



Brill Place Limited

BRILL PLACE, LONDON

Ground Movement Assessment on Thames
Water Assets - Full Construction

7370-WSP-00-ZZ-RP-Y-110101





Brill Place Limited

BRILL PLACE, LONDON

Ground Movement Assessment on Thames Water Assets -
Full Construction

TYPE OF DOCUMENT (VERSION) CONFIDENTIAL

PROJECT NO. 70057370

OUR REF. NO. 7370-WSP-00-ZZ-RP-Y-1101001

DATE: FEBRUARY 2020

Brill Place Limited

BRILL PLACE, LONDON

Ground Movement Assessment on Thames Water Assets -
Full Construction

WSP

WSP House
70 Chancery Lane
London
WC2A 1AF

Phone: +44 20 7314 5000

Fax: +44 20 7314 5111



Brill Place Limited

BRILL PLACE, LONDON

Ground Movement Assessment on Thames Water Assets -
Full Construction

WSP.com



QUALITY CONTROL

Issue/revision	Revision P01	Revision P02	Revision P03	Revision P04
Remarks	First Issue			
Date	27/02/2020			
Prepared by	Jose Adrego			
Signature				
Checked by	John Richmond			
Signature				
Authorised by	Matthew Sharratt			
Signature				
Project number	70057370			
Report number	7370-WSP-00-ZZ-RP-Y-110101			

CONTENTS

1.	INTRODUCTION	1
1.1.	AUTHORIZATION	1
1.2.	OBJECTIVE	1
1.3.	REFERENCES	1
2.	BASIS OF ANALYSIS	2
2.1.	SITE DESCRIPTION	2
2.2.	PROPOSED DEVELOPMENT	2
2.3.	PROPOSED WORKS	3
2.4.	THAMES WATER ASSETS	4
3.	GROUND CONDITIONS	8
3.1.	GROUND MODEL	8
3.2.	GROUNDWATER CONDITIONS	8
4.	METHODOLOGY	9
4.1.	GENERAL	9
4.2.	WALL INSTALLATION	9
4.3.	EXCAVATION	11
4.4.	CONSTRUCTION	13
4.5.	MODELLING OF THAMES WATER ASSETS	13
4.6.	SUPERIMPOSITION OF GROUND MOVEMENTS	13
4.7.	THAMES WATER CRITERIA	14
5.	ASSESSMENT	17
5.1.	TERMINOLOGY	17
6.	RESULTS	20

6.1.	GENERAL	20
6.2.	SEWERS	21
6.3.	WATER MAINS	23
7.	FINAL REMARKS	25

TABLES

Table 1 - Thames Water Assets (Sewers)	7
Table 2 - Thames Water Assets (Water Mains)	7
Table 3 – Ground Model	8
Table 4 – General approach considered for the superimposition of ground movements	14
Table 5 – Screening Criteria for Existing Thames Water Pipelines and Sewers Assets (Reference 4)	15
Table 6 – Maximum Rotation for Vitrified Clay and Concrete Pipes (Reference 4)	15
Table 7 – Screening criteria adopted in this assessment for HPPE pipes	16
Table 8 – Increase in strain (equations)	19
Table 9 – Summary of maximum predicted displacements, strains, curves, rotation and pull-out (Sewers)	21
Table 10 – Summary of maximum predicted displacements, strains, curves, rotation and pull-out (Water Mains)	23

FIGURES

Figure 1 - Central Somers Town: Community Facilities Project Masterplan	2
Figure 2 - Section through Brill Place Tower	3
Figure 3 - Thames Water sewers included in the assessment (orange)	5
Figure 4 - Thames Water mains included in the assessment (pink)	6
Figure 5 – Ground surface movements due to bored pile installation in stiff clay (CIRIA760 report)	10
Figure 6 – Ground surface movements due to excavation in front of embedded wall in stiff clay (CIRIA760 report)	11
Figure 7 – Zone identification, method's parameters, geometry, plots and example of application method (extracted from Xdisp version 19.3, User Manual)	12

APPENDICES

APPENDIX A

SITE LOCATION PLANS

APPENDIX B

DEVELOPMENT DRAWINGS

APPENDIX C

THAMES WATER ASSETS

APPENDIX C.1

THAMES WATER ASSET LOCATION MAPS

APPENDIX C.2

GPR SURVEYS

APPENDIX C.3

CONDITION SURVEY

APPENDIX D

XDISP AND PDISP INPUT/OUTPUT

APPENDIX D.1

WALL INSTALLATION (XDISP ASSESSMENT)

APPENDIX D.2

EXCAVATION (XDISP ASSESSMENT)

APPENDIX D.3

EXCAVATION (PDISP ASSESSMENT) UNDRAINED/DRAINED

APPENDIX D.4

CONSTRUCTION (PDISP ASSESSMENT) UNDRAINED/DRAINED

APPENDIX E

GRAPH PLOTS

APPENDIX E.1

SEWERS

APPENDIX E.2

WATER MAINS
APPENDIX F
CONTOUR PLOTS

1. INTRODUCTION

1.1. AUTHORIZATION

WSP (the Designer) has been instructed by Brill Place Ltd. (the Client) to carry out an assessment of the impact of the proposed wall installation, excavation and construction works, to be undertaken as part of the re-development of the Brill Place, on the Thames Water assets adjacent to the site.

1.2. OBJECTIVE

This report details the results of the assessment undertaken regarding the impact of the proposed works part of the Brill Place re-development on the Thames Water Assets running adjacent to the site.

1.3. REFERENCES

The following information has been reviewed in the preparation of this report:

1. Thames Water 'Asset Location Search reference number ALS/ALS Standard/2019-4048395', dated 29 July 2019 (enclosed in Appendix C);
2. WSP, Brill Place – Ground Investigation Report, Rev 0, dated November 2019;
3. CIRIA Report C760 (2017), 'Guidance on embedded retaining wall design';
4. Thames Water 'Guidance on piling, heavy loads, excavations, tunnelling and dewatering', [Thameswater.co.uk/developersservices](https://www.thameswater.co.uk/developersservices) consulted on 21st February 2018.
5. Pancras Square Pre Construction Photographic Record, Fleet Storm Relief Sewer (Main Line), Rev A and dated 19 August 2015 (enclosed in Appendix C);
6. Attewell, P. B., Yeates, J. and Selby, A. R. (1986), 'Soil movements induced by tunnelling and their effects on pipelines and structures'.

2. BASIS OF ANALYSIS

2.1. SITE DESCRIPTION

The development site is in the southern end of Brill Place Park, immediately north-west of the Brill Place and opposite the Francis Crick Institute Building within the Somers Town district of the London Borough of Camden, London NW1. St. Pancras mainline railway station is situated approximately 80m east of the site. The site is approximately centred on National Grid Reference TQ 29880 83130. The site and surrounding area are nominally level.

The site is currently open parkland with trees. Part of the site to the north is being used as a playground and another area to the south as a basketball court. The site is approximately 0.1 hectares (ha) in area of which the majority is made up of impermeable ground.

At the southern end of the park, the ground level lies at circa +19 mOD to 20 mOD. The park is gently undulating and slopes down locally towards the south-east.

Site location plans are presented in Appendix A.

2.2. PROPOSED DEVELOPMENT

The Brill Place Tower development site is located within the Central Somers Town Community Facilities Project, which aims to provide a new primary school, community facilities, affordable homes, and a public park, as well as a small number of private homes.

The proposed 22-storey Brill Place Tower scheme comprises a contemporary park side building of 54 private residential apartments, with flexible floor space and a café at ground level. A single-storey basement is also proposed. Figure 1 presents the masterplan of the development.

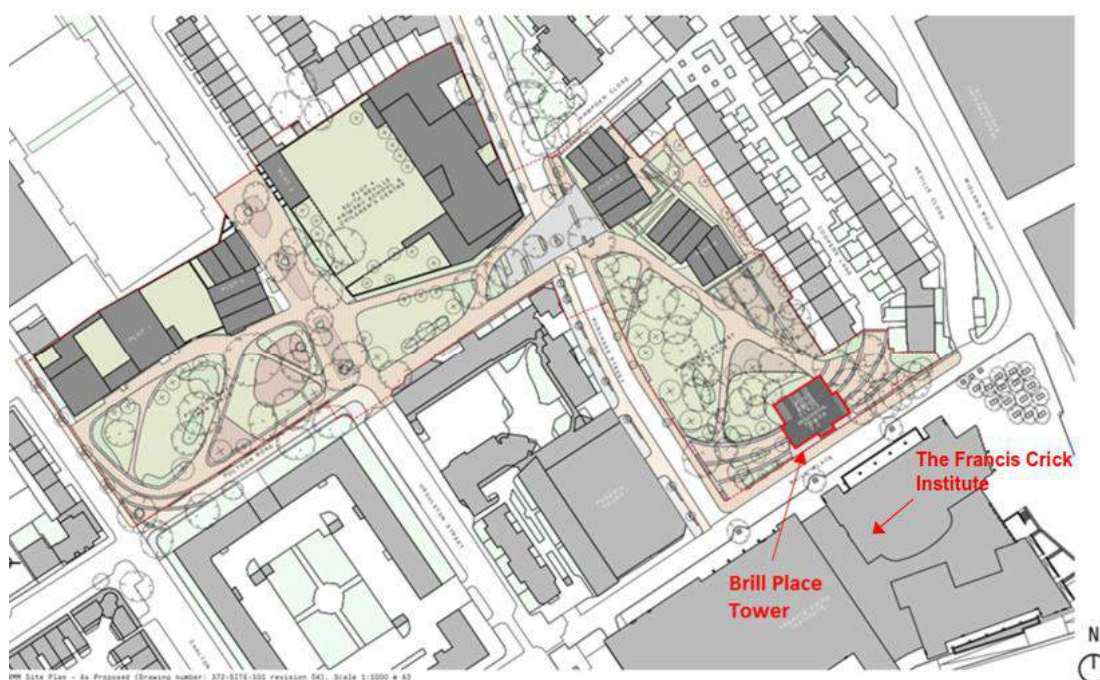


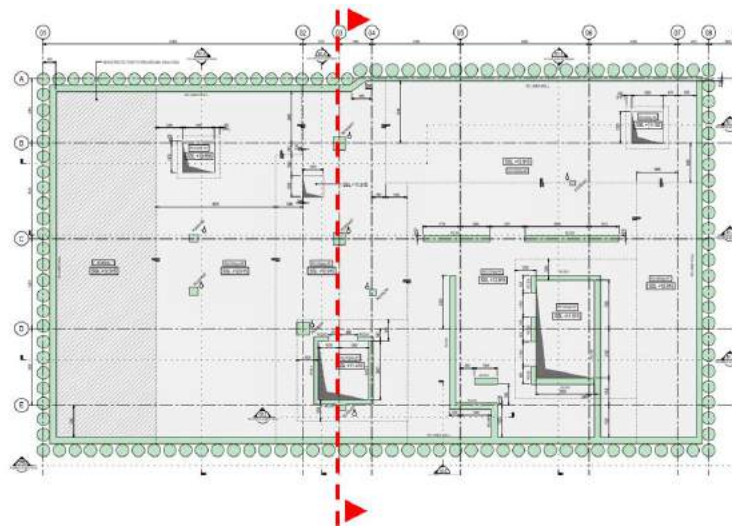
Figure 1 - Central Somers Town: Community Facilities Project Masterplan

2.3. PROPOSED WORKS

The proposed Brill Place Tower, comprising 22-storeys and a single-storey basement, is to be supported on a raft foundation with a thickness of approximately 1500 mm. The basement is to be formed within a contiguous bored pile wall consisting of 600 mm diameter piles at 750 mm centres, with an assumed toe elevation of +4.0 mOD. For the purpose of this assessment, the elevation of the underside of the 1500 mm thick raft has been assumed at +11.4 mOD, giving a total excavation depth of 7.5 m.

The maximum retained height of the contiguous pile wall propped in the permanent condition by the internal structure is 5.915 m.

The basement will be constructed in a bottom-up fashion with temporary props installed at an elevation of +18.45 mOD during excavation. The geometry adopted in this assessment is presented in Figure 2.



BRILL PLACE TOWER

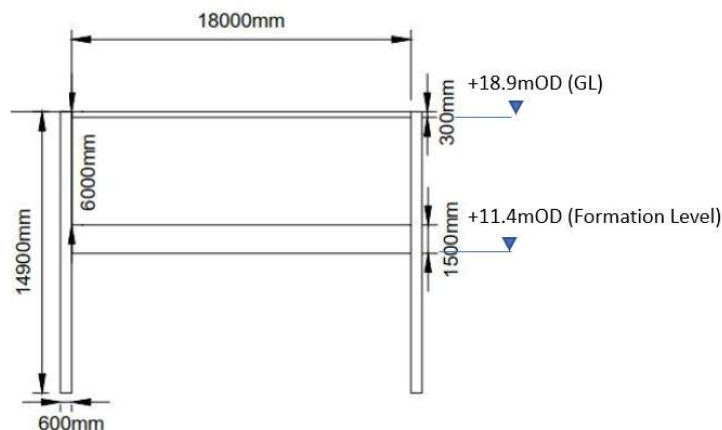


Figure 2 - Section through Brill Place Tower

Plan and section drawings of the proposed basement are presented in Appendix B.

2.4. THAMES WATER ASSETS

There are numerous Thames Water sewers and water mains running around the site. Appendix C contains the asset location maps provided by Thames Water, the condition surveys undertaken in the adjacent sewers and the GPR survey plans.

Given the inherent conservatism of the assessment methodology required by Thames Water, it is envisaged that the accuracy of the existing record information provided will not have any significant effect in terms of the overall impact predicted for the assets assessed.

The extension of the adjacent assets included in the present assessment was previously screened by a 1 mm zone of influence line. This zone of influence was determined by the established ground movement curves presented in CIRIA Report 760 (Reference 3) – further details are presented in section 4 of the present report.

SEWERS

The asset location maps provided by Thames Water (Appendix C.1) and the findings from the condition surveys suggest that existence of the following sewers adjacent to the site:

- **Sewer 1** – runs along Purchase Street and the available records indicate it has an internal diameter of 1245x813 mm. It is assumed that this sewer is of brick construction and that it has an egg-shape section;
- **Sewer 2** – is a Fleet Storm Relief Sewer, it runs along Brill Place and it has a circular section with 2134 mm of internal diameter. The records indicate that the sewer is of brick construction. For the purpose of this assessment this asset has been divided in 2 segments: sewer 2.1 and 2.2;
- **Sewer 3** – runs along Brill Place, parallel to the site, and the available records indicate it has an internal diameter of 1118x813 mm increasing to 1270x813 mm as it runs towards west. It is assumed that this sewer is of brick construction and that it has an egg-shape section. For the purpose of this assessment this asset has been divided in 2 segments: sewer 3.1 and 3.2;

Figure 3 presents the location of the sewers included in this assessment within the 1 mm ground movement zone of influence.

Note: the red arrows presented in Figure 3 represent the assumed direction of increasing chainage.

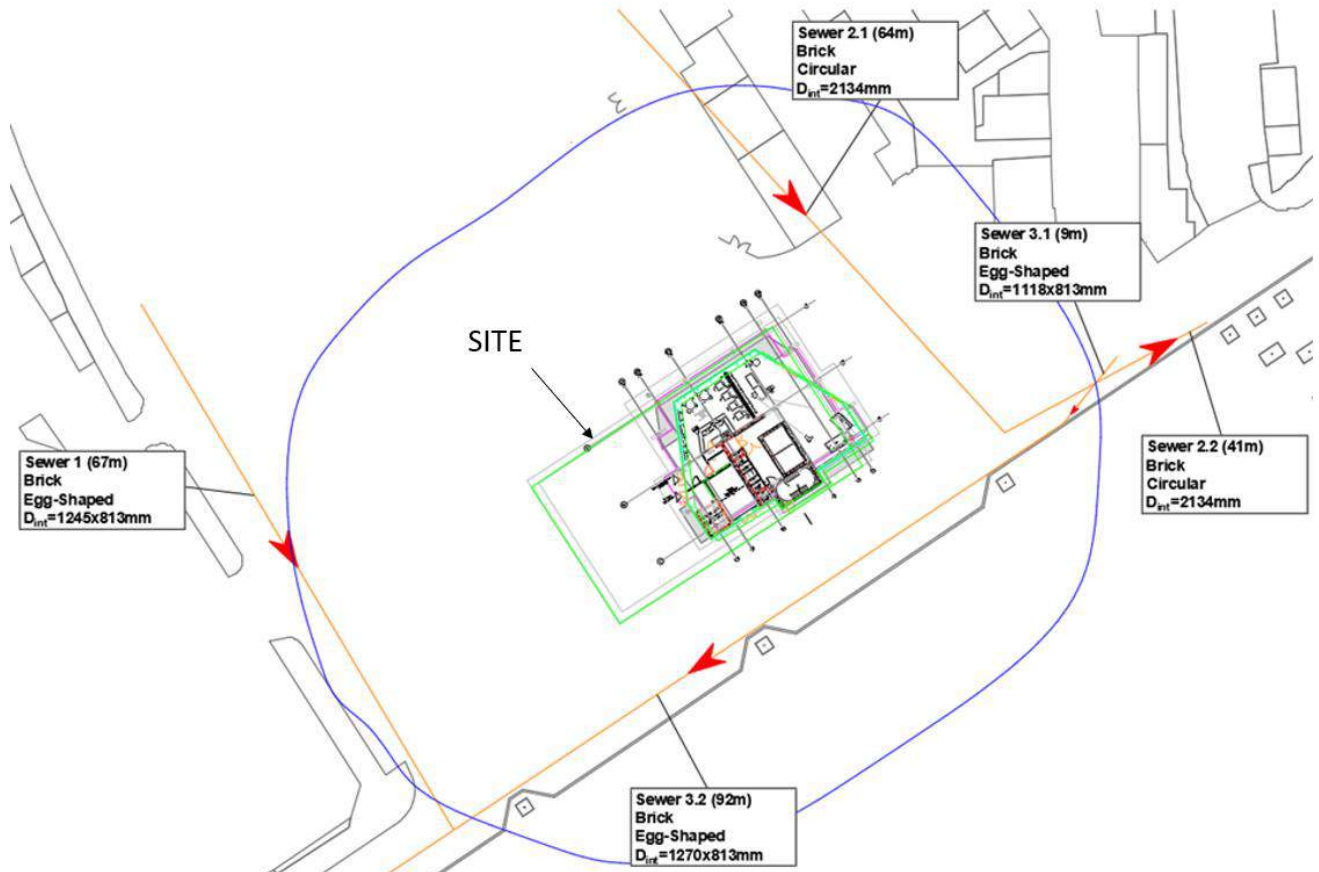


Figure 3 - Thames Water sewers included in the assessment (orange)

WATER MAINS

The asset location maps provided by Thames Water and the GPR surveys indicate the presence of 2 no. water mains adjacent to the site of circular section ("WM 1" and "WM 2"). The first one is of HPPE material with a 125 mm of internal diameter, and the second of BP material (assumed as barrier pipe - polyethylene) with a 180 mm of internal diameter. Each of these assets has been divided into 2 segments for the purpose of this assessment as it is shown in Figure 4.

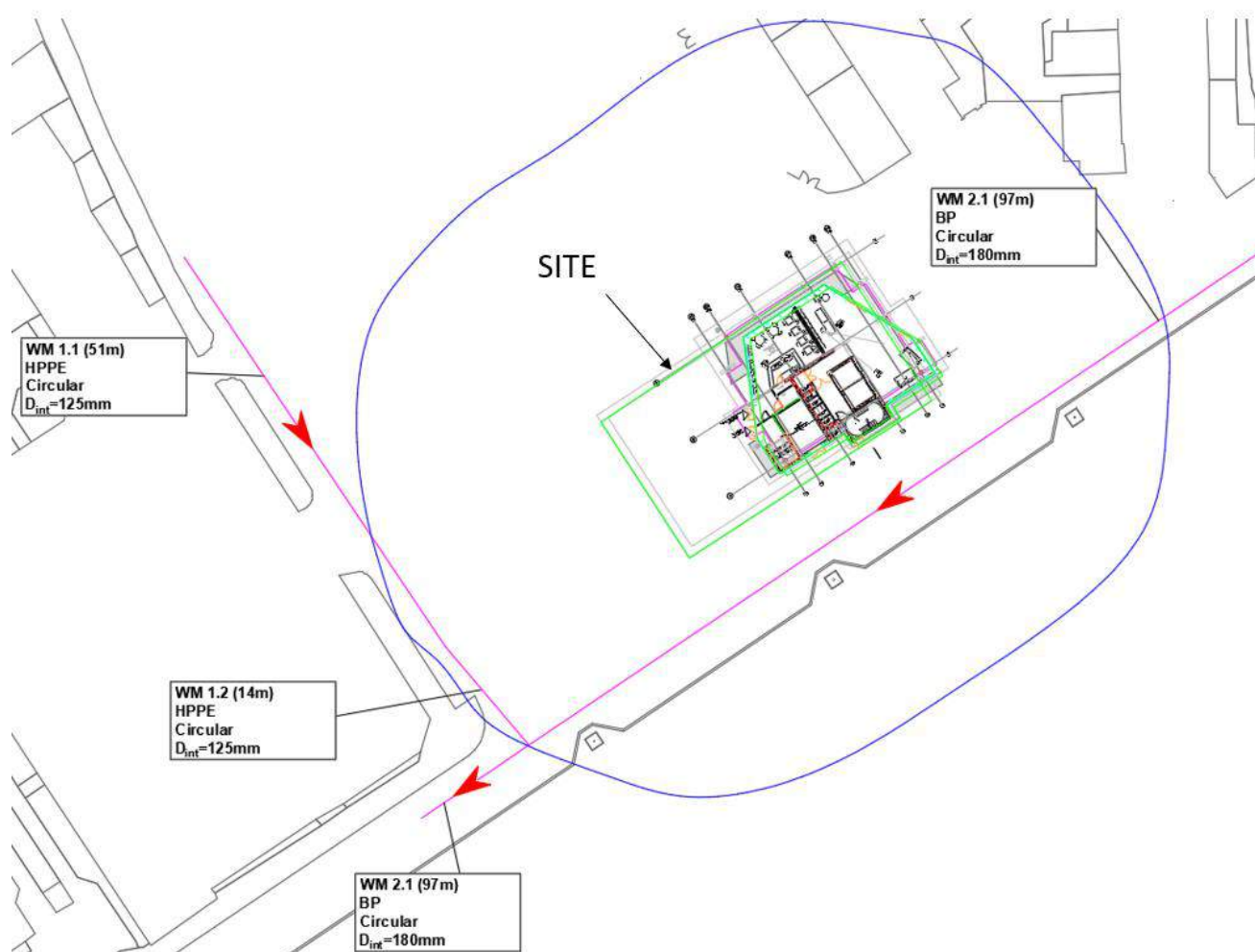


Figure 4 - Thames Water mains included in the assessment (pink)

CONDITION SURVEY

The condition survey of the Thames Water Fleet Storm Relief Sewer ("Sewer 2") is reported in, '5 Pancras Square Pre-Construction Photographic Record', (Reference 5). This document includes a photographic record of this section of the sewer. The survey is enclosed in Appendix C.3.

SUMMARY OF ASSETS

The properties of the Thames Water assets adopted in this assessment are summarised in Table 1 and Table 2, for the sewers and water mains, respectively.

Table 1 - Thames Water Assets (Sewers)

Asset	Location	Invert Level (mOD)	Section Type	Internal Diameter (mm)	Thickness (mm)	Material
Sewer 1	Purchase St	+14.8 to +15.8	Egg-Shape*	1695x1038	225*	Brick*
Sewer 2.1	Brill Place	+3.86 to +3	Circular	2584	225*	Brick*
Sewer 2.2	Brill Place	+3*	Circular	2584	225*	Brick*
Sewer 3.1	Brill Place	+13.2 to +13.9	Egg-Shape*	1568x1263	225*	Brick*
Sewer 3.2	Brill Place	+13.9 to +15.2	Egg-Shape*	1720x1263	225*	Brick*

(*) Assumed properties within the scope of this assessment

Table 2 - Thames Water Assets (Water Mains)

Asset	Location	Invert Level (mOD)	Section Type	Internal Diameter (mm)	Thickness (mm)	Material
WM 1.1	Purchase St	+18.9*	Circular	125	10*	HPPE
WM 1.2	Purchase St	+18.9*	Circular	125	10*	HPPE
WM 2.1	Brill Place	+18.9*	Circular	180	10*	BP
WM 2.2	Brill Place	+18.9*	Circular	180	10*	BP

(*) Assumed properties within the scope of this assessment

3. GROUND CONDITIONS

3.1. GROUND MODEL

The ground profile presented in Table 3 is based on the *Brill Place, London – Ground Investigation Report* (Reference 2), as well as published data and WSP experience.

Table 3 – Ground Model

Strata	Top Level (mOD)	γ (kN/m ³)	c' (kPa)	Φ' (°)	c_u (kPa)	v' (-)	V_u (-)	E_u (MPa)	E' (MPa)
Made Ground	+18.9	18	-	25	-	0.2	-	-	10
London Clay	+16.5	20	5	23	100 between 16.5mOD and 10.0mOD and increasing linearly to 300 from 10.0mOD to -1.0mOD.	0.2	0.49	$320c_u^{(1)}$ $640c_u^{(2)}$	$E'=0.80E_u$
Lambeth Group Clay	-1.0	20	5	27	300	0.2	0.49	$320c_u^{(1)}$ $640c_u^{(2)}$	$E'=0.80E_u$
Thanet Sand	-21.0	20	-	40	-	0.2	-	300	-
Chalk	-24.0	20	10	35	-	0.2	-	1500	-

⁽¹⁾ For routine foundation design.

⁽²⁾ For retaining wall design.

3.2. GROUNDWATER CONDITIONS

The site is underlain by the London Clay formation, which is designated as unproductive strata. The Chalk is a Principal Aquifer, defined as layers of rock or drift deposits that have high intergranular and/or fracture permeability capable of supporting water supply and/or river base flow on a strategic scale.

The chalk and overlying Thanet Sands and granular Lambeth Group Beds are however overlain by many metres of low permeability London Clay.

Perched ground water may be present in the Made Ground overlying the London Clay. The site investigation data would suggest that this is likely to be present as discrete independent bodies of groundwater, likely to reflect variations in the elevation of the upper surface of the London Clay and the nature of the Made Ground.

For the purpose of this assessment, a hydrostatic pore water pressure profile has been assumed from the top of the London Clay (+16.5mOD).

4. METHODOLOGY

4.1. GENERAL

The proposed works will change the soil stress state and will result in ground movements in and around the immediate vicinity of the site. The Thames Water assets are located sufficiently close to the site that the effects of these ground movements need to be assessed to ensure that the works will not have a detrimental effect on their integrity.

The proposed excavation and construction works are actions that result in unloading and reloading of the underlying soil. This change in the soil's stress state induces ground movements in and around the immediate vicinity of the site. The following actions may induce movement:

- Wall installation.
- Excavation.
- Construction/Loading (short-term).
- Construction/Loading (long-term).

Note: no structures are currently present on site, therefore a demolition stage has not been included in the present analysis.

This is a generic ground movement assessment and does not consider any specific excavation sequence, propping stiffness or specifically employed equipment. It must be noted that this assessment does not include other local works, such as the construction of the capping beam.

The following design assumptions have been adopted for this assessment:

- The existing ground level is assumed at +18.9 mOD;
- The elevation of the underside of the 1500 mm raft is assumed at +11.4 mOD;
- The pile toe level of the contiguous bored pile wall (600 mm diameter piles at 750 mm centres) is assumed at +4.0mOD;
- One level of temporary props is assumed at +18.45 mOD;
- A UDL across the raft of 180kPa was adopted based on structural loads provided by the WSP structural team.

A diagrammatic construction sequence is provided in Appendix B.

The following sections detail the inherent methodology for each calculation stage.

4.2. WALL INSTALLATION

The perimeter of the lower basement is to be formed using a contiguous bored pile wall consisting of 600 mm diameter piles at 750 mm centres.

The Oasys software Xdisp was used to predict the movements on the various Thames Water assets due to the wall installation works. Xdisp allows the evaluation of ground movements induced by embedded wall installations/excavations in terms of three-dimensional displacements. The embedded walls are described in plan as polygons. Each wall of a polygon is assigned horizontal and vertical ground movement curves that are used to calculate soil displacements.

The ground movement curves input in the model were the “Installation of secant bored pile in stiff clay (CIRIA 760 Fig. 6.8(a))” and the “Installation of secant bored pile in stiff clay (CIRIA 760 Fig. 6.8(b))”, for the horizontal and vertical movements, respectively. No corner stiffening mechanism was considered, as soil arching effects behind wall corner are not expected to be significant in the absence of excavation works. The ground surface movements curves are shown graphically in Figure 5.

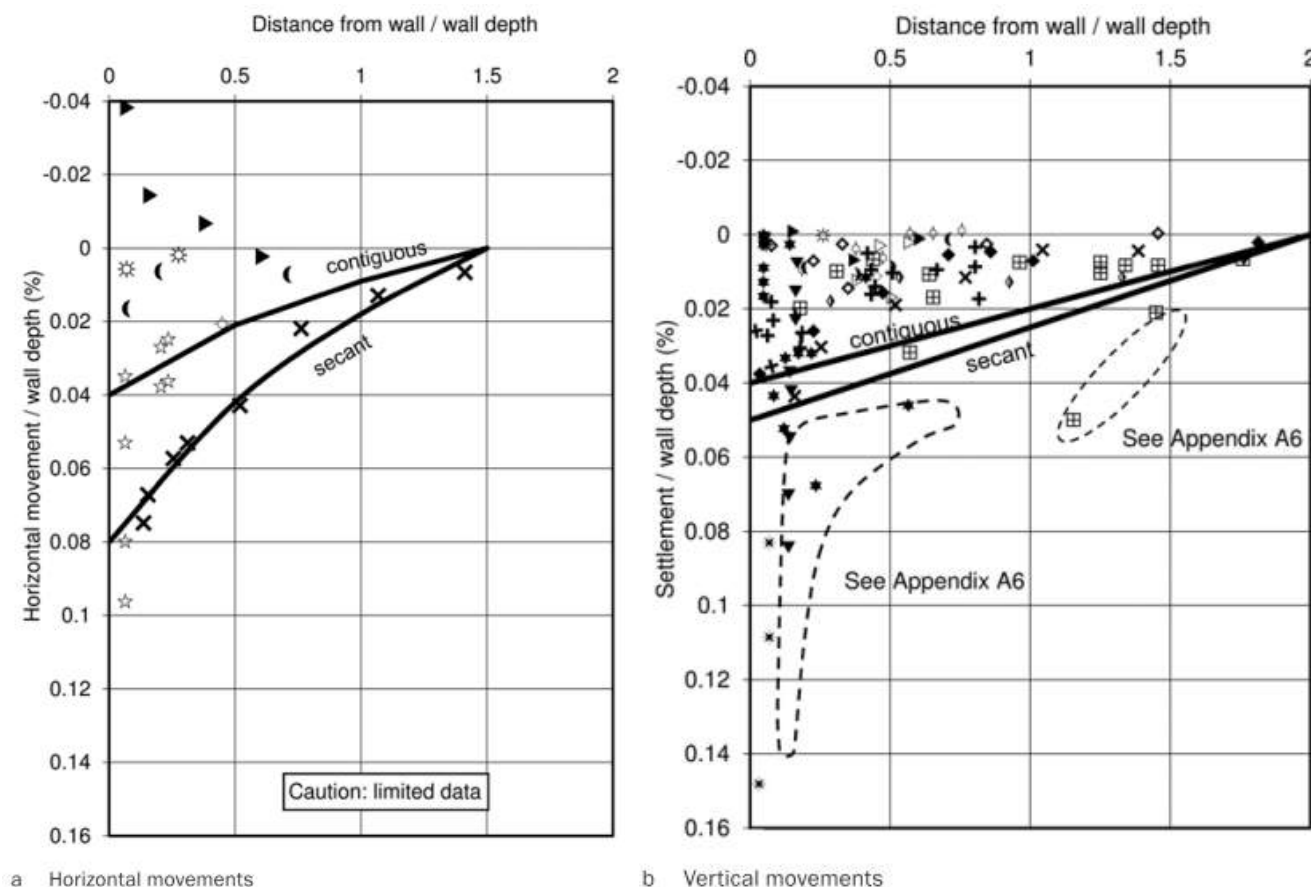


Figure 5 – Ground surface movements due to bored pile installation in stiff clay (CIRIA760 report)

The amount of soil movement during wall construction depends very much on the technique used to install the wall, depth of wall installation and quality of workmanship. With replacement type walls, the excavation for bored piles is certain to result in total stress relief in the ground and hence cause soil movement.

The published information suggests that for a secant pile wall, the maximum horizontal and vertical ground movement would be in the order of 0.08% and 0.05% respectively of wall depth. The CIRIA report indicates that horizontal movements would extend over a distance of 1.5 times the wall depth, and the vertical movements to twice the wall height.

For the purpose of this assessment, a constant toe elevation at basement raft formation level was considered (+11.4 mOD).

It was assumed that the wall installation does not produce any significant impact on the sewers since these are located at least 3 m below ground level.

A short-term (undrained behaviour) analysis was undertaken. Appendix D.1 shows all the input information used in the Xdisp model.

4.3. EXCAVATION

A capping beam will be formed over the contiguous pile wall. The basement will be constructed in a bottom-up fashion with temporary props installed at an elevation of +18.45 mOD during excavation, with a reinforced concrete slab in the permanent condition at ground level. The formation level was assumed to be at +11.4 mOD.

The Oasys software Xdisp was used to predict the movements on the various Thames Water assets due to the excavation works. Xdisp allows the evaluation of ground movements induced by embedded wall installations/excavations in terms of three-dimensional displacements. The embedded walls are described in plan as polygons. Each wall of a polygon is assigned horizontal and vertical ground movement curves that are used to calculate soil displacements.

The ground movement curves input in the model were the 'Excavation in front of high stiffness wall in stiff clay (CIRIA 760 Fig. 6.15(a))' and the 'Excavation in front of high stiffness wall in stiff clay (CIRIA 760 Fig 6.15(b))'. The ground surface movements curves are shown graphically in Figure 6.

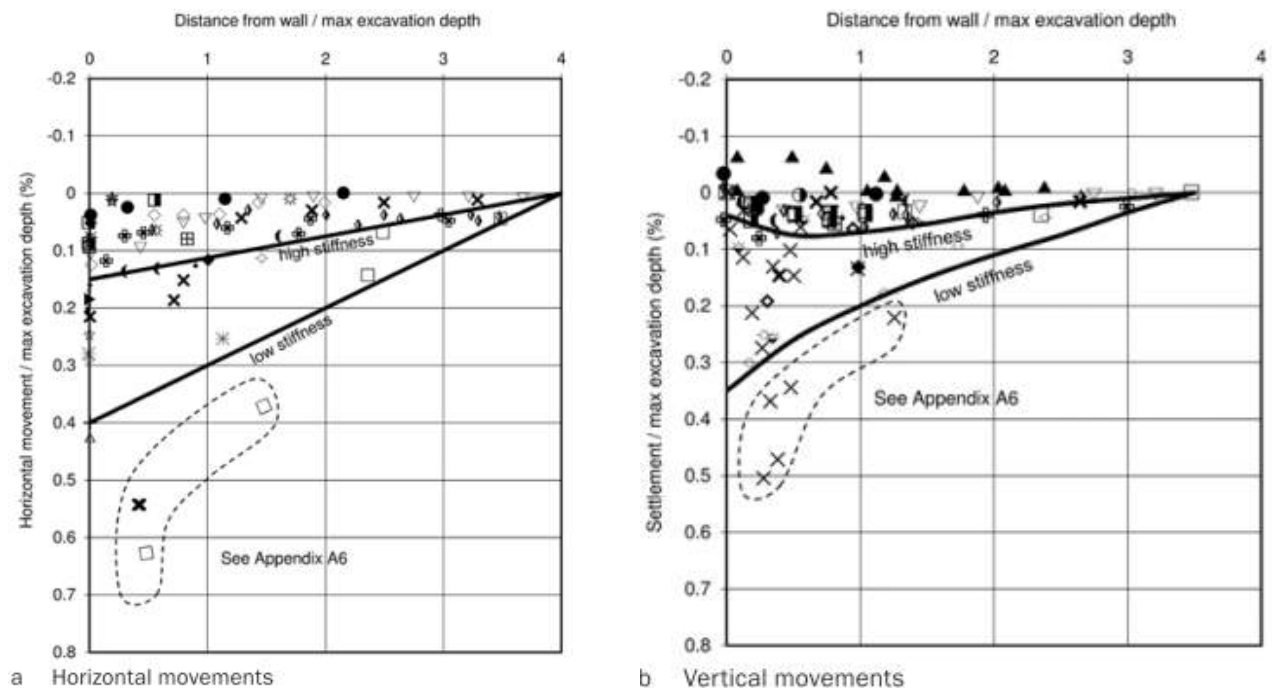


Figure 6 – Ground surface movements due to excavation in front of embedded wall in stiff clay (CIRIA760 report)

The ground movement curves aforementioned are considered to represent the totality of the ground movement profile. However, for retained cut excavations, there is increased stiffness at the corners.

Xdisp considers these corner effects and adjusts the ground movement according to 'Ground Movements Around Corners of Excavations – An Empirical Calculation Method' by Fuentes and Devriendt, published in the Journal of Geotechnical and Geoenvironmental Engineering, Volumes 135, Issue 10, pp. 1414-1424, in 2010 (see Figure 7). The position of dA and dB are defined at the middle point of each of the walls adjacent to the corner of the excavation.

As the movements at the middle point of each of the walls adjacent to the corner and the movement at the corner are independent of the length of the wall, in a relatively short excavation, as the one being modelled in this assessment, this approach is expected to generate displacement fields that are less smooth than what we would expect in reality.

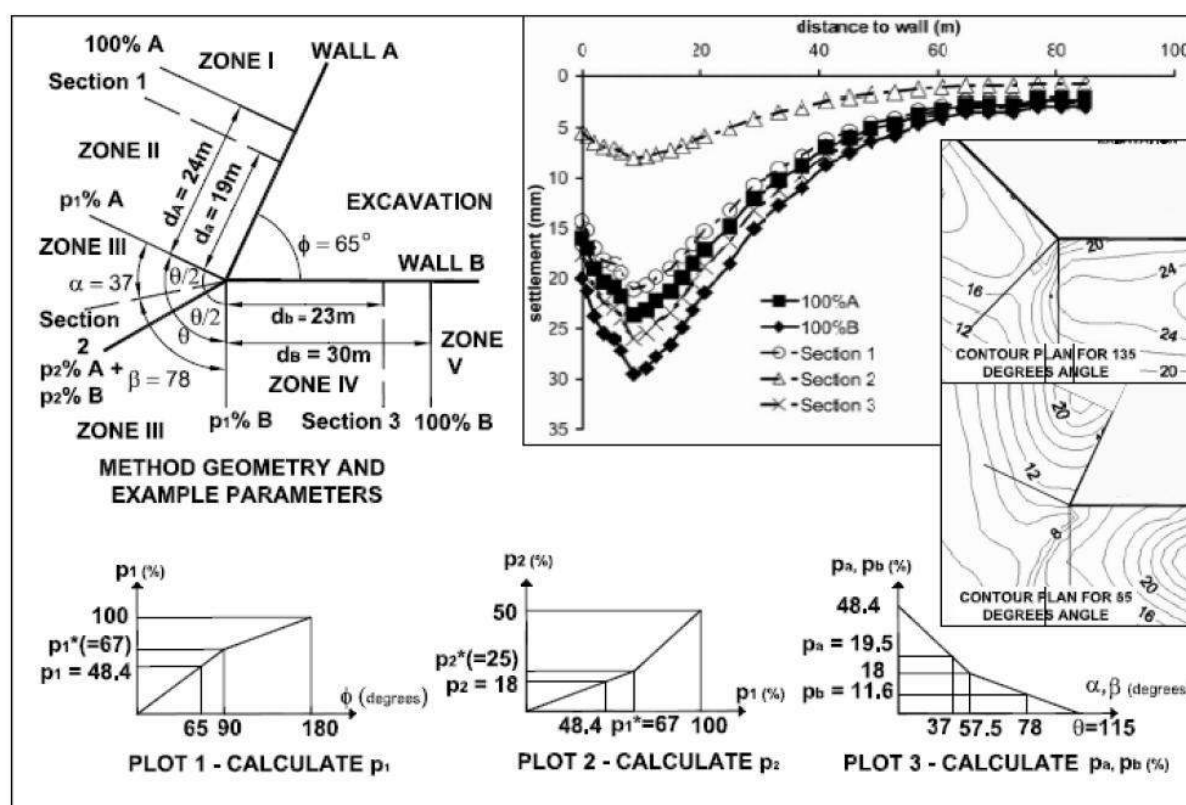


Figure 7 – Zone identification, method's parameters, geometry, plots and example of application method (extracted from Xdisp version 19.3, User Manual)

The Xdisp calculation undertaken is relative to the short-term (undrained behaviour). The Xdisp model input and output sheets are enclosed in Appendix D.2. The long-term net horizontal movement recovery was neglected when defining the movements for the later construction stages.

A Pdisp assessment was carried out to predict the long-term net vertical movement recovery due to the excavation. A short-term (undrained behaviour) and a long-term (drained behaviour) analyses were undertaken in order to define the secondary effects of the construction works. The ground was modelled based on the ground parameters summarized in section 3. A 150 kPa uniform distributed load (UDL) has been applied in the Pdisp models to simulate the unloading due to the excavation. This UDL has been applied at formation level.

The Pdisp model input and output sheets for the excavation stage are enclosed in Appendix D.3.

4.4. CONSTRUCTION

The new reinforced concrete structure occupying Brill Place is to be supported by a 1,500mm thick reinforced concrete raft foundation generally founded at +11.4mOD within the London Clay formation.

A Pdisp assessment was carried out to predict the vertical movements on the various Thames Water assets due to the construction works.

The reloading due to the construction of the proposed buildings was based on the structural loads enclosed in Appendix B. These loads were uniformly distributed over the footprint of the proposed raft level as a UDL of 180 kPa.

The ground was modelled based on the ground parameters summarized in section 3.

The Pdisp model input and output sheets for the excavation stage are enclosed in Appendix D.4.

4.5. MODELLING OF THAMES WATER ASSETS

The Thames Water assets were modelled at ground level in the Xdisp models, as the ground movement curves used in the analysis refer to ground movements at ground level. This is particularly conservative for the sewers as these are located at least circa 3 m below ground level.

The effects of the wall installation work on the sewers was not considered as these are located at least 3 m below ground level.

In the Pdisp models the assets were modelled with the elevations indicated in Table 1 and Table 2.

4.6. SUPERIMPOSITION OF GROUND MOVEMENTS

Table 4 summarises the general approach used in the superimposition of the ground movements assessed for the different construction stages.

The approach assumes that the reloading due to the construction causes predominantly vertical movement. Therefore, the cumulative effect of the wall installation, excavation and construction works in the short-term (undrained behaviour) is calculated by combining the horizontal and vertical movements due to the wall installation and excavation calculated by Xdisp and the vertical movements due to the construction works calculated by Pdisp based in short-term conditions (undrained behaviour).

The long-term net vertical movement is assumed to be the difference between the drained vertical movements and the undrained vertical movements due to the excavation and construction.

Table 4 – General approach considered for the superimposition of ground movements

Construction Phase	Cumulative Effect	Input
(1) Demolition	N/A	(a) Wall Installation (Xdisp analysis)
(2) Post Wall Installation	(a)	(b) Excavation (Xdisp analysis) (c) Excavation (Pdisp undrained behaviour analysis)
(3) Post Excavation	(2) + (b)	(d) Excavation (Pdisp drained behaviour analysis)
(4) Post Construction	(3) + (e)	(e) Construction (Pdisp undrained behaviour analysis) (f) Construction (Pdisp drained behaviour analysis)
(5) Long-term	(4) + {(d)-(c)} + {(f)-(e)}	

4.7. THAMES WATER CRITERIA

Typical screening criteria in terms of change in strain and joint rotation are presented in Table 5 and Table 6, provided by Thames Water (see Reference 4). These are criteria below which the damage may be considered 'negligible' and, as such, likely to be acceptable to Thames Water.

A pull-out limit of 3 mm is generally considered acceptable for pipes.

**Table 5 – Screening Criteria for Existing Thames Water Pipelines and Sewers Assets
(Reference 4)**

Pipe Type	Diameter (mm)	Allowable Increase in Strain ($\mu\epsilon$)		Rotation (deg.)
		Tension	Compression	
Brick Sewer (red/yellow/blue brick)	N/A	500	25% of the allowable stress ⁽¹⁾	N/A
Cast Iron (lead-yarn joints)	N/A	100	1,200	0.1
Ductile Iron (lead-yarn gasket joints)	N/A	500	700	0.5
Ductile Iron (rubber gasket joints)	N/A	500	700	2.0
Steel	N/A	450	450	1.5
Vitrified Clay	<125	80	400	0.5
	>125	80	400	Table 6
Concrete (unreinforced)	<225	20	400	0.5
	225 – 750	40	400	Table 6
	>750	60	400	Table 6

(1) A value of 625 $\mu\epsilon$ has been used in this assessment

Table 6 – Maximum Rotation for Vitrified Clay and Concrete Pipes (Reference 4)

Diameter (mm)	Rotation (deg.)
<375	2.0
375 – 750	1.0
750 – 1,400	0.5
>1,400	0.3

Limited published information on the allowable settlement of polyethylene water pipes is available. Polyethylene pipes are more flexible and hence considered to have more tolerance to ground movement. In accordance with Reference 6, only polyethylene pipes subjected to settlement of more than 50 mm should require further assessment. The screening criteria summarised in Table 7 were considered in this assessment.

Table 7 – Screening criteria adopted in this assessment for HPPE pipes

Parameter	Value
Allowable increase in tension strain	2,000 $\mu\epsilon$ ⁽¹⁾
Allowable increase in compression strain	2,000 $\mu\epsilon$ ⁽¹⁾
Radius of curvature	5m ⁽²⁾
Rotation	1° ⁽²⁾
Pull-out	3mm ⁽²⁾

⁽¹⁾ An allowable increase in strain of 2,000 $\mu\epsilon$ is generally acceptable for polyethylene pipes.

⁽²⁾ In accordance with the Polyethylene Pipe Systems Manual published by WRc plc, the bending of polyethylene pipes is permissible, and the properties of fusion jointed systems enable changes of direction. However, the pipes should not normally be cold bent to a radius of curvature of less than 25 times the outside diameter of the pipe. Since the joints and fittings for polyethylene pipes are normally fused together, it is assumed that the response of such pipes to ground movement will not be influenced by the joints. For the purpose of this assessment, conservative screening criteria of 5m for the minimum radius of curvature, 1 degree for the maximum joint rotation and 3mm for the maximum joint pull-out were considered.

5. ASSESSMENT

5.1. TERMINOLOGY

5.1.1. Movements

The flexural movements are defined as the resultant of the horizontal (perpendicular to the axis) and vertical movements, i.e. the total movements subtracted by the horizontal (parallel to the axis) movements;

$$|u_{flexural}| = \sqrt{|u_{total}|^2 - |u_{axial}|^2} \quad (1)$$

The flexural movement is a resultant, and therefore has no sign.

