292	0.022980	**15917.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		3	15.137	18.506	Sagging	239.25E-6	5.6932	0.040208	-	**14158.**	0 (Negligible)
T	Maximum Slope		1	0.0	5.3990	Sagging	**252.24E-6**	5.0629	0.0071697	-	29498.	0 (Negligible)
	Maximum Settlement		1	0.0	5.3990	Sagging	252.24E-6	**5.0629**	0.0071697	-	29498.	0 (Negligible)
	Max. Tensile Strain		1	0.0	5.3990	Sagging	252.24E-6	5.0629	**0.0071697**	-	29498.	0 (Negligible)
	Min. Radius of Curvature (Hogging)		-	-	-	-	-	-	-	-	-	-
	Min. Radius of Curvature (Sagging)		1	0.0	5.3990	Sagging	252.24E-6	5.0629	0.0071697	-	**29498.**	0 (Negligible)
U	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.											
V	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.											
W	Maximum Slope		1	4.3571	6.0990	Hogging	**44.875E-6**	0.18119	0.025023	67323.	-	0 (Negligible)
	Maximum Settlement		1	4.3571	6.0990	Hogging	44.875E-6	**0.18119**	0.025023	67323.	-	0 (Negligible)
	Max. Tensile Strain		1	4.3571	6.0990	Hogging	44.875E-6	0.18119	**0.025023**	67323.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		1	4.3571	6.0990	Hogging	44.875E-6	0.18119	0.025023	**67323.**	-	0 (Negligible)
	Min. Radius of Curvature		-	-	-	-	-	-	-	-	-	-

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
	(Sagging)			[m]	[m]			[mm]	[%]	[m]	[m]	
X	Maximum Slope		2	0.91875	4.8207	Sagging	**33.916E-6**	0.18123	539.70E-6	-	192120.	0 (Negligible)
	Maximum Settlement		1	0.0	0.91875	Sagging	0.0	**0.18123**	0.0	-	216710.	0 (Negligible)
	Max. Tensile Strain		3	4.8207	7.3500	Hogging	33.916E-6	0.14238	**696.48E-6**	298040.	-	0 (Negligible)
	Min. Radius of Curvature (Hogging)		3	4.8207	7.3500	Hogging	33.916E-6	0.14238	696.48E-6	**298040.**	-	0 (Negligible)
	Min. Radius of Curvature (Sagging)		2	0.91875	4.8207	Sagging	33.916E-6	0.18123	539.70E-6	-	**192120.**	0 (Negligible)
Y	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.											
Z	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.											
AA	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.											
NRTunnelTop	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.											
NRTunnelBase	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.											

Specific Building Damage Results - All Combined Segments

Structure: A | 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: B | 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: C | 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: D | 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: E | 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: F | 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: G | 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: H | 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.

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

Structure: I | 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: J | 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: K | 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: L | 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: M | 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: N | 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: O | 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: P | 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: Q | 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: R | 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: S | 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: T | Sub-structure:

Vertical Offset from	Combined Segment	Start	Length	Curvature	Deflection Ratio	Average Horizontal	Max. Tensile	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: U | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: V | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: W | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: X | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: Y | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: Z | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: AA | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: NRTunnelTop | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Structure: NRTunnelBase | Sub-structure:

	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]		[%]	[%]	[%]	

No structures have segments combined.

Units: kN,m

INPUT DATA

SOIL PROFILE

Stratum no.	Elevation of top of stratum	Soil types Active side	Passive side
1	0.00	1 Made Ground	1 Made Ground
2	-1.00	2 W London Clay	2 W London Clay
3	-5.00	3 London Clay	3 London Clay
4	-20.00	4 London Clay	4 London Clay

SOIL PROPERTIES

-- Soil type -- No.	Description (Datum elev.)	Bulk density kN/m3	Young's Modulus Eh,kN/m2 (dEh/dy)	At rest coeff. Ko (dKo/dy)	Consol state. NC/OC (Nu)	Active limit Ka (Kac)	Passive limit Kp (Kpc)	Cohesion kN/m2 (dc/dy)
1	Made Ground	20.00	15000	0.500	NC (0.490)	1.000 (2.000)	1.000 (2.000)	20.00u
2	W London .. (-1.00)	20.00	37500 (1526)	1.000	OC (0.490)	1.000 (2.000)	1.000 (2.000)	50.00u (7.500)
3	London Clay (-5.00)	20.00	60000 (2500)	1.000	OC (0.490)	1.000 (2.000)	1.000 (2.000)	80.00u (3.330)
4	London Clay	20.00	97500	1.000	OC (0.490)	1.000 (2.000)	1.000 (2.000)	130.0u
5	Made Ground dr	20.00	10000	0.500	NC (0.200)	0.406 (1.274)	2.464 (3.139)	0.0d
6	W London .. (-1.00)	20.00	28125 (1875)	1.000	OC (0.200)	0.406 (1.274)	2.464 (3.139)	0.0d
7	London Cl.. (-5.00)	20.00	45000 (1875)	1.000	OC (0.200)	0.406 (1.274)	2.464 (3.139)	0.0d
8	London Clay dr	20.00	73125	1.000	OC (0.200)	0.406 (1.274)	2.464 (3.139)	0.0d

Additional soil parameters associated with Ka and Kp

------- Soil type ------- No.	Description	--- parameters for Ka --- Soil friction angle	Wall adhesion coeff.	Back-fill angle	--- parameters for Kp --- Soil friction angle	Wall adhesion coeff.	Back-fill angle
1	Made Ground	0.00	0.000	0.00	0.00	0.000	0.00
2	W London Clay	0.00	0.000	0.00	0.00	0.000	0.00
3	London Clay	0.00	0.000	0.00	0.00	0.000	0.00
4	London Clay	0.00	0.000	0.00	0.00	0.000	0.00
5	Made Ground dr	25.00	0.000	0.00	25.00	0.000	0.00
6	W London Clay dr	25.00	0.000	0.00	25.00	0.000	0.00
7	London Clay dr	25.00	0.000	0.00	25.00	0.000	0.00
8	London Clay dr	25.00	0.000	0.00	25.00	0.000	0.00

GROUND WATER CONDITIONS

Density of water = 10.00 kN/m3

	Active side	Passive side
Initial water table elevation	-1.00	-1.00

Automatic water pressure balancing at toe of wall : No

Water press. profile no.	Active side Point no.	Elev. m	Piezo elev. m	Water press. kN/m2	Passive side Point no.	Elev. m	Piezo elev. m	Water press. kN/m2	
1	1	-1.00	-1.00	0.0	1	-1.00	-1.00	0.0	MC+WC
	2	-1.00	-1.00	0.0					
2	1	-1.00	-1.00	0.0	1	-3.75	-3.75	0.0	MC
3	1	-1.00	-1.00	0.0	1	-7.00	-7.00	0.0	MC

WALL PROPERTIES

Type of structure = Fully Embedded Wall
Elevation of toe of wall = -11.00
Maximum finite element length = 1.00 m
Youngs modulus of wall E = 2.0000E+08 kN/m2
Moment of inertia of wall I = 3.3550E-03 m4/m run
E.I = 671000 kN.m2/m run
Yield Moment of wall = Not defined

STRUTS and ANCHORS

Strut/ anchor no.	Elev.	Strut spacing m	X-section area of strut sq.m	Youngs modulus kN/m2	Free length m	Inclin -ation (degs)	Pre- stress /strut kN	Tension allowed
1	-0.13	1.00	0.250000	2.000E+08	3.00	0.00	0	No
2	-3.68	1.00	0.250000	2.000E+08	3.00	0.00	0	No
3	-6.80	1.00	0.350000	2.000E+08	3.00	0.00	0	No

SURCHARGE LOADS

Surch -arge no.	Elev.	Distance from wall	Length parallel to wall	Width perpend. to wall	Surcharge ----- kN/m2 ----- Near edge	Far edge	Equiv. soil type	Partial factor/ Category	
1	-1.00	0.50(A)	0.60	20.00	16.00	=	N/A	1.00	-
2	-7.00	-0.00(P)	20.00	20.00	60.00	=	N/A	1.00	-

Note: A = Active side, P = Passive side
Limit State Categories P/U = Permanent Unfavourable
P/F = Permanent Favourable
Var = Variable (unfavourable)