The axial movement is the movement in the direction of the pipe, which is given by a unitary vector i , which also subdivides into 3 components (i_x , i_y and i_z). These are calculated by dividing the difference between coordinates for that direction and the total length of the asset, as follows;

$$i_x = \frac{\Delta X}{\sqrt{\Delta X^2 + \Delta Y^2 + \Delta Z^2}} \quad i_y = \frac{\Delta Y}{\sqrt{\Delta X^2 + \Delta Y^2 + \Delta Z^2}} \quad i_z = \frac{\Delta Z}{\sqrt{\Delta X^2 + \Delta Y^2 + \Delta Z^2}} \quad (2)$$

The axial movement is the internal product of the total movement vector and the direction unitary vector;

$$u_{axial} = u_x \times i_x + u_y \times i_y + u_z \times i_z \quad (3)$$

Horizontal parallel movement is the fraction of movement in the direction of the pipe (axial direction). This is equivalent to the axial movement if the pipe has no variation of elevation in the model ($i_z = 0$);

$$u_{hor,pll} = u_x \times i_x + u_y \times i_y \quad (4)$$

Horizontal perpendicular movement is the fraction of the horizontal movement in the direction perpendicular to the axial direction;

$$u_{hor,prp} = -u_x \times i_y + u_y \times i_x \quad (5)$$

The values follow this convention;

- A (+) sign in horizontal (parallel to the axis) movement indicates movement in the direction of increasing chainage of the asset;
- A (+) sign in horizontal (perpendicular) movement indicates movement towards the site/excavation;
- A (+) sign in vertical movement indicates heave and a (-) sign indicates settlement.

5.1.2. Radius of curvature

The radius of curvature of the Thames Water assets caused by the proposed works is calculated through the predicted flexural movement. The lowest (i.e. most critical) values are presented.

The line that models the pipe is composed by a succession of points typically equally spaced by L_c , to which the three components of the total resultant movement are calculated. As such, the points that are immediately before and after point P_j are identified as P_{j-1} and P_{j+1} . The radius of curvature at a certain location of the pipe is calculated using flexural movements of those points, as explained in Figure 8 and in equations below. The curvature is the inverse of the radius of curvature.

$$R_{curv} = \frac{\Delta_{flex}^2 + L_c^2}{2\Delta_{flex}} \quad (6)$$

The pipe joint rotation at P_j is given by;

$$Rotation_j = \alpha_{j-1} + \alpha_{j+1} \quad (7)$$

5.1.3. Increase in strain

The combined total strain (ϵ_{total}) due to the proposed works for the Thames Water assets was calculated using the equations below;

$$\epsilon_{total} = \epsilon_{flexural} + RF \times \epsilon_{axial} \quad (8)$$

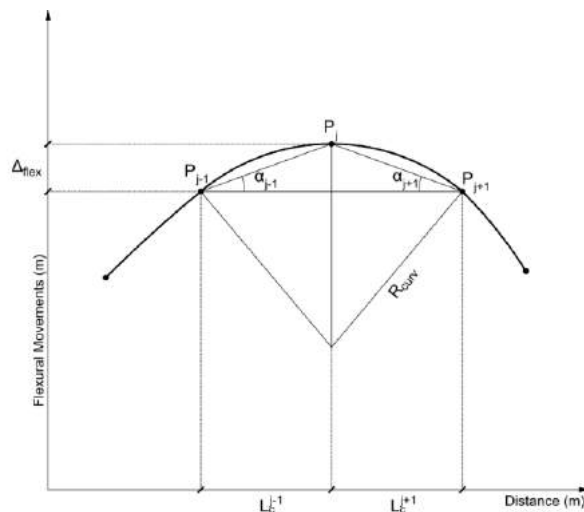


Figure 8 – Radius of curvature and pipe joint rotation

ϵ_{axial} is the axial strain, i.e. the change in length between two given points along the chainage of the asset divided by the initial value of that length:

$$\epsilon_{axial} = \frac{\Delta L_c}{L_c} \quad (9)$$

$\epsilon_{flexural}$ is given by the division of the external diameter of the asset and its radius of curvature, if the asset is of brick, unreinforced concrete or vitrified clay construction; or by the division of the

external radius of the asset and its radius of curvature, if the asset is of cast iron, ductile iron, steel or HPPE construction.

$$\varepsilon_{flex} = D_{ext} \times Curvature = \frac{D_{ext}}{R_{curv}}, \quad (10)$$

(for brick, unreinforced concrete and vitrified clay assets)

$$\varepsilon_{flex} = D_{ext}/2 \times Curvature = \frac{D_{ext}/2}{R_{curv}} \quad (11)$$

(for cast iron, ductile iron, steel and HPPE assets)

Table 8 – Increase in strain (equations)

Parameter		Equation
Axial extension		$\varepsilon_{axial} > 0$
Axial compression		$\varepsilon_{axial} < 0$
Brick, Concrete and Vitrified Clay	Tensile	$\varepsilon_{axial} < 0, \varepsilon_{total} = \varepsilon_{flexural}$
		$\varepsilon_{axial} > 0, \varepsilon_{total} = \varepsilon_{flexural} + RF \times \varepsilon_{axial}$
	Compressive	$\varepsilon_{axial} < 0, \varepsilon_{total} = RF \times \varepsilon_{axial}$
		$\varepsilon_{axial} > 0, \varepsilon_{total} = 0$
Cast Iron, Ductile Iron, Steel and HPPE	Tensile	$\varepsilon_{axial} < 0, \varepsilon_{total} = \varepsilon_{flexural}$
		$\varepsilon_{axial} > 0, \varepsilon_{total} = \varepsilon_{flexural} + RF \times \varepsilon_{axial}$
	Compressive	$\varepsilon_{axial} < 0, \varepsilon_{total} = \varepsilon_{flexural} + RF \times \varepsilon_{axial}$
		$\varepsilon_{axial} > 0, \varepsilon_{total} = \varepsilon_{flexural}$

5.1.4. Joint rotation and pull out

Joint pull out is the axial increase in strain (in zones of axial tension) between two given points along the chainage of the asset multiplied by the initial value of that length;

$$\Delta_{jpo} = \varepsilon_{axial}^+ \times L_c \quad (12)$$

5.1.5. Strain Reduction Factor

For brick assets, the strain reduction factor was taken equal to 1.0 and for all the other assets the strain reduction factor was taken equal to 0.2.

6. RESULTS

6.1. GENERAL

The effects of the wall installation, excavation and construction were assessed using Xdisp and Pdisp for the assets present in proximity of the site. Tabulated input and output from the Xdisp and Pdisp analyses are enclosed in Appendix D.

Output graphs are enclosed in Appendix E and include profiles of displacement, curvature, strain, joint rotation and pull out.

The following sections summarize the results obtained from Xdisp and Pdisp in Table 9 and Table 10 for Sewers and Water Mains, respectively.

Note: calculation stages are labelled as in Table 4

- 2-Wall Installation;
- 3-Excavation;
- 4-Construction;
- 5-Long-Term.

6.2. SEWERS

Table 9 summarises the maximum displacement, strain, joint rotation and pull out for the sewers.

Table 9 – Summary of maximum predicted displacements, strains, curves, rotation and pull-out (Sewers)

Asset	Calc. Stage	Vertical (mm)	Horizontal parallel (mm)	Horizontal perpendicular (mm)	Flexural (mm)	Material	External Diameter (mm)	Radius of Curvature (km)	Screening Criteria			Results				Comments
									Compressive (µε)	Tensile (µε)	Joint Rot. (°)	Compressive (µε)	Tensile (µε)	Joint Rot (°)	Joint Pull Out (mm)	
Sewer 1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
	3	0/-0.2	0.1/-0.1	1.2/0	1.2/0	Brick	1,695	>1000	-625	500	N/A	-17.74	107.10	0.002 ₃	0.0	-
	4	-0.3/-0.7	0.1/-0.1	1.2/0	1.4/0.3	Brick	1,695	>1000	-625	500	N/A	-17.74	99.92	0.002 ₁	0.0	-
	5	-0.3/-0.5	0.1/-0.1	1.2/0	1.3/0.3	Brick	1,695	>1000	-625	500	N/A	-17.71	103.10	0.002 ₂	0.0	-
Sewer 2.1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
	3	0/-3.6	1.7/-1.1	0/-6.5	7.4/0	Brick	2,584	>1000	-625	500	N/A	-258.3 ₉	710.61 (<237)	0.015 ₄	0.2	During the excavation, construction and long-term stages the asset exceeds the TW screening criteria due to flexural tensile strains in an isolated peak at chainage 50 m. This peak is mainly driven at the excavation stage modelled in Xdisp in the location where ground surface movements reach their peak behind the wall. The proximity of the Sewer 2.1 with this area leads to a sudden change of horizontal perpendicular movements at chainage 50 m which then reflects in an isolated peak of flexural tensile strain. These sudden changes in horizontal perpendicular movements are interpreted to be due to the modelling approach adopted by Xdisp which makes the movements induced on the assets to be less smooth than one would expect in reality. Nevertheless, the maximum typical tensile strain values developed on this asset are <238 µε
	4	0.3/-4.4	1.7/-1.1	0/-6.5	7.9/0.2	Brick	2,584	>1000	-625	500	N/A	-257.6 ₃	716.37 (<238)	0.015 ₅	0.2	
	5	-0.3/-6.8	1.7/-1.1	0/-6.5	9.4/0.3	Brick	2,584	>1000	-625	500	N/A	-257.0 ₅	699.12 (<213)	0.015 ₂	0.2	
Sewer 2.2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
	3	0/-1.3	0/-2.6	0.4/0	1.4/0	Brick	2,584	>1000	-625	500	N/A	0.00	165.74	0.000 ₉	0.2	-
	4	-0.2/-1.2	0/-2.6	0.4/0	1.3/0.2	Brick	2,584	>1000	-625	500	N/A	-0.18	149.69	0.000 ₆	0.2	-

Asset	Calc. Stage	Vertical (mm)	Horizontal parallel (mm)	Horizontal perpendicular (mm)	Flexural (mm)	Material	External Diameter (mm)	Radius of Curvature (km)	Screening Criteria			Results				Comments
									Compressive (µε)	Tensile (µε)	Joint Rot. (°)	Compressive (µε)	Tensile (µε)	Joint Rot (°)	Joint Pull Out (mm)	
	5	-0.2/-1	0/-2.6	0.4/0	1.1/0.2	Brick	2,584	>1000	-625	500	N/A	-1.25	148.09	0.0006	0.2	-
Sewer 3.1	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
	3	0/-0.3	1.1/0	0/-0.7	0.7/0	Brick	1,568	>1000	-625	500	N/A	0.00	166.33	0.0003	0.2	-
	4	-0.4/-0.6	1.1/0	0/-0.7	0.8/0.4	Brick	1,568	253.7169913	-625	500	N/A	0.00	171.00	0.0005	0.2	-
	5	-0.3/-0.6	1.1/0	0/-0.7	0.8/0.3	Brick	1,568	220.4051076	-625	500	N/A	0.00	171.93	0.0005	0.2	-
Sewer 3.2	2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	N/A
	3	0/-5	2/-1.9	0/-8	9.5/0	Brick	1,720	>1000	-625	500	N/A	-307.70	427.23	0.0116	0.2	-
	4	-0.3/-1.7	2/-1.9	0/-8	8.2/0.3	Brick	1,720	>1000	-625	500	N/A	-308.09	465.03	0.0107	0.2	-
	5	-0.3/-2.2	2/-1.9	0/-8	8.3/0.3	Brick	1,720	>1000	-625	500	N/A	-308.02	461.50	0.0109	0.2	-

6.3. WATER MAINS

Table 10 – Summary of maximum predicted displacements, strains, curves, rotation and pull-out (Water Mains)

Asset	Calc. Stage	Vertical (mm)	Horizontal parallel (mm)	Horizontal perpendicular (mm)	Flexural (mm)	Material	External Diameter (mm)	Radius of Curvature (km)	Screening Criteria			Results				Comments
									Compressive (µε)	Tensile (µε)	Joint Rot. (°)	Compressive (µε)	Tensile (µε)	Joint Rot (°)	Joint Pull Out (mm)	
WM 1.1	2	0/0	0/0	0/0	0/0	HPPE	145	#DIV/0!	-2000	2000	1.0	0.0	0.0	0.0	0.0	-
	3	0/-0.1	0/0	0.9/0	0.9/0	HPPE	145	>1000	-2000	2000	1.0	-3.56	4.45	0.0020	0.0	-
	4	-0.3/-0.6	0/0	0.9/0	1.1/0.3	HPPE	145	>1000	-2000	2000	1.0	-2.28	3.38	0.0018	0.0	-
	5	-0.3/-0.5	0/0	0.9/0	1/0.3	HPPE	145	>1000	-2000	2000	1.0	-2.39	3.51	0.0019	0.0	-
WM 1.2	2	0/0	0/0	0/0	0/0	HPPE	145	#DIV/0!	-2000	2000	N/A	0.0	0.0	0.0	0.0	-
	3	-0.1/-0.1	0.1/0	0.8/0.7	0.8/0.7	HPPE	145	612	-2000	2000	N/A	-4.29	0.79	0.0005	0.0	-
	4	-0.6/-0.6	0.1/0	0.8/0.7	1/0.9	HPPE	145	>1000	-2000	2000	N/A	-4.19	0.74	0.0005	0.0	-
	5	-0.5/-0.5	0.1/0	0.8/0.7	1/0.8	HPPE	145	953.354	-2000	2000	N/A	-4.22	0.77	0.0005	0.0	-
WM 2.1	2	0/-1.7	0.2/-0.2	0/-0.9	1.9/0	BP	200	>1000	-2000	2000	N/A	-19.73	15.43	0.0050	0.1	-
	3	0/-7	2.5/-2.3	0/-9.5	11.8/0	BP	200	>1000	-2000	2000	N/A	-135.35	45.96	0.0160	0.2	-
	4	-0.4/-4.5	2.5/-2.3	0/-9.5	10.5/0.4	BP	200	>1000	-2000	2000	N/A	-137.76	48.37	0.0166	0.2	-
	5	-0.3/-3.5	2.5/-2.3	0/-9.5	10.1/0.3	BP	200	>1000	-2000	2000	N/A	-139.25	49.86	0.0171	0.2	-

Asset	Calc. Stage	Vertical (mm)	Horizontal parallel (mm)	Horizontal perpendicular (mm)	Flexural (mm)	Material	External Diameter (mm)	Radius of Curvature (km)	Screening Criteria			Results				Comments
									Compressive (µε)	Tensile (µε)	Joint Rot. (°)	Compressive (µε)	Tensile (µε)	Joint Rot (°)	Joint Pull Out (mm)	
WM 2.2	2	0/0	0/0	0/0	0/0	BP	200	0	-2000	2000	N/A	0.00	0.00	0.0000	0.0	-
	3	0/-0.1	0/-0.6	0/-0.1	0.1/0	BP	200	>1000	-2000	2000	N/A	-3.28	41.68	0.0013	0.2	-
	4	-0.4/-0.6	0/-0.6	0/-0.1	0.6/0.4	BP	200	>1000	-2000	2000	N/A	-2.51	40.92	0.0010	0.2	-
	5	-0.3/-0.5	0/-0.6	0/-0.1	0.5/0.3	BP	200	>1000	-2000	2000	N/A	-2.49	40.90	0.0010	0.2	-

7. FINAL REMARKS

A conservative analysis of the consequences of the proposed works on the Thames Water assets located in proximity of the site was undertaken. The results presented are based on the assumptions detailed in this report.

Pdisp and Xdisp calculations were carried out to estimate the impact of the demolition, wall installation, excavation and construction works on the Thames Water assets. The assessment assumes that the utilities are subject to green-field displacements and therefore ignores the movement-restraining effect induced by the utilities' lining flexural and axial rigidity. The results of this conservative analysis indicate that the impact of the proposed works on the Thames Water assets is within acceptable limits, except for a few assets which are discussed below. In general, no significant impact on the Thames Water assets is expected due to the effects of the proposed works.

The modelling approach adopted by Xdisp causes the assets to bend in a way which is less smooth than what one would expect in reality, and the analysis undertaken ignores the movement-restraining effect induced by the utilities' lining and axial rigidity and the stiffness provided by the connection to the rest of the network and manholes.

A single asset exceeds the screening criteria in an isolated peak due to excessive flexural tensile strain (Sewer 2.1) driven by the excavation stage modelled in Xdisp. This localised peak is due to a sudden change of horizontal perpendicular movements that will then generate a single peak of excessive flexural tensile strain. Typical values of tensile strain for this asset are within the negligible limits proposed by TW.

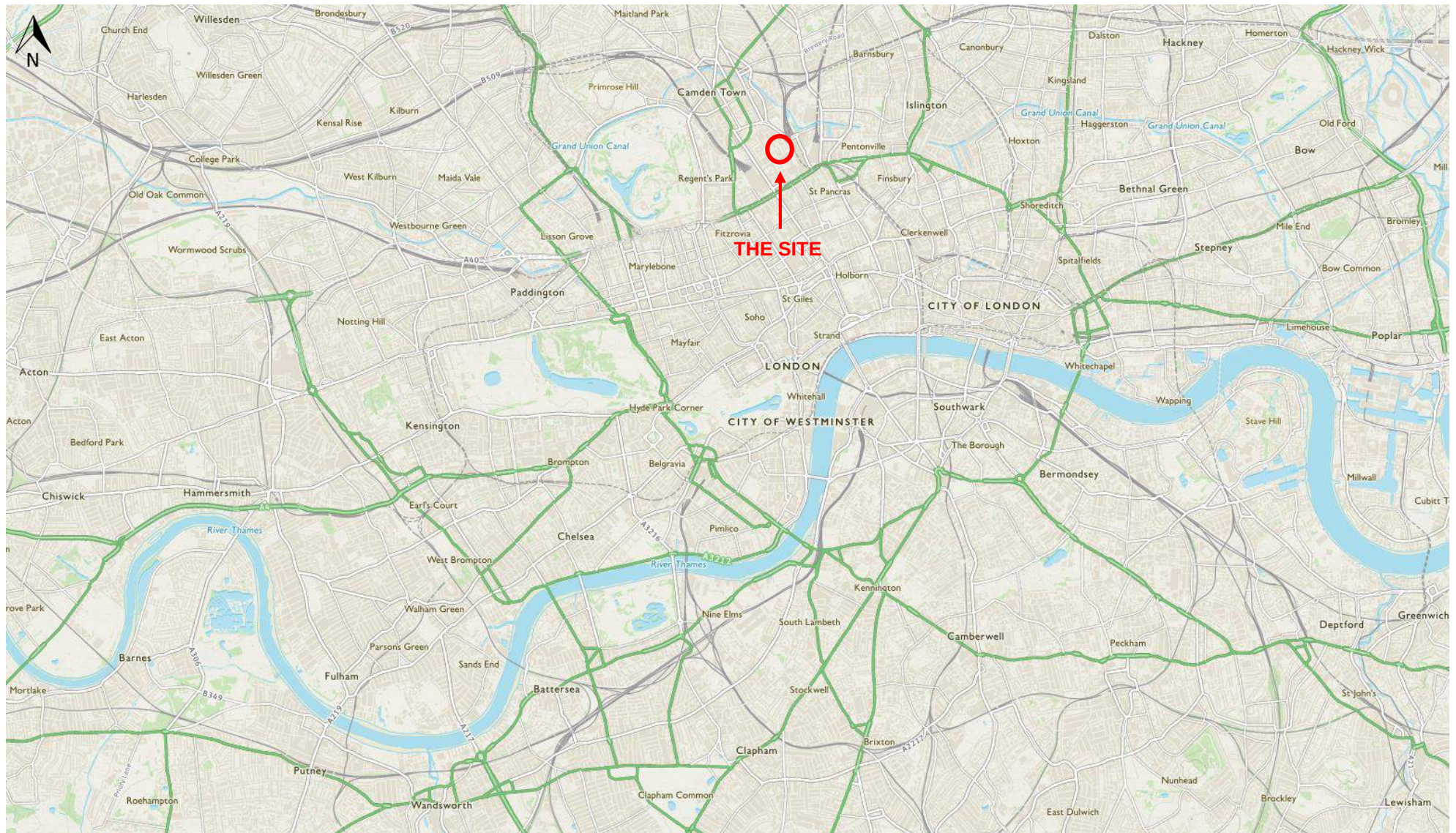
The Utilities Team shall liaise with TWUL to agree suitable mitigation measures for the assets around the site. Notwithstanding this, suggested "simple" mitigation measures for all Thames Water assets around the site should be adopted in place (e.g. pre and post conditions surveys of the sewers). Trial shutting of the valves is required for all clear water assets.

This assessment has been undertaken on the basis that best construction practice will be adopted.

Ground movements due to uncertain matters such as unplanned occasional works, for example, are not included.

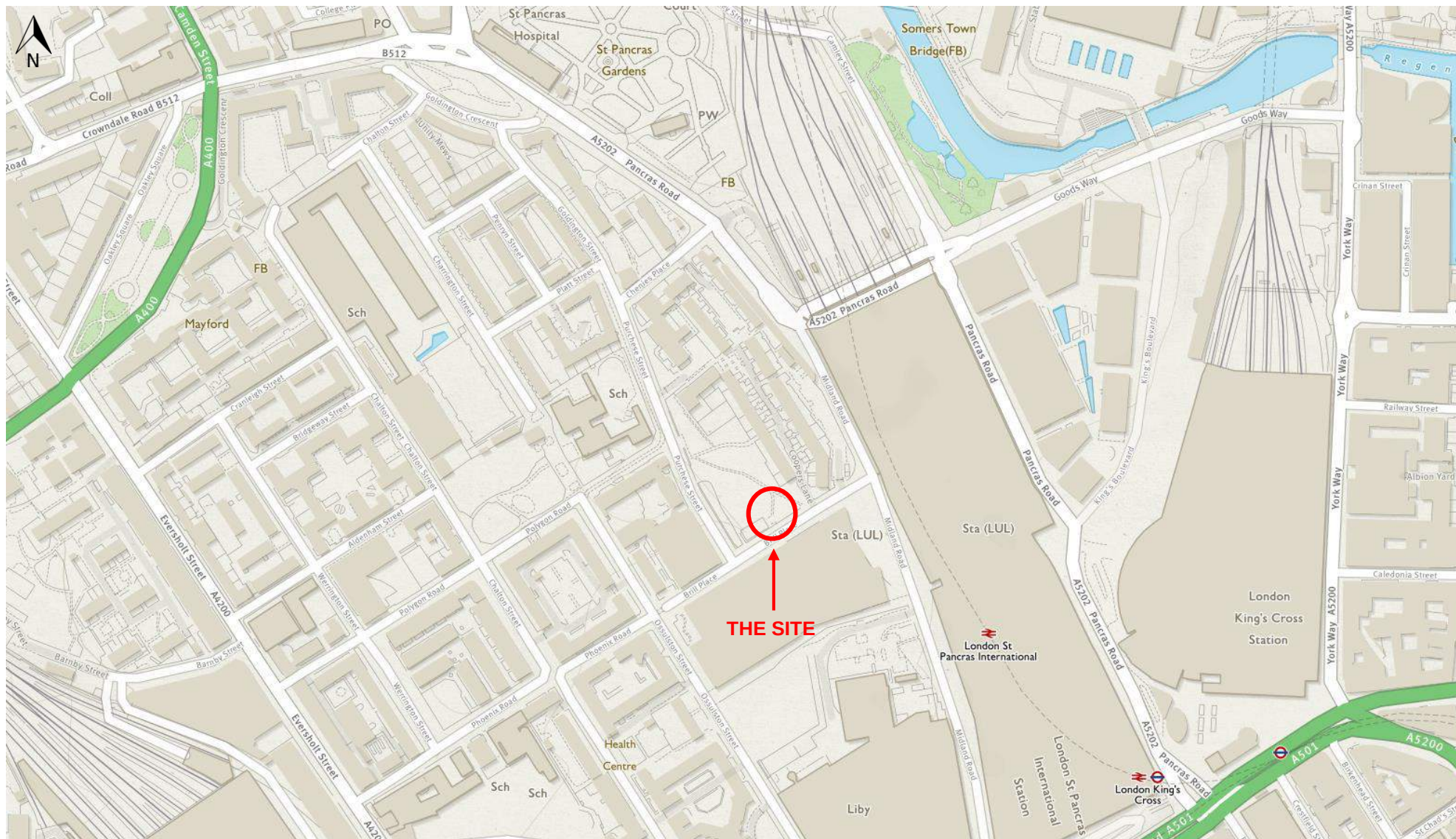
Appendix A

SITE LOCATION PLANS 



WSP House
70 Chancery Lane
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Limited	Figure No.	Appendix A.1
Project	Brill Place, London	Drawn by	BV
Title	Site Location Plan	Checked by	MS



WSP House
70 Chancery Lane
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Limited	Figure No.	Appendix A.2
Project	Brill Place, London	Drawn by	BV
Title	Site Location Plan	Checked by	MS



WSP House
70 Chancery Lane
London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Limited	Figure No.	Appendix A.3
Project	Brill Place, London	Drawn by	BV
Title	Aerial Photograph of Site	Checked by	MS

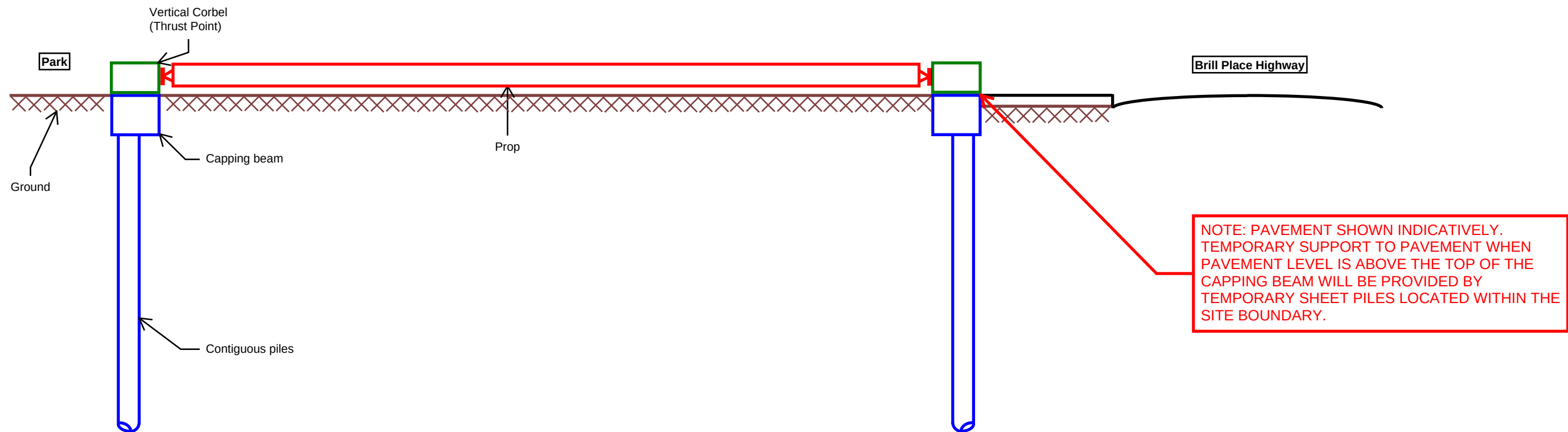
Appendix B

DEVELOPMENT DRAWINGS

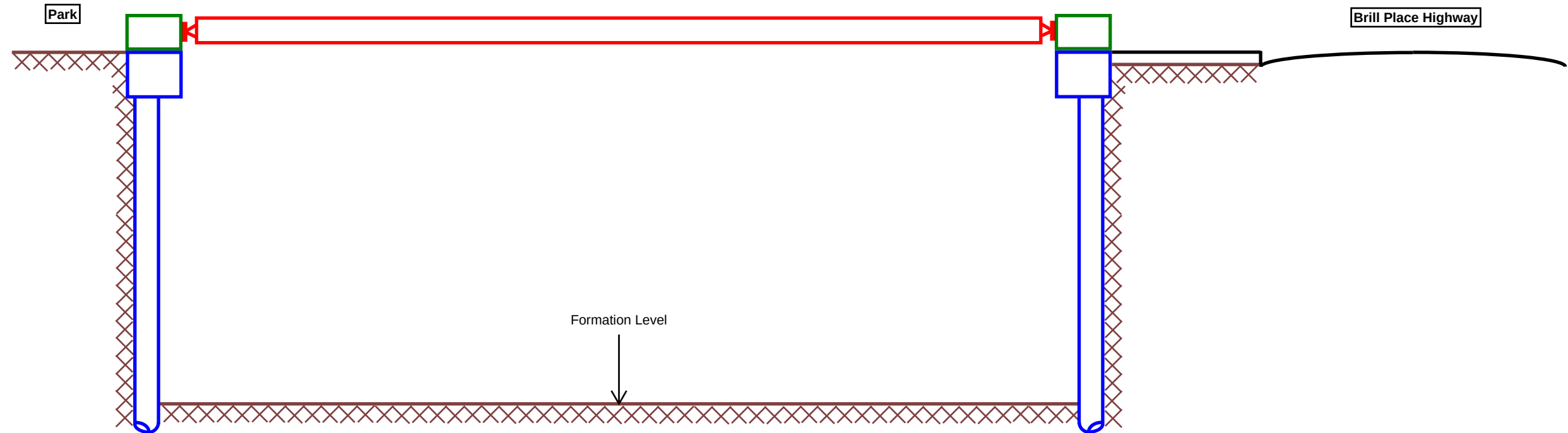
wsp



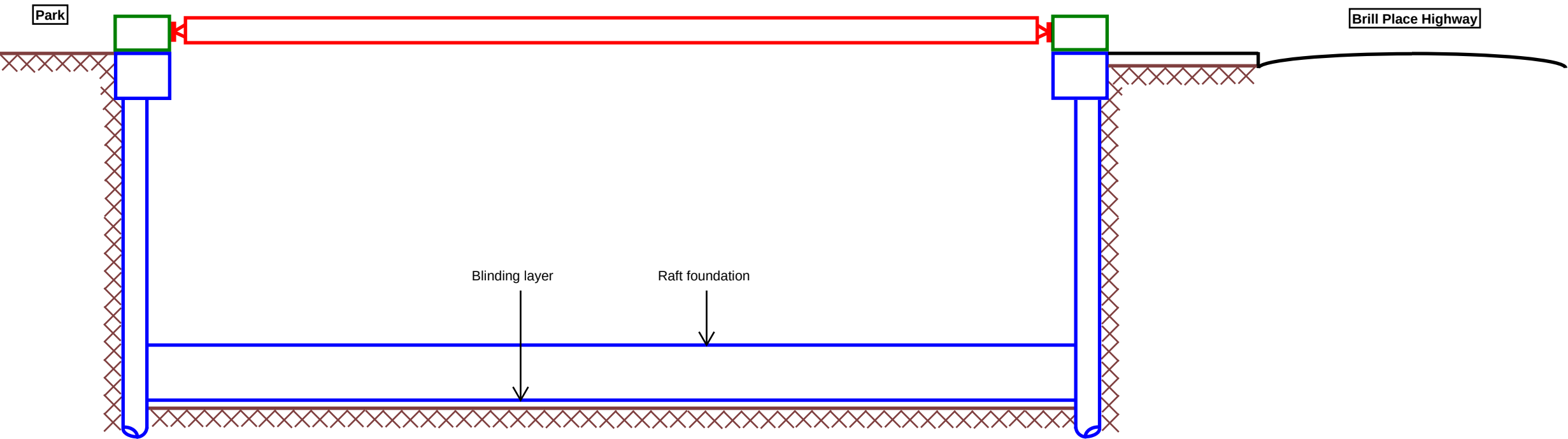
Step 1: Install contiguous pile wall, capping beam, vertical corbels and props



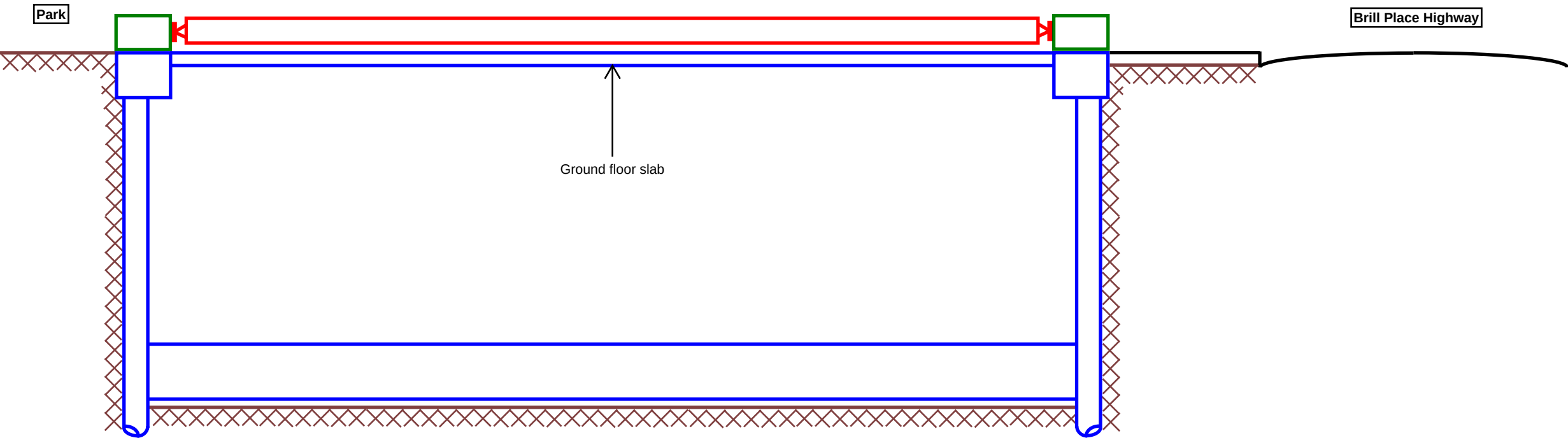
Step 2: Excavate to formation level



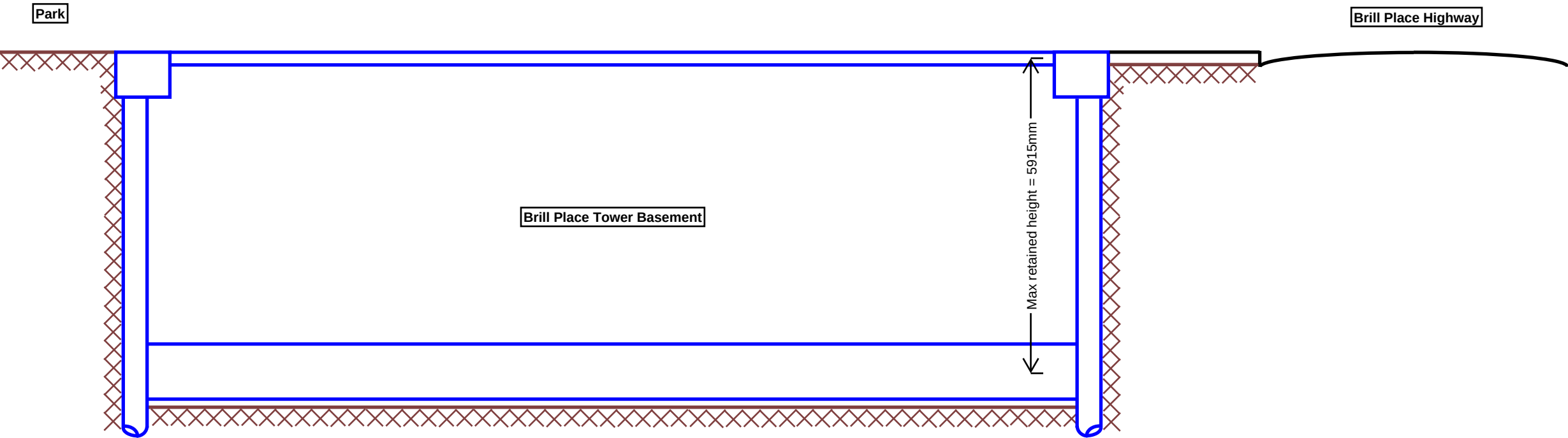
Step 3: Pour blinding layer and cast raft foundation



Step 4: Cast ground floor slab



Step 5: Remove props and vertical corbels





Project.
Brill Place Tower

Title.
Proposed Basement Construction Sequence (Section Views) and Temporary Propping Arrangement

Made by.
KW

Job No.
70057370

Date.
27/01/2020

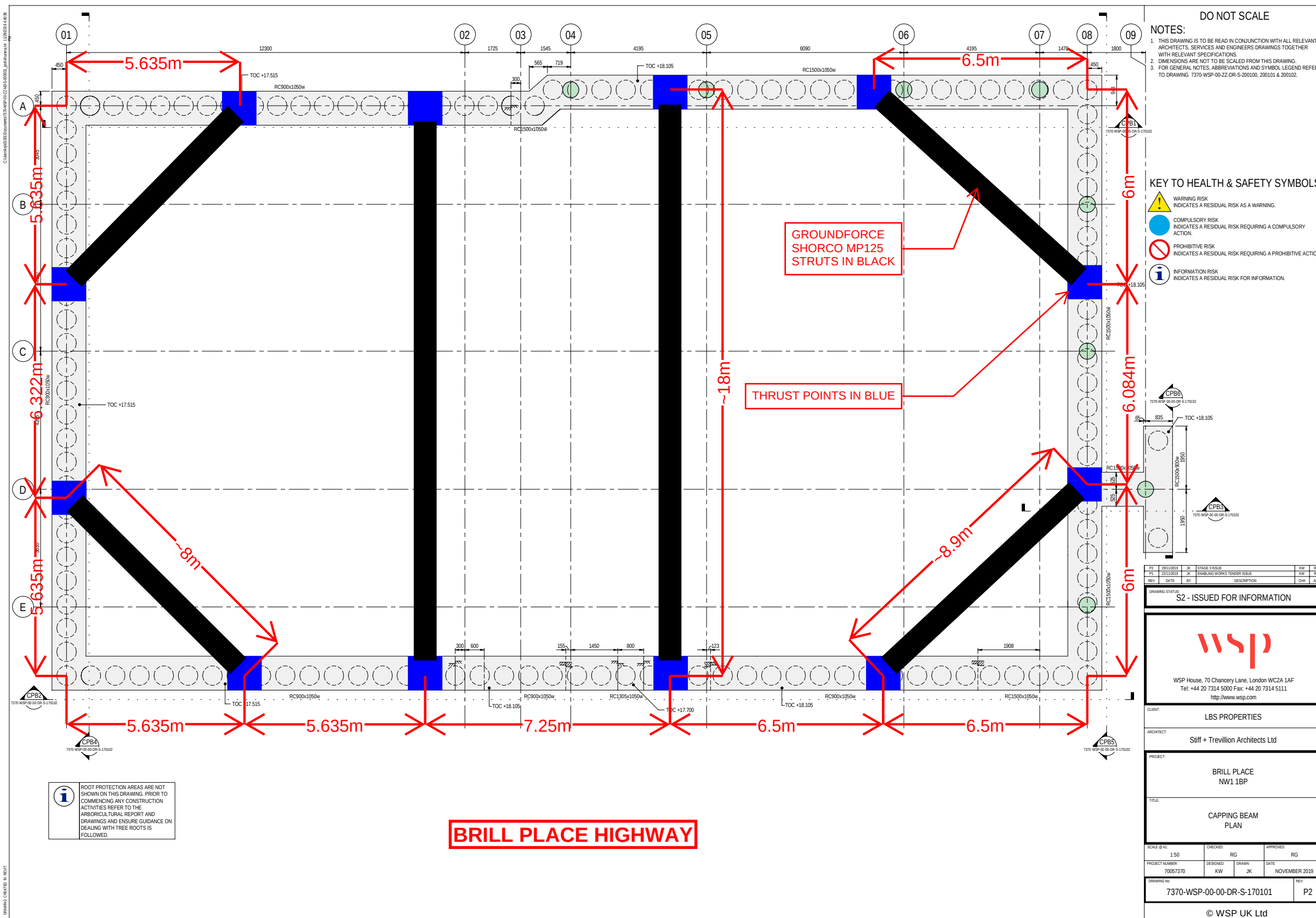
Checked by.
RG

Revision.
01

Page No.
4/5

Sketch No.
DDNS 008

PROPOSED TEMPORARY PROP ARRANGEMENT AT GROUND FLOOR





Project.
Brill Place Tower

Title.
Proposed Basement Construction Sequence (Section Views) and Temporary Propping Arrangement

Made by. KW	Job No. 70057370	Date. 27/01/2020
Checked by. RG	Revision. 01	Page No. 5/5
Sketch No. DDNS 008		

TEMPORARY PROPPING - PROP SIZING

~18m LONG PROP

SLS PROP FORCE = 587kN

587kN < ALLOWABLE 1000kN WORKING LOAD. THEREFORE OK.

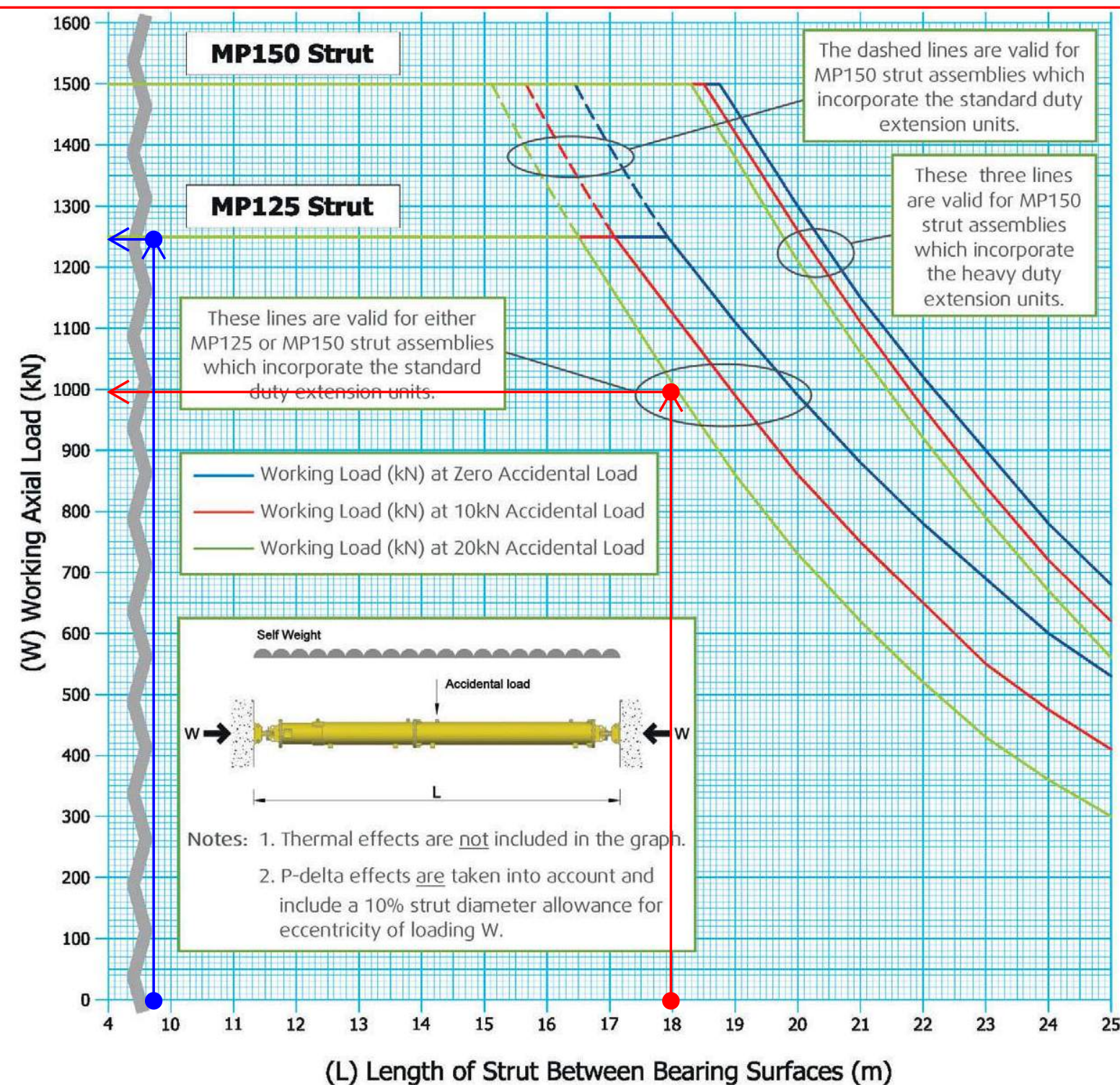
USE GROUNDFORCE SHORCO MP125 STRUT

~ 8.85m LONG CORNER PROP

SLS PROP FORCE = 903kN

903kN < ALLOWABLE 1250kN WORKING LOAD. THEREFORE OK.

USE GROUNDFORCE SHORCO MP125 STRUT

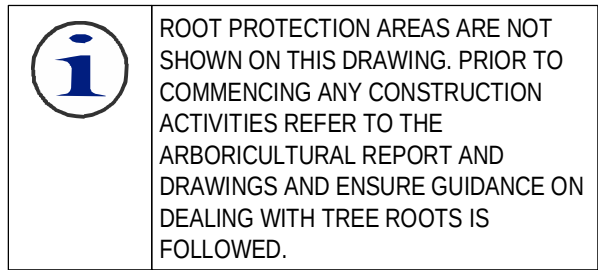


Groundforce Shorco | Technical File Issue 3.1

technical@vpplc.com

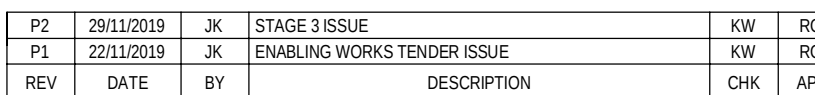
www.vpgroundforce.com

EXTRACT FROM GROUND FORCE SHORCO TECHNICAL FILES



1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH RELEVANT SPECIFICATIONS.
2. DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 7370-WSP-00-ZZ-DR-S-200100, 200101 & 200102.

INFORMATION RISK
INDICATES A RESIDUAL RISK FOR INFORMATION.