CONSTRUCTION STAGES

Construction stage no.	Stage description
1	Apply surcharge no.1 at elevation -1.00
	No analysis at this stage
2	Excavate to elevation -0.50 on PASSIVE side
3	Install strut or anchor no.1 at elevation -0.13
4	Apply water pressure profile no.1 (Mod. Conserv.)
	No analysis at this stage
5	Apply water pressure profile no.2 (Mod. Conserv.)
	No analysis at this stage
6	Excavate to elevation -3.75 on PASSIVE side
7	Install strut or anchor no.2 at elevation -3.68
8	Apply water pressure profile no.3 (Mod. Conserv.)
	No analysis at this stage
9	Excavate to elevation -7.00 on PASSIVE side
10	Install strut or anchor no.3 at elevation -6.80
11	Apply surcharge no.2 at elevation -7.00
12	Change properties of soil type 1 to soil type 5
	No analysis at this stage
	Ko pressures will not be reset
13	Change properties of soil type 2 to soil type 6
	No analysis at this stage
	Ko pressures will not be reset
14	Change properties of soil type 3 to soil type 7
	No analysis at this stage
	Ko pressures will not be reset
15	Change properties of soil type 4 to soil type 8
	Ko pressures will be reset

FACTORS OF SAFETY and ANALYSIS OPTIONS

Limit State options: Serviceability Limit State
All loads and soil strengths are unfactored

Stability analysis:
Method of analysis - Strength Factor method
Factor on soil strength for calculating wall depth = 1.00

Parameters for undrained strata:
Minimum equivalent fluid density = 5.00 kN/m3
Maximum depth of water filled tension crack = 0.00 m

Bending moment and displacement calculation:
Method - Subgrade reaction model using Influence Coefficients
Open Tension Crack analysis? - No
Non-linear Modulus Parameter (L) = 0 m

Boundary conditions:
Length of wall (normal to plane of analysis) = 1000.00 m

Width of excavation on active side of wall = 20.00 m
Width of excavation on passive side of wall = 20.00 m

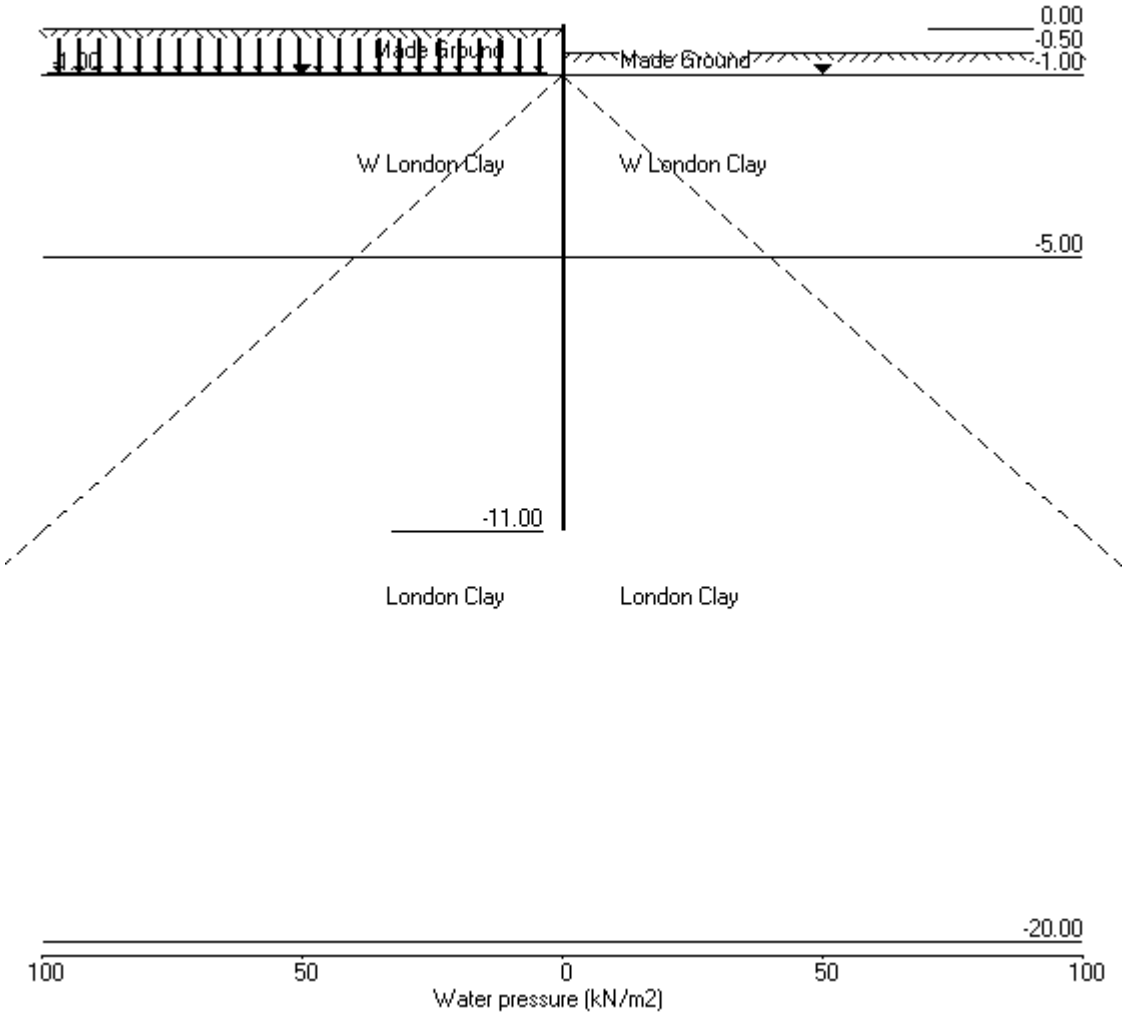
Distance to rigid boundary on active side = 20.00 m
Distance to rigid boundary on passive side = 20.00 m

OUTPUT OPTIONS

Stage no.	Stage description	Output options: Displacement, Bending mom., Shear force	Active, Passive pressures	Graph. output
1	Apply surcharge no.1 at elev. -1.00	No	No	No
2	Excav. to elev. -0.50 on PASSIVE side	Yes	Yes	Yes
3	Install strut no.1 at elev. -0.13	No	No	No
4	Apply water pressure profile no.1	No	No	No
5	Apply water pressure profile no.2	No	No	No
6	Excav. to elev. -3.75 on PASSIVE side	No	No	No
7	Install strut no.2 at elev. -3.68	No	No	No
8	Apply water pressure profile no.3	No	No	No
9	Excav. to elev. -7.00 on PASSIVE side	No	No	No
10	Install strut no.3 at elev. -6.80	No	No	No
11	Apply surcharge no.2 at elev. -7.00	No	No	No
12	Change soil type 1 to soil type 5	No	No	No
13	Change soil type 2 to soil type 6	No	No	No
14	Change soil type 3 to soil type 7	No	No	No
15	Change soil type 4 to soil type 8	No	No	No
*	Summary output	Yes	-	Yes

Units: kN,m

Stage No.2 Excav. to elev. -0.50 on PASSIVE side



Units: kN,m

Stage No. 2 Excavate to elevation -0.50 on PASSIVE side

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method

Factor of safety on soil strength

Stage No.	--- G.L. --- Act.	Pass.	Strut Elev.	FoS for toe elev. = -11.00 Factor of Safety	Moment equilib. at elev.	Toe elev. for FoS = 1.000 Toe elev.	Wall Penetr -ation
2	0.00	-0.50	Cant.	Conditions not suitable for FoS calc.			

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 1000.00m

Subgrade reaction model - Boussinesq Influence coefficients

Soil deformations are elastic until the active or passive limit is reached

Open Tension Crack analysis - No

Rigid boundaries: Active side 20.00 from wall
Passive side 20.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces are to be multiplied by a factor of 1.35 to obtain values for structural design. See summary for factored values.

Node no.	Y coord	Nett pressure kN/m2	Wall disp. m	Wall rotation rad.	Shear force kN/m	Bending moment kN.m/m	Strut forces kN/m
1	0.00	0.00	0.001	8.75E-05	0.0	0.0	
2	-0.13	0.63	0.001	8.75E-05	0.0	0.0	
3	-0.50	2.50	0.001	8.75E-05	0.6	0.1	
		0.17	0.001	8.75E-05	0.6	0.1	
4	-1.00	5.03	0.001	8.72E-05	1.9	0.6	
		-2.77	0.001	8.72E-05	1.9	0.6	
5	-2.00	-0.02	0.001	8.56E-05	0.5	1.5	
6	-2.84	0.39	0.001	8.34E-05	0.7	1.9	
7	-3.68	0.65	0.001	8.06E-05	1.1	2.6	
8	-3.75	0.68	0.001	8.03E-05	1.2	2.7	
9	-4.38	0.94	0.001	7.74E-05	1.7	3.5	
10	-5.00	1.24	0.001	7.35E-05	2.4	4.8	
		-2.34	0.001	7.35E-05	2.4	4.8	
11	-5.90	-1.71	0.001	6.64E-05	0.5	5.9	
12	-6.80	-1.09	0.001	5.86E-05	-0.7	5.7	
13	-7.00	-0.96	0.001	5.69E-05	-0.9	5.5	
14	-8.00	-0.34	0.000	4.98E-05	-1.6	4.1	
15	-9.00	0.23	0.000	4.51E-05	-1.6	2.3	
16	-10.00	0.81	0.000	4.28E-05	-1.1	0.7	
17	-11.00	1.42	0.000	4.23E-05	-0.0	0.0	

(continued)

Stage No.2 Excavate to elevation -0.50 on PASSIVE side

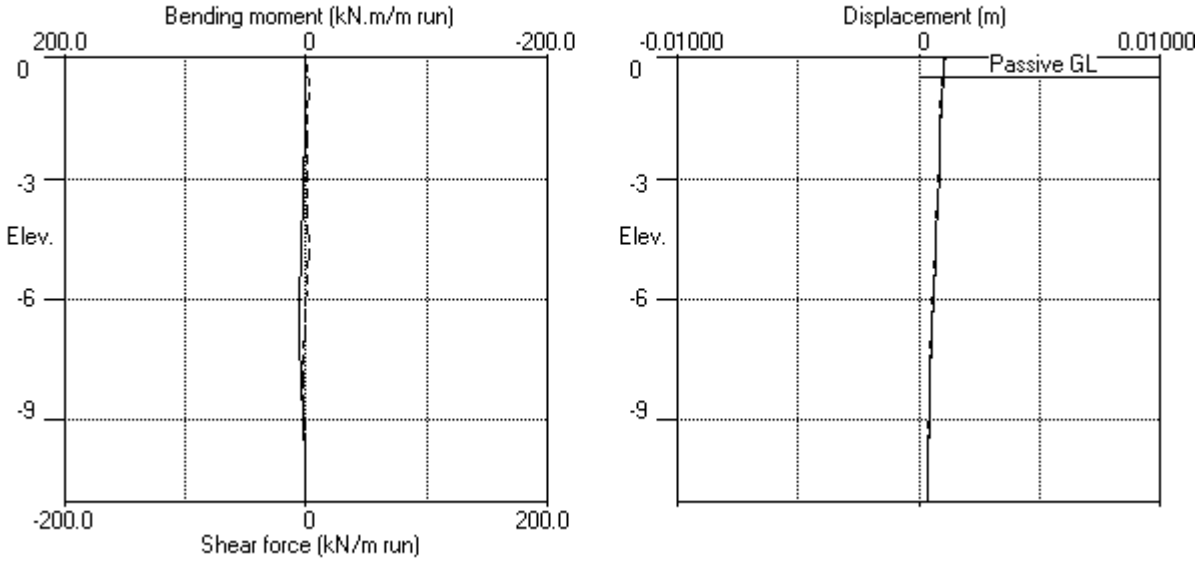
Node no.	Y coord	ACTIVE side						
		Water press. kN/m2	Effective stresses: Vertic -al kN/m2	Active limit kN/m2	Passive limit kN/m2	Earth pressure kN/m2	Total earth pressure kN/m2	Soil stiffness coeff. kN/m3
1	0.00	Total>	0.00	0.00	40.00	0.00	0.00a	2544
2	-0.13	Total>	2.50	0.63m	42.50	0.63	0.63a	2544
3	-0.50	Total>	10.00	2.50m	50.00	2.50	2.50a	2544
4	-1.00	Total>	20.00	5.00m	60.00	7.53	7.53	2544
		Total>	20.00	5.00m	120.00	13.82	13.82	6361
5	-2.00	Total>	42.19	10.00m	157.19	36.25	36.25	6620
6	-2.84	Total>	58.81	14.20m	186.41	53.17	53.17	6838
7	-3.68	Total>	75.25	18.40m	215.45	69.93	69.93	7055
8	-3.75	Total>	76.62	18.75m	217.87	71.33	71.33	7073
9	-4.38	Total>	88.91	21.88m	239.53	83.86	83.86	7235
10	-5.00	Total>	101.24	25.00m	261.24	96.44	96.44	7397
		Total>	101.24	25.00m	261.24	94.65	94.65	10178
11	-5.90	Total>	119.05	29.50m	285.05	112.90	112.90	10560
12	-6.80	Total>	136.91	34.00m	308.90	131.16	131.16	10941
13	-7.00	Total>	140.89	35.00m	314.21	135.22	135.22	11026
14	-8.00	Total>	160.78	40.00m	340.76	155.50	155.50	11450
15	-9.00	Total>	180.69	45.00m	367.33	175.78	175.78	11874
16	-10.00	Total>	200.62	50.00m	393.92	196.08	196.08	12298
17	-11.00	Total>	220.56	55.00m	420.52	216.40	216.40	12722

Node no.	Y coord	PASSIVE side						
		Water press. kN/m2	Effective stresses: Vertic -al kN/m2	Active limit kN/m2	Passive limit kN/m2	Earth pressure kN/m2	Total earth pressure kN/m2	Soil stiffness coeff. kN/m3
1	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.0
2	-0.13	0.00	0.00	0.00	0.00	0.00	0.00	0.0
3	-0.50	0.00	0.00	0.00	0.00	0.00	0.00	0.0
		Total>	0.00	0.00	40.00	2.33	2.33	2555
4	-1.00	Total>	10.00	2.50m	50.00	2.50	2.50a	2555
		Total>	10.00	2.50m	110.00	16.59	16.59	6388
5	-2.00	Total>	30.00	7.50m	145.00	36.27	36.27	6648
6	-2.84	Total>	46.81	11.70m	174.41	52.78	52.78	6867
7	-3.68	Total>	63.62	15.90m	203.82	69.28	69.28	7085
8	-3.75	Total>	65.02	16.25m	206.27	70.65	70.65	7103
9	-4.38	Total>	77.53	19.38m	228.15	82.93	82.93	7266
10	-5.00	Total>	90.05	22.50m	250.05	95.20	95.20	7428
		Total>	90.05	22.50m	250.05	97.00	97.00	10222
11	-5.90	Total>	108.08	27.00m	274.07	114.60	114.60	10605
12	-6.80	Total>	126.12	31.50m	298.11	132.25	132.25	10988
13	-7.00	Total>	130.13	32.50m	303.45	136.18	136.18	11073
14	-8.00	Total>	150.19	37.50m	330.17	155.84	155.84	11499
15	-9.00	Total>	170.27	42.50m	356.91	175.55	175.55	11925
16	-10.00	Total>	190.36	47.50m	383.66	195.27	195.27	12351
17	-11.00	Total>	210.46	52.50m	410.42	214.98	214.98	12777

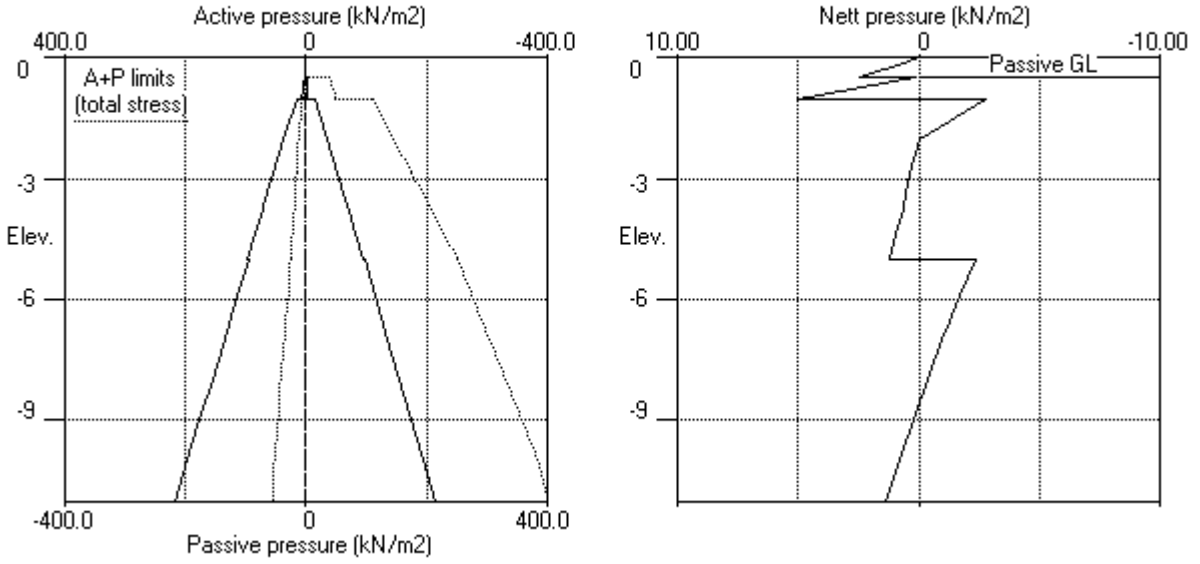
Note: 2.50a Soil pressure at active limit
123.45p Soil pressure at passive limit