DRAWING STATUS:
S2 - ISSUED FOR INFORMATION



CLIENT:

LBS PROPERTIES

ARCHITECT:

Stiff + Trevillion Architects Ltd

PROJECT:

BRILL PLACE
NW1 1BP

TITLE:

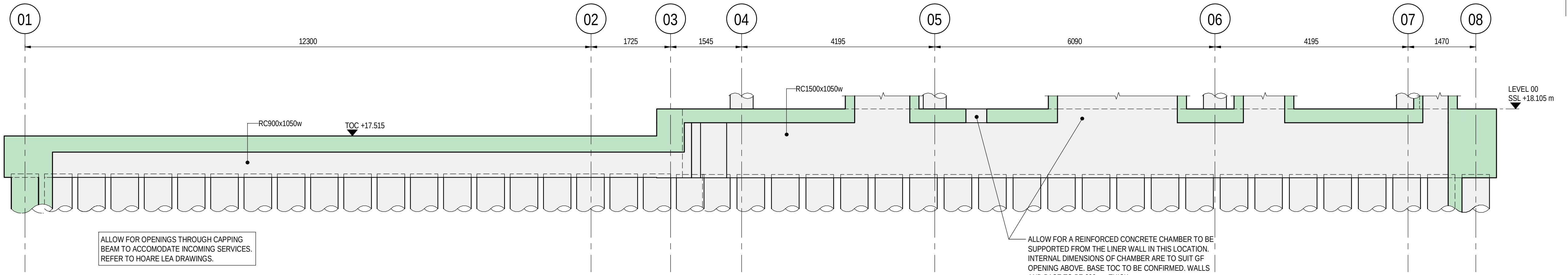
CAPPING BEAM
PLAN

DRAWING No:	REV:
7370-WSP-00-00-DR-S-170101	P2

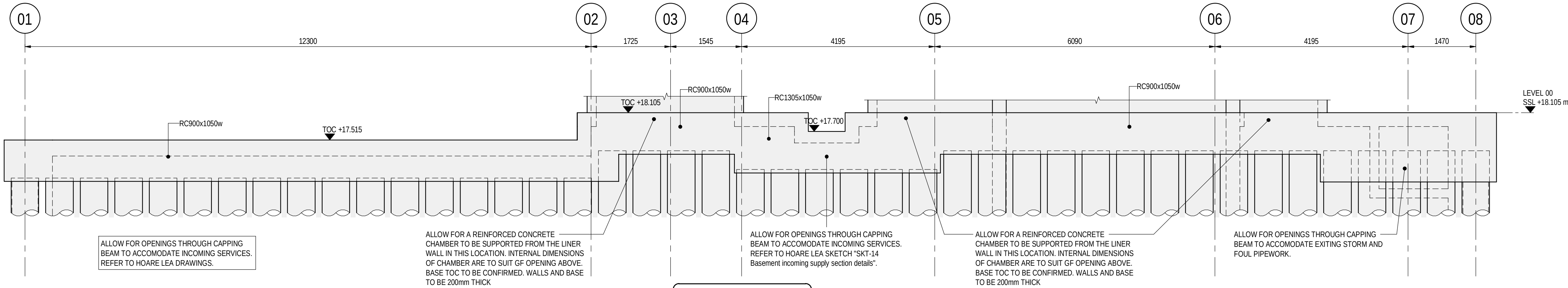
© WSP UK Ltd

C:\Users\p10101\Documents\7370-WSP-00-00-00001_1\7370-00-00-00001_1.dwg 11/29/2019 4:42:38 PM

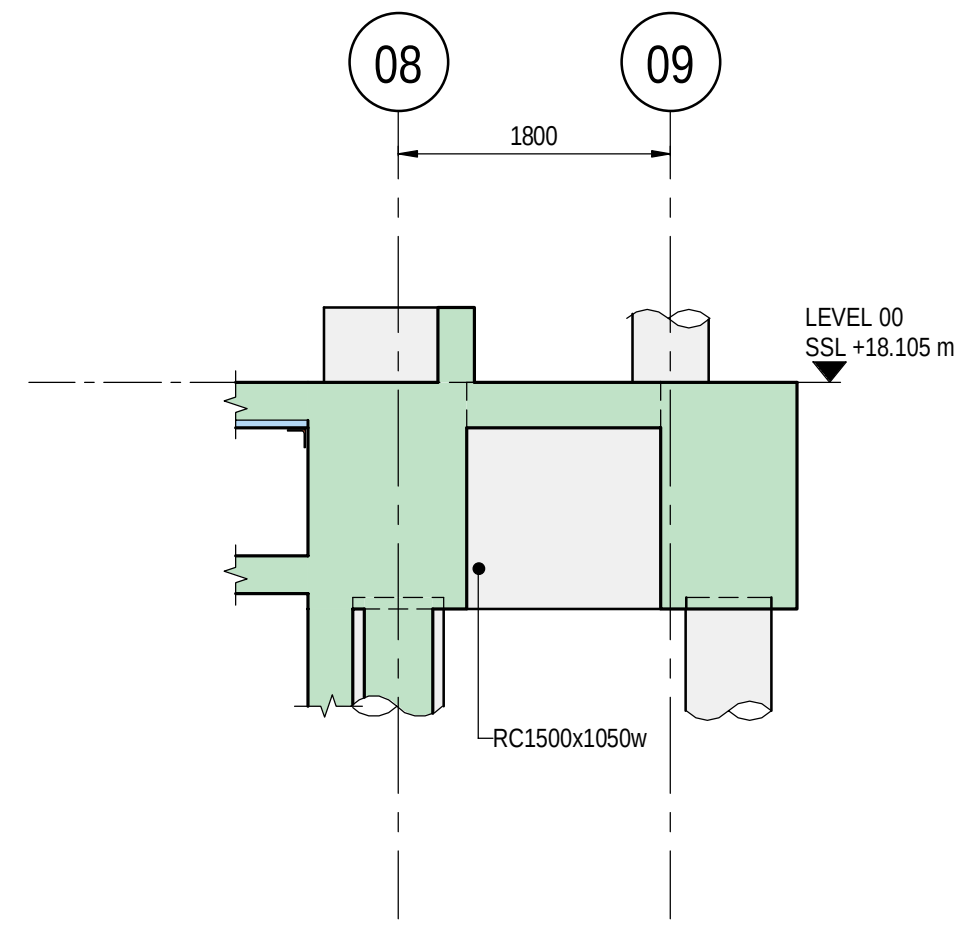
DRAWING CREATED IN REVIT



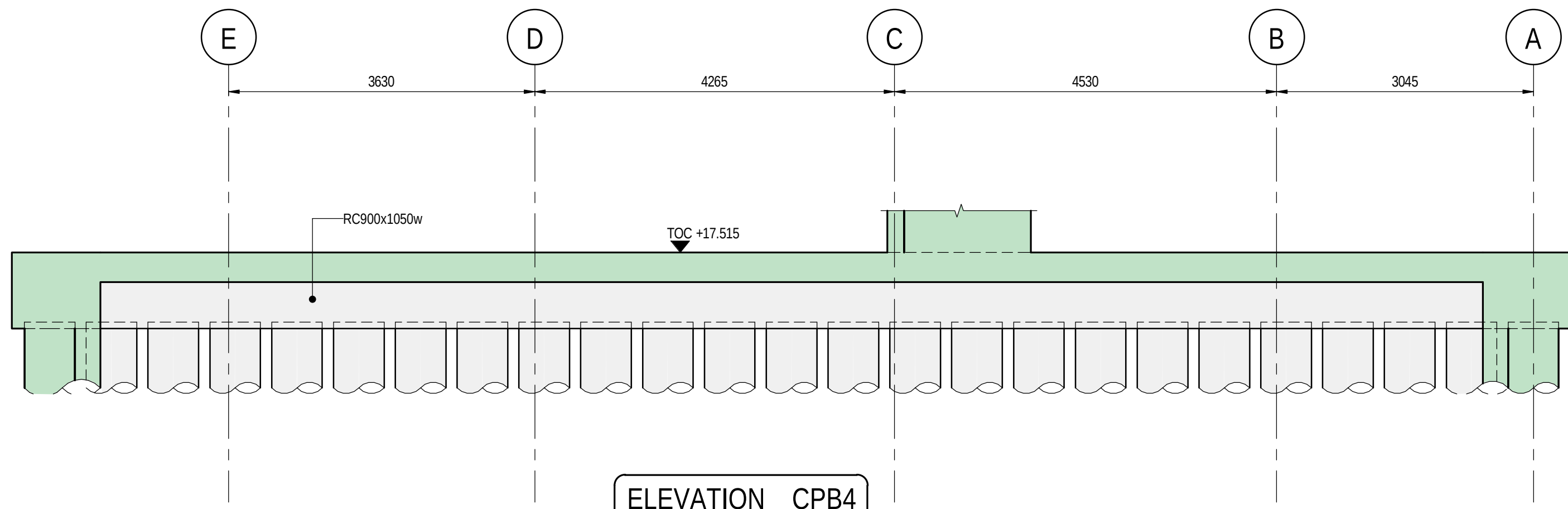
ELEVATION CPB1
1 : 50 7370-WSP-00-00-DR-S-170101



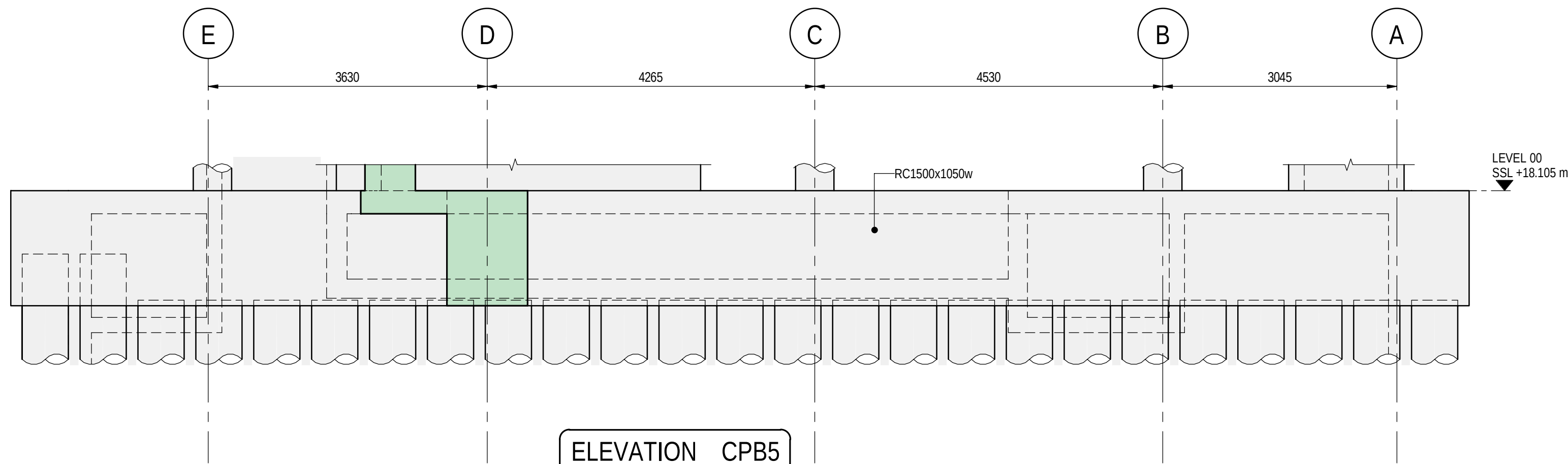
ELEVATION CPB2
1 : 50 7370-WSP-00-00-DR-S-170101



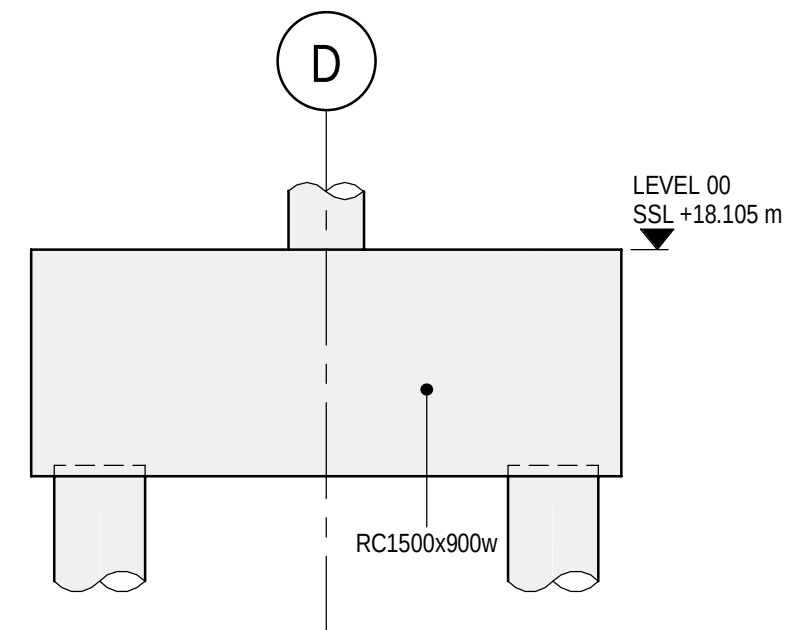
ELEVATION CPB3
1 : 50 7370-WSP-00-00-DR-S-170101



ELEVATION CPB4
1 : 50 7370-WSP-00-00-DR-S-170101



ELEVATION CPB5
1 : 50 7370-WSP-00-00-DR-S-170101



ELEVATION CPB6
1 : 50 7370-WSP-00-00-DR-S-170101

DO NOT SCALE

NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH RELEVANT SPECIFICATIONS.
- DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
- FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 7370-WSP-00-ZZ-DR-S-200100, 200101 & 200102.

KEY TO HEALTH & SAFETY SYMBOLS

- WARNING RISK
INDICATES A RESIDUAL RISK AS A WARNING.
- COMPULSORY RISK
INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.
- PROHIBITIVE RISK
INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
- INFORMATION RISK
INDICATES A RESIDUAL RISK FOR INFORMATION.

P2	29/11/2019	JK	STAGE 3 ISSUE	KW	RG
P1	22/11/2019	JK	ENABLING WORKS TENDER ISSUE	KW	RG
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS:
S2 - ISSUED FOR INFORMATION



WSP House, 70 Chancery Lane, London WC2A 1AF
Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
<http://www.wsp.com>

CLIENT:
LBS PROPERTIES

ARCHITECT:
Stiff + Trevillion Architects Ltd

PROJECT:
BRILL PLACE
NW1 1BP

TITLE:
CAPPING BEAM
ELEVATIONS

SCALE @ A1: 1:50	CHECKED: RG	APPROVED: RG
PROJECT NUMBER: 70057370	DESIGNED: KW	DRAWN: JK
		DATE: NOVEMBER 2019

DRAWING No: 7370-WSP-00-00-DR-S-170102	REV: P2

© WSP UK Ltd

1. THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH RELEVANT SPECIFICATIONS.
2. DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
3. FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 7370-WSP-00-ZZ-DR-S-200100, 200101 & 200102.

	WARNING RISK INDICATES A RESIDUAL RISK AS A WARNING.
	COMPULSORY RISK INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.
	PROHIBITIVE RISK INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
	INFORMATION RISK INDICATES A RESIDUAL RISK FOR INFORMATION.

DRAWING STATUS:
S2 - ISSUED FOR INFORMATION

WSP House, 70 Chancery Lane, London WC2A 1AF
Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
<http://www.wsp.com>

TITLE:

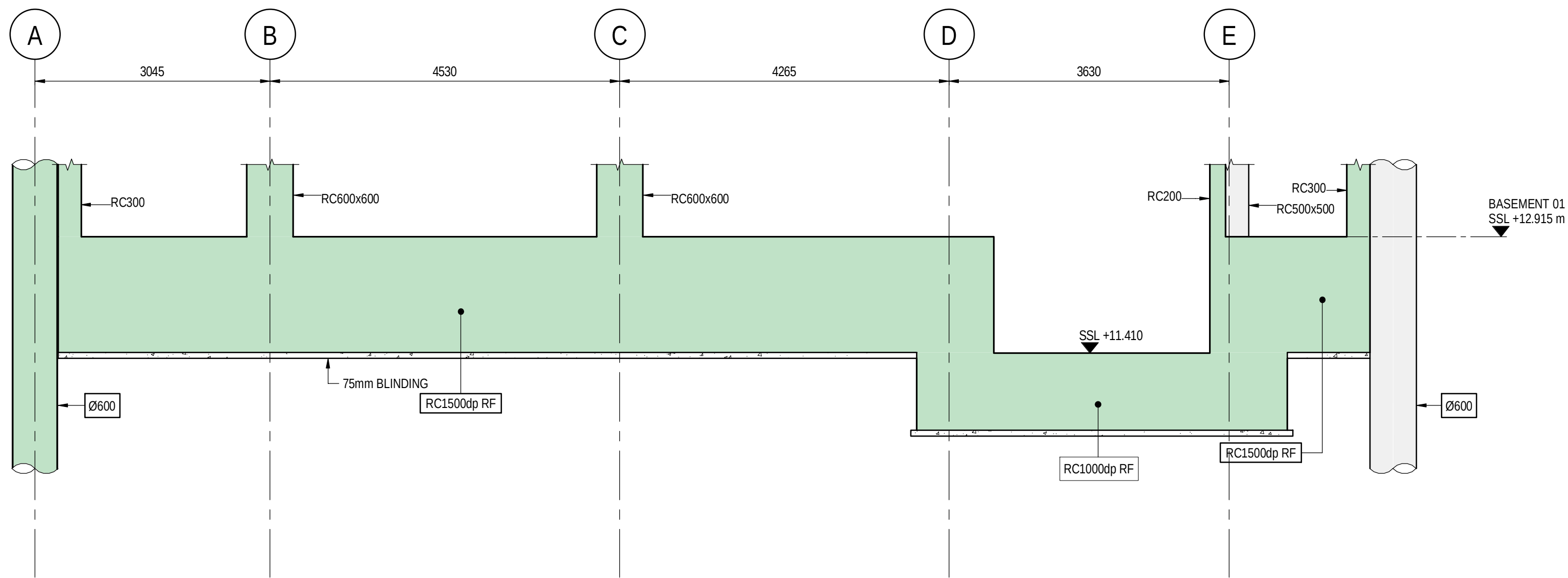
LEVEL B1
GENERAL ARRANGEMENT

DRAWING No:	REV:
7370-WSP-00-B1-DR-S-160101	P2

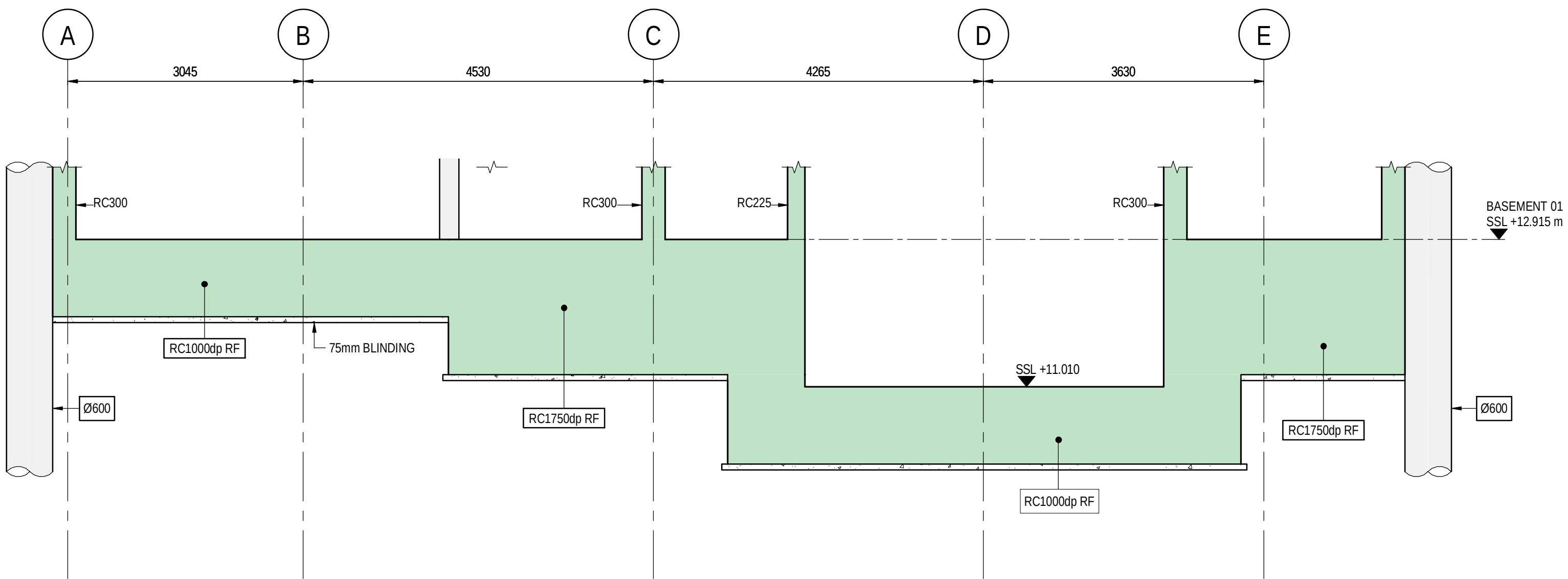
 ROOT PROTECTION AREAS ARE NOT SHOWN ON THIS DRAWING. PRIOR TO COMMENCING ANY CONSTRUCTION ACTIVITIES REFER TO THE ARBORICULTURAL REPORT AND DRAWINGS AND ENSURE GUIDANCE ON DEALING WITH TREE ROOTS IS FOLLOWED.

	ALLOWANCES SHOULD BE MADE FOR DEWATERING DURING EXCAVATION

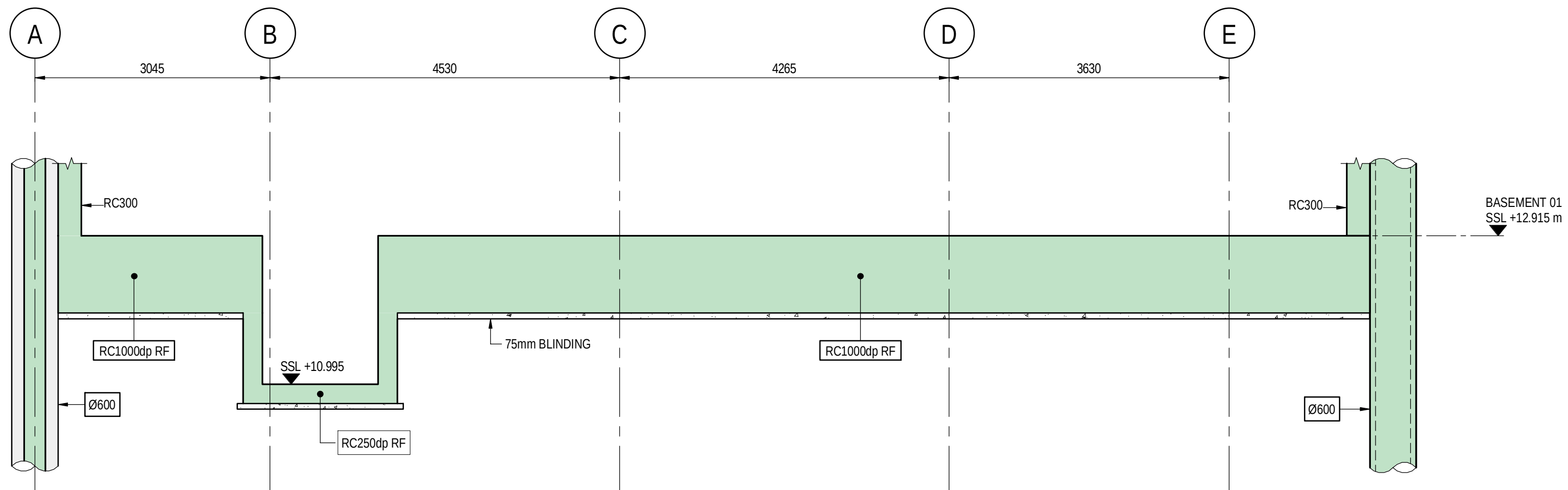
Brill Place Highway



SECTION B1.4
1 : 50 7370-WSP-00-B1-DR-S-160101



SECTION B1.5
1 : 50 7370-WSP-00-B1-DR-S-160101



SECTION B1.6
1 : 50 7370-WSP-00-B1-DR-S-160101

DO NOT SCALE

NOTES:

- THIS DRAWING IS TO BE READ IN CONJUNCTION WITH ALL RELEVANT ARCHITECTS, SERVICES AND ENGINEERS DRAWINGS TOGETHER WITH RELEVANT SPECIFICATIONS.
- DIMENSIONS ARE NOT TO BE SCALED FROM THIS DRAWING.
- FOR GENERAL NOTES, ABBREVIATIONS AND SYMBOL LEGEND REFER TO DRAWING 7370-WSP-00-ZZ-DR-S-200100, 200101 & 200102.

KEY TO HEALTH & SAFETY SYMBOLS

- WARNING RISK
INDICATES A RESIDUAL RISK AS A WARNING.
- COMPULSORY RISK
INDICATES A RESIDUAL RISK REQUIRING A COMPULSORY ACTION.
- PROHIBITIVE RISK
INDICATES A RESIDUAL RISK REQUIRING A PROHIBITIVE ACTION.
- INFORMATION RISK
INDICATES A RESIDUAL RISK FOR INFORMATION.

P2	29/11/2019	JK	STAGE 3 ISSUE	KW	RG
P1	22/11/2019	JK	ENABLING WORKS TENDER ISSUE	KW	RG
REV	DATE	BY	DESCRIPTION	CHK	APP

DRAWING STATUS:
S2 - ISSUED FOR INFORMATION

WSP

WSP House, 70 Chancery Lane, London WC2A 1AF
Tel: +44 20 7314 5000 Fax: +44 20 7314 5111
<http://www.wsp.com>

CLIENT:
LBS PROPERTIES

ARCHITECT:
Stiff + Trevillion Architects Ltd

PROJECT:
BRILL PLACE
NW1 1BP

TITLE:
BASEMENT SECTIONS
SHEET 2

SCALE @ A1: 1:50	CHECKED: RG	APPROVED: RG
PROJECT NUMBER: 70057370	DESIGNED: KW	DRAWN: JK
		DATE: NOVEMBER 2019

DRAWING No: 7370-WSP-00-B1-DR-S-200302	REV: P2

© WSP UK Ltd

Appendix C

THAMES WATER ASSETS 

Appendix C.1

**THAMES WATER ASSET LOCATION
MAPS**



Asset location search



Property Searches

WSP UK Ltd
LONDON
WC2A 1AF

Search address supplied Flat 1
Phoenix Court
Purchase Street
London
NW1 1EL

Your reference Brill Place Plot 7

Our reference ALS/ALS Standard/2019_4048395

Search date 29 July 2019

Keeping you up-to-date

Notification of Price Changes

From 1 September 2018 Thames Water Property Searches will be increasing the price of its Asset Location Search in line with RPI at 3.23%.

For further details on the price increase please visit our website: www.thameswater-propertysearches.co.uk
Please note that any orders received with a higher payment prior to the 1 September 2018 will be non-refundable.



Thames Water Utilities Ltd
Property Searches, PO Box 3189, Slough SL1 4WW
DX 151280 Slough 13



searches@thameswater.co.uk
www.thameswater-propertysearches.co.uk



0845 070 9148



Search address supplied: Flat 1, Phoenix Court, Purchase Street, London, NW1 1EL

Dear Sir / Madam

An Asset Location Search is recommended when undertaking a site development. It is essential to obtain information on the size and location of clean water and sewerage assets to safeguard against expensive damage and allow cost-effective service design.

The following records were searched in compiling this report: - the map of public sewers & the map of waterworks. Thames Water Utilities Ltd (TWUL) holds all of these.

This search provides maps showing the position, size of Thames Water assets close to the proposed development and also manhole cover and invert levels, where available.

Please note that none of the charges made for this report relate to the provision of Ordnance Survey mapping information. The replies contained in this letter are given following inspection of the public service records available to this company. No responsibility can be accepted for any error or omission in the replies.

You should be aware that the information contained on these plans is current only on the day that the plans are issued. The plans should only be used for the duration of the work that is being carried out at the present time. Under no circumstances should this data be copied or transmitted to parties other than those for whom the current work is being carried out.

Thames Water do update these service plans on a regular basis and failure to observe the above conditions could lead to damage arising to new or diverted services at a later date.

Contact Us

If you have any further queries regarding this enquiry please feel free to contact a member of the team on 0845 070 9148, or use the address below:

Thames Water Utilities Ltd
Property Searches
PO Box 3189
Slough
SL1 4WW

Email: searches@thameswater.co.uk

Web: www.thameswater-propertysearches.co.uk

Waste Water Services

Please provide a copy extract from the public sewer map.

Enclosed is a map showing the approximate lines of our sewers. Our plans do not show sewer connections from individual properties or any sewers not owned by Thames Water unless specifically annotated otherwise. Records such as "private" pipework are in some cases available from the Building Control Department of the relevant Local Authority.

Where the Local Authority does not hold such plans it might be advisable to consult the property deeds for the site or contact neighbouring landowners.

This report relates only to sewerage apparatus of Thames Water Utilities Ltd, it does not disclose details of cables and or communications equipment that may be running through or around such apparatus.

The sewer level information contained in this response represents all of the level data available in our existing records. Should you require any further Information, please refer to the relevant section within the 'Further Contacts' page found later in this document.

For your guidance:

- The Company is not generally responsible for rivers, watercourses, ponds, culverts or highway drains. If any of these are shown on the copy extract they are shown for information only.
- Any private sewers or lateral drains which are indicated on the extract of the public sewer map as being subject to an agreement under Section 104 of the Water Industry Act 1991 are not an 'as constructed' record. It is recommended these details be checked with the developer.

Clean Water Services

Please provide a copy extract from the public water main map.

Enclosed is a map showing the approximate positions of our water mains and associated apparatus. Please note that records are not kept of the positions of individual domestic supplies.

For your information, there will be a pressure of at least 10m head at the outside stop valve. If you would like to know the static pressure, please contact our Customer Centre on 0800 316 9800. The Customer Centre can also arrange for a full flow and pressure test to be carried out for a fee.



For your guidance:

- Assets other than vested water mains may be shown on the plan, for information only.
- If an extract of the public water main record is enclosed, this will show known public water mains in the vicinity of the property. It should be possible to estimate the likely length and route of any private water supply pipe connecting the property to the public water network.

Payment for this Search

A charge will be added to your suppliers account.

Further contacts:

Waste Water queries

Should you require verification of the invert levels of public sewers, by site measurement, you will need to approach the relevant Thames Water Area Network Office for permission to lift the appropriate covers. This permission will usually involve you completing a TWOSA form. For further information please contact our Customer Centre on Tel: 0845 920 0800. Alternatively, a survey can be arranged, for a fee, through our Customer Centre on the above number.

If you have any questions regarding sewer connections, budget estimates, diversions, building over issues or any other questions regarding operational issues please direct them to our service desk. Which can be contacted by writing to:

Developer Services (Waste Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

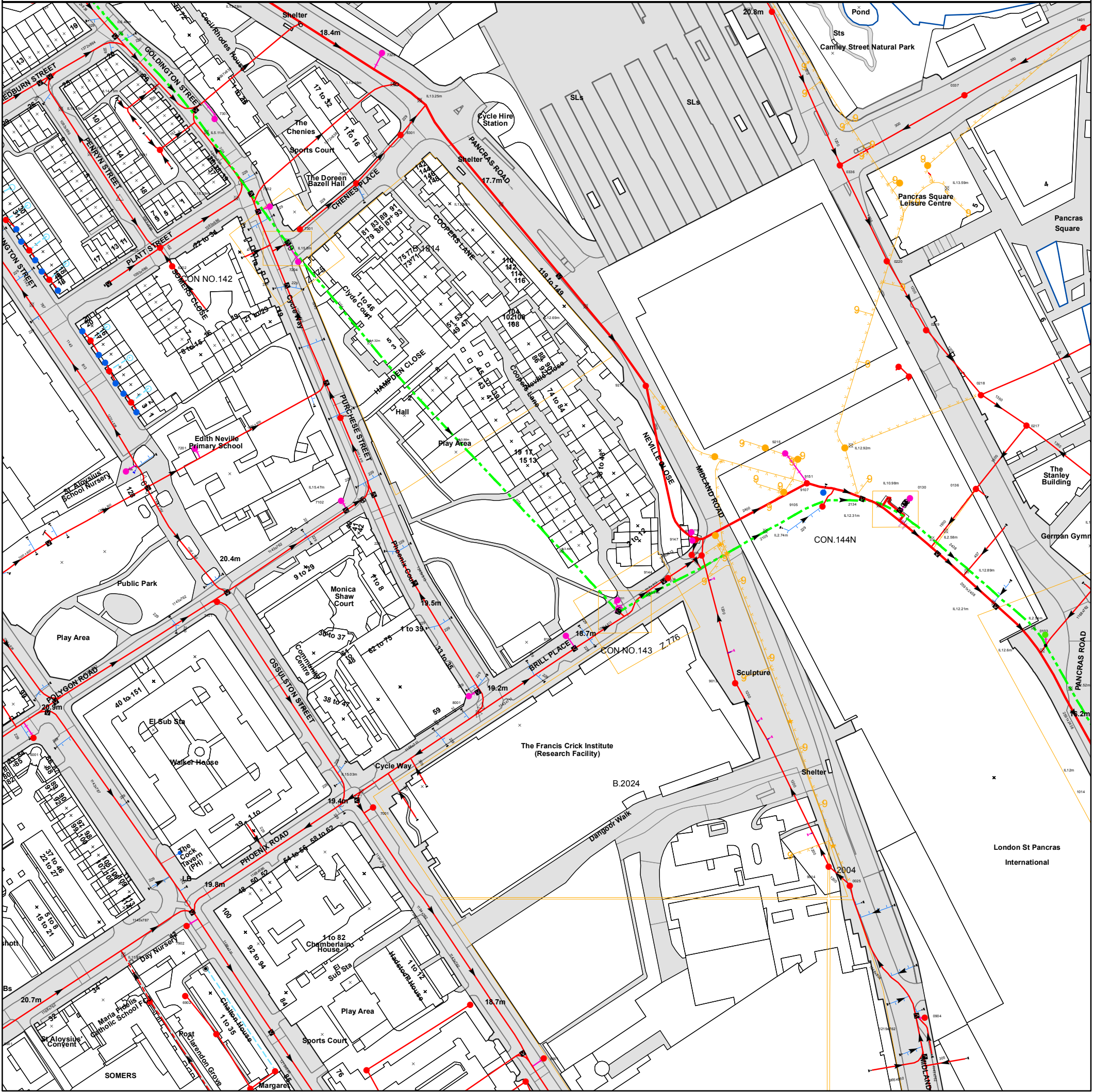
Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk

Clean Water queries

Should you require any advice concerning clean water operational issues or clean water connections, please contact:

Developer Services (Clean Water)
Thames Water
Clearwater Court
Vastern Road
Reading
RG1 8DB

Tel: 0800 009 3921
Email: developer.services@thameswater.co.uk



The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale: 1:1792
Width: 500m
Printed By: SASirvat
Print Date: 29/07/2019
Map Centre: 529870,183162
Grid Reference: TQ2983SE

Comments:

ALS/ALS Standard/2019_4048395

NB: Level quoted in metres Ordnance Newlyn Datum. The value -9999.00 indicates no Survey information is available.

REFERENCE	COVER LEVEL	INVERT LEVEL
9214	16.95	12.97
911C		
8301	17.95	16.81
9144		
6301		
6202		
8001		
7204		
9013	18.03	13.18
7302		
6001		
7902		
7305	18.44	17.3
0103		
0218	17.67	13.11
0337	17.3	14.33
0130	16.64	
0219	17.19	13.42
02BI		
9014	17.7	13.59
0220	16.57	13.63
8101		
9105		
611A	21.1	
9101	18.3	15.73
79AF		
62DE		
62CJ		
62ED		
63EG		
62EI		
62EE		
62BG		
79BD		
62BF		
62EG		
62EF		
62EJ		
62DG		
63EE		
62BH		
6902		

REFERENCE	COVER LEVEL	INVERT LEVEL
9146		12.9
911A	17.5	
8901		
7102		
6203	20.2	16.79
9147	17.34	12.95
7201		
7301	18.93	17.86
9215		
9423	19.43	14.37
7001		
9151	17.02	12.36
7101	20.41	15.97
0136	17.18	12.76
0217	17.6	12.89
0025	17.5	13.66
0904		
02BH		
1401	22.68	20.37
0336	16.82	13.92
7307		
7328		
9107	16.67	
721A	19.7	14.76
63EI		
62DF		
62DA		
79AB		
79BG		
63EF		
63ED		
89BC		
89AC		
79BA		
911B		
62DC		
62DH		
62BI		
63EH		
62DB		
701A		



ALS Sewer Map Key

Public Sewer Types (Operated & Maintained by Thames Water)

	Foul: A sewer designed to convey waste water from domestic and industrial sources to a treatment works.		Trunk Foul
	Surface Water: A sewer designed to convey surface water (e.g. rain water from roofs, yards and car parks) to rivers or watercourses.		Trunk Surface Water
	Combined: A sewer designed to convey both waste water and surface water from domestic and industrial sources to a treatment works.		Trunk Combined
	Storm Relief		Bio-solids (Sludge)
	Vent Pipe		Proposed Thames Water Foul Sewer
	Proposed Thames Surface Water Sewer		Foul Rising Main
	Gallery		Combined Rising Main
	Surface Water Rising Main		Proposed Thames Water Rising Main
	Sludge Rising Main		Vacuum

Notes:

- 1) All levels associated with the plans are to Ordnance Datum Newlyn.
- 2) All measurements on the plans are metric.
- 3) Arrows (on gravity fed sewers) or flecks (on rising mains) indicate direction of flow.
- 4) Most private pipes are not shown on our plans, as in the past, this information has not been recorded.
- 5) 'na' or '0' on a manhole level indicates that data is unavailable.

Sewer Fittings

A feature in a sewer that does not affect the flow in the pipe. Example: a vent is a fitting as the function of a vent is to release excess gas.

	Air Valve
	Dam Chase
	Fitting
	Meter
	Vent Column

Operational Controls

A feature in a sewer that changes or diverts the flow in the sewer. Example: A hydrobrake limits the flow passing downstream.

	Control Valve
	Drop Pipe
	Ancillary
	Weir

End Items

End symbols appear at the start or end of a sewer pipe. Examples: an Undefined End at the start of a sewer indicates that Thames Water has no knowledge of the position of the sewer upstream of that symbol, Outfall on a surface water sewer indicates that the pipe discharges into a stream or river.

	Outfall
	Undefined End
	Inlet

Other Symbols

Symbols used on maps which do not fall under other general categories

	Public/Private Pumping Station
	Change of characteristic indicator (C.O.C.I.)
	Invert Level
	Summit

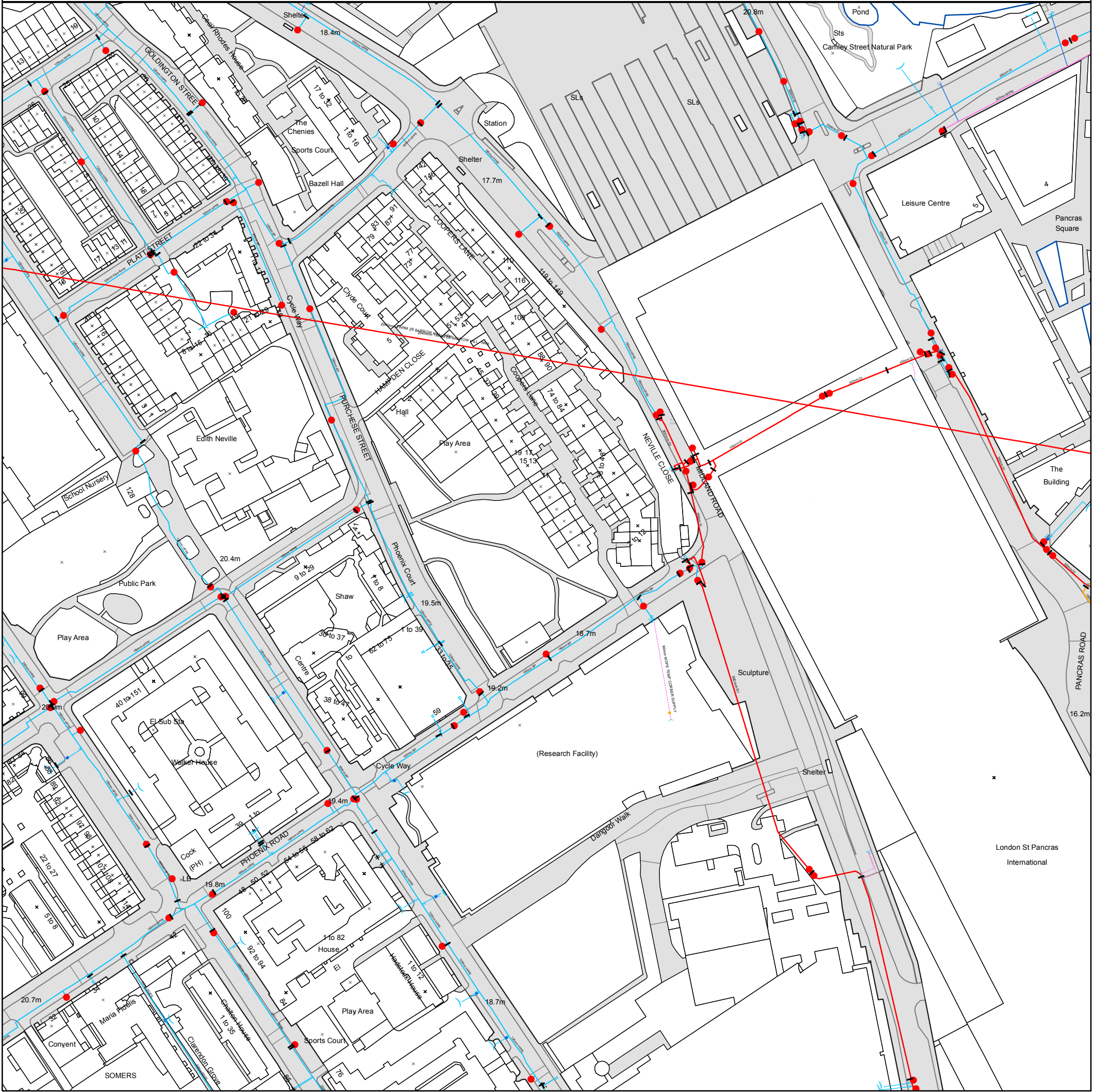
Areas

Lines denoting areas of underground surveys, etc.

	Agreement
	Operational Site
	Chamber
	Tunnel
	Conduit Bridge

Other Sewer Types (Not Operated or Maintained by Thames Water)

	Foul Sewer		Surface Water Sewer
	Combined Sewer		Gully
	Culverted Watercourse		Proposed
			Abandoned Sewer



The position of the apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. Service pipes are not shown but their presence should be anticipated. No liability of any kind whatsoever is accepted by Thames Water for any error or omission. The actual position of mains and services must be verified before any works are undertaken. Crown copyright Reserved

Scale: 1:1792
Width: 500m
Printed By: SASirvat
Print Date: 29/07/2019
Map Centre: 529870,183162
Grid Reference: TQ2983SE

Comments:



ALS Water Map Key

Water Pipes (Operated & Maintained by Thames Water)

4"	Distribution Main: The most common pipe shown on water maps. With few exceptions, domestic connections are only made to distribution mains.
16"	Trunk Main: A main carrying water from a source of supply to a treatment plant or reservoir, or from one treatment plant or reservoir to another. Also a main transferring water in bulk to smaller water mains used for supplying individual customers.
3" SUPPLY	Supply Main: A supply main indicates that the water main is used as a supply for a single property or group of properties.
3" FIRE	Fire Main: Where a pipe is used as a fire supply, the word FIRE will be displayed along the pipe.
3" METERED	Metered Pipe: A metered main indicates that the pipe in question supplies water for a single property or group of properties and that quantity of water passing through the pipe is metered even though there may be no meter symbol shown.
	Transmission Tunnel: A very large diameter water pipe. Most tunnels are buried very deep underground. These pipes are not expected to affect the structural integrity of buildings shown on the map provided.
	Proposed Main: A main that is still in the planning stages or in the process of being laid. More details of the proposed main and its reference number are generally included near the main.

PIPE DIAMETER	DEPTH BELOW GROUND
Up to 300mm (12")	900mm (3')
300mm - 600mm (12" - 24")	1100mm (3' 8")
600mm and bigger (24" plus)	1200mm (4')

Valves

	General Purpose Valve
	Air Valve
	Pressure Control Valve
	Customer Valve

Hydrants

	Single Hydrant

Meters

	Meter

End Items

Symbol indicating what happens at the end of a water main.

	Blank Flange
	Capped End
	Emptying Pit
	Undefined End
	Manifold
	Customer Supply
	Fire Supply

Operational Sites

	Booster Station
	Other
	Other (Proposed)
	Pumping Station
	Service Reservoir
	Shaft Inspection
	Treatment Works
	Unknown
	Water Tower

Other Symbols

	Data Logger

Other Water Pipes (Not Operated or Maintained by Thames Water)

	Other Water Company Main: Occasionally other water company water pipes may overlap the border of our clean water coverage area. These mains are denoted in purple and in most cases have the owner of the pipe displayed along them.
	Private Main: Indicates that the water main in question is not owned by Thames Water. These mains normally have text associated with them indicating the diameter and owner of the pipe.

Terms and Conditions

All sales are made in accordance with Thames Water Utilities Limited (TWUL) standard terms and conditions unless previously agreed in writing.

1. All goods remain in the property of Thames Water Utilities Ltd until full payment is received.
2. Provision of service will be in accordance with all legal requirements and published TWUL policies.
3. All invoices are strictly due for payment 14 days from due date of the invoice. Any other terms must be accepted/agreed in writing prior to provision of goods or service, or will be held to be invalid.
4. Thames Water does not accept post-dated cheques-any cheques received will be processed for payment on date of receipt.
5. In case of dispute TWUL's terms and conditions shall apply.
6. Penalty interest may be invoked by TWUL in the event of unjustifiable payment delay. Interest charges will be in line with UK Statute Law 'The Late Payment of Commercial Debts (Interest) Act 1998'.
7. Interest will be charged in line with current Court Interest Charges, if legal action is taken.
8. A charge may be made at the discretion of the company for increased administration costs.

A copy of Thames Water's standard terms and conditions are available from the Commercial Billing Team (cashoperations@thameswater.co.uk).

We publish several Codes of Practice including a guaranteed standards scheme. You can obtain copies of these leaflets by calling us on 0800 316 9800

If you are unhappy with our service you can speak to your original goods or customer service provider. If you are not satisfied with the response, your complaint will be reviewed by the Customer Services Director. You can write to her at: Thames Water Utilities Ltd. PO Box 492, Swindon, SN38 8TU.

If the Goods or Services covered by this invoice falls under the regulation of the 1991 Water Industry Act, and you remain dissatisfied you can refer your complaint to Consumer Council for Water on 0121 345 1000 or write to them at Consumer Council for Water, 1st Floor, Victoria Square House, Victoria Square, Birmingham, B2 4AJ.

Ways to pay your bill

Credit Card	BACS Payment	Telephone Banking	Cheque
Call 0845 070 9148 quoting your invoice number starting CBA or ADS / OSS	Account number 90478703 Sort code 60-00-01 A remittance advice must be sent to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW. or email ps.billing@thameswater.co.uk	By calling your bank and quoting: Account number 90478703 Sort code 60-00-01 and your invoice number	Made payable to ' Thames Water Utilities Ltd ' Write your Thames Water account number on the back. Send to: Thames Water Utilities Ltd., PO Box 3189, Slough SL1 4WW or by DX to 151280 Slough 13

Thames Water Utilities Ltd Registered in England & Wales No. 2366661 Registered Office Clearwater Court, Vastern Rd, Reading, Berks, RG1 8DB.