Units: kN,m

Stage No.2 Excav. to elev. -0.50 on PASSIVE side



Stage No.2 Excav. to elev. -0.50 on PASSIVE side



Units: kN,m

Summary of results

LIMIT STATE PARAMETERS

Limit State: Serviceability Limit State

All loads and soil strengths are unfactored

STABILITY ANALYSIS of Fully Embedded Wall according to Strength Factor method

Factor of safety on soil strength

Stage No.	G.L. Act.	G.L. Pass.	Strut Elev.	FoS for toe elev. = -11.00 Factor of Safety	Moment equilib. at elev.	Toe elev. for FoS = 1.000 Toe elev.	Wall Penetr -ation
1	0.00	0.00	Cant.	Conditions not suitable for FoS calc.			
2	0.00	-0.50	Cant.	Conditions not suitable for FoS calc.			
3	0.00	-0.50		No analysis at this stage			
4	0.00	-0.50		No analysis at this stage			
5	0.00	-0.50		No analysis at this stage			
6	0.00	-3.75	-0.13	4.556	n/a	-3.91	0.16
7	0.00	-3.75		No analysis at this stage			

All remaining stages have more than one strut - FoS calculation n/a

Units: kN,m

Summary of results

BENDING MOMENT and DISPLACEMENT ANALYSIS of Fully Embedded Wall

Analysis options

Length of wall perpendicular to section = 1000.00m
Subgrade reaction model - Boussinesq Influence coefficients
Soil deformations are elastic until the active or passive limit is reached
Open Tension Crack analysis - No

Rigid boundaries: Active side 20.00 from wall
Passive side 20.00 from wall

Limit State: Serviceability Limit State

Calculated Bending Moments and Strut Forces have been multiplied by a factor of 1.35 to obtain values for structural design.

Bending moment, shear force and displacement envelopes

Node no.	Y coord	Displacement		Bending moment Calculated		Bending moment Factored		Shear force Calculated		Shear force Factored	
		max.	min.	max.	min.	max.	min.	max.	min.	max.	min.
		m	m	kN.m/m		kN.m/m		kN/m	kN/m	kN/m	kN/m
1	0.00	0.001	0.000	0	0	0	0	0	0	0	0
2	-0.13	0.001	0.000	0	-0	0	-0	1	-72	1	-97
3	-0.50	0.001	0.000	0	-27	0	-36	1	-71	1	-96
4	-1.00	0.002	0.000	1	-62	1	-83	2	-69	3	-93
5	-2.00	0.003	0.000	2	-123	2	-166	9	-52	12	-70
6	-2.84	0.003	0.000	6	-156	9	-210	38	-25	51	-34
7	-3.68	0.004	0.000	54	-162	74	-218	76	-162	103	-218
8	-3.75	0.004	0.000	43	-161	58	-217	16	-158	21	-213
9	-4.38	0.004	0.000	4	-146	5	-197	30	-123	41	-166
10	-5.00	0.005	0.000	5	-160	6	-216	42	-83	57	-112
11	-5.90	0.005	0.000	6	-195	8	-263	38	-29	51	-39
12	-6.80	0.006	0.000	6	-168	8	-227	68	-1	92	-1
13	-7.00	0.006	0.000	6	-152	7	-206	86	-1	117	-1
14	-8.00	0.006	0.000	4	-94	5	-127	61	-2	83	-2
15	-9.00	0.006	0.000	2	-47	3	-63	40	-2	55	-2
16	-10.00	0.006	0.000	1	-13	1	-18	23	-1	31	-2
17	-11.00	0.006	0.000	0	0	0	0	0	-0	0	-0

Maximum and minimum bending moment and shear force at each stage

Stage no.	Bending moment Calculated max.	elev.	min.	elev.	Bending moment Factored max.	min.	Shear force Calculated max.	elev.	min.	elev.	Shear force Factored max.	min.
	kN.m/m		kN.m/m		kN.m/m		kN/m		kN/m		kN/m	kN/m
1	0	-8.00	-1	-2.84	1	-2	1	-5.00	-1	-2.00	1	-1
2	6	-5.90	0	0.00	8	0	2	-5.00	-2	-9.00	3	-2
3	No calculation at this stage											
4	No calculation at this stage											
5	No calculation at this stage											
6	0	-0.13	-162	-3.68	0	-218	42	-5.00	-72	-0.13	57	-97
7	No calculation at this stage											
8	No calculation at this stage											
9	54	-3.68	-158	-5.90	74	-213	76	-3.68	-162	-3.68	103	-218
10	No calculation at this stage											
11	0	-0.13	-189	-5.90	0	-256	85	-7.00	-144	-3.68	114	-195
12	No calculation at this stage											
13	No calculation at this stage											
14	No calculation at this stage											
15	0	-0.13	-195	-5.90	0	-263	86	-7.00	-151	-3.68	117	-204

Summary of results (continued)

Maximum and minimum displacement at each stage

Stage no.	Displacement maximum m	elev.	minimum m	elev.	Stage description
1	0.000	0.00	0.000	0.00	Apply surcharge no.1 at elev. -1.00
2	0.001	0.00	0.000	0.00	Excav. to elev. -0.50 on PASSIVE side
3	No calculation at this stage				Install strut no.1 at elev. -0.13
4	No calculation at this stage				Apply water pressure profile no.1
5	No calculation at this stage				Apply water pressure profile no.2
6	0.004	-5.90	0.000	0.00	Excav. to elev. -3.75 on PASSIVE side
7	No calculation at this stage				Install strut no.2 at elev. -3.68
8	No calculation at this stage				Apply water pressure profile no.3
9	0.006	-9.00	0.000	0.00	Excav. to elev. -7.00 on PASSIVE side
10	No calculation at this stage				Install strut no.3 at elev. -6.80
11	0.005	-6.80	0.000	0.00	Apply surcharge no.2 at elev. -7.00
12	No calculation at this stage				Change soil type 1 to soil type 5
13	No calculation at this stage				Change soil type 2 to soil type 6
14	No calculation at this stage				Change soil type 3 to soil type 7
15	0.005	-6.80	0.000	0.00	Change soil type 4 to soil type 8

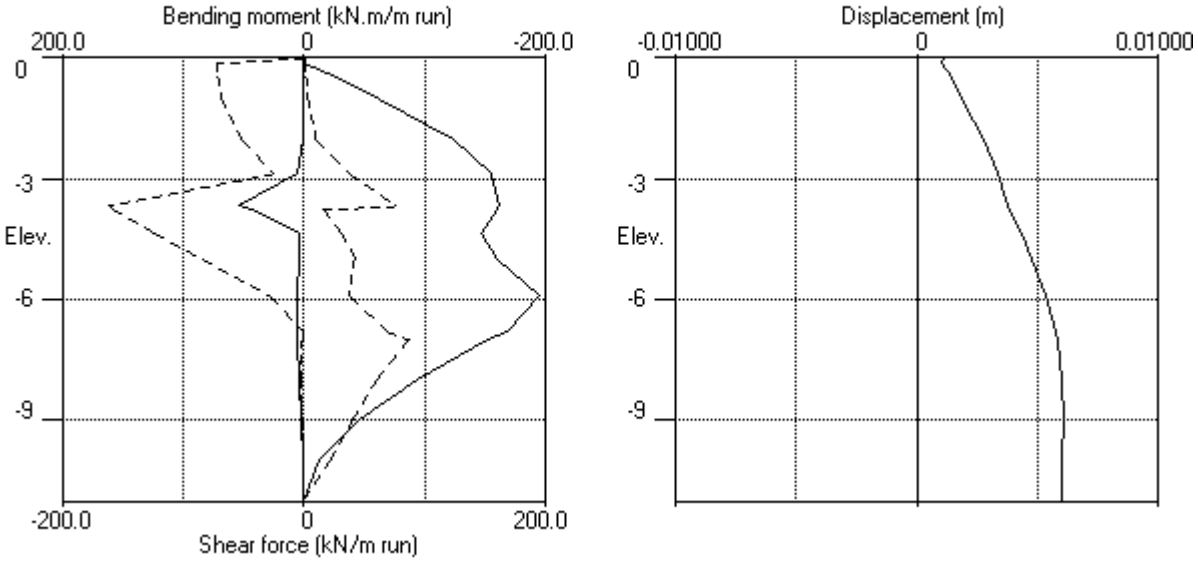
Strut forces at each stage (horizontal components)

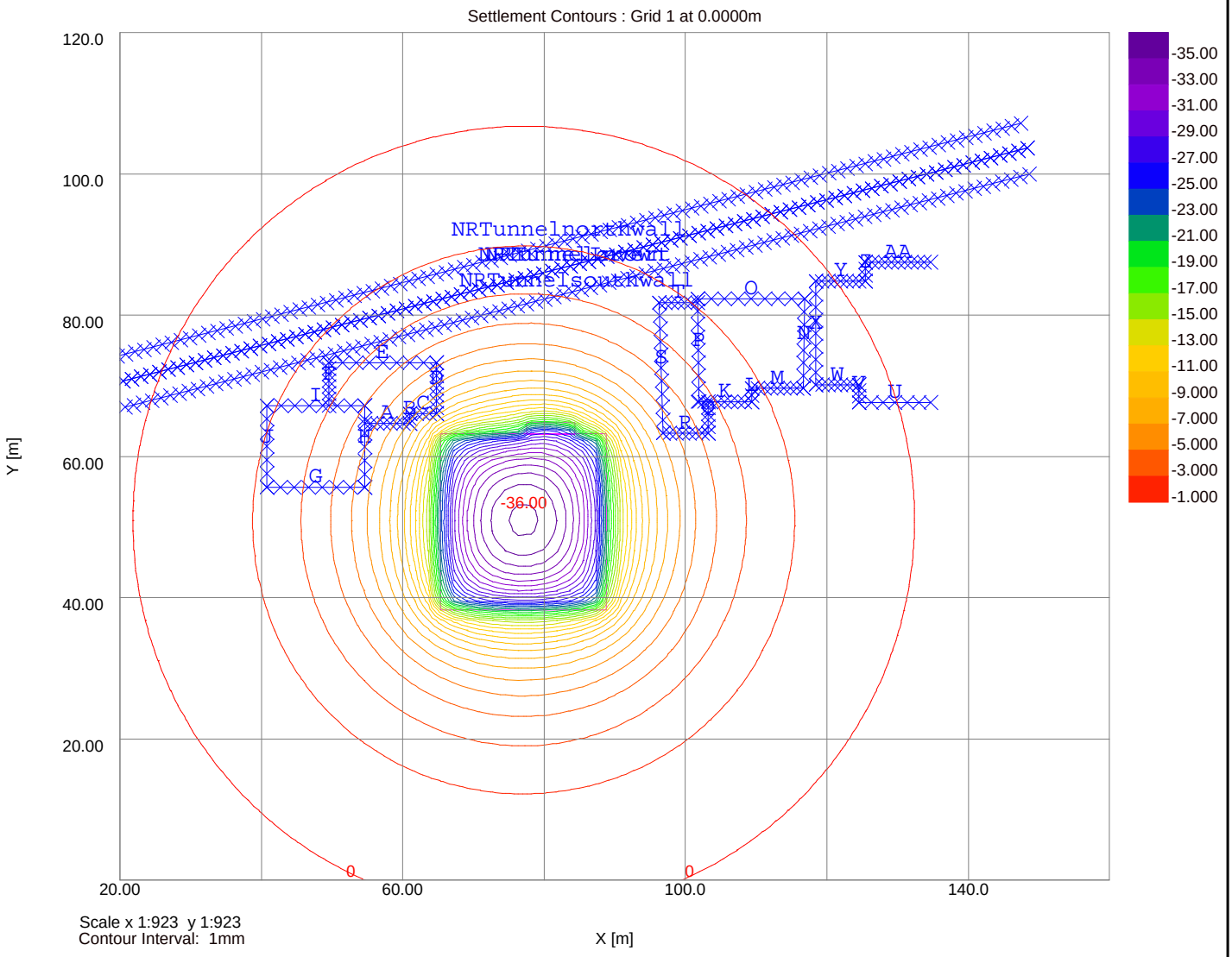
Stage no.	Strut no. 1 at elev.-0.13			Strut no. 2 at elev.-3.68			Strut no. 3 at elev.-6.80		
	Calculated kN per m run	Factored kN per strut		Calculated kN per m run	Factored kN per strut		Calculated kN per m run	Factored kN per strut	
6	72	72	98	---	---	---	---	---	---
9	14	14	19	238	238	321	---	---	---
11	34	34	46	199	199	269	slack	slack	slack
15	32	32	43	209	209	282	slack	slack	slack

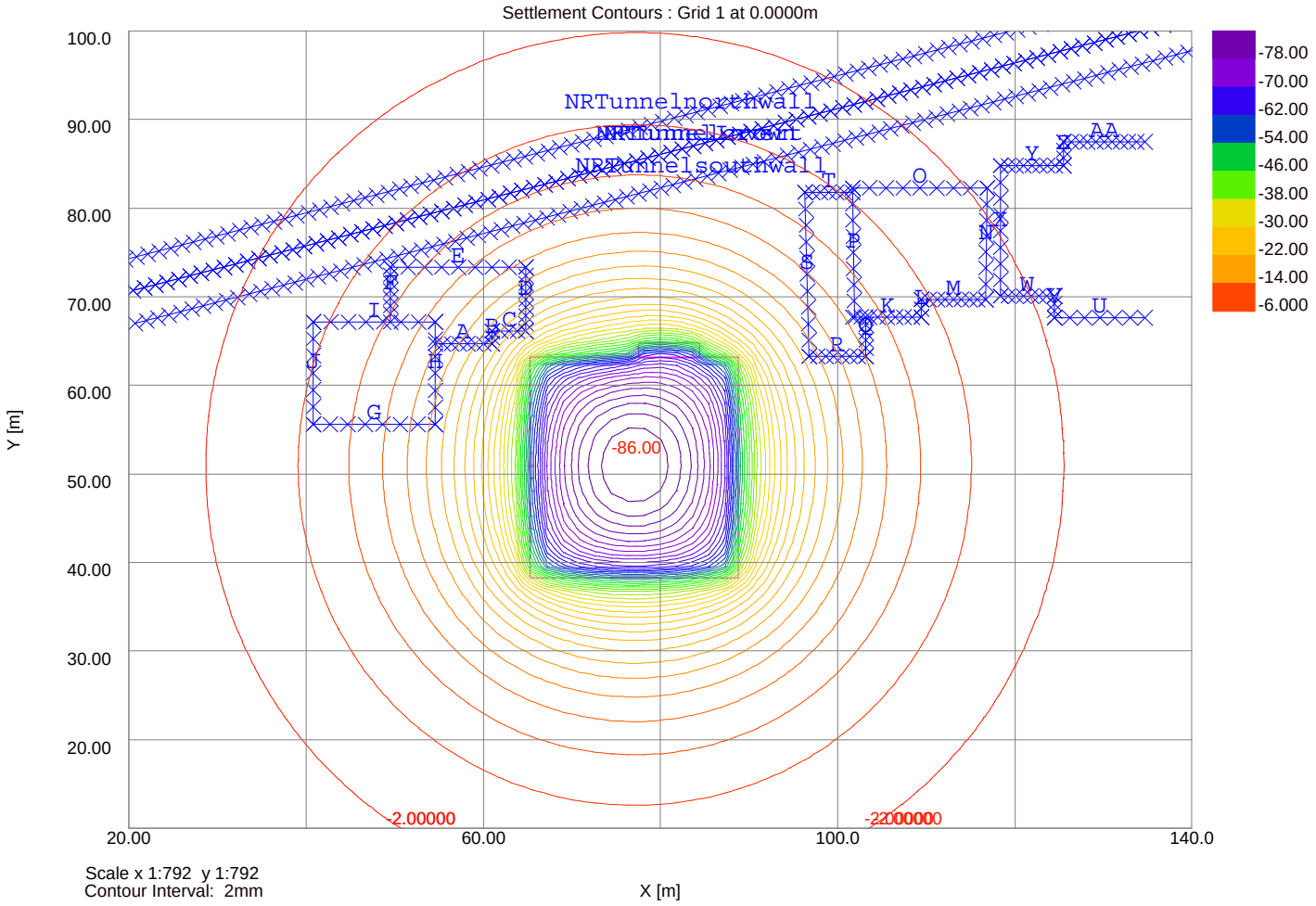
* Indicates that the total force shown is the sum of the force in the strut plus a force applied at the same elevation which may represent temperature load or other forces which are part of the strut load. Force components are listed in the detailed results for individual stages.