Search Code

IMPORTANT CONSUMER PROTECTION INFORMATION

This search has been produced by Thames Water Property Searches, Clearwater Court, Vastern Road, Reading RG1 8DB, which is registered with the Property Codes Compliance Board (PCCB) as a subscriber to the Search Code. The PCCB independently monitors how registered search firms maintain compliance with the Code.

The Search Code:

- provides protection for homebuyers, sellers, estate agents, conveyancers and mortgage lenders who rely on the information included in property search reports undertaken by subscribers on residential and commercial property within the United Kingdom
- sets out minimum standards which firms compiling and selling search reports have to meet
- promotes the best practise and quality standards within the industry for the benefit of consumers and property professionals
- enables consumers and property professionals to have confidence in firms which subscribe to the code, their products and services.

By giving you this information, the search firm is confirming that they keep to the principles of the Code. This provides important protection for you.

The Code's core principles

Firms which subscribe to the Search Code will:

- display the Search Code logo prominently on their search reports
- act with integrity and carry out work with due skill, care and diligence
- at all times maintain adequate and appropriate insurance to protect consumers
- conduct business in an honest, fair and professional manner
- handle complaints speedily and fairly
- ensure that products and services comply with industry registration rules and standards and relevant laws
- monitor their compliance with the Code

Complaints

If you have a query or complaint about your search, you should raise it directly with the search firm, and if appropriate ask for any complaint to be considered under their formal internal complaints procedure. If you remain dissatisfied with the firm's final response, after your complaint has been formally considered, or if the firm has exceeded the response timescales, you may refer your complaint for consideration under The Property Ombudsman scheme (TPOs). The Ombudsman can award compensation of up to £5,000 to you if the Ombudsman finds that you have suffered actual loss and/or aggravation, distress or inconvenience as a result of your search provider failing to keep to the code.

Please note that all queries or complaints regarding your search should be directed to your search provider in the first instance, not to TPOs or to the PCCB.

TPOs Contact Details

The Property Ombudsman scheme
Milford House
43-55 Milford Street
Salisbury
Wiltshire SP1 2BP
Tel: 01722 333306
Fax: 01722 332296
Web site: www.tpos.co.uk
Email: admin@tpos.co.uk

You can get more information about the PCCB from www.propertycodes.org.uk

PLEASE ASK YOUR SEARCH PROVIDER IF YOU WOULD LIKE A COPY OF THE SEARCH CODE

Appendix C.2

GPR SURVEYS

wsp

Appendix C.3

CONDITION SURVEY 



**Job No. 03134
5 Pancras Square
Pre Construction Photographic
Record**

FLEET STORM RELIEF SEWER (MAIN LINE)

5 PANCRAS SQUARE

PHOTOGRAPHIC RECORD – FLEET STORM RELIEF SEWER (MAIN LINE)

CONTENTS AMENDMENT RECORD

This document has been issued and amended as follows:

Revision	Date	Issued For / Revision Details
A	19/10/2015	Approved

Name	Data
Document No.	Job No. 03134
Status	Approved
Document Type	Report
Title/Subject	5 Pancras Square - Fleet Storm Relief Sewer Main Line Pre-Construction Photographic Record
WBS	N/A
Project	5 Pancras Square
Authors	KM
Keywords	Chainage, Downstream, Invert, Junction, Shaft, Spiral Staircase, Lifting Shaft and Upstream.

5 PANCRAS SQUARE

PHOTOGRAPHIC RECORD – FLEET STORM RELIEF SEWER (MAIN LINE)

LIST OF CONTENTS

	Page Number
1 INTRODUCTION	4
2 SURVEY ROUTE	4
2.1 Start Point	4
2.2 Finish Point	4
3 ASSOCIATED DOCUMENTATION	4
4 SURVEY REPORT DETAILS	4
4.1 Rules of Survey	4
4.2 Equipment Used	5
5 LOCATION	5
6 PHOTOGRAPH DETAILS	6
Photo Reference 1	6
Photo Reference 2	6
Photo Reference 3	6
Photo Reference 4	7
Photo Reference 5	7
Photo Reference 6	7
Photo Reference 7	8
Photo Reference 8	8
Photo Reference 9	8
Photo Reference 10	9
Photo Reference 11	9
Photo Reference 12	9
Photo Reference 13	10
Photo Reference 14	10
Photo Reference 15	10
Photo Reference 16	11
Photo Reference 17	11
Photo Reference 18	11
Photo Reference 19	12
Photo Reference 20	12
Photo Reference 21	12
Photo Reference 22	13
Photo Reference 23	13
Photo Reference 24	13
Photo Reference 25	14
Photo Reference 26	14
Photo Reference 27	14
Photo Reference 28	15
Photo Reference 29	15
Photo Reference 30	15
Photo Reference 31	16

Photo Reference 32	16
Photo Reference 33	16
Photo Reference 34	17
Photo Reference 35	17
Photo Reference 36	17
Photo Reference 37	18
Photo Reference 38	18

1 INTRODUCTION

This report provides a photographic record for a section of the Fleet Storm Relief Sewer (Main Line). The report is to be used in conjunction with survey drawing number 03134-XX-00500-DES.

2 SURVEY ROUTE

A 156m section of the Fleet Storm Relief Sewer (Main Line) was surveyed between MH TQ 2983 7204, located at junction of Purchase Street and Chenies Place and MH TQ 2983 9101 located on footpath in Brill Place.

2.1 Start Point

Photography starts 75m downstream from MH TQ 2983 7204.

2.2 Finish Point

Photography ends at MH TQ 2983 9101.

3 ASSOCIATED DOCUMENTATION

This survey record has the following associated documents.

Table 3.0.1 – Associated Documents

	Title	Doc Cnt No. / Ops Ref. No.
Survey Drawing:	Fleet Storm Relief Sewer (Main Line) Line and Level Survey	03134-XX-00500-DES
Condition Survey:	Fleet Storm Relief Sewer (Main Line) OS19/21 Condition Survey	TBC

4 SURVEY REPORT DETAILS

The survey report was compiled by the personnel identified in Table 4.0.1.

Table 4.0.1 – Survey Staff Record

	Initials	Date
Surveyed by:	PAP/NJL	25 th September 2015
Checked by:	KM	19 th October 2015
Approved by:	NJL	19 th October 2015

4.1 Rules of Survey

Positive chainage runs downstream.

Photos were taken every 10m and also at pertinent features in the sewer.

Chainage stated in the photographic record are based on measurements made during the line and level survey of the sewer.

Zero Chainage is at MH TQ 2983 7204.

4.2 Equipment Used

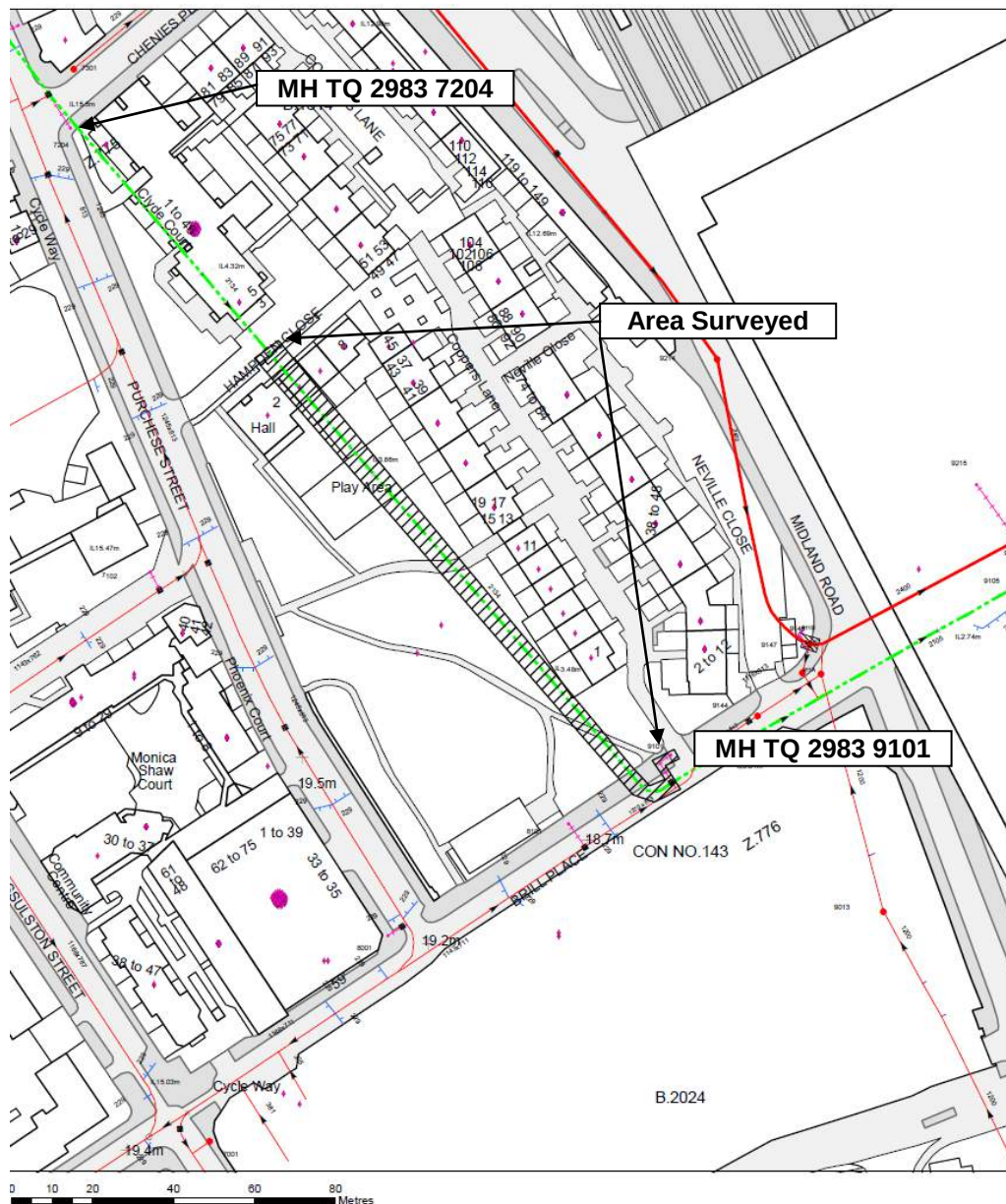
4.2.1 Camera Details

Table 4.2.1 – Camera Details

Canon Powershot G16	
Type:	High-sensitivity 10MP CCD
Lens:	6.1 – 30.5mm 1/1.8 – 2.8
Flash:	Ikelite DS161 Substrobe

5 LOCATION

Figure 5.0.1 – Location Details



The position of any boundary or apparatus shown on this plan is given without obligation and warranty, and the accuracy cannot be guaranteed. No liability of any kind whatsoever is accepted by Thames Water for any error or omission.

6 PHOTOGRAPH DETAILS



Photo Reference 1

Chainage: **75m**
Looking downstream.



Photo Reference 2

Chainage: **80m**
Looking downstream.



Photo Reference 3

Chainage: **90m**
Looking downstream



Photo Reference 4

Chainage: **100m**

Looking downstream.



Photo Reference 5

Chainage: **110m**

Looking downstream.



Photo Reference 6

Chainage: **120m**

Looking downstream



Photo Reference 7

Chainage: **130m**

Looking downstream.



Photo Reference 8

Chainage: **140m**

Looking downstream.



Photo Reference 9

Chainage: **150m**

Looking downstream.



Photo Reference 10

Chainage: **160m**

Looking downstream.



Photo Reference 11

Chainage: **170m**

Looking downstream.



Photo Reference 12

Chainage: **180m**

Looking downstream.



Photo Reference 13

Chainage: **190m**

Looking downstream.



Photo Reference 14

Chainage: **200m**

Looking downstream.



Photo Reference 15

Chainage: **210m**

Looking downstream.



Photo Reference 16

Chainage: **220m**

Lifting Shaft TQ 2983 9131 on RHS.

Looking downstream.



Photo Reference 17

Chainage: **226m**

Lifting Shaft TQ 2983 9131.

Looking downstream.



Photo Reference 18

Chainage: **226m**

Looking up Lifting Shaft TQ 2983 9131.



Photo Reference 19

Chainage: **228m**

Soffit detail at entrance to Spiral Staircase for MH TQ 2983 9101.

Looking downstream.



Photo Reference 20

Chainage: **228m**

Invert detail at entrance to Spiral Staircase for MH TQ 2983 9101.

Looking downstream.



Photo Reference 21

Chainage: **228m**

Invert detail at entrance to Spiral Staircase for MH TQ 2983 9101.

Bottom of steps.



Photo Reference 22

Chainage: **228m**

Soffit detail of Spiral Staircase for MH TQ 2983 9101, leading away from sewer line.



Photo Reference 23

Chainage: **228m**

Invert detail of Spiral Staircase for MH TQ 2983 9101, at junction with sewer line.



Photo Reference 24

Chainage: **228m**

High Soffit detail of Spiral Staircase for MH TQ 2983 9101, at junction with sewer line.



Photo Reference 25

Chainage: **n/a**

Soffit detail at top of Spiral Staircase at junction with Gallery for MH TQ 2983 9101.

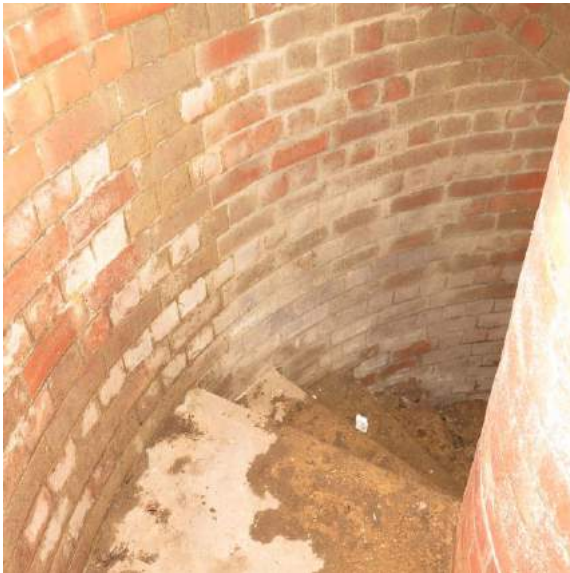


Photo Reference 26

Chainage: **n/a**

Invert detail at top of Spiral Staircase at junction with Gallery for MH TQ 2983 9101.

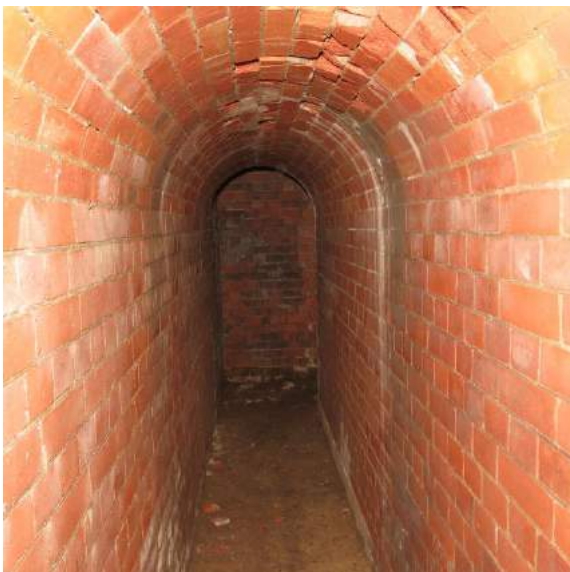


Photo Reference 27

Chainage: **n/a**

At top of Spiral Staircase

Looking back along gallery towards MH TQ 2983 9101 to right at end of gallery.



Photo Reference 28

Chainage: **n/a**

Halfway along gallery for MH TQ 2983 9101 looking towards top of Spiral Staircase

Soffit detail.



Photo Reference 29

Chainage: **n/a**

Halfway along gallery for MH TQ 2983 9101 looking towards top of Spiral Staircase

Invert detail.



Photo Reference 30

Chainage: **n/a**

Missing Brickwork within Gallery for MH TQ 2983 9101.



Photo Reference 31

Chainage: **n/a**

At start of gallery for MH TQ 2983 9101 looking towards top of Spiral Staircase that leads to sewer line.



Photo Reference 32

Chainage: **n/a**

Change in soffit construction within Gallery for MH TQ 2983 9101.



Photo Reference 33

Chainage: **n/a**

At MH TQ 2983 9101 Looking towards start of gallery

Soffit detail.



Photo Reference 34

Chainage: **n/a**

At MH TQ 2983 9101 Looking towards
start of gallery

Invert detail.



Photo Reference 35

Chainage: **n/a**

MH TQ 2983 9101

Bottom of ladder/Invert detail

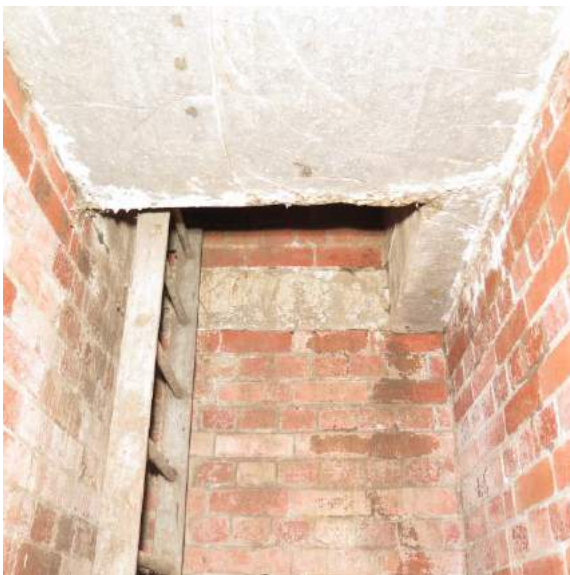


Photo Reference 36

Chainage: **n/a**

MH TQ 2983 9101

Soffit detail.



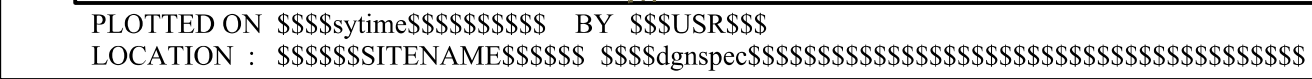
Photo Reference 37

Chainage: **n/a**
MH TQ 2983 9101
Looking up shaft.



Photo Reference 38

Chainage: **n/a**
MH TQ 2983 9101



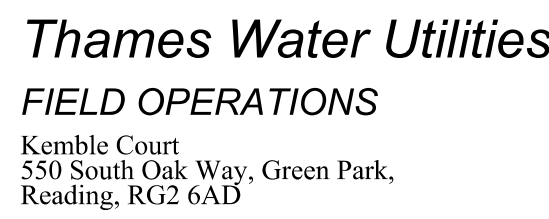
LEVELS ARE RELATED TO THE CLIENT SUPPLIED DATUM, BASED ON STATION ST01 & ST07. THE CLIENT SUPPLIED DATUM IS UNCHECKED AND UNVERIFIED BY TWUL.

(*) Indicates No Value

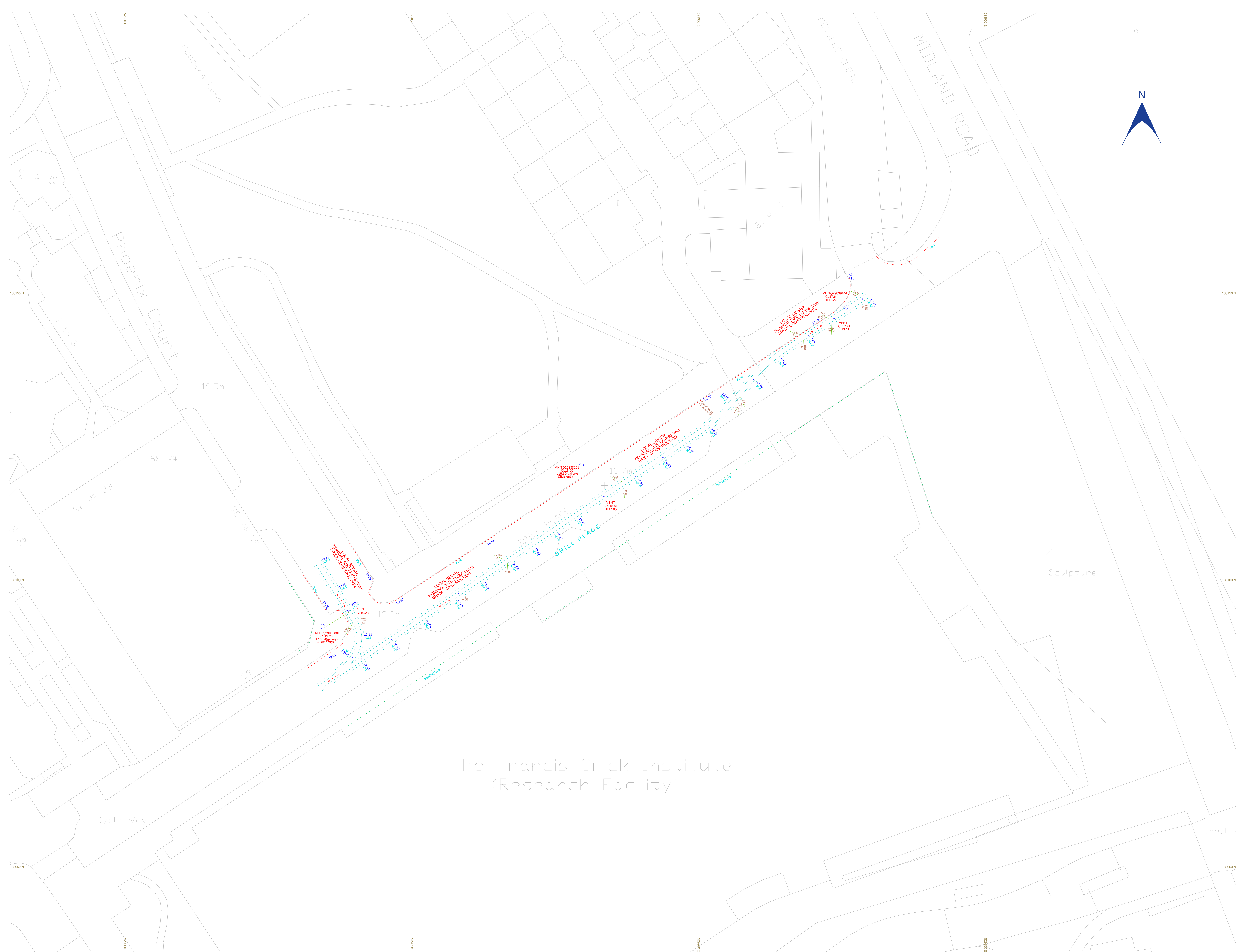
Ass	Assumed Route
Bch	Benching
Bld	Blank Drop
Bdl	Blank Drop Level
Bld	Benching Level
CB	Connection, Blocked with a Flap
CN/CF	Connection, Blocked with no Flap
C	Custom
D	Down
DNF	Connection, Dead with a Flap
D	Connection, Dead with no Flap
F	Flap Level
GL	Ground Level
HSL	High Soffit Level
I	Involved
IR	Iron Railing
LF	Connection, Live with a Flap
LF	Connection, Live with no Flap
LSL	Low Soffit Level
m	Metres
mm	Millimetres
MH	Marshall
MH	Metres High
M	Physical Resistance
SL	Soffit Level
TBL	Tumbling Bay
Top	Top of Deck
Top	Top of Pipe
ToW	Top of Wall
U	Unknown
UNK	Underside of Pipe
V	Vent
V	Vent Pipe
V	Vent Shaft
(000X.XX, XXXX)	(Inset Level, In metres, of Connection)

NOTE
SURVEY DETAIL IN SIDE ENTRANCE GALLERY AND SPIRAL
STAIRCASE HAS BEEN PLOTTED BY BEST GRAPHICAL FIT USING
COMMON SURVEY DETAIL ON SURFACE (MH TQ 2983 9101)
AND IN SEWER LINE.

A	ORIGINAL ISSUE		KM/NJL	NJL	OCT 20
Iss	Description	Dsgnr	Chkd	Appd	Date



© Thames Water Utilities Ltd 2006

[illegible]

Sewer sondes have been used in the location of the sewers. The results are not infallible and should be viewed in that light. It is normally expected that the optimum accuracy be $\pm 10\%$ of the depth of the traced sonde. The location, as shown, of sewer connections has been derived from video footage and chainage recordings from the CCTV crawler unit used to undertake a condition survey. No direct measurement has been made.

Greyscale linework is Ordnance Survey (OS) topographic survey. It is intended to provide contextual information. No responsibility for the accuracy of this data can be accepted by Plowman Croyen.

LEGEND

— — — — —	Detail at higher level
— — — — —	Assumed detail
$\frac{150}{F}$	Connection with size in mm and flap
$\Rightarrow \Rightarrow \Rightarrow$	Direction of flow
$+ 14.67$	Ground level & associated invert depth

Due to the inherent instability of paper materials, drawings plotted on paper may be stretched and distorted - dimensions scaled from paper plots should therefore be treated with caution

This drawing has been produced for the purpose of the original commissioning agent. Ploverman Craven Limited will accept no responsibility for details that are subsequently found to be the consequence of undisclosed facts or that were obscured from view at the time of survey or that have been altered since the survey.

See www.plovermancraven.co.uk for full terms and conditions of contract.

SHEET LAYOUT

ISSUES & REVISIONS			
Issue	Details	By	Date
A	Original Issue	JD	10/01/2018

This survey is commensurate with band E accuracy, as outlined in the RICS survey detail accuracy banding table

All levels are in metres and are above Ordnance Survey Newlyn Datum derived by multiple network RTK GPS observations

The survey grid shown on this drawing is positioned on Ordnance Survey (OS) National Grid, obtained by multiple network RTK GPS observations

Unless otherwise stated, levels have been taken to finished floor surface.

Drawing units are metres

Learning units are marked

CLIENT
WSP Group PLC
WSP House
70 Chancery Lane
London
WC2A 1AF

PROJECT TITLE

Brill Place
Kings Cross
London

2D Line and Level Survey

PRESENTATION SCALE 1:200 @ A0

DATE OF ORIGINAL SURVEY 3rd January 2020

PC PROJECT No. 43859 CHECKED DL
REVISION: ISSUE

DRAWING No. 12250T-01 ISSUE A

438591-01 A

Plowman Craver

Plowman Craven House	115 Southwark Bridge Road

2 Lea Business Park
Lower Luton Road
London
SE1 0AX

Harpden
Hertfordshire

Tel: +44 (0)1582 765566 Tel: +44 (0)207 490 7700

Email: post@plowmancraven.co.uk
Web: www.plowmancraven.co.uk



Appendix D

XDISP AND PDISP INPUT/OUTPUT

Appendix D.1



WALL INSTALLATION (XDISP ASSESSMENT)



Brill Place
TW GMA
Wall Installation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Displacement Lines

Ref.	Name	x1	y1	z1	x2	y2	z2	Intervals	Calculate	Surface type for tunnels
		[m]	[m]	[m]	[m]	[m]	[m]	[No.]		
1	Sewer 1	-51.92000	34.37000	14.80000	-17.85000	-22.90000	15.80000	67	Surface	No
2	Sewer 2.1	-1.24000	67.87000	3.86000	42.19000	20.38000	3.00000	64	Surface	No
3	Sewer 2.2	42.19000	20.38000	3.00000	78.03000	39.89000	3.00000	41	Surface	No
4	Sewer 3.1	54.43000	28.65000	4.40000	48.56000	21.35000	4.10000	9	Surface	No
5	Sewer 3.2	48.56000	21.35000	4.10000	-28.29000	-29.87000	3.90000	92	Surface	No
6	WM 1.1	-54.84000	32.41000	18.90000	-26.31000	-10.12000	18.90000	51	Surface	Yes
7	WM 1.2	-26.31000	-10.12000	18.90000	-17.25000	-20.84000	18.90000	14	Surface	Yes
8	WM 2.1	63.46000	33.59000	18.90000	-17.25000	-20.84000	18.90000	97	Surface	Yes
9	WM 2.2	-17.25000	-20.84000	18.90000	-28.98000	-28.83000	18.90000	14	Surface	Yes
10	Gas Main 1.1	40.22000	13.90000	18.90000	23.40000	3.14000	18.90000	20	Surface	No
11	Gas Main 1.2	23.40000	3.14000	18.90000	11.57000	-0.91000	18.90000	13	Surface	No
12	Gas Main 1.3	11.57000	-0.91000	18.90000	-20.81000	-23.46000	18.90000	39	Surface	No

Displacement Grids

Ref.	Name	Extrusion: Direction	Base line start: X	Base line start: Y	Base line start: Z(level)	Base line end: X	Base line end: Y	Base line end: Z(level)	Base line: Intervals	Extrusion: Distance	Extrusion: Intervals	Surface type for tunnels	Calculate
			[m]	[m]	[m]	[m]	[m]	[m]	[No.]	[m]	[No.]		
1	Grid	Global Y	-79.20000	-51.31000	18.90000	93.00000	-	18.90000	86	128.00000	64	Surface	No

Polygonal Excavations

Ref. CPW
Excavation Name: 1
Surface level [m]: 18.900
Contribution: Positive
Surface movement curves which are selected are applied between surface and [m]: 0.0

Corner	x	y	Base Level	Arc Enabled	Stiffened	Prev. Side: d	Prev. Side: p1	Prev. Side: p2*	Next Side: d	Next Side: p1	Next Side: p2*
	[m]	[m]	[m]			[m]	[%]	[%]	[m]	[%]	[%]
1	-9.3600	14.420	11.400	Yes	No	-	-	-	-	-	-
2	16.850	31.930	11.400	Yes	No	-	-	-	-	-	-
3	26.700	16.760	11.400	Yes	No	-	-	-	-	-	-
4	0.26000	-0.41000	11.400	Yes	No	-	-	-	-	-	-

Side	x1	y1	x2	y2	G.M. Curve: Vertical	G.M. Curve: Horizontal
	[m]	[m]	[m]	[m]		
1	-9.3600	14.420	16.850	31.930	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(b))	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(a))
2	16.850	31.930	26.700	16.760	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(b))	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(a))
3	26.700	16.760	0.26000	-0.41000	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(b))	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(a))
4	0.26000	-0.41000	-9.3600	14.420	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(b))	Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(a))

Circular Excavations

Vertical Ground Movement Curves

Curve Name: Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(b))
Coordinates: [Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Settlement / wall depth or max. excavation depth (z)(%)]
[0.000,0.000,0.040][2.000,0.000,0.000]
Curve Fitting Method: Polynomial
x Order: 1
y Order: 0
Polynomial: z = -2.0E-2x + 4.0E-2
Coeff. of Determination: 1.0

Horizontal Ground Movement Curves

Curve Name: Inst. of contiguous bored pile wall in stiff clay (CIRIA C760 Fig. 6.8(a))
Coordinates: [Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Horizontal movement / wall depth or max. excavation depth (z)(%)]
[0.000,0.000,0.041][0.050,0.000,0.038][0.100,0.000,0.036][0.150,0.000,0.034]
[0.200,0.000,0.032][0.250,0.000,0.030][0.300,0.000,0.029][0.350,0.000,0.027]
[0.400,0.000,0.025][0.450,0.000,0.023][0.500,0.000,0.022][0.550,0.000,0.020]



Brill Place
TW GMA
Wall Installation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Side	x1 [m]	y1 [m]	x2 [m]	y2 [m]	G.M. Curve: Vertical	G.M. Curve: Horizontal
					[0.600,0.000,0.019][0.650,0.000,0.018][0.700,0.000,0.016][0.750,0.000,0.015] [0.800,0.000,0.014][0.850,0.000,0.013][0.900,0.000,0.011][0.950,0.000,0.010] [1.000,0.000,0.009][1.050,0.000,0.008][1.100,0.000,0.007][1.150,0.000,0.006] [1.200,0.000,0.005][1.250,0.000,0.004][1.300,0.000,0.004][1.350,0.000,0.003] [1.400,0.000,0.002][1.450,0.000,0.001][1.500,0.000,0.000]	
Curve Fitting Method:						
x Order:						
y Order:						
Polynomial: z =						
Coeff. of Determination: 1.0000						

Warnings

None

Errors

None

Displacement Results - Displacement Lines

Stage: Ref.	Stage: Name	Disp. Line: Ref.	Disp. Line: Name	Chainage	x	y	z	δx	δy	δz	δH//	δHperp.	Angle
				[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]
0	Base Model 6	WM 1.1		0.0	-54.84000	32.41000	18.90000	0.0	0.0	0.0	0.0	0.0	303.85
			1.0042	-54.28059	31.57608	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			2.0083	-53.72118	30.74216	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			3.0125	-53.16176	29.90824	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			4.0167	-52.60235	29.07431	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			5.0209	-52.04294	28.24039	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			6.0250	-51.48353	27.40647	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			7.0292	-50.92412	26.57255	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			8.0334	-50.36471	25.73863	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			9.0376	-49.80529	24.90471	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			10.042	-49.24588	24.07078	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			11.046	-48.68647	23.23686	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			12.050	-48.12706	22.40294	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			13.054	-47.56765	21.56902	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			14.058	-47.00824	20.73510	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			15.063	-46.44882	19.90118	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			16.067	-45.88941	19.06725	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			17.071	-45.33000	18.23333	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			18.075	-44.77059	17.39941	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			19.079	-44.21118	16.56549	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			20.083	-43.65176	15.73157	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			21.088	-43.09235	14.89765	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			22.092	-42.53294	14.06373	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			23.096	-41.97353	13.22980	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			24.100	-41.41412	12.39588	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			25.104	-40.85471	11.56196	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			26.109	-40.29529	10.72804	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			27.113	-39.73588	9.89412	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			28.117	-39.17647	9.06020	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			29.121	-38.61706	8.22627	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			30.125	-38.05765	7.39235	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			31.129	-37.49824	6.55843	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			32.134	-36.93882	5.72451	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			33.138	-36.37941	4.89059	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			34.142	-35.82000	4.05667	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			35.146	-35.26059	3.22275	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			36.150	-34.70118	2.38882	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			37.154	-34.14176	1.55490	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			38.159	-33.58235	0.72098	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			39.163	-33.02294	-0.11294	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			40.167	-32.46353	-0.94686	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			41.171	-31.90412	-1.78078	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			42.175	-31.34471	-2.61471	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			43.180	-30.78529	-3.44863	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			44.184	-30.22588	-4.28255	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			45.188	-29.66647	-5.11647	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			46.192	-29.10706	-5.95039	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			47.196	-28.54765	-6.78431	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			48.200	-27.98824	-7.61824	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			49.205	-27.42882	-8.45216	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			50.209	-26.86941	-9.28608	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
			51.213	-26.31000	-10.12000	18.90000	0.0	0.0	0.0	0.0	0.0	303.85	
7	WM 1.2		0.0	-26.31000	-10.12000	18.90000	0.0	0.0	0.0	0.0	0.0	310.20	
		1.0026	-25.66286	-10.88571	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		2.0051	-25.01571	-11.65143	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		3.0077	-24.36857	-12.41714	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		4.0102	-23.72143	-13.18286	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		5.0128	-23.07429	-13.94857	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		6.0153	-22.42714	-14.71429	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		7.0179	-21.78000	-15.48000	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		8.0204	-21.13286	-16.24571	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		9.0230	-20.48571	-17.01143	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		10.025	-19.83857	-17.77714	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		11.028	-19.19143	-18.54286	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		12.031	-18.54429	-19.30857	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
		13.033	-17.89714	-20.07429	18.90000	0.0	0.0	0.0	0.0	0.0	310.20		
8	WM 2.1		14.036	-17.25000	-20.84000	18.90000	0.0	0.0	0.0	0.0	0.0	310.20	
		0.0	63.46000	33.59000	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		1.0036	62.62794	33.02887	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		2.0072	61.79588	32.46773	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		3.0108	60.96381	31.90660	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		4.0144	60.13175	31.34546	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		5.0180	59.29969	30.78433	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		6.0216	58.46763	30.22320	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		7.0251	57.63557	29.66206	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		8.0287	56.80351	29.10093	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		9.0323	55.97144	28.53979	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		10.036	55.13938	27.97866	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		11.040	54.30732	27.41753	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		12.043	53.47526	26.85639	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		13.047	52.64320	26.29526	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		14.050	51.81113	25.73412	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		15.054	50.97907	25.17299	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		16.057	50.14781	24.61186	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		17.061	49.31495	24.05072	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		18.065	48.48209	23.48959	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		19.068	47.65082	22.92845	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		20.072	46.81876	22.36732	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		21.075	45.98678	21.80619	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		22.079	45.15464	21.24505	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		23.083	44.32258	20.68392	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		24.086	43.49052	20.12278	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		25.090	42.65845	19.56165	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		26.093	41.82639	19.00052	18.90000	0.0	0.0	0.0	0.0	0.0	214.00		
		27.097	40.99433	18.43938	18.90000	0.0	0.0	0.0	0.0	0.12147	0.0	214.00	
		28.101	40.16227	17.87825	18.90000	0.0	0.0	0.0	0.0	0.29827	0.0	214.00	
		29.104	39.33021	17.31711	18.90000	0.0	0.0	0.0	0.0	0.47150	0.0	214.00	
		30.108	38.49814	16.75598	18.90000	0.0	0.0	0.0	0.0	0.64637	0.0	214.00	
31.111	37.66608	16.19485	18.90000	-0.035512	389.79E+06	0.03837	0.029511	0.082487	-0.020179	214.00			
32.115	36.83402	15.63371	18.90000	-0.13365	0.011390	0.96072	0.184448	0.004093	214.00	214.00			
33.119	36.00196	15.07258	18.90000	-0.22481	0.038885	1.1092	0.16465	-0.15794	214.00	214.00			
34.122	35.16990	14.51144	18.90000	-0.30783	0.086213	1.2473	0.20762	-0.24359	214.00	214.00			



Brill Place
TW GMA
Wall Installation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Stage: Ref.	Stage: Name	Disp. Line: Ref.	Disp. Line: Name	Chainage	x	y	z	δx	δy	δz	δH//	δHperp.	Angle	
					[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
					35.126	34.33784	13.95031	18.90000	-0.38051	0.15623	1.3724	0.22812	-0.34228	214.00
					36.129	33.50577	13.38918	18.90000	-0.43975	0.25067	1.4810	0.22443	-0.45371	214.00
					37.133	32.67371	12.82804	18.90000	-0.48201	0.36832	1.5697	0.19369	-0.57488	214.00
					38.137	31.84165	12.26691	18.90000	-0.50413	0.50295	1.6344	0.13675	-0.69886	214.00
					39.140	31.00959	11.70577	18.90000	-0.50444	0.64197	1.6716	0.069284	-0.81429	214.00
					40.144	30.17753	11.14464	18.90000	-0.48758	0.75082	1.6793	-0.015559	-0.89510	214.00
					41.147	29.34546	10.53351	18.90000	-0.48544	0.74753	1.6758	-0.015491	-0.89119	214.00
					42.151	28.51340	10.02237	18.90000	-0.48331	0.74425	1.6723	-0.015423	-0.88728	214.00
					43.154	27.68134	9.46124	18.90000	-0.48119	0.74098	1.6688	-0.015355	-0.88337	214.00
					44.158	26.84928	8.90010	18.90000	-0.47906	0.73771	1.6654	-0.015287	-0.87948	214.00
					45.162	26.01722	8.33897	18.90000	-0.47694	0.73444	1.6619	-0.015220	-0.87559	214.00
					46.165	25.18515	7.77784	18.90000	-0.47483	0.73118	1.6584	-0.015152	-0.87179	214.00
					47.169	24.35309	7.21678	18.90000	-0.47271	0.72793	1.6549	-0.015085	-0.86782	214.00
					48.172	23.52103	6.65557	18.90000	-0.47061	0.72468	1.6514	-0.015018	-0.86395	214.00
					49.176	22.68897	6.09443	18.90000	-0.46850	0.72144	1.6479	-0.014950	-0.86008	214.00
					50.180	21.85691	5.53330	18.90000	-0.46640	0.71820	1.6444	-0.014883	-0.85622	214.00
					51.183	21.02485	4.97216	18.90000	-0.46430	0.71497	1.6409	-0.014816	-0.85237	214.00
					52.187	20.19278	4.41103	18.90000	-0.46220	0.71174	1.6375	-0.014749	-0.84852	214.00
					53.190	19.36072	3.84909	18.90000	-0.46011	0.70852	1.6340	-0.014683	-0.84468	214.00
					54.194	18.52866	3.28876	18.90000	-0.45802	0.70530	1.6305	-0.014616	-0.84084	214.00
					55.198	17.69660	2.72763	18.90000	-0.45593	0.70209	1.6270	-0.014549	-0.83702	214.00
					56.201	16.86454	2.16649	18.90000	-0.45385	0.69888	1.6235	-0.014483	-0.83319	214.00
					57.205	16.03247	1.60536	18.90000	-0.45177	0.69568	1.6200	-0.014417	-0.82937	214.00
					58.208	15.20041	1.04423	18.90000	-0.44970	0.69248	1.6165	-0.014350	-0.82556	214.00
					59.212	14.36835	0.48309	18.90000	-0.44762	0.68929	1.6130	-0.014284	-0.82176	214.00
					60.216	13.53629	-0.07894	18.90000	-0.44555	0.68610	1.6095	-0.014218	-0.81796	214.00
					61.219	12.70423	-0.63918	18.90000	-0.44349	0.68292	1.6061	-0.014152	-0.81416	214.00
					62.223	11.87216	-1.20031	18.90000	-0.44142	0.67974	1.6026	-0.014086	-0.81038	214.00
					63.226	11.04010	-1.76144	18.90000	-0.43936	0.67657	1.5991	-0.014021	-0.80659	214.00
					64.230	10.20804	-2.32258	18.90000	-0.43731	0.67340	1.5956	-0.013955	-0.80282	214.00
					65.234	9.37598	-2.88371	18.90000	-0.43525	0.67024	1.5921	-0.013889	-0.79905	214.00
					66.237	8.54392	-3.44465	18.90000	-0.43320	0.66708	1.5886	-0.013824	-0.79528	214.00
					67.241	7.71186	-4.00598	18.90000	-0.43115	0.66393	1.5851	-0.013759	-0.79152	214.00
					68.244	6.87979	-4.56711	18.90000	-0.42911	0.66078	1.5816	-0.013693	-0.78777	214.00
					69.248	6.04773	-5.12825	18.90000	-0.42707	0.65764	1.5781	-0.013628	-0.78402	214.00
					70.251	5.21567	-5.68938	18.90000	-0.42503	0.65450	1.5747	-0.013563	-0.78028	214.00
					71.255	4.38361	-6.25052	18.90000	-0.42299	0.65137	1.5712	-0.013498	-0.77655	214.00
					72.259	3.55155	-6.81165	18.90000	-0.42095	0.64823	1.5678	-0.013433	-0.77282	214.00
					73.262	2.71948	-7.37278	18.90000	-0.41891	0.64509	1.5643	-0.013368	-0.76910	214.00
					74.266	1.88742	-7.93392	18.90000	-0.41687	0.64195	1.5608	-0.013303	-0.76539	214.00
					75.269	1.05536	-8.49505	18.90000	-0.41483	0.63881	1.5573	-0.013238	-0.76169	214.00
					76.273	0.22330	-9.05619	18.90000	-0.41280	0.63567	1.5538	-0.013173	-0.75799	214.00
					77.277	-0.60876	-9.61732	18.90000	-0.41077	0.63253	1.5503	-0.013108	-0.75429	214.00
					78.280	-1.44082	-10.17845	18.90000	-0.40874	0.62939	1.5468	-0.013043	-0.75059	214.00
					79.284	-2.27289	-10.73959	18.90000	-0.40671	0.62625	1.5433	-0.012978	-0.74689	214.00
					80.287	-3.10495	-11.30072	18.90000	-0.40468	0.62311	1.5398	-0.012913	-0.74319	214.00
					81.291	-3.93701	-11.86186	18.90000	-0.40265	0.62000	1.5363	-0.012848	-0.73949	214.00
					82.295	-4.76907	-12.42299	18.90000	-0.40062	0.61688	1.5328	-0.012783	-0.73579	214.00
					83.298	-5.60113	-12.98412	18.90000	-0.39859	0.61377	1.5293	-0.012718	-0.73209	214.00
					84.302	-6.43320	-13.54526	18.90000	-0.39656	0.61065	1.5258	-0.012653	-0.72839	214.00
					85.305	-7.26526	-14.10639	18.90000	-0.39453	0.60753	1.5223	-0.012588	-0.72469	214.00
					86.309	-8.09732	-14.66753	18.90000	-0.39250	0.60441	1.5188	-0.012523	-0.72099	214.00
					87.313	-8.92938	-15.22866	18.90000	-0.39047	0.60129	1.5153	-0.012458	-0.71729	214.00
					88.316	-9.76144	-15.78979	18.90000	-0.38844	0.59817	1.5118	-0.012393	-0.71359	214.00
					89.320	-10.59351	-16.35093	18.90000	-0.38641	0.59505	1.5083	-0.012328	-0.70989	214.00
					90.323	-11.42557	-16.91206	18.90000	-0.38438	0.59193	1.5048	-0.012263	-0.70619	214.00
					91.327	-12.25763	-17.47320	18.90000	-0.38235	0.58881	1.5013	-0.012198	-0.70249	214.00
					92.331	-13.08969	-18.03433	18.90000	-0.38032	0.58569	1.4978	-0.012133	-0.69879	214.00
					93.334	-13.92175	-18.59546	18.90000	-0.37829	0.58257	1.4943	-0.012068	-0.69509	214.00
					94.338	-14.75381	-19.15660	18.90000	-0.37626	0.57945	1.4908	-0.012003	-0.69139	214.00
					95.341	-15.58588	-19.71773	18.90000	-0.37423	0.57633	1.4873	-0.011938	-0.68769	214.00
					96.345	-16.41794	-20.27887	18.90000	-0.37220	0.57321	1.4838	-0.011873	-0.68399	214.00
					97.348	-17.25000	-20.84000	18.90000	-0.37017	0.57009	1.4803	-0.011808	-0.68029	214.00
					98.352	-18.08206	-21.40113	18.90000	-0.36814	0.56697	1.4768	-0.011743	-0.67659	214.00
					99.355	-18.91412	-21.96226	18.90000	-0.36611	0.56385	1.4733	-0.011678	-0.67289	214.00
					100.359	-19.74618	-22.52339	18.90000	-0.36408	0.56073	1.4698	-0.011613	-0.66919	214.00
					101.362	-20.57824	-23.08452	18.90000	-0.36205	0.55761	1.4663	-0.011548	-0.66549	214.00
					102.366	-21.41030	-23.64565	18.90000	-0.36002	0.55449	1.4628	-0.011483	-0.66179	214.00
					103.369	-22.24236	-24.20678	18.90000	-0.35799	0.55137	1.4593	-0.011418	-0.65809	214.00
					104.373	-23.07442	-24.76791	18.90000	-0.35596	0.54825	1.4558	-0.011353	-0.65439	214.00
					105.376	-23.90648	-25.32904	18.90000	-0.35393	0.54513	1.4523	-0.011288	-0.65069	214.00
					106.380	-24.73854	-25.89017	18.90000	-0.35190	0.54201	1.4488	-0.011223	-0.64699	214.00
					107.383	-25.57060	-26.45130	18.90000	-0.34987	0.53889	1.4453	-0.011158	-0.64329	214.00
					108.387	-26.40266	-27.01243	18.90000	-0.34784	0.53577	1.4418	-0.011093	-0.63959	214.00
					109.390	-27.23472	-27.57356	18.90000	-0.34581	0.53265	1.4383	-0.011028	-0.63589	214.00
					110.394	-28.06678	-28.13469	18.90000	-0.34378	0.52953	1.4348	-0.010963	-0.63219	214.00
					111.397	-28.89884	-28.69582	18.90000	-0.34175	0.52641	1.4313	-0.010898	-0.62849	214.00
					112.401	-29.73090	-29.25695	18.90000	-0.33972	0.52329	1.4278	-0.010833	-0.62479	214.00
					113.404	-30.56296	-29.81808	18.90000	-0.33769	0.52017	1.4243	-0.010768	-0.62109	214.00
					114.408	-31.39502	-30.37921	18.90000	-0.33566	0.51705	1.4208	-0.010703	-0.61739	214.00
					115.411	-32.22708	-30.94034	18.90000	-0.33363	0.51393	1.4173	-0.010638	-0.61369	214.00
					116.415	-33.05914	-31.50147	18.90000	-0.33160	0.51081	1.4138	-0.010573	-0.60999	214.00
					117.418	-33.89120	-32.06260	18.90000	-0.32957					