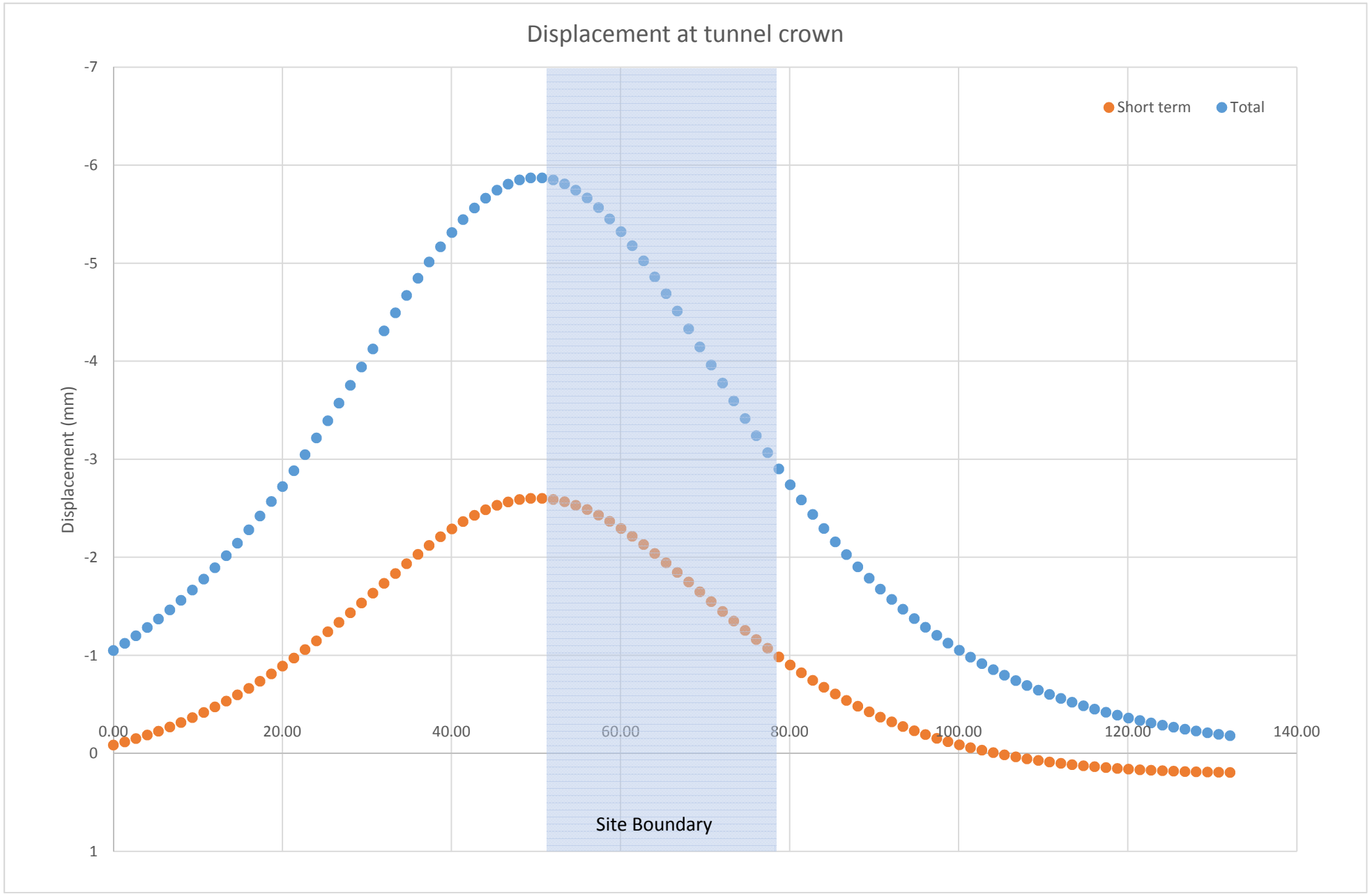
Units: kN,m

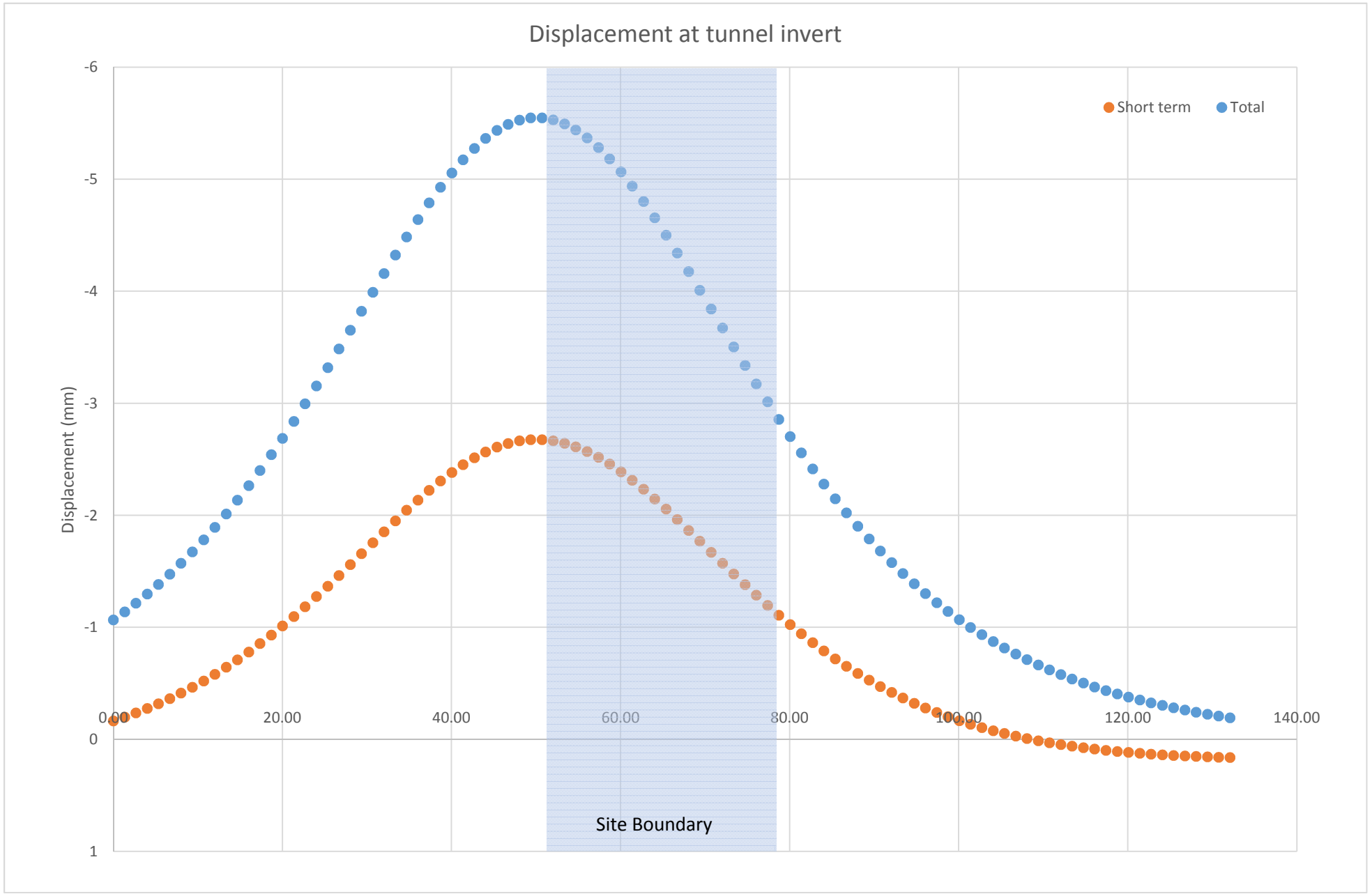
Bending moment, shear force, displacement envelopes