Appendix D.2

EXCAVATION (XDISP ASSESSMENT)



Brill Place
TW GMA
Excavation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Displacement Lines

Ref.	Name	x1	y1	z1	x2	y2	z2	Intervals	Calculate	Surface type for tunnels
		[m]	[m]	[m]	[m]	[m]	[m]	[No.]		
1	Sewer 1	-51.92000	34.37000	14.80000	-17.85000	-22.90000	15.80000	67	Surface	Yes
2	Sewer 2.1	-1.24000	67.87000	3.86000	42.19000	20.38000	3.00000	64	Surface	Yes
3	Sewer 2.2	42.19000	20.38000	3.00000	78.03000	39.89000	3.00000	41	Surface	Yes
4	Sewer 3.1	54.43000	28.65000	4.40000	48.56000	21.35000	4.10000	9	Surface	Yes
5	Sewer 3.2	48.56000	21.35000	4.10000	-28.29000	-29.87000	3.90000	92	Surface	Yes
6	WM 1.1	-54.84000	32.41000	18.90000	-20.31000	-10.12000	18.90000	51	Surface	Yes
7	WM 1.2	-26.31000	-10.12000	18.90000	-17.25000	-20.84000	18.90000	14	Surface	Yes
8	WM 2.1	63.46000	33.59000	18.90000	-17.25000	-20.84000	18.90000	97	Surface	Yes
9	WM 2.2	-17.25000	-20.84000	18.90000	-28.98000	-28.83000	18.90000	14	Surface	Yes
10	Gas Main 1.1	40.22000	13.90000	18.90000	23.40000	3.14000	18.90000	20	Surface	No
11	Gas Main 1.2	23.40000	3.14000	18.90000	11.57000	-0.91000	18.90000	13	Surface	No
12	Gas Main 1.3	11.57000	-0.91000	18.90000	-20.81000	-23.46000	18.90000	39	Surface	No

Displacement Grids

Ref.	Name	Extrusion: Direction	Base line start: X	Base line start: Y	Base line start: z(level)	Base line end: X	Base line end: Y	Base line end: z(level)	Base line: Intervals	Extrusion: Distance	Extrusion: Intervals	Surface type for tunnels	Calculate
			[m]	[m]	[m]	[m]	[m]	[m]	[No.]	[m]	[No.]		
1	Grid	Global Y	-79.20000	-51.31000	18.90000	93.00000	-	18.90000	86	128.00000	64	Surface	No

Polygonal Excavations

Ref. 1
Excavation Name: CPW
Surface level [m]: 18.900
Contribution: Positive
Surface movement curves which are selected are applied between surface and [m]: 0.0

Corner	x	y	Base Level	Arc Enabled	Stiffened	Prev. Side: d	Prev. Side: p1	Prev. Side: p2*	Next Side: d	Next Side: p1	Next Side: p2*
	[m]	[m]	[m]			[m]	[%]	[%]	[m]	[%]	[%]
1	-9.3600	14.420	11.400	Yes	Yes	8.5000	67.000	25.000	15.500	67.000	25.000
2	16.850	31.930	11.400	Yes	Yes	15.500	67.000	25.000	8.5000	67.000	25.000
3	26.700	16.760	11.400	Yes	Yes	8.5000	67.000	25.000	15.500	67.000	25.000
4	0.26000	-0.41000	11.400	Yes	Yes	15.500	67.000	25.000	8.5000	67.000	25.000
Side											
	x1	y1	x2	y2	G.M. Curve: Vertical			G.M. Curve: Horizontal			
	[m]	[m]	[m]	[m]							
1	-9.3600	14.420	16.850	31.930	Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b))			Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(a))			
2	16.850	31.930	26.700	16.760	Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b))			Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(a))			
3	26.700	16.760	0.26000	-0.41000	Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b))			Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(a))			
4	0.26000	-0.41000	-9.3600	14.420	Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b))			Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(a))			

Circular Excavations

Vertical Ground Movement Curves

Curve Name: Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(b))
Coordinates: [Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Settlement / wall depth or max. excavation depth (z)(%)]

[0.000,0.000,0.039][0.100,0.000,0.049][0.200,0.000,0.056][0.300,0.000,0.062][0.400,0.000,0.067][0.500,0.000,0.070][0.600,0.000,0.072][0.700,0.000,0.073][0.800,0.000,0.073][0.900,0.000,0.072][1.000,0.000,0.070][1.100,0.000,0.068][1.200,0.000,0.065][1.300,0.000,0.061][1.400,0.000,0.058][1.500,0.000,0.054][1.600,0.000,0.050][1.700,0.000,0.046][1.800,0.000,0.042][1.900,0.000,0.038][2.000,0.000,0.034][2.100,0.000,0.030][2.200,0.000,0.027][2.300,0.000,0.023][2.400,0.000,0.020][2.500,0.000,0.017][2.600,0.000,0.014][2.700,0.000,0.012][2.800,0.000,0.010][2.900,0.000,0.008][3.000,0.000,0.007][3.100,0.000,0.005][3.200,0.000,0.004][3.300,0.000,0.004][3.400,0.000,0.003][3.500,0.000,0.002][3.600,0.000,0.002][3.700,0.000,0.002][3.800,0.000,0.001][3.900,0.000,0.001][4.000,0.000,0.000]

Curve Fitting Method: Polynomial
x Order: 4
y Order: 0
Polynomial: z = -2.6455E-3x⁴ + 2.8495E-2x³ - 1.0051E-1x² + 1.0569E-1x + 3.8990E-2
Coeff. of Determination: 9.9991E-1



Brill Place

TW GMA

Excavation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Side	x1 [m]	y1 [m]	x2 [m]	y2 [m]	G.M. Curve: Vertical	G.M. Curve: Horizontal							
Horizontal Ground Movement Curves													
Curve Name:		Exc. in front of high stiffness wall in stiff clay (CIRIA C760 Fig. 6.15(a))											
Coordinates:		[Distance from wall / wall depth or max. excavation depth (x), Depth / wall depth or max. excavation depth (y), Horizontal movement / wall depth or max. excavation depth (z)(%)]											
		[0.000,0.000,0.150][4.000,0.000,0.000]											
Curve Fitting Method:		Polynomial											
x Order:		1											
y Order:		0											
Polynomial: z =		-3.75E-2x + 1.50E-1											
Coeff. of Determination:		1.00											
Warnings													
None													
Errors													
None													
Displacement Results - Displacement Lines													
Stage: Ref.	Stage: Name	Disp. Line: Ref.	Disp. Line: Name	Chainage	x	y	z	δx	δy	δz	δH//	δHperp.	Angle
				[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]
0	Base Model 1		Sewer 1		0.0	-51.92000	34.37000	14.80000	0.0	0.0	0.0	0.0	300.75
				0.99460	-51.41149	33.51522	14.81493	0.0	0.0	0.0	0.0	0.0	300.75
				1.9892	-50.90299	32.66045	14.82985	0.0	0.0	0.0	0.0	0.0	300.75
				2.9838	-50.39448	31.80567	14.84478	0.0	0.0	0.0	0.0	0.0	300.75
				3.9784	-49.88597	30.95090	14.85970	0.0	0.0	0.0	0.0	0.0	300.75
				4.9730	-49.37746	30.09612	14.87463	0.0	0.0	0.0	0.0	0.0	300.75
				5.9676	-48.86896	29.24134	14.88955	0.0	0.0	0.0	0.0	0.0	300.75
				6.9622	-48.36045	28.38657	14.90448	0.0	0.0	0.0	0.0	0.0	300.75
				7.9568	-47.85194	27.53179	14.91940	0.0	0.0	0.0	0.0	0.0	300.75
				8.9514	-47.34343	26.67701	14.93433	0.0	0.0	0.0	0.0	0.0	300.75
				9.9460	-46.83493	25.82224	14.94925	0.0	0.0	0.0	0.0	0.0	300.75
				10.941	-46.32642	24.96746	14.96418	0.0	0.0	0.0	0.0	0.0	300.75
				11.935	-45.81791	24.11269	14.97910	0.0	0.0	0.0	0.0	0.0	300.75
				12.930	-45.30940	23.25791	14.99403	0.0	0.0	0.0	0.0	0.0	300.75
				13.924	-44.80090	22.40313	15.00896	0.0	0.0	0.0	0.0	0.0	300.75
				14.919	-44.29239	21.54836	15.02388	0.0	0.0	0.0	0.0	0.0	300.75
				15.914	-43.78388	20.69358	15.03881	0.0	0.0	0.0	0.0	0.0	300.75
				16.908	-43.27537	19.83881	15.05373	0.0	0.0	0.0	0.0	0.0	300.75
				17.903	-42.76687	18.98403	15.06866	0.0	0.0	0.0	0.0	0.0	300.75
				18.897	-42.25836	18.12925	15.08358	0.0	0.0	0.0	0.0	0.0	300.75
				19.892	-41.74985	17.27448	15.09851	0.0	0.0	0.0	0.0	0.0	300.75
				20.887	-41.24134	16.41970	15.11343	0.0	0.0	0.0	0.0	0.0	300.75
				21.881	-40.73284	15.56493	15.12836	0.0	0.0	0.0	0.0	0.0	300.75
				22.876	-40.22433	14.71015	15.14328	0.0	0.0	0.0	0.0	0.0	300.75
				23.870	-39.71582	13.85537	15.15821	0.0	0.0	0.0	0.0	0.0	300.75
				24.865	-39.20731	13.00060	15.17313	0.018742	0.0030682	0.0006824	0.0069455	0.017676	300.75
				25.860	-38.69881	12.14582	15.18806	0.092063	0.018397	0.026213	0.031258	0.088527	300.75
				26.854	-38.19030	11.29104	15.20299	0.16383	0.030607	0.040378	0.050584	0.16054	300.75
				27.849	-37.68179	10.43627	15.21791	0.23372	0.063357	0.052092	0.065042	0.232325	300.75
				28.843	-37.17328	9.58149	15.23284	0.30134	0.092234	0.062058	0.074796	0.30613	300.75
				29.838	-36.66478	8.72672	15.24776	0.36628	0.12475	0.070789	0.080059	0.37857	300.75
				30.832	-36.15627	7.87194	15.26269	0.42812	0.16033	0.078636	0.081093	0.44991	300.75
				31.827	-35.64776	7.01716	15.27761	0.48638	0.19834	0.085812	0.078211	0.51941	300.75
				32.822	-35.13925	6.16239	15.29254	0.54057	0.23807	0.092419	0.071779	0.58630	300.75
				33.816	-34.63075	5.30761	15.30746	0.59018	0.27871	0.098470	0.062211	0.64971	300.75
				34.811	-34.12224	4.45284	15.32239	0.63468	0.31943	0.10392	0.049966	0.70877	300.75
				35.805	-33.61373	3.59806	15.33731	0.67352	0.35932	0.10868	0.035547	0.76255	300.75
				36.800	-33.10522	2.74328	15.35224	0.70618	0.39743	0.11265	0.019492	0.81010	300.75
				37.795	-32.59672	1.88851	15.36716	0.73211	0.43278	0.11572	0.0023656	0.85046	300.75
				38.789	-32.08821	1.03373	15.38209	0.75081	0.46440	0.11780	0.015247	0.88269	300.75
				39.784	-31.57970	0.17896	15.39701	0.76177	0.49128	0.11885	-0.032749	0.90586	300.75
				40.778	-31.07119	-0.67582	15.41194	0.79243	0.51403	0.12371	-0.036628	0.94384	300.75
				41.773	-30.56269	-1.53060	15.42687	0.82636	0.53605	0.12922	-0.038197	0.98426	300.75
				42.768	-30.05418	-2.38537	15.44179	0.85938	0.55746	0.13462	-0.039723	1.0236	300.75
				43.762	-29.54567	-3.24015	15.45672	0.89146	0.57828	0.13992	-0.041206	1.0618	300.75
				44.757	-29.03716	-4.09493	15.47164	0.92261	0.59849	0.14510	-0.042646	1.0999	300.75
				45.751	-28.52866	-4.94970	15.48657	0.95284	0.61809	0.15017	-0.044043	1.1349	300.75
				46.746	-28.02015	-5.80448	15.50149	0.98214	0.63710	0.15514	-0.045397	1.1698	300.75
				47.741	-27.51164	-6.65925	15.51642	1.0105	0.65550	0.16000	-0.046709	1.2036	300.75
				48.735	-27.00313	-7.51403	15.53134	1.0261	0.66562	0.16287	-0.047429	1.2222	300.75
				49.730	-26.49463	-8.36881	15.54627	0.98967	0.64199	0.15749	-0.045746	1.1788	300.75
				50.724	-25.98612	-9.22358	15.56119	0.93915	0.60921	0.14986	-0.043410	1.1186	300.75
				51.719	-25.47761	-10.07836	15.57612	0.88956	0.57705	0.14234	-0.041118	1.0595	300.75
				52.714	-24.96910	-10.93313	15.59104	0.84091	0.54549	0.13495	-0.038869	1.0016	300.75
				53.709	-24.46060	-11.78791	15.60597	0.79320	0.51454	0.12769	-0.036664	0.94476	300.75
				54.703	-23.95209	-12.64269	15.62090	0.74642	0.48419	0.12054	-0.034502	0.88905	300.75
				55.697	-23.44358	-13.49746	15.63582	0.70059	0.45446	0.11351	-0.032383	0.83445	300.75
				56.692	-22.93507	-14.35224	15.65075	0.65608	0.42533	0.10659	-0.030308	0.78097	300.75
				57.687	-22.42657	-15.20701	15.66567	0.61241	0.39830	0.10010	-0.029196	0.72996	300.75
				58.681	-21.91806	-16.06179	15.68060	0.57559	0.38926	0.097451	-0.040252	0.69369	300.75
				59.676	-21.40955	-16.91657	15.69552	0.53293	0.37534	0.093967	-0.050102	0.64991	300.75
				60.670	-20.90104	-17.77134	15.71045	0.48545	0.35663	0.089709	-0.058293	0.59954	300.75
				61.665	-20.39254	-18.62612	15.72537	0.43419	0.33323	0.084686	-0.064396	0.54352	300.75
				62.660	-19.88403	-19.48090	15.74030	0.38012	0.30526	0.078928	-0.068087	0.48275	300.75
				63.654	-19.37552	-20.33567	15.75522	0.32418	0.27286	0.072378	-0.068760	0.41812	300.75
				64.649	-18.86701	-21.19845	15.77015	0.26728	0.23618	0.064917	-0.066321	0.35046	300.75
				65.643	-18.35851	-22.04522	15.78507	0.21023	0.19535	0.056328	-0.060399	0.28056	300.75
				66.638	-17.85000	-22.90000	15.80000	0.15380	0.15054	0.046274	-0.050742	0.20915	300.75
2	Sewer 2.1			0.0	-1.24000	67.87000	3.86000	0.0	0.0	0.0	0.0	0.0	312.44
				1.0055	-0.56141	67.12797	3.84656	0.0	0.0	0.0	0.0	0.0	312.44
				2.0111	0.11719	66.38504	3.83312	0.0	0.0	0.0	0.0	0.0	312.44
				3.0166	0.79578	65.64391	3.81969	0.0	0.0	0.0	0.0	0.0	312.44
				4.0221	1.47437	64.90188	3.80625	0.0	0.0	0.0	0.0	0.0	312.44
				5.0277	2.15297	64.15984	3.79281</						



Brill Place
TW GMA
Exavation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Stage: Ref.	Stage: Name	Disp. Line: Ref.	Disp. Line: Name	Chainage	x	y	z	δx	δy	δz	δH//	δHperp.	Angle
				[m]	[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]
				32.172	19.79641	44.86703	3.44344	-0.52142	-2.1440	1.6236	-1.2393	-1.8317	312.44
				32.177	20.47500	44.12500	3.43000	-0.79745	-2.2249	1.7836	1.1037	-2.0900	312.44
				33.183	21.15359	43.38297	3.41656	-1.1088	-2.3000	1.9410	0.94897	-2.3704	312.44
				34.188	21.83219	42.64094	3.40313	-1.4537	-2.3681	2.0934	0.76652	-2.6709	312.44
				35.194	22.51078	41.89891	3.38969	-1.8281	-2.4283	2.2380	0.55823	-2.9878	312.44
				36.199	23.18938	41.15687	3.37625	-2.2256	-2.4793	2.3720	0.32758	-3.3156	312.44
				37.205	23.86797	40.41484	3.36281	-2.6373	-2.5278	2.4922	0.079948	-3.6470	312.44
				38.210	24.54656	39.67281	3.34938	-3.0525	-2.5496	2.5954	-0.17856	-3.9732	312.44
				39.216	25.22516	38.93078	3.33594	-3.4583	-2.5670	2.6780	-0.43956	-4.2844	312.44
				40.221	25.90375	38.18875	3.32250	-3.8422	-2.5718	2.7366	-0.69511	-4.5709	312.44
				41.227	26.58234	37.44672	3.30906	-4.0930	-2.6576	2.8296	-0.80101	-4.8139	312.44
				42.232	27.26094	36.70469	3.29562	-4.2870	-2.7836	2.9428	-0.83899	-5.0421	312.44
				43.238	27.93953	35.96208	3.28219	-4.4770	-2.9078	3.0504	-0.87617	-5.2656	312.44
				44.244	28.61813	35.22062	3.26875	-4.6629	-3.0277	3.1525	-0.91256	-5.4843	312.44
				45.249	29.29672	34.47859	3.25531	-4.8448	-3.1458	3.2491	-0.94815	-5.6982	312.44
				46.255	29.97531	33.73656	3.24187	-5.0226	-3.2612	3.3402	-0.98294	-5.9073	312.44
				47.260	30.65391	32.99453	3.22844	-5.1963	-3.3740	3.4258	-1.0169	-6.1116	312.44
				48.266	31.33250	32.25250	3.21500	-5.3660	-3.4842	3.5059	-1.0501	-6.3111	312.44
				49.271	32.01109	31.51047	3.20156	-5.5080	-3.5764	3.5853	-1.0779	-6.4782	312.44
				50.277	32.68969	30.76844	3.18812	-5.4534	-3.5409	3.4960	-1.0673	-6.4139	312.44
				51.282	33.36828	30.02641	3.17469	-5.1934	-3.3721	3.2964	-1.0164	-6.1082	312.44
				52.288	34.04688	29.28437	3.16125	-4.9374	-3.2059	3.1019	-0.96627	-5.8071	312.44
				53.293	34.72547	28.54234	3.14781	-4.6854	-3.0423	2.9126	-0.91696	-5.5107	312.44
				54.299	35.40406	27.80031	3.13437	-4.4374	-2.8813	2.7285	-0.86842	-5.2190	312.44
				55.304	36.08266	27.05828	3.12094	-4.1934	-2.7228	2.5497	-0.82087	-4.9321	312.44
				56.310	36.76125	26.31625	3.10750	-3.9534	-2.5678	2.3763	-0.77370	-4.6498	312.44
				57.315	37.43984	25.57422	3.09406	-3.7174	-2.4138	2.2081	-0.72752	-4.3722	312.44
				58.321	38.11844	24.83219	3.08062	-3.4854	-2.2631	2.0453	-0.68211	-4.0994	312.44
				59.327	38.79703	24.09016	3.06719	-3.2903	-2.0662	1.9159	-0.69573	-3.8225	312.44
				60.332	39.47563	23.34812	3.05375	-3.1319	-1.8117	1.8131	-0.77669	-3.5338	312.44
				61.338	40.15422	22.60609	3.04031	-2.9680	-1.5650	1.6905	-0.84813	-3.2464	312.44
				62.343	40.83281	21.86406	3.02687	-2.8011	-1.3361	1.5747	-0.90885	-2.9647	312.44
				63.349	41.51141	21.12283	3.01344	-2.6333	-1.1099	1.4446	-0.95803	-2.6922	312.44
				64.354	42.19000	20.38000	3.00000	-2.4662	-0.90666	1.3108	-0.99525	-2.4318	312.44
	3		Sewer 2.2	0	42.19000	20.38000	3.00000	-2.4662	-0.90666	1.3108	-2.5995	0.38279	28.562
				0.99527	43.06415	20.85585	3.00000	-2.3191	-0.88788	1.1125	-2.4614	0.32898	28.562
				1.9905	43.93829	21.33171	3.00000	-2.1662	-0.85822	0.92753	-2.3129	0.28191	28.562
				2.9858	44.81244	21.80756	3.00000	-2.0083	-0.81931	0.75922	-2.1556	0.24058	28.562
				3.9811	45.68659	22.28341	3.00000	-1.8460	-0.77248	0.60995	-1.9907	0.20415	28.562
				4.9764	46.56073	22.75927	3.00000	-1.6801	-0.71882	0.48119	-1.8193	0.17195	28.562
				5.9716	47.43488	23.23512	3.00000	-1.5110	-0.65922	0.37347	-1.6423	0.14343	28.562
				6.9669	48.30902	23.71098	3.00000	-1.3391	-0.59444	0.28641	-1.4603	0.11813	28.562
				7.9622	49.18317	24.18683	3.00000	-1.1647	-0.52512	0.21865	-1.2740	0.095636	28.562
				8.9575	50.05732	24.66268	3.00000	-0.98812	-0.45178	0.16792	-1.0832	0.07284	28.562
				9.9527	50.93146	25.13854	3.00000	-0.80963	-0.37488	0.13098	-0.89033	0.057840	28.562
				10.948	51.80561	25.61439	3.00000	-0.62944	-0.29481	0.10365	-0.69378	0.042012	28.562
				11.943	52.67976	26.09024	3.00000	-0.44771	-0.21100	0.080780	-0.49453	0.027943	28.562
				12.939	53.55390	26.56610	3.00000	-0.26460	-0.12644	0.056275	-0.29285	0.015454	28.562
				13.934	54.42805	27.04195	3.00000	-0.080251	-0.038689	0.023081	-0.088962	0.0043885	28.562
				14.929	55.30220	27.51780	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				15.924	56.17634	27.99366	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				16.920	57.05049	28.46951	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				17.915	57.92463	28.94537	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				18.910	58.79878	29.42122	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				19.905	59.67293	29.89707	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				20.901	60.54707	30.37293	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				21.896	61.42122	30.84878	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				22.891	62.29537	31.32463	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				23.887	63.16951	31.80049	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				24.882	64.04366	32.27634	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				25.877	64.91780	32.75220	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				26.872	65.79195	33.22805	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				27.868	66.66610	33.70390	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				28.863	67.54024	34.17976	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				29.858	68.41439	34.65561	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				30.853	69.28854	35.13146	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				31.849	70.16268	35.60732	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				32.844	71.03683	36.08317	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				33.839	71.91098	36.55902	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				34.835	72.78512	37.03488	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				35.830	73.65927	37.51073	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				36.825	74.53341	37.98659	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				37.820	75.40756	38.46244	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				38.816	76.28171	38.93829	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				39.811	77.15585	39.41415	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
				40.806	78.03000	39.89000	3.00000	0.0	0.0	0.0	0.0	0.0	28.562
	4		Sewer 3.1	0	54.43000	28.65000	4.40000	0.0	0.0	0.0	0.0	0.0	231.20
				1.0408	53.77778	27.83889	4.36667	-0.14228	-0.072539	0.035589	0.14569	-0.065420	231.20
				2.0816	53.12556	27.02778	4.33333	-0.31270	-0.15484	0.063190	0.31662	-0.14666	231.20
				3.1224	52.47333	26.21667	4.30000	-0.47771	-0.22891	0.084459	0.47775	-0.22884	231.20
				4.1633	51.82111	25.40556	4.26667	-0.63667	-0.29406	0.19472	0.62822	-0.31200	231.20
				5.2041	51.16889	24.59444	4.23333	-0.78048	-0.34952	0.12823	0.76711	-0.39622	231.20
				6.2449	50.51667	23.78333	4.20000	-0.93512	-0.39445	0.15823	0.89339	-0.48156	231.20
				7.2857	49.86444	22.97222	4.16667	-1.0731	-0.42796	0.19696	1.0060	-0.56809	231.20
				8.3265	49.21222	22.16111	4.13333	-1.2027	-0.44907	0.24576	1.1036	-0.65586	231.20
				9.3673	48.56000	21.35000	4.10000	-1.3232	-0.45675	0.30505	1.1851	-0.74493	231.20
				10.408	47.90800	20.55000	4.06667	-1.4333	-0.45675	0.30505	1.3543	-0.85376	213.68
				1.0037	47.72467	20.79326	4.09783	-1.4681	-0.48074	0.39000	1.4882	-0.74415	213.68
				2.0077	46.88935	20.23652	4.09565	-1.6069	-0.49445	0.49161	1.6113	-0.47973	213.68
				3.0116	46.05402	19.67978	4.09348	-1.7388	-0.49655	0.60919	1.7223	-0.55114	213.68
				4.0154	45.21870	19.12304							



Brill Place

TW GMA

Excavation

Oasys												Job No.	Sheet No.	Rev.	
												70057370			
Brill Place												Drg. Ref.			
TW GMA												Made by		Date	Checked
Exavation												JAA		26-Feb-2020	
Stage: Ref.	Stage: Name	Disp. Line: Ref.	Disp. Line: Name	Chainage	x	y	z	δx	δy	δz	δH//	δHperp.	Angle		
[m]	[m]	[m]	[m]		[mm]	[mm]	[mm]	[mm]				[mm]	[°]		
48.185	8.46435	-5.37348	3.99565		-3.3116	5.0995	3.7733	-0.072554	-6.0800	213.68					
49.189	7.62902	-5.93022	3.99348		-3.2164	4.9530	3.6644	-0.070470	-5.9053	213.68					
50.193	6.79370	-6.48696	3.99130		-3.1214	4.8067	3.5557	-0.068388	-5.7308	213.68					
51.197	5.95837	-7.04370	3.98913		-3.0265	4.6605	3.4471	-0.066308	-5.5566	213.68					
52.201	5.12304	-7.60043	3.98696		-2.9317	4.5145	3.3386	-0.064231	-5.3825	213.68					
53.204	4.28772	-8.15717	3.98478		-2.4799	4.2684	3.2081	-0.063608	-4.9272	213.68					
54.208	3.45239	-8.71391	3.98261		-1.9644	3.9906	3.0573	-0.057862	-4.4181	213.68					
55.212	2.61707	-9.27065	3.98043		-1.4725	3.7691	2.8934	-0.053177	-3.9031	213.68					
56.216	1.78174	-9.82739	3.97826		-1.0191	3.4325	2.7196	-1.0556	-3.4215	213.68					
57.220	0.94641	-10.38413	3.97609		-0.61342	3.1669	2.5383	-1.2459	-2.9754	213.68					
58.224	0.11109	-10.94087	3.97391		-0.25956	2.9159	2.3516	-1.4012	-2.5703	213.68					
59.228	-0.72424	-11.49761	3.97174	0.042138	2.6813	2.1615	-1.5221	-1.6109	-2.2078	213.68					
60.231	-1.55957	-12.05435	3.96957	0.29309	2.4634	1.9698	-1.6109	-1.8868	-2.1368	213.68					
61.235	-2.39489	-12.61109	3.96739	0.50168	2.2705	1.7857	-1.6767	-1.6111	-2.1368	213.68					
62.239	-3.23822	-13.16783	3.96522	0.68687	2.1826	1.6711	-1.7820	-1.4352	-2.1368	213.68					
63.243	-4.06554	-13.72457	3.96304	0.83080	2.0888	1.5397	-1.8498	-1.2774	-2.1368	213.68					
64.247	-4.90087	-14.28130	3.96087	0.93827	1.9900	1.3963	-1.8844	-1.1356	-2.1368	213.68					
65.251	-5.73620	-14.83804	3.95870	1.0137	1.8870	1.2459	-1.8991	-1.0080	-2.1368	213.68					
66.255	-6.57152	-15.39478	3.95652	1.0610	1.7893	1.0935	-1.8703	-0.89302	-2.1368	213.68					
67.258	-7.40685	-15.95152	3.95435	1.0837	1.6705	0.94329	-1.8282	-0.78967	-2.1368	213.68					
68.262	-8.24217	-16.50826	3.95217	1.0847	1.5580	0.79944	-1.7667	-0.69485	-2.1368	213.68					
69.266	-9.07750	-17.06500	3.95000	1.0667	1.4431	0.66529	-1.6880	-0.60922	-2.1368	213.68					
70.270	-9.91283	-17.62174	3.94783	1.0320	1.3262	0.54357	-1.5943	-0.53117	-2.1368	213.68					
71.274	-10.74815	-18.17848	3.94565	0.98252	1.2074	0.43626	-1.4872	-0.45982	-2.1368	213.68					
72.278	-11.58348	-18.73522	3.94348	0.91990	1.0871	0.34458	-1.3684	-0.39443	-2.1368	213.68					
73.282	-12.41889	-19.29196	3.94130	0.84565	0.96541	0.26880	-1.2301	-0.33434	-2.1368	213.68					
74.285	-13.25413	-19.84870	3.93913	0.76181	0.84247	0.20869	-1.1005	-0.27898	-2.1368	213.68					
75.289	-14.08946	-20.40543	3.93696	0.66710	0.71844	0.16260	-0.95355	-0.22785	-2.1368	213.68					
76.293	-14.92478	-20.96217	3.93478	0.56487	0.59343	0.12831	-0.79915	-0.18052	-2.1368	213.68					
77.297	-15.76011	-21.51891	3.93261	0.45515	0.46754	0.10259	-0.63804	-0.13662	-2.1368	213.68					
78.301	-16.59543	-22.07565	3.93043	0.33689	0.34087	0.081276	-0.47087	-0.095804	-2.1368	213.68					
79.305	-17.43076	-22.63239	3.92826	0.21612	0.21348	0.059229	-0.29823	-0.057785	-2.1368	213.68					
80.309	-18.26609	-23.18913	3.92609	0.088009	0.085461	0.030327	-0.12063	-0.022304	-2.1368	213.68					
81.312	-19.10141	-23.74587	3.92391	0.0	0.0	0.0	0.0	0.0	-2.1368	213.68					
82.316	-19.93674	-24.30261	3.92174	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368					
83.320	-20.77207	-24.85935	3.91957	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368				
84.324	-21.60739	-25.41609	3.91739	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368			
85.328	-22.44272	-25.97283	3.91522	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
86.332	-23.27804	-26.52957	3.91304	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
87.336	-24.11337	-27.08630	3.91087	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
88.339	-24.94870	-27.64304	3.90870	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
89.343	-25.78402	-28.19978	3.90652	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
90.347	-26.61935	-28.75652	3.90435	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
91.351	-27.45467	-29.31326	3.90217	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
92.355	-28.29000	-29.87000	3.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	-2.1368		
0.0	-54.84000	32.41000	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
1.0042	-54.28059	31.57608	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
2.0083	-53.72118	30.74216	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
3.0125	-53.16176	29.90824	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
4.0167	-52.60235	29.07431	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
5.0209	-52.04294	28.24039	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
6.0250	-51.48353	27.40647	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
7.0292	-50.92412	26.57255	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
8.0334	-50.36471	25.73863	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
9.0376	-49.80529	24.90471	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
10.042	-49.24588	24.07078	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
11.046	-48.68647	23.23686	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
12.050	-48.12706	22.40294	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
13.054	-47.56765	21.56902	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
14.058	-47.00824	20.73510	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
15.063	-46.44882	19.90118	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
16.067	-45.88941	19.06725	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
17.071	-45.33000	18.23333	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
18.075	-44.77059	17.39941	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
19.079	-44.21118	16.56549	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
20.083	-43.65176	15.73157	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
21.088	-43.09235	14.89765	18.90000	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	303.85		
22.092	-42.53294	1													



Brill Place
TW GMA
Excavation

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date 26-Feb-2020	Checked

Stage: Ref.	Stage: Name	Disp. Line: Ref.	Disp. Line: Name	Chainage	x	y	z	δx	δy	δz	δH//	δHperp.	Angle	
					[m]	[m]	[m]	[mm]	[mm]	[mm]	[mm]	[mm]	[°]	
					22.079	45.15464	21.24505	18.90000	-1.9364	-0.72856	0.71925	2.0128	-0.47866	214.00
					23.083	44.32258	20.68392	18.90000	-2.0776	-0.74231	0.87393	2.1375	-0.54617	214.00
					24.086	43.49052	20.12278	18.90000	-2.2109	-0.74236	1.0424	2.2481	-0.62067	214.00
					25.090	42.65845	19.56165	18.90000	-2.3351	-0.72653	1.2211	2.3422	-0.70325	214.00
					26.093	41.82639	19.00052	18.90000	-2.4487	-0.69218	1.4058	2.4172	-0.79525	214.00
					27.097	40.99433	18.43938	18.90000	-2.5499	-0.63614	1.5915	2.4697	-0.89828	214.00
					28.101	40.16227	17.87825	18.90000	-2.6363	-0.55454	1.7727	2.4958	-1.0143	214.00
					29.104	39.33021	17.31711	18.90000	-2.7053	-0.44271	1.9432	2.4904	-1.1455	214.00
					30.108	38.49814	16.75598	18.90000	-2.7534	-0.29499	2.0965	2.4478	-1.2950	214.00
					31.111	37.66608	16.19485	18.90000	-2.7767	-0.10459	2.2262	2.3606	-1.4658	214.00
					32.115	36.83402	15.63371	18.90000	-2.7703	0.13649	2.3260	2.2295	-1.6621	214.00
					33.119	36.00196	15.07258	18.90000	-2.7284	0.43737	2.3901	2.0175	-1.8881	214.00
					34.122	35.16990	14.51144	18.90000	-2.7639	0.83373	2.5202	1.8255	-2.2362	214.00
					35.126	34.33784	13.95031	18.90000	-2.8638	1.3319	2.7110	1.6296	-2.7055	214.00
					36.129	33.50577	13.38918	18.90000	-2.9569	1.9260	2.8998	1.3746	-3.2501	214.00
					37.133	32.67371	12.82804	18.90000	-3.0408	2.6155	3.0880	1.0586	-3.8687	214.00
					38.137	31.84165	12.26691	18.90000	-3.1125	3.3878	3.2761	0.68633	-4.5490	214.00
					39.140	31.00959	11.70577	18.90000	-3.1687	4.2134	3.4626	0.27128	-5.2649	214.00
					40.144	30.17753	11.14464	18.90000	-3.2160	4.9524	3.6340	-0.10263	-5.9941	214.00
					41.147	29.34546	10.58351	18.90000	-3.3156	5.1057	3.7479	-0.10501	-6.0070	214.00
					42.151	28.51340	10.02237	18.90000	-3.4151	5.2589	3.8616	-0.10898	-6.2695	214.00
					43.154	27.68134	9.46124	18.90000	-3.5144	5.4118	3.9753	-0.11215	-6.4518	214.00
					44.158	26.84928	8.90010	18.90000	-3.6136	5.5645	4.0888	-0.11531	-6.6339	214.00
					45.162	26.01722	8.33897	18.90000	-3.7126	5.7169	4.2022	-0.11847	-6.8156	214.00
					46.165	25.18515	7.77784	18.90000	-3.8114	5.8692	4.3154	-0.12163	-6.9971	214.00
					47.169	24.35309	7.21679	18.90000	-3.9101	6.0211	4.4286	-0.12478	-7.1783	214.00
					48.172	23.52103	6.65557	18.90000	-4.0086	6.1729	4.5416	-0.12792	-7.3592	214.00
					49.176	22.68897	6.09443	18.90000	-4.1070	6.3244	4.6545	-0.13106	-7.5398	214.00
					50.180	21.85691	5.53330	18.90000	-4.2053	6.4757	4.7673	-0.13419	-7.7201	214.00
					51.183	21.02485	4.97216	18.90000	-4.3033	6.6267	4.8799	-0.13732	-7.9002	214.00
					52.187	20.19278	4.41103	18.90000	-4.4013	6.7775	4.9924	-0.14045	-8.0800	214.00
					53.190	19.36072	3.84990	18.90000	-4.4991	6.9281	5.1048	-0.14357	-8.2595	214.00
					54.194	18.52866	3.28876	18.90000	-4.5967	7.0784	5.2170	-0.14669	-8.4387	214.00
					55.198	17.69660	2.72763	18.90000	-4.6942	7.2285	5.3291	-0.14980	-8.6177	214.00
					56.201	16.86454	2.16649	18.90000	-4.7042	7.2440	5.3420	-0.15012	-8.6362	214.00
					57.205	16.03247	1.60536	18.90000	-4.7998	7.0833	5.2248	-0.14679	-8.4445	214.00
					58.208	15.20041	1.04423	18.90000	-4.8956	6.9227	5.1077	-0.14346	-8.2531	214.00
					59.212	14.36835	0.48309	18.90000	-4.9915	6.7624	4.9907	-0.14014	-8.0620	214.00
					60.216	13.53629	-0.07804	18.90000	-4.2875	6.6024	4.8738	-0.13682	-7.8712	214.00
					61.219	12.70423	-0.63918	18.90000	-4.1837	6.4425	4.7570	-0.13351	-7.6806	214.00
					62.223	11.87216	-1.20031	18.90000	-4.0801	6.2829	4.6403	-0.13020	-7.4904	214.00
					63.226	11.04010	-1.76144	18.90000	-3.9766	6.1236	4.5236	-0.12690	-7.3004	214.00
					64.230	10.20804	-2.32258	18.90000	-3.8733	5.9644	4.4071	-0.12360	-7.1107	214.00
					65.234	9.37598	-2.89371	18.90000	-3.7701	5.8059	4.2907	-0.12031	-6.9212	214.00
					66.237	8.54392	-3.44485	18.90000	-3.6670	5.6469	4.1743	-0.11702	-6.7321	214.00
					67.241	7.71186	-4.00598	18.90000	-3.5642	5.4884	4.0581	-0.11374	-6.5432	214.00
					68.244	6.87979	-4.56711	18.90000	-3.4614	5.3303	3.9419	-0.11046	-6.3546	214.00
					69.248	6.04773	-5.12825	18.90000	-3.3589	5.1723	3.8259	-0.10718	-6.1663	214.00
					70.251	5.21567	-5.68938	18.90000	-3.2564	5.0146	3.7100	-0.10392	-5.9782	214.00
					71.255	4.38361	-6.25052	18.90000	-3.1542	4.8571	3.5942	-0.10065	-5.7905	214.00
					72.259	3.55155	-6.81165	18.90000	-3.0520	4.6995	3.4784	-0.09737	-5.6028	214.00
					73.262	2.71948	-7.37278	18.90000	-2.9497	4.5418	3.3634	-0.09408	-5.4151	214.00
					74.266	1.88742	-7.93392	18.90000	-2.8473	4.3843	3.2485	-0.09079	-5.2274	214.00
					75.269	1.05536	-8.49505	18.90000	-2.7449	4.2268	3.1336	-0.08750	-5.0397	214.00
					76.273	0.22330	-9.05619	18.90000	-2.6425	4.0693	3.0187	-0.08421	-4.8519	214.00
					77.277	-0.60876	-9.61732	18.90000	-2.5401	3.9118	2.9037	-0.08092	-4.6641	214.00
					78.280	-1.44082	-10.17845	18.90000	-2.4377	3.7543	2.7887	-0.07763	-4.4763	214.00
					79.284	-2.27289	-10.73959	18.90000	-2.3353	3.5968	2.6737	-0.07434	-4.2885	214.00
					80.287	-3.10495	-11.30072	18.90000	-2.2329	3.4393	2.5587	-0.07105	-4.1007	214.00
					81.291	-3.93701	-11.86186	18.90000	-2.1305	3.2818	2.4437	-0.06776	-3.9129	214.00
					82.295	-4.76907	-12.42299	18.90000	-2.0281	3.1243	2.3287	-0.06447	-3.7251	214.00
					83.298	-5.60113	-12.98412	18.90000	-1.9257	2.9668	2.2137	-0.06118	-3.5373	214.00
					84.302	-6.43320	-13.54526	18.90000	-1.8233	2.8093	2.1007	-0.05789	-3.3495	214.00
					85.305	-7.26526	-14.10639	18.90000	-1.7209	2.6518	1.9877	-0.05460	-3.1617	214.00
					86.309	-8.09732	-14.66753	18.90000	-1.6185	2.4943	1.8747	-0.05131	-2.9739	214.00
					87.313	-8.92938	-15.22866	18.90000	-1.5161	2.3368	1.7617	-0.04802	-2.7861	214.00
					88.316	-9.76144	-15.78979	18.90000	-1.4137	2.1793	1.6487	-0.04473	-2.5983	214.00
					89.320	-10.59351	-16.35093	18.90000	-1.3113	2.0218	1.5357	-0.04144	-2.4105	214.00
					90.323	-11.42557	-16.91206	18.90000	-1.2089	1.8643	1.4227	-0.03815	-2.2227	214.00
					91.327	-12.25763	-17.47320	18.90000	-1.1065	1.7068	1.3097	-0.03486	-2.0349	214.00
					92.331	-13.08969	-18.03433	18.90000	-1.0041	1.5493	1.1967	-0.03157	-1.8471	214.00
					93.334	-13.92175	-18.59546	18.90000	-0.9017	1.3918	1.0837	-0.02828	-1.6593	214.00
					94.338	-14.75381	-19.15660	18.90000	-0.7993	1.2343	0.9707	-0.02499	-1.4715	214.00
					95.341	-15.58588	-19.71773	18.90000	-0.6969	1.0768	0.8577	-0.02170	-1.2837	214.00
					96.345	-16.41794	-20.27887	18.90000	-0.5945	0.9193	0.7447	-0.01841	-1.0959	214.00
					97.348	-17.25000	-20.84000	18.90000	-0.4921	0.7618	0.6317	-0.01512	-0.9081	214.00
	9	WM 2.2			0.0	-17.25000	-20.84000	18.90000	-0.44501	0.41479	0.095017	-0.60130	-0.092289	214.26
					1.0138	-18.08786	-21.41071	18.90000	-0.30871	0.28357	0.072945	-0.41478	-0.060570	214.26
					2.0275	-18.92571	-21.98143	18.90000	-0.16756	0.15186	0.047277	-0.22398	-0.031179	214.26
					3.0413	-19.76357	-22.55214	18.90000	-0.022620	0.019712	0.018000	-0.029297	-0.0038948	214.26
					4.0551	-20.60143	-23.12286	18.90000	0.0	0.0	0.0	0.0	0.0	214.26
					5.0688	-21.43929	-23.69357	18.90000	0.0	0.0	0.0	0.0	0.0	214.26
					6.0826	-22.27714	-24.26429	18.90000	0.0	0.0	0.0	0.0	0.0	214.26
					7.0964	-23.11500	-24.83500	18.90000	0.0	0.0	0.0	0.0	0.0	214.26
					8.1101	-23.95286	-25.40571	18.90000	0.0	0.0	0.0	0.0	0.0	214.26
					9.1239	-24.79071	-25.97643							

Appendix D.3

**EXCAVATION (PDISP ASSESSMENT)
UNDRAINED/DRAINED**



Brill Place
TW GMA
Excavation (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Titles

Job No.: 70057370
Job Title: Brill Place
Sub-title: TW GMA
Calculation Heading: Excavation (UD)
Initials: JAA
Checker:

Analysis Options

General

Global Poisson's ratio: 0.49
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -24.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

Elastic

Elastic : Yes
Analysis: Boussinesq
Stiffness for horizontal displacement calculations: Weighted average
Using legacy heave correction factor: No

Consolidation

consolidation : No

Soil ProfilesUndrained

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10000.	10000.	0.20000	None
2	LC (1)	16.500	6	32500.	32500.	0.49000	None
3	LC (2)	10.000	11	32500.	97500.	0.49000	None
4	LG	-1.0000	20	97500.	97500.	0.49000	None
5	TS	-21.000	4	300000.	300000.	0.20000	None

Soil ProfilesDrained

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10000.	10000.	0.20000	None
2	LC (1)	16.500	6	26000.	26000.	0.20000	None
3	LC (2)	10.000	11	26000.	78000.	0.20000	None
4	LG	-1.0000	20	78000.	78000.	0.20000	None
5	TS	-21.000	4	300000.	300000.	0.20000	None

Soil Zones

Zone	Name	X min	X max	Y min	Y max	Profile
		[m]	[m]	[m]	[m]	
1	UD	-79.200	93.000	-51.310	77.680	Undrained

Polygonal Load Data

Load ref.	Name	Position : Level	Position : Polygon : Coords.	Position : Polygon Rectangles : Rect. tolerance	No. of Rectangles	Value : Normal (local z)
		[m]	[m]	[%]		[kN/m ²]
1	Excavation	11.40000	(-9.36,14.4) (16.9,31.9) (26.7,16.8) (0.26,-0.41) (-9.36,14.4)	10.000	1	-150.00

Polygonal Loads' Rectangles

No.	Centre : x	Centre : y	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Excavation (Edge 2 optimal)					
1	8.61412	15.67605	32.999	31.517	17.882

Displacement Lines

Name	X1	Y1	Z1	X2	Y2	Z2	Intervals	Calculate	Detailed Results
	[m]	[m]	[m]	[m]	[m]	[m]	[No.]		
Sewer 1	-51.92000	34.37000	14.80000	-17.85000	-22.90000	15.80000	67	Yes	Yes
Sewer 2.1	-12.24000	67.87000	3.80000	42.19000	20.38000	3.00000	64	Yes	Yes
Sewer 2.2	42.19000	20.38000	3.00000	78.03000	39.89000	3.00000	41	Yes	Yes
Sewer 3.1	54.43000	28.65000	13.20000	48.56000	21.35000	13.90000	9	Yes	Yes
Sewer 3.2	48.56000	21.35000	13.90000	-28.29000	-29.87000	15.20000	92	Yes	Yes
WM 1.1	-54.84000	32.41000	18.90000	-26.31000	-10.12000	18.90000	51	Yes	Yes
WM 1.2	-26.31000	-10.12000	18.90000	-17.25000	-20.84000	18.90000	14	Yes	Yes
WM 2.1	63.46000	33.59000	18.90000	-17.25000	-20.84000	18.90000	97	Yes	Yes
WM 2.2	-17.25000	-20.84000	18.90000	-20.98000	-20.83000	18.90000	14	Yes	Yes
Gas Main 1.1	40.22000	13.90000	18.90000	23.40000	3.14000	18.90000	20	Yes	No
Gas Main 1.2	23.40000	3.14000	18.90000	11.57000	-0.91000	18.90000	13	Yes	No
Gas Main 1.3	11.57000	-0.91000	18.90000	-20.81000	-23.46000	18.90000	39	Yes	No