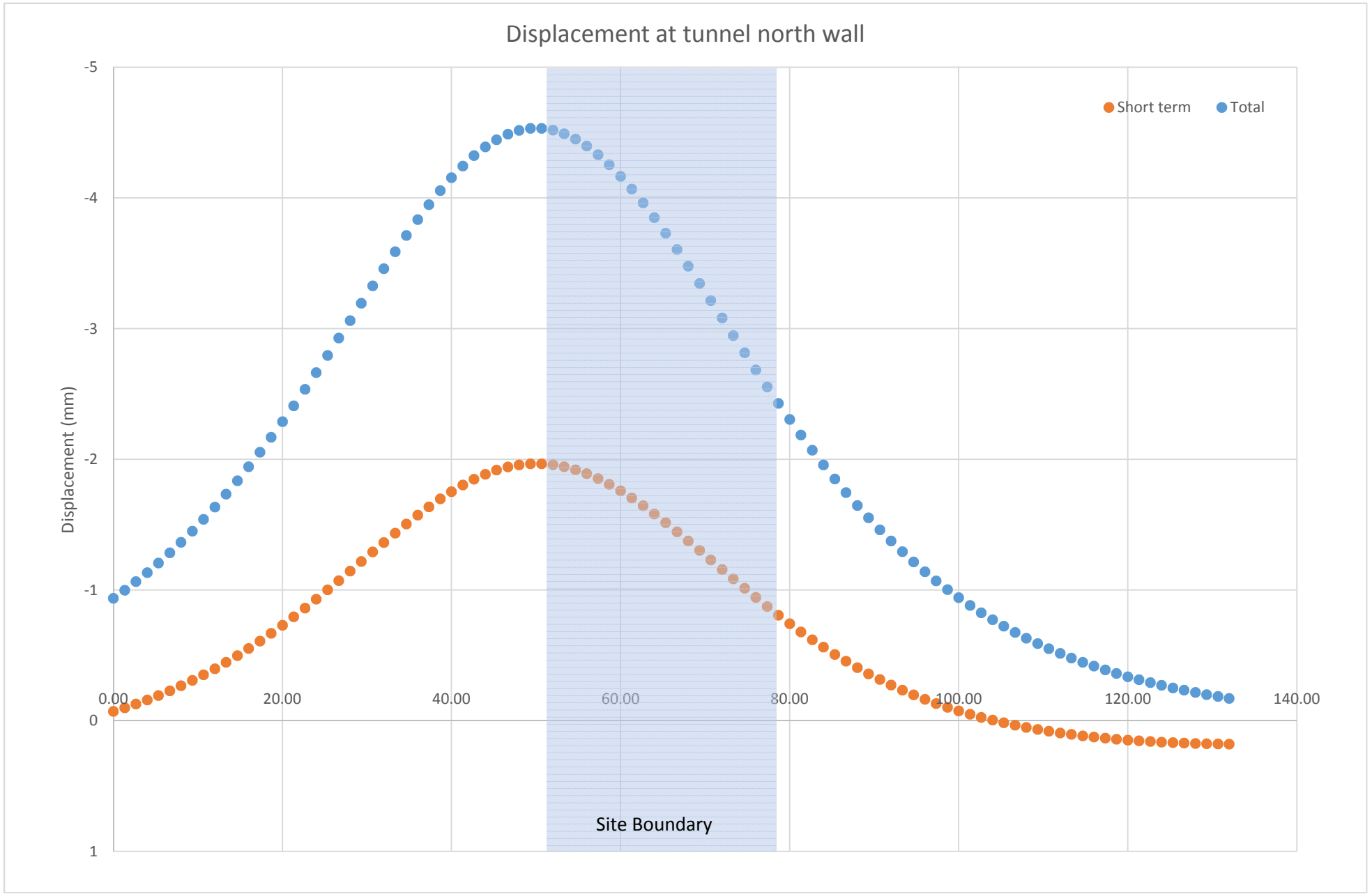


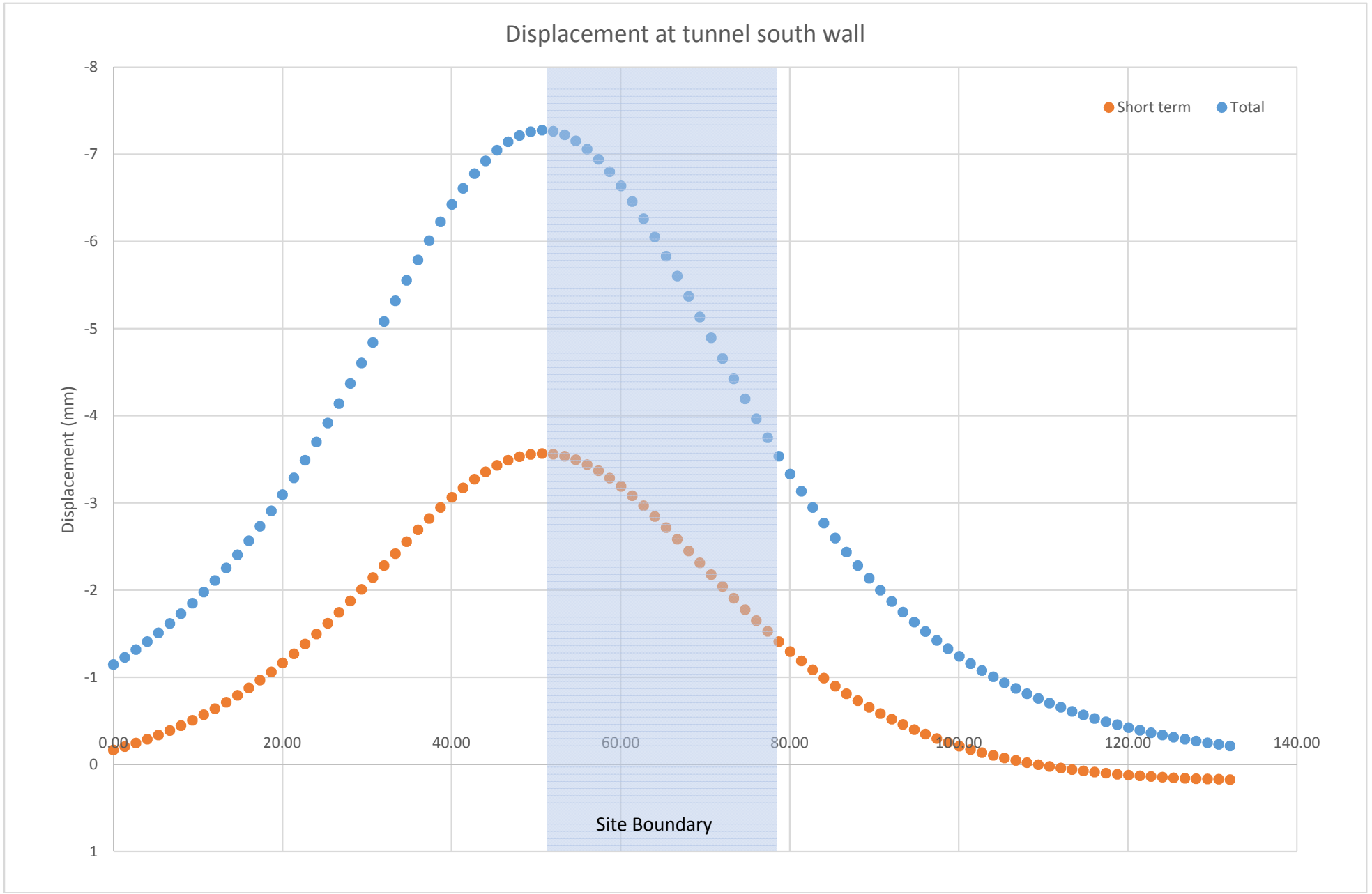

Settlement Contours : Grid 1 at 0.0000m
120.0
100.0
80.00
60.00
40.00
20.00
Y [m]
20.00
60.00
100.0
140.0
X [m]
NRTunnelnorthwall
NRTunnelsouthwall
-36.00
0
0
-35.00
-33.00
-31.00
-29.00
-27.00
-25.00
-23.00
-21.00
-19.00
-17.00
-15.00
-13.00
-11.00
-9.000
-7.000
-5.000
-3.000
-1.000
Scale x 1:923 y 1:923
Contour Interval: 1mm