Displacement Grids

Name	Extrusion: Direction	X1	Y1	Z1	X2	Y2	Z2	Intervals Along	Extrusion: Distance	Extrusion: Intervals	Calculate	Detailed Results



Brill Place
TW GMA
Excavation (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

	[m]	[m]	[m]	[m]	[m]	[m]	Line [No.]	[m]	Along [No.]
Grid	Global Y	-79.20000	-51.31000	18.90000	93.00000	-	18.90000	86	128.00000
									64 No
									No

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
1	Excavation	8.66306	15.70786	11.40000	-23.96218	11.050	-150.00	-434.20	-330.35E-6

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
1	Sewer 1	-51.92000	34.37000	14.80000	0.26069	14.320	0.0	0.0	0.0
1	Sewer 1	-51.41149	33.51522	14.81493	0.26656	14.333	0.0	0.0	0.0
1	Sewer 1	-50.90299	32.66045	14.82995	0.27249	14.347	0.0	0.0	0.0
1	Sewer 1	-50.39448	31.80567	14.84478	0.27846	14.360	0.0	0.0	0.0
1	Sewer 1	-49.88597	30.95090	14.85970	0.28448	14.374	0.0	0.0	0.0
1	Sewer 1	-49.37746	30.09612	14.87463	0.29052	14.387	0.0	0.0	0.0
1	Sewer 1	-48.86896	29.24134	14.88955	0.29658	14.401	0.0	0.0	0.0
1	Sewer 1	-48.36045	28.38657	14.90448	0.30265	14.414	0.0	0.0	0.0
1	Sewer 1	-47.85194	27.53179	14.91940	0.30871	14.427	0.0	0.0	0.0
1	Sewer 1	-47.34343	26.67703	14.93433	0.31475	14.441	0.0	0.0	0.0
1	Sewer 1	-46.83493	25.82224	14.94925	0.32075	14.454	0.0	0.0	0.0
1	Sewer 1	-46.32642	24.96746	14.96418	0.32670	14.468	0.0	0.0	0.0
1	Sewer 1	-45.81791	24.11269	14.97910	0.33259	14.481	0.0	0.0	0.0
1	Sewer 1	-45.30940	23.25791	14.99403	0.33839	14.495	0.0	0.0	0.0
1	Sewer 1	-44.80090	22.40313	15.00896	0.34410	14.508	0.0	0.0	0.0
1	Sewer 1	-44.29239	21.54836	15.02388	0.34966	14.521	0.0	0.0	0.0
1	Sewer 1	-43.78388	20.69358	15.03881	0.35513	14.535	0.0	0.0	0.0
1	Sewer 1	-43.27537	19.83881	15.05373	0.36042	14.548	0.0	0.0	0.0
1	Sewer 1	-42.76687	18.98403	15.06866	0.36554	14.562	0.0	0.0	0.0
1	Sewer 1	-42.25836	18.12925	15.08358	0.37046	14.575	0.0	0.0	0.0
1	Sewer 1	-41.74985	17.27448	15.09851	0.37518	14.589	0.0	0.0	0.0
1	Sewer 1	-41.24134	16.41970	15.11343	0.37967	14.602	0.0	0.0	0.0
1	Sewer 1	-40.73284	15.56493	15.12836	0.38391	14.616	0.0	0.0	0.0
1	Sewer 1	-40.22433	14.71015	15.14328	0.38790	14.629	0.0	0.0	0.0
1	Sewer 1	-39.71582	13.85537	15.15821	0.39162	14.642	0.0	0.0	0.0
1	Sewer 1	-39.20731	13.00060	15.17313	0.39506	14.656	0.0	0.0	0.0
1	Sewer 1	-38.69881	12.14582	15.18806	0.39821	14.669	0.0	0.0	0.0
1	Sewer 1	-38.19030	11.29104	15.20299	0.40187	14.683	0.0	0.0	0.0
1	Sewer 1	-37.68179	10.43627	15.21791	0.40563	14.696	0.0	0.0	0.0
1	Sewer 1	-37.17328	9.58149	15.23284	0.40950	14.710	0.0	0.0	0.0
1	Sewer 1	-36.66478	8.72672	15.24776	0.40788	14.723	0.0	0.0	0.0
1	Sewer 1	-36.15627	7.87194	15.26269	0.40957	14.736	0.0	0.0	0.0
1	Sewer 1	-35.64776	7.01716	15.27761	0.41099	14.750	0.0	0.0	0.0
1	Sewer 1	-35.13925	6.16239	15.29254	0.41215	14.763	0.0	0.0	0.0
1	Sewer 1	-34.63075	5.30761	15.30746	0.41307	14.777	0.0	0.0	0.0
1	Sewer 1	-34.12224	4.45284	15.32239	0.41378	14.790	0.0	0.0	0.0
1	Sewer 1	-33.61373	3.59806	15.33731	0.41428	14.804	0.0	0.0	0.0
1	Sewer 1	-33.10522	2.74328	15.35224	0.41461	14.817	0.0	0.0	0.0
1	Sewer 1	-32.59672	1.88851	15.36716	0.41480	14.830	0.0	0.0	0.0
1	Sewer 1	-32.08821	1.03373	15.38209	0.41486	14.844	0.0	0.0	0.0
1	Sewer 1	-31.57970	0.17870	15.39702	0.41483	14.857	0.0	0.0	0.0
1	Sewer 1	-31.07119	-0.67582	15.41194	0.41474	14.871	0.0	0.0	0.0
1	Sewer 1	-30.56269	-1.53060	15.42687	0.41426	14.975	0.0	0.0	0.0
1	Sewer 1	-30.05418	-2.38537	15.44179	0.41407	14.988	0.0	0.0	0.0
1	Sewer 1	-29.54567	-3.24015	15.45672	0.41388	15.002	0.0	0.0	0.0
1	Sewer 1	-29.03716	-4.09493	15.47164	0.41371	15.016	0.0	0.0	0.0
1	Sewer 1	-28.52866	-4.94970	15.48657	0.41357	15.029	0.0	0.0	0.0
1	Sewer 1	-28.02015	-5.80448	15.50149	0.41347	15.043	0.0	0.0	0.0
1	Sewer 1	-27.51164	-6.65925	15.51642	0.41341	15.057	0.0	0.0	0.0
1	Sewer 1	-27.00313	-7.51403	15.53134	0.41340	15.070	0.0	0.0	0.0
1	Sewer 1	-26.49463	-8.36881	15.54627	0.41343	15.084	0.0	0.0	0.0
1	Sewer 1	-25.98612	-9.22358	15.56119	0.41348	15.098	0.0	0.0	0.0
1	Sewer 1	-25.47761	-10.07830	15.57612	0.41355	15.111	0.0	0.0	0.0
1	Sewer 1	-24.96910	-10.93313	15.59104	0.41363	15.125	0.0	0.0	0.0
1	Sewer 1	-24.46060	-11.78791	15.60597	0.41369	15.139	0.0	0.0	0.0
1	Sewer 1	-23.95209	-12.64269	15.62090	0.41373	15.152	0.0	0.0	0.0
1	Sewer 1	-23.44358	-13.49746	15.63582	0.41371	15.166	0.0	0.0	0.0
1	Sewer 1	-22.93507	-14.35224	15.65075	0.41359	15.180	0.0	0.0	0.0
1	Sewer 1	-22.42657	-15.20701	15.66567	0.41335	15.194	0.0	0.0	0.0
1	Sewer 1	-21.91808	-16.06179	15.68060	0.41296	15.207	0.0	0.0	0.0
1	Sewer 1	-21.40955	-16.91657	15.69552	0.41240	15.221	0.0	0.0	0.0
1	Sewer 1	-20.90104	-17.77134	15.71045	0.41164	15.235	0.0	0.0	0.0
1	Sewer 1	-20.39254	-18.62612	15.72537	0.41066	15.248	0.0	0.0	0.0
1	Sewer 1	-19.88403	-19.48090	15.74030	0.40944	15.262	0.0	0.0	0.0
1	Sewer 1	-19.37552	-20.33567	15.75522	0.40797	15.276	0.0	0.0	0.0
1	Sewer 1	-18.86701	-21.19045	15.77015	0.40623	15.289	0.0	0.0	0.0
1	Sewer 1	-18.35851	-22.04522	15.78507	0.40420	15.303	0.0	0.0	0.0
1	Sewer 1	-17.85000	-22.90000	15.80000	0.40189	15.317	0.0	0.0	0.0
2	Sewer 2.1	-1.24000	67.87000	3.86000	0.27655	3.5485	-0.049059	-2.0099	13.538E-6
2	Sewer 2.1	-0.56141	67.12797	3.84656	0.28094	3.5363	-0.053672	-2.2098	14.189E-6
2	Sewer 2.1	0.11719	66.38594	3.83312	0.28502	3.5242	-0.058787	-2.3268	14.877E-6
2	Sewer 2.1	0.79578	65.64301	3.81969	0.28876	3.5120	-0.064467	-2.4516	15.605E-6
2	Sewer 2.1	1.47437	64.90188	3.80625	0.29209	3.4998	-0.070783	-2.5845	16.376E-6
2	Sewer 2.1	2.15297	64.15984	3.79281	0.29494	3.4877	-0.077815	-2.7264	17.191E-6
2	Sewer 2.1	2.83156	63.41781	3.77937	0.29722	3.4755	-0.085656	-2.8778	18.054E-6
2	Sewer 2.1	3.51016	62.67578	3.76594	0.29886	3.4633	-0.094410	-3.0395	18.966E-6
2	Sewer 2.1	4.18875	61.93375	3.75250	0.29976	3.4512	-0.10420	-3.2124	19.932E-6
2	Sewer 2.1	4.86734	61.19172	3.73906	0.29982	3.4390	-0.115516	-3.3972	20.954E-6
2	Sewer 2.1	5.54594	60.44969	3.72562	0.29892	3.4268	-0.12745	-3.5950	22.034E-6
2	Sewer 2.1	6.22453	59.70766	3.71219	0.29693	3.4146	-0.14125	-3.8067	23.177E-6
2	Sewer 2.1	6.90313	58.96563	3.69875	0.29373	3.4025	-0.15677	-4.0333	24.384E-6
2	Sewer 2.1	7.58172	58.22359	3.68531	0.28916	3.3903	-0.17426	-4.2762	25.659E-6
2	Sewer 2.1	8.26031	57.48156	3.67188	0.28397	3.3781	-0.19398	-4.5366	27.004E-6
2	Sewer 2.1	8.93891	56.73953	3.65844	0.27829	3.3659	-0.21626	-4.8157	28.422E-6
2	Sewer 2.1	9.61750	55.99750	3.64500	0.26564	3.3537	-0.24146	-5.1151	29.914E-6
2	Sewer 2.1	10.29609	55.25547	3.63156	0.25394	3.3415	-0.27000	-5.4363	31.483E-6
2	Sewer 2.1	10.97469	54.51344	3.61813	0.23997	3.3293	-0.30237	-5.7809	33.129E-6
2	Sewer 2.1	11.65328	53.77141	3.60469	0.22354	3.3171	-0.33911	-6.1505	34.852E-6
2	Sewer 2.1	12.33187	53.02938	3.59125	0.20443	3.3049	-0.38086	-6.5470	36.650E-6
2	Sewer 2.1	13.01047	52.28734	3.57781	0.18244	3.2927	-0.42834	-6.9723	38.520E-6
2	Sewer 2.1	13.68906	51.54531	3.56438	0.15735	3.2805	-0.48234	-7.4276	40.459E-6
2	Sewer 2.1	14.36766	50.80328	3.55094	0.12896	3.2683	-0.54377	-7.9153	42.458E-6
2	Sewer 2.1	15.04625	50.06125	3.53750	0.09708	3.2561	-0.61363	-8.4367	44.509E-6
2	Sewer 2.1	15.72484	49.31922	3.52406	0.06155	3.2439	-0.69299	-8.9934	46.599E-6
2	Sewer 2.1	16.40344	48.57719	3.51063	0.02226	3.2317	-0.78299	-9.5864	48.711E-6
2	Sewer 2.1	17.08203	47.83516	3.49719	-0.02089	3.2195	-0.88480	-10.217	50.827E-6
2	Sewer 2.1	17.76063	47.09313	3.48375	-0.06789	3.2073	-0.99956	-10.884	52.924E-6
2	Sewer 2.1	18.43922	46.35109	3.47031	-0.11869	3.1951	-1.1283	-11.587	54.975E-6
2	Sewer 2.1	19.11781	45.60906	3.45688	-0.17311	3.1828	-1.2718	-12.325	56.952E-6



Brill Place
TW GMA
Excavation (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[µ]
2	Sewer 2.1	19.79641	44.86783	3.44344	-0.23085	3.1766	-1.4305	-13.895	58.826E-6
2	Sewer 2.1	20.47590	44.12500	3.43800	-0.29150	3.1584	-1.6042	-13.891	60.568E-6
2	Sewer 2.1	21.15359	43.38297	3.41656	-0.35446	3.1462	-1.7920	-14.707	62.153E-6
2	Sewer 2.1	21.83219	42.64094	3.40313	-0.41899	3.1339	-1.9921	-15.535	63.563E-6
2	Sewer 2.1	22.51078	41.89891	3.38969	-0.48417	3.1217	-2.2015	-16.364	64.787E-6
2	Sewer 2.1	23.18938	41.15687	3.37625	-0.54896	3.1095	-2.4163	-17.182	65.827E-6
2	Sewer 2.1	23.86797	40.41484	3.36281	-0.62246	3.0972	-2.6312	-17.975	66.692E-6
2	Sewer 2.1	24.54656	39.67281	3.34937	-0.67253	3.0850	-2.8406	-18.728	67.402E-6
2	Sewer 2.1	25.22516	38.93078	3.33594	-0.72878	3.0728	-3.0383	-19.426	67.984E-6
2	Sewer 2.1	25.90375	38.18875	3.32250	-0.77968	3.0605	-3.2180	-20.054	68.464E-6
2	Sewer 2.1	26.58234	37.44672	3.30906	-0.82411	3.0483	-3.3744	-20.600	68.864E-6
2	Sewer 2.1	27.26094	36.70469	3.29562	-0.86188	3.0360	-3.5639	-21.052	69.290E-6
2	Sewer 2.1	27.93953	35.96260	3.28219	-0.89983	3.0238	-3.6905	-21.400	69.479E-6
2	Sewer 2.1	28.61813	35.22062	3.26875	-0.90981	3.0115	-3.6651	-21.640	69.697E-6
2	Sewer 2.1	29.29672	34.47859	3.25531	-0.92069	2.9993	-3.6962	-21.767	69.844E-6
2	Sewer 2.1	29.97531	33.73656	3.24187	-0.92239	2.9870	-3.6943	-21.781	69.905E-6
2	Sewer 2.1	30.65391	32.99453	3.22844	-0.91501	2.9748	-3.6609	-21.684	69.866E-6
2	Sewer 2.1	31.33250	32.25250	3.21500	-0.89889	2.9625	-3.5979	-21.479	69.710E-6
2	Sewer 2.1	32.01109	31.51047	3.20150	-0.87449	2.9502	-3.5088	-21.173	69.424E-6
2	Sewer 2.1	32.68969	30.76844	3.18812	-0.84244	2.9380	-3.3941	-20.772	69.001E-6
2	Sewer 2.1	33.36828	30.02641	3.17469	-0.80350	2.9257	-3.2593	-20.287	68.434E-6
2	Sewer 2.1	34.04688	29.28437	3.16125	-0.75852	2.9134	-3.1070	-19.726	67.722E-6
2	Sewer 2.1	34.72547	28.54234	3.14781	-0.70842	2.9012	-2.9406	-19.100	66.864E-6
2	Sewer 2.1	35.40406	27.80031	3.13437	-0.65419	2.8889	-2.7639	-18.420	65.862E-6
2	Sewer 2.1	36.08266	27.05828	3.12094	-0.59682	2.8766	-2.5883	-17.698	64.721E-6
2	Sewer 2.1	36.76125	26.31625	3.10750	-0.53732	2.8643	-2.3935	-16.944	63.444E-6
2	Sewer 2.1	37.43984	25.57422	3.09406	-0.47666	2.8521	-2.2067	-16.171	62.037E-6
2	Sewer 2.1	38.11844	24.83219	3.08062	-0.41576	2.8398	-2.0230	-15.389	60.509E-6
2	Sewer 2.1	38.79703	24.09016	3.06719	-0.35547	2.8275	-1.8450	-14.606	58.870E-6
2	Sewer 2.1	39.47562	23.34812	3.05375	-0.29653	2.8152	-1.6749	-13.831	57.130E-6
2	Sewer 2.1	40.15422	22.60609	3.04031	-0.23958	2.8029	-1.5145	-13.073	55.305E-6
2	Sewer 2.1	40.83281	21.86406	3.02687	-0.18514	2.7906	-1.3647	-12.335	53.411E-6
2	Sewer 2.1	41.51141	21.12203	3.01344	-0.13362	2.7783	-1.2264	-11.624	51.465E-6
2	Sewer 2.1	42.19000	20.38000	3.00000	-0.08533	2.7660	-1.0996	-10.942	49.486E-6
2	Sewer 2.2	42.19000	20.38000	3.00000	-0.08533	2.7660	-1.0996	-10.942	49.486E-6
3	Sewer 2.2	43.06415	20.85585	3.00000	-0.02347	2.7660	-0.93578	-10.014	46.683E-6
3	Sewer 2.2	43.93829	21.33171	3.00000	0.02955	2.7660	-0.79971	-9.1824	43.985E-6
3	Sewer 2.2	44.81244	21.80756	3.00000	0.07477	2.7660	-0.68624	-8.4371	41.358E-6
3	Sewer 2.2	45.68659	22.28341	3.00000	0.11313	2.7660	-0.59124	-7.7675	38.878E-6
3	Sewer 2.2	46.56073	22.75927	3.00000	0.14549	2.7660	-0.51136	-7.1646	36.534E-6
3	Sewer 2.2	47.43488	23.23512	3.00000	0.17257	2.7660	-0.44392	-6.6208	34.328E-6
3	Sewer 2.2	48.30902	23.71098	3.00000	0.19505	2.7660	-0.38676	-6.1293	32.259E-6
3	Sewer 2.2	49.18317	24.18683	3.00000	0.21351	2.7660	-0.33812	-5.6841	30.323E-6
3	Sewer 2.2	50.05732	24.66268	3.00000	0.22846	2.7660	-0.29565	-5.2801	28.514E-6
3	Sewer 2.2	50.93146	25.13854	3.00000	0.24038	2.7660	-0.26097	-4.9127	26.827E-6
3	Sewer 2.2	51.80561	25.61439	3.00000	0.24965	2.7660	-0.23033	-4.5781	25.254E-6
3	Sewer 2.2	52.67976	26.09024	3.00000	0.25663	2.7660	-0.20389	-4.2727	23.789E-6
3	Sewer 2.2	53.55390	26.56610	3.00000	0.26165	2.7660	-0.18098	-3.9935	22.424E-6
3	Sewer 2.2	54.42805	27.04195	3.00000	0.26496	2.7660	-0.16109	-3.7377	21.152E-6
3	Sewer 2.2	55.30220	27.51780	3.00000	0.26661	2.7660	-0.14371	-3.4931	19.968E-6
3	Sewer 2.2	56.17634	27.99366	3.00000	0.26741	2.7660	-0.12859	-3.2875	18.864E-6
3	Sewer 2.2	57.05049	28.46951	3.00000	0.26695	2.7660	-0.11531	-3.0890	17.834E-6
3	Sewer 2.2	57.92463	28.94537	3.00000	0.26559	2.7660	-0.10364	-2.9061	16.874E-6
3	Sewer 2.2	58.79878	29.42122	3.00000	0.26347	2.7660	-0.093352	-2.7372	15.978E-6
3	Sewer 2.2	59.67293	29.89707	3.00000	0.26070	2.7660	-0.084265	-2.5810	15.141E-6
3	Sewer 2.2	60.54707	30.37293	3.00000	0.25740	2.7660	-0.076212	-2.4365	14.358E-6
3	Sewer 2.2	61.42122	30.84878	3.00000	0.25367	2.7660	-0.069074	-2.3024	13.627E-6
3	Sewer 2.2	62.29537	31.32463	3.00000	0.24958	2.7660	-0.062719	-2.1779	12.942E-6
3	Sewer 2.2	63.16951	31.80049	3.00000	0.24520	2.7660	-0.057053	-2.0622	12.301E-6
3	Sewer 2.2	64.04366	32.27634	3.00000	0.24059	2.7660	-0.051989	-1.9545	11.700E-6
3	Sewer 2.2	64.91780	32.75220	3.00000	0.23581	2.7660	-0.047456	-1.8542	11.136E-6
3	Sewer 2.2	65.79195	33.22805	3.00000	0.23090	2.7660	-0.043389	-1.7606	10.607E-6
3	Sewer 2.2	66.66610	33.70390	3.00000	0.22598	2.7660	-0.039733	-1.6731	10.110E-6
3	Sewer 2.2	67.54024	34.17976	3.00000	0.22084	2.7660	-0.036441	-1.5913	9.6423E-6
3	Sewer 2.2	68.41439	34.65561	3.00000	0.21576	2.7660	-0.033472	-1.5148	9.2025E-6
3	Sewer 2.2	69.28854	35.13146	3.00000	0.21067	2.7660	-0.030788	-1.4431	8.7885E-6
3	Sewer 2.2	70.16268	35.60732	3.00000	0.20561	2.7660	-0.028359	-1.3758	8.3984E-6
3	Sewer 2.2	71.03683	36.08317	3.00000	0.20057	2.7660	-0.026156	-1.3126	8.0306E-6
3	Sewer 2.2	71.91098	36.55902	3.00000	0.19559	2.7660	-0.024156	-1.2532	7.6835E-6
3	Sewer 2.2	72.78512	37.03488	3.00000	0.19067	2.7660	-0.022337	-1.1974	7.3558E-6
3	Sewer 2.2	73.65927	37.51073	3.00000	0.18583	2.7660	-0.020680	-1.1448	7.0461E-6
3	Sewer 2.2	74.53341	37.98659	3.00000	0.18106	2.7660	-0.019168	-1.0952	6.7533E-6
3	Sewer 2.2	75.40756	38.46244	3.00000	0.17638	2.7660	-0.017788	-1.0485	6.4762E-6
3	Sewer 2.2	76.28171	38.93829	3.00000	0.17180	2.7660	-0.016525	-1.0044	6.2139E-6
3	Sewer 2.2	77.15585	39.41415	3.00000	0.16731	2.7660	-0.015369	-0.9626	5.9653E-6
3	Sewer 2.2	78.03000	39.89000	3.00000	0.16292	2.7660	-0.014388	-0.92327	5.7296E-6
4	Sewer 3.1	54.43800	28.65000	13.20000	0.39655	12.667	0.0	0.0	0.0
4	Sewer 3.1	53.77778	27.83889	13.27778	0.40209	12.868	0.0	0.0	0.0
4	Sewer 3.1	53.12556	27.02778	13.35556	0.40674	12.936	0.0	0.0	0.0
4	Sewer 3.1	52.47333	26.21667	13.43333	0.41067	13.004	0.0	0.0	0.0
4	Sewer 3.1	51.82111	25.40556	13.51111	0.41377	13.072	0.0	0.0	0.0
4	Sewer 3.1	51.16889	24.59444	13.58889	0.41595	13.140	0.0	0.0	0.0
4	Sewer 3.1	50.51667	23.78333	13.66667	0.41711	13.208	0.0	0.0	0.0
4	Sewer 3.1	49.86444	22.97222	13.74444	0.41720	13.276	0.0	0.0	0.0
4	Sewer 3.1	49.21222	22.16111	13.82222	0.41636	13.344	0.0	0.0	0.0
4	Sewer 3.1	48.56000	21.35000	13.90000	0.41427	13.413	0.0	0.0	0.0
5	Sewer 3.2	48.56000	21.35000	13.90000	0.41427	13.413	0.0	0.0	0.0
5	Sewer 3.2	47.72467	20.79326	13.91413	0.40941	13.425	0.0	0.0	0.0
5	Sewer 3.2	46.88935	20.23652	13.92826	0.40212	13.437	0.0	0.0	0.0
5	Sewer 3.2	46.05402	19.67978	13.94239	0.39208	13.450	0.0	0.0	0.0
5	Sewer 3.2	45.21870	19.12304	13.95652	0.37895	13.462	0.0	0.0	0.0
5	Sewer 3.2	44.38337	18.56630	13.97065	0.36236	13.474	0.0	0.0	0.0
5	Sewer 3.2	43.54804	18.00857	13.98479	0.34194	13.487	0.0	0.0	0.0
5	Sewer 3.2	42.71272	17.45283	13.99891	0.31727	13.499	0.0	0.0	0.0
5	Sewer 3.2	41.87739	16.89609	14.01304	0.28794	13.511	0.0	0.0	0.0
5	Sewer 3.2	41.04297	16.33935	14.02717	0.25353	13.524	0.0	0.0	0.0
5	Sewer 3.2	40.20674	15.78261	14.04130	0.21364	13.536	0.0	0.0	0.0
5	Sewer 3.2	39.37141	15.22587	14.05543	0.16788	13.549	0.0	0.0	0.0
5	Sewer 3.2	38.53609	14.66913	14.06957	0.11590	13.561	0.0	0.0	0.0
5	Sewer 3.2	37.70076	14.11230	14.08370	0.05745	13.573	0.0	0.0	0.0
5	Sewer 3.2	36.86543	13.55565	14.09783	-0.00764	13.586	0.0	0.0	0.0
5	Sewer 3.2	36.03011	12.99891	14.11196	-0.07935	13.598	0.0	0.0	0.0
5	Sewer 3.2	35.19478	12.44217	14.12609	-0.15748	13.610	0.0	0.0	0.0
5	Sewer 3.2	34.35946	11.88543	14.14022	-0.24153	13.			



Brill Place
TW GMA
Excavation (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
5	Sewer 3.2	6.46435	-5.37348	14.57826	-0.89939	14.120	0.0	0.0	0.0
5	Sewer 3.2	7.62902	-5.93022	14.59239	-0.81481	14.133	0.0	0.0	0.0
5	Sewer 3.2	6.79370	-6.48696	14.60652	-0.72593	14.146	0.0	0.0	0.0
5	Sewer 3.2	5.95837	-7.04370	14.62065	-0.63404	14.159	0.0	0.0	0.0
5	Sewer 3.2	5.12394	-7.60043	14.63478	-0.54063	14.171	0.0	0.0	0.0
5	Sewer 3.2	4.28772	-8.15717	14.64891	-0.44731	14.184	0.0	0.0	0.0
5	Sewer 3.2	3.45239	-8.71339	14.66304	-0.35569	14.197	0.0	0.0	0.0
5	Sewer 3.2	2.61707	-9.27065	14.67717	-0.26706	14.209	0.0	0.0	0.0
5	Sewer 3.2	1.78174	-9.82739	14.69130	-0.18277	14.222	0.0	0.0	0.0
5	Sewer 3.2	0.94641	-10.38413	14.70543	-0.10383	14.235	0.0	0.0	0.0
5	Sewer 3.2	0.11109	-10.94087	14.71957	-0.03084	14.248	0.0	0.0	0.0
5	Sewer 3.2	-0.72424	-11.49761	14.73370	0.03585	14.260	0.0	0.0	0.0
5	Sewer 3.2	-1.55935	-12.05435	14.74783	0.09611	14.273	0.0	0.0	0.0
5	Sewer 3.2	-2.39489	-12.61109	14.76196	0.15001	14.286	0.0	0.0	0.0
5	Sewer 3.2	-3.23822	-13.16783	14.77609	0.19774	14.298	0.0	0.0	0.0
5	Sewer 3.2	-4.06554	-13.72457	14.79022	0.23957	14.311	0.0	0.0	0.0
5	Sewer 3.2	-4.90087	-14.28130	14.80435	0.27586	14.324	0.0	0.0	0.0
5	Sewer 3.2	-5.73626	-14.83804	14.81848	0.30698	14.337	0.0	0.0	0.0
5	Sewer 3.2	-6.57152	-15.39478	14.83260	0.33334	14.349	0.0	0.0	0.0
5	Sewer 3.2	-7.40685	-15.95152	14.84674	0.35533	14.362	0.0	0.0	0.0
5	Sewer 3.2	-8.24217	-16.50826	14.86087	0.37336	14.375	0.0	0.0	0.0
5	Sewer 3.2	-9.07750	-17.06500	14.87500	0.38781	14.387	0.0	0.0	0.0
5	Sewer 3.2	-9.91283	-17.62174	14.88913	0.39904	14.400	0.0	0.0	0.0
5	Sewer 3.2	-10.74815	-18.17848	14.90326	0.40740	14.413	0.0	0.0	0.0
5	Sewer 3.2	-11.58348	-18.73522	14.91739	0.41322	14.426	0.0	0.0	0.0
5	Sewer 3.2	-12.41880	-19.29196	14.93152	0.41678	14.438	0.0	0.0	0.0
5	Sewer 3.2	-13.25413	-19.84870	14.94565	0.41837	14.451	0.0	0.0	0.0
5	Sewer 3.2	-14.08946	-20.40543	14.95978	0.41824	14.464	0.0	0.0	0.0
5	Sewer 3.2	-14.92478	-20.96217	14.97391	0.41661	14.477	0.0	0.0	0.0
5	Sewer 3.2	-15.76011	-21.51891	14.98804	0.41370	14.489	0.0	0.0	0.0
5	Sewer 3.2	-16.59543	-22.07565	15.00217	0.40968	14.502	0.0	0.0	0.0
5	Sewer 3.2	-17.43076	-22.63239	15.01630	0.40473	14.515	0.0	0.0	0.0
5	Sewer 3.2	-18.26609	-23.18913	15.03043	0.39899	14.527	0.0	0.0	0.0
5	Sewer 3.2	-19.10141	-23.74587	15.04457	0.39260	14.540	0.0	0.0	0.0
5	Sewer 3.2	-19.93674	-24.30261	15.05870	0.38568	14.553	0.0	0.0	0.0
5	Sewer 3.2	-20.77207	-24.85935	15.07283	0.37832	14.566	0.0	0.0	0.0
5	Sewer 3.2	-21.60739	-25.41609	15.08696	0.37063	14.578	0.0	0.0	0.0
5	Sewer 3.2	-22.44272	-25.97283	15.10109	0.36267	14.591	0.0	0.0	0.0
5	Sewer 3.2	-23.27804	-26.52957	15.11522	0.35453	14.604	0.0	0.0	0.0
5	Sewer 3.2	-24.11337	-27.08630	15.12935	0.34626	14.616	0.0	0.0	0.0
5	Sewer 3.2	-24.94870	-27.64304	15.14348	0.33791	14.629	0.0	0.0	0.0
5	Sewer 3.2	-25.78402	-28.19978	15.15761	0.32953	14.642	0.0	0.0	0.0
5	Sewer 3.2	-26.61935	-28.75652	15.17174	0.32117	14.655	0.0	0.0	0.0
5	Sewer 3.2	-27.45467	-29.31326	15.18587	0.31287	14.667	0.0	0.0	0.0
5	Sewer 3.2	-28.29000	-29.87000	15.20000	0.30459	14.680	0.0	0.0	0.0
6	WM 1.1	-54.84000	32.41000	18.90000	0.24396	18.500	0.0	0.0	0.0
6	WM 1.1	-54.28059	31.57608	18.90000	0.24959	18.500	0.0	0.0	0.0
6	WM 1.1	-53.72118	30.74216	18.90000	0.25530	18.500	0.0	0.0	0.0
6	WM 1.1	-53.16176	29.90824	18.90000	0.26106	18.500	0.0	0.0	0.0
6	WM 1.1	-52.60235	29.07433	18.90000	0.26689	18.500	0.0	0.0	0.0
6	WM 1.1	-52.04294	28.24039	18.90000	0.27276	18.500	0.0	0.0	0.0
6	WM 1.1	-51.48353	27.40647	18.90000	0.27868	18.500	0.0	0.0	0.0
6	WM 1.1	-50.92412	26.57255	18.90000	0.28462	18.500	0.0	0.0	0.0
6	WM 1.1	-50.36471	25.73863	18.90000	0.29058	18.500	0.0	0.0	0.0
6	WM 1.1	-49.80529	24.90471	18.90000	0.29655	18.500	0.0	0.0	0.0
6	WM 1.1	-49.24588	24.07078	18.90000	0.30252	18.500	0.0	0.0	0.0
6	WM 1.1	-48.68647	23.23686	18.90000	0.30847	18.500	0.0	0.0	0.0
6	WM 1.1	-48.12706	22.40294	18.90000	0.31440	18.500	0.0	0.0	0.0
6	WM 1.1	-47.56765	21.56902	18.90000	0.32027	18.500	0.0	0.0	0.0
6	WM 1.1	-47.00824	20.73510	18.90000	0.32609	18.500	0.0	0.0	0.0
6	WM 1.1	-46.44882	19.90118	18.90000	0.33183	18.500	0.0	0.0	0.0
6	WM 1.1	-45.88941	19.06725	18.90000	0.33740	18.500	0.0	0.0	0.0
6	WM 1.1	-45.33000	18.23333	18.90000	0.34302	18.500	0.0	0.0	0.0
6	WM 1.1	-44.77059	17.39941	18.90000	0.34844	18.500	0.0	0.0	0.0
6	WM 1.1	-44.21118	16.56549	18.90000	0.35371	18.500	0.0	0.0	0.0
6	WM 1.1	-43.65176	15.73157	18.90000	0.35882	18.500	0.0	0.0	0.0
6	WM 1.1	-43.09235	14.89765	18.90000	0.36375	18.500	0.0	0.0	0.0
6	WM 1.1	-42.53294	14.06373	18.90000	0.36849	18.500	0.0	0.0	0.0
6	WM 1.1	-41.97353	13.22980	18.90000	0.37302	18.500	0.0	0.0	0.0
6	WM 1.1	-41.41412	12.39588	18.90000	0.37733	18.500	0.0	0.0	0.0
6	WM 1.1	-40.85471	11.56196	18.90000	0.38140	18.500	0.0	0.0	0.0
6	WM 1.1	-40.29529	10.72804	18.90000	0.38523	18.500	0.0	0.0	0.0
6	WM 1.1	-39.73588	9.89412	18.90000	0.38879	18.500	0.0	0.0	0.0
6	WM 1.1	-39.17647	9.06020	18.90000	0.39209	18.500	0.0	0.0	0.0
6	WM 1.1	-38.61706	8.22627	18.90000	0.39512	18.500	0.0	0.0	0.0
6	WM 1.1	-38.05765	7.39235	18.90000	0.39788	18.500	0.0	0.0	0.0
6	WM 1.1	-37.49824	6.55843	18.90000	0.40037	18.500	0.0	0.0	0.0
6	WM 1.1	-36.93882	5.72451	18.90000	0.40259	18.500	0.0	0.0	0.0
6	WM 1.1	-36.37941	4.89059	18.90000	0.40455	18.500	0.0	0.0	0.0
6	WM 1.1	-35.82000	4.05667	18.90000	0.40625	18.500	0.0	0.0	0.0
6	WM 1.1	-35.26059	3.22275	18.90000	0.40771	18.500	0.0	0.0	0.0
6	WM 1.1	-34.70118	2.38882	18.90000	0.40895	18.500	0.0	0.0	0.0
6	WM 1.1	-34.14176	1.55490	18.90000	0.40997	18.500	0.0	0.0	0.0
6	WM 1.1	-33.58235	0.72098	18.90000	0.41081	18.500	0.0	0.0	0.0
6	WM 1.1	-33.02294	-0.11294	18.90000	0.41147	18.500	0.0	0.0	0.0
6	WM 1.1	-32.46353	-0.94686	18.90000	0.41199	18.500	0.0	0.0	0.0
6	WM 1.1	-31.90412	-1.78078	18.90000	0.41237	18.500	0.0	0.0	0.0
6	WM 1.1	-31.34471	-2.61471	18.90000	0.41266	18.500	0.0	0.0	0.0
6	WM 1.1	-30.78529	-3.44863	18.90000	0.41285	18.500	0.0	0.0	0.0
6	WM 1.1	-30.22588	-4.28255	18.90000	0.41299	18.500	0.0	0.0	0.0
6	WM 1.1	-29.66647	-5.11647	18.90000	0.41307	18.500	0.0	0.0	0.0
6	WM 1.1	-29.10706	-5.95039	18.90000	0.41312	18.500	0.0	0.0	0.0
6	WM 1.1	-28.54765	-6.78431	18.90000	0.41315	18.500	0.0	0.0	0.0
6	WM 1.1	-27.98824	-7.61824	18.90000	0.41318	18.500	0.0	0.0	0.0
6	WM 1.1	-27.42882	-8.45216	18.90000	0.41319	18.500	0.0	0.0	0.0
6	WM 1.1	-26.86941	-9.28608	18.90000	0.41320	18.500	0.0	0.0	0.0
6	WM 1.1	-26.31000	-10.12000	18.90000	0.41321	18.500	0.0	0.0	0.0
7	WM 1.2	-26.31000	-10.12000	18.90000	0.41321	18.500	0.0	0.0	0.0
7	WM 1.2	-25.66286	-10.88571	18.90000	0.41333	18.500	0.0	0.0	0.0
7	WM 1.2	-25.01571	-11.65143	18.90000	0.41344	18.500	0.0	0.0	0.0
7	WM 1.2	-24.36857	-12.41714	18.90000	0.41356	18.500	0.0	0.0	0.0
7	WM 1.2	-23.72143	-13.18286	18.90000	0.41367	18.500	0.0	0.0	0.0
7	WM 1.2	-23.07429	-13.94857	18.90000	0.41377	18.500	0.0	0.0	0.0
7	WM 1.2	-22.42714	-14.71429	18.90000	0.41386	18.500	0.0	0.0	0.0
7	WM 1.2	-21.78000	-15.48000	18.90000	0.41392	18.500	0.0	0.0	0.0
7	WM 1.2	-21.13286	-16.24571	18.90000	0.41394	18.500	0.0	0.0	0.0
7	WM 1.2	-20.48571	-17.01143	18.90000	0.41390	18.500	0.0	0.0	0.0
7	WM 1.2	-19.83857	-17.77714	18.90000	0.41377	18.500	0.0	0.0	0.0
7	WM 1.2	-19.19143	-18.54286	18.90000	0.41355	18.500	0.0	0.0	0.0
7	WM 1.2	-18.54429	-19.30857	18.90000	0.41320	18.500	0.0	0.0	0.0
7	WM 1.2	-17.89714	-20.07429	18.90000	0.41270	18.500	0.0	0.0	0.0
7	WM 1.2	-17.25000	-20.84000	18.90000	0.41204	18.500	0.0	0.0	0.0
8	WM 2.1	63.46000	33.59000	18.90000	0.31271	18.500	0.0	0.0	0.0
8	WM 2.1	62.62794	33.0288						



Brill Place
TW GMA
Excavation (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
8 WM 2.1		45.35464	21.24505	18.90000	0.37763	18.500	0.0	0.0	0.0
8 WM 2.1		44.32258	20.68392	18.90000	0.36028	18.500	0.0	0.0	0.0
8 WM 2.1		43.49052	20.12278	18.90000	0.33868	18.500	0.0	0.0	0.0
8 WM 2.1		42.65845	19.56165	18.90000	0.31232	18.500	0.0	0.0	0.0
8 WM 2.1		41.82639	19.00052	18.90000	0.28063	18.500	0.0	0.0	0.0
8 WM 2.1		40.99433	18.43938	18.90000	0.24301	18.500	0.0	0.0	0.0
8 WM 2.1		39.16227	17.87825	18.90000	0.19800	18.500	0.0	0.0	0.0
8 WM 2.1		39.33021	17.31711	18.90000	0.14751	18.500	0.0	0.0	0.0
8 WM 2.1		38.49814	16.75598	18.90000	0.08830	18.500	0.0	0.0	0.0
8 WM 2.1		37.66608	16.19485	18.90000	0.02600	18.500	0.0	0.0	0.0
8 WM 2.1		36.83402	15.63371	18.90000	-0.05620	18.500	0.0	0.0	0.0
8 WM 2.1		36.00196	15.07258	18.90000	-0.14261	18.500	0.0	0.0	0.0
8 WM 2.1		35.16990	14.51144	18.90000	-0.23897	18.500	0.0	0.0	0.0
8 WM 2.1		34.33784	13.95031	18.90000	-0.34535	18.500	0.0	0.0	0.0
8 WM 2.1		33.50577	13.38918	18.90000	-0.46141	18.500	0.0	0.0	0.0
8 WM 2.1		32.67371	12.82804	18.90000	-0.58624	18.500	0.0	0.0	0.0
8 WM 2.1		31.84165	12.26691	18.90000	-0.71819	18.500	0.0	0.0	0.0
8 WM 2.1		31.00959	11.70577	18.90000	-0.85486	18.500	0.0	0.0	0.0
8 WM 2.1		30.17753	11.14462	18.90000	-0.99316	18.500	0.0	0.0	0.0
8 WM 2.1		29.34546	10.58351	18.90000	-1.12977	18.500	0.0	0.0	0.0
8 WM 2.1		28.51340	10.02237	18.90000	-1.26140	18.500	0.0	0.0	0.0
8 WM 2.1		27.68134	9.46124	18.90000	-1.38539	18.500	0.0	0.0	0.0
8 WM 2.1		26.84928	8.90010	18.90000	-1.49980	18.500	0.0	0.0	0.0
8 WM 2.1		26.01722	8.33897	18.90000	-1.60345	18.500	0.0	0.0	0.0
8 WM 2.1		25.18515	7.77784	18.90000	-1.69579	18.500	0.0	0.0	0.0
8 WM 2.1		24.35309	7.21670	18.90000	-1.77670	18.500	0.0	0.0	0.0
8 WM 2.1		23.52103	6.65557	18.90000	-1.84634	18.500	0.0	0.0	0.0
8 WM 2.1		22.68897	6.09443	18.90000	-1.90506	18.500	0.0	0.0	0.0
8 WM 2.1		21.85691	5.53330	18.90000	-1.95326	18.500	0.0	0.0	0.0
8 WM 2.1		21.02485	4.97216	18.90000	-1.99136	18.500	0.0	0.0	0.0
8 WM 2.1		20.19278	4.41103	18.90000	-2.01979	18.500	0.0	0.0	0.0
8 WM 2.1		19.36072	3.84990	18.90000	-2.03868	18.500	0.0	0.0	0.0
8 WM 2.1		18.52866	3.28876	18.90000	-2.04893	18.500	0.0	0.0	0.0
8 WM 2.1		17.69660	2.72763	18.90000	-2.05018	18.500	0.0	0.0	0.0
8 WM 2.1		16.86454	2.16649	18.90000	-2.04274	18.500	0.0	0.0	0.0
8 WM 2.1		16.03247	1.60536	18.90000	-2.02671	18.500	0.0	0.0	0.0
8 WM 2.1		15.20041	1.04423	18.90000	-2.00206	18.500	0.0	0.0	0.0
8 WM 2.1		14.36835	0.48300	18.90000	-1.96873	18.500	0.0	0.0	0.0
8 WM 2.1		13.53629	-0.07804	18.90000	-1.92656	18.500	0.0	0.0	0.0
8 WM 2.1		12.70423	-0.63918	18.90000	-1.87539	18.500	0.0	0.0	0.0
8 WM 2.1		11.87216	-1.20031	18.90000	-1.81500	18.500	0.0	0.0	0.0
8 WM 2.1		11.04010	-1.76144	18.90000	-1.74519	18.500	0.0	0.0	0.0
8 WM 2.1		10.20804	-2.32258	18.90000	-1.66581	18.500	0.0	0.0	0.0
8 WM 2.1		9.37598	-2.88371	18.90000	-1.57600	18.500	0.0	0.0	0.0
8 WM 2.1		8.54392	-3.44485	18.90000	-1.47832	18.500	0.0	0.0	0.0
8 WM 2.1		7.71186	-4.00598	18.90000	-1.37078	18.500	0.0	0.0	0.0
8 WM 2.1		6.87979	-4.56711	18.90000	-1.25501	18.500	0.0	0.0	0.0
8 WM 2.1		6.04773	-5.12825	18.90000	-1.13234	18.500	0.0	0.0	0.0
8 WM 2.1		5.21567	-5.68938	18.90000	-1.00467	18.500	0.0	0.0	0.0
8 WM 2.1		4.38361	-6.25052	18.90000	-0.87439	18.500	0.0	0.0	0.0
8 WM 2.1		3.55155	-6.81165	18.90000	-0.74420	18.500	0.0	0.0	0.0
8 WM 2.1		2.71948	-7.37278	18.90000	-0.61681	18.500	0.0	0.0	0.0
8 WM 2.1		1.88742	-7.93392	18.90000	-0.49461	18.500	0.0	0.0	0.0
8 WM 2.1		1.05536	-8.49505	18.90000	-0.37949	18.500	0.0	0.0	0.0
8 WM 2.1		0.22330	-9.05619	18.90000	-0.27270	18.500	0.0	0.0	0.0
8 WM 2.1		-0.60076	-9.61732	18.90000	-0.17496	18.500	0.0	0.0	0.0
8 WM 2.1		-1.44082	-10.17845	18.90000	-0.08651	18.500	0.0	0.0	0.0
8 WM 2.1		-2.27289	-10.73959	18.90000	-0.00728	18.500	0.0	0.0	0.0
8 WM 2.1		-3.10495	-11.30072	18.90000	0.06307	18.500	0.0	0.0	0.0
8 WM 2.1		-3.93701	-11.86186	18.90000	0.12498	18.500	0.0	0.0	0.0
8 WM 2.1		-4.76907	-12.42299	18.90000	0.17902	18.500	0.0	0.0	0.0
8 WM 2.1		-5.60113	-12.98412	18.90000	0.22777	18.500	0.0	0.0	0.0
8 WM 2.1		-6.43320	-13.54526	18.90000	0.26585	18.500	0.0	0.0	0.0
8 WM 2.1		-7.26526	-14.10639	18.90000	0.29985	18.500	0.0	0.0	0.0
8 WM 2.1		-8.09732	-14.66753	18.90000	0.32834	18.500	0.0	0.0	0.0
8 WM 2.1		-8.92938	-15.22866	18.90000	0.35189	18.500	0.0	0.0	0.0
8 WM 2.1		-9.76144	-15.78979	18.90000	0.37102	18.500	0.0	0.0	0.0
8 WM 2.1		-10.59351	-16.35093	18.90000	0.38620	18.500	0.0	0.0	0.0
8 WM 2.1		-11.42557	-16.91206	18.90000	0.39788	18.500	0.0	0.0	0.0
8 WM 2.1		-12.25763	-17.47320	18.90000	0.40648	18.500	0.0	0.0	0.0
8 WM 2.1		-13.08969	-18.03433	18.90000	0.41237	18.500	0.0	0.0	0.0
8 WM 2.1		-13.92175	-18.59546	18.90000	0.41589	18.500	0.0	0.0	0.0
8 WM 2.1		-14.75381	-19.15660	18.90000	0.41736	18.500	0.0	0.0	0.0
8 WM 2.1		-15.58588	-19.71773	18.90000	0.41704	18.500	0.0	0.0	0.0
8 WM 2.1		-16.41794	-20.27887	18.90000	0.41520	18.500	0.0	0.0	0.0
8 WM 2.1		-17.25000	-20.84000	18.90000	0.41204	18.500	0.0	0.0	0.0
9 WM 2.2		-17.25000	-20.84000	18.90000	0.41204	18.500	0.0	0.0	0.0
9 WM 2.2		-18.08786	-21.41071	18.90000	0.40772	18.500	0.0	0.0	0.0
9 WM 2.2		-18.92571	-21.98143	18.90000	0.40245	18.500	0.0	0.0	0.0
9 WM 2.2		-19.76357	-22.55214	18.90000	0.39638	18.500	0.0	0.0	0.0
9 WM 2.2		-20.60143	-23.12286	18.90000	0.38966	18.500	0.0	0.0	0.0
9 WM 2.2		-21.43929	-23.69357	18.90000	0.38242	18.500	0.0	0.0	0.0
9 WM 2.2		-22.27714	-24.26429	18.90000	0.37477	18.500	0.0	0.0	0.0
9 WM 2.2		-23.11500	-24.83500	18.90000	0.36679	18.500	0.0	0.0	0.0
9 WM 2.2		-23.95286	-25.40571	18.90000	0.35858	18.500	0.0	0.0	0.0
9 WM 2.2		-24.79071	-25.97643	18.90000	0.35020	18.500	0.0	0.0	0.0
9 WM 2.2		-25.62857	-26.54714	18.90000	0.34171	18.500	0.0	0.0	0.0
9 WM 2.2		-26.46643	-27.11786	18.90000	0.33318	18.500	0.0	0.0	0.0
9 WM 2.2		-27.30429	-27.68857	18.90000	0.32464	18.500	0.0	0.0	0.0
9 WM 2.2		-28.14214	-28.25929	18.90000	0.31613	18.500	0.0	0.0	0.0
9 WM 2.2		-28.98000	-28.83000	18.90000	0.30768	18.500	0.0	0.0	0.0
10 Gas Main 1.1		40.22000	13.90000	18.90000	0.23165	18.500	0.0	0.0	0.0
10 Gas Main 1.1		39.37000	13.35000	18.90000	0.18118	18.500	0.0	0.0	0.0
10 Gas Main 1.1		38.53000	12.82000	18.90000	0.14573	18.500	0.0	0.0	0.0
10 Gas Main 1.1		37.69700	12.28000	18.90000	0.09522	18.500	0.0	0.0	0.0
10 Gas Main 1.1		36.85000	11.74000	18.90000	0.03970	18.500	0.0	0.0	0.0
10 Gas Main 1.1		36.01500	11.21000	18.90000	-0.02063	18.500	0.0	0.0	0.0
10 Gas Main 1.1		35.17400	10.67200	18.90000	-0.08540	18.500	0.0	0.0	0.0
10 Gas Main 1.1		34.33300	10.13400	18.90000	-0.15405	18.500	0.0	0.0	0.0
10 Gas Main 1.1		33.49200	9.59600	18.90000	-0.22583	18.500	0.0	0.0	0.0
10 Gas Main 1.1		32.65100	9.05800	18.90000	-0.29978	18.500	0.0	0.0	0.0
10 Gas Main 1.1		31.81000	8.52000	18.90000	-0.37483	18.500	0.0	0.0	0.0
10 Gas Main 1.1		30.96900	7.98200	18.90000	-0.44979	18.500	0.0	0.0	0.0
10 Gas Main 1.1		30.12800	7.44400	18.90000	-0.52351	18.500	0.0	0.0	0.0
10 Gas Main 1.1		29.28700	6.90600	18.90000	-0.59480	18.500	0.0	0.0	0.0
10 Gas Main 1.1		28.44600	6.36800	18.90000	-0.66295	18.500	0.0	0.0	0.0
10 Gas Main 1.1		27.60500	5.83000	18.90000	-0.72690	18.500	0.0	0.0	0.0
10 Gas Main 1.1		26.76400	5.29200	18.90000	-0.78612	18.500	0.0	0.0	0.0
10 Gas Main 1.1		25.92300	4.75400	18.90000	-0.84017	18.500	0.0	0.0	0.0
10 Gas Main 1.1		25.08200	4.21600	18.90000	-0.88873	18.500	0.0	0.0	0.0
10 Gas Main 1.1		24.24100	3.67800	18.90000	-0.93161	18.500	0.0	0.0	0.0
10 Gas Main 1.1		23.40000	3.14000	18.90000	-0.96872	18.500	0.0	0.0	0.0
11 Gas Main 1.2		23.40000	3.14000	18.90000	-0.96872	18.500	0.0	0.0	0.0
11 Gas Main 1.2		22.49000	2.82846	18.90000	-1.06089	18.500	0.0	0.0	0.0
11 Gas Main 1.2		21.58000	2.51692	18.90000	-1.15				



Brill Place
TW GMA
Excavation (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
12	Gas Main 1.3	4.92795	-5.53564	18.90000	-1.06265	18.500	0.0	0.0	0.0
12	Gas Main 1.3	4.09769	-6.11385	18.90000	-0.91894	18.500	0.0	0.0	0.0
12	Gas Main 1.3	3.26744	-6.69205	18.90000	-0.77675	18.500	0.0	0.0	0.0
12	Gas Main 1.3	2.43718	-7.27026	18.90000	-0.63906	18.500	0.0	0.0	0.0
12	Gas Main 1.3	1.60692	-7.84846	18.90000	-0.50838	18.500	0.0	0.0	0.0
12	Gas Main 1.3	0.77667	-8.42667	18.90000	-0.39652	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-0.05359	-9.00487	18.90000	-0.27457	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-0.88385	-9.58308	18.90000	-0.17301	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-1.71410	-10.16128	18.90000	-0.08186	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-2.54436	-10.73949	18.90000	-0.00081	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-3.37462	-11.31769	18.90000	0.07063	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-4.20487	-11.89590	18.90000	0.13310	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-5.03513	-12.47410	18.90000	0.18727	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-5.86538	-13.05231	18.90000	0.23383	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-6.69564	-13.63051	18.90000	0.27348	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-7.52590	-14.20872	18.90000	0.30688	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-8.35615	-14.78692	18.90000	0.33467	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-9.18641	-15.36513	18.90000	0.35744	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-10.01667	-15.94333	18.90000	0.37575	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-10.84692	-16.52154	18.90000	0.39010	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-11.67718	-17.09974	18.90000	0.40096	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-12.50744	-17.67795	18.90000	0.40876	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-13.33769	-18.25615	18.90000	0.41389	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-14.16795	-18.83436	18.90000	0.41669	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-14.99821	-19.41256	18.90000	0.41748	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-15.82846	-19.99077	18.90000	0.41653	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-16.65872	-20.56897	18.90000	0.41411	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-17.48897	-21.14718	18.90000	0.41042	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-18.31923	-21.72538	18.90000	0.40568	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-19.14949	-22.30359	18.90000	0.40006	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-19.97974	-22.88179	18.90000	0.39370	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-20.81000	-23.46000	18.90000	0.38674	18.500	0.0	0.0	0.0

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None

Titles		
Job No.:		76057370
Job Title:	Brill Place	
Sub-title:	TW GMA	
Calculation Heading:	Exacavation (D)	
Initials:	JAA	

Analysis Options

General

Global Poisson's ratio: 0.20
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -24.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

Elastic

Elastic : Yes
Analysis: Boussinesq
Stiffness for horizontal displacement calculations: Weighted average
Using legacy heave correction factor: No

Consolidation

Consolidation : No

Soil ProfilesUndrained

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10000.	10000.	0.20000	None
2	LC (1)	16.500	6	32500.	32500.	0.49000	None
3	LC (2)	10.000	11	97500.	97500.	0.49000	None
4	LG	-1.0000	20	32500.	97500.	0.49000	None
		21.000		300000.	300000.	0.20000	None

Soil ProfilesDrained

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10900.	10900.	0.20000	None
2	LC (1)	16.500	6	26000.	26000.	0.20000	None
3	LC (2)	10.000	11	26000.	78000.	0.20000	None
4	LG	-1.0000	20	78000.	78000.	0.20000	None
5	CG	0.0000	30	300000.	300000.	0.20000	None

Soil Zones

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	D	-79.200	93.000	-51.310	77.680	Drained

Polygonal Load Data

Load ref.	Name	Position : Level	Position : Polygon	Coords. : Rect. tolerance	Position : Polygon	No. of Rectangles	Value : Normal (local z)
		[m]		[m]		[%]	[kN/m²]
1	Excavation	11.40000	(-9.36,14.4)	(16.9,31.9) (26.7,16.8) (9.26,-0.41) (-9.36,14.4)		10.000	1 -150.00

Polygonal Loads' Rectangles

Polygonal Loads Rectangles					
No.	Centre x	Centre y	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Excavation (Edge 2 optimal)					
1	8.61412	15.67605	32.999	31.517	17.882

Displacement Lines

Name	X1	Y1	Z1	X2	Y2	Z2	Intervals	Calculate	Detailed Results
	[m]	[m]	[m]	[m]	[m]	[m]	[No.]		
Sewer 1	-51.92000	34.37000	14.80000	-17.85000	-22.90000	15.80000	67	Yes	Yes
Sewer 2.1	-1.24000	67.87000	3.86000	42.19000	20.38000	3.00000	64	Yes	Yes
Sewer 2.2	42.19000	20.38000	3.00000	78.03000	39.89000	3.00000	41	Yes	Yes
Sewer 3.1	54.43000	28.65000	13.20000	48.56000	21.35000	13.90000	9	Yes	Yes
Sewer 3.2	48.56000	21.35000	13.90000	28.29000	29.87000	15.20000	92	Yes	Yes
WM 1.1	54.84000	32.41000	18.90000	-26.31000	-10.12000	18.90000	51	Yes	Yes
WM 1.2	-26.31000	-10.12000	18.90000	-26.31000	-20.84000	18.90000	14	Yes	Yes
WM 2.1	63.64000	33.59000	18.90000	-17.25000	-20.84000	18.90000	97	Yes	Yes
WM 2.2	-17.25000	-20.84000	18.90000	-28.90000	-28.83000	18.90000	14	Yes	Yes
Gas Main 1.1	49.22000	13.90000	18.90000	23.40000	3.14000	18.90000	28	Yes	No
Gas Main 1.2	23.40000	3.14000	18.90000	11.57000	-0.91000	18.90000	15	No	No
Gas Main 1.3	11.57000	-0.91000	18.90000	20.81000	-23.46000	18.90000	39	Yes	No

Displacement Grids

Extrusion Lines												
Name	Extrusion: Direction	X1	Y1	Z1	X2	Y2	Z2	Intervals Along Line	Extrusion: Distance	Extrusion: Intervals Along	Calculate	Detailed Results



Brill Place
TW GMA
Excavation (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

		[m]	[m]	[m]	[m]	[m]	[m]	[No.]	[m]	[No.]	
Grid	Global Y	-79.20000	-51.31000	18.90000	93.00000	-	18.90000	86	128.00000	64 No	No

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x	y	z	δz	Stress: Calc. Level [mod]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
		[m]	[m]	[mod]	[mm]				
1	Excavation	8.66306	15.70786	11.40000	-48.02400	11.050	-150.00	-349.69	-0.0042330

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x	y	z	δz	Stress: Calc. Level [mod]	Stress: Vertical [kN/m²]	Stress: Sum Princ. [kN/m²]	Vert. Strain [μ]
		[m]	[m]	[mod]	[mm]				
1	Sewer 1	-51.92000	34.37000	14.80000	0.02873	14.320	0.0	0.0	0.0
1	Sewer 1	-51.41149	33.51522	14.81493	0.02678	14.333	0.0	0.0	0.0
1	Sewer 1	-50.90299	32.66045	14.82985	0.02460	14.347	0.0	0.0	0.0
1	Sewer 1	-50.39448	31.80567	14.84478	0.02218	14.360	0.0	0.0	0.0
1	Sewer 1	-49.88597	30.95090	15.85979	0.01950	14.374	0.0	0.0	0.0
1	Sewer 1	-49.37746	30.09612	14.87463	0.01656	14.387	0.0	0.0	0.0
1	Sewer 1	-48.86896	29.24134	14.88955	0.01332	14.401	0.0	0.0	0.0
1	Sewer 1	-48.36045	28.38657	14.90448	0.00978	14.414	0.0	0.0	0.0
1	Sewer 1	-47.85194	27.53179	14.91940	0.00591	14.427	0.0	0.0	0.0
1	Sewer 1	-47.34343	26.67701	14.93433	0.00171	14.441	0.0	0.0	0.0
1	Sewer 1	-46.83493	25.82224	14.94925	-0.00286	14.454	0.0	0.0	0.0
1	Sewer 1	-46.32642	24.96746	14.96418	-0.00780	14.468	0.0	0.0	0.0
1	Sewer 1	-45.81791	24.11269	14.97910	-0.01314	14.481	0.0	0.0	0.0
1	Sewer 1	-45.30940	23.25791	14.99403	-0.01889	14.495	0.0	0.0	0.0
1	Sewer 1	-44.80090	22.40313	15.00896	-0.02506	14.508	0.0	0.0	0.0
1	Sewer 1	-44.29239	21.54836	15.02388	-0.03157	14.521	0.0	0.0	0.0
1	Sewer 1	-43.78388	20.69358	15.03881	-0.03872	14.535	0.0	0.0	0.0
1	Sewer 1	-43.27537	19.83881	15.05373	-0.04624	14.548	0.0	0.0	0.0
1	Sewer 1	-42.76687	18.98403	15.06866	-0.05422	14.562	0.0	0.0	0.0
1	Sewer 1	-42.25836	18.12925	15.08358	-0.06267	14.575	0.0	0.0	0.0
1	Sewer 1	-41.74985	17.27448	15.09851	-0.07158	14.589	0.0	0.0	0.0
1	Sewer 1	-41.24134	16.41970	15.11343	-0.08096	14.602	0.0	0.0	0.0
1	Sewer 1	-40.73284	15.56493	15.12836	-0.09090	14.616	0.0	0.0	0.0
1	Sewer 1	-40.22433	14.71015	15.14328	-0.10107	14.629	0.0	0.0	0.0
1	Sewer 1	-39.71582	13.85537	15.15821	-0.11176	14.642	0.0	0.0	0.0
1	Sewer 1	-39.20731	13.00060	15.17313	-0.12283	14.656	0.0	0.0	0.0
1	Sewer 1	-38.69881	12.14582	15.18806	-0.13427	14.669	0.0	0.0	0.0
1	Sewer 1	-38.19030	11.29104	15.20299	-0.14602	14.683	0.0	0.0	0.0
1	Sewer 1	-37.68179	10.43627	15.21791	-0.15803	14.696	0.0	0.0	0.0
1	Sewer 1	-37.17328	9.58149	15.23284	-0.17025	14.710	0.0	0.0	0.0
1	Sewer 1	-36.66478	8.72672	15.24776	-0.18260	14.723	0.0	0.0	0.0
1	Sewer 1	-36.15627	7.87194	15.26269	-0.19503	14.736	0.0	0.0	0.0
1	Sewer 1	-35.64776	7.01716	15.27761	-0.20745	14.750	0.0	0.0	0.0
1	Sewer 1	-35.13925	6.16239	15.29254	-0.21977	14.763	0.0	0.0	0.0
1	Sewer 1	-34.63075	5.30761	15.30746	-0.23190	14.777	0.0	0.0	0.0
1	Sewer 1	-34.12224	4.45284	15.32239	-0.24374	14.790	0.0	0.0	0.0
1	Sewer 1	-33.61373	3.59806	15.33731	-0.25519	14.804	0.0	0.0	0.0
1	Sewer 1	-33.10522	2.74328	15.35224	-0.26615	14.817	0.0	0.0	0.0
1	Sewer 1	-32.59672	1.88851	15.36716	-0.27652	14.830	0.0	0.0	0.0
1	Sewer 1	-32.08821	1.03373	15.38209	-0.28619	14.844	0.0	0.0	0.0
1	Sewer 1	-31.57970	0.17896	15.39701	-0.29507	14.857	0.0	0.0	0.0
1	Sewer 1	-31.07119	-0.67592	15.41194	-0.30386	14.871	0.0	0.0	0.0
1	Sewer 1	-30.56269	-1.53060	15.42687	-0.31021	14.975	0.0	0.0	0.0
1	Sewer 1	-30.05418	-2.38537	15.44179	-0.31619	14.988	0.0	0.0	0.0
1	Sewer 1	-29.54567	-3.24015	15.45672	-0.32105	15.002	0.0	0.0	0.0
1	Sewer 1	-29.03716	-4.09493	15.47164	-0.32473	15.016	0.0	0.0	0.0
1	Sewer 1	-28.52866	-4.94970	15.48657	-0.32719	15.029	0.0	0.0	0.0
1	Sewer 1	-28.02015	-5.80448	15.50149	-0.32841	15.043	0.0	0.0	0.0
1	Sewer 1	-27.51164	-6.65925	15.51642	-0.32838	15.057	0.0	0.0	0.0
1	Sewer 1	-27.00313	-7.51403	15.53134	-0.32708	15.070	0.0	0.0	0.0
1	Sewer 1	-26.49463	-8.36881	15.54627	-0.32454	15.084	0.0	0.0	0.0
1	Sewer 1	-25.98612	-9.22358	15.56119	-0.32079	15.098	0.0	0.0	0.0
1	Sewer 1	-25.47761	-10.07836	15.57612	-0.31587	15.111	0.0	0.0	0.0
1	Sewer 1	-24.96910	-10.93313	15.59104	-0.30993	15.125	0.0	0.0	0.0
1	Sewer 1	-24.46060	-11.78791	15.60597	-0.30275	15.139	0.0	0.0	0.0
1	Sewer 1	-23.95209	-12.64269	15.62090	-0.29470	15.152	0.0	0.0	0.0
1	Sewer 1	-23.44358	-13.49746	15.63582	-0.28576	15.166	0.0	0.0	0.0
1	Sewer 1	-22.93507	-14.35224	15.65075	-0.27605	15.180	0.0	0.0	0.0
1	Sewer 1	-22.42657	-15.20701	15.66567	-0.26564	15.194	0.0	0.0	0.0
1	Sewer 1	-21.91806	-16.06179	15.68060	-0.25465	15.207	0.0	0.0	0.0
1	Sewer 1	-21.40955	-16.91657	15.69552	-0.24318	15.221	0.0	0.0	0.0
1	Sewer 1	-20.90104	-17.77134	15.71045	-0.23133	15.235	0.0	0.0	0.0
1	Sewer 1	-20.39254	-18.62612	15.72537	-0.21919	15.248	0.0	0.0	0.0
1	Sewer 1	-19.88403	-19.48090	15.74030	-0.20687	15.262	0.0	0.0	0.0
1	Sewer 1	-19.37552	-20.33567	15.75522	-0.19446	15.276	0.0	0.0	0.0
1	Sewer 1	-18.86701	-21.18045	15.77015	-0.18203	15.289	0.0	0.0	0.0
1	Sewer 1	-18.35851	-22.04522	15.78507	-0.16968	15.303	0.0	0.0	0.0
1	Sewer 1	-17.85000	-22.90000	15.80000	-0.15748	15.317	0.0	0.0	0.0
2	Sewer 2.1	-1.24000	67.87000	3.86000	-0.04391	3.5485	-0.0409509	-1.6912	4.9458E-6
2	Sewer 2.1	-0.56141	67.12797	3.84656	-0.05332	3.5363	-0.053672	-1.7797	5.1500E-6
2	Sewer 2.1	0.11719	66.38594	3.83312	-0.06373	3.5242	-0.060787	-1.8740	5.3754E-6
2	Sewer 2.1	0.79578	65.64831	3.81939	-0.07522	3.5120	-0.064487	-1.9744	5.6041E-6
2	Sewer 2.1	1.47437	64.90188	3.80625	-0.08790	3.4998	-0.070783	-2.0815	5.8425E-6
2	Sewer 2.1	2.15297	64.15984	3.79281	-0.10188	3.4877	-0.077815	-2.1957	6.0904E-6
2	Sewer 2.1	2.83156	63.41781	3.77937	-0.11727	3.4755	-0.085656	-2.3177	6.3478E-6
2	Sewer 2.1	3.51016	62.67578	3.76594	-0.13421	3.4633	-0.094410	-2.4480	6.6147E-6
2	Sewer 2.1	4.18875	61.93375	3.75250	-0.15283	3.4512	-0.10420	-2.5872	6.8906E-6
2	Sewer 2.1	4.86734	61.19172	3.73906	-0.17328	3.4390	-0.11516	-2.7360	7.1752E-6
2	Sewer 2.1	5.54504	60.44969	3.72562	-0.19572	3.4268	-0.12745	-2.8953	7.4677E-6
2	Sewer 2.1	6.22453	59.70766	3.71219	-0.22033	3.4146	-0.14125	-3.0658	7.7671E-6
2	Sewer 2.1	6.90313	58.96563	3.69875	-0.24728	3.4025	-0.15677	-3.2483	8.0721E-6
2	Sewer 2.1	7.58172	58.22359	3.68531	-0.27676	3.3903	-0.17426	-3.4440	8.3809E-6
2	Sewer 2.1	8.26031	57.48156	3.67188	-0.30899	3.3781	-0.19398	-3.6536	8.6913E-6
2	Sewer 2.1	8.93891	56.73953	3.65844	-0.34417	3.3659	-0.21626	-3.8784	9.0005E-6
2	Sewer 2.1	9.61750	55.99750	3.64500	-0.38251	3.3537	-0.24146	-4.1196	9.3047E-6
2	Sewer 2.1	10.29609	55.25547	3.63156	-0.42426	3.3415	-0.27009	-4.3782	9.5996E-6
2	Sewer 2.1	10.97469	54.51344	3.61813	-0.46964	3.3293	-0.30237	-4.6557	9.8796E-6
2	Sewer 2.1	11.65328	53.77141	3.60469	-0.51889	3.3171	-0.33911	-4.9534	10.138E-6
2	Sewer 2.1	12.33187	53.02938	3.59125	-0.57223	3.3049	-0.38086	-5.2728	10.367E-6
2	Sewer 2.1	13.01047	52.28734	3.57781	-0.62989	3.2927	-0.42834	-5.6151	10.556E-6
2	Sewer 2.1	13.68906	51.54531	3.56438	-0.69208	3.2805	-0.48234	-5.9820	10.693E-6
2	Sewer 2.1	14.36766	50.80328	3.55094	-0.75898	3.2683	-0.54377	-6.3747	10.766E-6
2	Sewer 2.1	15.04625	50.06125	3.53750	-0.83074	3.2561	-0.61363	-6.7947	10.758E-6
2	Sewer 2.1	15.72484	49.31922	3.52406	-0.90747	3.2439	-0.69299	-7.2430	10.651E-6
2	Sewer 2.1	16.40344	48.57719	3.51063	-0.98921	3.2317	-0.78299	-7.7206	10.426E-6
2	Sewer 2.1	17.08203	47.83516	3.49719	-1.07592	3.2195	-0.88480	-8.2281	10.059E-6
2	Sewer 2.1	17.76063	47.09313	3.48375	-1.16748	3.2073	-0.99956	-8.7654	9.5283E-6
2	Sewer 2.1	18.43922	46.35109	3.47031	-1.26362	3.1951	-1.1283	-9.3320	8.8112E-6
2	Sewer 2.1	19.11781	45.60906	3.45688	-1.36395	3.1828	-1.2718	-9.9265	7.8867E-6
2	Sewer 2.1	19.79641	44.86703	3.44344	-1.46791	3.1706	-1.4305	-10.546	6.7382E-6



Brill Place
TW GMA
Excavation (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
2	Sewer 2.1	25.47590	44.12500	3.43900	-1.57474	3.1584	-1.6042	-11.187	5.3585E-6
2	Sewer 2.1	21.15359	43.38297	3.41656	-1.68349	3.1462	-1.7920	-11.845	3.7429E-6
2	Sewer 2.1	21.83219	42.64094	3.40313	-1.79298	3.1339	-1.9921	-12.511	1.9126E-6
2	Sewer 2.1	22.51078	41.89891	3.38969	-1.90185	3.1217	-2.2015	-13.179	102.67E-9
2	Sewer 2.1	23.18938	41.15687	3.37625	-2.00853	3.1095	-2.4163	-13.838	-2.2533E-6
2	Sewer 2.1	23.86797	40.41484	3.36281	-2.11131	3.0972	-2.6312	-14.476	-4.4735E-6
2	Sewer 2.1	24.54656	39.67281	3.34939	-2.20846	3.0850	-2.8406	-15.083	-6.6844E-6
2	Sewer 2.1	25.22516	38.93078	3.33594	-2.29800	3.0728	-3.0383	-15.645	-8.8088E-6
2	Sewer 2.1	25.90375	38.18875	3.32250	-2.37839	3.0605	-3.2180	-16.151	-10.739E-6
2	Sewer 2.1	26.58234	37.44672	3.30906	-2.44797	3.0483	-3.3744	-16.591	-12.423E-6
2	Sewer 2.1	27.26094	36.70469	3.29562	-2.50539	3.0360	-3.5030	-16.954	-13.795E-6
2	Sewer 2.1	27.93953	35.96266	3.28219	-2.54955	3.0238	-3.6095	-17.235	-14.814E-6
2	Sewer 2.1	28.61813	35.22062	3.26875	-2.57968	3.0115	-3.6953	-17.428	-15.459E-6
2	Sewer 2.1	29.29672	34.47859	3.25531	-2.59531	2.9993	-3.6962	-17.530	-15.729E-6
2	Sewer 2.1	29.97531	33.73656	3.24187	-2.59632	2.9870	-3.6943	-17.542	-15.637E-6
2	Sewer 2.1	30.65391	32.99453	3.22844	-2.58284	2.9748	-3.6609	-17.463	-15.209E-6
2	Sewer 2.1	31.33250	32.25250	3.21500	-2.55533	2.9625	-3.5979	-17.298	-14.475E-6
2	Sewer 2.1	32.01109	31.51047	3.20156	-2.51445	2.9502	-3.5080	-17.052	-13.474E-6
2	Sewer 2.1	32.68969	30.76847	3.18812	-2.46111	2.9380	-3.3941	-16.729	-12.244E-6
2	Sewer 2.1	33.36828	30.02641	3.17469	-2.39638	2.9257	-3.2593	-16.338	-10.826E-6
2	Sewer 2.1	34.04688	29.28437	3.16125	-2.32149	2.9134	-3.1070	-15.886	-9.2628E-6
2	Sewer 2.1	34.72547	28.54234	3.14781	-2.23779	2.9012	-2.9406	-15.382	-7.5957E-6
2	Sewer 2.1	35.40406	27.80031	3.13437	-2.14670	2.8889	-2.7639	-14.835	-5.8672E-6
2	Sewer 2.1	36.08266	27.05828	3.12094	-2.04970	2.8766	-2.5803	-14.253	-4.1194E-6
2	Sewer 2.1	36.76125	26.31625	3.10750	-1.94028	2.8643	-2.3935	-13.640	-2.3923E-6
2	Sewer 2.1	37.43984	25.57422	3.09406	-1.84386	2.8521	-2.2067	-13.024	-723.29E-9
2	Sewer 2.1	38.11844	24.83219	3.08062	-1.73784	2.8398	-2.0230	-12.393	854.67E-9
2	Sewer 2.1	38.79703	24.09016	3.06719	-1.63150	2.8275	-1.8450	-11.763	2.3143E-6
2	Sewer 2.1	39.47562	23.34812	3.05375	-1.52599	2.8152	-1.6749	-11.139	3.6351E-6
2	Sewer 2.1	40.15422	22.60609	3.04031	-1.42233	2.8029	-1.5145	-10.528	4.8034E-6
2	Sewer 2.1	40.83281	21.86406	3.02687	-1.32137	2.7906	-1.3647	-9.9343	5.8127E-6
2	Sewer 2.1	41.51141	21.12293	3.01344	-1.22381	2.7783	-1.2264	-9.3615	6.6628E-6
2	Sewer 2.1	42.19000	20.38000	3.00000	-1.13020	2.7660	-1.0996	-8.8125	7.3586E-6
3	Sewer 2.2	42.19000	20.38000	3.00000	-1.13020	2.7660	-1.0996	-8.8125	7.3586E-6
3	Sewer 2.2	43.06415	20.85585	3.00000	-1.00550	2.7660	-0.93578	-8.0646	8.1405E-6
3	Sewer 2.2	43.93829	21.33171	3.00000	-0.89395	2.7660	-0.79971	-7.3952	8.6292E-6
3	Sewer 2.2	44.81244	21.80756	3.00000	-0.79422	2.7660	-0.68624	-6.7950	8.9368E-6
3	Sewer 2.2	45.68659	22.28341	3.00000	-0.70507	2.7660	-0.59124	-6.2557	9.9900E-6
3	Sewer 2.2	46.56073	22.75927	3.00000	-0.62541	2.7660	-0.51136	-5.7702	8.9783E-6
3	Sewer 2.2	47.43488	23.23512	3.00000	-0.55424	2.7660	-0.44392	-5.3322	8.8675E-6
3	Sewer 2.2	48.30902	23.71098	3.00000	-0.49067	2.7660	-0.38676	-4.9363	8.6917E-6
3	Sewer 2.2	49.18317	24.18683	3.00000	-0.43388	2.7660	-0.33812	-4.5778	8.4700E-6
3	Sewer 2.2	50.05732	24.66268	3.00000	-0.38316	2.7660	-0.29658	-4.2524	8.2170E-6
3	Sewer 2.2	50.93146	25.13854	3.00000	-0.33786	2.7660	-0.26057	-3.9568	7.9449E-6
3	Sewer 2.2	51.80561	25.61439	3.00000	-0.29741	2.7660	-0.23033	-3.6871	7.6593E-6
3	Sewer 2.2	52.67976	26.09024	3.00000	-0.26129	2.7660	-0.20389	-3.4411	7.3692E-6
3	Sewer 2.2	53.55390	26.56610	3.00000	-0.22903	2.7660	-0.18098	-3.2162	7.0786E-6
3	Sewer 2.2	54.42805	27.04195	3.00000	-0.20022	2.7660	-0.16109	-3.0102	6.7909E-6
3	Sewer 2.2	55.30220	27.51780	3.00000	-0.17450	2.7660	-0.14375	-2.8213	6.5087E-6
3	Sewer 2.2	56.17634	27.99366	3.00000	-0.15153	2.7660	-0.12859	-2.6478	6.2338E-6
3	Sewer 2.2	57.05049	28.46951	3.00000	-0.13103	2.7660	-0.11531	-2.4878	5.9676E-6
3	Sewer 2.2	57.92463	28.94537	3.00000	-0.11273	2.7660	-0.10364	-2.3405	5.7107E-6
3	Sewer 2.2	58.79878	29.42122	3.00000	-0.09639	2.7660	-0.093352	-2.2045	5.4638E-6
3	Sewer 2.2	59.67293	29.89707	3.00000	-0.08182	2.7660	-0.084265	-2.0787	5.2271E-6
3	Sewer 2.2	60.54707	30.37293	3.00000	-0.06882	2.7660	-0.076218	-1.9622	5.0006E-6
3	Sewer 2.2	61.42122	30.84878	3.00000	-0.05723	2.7660	-0.069074	-1.8543	4.7843E-6
3	Sewer 2.2	62.29537	31.32463	3.00000	-0.04690	2.7660	-0.062719	-1.7540	4.5779E-6
3	Sewer 2.2	63.16951	31.80049	3.00000	-0.03769	2.7660	-0.057053	-1.6609	4.3813E-6
3	Sewer 2.2	64.04366	32.27634	3.00000	-0.02950	2.7660	-0.051989	-1.5741	4.1940E-6
3	Sewer 2.2	64.91780	32.75220	3.00000	-0.02221	2.7660	-0.047456	-1.4933	4.0159E-6
3	Sewer 2.2	65.79195	33.22805	3.00000	-0.01573	2.7660	-0.043389	-1.4179	3.8464E-6
3	Sewer 2.2	66.66610	33.70390	3.00000	-0.00987	2.7660	-0.039733	-1.3475	3.6853E-6
3	Sewer 2.2	67.54024	34.17976	3.00000	-0.00486	2.7660	-0.036441	-1.2816	3.5320E-6
3	Sewer 2.2	68.41439	34.65561	3.00000	-0.00034	2.7660	-0.033472	-1.2200	3.3864E-6
3	Sewer 2.2	69.28854	35.13146	3.00000	0.00366	2.7660	-0.030788	-1.1622	3.2480E-6
3	Sewer 2.2	70.16268	35.60732	3.00000	0.00720	2.7660	-0.028359	-1.1080	3.1163E-6
3	Sewer 2.2	71.03683	36.08317	3.00000	0.01031	2.7660	-0.026156	-1.0571	2.9912E-6
3	Sewer 2.2	71.91098	36.55902	3.00000	0.01305	2.7660	-0.024156	-1.0093	2.8722E-6
3	Sewer 2.2	72.78512	37.03488	3.00000	0.01545	2.7660	-0.022337	-0.9645	2.7590E-6
3	Sewer 2.2	73.65927	37.51073	3.00000	0.01755	2.7660	-0.020680	-0.92198	2.6513E-6
3	Sewer 2.2	74.53341	37.98659	3.00000	0.01937	2.7660	-0.019168	-0.88207	2.5488E-6
3	Sewer 2.2	75.40756	38.46244	3.00000	0.02096	2.7660	-0.017788	-0.84442	2.4512E-6
3	Sewer 2.2	76.28171	38.93829	3.00000	0.02232	2.7660	-0.016525	-0.80889	2.3583E-6
3	Sewer 2.2	77.15585	39.41415	3.00000	0.02349	2.7660	-0.015369	-0.77531	2.2698E-6
3	Sewer 2.2	78.03000	39.89000	3.00000	0.02449	2.7660	-0.014308	-0.74357	2.1855E-6
4	Sewer 3.1	54.43080	28.65000	13.20000	-0.14078	12.667	0.0	0.0	0.0
4	Sewer 3.1	53.77778	27.83889	13.27778	-0.16173	12.868	0.0	0.0	0.0
4	Sewer 3.1	53.12556	27.02778	13.35556	-0.18479	12.936	0.0	0.0	0.0
4	Sewer 3.1	52.47333	26.21667	13.43333	-0.21000	13.004	0.0	0.0	0.0
4	Sewer 3.1	51.82111	25.40556	13.51111	-0.23751	13.072	0.0	0.0	0.0
4	Sewer 3.1	51.16889	24.59444	13.58889	-0.26745	13.140	0.0	0.0	0.0
4	Sewer 3.1	50.51667	23.78333	13.66667	-0.29995	13.208	0.0	0.0	0.0
4	Sewer 3.1	49.86444	22.97222	13.74444	-0.33512	13.276	0.0	0.0	0.0
4	Sewer 3.1	49.21222	22.16111	13.82222	-0.37298	13.344	0.0	0.0	0.0
4	Sewer 3.1	48.56000	21.35000	13.90000	-0.41371	13.413	0.0	0.0	0.0
5	Sewer 3.2	48.56000	21.35000	13.90000	-0.41371	13.413	0.0	0.0	0.0
5	Sewer 3.2	47.72467	20.79326	13.91113	-0.45829	13.425	0.0	0.0	0.0
5	Sewer 3.2	46.88935	20.23652	13.92826	-0.50287	13.437	0.0	0.0	0.0
5	Sewer 3.2	46.05402	19.67978	13.94239	-0.59603	13.450	0.0	0.0	0.0
5	Sewer 3.2	45.21870	19.12304	13.95652	-0.67040	13.462	0.0	0.0	0.0
5	Sewer 3.2	44.38337	18.56630	13.97065	-0.75264	13.474	0.0	0.0	0.0
5	Sewer 3.2	43.54894	18.00957	13.98478	-0.84345	13.487	0.0	0.0	0.0
5	Sewer 3.2	42.71272	17.45283	13.99811	-0.94354	13.499	0.0	0.0	0.0
5	Sewer 3.2	41.87735	16.89609	14.01304	-1.05366	13.511	0.0	0.0	0.0
5	Sewer 3.2	41.04207	16.33935	14.02717	-1.17454	13.524	0.0	0.0	0.0
5	Sewer 3.2	40.20674	15.78261	14.04130	-1.30690	13.536	0.0	0.0	0.0
5	Sewer 3.2	39.37141	15.22587	14.05543	-1.45139	13.549	0.0	0.0	0.0
5	Sewer 3.2	38.53609	14.66913	14.06957	-1.60857	13.561	0.0	0.0	0.0
5	Sewer 3.2	37.70076	14.11239	14.08370	-1.77885	13.573	0.0	0.0	0.0
5	Sewer 3.2	36.86543	13.55565	14.09783	-1.96238	13.586	0.0	0.0	0.0
5	Sewer 3.2	36.03011	12.99891	14.11196	-2.15900	13.598	0.0	0.0	0.0
5	Sewer 3.2	35.19478	12.44217	14.12609	-2.36809	13.610	0.0	0.0	0.0
5	Sewer 3.2	34.35946	11.88543	14.14022	-2.58849	13.623	0.0	0.0	0.0
5	Sewer 3.2	33.52413	11.32870	14.15435	-2.81836	13.635	0.0		



Brill Place
TW GMA
Excavation (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
5	Sewer 3.2	1.52902	-5.93022	14.59239	-4.03605	14.133	0.0	0.0	0.0
5	Sewer 3.2	6.79370	-6.48696	14.60652	-3.81551	14.146	0.0	0.0	0.0
5	Sewer 3.2	5.95837	-7.04370	14.62065	-3.58687	14.159	0.0	0.0	0.0
5	Sewer 3.2	5.12304	-7.60043	14.63478	-3.35337	14.171	0.0	0.0	0.0
5	Sewer 3.2	4.28772	-8.15717	14.64891	-3.11849	14.184	0.0	0.0	0.0
5	Sewer 3.2	3.45239	-8.71391	14.66304	-2.88565	14.197	0.0	0.0	0.0
5	Sewer 3.2	2.61707	-9.27065	14.67720	-2.65792	14.209	0.0	0.0	0.0
5	Sewer 3.2	1.78174	-9.82739	14.69130	-2.43813	14.222	0.0	0.0	0.0
5	Sewer 3.2	0.94641	-10.38413	14.70543	-2.22826	14.235	0.0	0.0	0.0
5	Sewer 3.2	0.11109	-10.94087	14.71957	-2.02978	14.248	0.0	0.0	0.0
5	Sewer 3.2	-0.72424	-11.49761	14.73370	-1.84360	14.260	0.0	0.0	0.0
5	Sewer 3.2	-1.55957	-12.05435	14.74783	-1.67012	14.273	0.0	0.0	0.0
5	Sewer 3.2	-2.39499	-12.61109	14.76196	-1.50938	14.286	0.0	0.0	0.0
5	Sewer 3.2	-3.23822	-13.16783	14.77609	-1.36115	14.298	0.0	0.0	0.0
5	Sewer 3.2	-4.06554	-13.72457	14.79022	-1.22499	14.311	0.0	0.0	0.0
5	Sewer 3.2	-4.90087	-14.28130	14.80435	-1.10034	14.324	0.0	0.0	0.0
5	Sewer 3.2	-5.73620	-14.83804	14.81848	-0.98656	14.337	0.0	0.0	0.0
5	Sewer 3.2	-6.57152	-15.39478	14.83261	-0.88295	14.349	0.0	0.0	0.0
5	Sewer 3.2	-7.40685	-15.95152	14.84674	-0.78880	14.362	0.0	0.0	0.0
5	Sewer 3.2	-8.24217	-16.50826	14.86087	-0.70341	14.375	0.0	0.0	0.0
5	Sewer 3.2	-9.07750	-17.06500	14.87500	-0.62610	14.387	0.0	0.0	0.0
5	Sewer 3.2	-9.91283	-17.62174	14.88913	-0.55619	14.400	0.0	0.0	0.0
5	Sewer 3.2	-10.74815	-18.17848	14.90326	-0.49308	14.413	0.0	0.0	0.0
5	Sewer 3.2	-11.58348	-18.73522	14.91739	-0.43615	14.426	0.0	0.0	0.0
5	Sewer 3.2	-12.41880	-19.29196	14.93152	-0.38487	14.438	0.0	0.0	0.0
5	Sewer 3.2	-13.25413	-19.84879	14.94565	-0.33872	14.451	0.0	0.0	0.0
5	Sewer 3.2	-14.08946	-20.40543	14.95978	-0.29723	14.464	0.0	0.0	0.0
5	Sewer 3.2	-14.92478	-20.96217	14.97391	-0.25995	14.477	0.0	0.0	0.0
5	Sewer 3.2	-15.76011	-21.51891	14.98804	-0.22649	14.489	0.0	0.0	0.0
5	Sewer 3.2	-16.59543	-22.07565	15.00217	-0.19648	14.502	0.0	0.0	0.0
5	Sewer 3.2	-17.43076	-22.63239	15.01630	-0.16958	14.515	0.0	0.0	0.0
5	Sewer 3.2	-18.26609	-23.18913	15.03043	-0.14569	14.527	0.0	0.0	0.0
5	Sewer 3.2	-19.10141	-23.74587	15.04457	-0.12395	14.540	0.0	0.0	0.0
5	Sewer 3.2	-19.93674	-24.30261	15.05870	-0.10468	14.553	0.0	0.0	0.0
5	Sewer 3.2	-20.77207	-24.85935	15.07283	-0.08747	14.566	0.0	0.0	0.0
5	Sewer 3.2	-21.60739	-25.41609	15.08696	-0.07211	14.578	0.0	0.0	0.0
5	Sewer 3.2	-22.44272	-25.97283	15.10109	-0.05841	14.591	0.0	0.0	0.0
5	Sewer 3.2	-23.27804	-26.52957	15.11522	-0.04621	14.604	0.0	0.0	0.0
5	Sewer 3.2	-24.11337	-27.08630	15.12935	-0.03535	14.616	0.0	0.0	0.0
5	Sewer 3.2	-24.94870	-27.64304	15.14348	-0.02570	14.629	0.0	0.0	0.0
5	Sewer 3.2	-25.78402	-28.19978	15.15761	-0.01713	14.642	0.0	0.0	0.0
5	Sewer 3.2	-26.61935	-28.75652	15.17174	-0.00954	14.655	0.0	0.0	0.0
5	Sewer 3.2	-27.45467	-29.31326	15.18587	-0.00282	14.667	0.0	0.0	0.0
5	Sewer 3.2	-28.29000	-29.87000	15.20000	0.00312	14.680	0.0	0.0	0.0
6	WM 1.1	-54.84090	32.41000	18.90000	0.03287	18.500	0.0	0.0	0.0
6	WM 1.1	-54.28659	31.57608	18.90000	0.03145	18.500	0.0	0.0	0.0
6	WM 1.1	-53.72118	30.74216	18.90000	0.02984	18.500	0.0	0.0	0.0
6	WM 1.1	-53.16176	29.90824	18.90000	0.02805	18.500	0.0	0.0	0.0
6	WM 1.1	-52.60235	29.07431	18.90000	0.02604	18.500	0.0	0.0	0.0
6	WM 1.1	-52.04294	28.24038	18.90000	0.02389	18.500	0.0	0.0	0.0
6	WM 1.1	-51.48353	27.40647	18.90000	0.02133	18.500	0.0	0.0	0.0
6	WM 1.1	-50.92412	26.57255	18.90000	0.01861	18.500	0.0	0.0	0.0
6	WM 1.1	-50.36471	25.73863	18.90000	0.01561	18.500	0.0	0.0	0.0
6	WM 1.1	-49.80529	24.90471	18.90000	0.01233	18.500	0.0	0.0	0.0
6	WM 1.1	-49.24588	24.07078	18.90000	0.00874	18.500	0.0	0.0	0.0
6	WM 1.1	-48.68647	23.23686	18.90000	0.00484	18.500	0.0	0.0	0.0
6	WM 1.1	-48.12706	22.40294	18.90000	0.00061	18.500	0.0	0.0	0.0
6	WM 1.1	-47.56765	21.56902	18.90000	-0.00398	18.500	0.0	0.0	0.0
6	WM 1.1	-47.00824	20.73510	18.90000	-0.00892	18.500	0.0	0.0	0.0
6	WM 1.1	-46.44882	19.90118	18.90000	-0.01424	18.500	0.0	0.0	0.0
6	WM 1.1	-45.88941	19.06725	18.90000	-0.01995	18.500	0.0	0.0	0.0
6	WM 1.1	-45.33000	18.23333	18.90000	-0.02607	18.500	0.0	0.0	0.0
6	WM 1.1	-44.77059	17.39941	18.90000	-0.03258	18.500	0.0	0.0	0.0
6	WM 1.1	-44.21118	16.56549	18.90000	-0.03952	18.500	0.0	0.0	0.0
6	WM 1.1	-43.65176	15.73157	18.90000	-0.04687	18.500	0.0	0.0	0.0
6	WM 1.1	-43.09235	14.89765	18.90000	-0.05465	18.500	0.0	0.0	0.0
6	WM 1.1	-42.53294	14.06373	18.90000	-0.06284	18.500	0.0	0.0	0.0
6	WM 1.1	-41.97353	13.22980	18.90000	-0.07144	18.500	0.0	0.0	0.0
6	WM 1.1	-41.41412	12.39588	18.90000	-0.08043	18.500	0.0	0.0	0.0
6	WM 1.1	-40.85471	11.56196	18.90000	-0.08981	18.500	0.0	0.0	0.0
6	WM 1.1	-40.29529	10.72804	18.90000	-0.09955	18.500	0.0	0.0	0.0
6	WM 1.1	-39.73588	9.89412	18.90000	-0.10962	18.500	0.0	0.0	0.0
6	WM 1.1	-39.17647	9.06020	18.90000	-0.11998	18.500	0.0	0.0	0.0
6	WM 1.1	-38.61706	8.22627	18.90000	-0.13059	18.500	0.0	0.0	0.0
6	WM 1.1	-38.05765	7.39235	18.90000	-0.14142	18.500	0.0	0.0	0.0
6	WM 1.1	-37.49824	6.55843	18.90000	-0.15239	18.500	0.0	0.0	0.0
6	WM 1.1	-36.93882	5.72451	18.90000	-0.16345	18.500	0.0	0.0	0.0
6	WM 1.1	-36.37941	4.89059	18.90000	-0.17453	18.500	0.0	0.0	0.0
6	WM 1.1	-35.82000	4.05667	18.90000	-0.18556	18.500	0.0	0.0	0.0
6	WM 1.1	-35.26059	3.22275	18.90000	-0.19645	18.500	0.0	0.0	0.0
6	WM 1.1	-34.70118	2.38882	18.90000	-0.20713	18.500	0.0	0.0	0.0
6	WM 1.1	-34.14176	1.55490	18.90000	-0.21750	18.500	0.0	0.0	0.0
6	WM 1.1	-33.58235	0.72098	18.90000	-0.22748	18.500	0.0	0.0	0.0
6	WM 1.1	-33.02294	-0.11294	18.90000	-0.23698	18.500	0.0	0.0	0.0
6	WM 1.1	-32.46353	-0.94686	18.90000	-0.24589	18.500	0.0	0.0	0.0
6	WM 1.1	-31.90412	-1.78078	18.90000	-0.25415	18.500	0.0	0.0	0.0
6	WM 1.1	-31.34471	-2.61471	18.90000	-0.26165	18.500	0.0	0.0	0.0
6	WM 1.1	-30.78529	-3.44863	18.90000	-0.26833	18.500	0.0	0.0	0.0
6	WM 1.1	-30.22588	-4.28255	18.90000	-0.27411	18.500	0.0	0.0	0.0
6	WM 1.1	-29.66647	-5.11647	18.90000	-0.27892	18.500	0.0	0.0	0.0
6	WM 1.1	-29.10706	-5.95039	18.90000	-0.28272	18.500	0.0	0.0	0.0
6	WM 1.1	-28.54765	-6.78431	18.90000	-0.28545	18.500	0.0	0.0	0.0
6	WM 1.1	-27.98824	-7.61824	18.90000	-0.28709	18.500	0.0	0.0	0.0
6	WM 1.1	-27.42882	-8.45216	18.90000	-0.28761	18.500	0.0	0.0	0.0
6	WM 1.1	-26.86941	-9.28608	18.90000	-0.28702	18.500	0.0	0.0	0.0
6	WM 1.1	-26.31000	-10.12000	18.90000	-0.28531	18.500	0.0	0.0	0.0
7	WM 1.2	-26.31000	-10.12000	18.90000	-0.28531	18.500	0.0	0.0	0.0
7	WM 1.2	-25.66286	-10.88571	18.90000	-0.28723	18.500	0.0	0.0	0.0
7	WM 1.2	-25.01571	-11.65143	18.90000	-0.28894	18.500	0.0	0.0	0.0
7	WM 1.2	-24.36857	-12.41714	18.90000	-0.28771	18.500	0.0	0.0	0.0
7	WM 1.2	-23.72143	-13.18286	18.90000	-0.28630	18.500	0.0	0.0	0.0
7	WM 1.2	-23.07429	-13.94857	18.90000	-0.28377	18.500	0.0	0.0	0.0
7	WM 1.2	-22.42714	-14.71429	18.90000	-0.28017	18.500	0.0	0.0	0.0
7	WM 1.2	-21.78000	-15.48000	18.90000	-0.27553	18.500	0.0	0.0	0.0
7	WM 1.2	-21.13206	-16.24571	18.90000	-0.26992	18.500	0.0	0.0	0.0
7	WM 1.2	-20.48571	-17.01143	18.90000	-0.26339	18.500	0.0	0.0	0.0
7	WM 1.2	-19.83857	-17.77714	18.90000	-0.25601	18.500	0.0	0.0	0.0
7	WM 1.2	-19.19143	-18.54286	18.90000	-0.24787	18.500	0.0	0.0	0.0
7	WM 1.2	-18.54429	-19.30857	18.90000	-0.23904	18.500	0.0	0.0	0.0
7	WM 1.2	-17.89714	-20.07429	18.90000	-0.22962	18.500	0.0	0.0	0.0
7	WM 1.2	-17.25000	-20.84000	18.90000	-0.21970	18.500	0.0	0.0	0.0
8	WM 2.1	63.46000	33.59000	18.90000	-0.00332	18.500	0.0	0.0	0.0
8	WM 2.1	62.62794	33.02887	18.90000	-0.01017	18.500	0.0	0.0	0.0
8	WM 2.1	61.							