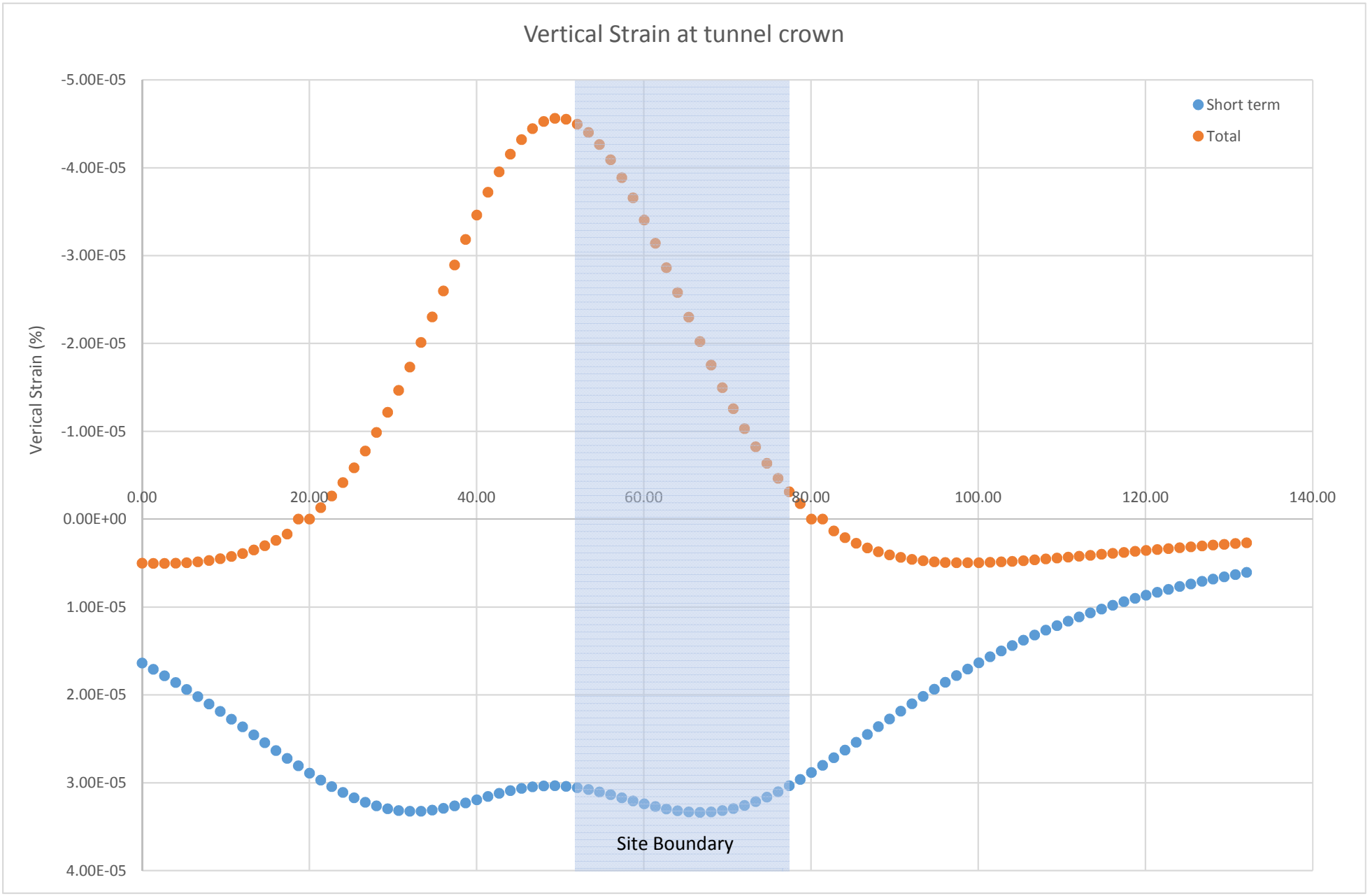

Settlement Contours : Grid 1 at 0.0000m
NRTunnelnorthwall
NRTunnelsouthwall
-86.00
-2.00000
-78.00
-70.00
-62.00
-54.00
-46.00
-38.00
-30.00
-22.00
-14.00
-6.000
100.0
90.00
80.00
70.00
60.00
50.00
40.00
30.00
20.00
Y [m]
20.00
60.00
100.0
140.0
X [m]
Scale x 1:792 y 1:792
Contour Interval: 2mm

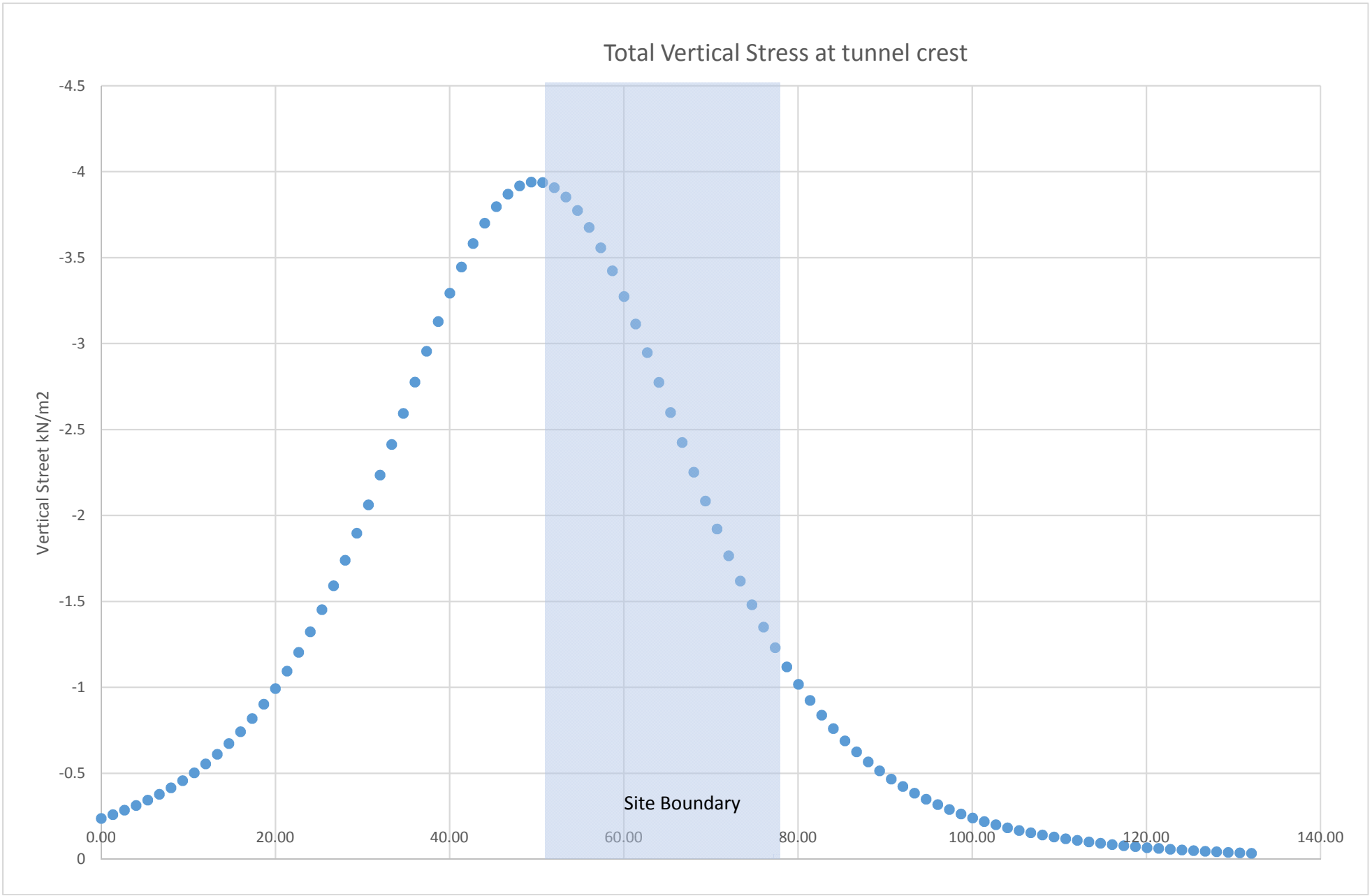

Displacement at tunnel crown
Short term
Total
Displacement (mm)
-7
-6
-5
-4
-3
-2
-1
0
1
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
Site Boundary


Displacement at tunnel invert
Short term
Total
Displacement (mm)
-6
-5
-4
-3
-2
-1
0
1
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
Site Boundary


Displacement at tunnel north wall
Short term
Total
Displacement (mm)
-5
-4
-3
-2
-1
0
1
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
Site Boundary


Displacement at tunnel south wall
Short term
Total
Displacement (mm)
-8
-7
-6
-5
-4
-3
-2
-1
0
1
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
Site Boundary


Vertical Strain at tunnel crown
Verical Strain (%)
-5.00E-05
-4.00E-05
-3.00E-05
-2.00E-05
-1.00E-05
0.00E+00
1.00E-05
2.00E-05
3.00E-05
4.00E-05
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
Short term
Total
Site Boundary


Total Vertical Stress at tunnel crest
Vertical Street kN/m2
-4.5
-4
-3.5
-3
-2.5
-2
-1.5
-1
-0.5
0
0.00
20.00
40.00
60.00
80.00
100.00
120.00
140.00
Site Boundary

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.

We have offices at

Widbury Barn
Widbury Hill
Ware
Hertfordshire
SG12 7QE
tel 01727 824666
mail@gea-ltd.co.uk

Church Farm
Gotham Road
Kingston on Soar
Notts
NG11 0DE
tel 01509 674888
midlands@gea-ltd.co.uk

Enquiries can also be made on-line at

www.gea-ltd.co.uk

where information can be found on all of the services that we offer.

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