Brill Place
TW GMA
Excavation (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mD]	[mm]	[mD]	[kN/m²]	[kN/m²]	[μ]
8 WM 2.1		44.32258	20.68392	18.90000	-0.75112	18.500	0.0	0.0	0.0
8 WM 2.1		43.49652	20.12278	18.90000	-0.84571	18.500	0.0	0.0	0.0
8 WM 2.1		42.65845	19.56165	18.90000	-0.95080	18.500	0.0	0.0	0.0
8 WM 2.1		41.82639	19.00052	18.90000	-1.06741	18.500	0.0	0.0	0.0
8 WM 2.1		40.99433	18.43938	18.90000	-1.19665	18.500	0.0	0.0	0.0
8 WM 2.1		40.16227	17.87825	18.90000	-1.33968	18.500	0.0	0.0	0.0
8 WM 2.1		39.33021	17.31705	18.90000	-1.49767	18.500	0.0	0.0	0.0
8 WM 2.1		38.49814	16.75598	18.90000	-1.67185	18.500	0.0	0.0	0.0
8 WM 2.1		37.66608	16.19485	18.90000	-1.86338	18.500	0.0	0.0	0.0
8 WM 2.1		36.83402	15.63371	18.90000	-2.07333	18.500	0.0	0.0	0.0
8 WM 2.1		36.00196	15.07258	18.90000	-2.30257	18.500	0.0	0.0	0.0
8 WM 2.1		35.16990	14.51144	18.90000	-2.55162	18.500	0.0	0.0	0.0
8 WM 2.1		34.33784	13.95031	18.90000	-2.82042	18.500	0.0	0.0	0.0
8 WM 2.1		33.50577	13.38918	18.90000	-3.10804	18.500	0.0	0.0	0.0
8 WM 2.1		32.67371	12.82804	18.90000	-3.41239	18.500	0.0	0.0	0.0
8 WM 2.1		31.84165	12.26691	18.90000	-3.72993	18.500	0.0	0.0	0.0
8 WM 2.1		31.00959	11.70577	18.90000	-4.05556	18.500	0.0	0.0	0.0
8 WM 2.1		30.17753	11.14464	18.90000	-4.38289	18.500	0.0	0.0	0.0
8 WM 2.1		29.34546	10.57345	18.90000	-4.70492	18.500	0.0	0.0	0.0
8 WM 2.1		28.51340	10.02237	18.90000	-5.01493	18.500	0.0	0.0	0.0
8 WM 2.1		27.68134	9.46124	18.90000	-5.30729	18.500	0.0	0.0	0.0
8 WM 2.1		26.84928	8.90010	18.90000	-5.57787	18.500	0.0	0.0	0.0
8 WM 2.1		26.01722	8.33897	18.90000	-5.82406	18.500	0.0	0.0	0.0
8 WM 2.1		25.18515	7.77784	18.90000	-6.04452	18.500	0.0	0.0	0.0
8 WM 2.1		24.35309	7.21670	18.90000	-6.23083	18.500	0.0	0.0	0.0
8 WM 2.1		23.52103	6.65557	18.90000	-6.40717	18.500	0.0	0.0	0.0
8 WM 2.1		22.68897	6.09443	18.90000	-6.55010	18.500	0.0	0.0	0.0
8 WM 2.1		21.85691	5.53330	18.90000	-6.66834	18.500	0.0	0.0	0.0
8 WM 2.1		21.02485	4.97216	18.90000	-6.76267	18.500	0.0	0.0	0.0
8 WM 2.1		20.19278	4.41103	18.90000	-6.83385	18.500	0.0	0.0	0.0
8 WM 2.1		19.36072	3.84990	18.90000	-6.88254	18.500	0.0	0.0	0.0
8 WM 2.1		18.52866	3.28876	18.90000	-6.90929	18.500	0.0	0.0	0.0
8 WM 2.1		17.69660	2.72763	18.90000	-6.91454	18.500	0.0	0.0	0.0
8 WM 2.1		16.86454	2.16649	18.90000	-6.89856	18.500	0.0	0.0	0.0
8 WM 2.1		16.03247	1.60536	18.90000	-6.86150	18.500	0.0	0.0	0.0
8 WM 2.1		15.20041	1.04423	18.90000	-6.80336	18.500	0.0	0.0	0.0
8 WM 2.1		14.36835	0.48309	18.90000	-6.72401	18.500	0.0	0.0	0.0
8 WM 2.1		13.53629	-0.07804	18.90000	-6.62323	18.500	0.0	0.0	0.0
8 WM 2.1		12.70423	-0.63918	18.90000	-6.50072	18.500	0.0	0.0	0.0
8 WM 2.1		11.87216	-1.20031	18.90000	-6.35613	18.500	0.0	0.0	0.0
8 WM 2.1		11.04010	-1.76144	18.90000	-6.18914	18.500	0.0	0.0	0.0
8 WM 2.1		10.20804	-2.32258	18.90000	-5.99957	18.500	0.0	0.0	0.0
8 WM 2.1		9.37598	-2.88371	18.90000	-5.78745	18.500	0.0	0.0	0.0
8 WM 2.1		8.54392	-3.44495	18.90000	-5.55321	18.500	0.0	0.0	0.0
8 WM 2.1		7.71186	-4.00598	18.90000	-5.29791	18.500	0.0	0.0	0.0
8 WM 2.1		6.87979	-4.56711	18.90000	-5.02341	18.500	0.0	0.0	0.0
8 WM 2.1		6.04773	-5.12825	18.90000	-4.73263	18.500	0.0	0.0	0.0
8 WM 2.1		5.21567	-5.68938	18.90000	-4.42961	18.500	0.0	0.0	0.0
8 WM 2.1		4.38361	-6.25052	18.90000	-4.11939	18.500	0.0	0.0	0.0
8 WM 2.1		3.55155	-6.81155	18.90000	-3.80785	18.500	0.0	0.0	0.0
8 WM 2.1		2.71948	-7.37278	18.90000	-3.50004	18.500	0.0	0.0	0.0
8 WM 2.1		1.88742	-7.93392	18.90000	-3.20164	18.500	0.0	0.0	0.0
8 WM 2.1		1.05536	-8.49505	18.90000	-2.91646	18.500	0.0	0.0	0.0
8 WM 2.1		0.22330	-9.05619	18.90000	-2.64728	18.500	0.0	0.0	0.0
8 WM 2.1		-0.60876	-9.61732	18.90000	-2.39577	18.500	0.0	0.0	0.0
8 WM 2.1		-1.44062	-10.17845	18.90000	-2.16264	18.500	0.0	0.0	0.0
8 WM 2.1		-2.27289	-10.73959	18.90000	-1.94789	18.500	0.0	0.0	0.0
8 WM 2.1		-3.10495	-11.30072	18.90000	-1.75106	18.500	0.0	0.0	0.0
8 WM 2.1		-3.93701	-11.86186	18.90000	-1.57136	18.500	0.0	0.0	0.0
8 WM 2.1		-4.76907	-12.42299	18.90000	-1.40782	18.500	0.0	0.0	0.0
8 WM 2.1		-5.60113	-12.98412	18.90000	-1.25937	18.500	0.0	0.0	0.0
8 WM 2.1		-6.43320	-13.54526	18.90000	-1.12480	18.500	0.0	0.0	0.0
8 WM 2.1		-7.26526	-14.10639	18.90000	-1.00333	18.500	0.0	0.0	0.0
8 WM 2.1		-8.09732	-14.66753	18.90000	-0.89358	18.500	0.0	0.0	0.0
8 WM 2.1		-8.92938	-15.22866	18.90000	-0.79464	18.500	0.0	0.0	0.0
8 WM 2.1		-9.76144	-15.78979	18.90000	-0.70555	18.500	0.0	0.0	0.0
8 WM 2.1		-10.59351	-16.35093	18.90000	-0.62541	18.500	0.0	0.0	0.0
8 WM 2.1		-11.42557	-16.91206	18.90000	-0.55340	18.500	0.0	0.0	0.0
8 WM 2.1		-12.25763	-17.47320	18.90000	-0.48875	18.500	0.0	0.0	0.0
8 WM 2.1		-13.08969	-18.03433	18.90000	-0.43074	18.500	0.0	0.0	0.0
8 WM 2.1		-13.92175	-18.59546	18.90000	-0.37873	18.500	0.0	0.0	0.0
8 WM 2.1		-14.75381	-19.15660	18.90000	-0.33213	18.500	0.0	0.0	0.0
8 WM 2.1		-15.58588	-19.71773	18.90000	-0.29042	18.500	0.0	0.0	0.0
8 WM 2.1		-16.41794	-20.27887	18.90000	-0.25309	18.500	0.0	0.0	0.0
8 WM 2.1		-17.25000	-20.84000	18.90000	-0.21919	18.500	0.0	0.0	0.0
9 WM 2.2		-17.25000	-20.84000	18.90000	-0.21970	18.500	0.0	0.0	0.0
9 WM 2.2		-18.08786	-21.41071	18.90000	-0.18952	18.500	0.0	0.0	0.0
9 WM 2.2		-18.92571	-21.98143	18.90000	-0.16261	18.500	0.0	0.0	0.0
9 WM 2.2		-19.76357	-22.55214	18.90000	-0.13862	18.500	0.0	0.0	0.0
9 WM 2.2		-20.60143	-23.12286	18.90000	-0.11724	18.500	0.0	0.0	0.0
9 WM 2.2		-21.43929	-23.69357	18.90000	-0.09922	18.500	0.0	0.0	0.0
9 WM 2.2		-22.27714	-24.26429	18.90000	-0.08129	18.500	0.0	0.0	0.0
9 WM 2.2		-23.11500	-24.83500	18.90000	-0.06625	18.500	0.0	0.0	0.0
9 WM 2.2		-23.95286	-25.40571	18.90000	-0.05289	18.500	0.0	0.0	0.0
9 WM 2.2		-24.79071	-25.97643	18.90000	-0.04103	18.500	0.0	0.0	0.0
9 WM 2.2		-25.62857	-26.54714	18.90000	-0.03052	18.500	0.0	0.0	0.0
9 WM 2.2		-26.46643	-27.11786	18.90000	-0.02122	18.500	0.0	0.0	0.0
9 WM 2.2		-27.30429	-27.68857	18.90000	-0.01300	18.500	0.0	0.0	0.0
9 WM 2.2		-28.14214	-28.25929	18.90000	-0.00574	18.500	0.0	0.0	0.0
9 WM 2.2		-28.98000	-28.83000	18.90000	0.00066	18.500	0.0	0.0	0.0
10 Gas Main 1.1		40.22000	13.90000	18.90000	-1.25923	18.500	0.0	0.0	0.0
10 Gas Main 1.1		39.37900	13.36200	18.90000	-1.39069	18.500	0.0	0.0	0.0
10 Gas Main 1.1		38.53800	12.82400	18.90000	-1.53221	18.500	0.0	0.0	0.0
10 Gas Main 1.1		37.69700	12.28600	18.90000	-1.68378	18.500	0.0	0.0	0.0
10 Gas Main 1.1		36.85600	11.74800	18.90000	-1.84516	18.500	0.0	0.0	0.0
10 Gas Main 1.1		36.01500	11.21000	18.90000	-2.01578	18.500	0.0	0.0	0.0
10 Gas Main 1.1		35.17400	10.67200	18.90000	-2.19474	18.500	0.0	0.0	0.0
10 Gas Main 1.1		34.33300	10.13400	18.90000	-2.38073	18.500	0.0	0.0	0.0
10 Gas Main 1.1		33.49200	9.59600	18.90000	-2.57201	18.500	0.0	0.0	0.0
10 Gas Main 1.1		32.65100	9.05800	18.90000	-2.76649	18.500	0.0	0.0	0.0
10 Gas Main 1.1		31.81000	8.52000	18.90000	-2.96178	18.500	0.0	0.0	0.0
10 Gas Main 1.1		30.96900	7.98200	18.90000	-3.15533	18.500	0.0	0.0	0.0
10 Gas Main 1.1		30.12800	7.44400	18.90000	-3.34457	18.500	0.0	0.0	0.0
10 Gas Main 1.1		29.28700	6.90600	18.90000	-3.52711	18.500	0.0	0.0	0.0
10 Gas Main 1.1		28.44600	6.36800	18.90000	-3.70601	18.500	0.0	0.0	0.0
10 Gas Main 1.1		27.60500	5.83000	18.90000	-3.88389	18.500	0.0	0.0	0.0
10 Gas Main 1.1		26.76400	5.29200	18.90000	-4.01493	18.500	0.0	0.0	0.0
10 Gas Main 1.1		25.92300	4.75400	18.90000	-4.15288	18.500	0.0	0.0	0.0
10 Gas Main 1.1		25.08200	4.21600	18.90000	-4.27698	18.500	0.0	0.0	0.0
10 Gas Main 1.1		24.24100	3.67800	18.90000	-4.38674	18.500	0.0	0.0	0.0
10 Gas Main 1.1		23.40000	3.14000	18.90000	-4.48184	18.500	0.0	0.0	0.0
11 Gas Main 1.2		23.40000	3.14000	18.90000	-4.48184	18.500	0.0	0.0	0.0
11 Gas Main 1.2		22.49000	2.82846	18.90000	-4.70034	18.500	0.0	0.0	0.0
11 Gas Main 1.2		21.58000	2.51692	18.90000	-4.91484	18.500	0.0	0.0	0.0
11 Gas Main 1.2		20.67000	2.20538	18					



Brill Place
TW GMA
Excavation (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[m]	[mm]	[m]	[kN/m²]	[kN/m²]	[μ]
12	Gas Main 1.3	4.09769	-6.11385	18.90000	-4.21644	18.500	0.0	0.0	0.0
12	Gas Main 1.3	3.26744	-6.69205	18.90000	-3.87858	18.500	0.0	0.0	0.0
12	Gas Main 1.3	2.43718	-7.27026	18.90000	-3.54834	18.500	0.0	0.0	0.0
12	Gas Main 1.3	1.60692	-7.84846	18.90000	-3.23102	18.500	0.0	0.0	0.0
12	Gas Main 1.3	0.77667	-8.42667	18.90000	-2.93051	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-0.05359	-9.00487	18.90000	-2.64926	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-0.88385	-9.58308	18.90000	-2.38848	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-1.71410	-10.16128	18.90000	-2.14842	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-2.54436	-10.73949	18.90000	-1.92865	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-3.37462	-11.31769	18.90000	-1.72832	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-4.20487	-11.89590	18.90000	-1.54632	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-5.03513	-12.47410	18.90000	-1.38144	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-5.86538	-13.05231	18.90000	-1.23237	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-6.69564	-13.63051	18.90000	-1.09786	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-7.52590	-14.20872	18.90000	-0.97667	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-8.35615	-14.78692	18.90000	-0.86762	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-9.18641	-15.36513	18.90000	-0.76961	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-10.01667	-15.94333	18.90000	-0.68162	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-10.84692	-16.52154	18.90000	-0.60268	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-11.67718	-17.09974	18.90000	-0.53193	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-12.50744	-17.67795	18.90000	-0.46856	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-13.33769	-18.25615	18.90000	-0.41184	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-14.16795	-18.83436	18.90000	-0.36110	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-14.99821	-19.41256	18.90000	-0.31575	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-15.82846	-19.99077	18.90000	-0.27523	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-16.65872	-20.56897	18.90000	-0.23804	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-17.48897	-21.14718	18.90000	-0.20675	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-18.31923	-21.72538	18.90000	-0.17794	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-19.14949	-22.30359	18.90000	-0.15226	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-19.97974	-22.88179	18.90000	-0.12939	18.500	0.0	0.0	0.0
12	Gas Main 1.3	-20.81000	-23.46000	18.90000	-0.10902	18.500	0.0	0.0	0.0

Results : Consolidation : Displacement Data : Lines

None

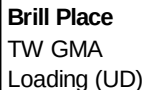
Results : Total : Displacement Data : Lines

None

Appendix D.4

**CONSTRUCTION (PDISP
ASSESSMENT)
UNDRAINED/DRAINED**

wsp



Titles		
Job No.:		70057370
Job Title:	Brill Place	
Sub-title:	TW GMA	
Calculation Heading:	Loading (UD)	
Initials:	JAA	

General

Global Poisson's ratio: 0.49
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -24.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

Elastic : Yes
Analysis: Boussinesq
Stiffness for horizontal displacement calculations: Weighted average
Using legacy heave correction factor: No

Consolidation : No

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10000.	10000.	0.20000	None
2	LC (1)	16.500	6	26000.	26000.	0.20000	None
3	LC (2)	10.000	11	20000.	78000.	0.20000	None
4	L6	-1.000	20	78000.	300000.	0.20000	None
5	T5	-21.000		300000.	300000.	0.20000	None

Zone	Name	X min [m]	X max [m]	Y min [m]	Y max [m]	Profile
1	UD	-79.200	93.000	-51.310	77.680	Undrained

Polygonal Load Data						
Load ref.	Name	Position : Level	Position : Polygon	Position : Polygon : Rect. tolerance	No. of Rectangles	Value : Normal (Normal z)
		[m]	[m]	[%]		[kN/m²]
1	Loading	11.40000	(-9.36,14.4) (26.7,16.8) (-9.36,14.4)	(16.9,31.9) (0.26,-0.41)	10.000	1 180.00

No.	Centre : x	Centre : y	Angle of local x from global X [Degrees]	Width x [m]	Depth y [m]
Load 1 : Loading					
(Edge 2 optimal)					
1	8.61412	15.67605	32.999	31.517	17.882

Name	X1	Y1	Z1	X2	Y2	Z2	Intervals	Calculate	Detailed Results
	[m]	[m]	[m]	[m]	[m]	[m]	[No.]		
Sewer 1	-51.92000	34.37000	14.80000	-17.85000	-22.90000	15.80000	67	Yes	Yes
Sewer 2.1	-1.24000	67.87000	3.86000	42.19000	20.38000	3.00000	64	Yes	Yes
Sewer 2.2	42.19000	20.38000	3.00000	78.63000	39.89000	3.00000	41	Yes	Yes
Sewer 3.1	54.43000	28.65000	13.20000	48.06000	21.35000	13.90000	9	Yes	Yes
Sewer 3.2	48.06000	21.35000	13.90000	-28.29000	-29.87000	15.20000	92	Yes	Yes
WM 1.1	54.84000	32.41000	18.99000	-26.31000	-18.12000	18.20000	51	Yes	Yes
WM 1.2	-26.31000	-18.12000	18.99000	-17.25000	-20.84000	18.99000	14	Yes	Yes
WM 2.1	63.46000	33.59000	18.99000	-17.25000	-20.84000	18.99000	97	Yes	Yes
WM 2.2	-17.25000	-20.84000	18.99000	-28.98000	-28.83000	18.99000	14	Yes	Yes
Gas Main 1.1	40.22000	13.96000	18.99000	23.40000	3.14000	18.99000	13	No	Yes
Gas Main 1.2	23.40000	3.14000	18.99000	11.57000	-0.91000	18.99000	20	No	Yes
Gas Main 1.3	11.57000	-0.91000	18.99000	-23.45000	-23.45000	18.99000	20	No	Yes

Name	Extrusion: Direction	X1	Y1	Z1	X2	Y2	Z2	Intervals Along Line	Extrusion: Distance	Extrusion: Intervals Along	Calculate	Detailed Results



Brill Place
TW GMA
Loading (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

	[m]	[m]	[m]	[m]	[m]	[m]	[No.]	[m]	[No.]	
Grid	Global Y	-79.200000	-51.310000	18.900000	93.000000	-	18.900000	86	128.000000	64 No

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[m]	[mm]	[m]	[kN/m²]	[kN/m²]	[μ]
1	Loading	8.66306	15.70786	11.40000	28.75461	11.050	179.99	521.04	396.42E-6

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[m]	[mm]	[m]	[kN/m²]	[kN/m²]	[μ]
1	Sewer 1	-51.92000	34.37000	14.80000	-0.31282	14.320	0.0	0.0	0.0
1	Sewer 1	-51.41149	33.51522	14.81493	-0.31987	14.333	0.0	0.0	0.0
1	Sewer 1	-50.90299	32.66045	14.82985	-0.32698	14.347	0.0	0.0	0.0
1	Sewer 1	-50.39448	31.80567	14.84478	-0.33415	14.360	0.0	0.0	0.0
1	Sewer 1	-49.88597	30.95090	14.85979	-0.34187	14.374	0.0	0.0	0.0
1	Sewer 1	-49.37746	30.09612	14.87463	-0.34862	14.387	0.0	0.0	0.0
1	Sewer 1	-48.86896	29.24134	14.88955	-0.35590	14.401	0.0	0.0	0.0
1	Sewer 1	-48.36045	28.38657	14.90448	-0.36318	14.414	0.0	0.0	0.0
1	Sewer 1	-47.85194	27.53179	14.91940	-0.37045	14.427	0.0	0.0	0.0
1	Sewer 1	-47.34343	26.67701	14.93433	-0.37769	14.441	0.0	0.0	0.0
1	Sewer 1	-46.83493	25.82224	14.94925	-0.38490	14.454	0.0	0.0	0.0
1	Sewer 1	-46.32642	24.96746	14.96418	-0.39204	14.468	0.0	0.0	0.0
1	Sewer 1	-45.81791	24.11269	14.97910	-0.39911	14.481	0.0	0.0	0.0
1	Sewer 1	-45.30940	23.25791	14.99403	-0.40607	14.495	0.0	0.0	0.0
1	Sewer 1	-44.80090	22.40313	15.00896	-0.41292	14.508	0.0	0.0	0.0
1	Sewer 1	-44.29239	21.54836	15.02388	-0.41962	14.521	0.0	0.0	0.0
1	Sewer 1	-43.78388	20.69358	15.03881	-0.42616	14.535	0.0	0.0	0.0
1	Sewer 1	-43.27537	19.83881	15.05373	-0.43250	14.548	0.0	0.0	0.0
1	Sewer 1	-42.76687	18.98403	15.06866	-0.43865	14.562	0.0	0.0	0.0
1	Sewer 1	-42.25836	18.12925	15.08358	-0.44456	14.575	0.0	0.0	0.0
1	Sewer 1	-41.74985	17.27448	15.09851	-0.45021	14.589	0.0	0.0	0.0
1	Sewer 1	-41.24134	16.41970	15.11343	-0.45560	14.602	0.0	0.0	0.0
1	Sewer 1	-40.73284	15.56493	15.12836	-0.46069	14.616	0.0	0.0	0.0
1	Sewer 1	-40.22433	14.71015	15.14328	-0.46548	14.629	0.0	0.0	0.0
1	Sewer 1	-39.71582	13.85537	15.15821	-0.46994	14.642	0.0	0.0	0.0
1	Sewer 1	-39.20731	13.00060	15.17313	-0.47407	14.656	0.0	0.0	0.0
1	Sewer 1	-38.69881	12.14582	15.18806	-0.47785	14.669	0.0	0.0	0.0
1	Sewer 1	-38.19030	11.29104	15.20299	-0.48128	14.683	0.0	0.0	0.0
1	Sewer 1	-37.68179	10.43627	15.21791	-0.48436	14.696	0.0	0.0	0.0
1	Sewer 1	-37.17328	9.58149	15.23284	-0.48708	14.710	0.0	0.0	0.0
1	Sewer 1	-36.66478	8.72672	15.24776	-0.48945	14.723	0.0	0.0	0.0
1	Sewer 1	-36.15627	7.87194	15.26269	-0.49148	14.736	0.0	0.0	0.0
1	Sewer 1	-35.64776	7.01716	15.27761	-0.49319	14.750	0.0	0.0	0.0
1	Sewer 1	-35.13925	6.16239	15.29254	-0.49458	14.763	0.0	0.0	0.0
1	Sewer 1	-34.63075	5.30761	15.30746	-0.49569	14.777	0.0	0.0	0.0
1	Sewer 1	-34.12224	4.45284	15.32239	-0.49653	14.790	0.0	0.0	0.0
1	Sewer 1	-33.61373	3.59806	15.33731	-0.49714	14.804	0.0	0.0	0.0
1	Sewer 1	-33.10522	2.74328	15.35224	-0.49753	14.817	0.0	0.0	0.0
1	Sewer 1	-32.59672	1.88851	15.36716	-0.49775	14.830	0.0	0.0	0.0
1	Sewer 1	-32.08821	1.03373	15.38209	-0.49783	14.844	0.0	0.0	0.0
1	Sewer 1	-31.57970	0.17896	15.39701	-0.49780	14.857	0.0	0.0	0.0
1	Sewer 1	-31.07119	-0.67592	15.41194	-0.49769	14.871	0.0	0.0	0.0
1	Sewer 1	-30.56269	-1.53060	15.42687	-0.49711	14.975	0.0	0.0	0.0
1	Sewer 1	-30.05418	-2.38537	15.44179	-0.49688	14.988	0.0	0.0	0.0
1	Sewer 1	-29.54567	-3.24015	15.45672	-0.49666	15.002	0.0	0.0	0.0
1	Sewer 1	-29.03716	-4.09493	15.47164	-0.49645	15.016	0.0	0.0	0.0
1	Sewer 1	-28.52866	-4.94970	15.48657	-0.49628	15.029	0.0	0.0	0.0
1	Sewer 1	-28.02015	-5.80448	15.50149	-0.49615	15.043	0.0	0.0	0.0
1	Sewer 1	-27.51164	-6.65925	15.51642	-0.49610	15.057	0.0	0.0	0.0
1	Sewer 1	-27.00313	-7.51403	15.53134	-0.49608	15.070	0.0	0.0	0.0
1	Sewer 1	-26.49463	-8.36881	15.54627	-0.49611	15.084	0.0	0.0	0.0
1	Sewer 1	-25.98612	-9.22358	15.56119	-0.49618	15.098	0.0	0.0	0.0
1	Sewer 1	-25.47761	-10.07836	15.57612	-0.49626	15.111	0.0	0.0	0.0
1	Sewer 1	-24.96910	-10.93313	15.59104	-0.49635	15.125	0.0	0.0	0.0
1	Sewer 1	-24.46060	-11.78791	15.60597	-0.49643	15.139	0.0	0.0	0.0
1	Sewer 1	-23.95209	-12.64269	15.62090	-0.49648	15.152	0.0	0.0	0.0
1	Sewer 1	-23.44358	-13.49746	15.63582	-0.49645	15.166	0.0	0.0	0.0
1	Sewer 1	-22.93507	-14.35224	15.65075	-0.49631	15.180	0.0	0.0	0.0
1	Sewer 1	-22.42657	-15.20701	15.66567	-0.49602	15.194	0.0	0.0	0.0
1	Sewer 1	-21.91806	-16.06179	15.68060	-0.49555	15.207	0.0	0.0	0.0
1	Sewer 1	-21.40955	-16.91657	15.69552	-0.49488	15.221	0.0	0.0	0.0
1	Sewer 1	-20.90104	-17.77134	15.71045	-0.49397	15.235	0.0	0.0	0.0
1	Sewer 1	-20.39254	-18.62612	15.72537	-0.49279	15.248	0.0	0.0	0.0
1	Sewer 1	-19.88403	-19.48090	15.74030	-0.49133	15.262	0.0	0.0	0.0
1	Sewer 1	-19.37552	-20.33567	15.75522	-0.48956	15.276	0.0	0.0	0.0
1	Sewer 1	-18.86701	-21.18045	15.77015	-0.48747	15.289	0.0	0.0	0.0
1	Sewer 1	-18.35851	-22.04522	15.78507	-0.48504	15.303	0.0	0.0	0.0
1	Sewer 1	-17.85000	-22.90000	15.80000	-0.48226	15.317	0.0	0.0	0.0
2	Sewer 2.1	-1.24000	67.87000	3.86000	-0.33186	3.5485	0.058871	2.5199	-16.245E-6
2	Sewer 2.1	-0.56141	67.12797	3.84656	-0.33712	3.5363	0.064406	2.6518	-17.026E-6
2	Sewer 2.1	0.11719	66.38594	3.83312	-0.34203	3.5242	0.070545	2.7922	-17.852E-6
2	Sewer 2.1	0.77957	65.64391	3.81969	-0.34662	3.5120	0.077361	2.9419	-18.726E-6
2	Sewer 2.1	1.47437	64.90189	3.80625	-0.35051	3.4998	0.084040	3.1014	-19.651E-6
2	Sewer 2.1	2.15297	64.15984	3.79281	-0.35393	3.4877	0.090337	3.2717	-20.629E-6
2	Sewer 2.1	2.83156	63.41781	3.77937	-0.35667	3.4755	0.10279	3.4534	-21.664E-6
2	Sewer 2.1	3.51016	62.67578	3.76594	-0.35864	3.4633	0.11329	3.6475	-22.760E-6
2	Sewer 2.1	4.18875	61.93375	3.75250	-0.35972	3.4512	0.12504	3.8549	-23.918E-6
2	Sewer 2.1	4.86734	61.19172	3.73906	-0.35978	3.4390	0.13819	4.0767	-25.145E-6
2	Sewer 2.1	5.54504	60.44969	3.72562	-0.35870	3.4268	0.15294	4.3140	-26.441E-6
2	Sewer 2.1	6.22453	59.70766	3.71219	-0.35632	3.4146	0.16950	4.5680	-27.812E-6
2	Sewer 2.1	6.90313	58.96563	3.69875	-0.35247	3.4025	0.18813	4.8400	-29.261E-6
2	Sewer 2.1	7.58172	58.22359	3.68531	-0.34699	3.3903	0.20911	5.1315	-30.790E-6
2	Sewer 2.1	8.26031	57.48156	3.67188	-0.33968	3.3781	0.23278	5.4439	-32.405E-6
2	Sewer 2.1	8.93981	56.73953	3.65844	-0.33035	3.3659	0.25951	5.7789	-34.106E-6
2	Sewer 2.1	9.61930	55.99750	3.64500	-0.31877	3.3537	0.28975	6.1382	-35.897E-6
2	Sewer 2.1	10.29880	55.25547	3.63156	-0.30472	3.3415	0.32400	6.5236	-37.780E-6
2	Sewer 2.1	10.97469	54.51344	3.61813	-0.28796	3.3293	0.36284	6.9371	-39.755E-6
2	Sewer 2.1	11.65328	53.77141	3.60469	-0.26825	3.3171	0.40693	7.3806	-41.822E-6
2	Sewer 2.1	12.33187	53.02938	3.59125	-0.24532	3.3049	0.45703	7.8564	-43.980E-6
2	Sewer 2.1	13.01047	52.28734	3.57781	-0.21893	3.2927	0.51409	8.3665	-46.224E-6
2	Sewer 2.1	13.68906	51.54531	3.56438	-0.18882	3.2805	0.57881	8.9131	-48.551E-6
2	Sewer 2.1	14.36766	50.80328	3.55094	-0.15475	3.2683	0.65253	9.4983	-50.950E-6
2	Sewer 2.1	15.04625	50.06125	3.53750	-0.11649	3.2561	0.73635	10.124	-53.411E-6
2	Sewer 2.1	15.72484	49.31922	3.52406	-0.07387	3.2439	0.83158	10.792	-55.919E-6
2	Sewer 2.1	16.40344	48.57719	3.51063	-0.02671	3.2317	0.93959	11.504	-58.454E-6
2	Sewer 2.1	17.08203	47.83516	3.49719	0.02586	3.2195	1.0618	12.260	-60.993E-6
2	Sewer 2.1	17.76063	47.09313	3.48375	0.08147	3.2073	1.1995	13.060	-63.509E-6
2	Sewer 2.1	18.43922	46.35109	3.47031	0.14243	3.1951	1.3540	13.905	-65.970E-6
2	Sewer 2.1	19.11781	45.60906	3.45688	0.20773	3.1828	1.5262	14.790	-68.342E-6
2	Sewer 2.1	19.79641	44.86703	3.44344	0.27702	3.1706	1.7166	15.714	-70.591E-6



Brill Place
TW GMA
Loading (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
2	Sewer 2.1	25.47590	44.12500	3.43900	0.34980	3.1584	1.9250	16.660	-72.681E-6
2	Sewer 2.1	21.15359	43.38297	3.41656	0.42535	3.1462	2.1584	17.649	-74.584E-6
2	Sewer 2.1	21.83219	42.64094	3.40313	0.50279	3.1339	2.3905	18.642	-76.275E-6
2	Sewer 2.1	22.51078	41.89891	3.38969	0.58101	3.1217	2.6418	19.637	-77.745E-6
2	Sewer 2.1	23.18938	41.15687	3.37625	0.65875	3.1095	2.8995	20.618	-78.992E-6
2	Sewer 2.1	23.86797	40.41484	3.36281	0.73459	3.0972	3.1575	21.570	-80.030E-6
2	Sewer 2.1	24.54656	39.67281	3.34939	0.80763	3.0850	3.4086	22.473	-80.893E-6
2	Sewer 2.1	25.22516	38.93078	3.33594	0.87453	3.0728	3.6459	23.311	-81.581E-6
2	Sewer 2.1	25.90375	38.18875	3.32250	0.93562	3.0605	3.8616	24.065	-82.157E-6
2	Sewer 2.1	26.58234	37.44672	3.30906	0.98893	3.0483	4.0493	24.720	-82.637E-6
2	Sewer 2.1	27.26094	36.70469	3.29562	1.03330	3.0360	4.2036	25.262	-83.040E-6
2	Sewer 2.1	27.93953	35.96266	3.28219	1.06789	3.0238	4.3206	25.681	-83.374E-6
2	Sewer 2.1	28.61813	35.22062	3.26875	1.09197	3.0115	4.3981	25.968	-83.636E-6
2	Sewer 2.1	29.29672	34.47859	3.25531	1.10483	2.9993	4.4355	26.120	-83.812E-6
2	Sewer 2.1	29.97531	33.73656	3.24187	1.10686	2.9870	4.4332	26.137	-83.887E-6
2	Sewer 2.1	30.65391	32.99453	3.22844	1.09802	2.9748	4.3931	26.020	-83.839E-6
2	Sewer 2.1	31.33250	32.25250	3.21500	1.07866	2.9625	4.3175	25.775	-83.652E-6
2	Sewer 2.1	32.01109	31.51047	3.20156	1.04938	2.9502	4.2096	25.407	-83.309E-6
2	Sewer 2.1	32.68969	30.76844	3.18812	1.01493	2.9380	4.0729	24.927	-82.801E-6
2	Sewer 2.1	33.36828	30.02641	3.17469	0.96420	2.9257	3.9111	24.344	-82.121E-6
2	Sewer 2.1	34.04688	29.28437	3.16125	0.91022	2.9134	3.7283	23.671	-81.266E-6
2	Sewer 2.1	34.72547	28.54234	3.14781	0.85011	2.9012	3.5288	22.919	-80.237E-6
2	Sewer 2.1	35.40406	27.80031	3.13437	0.78502	2.8889	3.3167	22.104	-79.035E-6
2	Sewer 2.1	36.08266	27.05828	3.12094	0.71618	2.8766	3.0964	21.237	-77.665E-6
2	Sewer 2.1	36.76125	26.31625	3.10750	0.64478	2.8643	2.8722	20.333	-76.133E-6
2	Sewer 2.1	37.43984	25.57422	3.09406	0.57199	2.8521	2.6480	19.408	-74.445E-6
2	Sewer 2.1	38.11844	24.83219	3.08062	0.49892	2.8398	2.4275	18.466	-72.611E-6
2	Sewer 2.1	38.79703	24.09016	3.06719	0.42657	2.8275	2.2140	17.527	-70.643E-6
2	Sewer 2.1	39.47562	23.34812	3.05375	0.35584	2.8152	2.0099	16.598	-68.556E-6
2	Sewer 2.1	40.15422	22.60609	3.04031	0.28749	2.8029	1.8174	15.687	-66.366E-6
2	Sewer 2.1	40.83281	21.86406	3.02687	0.22117	2.7906	1.6377	14.809	-64.093E-6
2	Sewer 2.1	41.51141	21.12203	3.01344	0.16035	2.7783	1.4717	13.949	-61.758E-6
2	Sewer 2.1	42.19000	20.38000	3.00000	0.10239	2.7660	1.3196	13.131	-59.383E-6
3	Sewer 2.2	42.19000	20.38000	3.00000	0.10239	2.7660	1.3196	13.131	-59.383E-6
3	Sewer 2.2	43.06415	20.85585	3.00000	0.02816	2.7660	1.1229	12.016	-56.019E-6
3	Sewer 2.2	43.93829	21.33171	3.00000	-0.03546	2.7660	0.95965	11.019	-52.758E-6
3	Sewer 2.2	44.81244	21.80756	3.00000	-0.08972	2.7660	0.82349	10.124	-49.629E-6
3	Sewer 2.2	45.68659	22.28341	3.00000	-0.13516	2.7660	0.70949	9.3210	-46.654E-6
3	Sewer 2.2	46.56073	22.75927	3.00000	-0.17459	2.7660	0.61363	8.5976	-43.841E-6
3	Sewer 2.2	47.43488	23.23512	3.00000	-0.20709	2.7660	0.53271	7.9450	-41.194E-6
3	Sewer 2.2	48.30992	23.71098	3.00000	-0.23406	2.7660	0.46412	7.3552	-38.711E-6
3	Sewer 2.2	49.18317	24.18683	3.00000	-0.25621	2.7660	0.40575	6.8209	-36.387E-6
3	Sewer 2.2	50.05732	24.66268	3.00000	-0.27416	2.7660	0.35590	6.3361	-34.217E-6
3	Sewer 2.2	50.93146	25.13854	3.00000	-0.28845	2.7660	0.31315	5.8953	-32.192E-6
3	Sewer 2.2	51.80561	25.61439	3.00000	-0.29958	2.7660	0.27640	5.4937	-30.305E-6
3	Sewer 2.2	52.67976	26.09024	3.00000	-0.30796	2.7660	0.24466	5.1272	-28.547E-6
3	Sewer 2.2	53.55390	26.56610	3.00000	-0.31398	2.7660	0.21718	4.7922	-26.909E-6
3	Sewer 2.2	54.42805	27.04195	3.00000	-0.31795	2.7660	0.19331	4.4853	-25.383E-6
3	Sewer 2.2	55.30228	27.51780	3.00000	-0.32017	2.7660	0.17250	4.2037	-23.961E-6
3	Sewer 2.2	56.17634	27.99366	3.00000	-0.32090	2.7660	0.15433	3.9450	-22.637E-6
3	Sewer 2.2	57.05049	28.46951	3.00000	-0.32034	2.7660	0.13837	3.7068	-21.401E-6
3	Sewer 2.2	57.92463	28.94537	3.00000	-0.31871	2.7660	0.12437	3.4873	-20.249E-6
3	Sewer 2.2	58.79878	29.42122	3.00000	-0.31616	2.7660	0.11202	3.2846	-19.173E-6
3	Sewer 2.2	59.67293	29.89707	3.00000	-0.31284	2.7660	0.10112	3.0972	-18.169E-6
3	Sewer 2.2	60.54707	30.37293	3.00000	-0.30889	2.7660	0.091461	2.9237	-17.230E-6
3	Sewer 2.2	61.42122	30.84878	3.00000	-0.30440	2.7660	0.082809	2.7629	-16.352E-6
3	Sewer 2.2	62.29537	31.32463	3.00000	-0.29949	2.7660	0.075263	2.6135	-15.531E-6
3	Sewer 2.2	63.16951	31.80049	3.00000	-0.29423	2.7660	0.068463	2.4747	-14.761E-6
3	Sewer 2.2	64.04366	32.27634	3.00000	-0.28871	2.7660	0.062387	2.3455	-14.040E-6
3	Sewer 2.2	64.91780	32.75220	3.00000	-0.28297	2.7660	0.056947	2.2250	-13.363E-6
3	Sewer 2.2	65.79195	33.22805	3.00000	-0.27708	2.7660	0.052067	2.1127	-12.728E-6
3	Sewer 2.2	66.66610	33.70390	3.00000	-0.27100	2.7660	0.047680	2.0077	-12.132E-6
3	Sewer 2.2	67.54024	34.17976	3.00000	-0.26501	2.7660	0.043730	1.9096	-11.571E-6
3	Sewer 2.2	68.41439	34.65561	3.00000	-0.25891	2.7660	0.040166	1.8178	-11.043E-6
3	Sewer 2.2	69.28854	35.13146	3.00000	-0.25281	2.7660	0.036946	1.7317	-10.546E-6
3	Sewer 2.2	70.16268	35.60732	3.00000	-0.24673	2.7660	0.034030	1.6509	-10.078E-6
3	Sewer 2.2	71.03683	36.08317	3.00000	-0.24069	2.7660	0.031387	1.5751	-9.6367E-6
3	Sewer 2.2	71.91098	36.55902	3.00000	-0.23471	2.7660	0.028987	1.5039	-9.2203E-6
3	Sewer 2.2	72.78512	37.03488	3.00000	-0.22881	2.7660	0.026804	1.4369	-8.8270E-6
3	Sewer 2.2	73.65927	37.51073	3.00000	-0.22299	2.7660	0.024816	1.3737	-8.4554E-6
3	Sewer 2.2	74.53341	37.98659	3.00000	-0.21727	2.7660	0.023002	1.3143	-8.1040E-6
3	Sewer 2.2	75.40756	38.46244	3.00000	-0.21166	2.7660	0.021345	1.2582	-7.7715E-6
3	Sewer 2.2	76.28171	38.93829	3.00000	-0.20616	2.7660	0.019830	1.2052	-7.4566E-6
3	Sewer 2.2	77.15585	39.41415	3.00000	-0.20077	2.7660	0.018442	1.1552	-7.1583E-6
3	Sewer 2.2	78.03000	39.89000	3.00000	-0.19551	2.7660	0.017170	1.1070	-6.8755E-6
4	Sewer 3.1	54.43080	28.65080	13.20000	-0.47586	12.667	0.0	0.0	0.0
4	Sewer 3.1	53.77778	27.83889	13.27778	-0.48251	12.868	0.0	0.0	0.0
4	Sewer 3.1	53.12556	27.02778	13.35556	-0.48809	12.936	0.0	0.0	0.0
4	Sewer 3.1	52.47333	26.21667	13.43333	-0.49280	13.004	0.0	0.0	0.0
4	Sewer 3.1	51.82111	25.40556	13.51111	-0.49652	13.072	0.0	0.0	0.0
4	Sewer 3.1	51.16889	24.59444	13.58889	-0.49914	13.140	0.0	0.0	0.0
4	Sewer 3.1	50.51667	23.78333	13.66667	-0.50054	13.208	0.0	0.0	0.0
4	Sewer 3.1	49.86444	22.97222	13.74444	-0.50065	13.276	0.0	0.0	0.0
4	Sewer 3.1	49.21222	22.16111	13.82222	-0.49963	13.344	0.0	0.0	0.0
4	Sewer 3.1	48.56000	21.35000	13.90000	-0.49713	13.413	0.0	0.0	0.0
5	Sewer 3.2	48.56000	21.35000	13.90000	-0.49713	13.413	0.0	0.0	0.0
5	Sewer 3.2	47.72467	20.79326	13.91413	-0.49139	13.425	0.0	0.0	0.0
5	Sewer 3.2	46.88935	20.23652	13.92826	-0.48255	13.437	0.0	0.0	0.0
5	Sewer 3.2	46.05402	19.67978	13.94239	-0.47050	13.450	0.0	0.0	0.0
5	Sewer 3.2	45.21870	19.12304	13.95652	-0.45474	13.462	0.0	0.0	0.0
5	Sewer 3.2	44.38337	18.56630	13.97065	-0.43484	13.474	0.0	0.0	0.0
5	Sewer 3.2	43.54884	18.00957	13.98478	-0.41833	13.487	0.0	0.0	0.0
5	Sewer 3.2	42.71272	17.45283	13.99517	-0.39972	13.499	0.0	0.0	0.0
5	Sewer 3.2	41.87739	16.89609	14.01304	-0.34553	13.511	0.0	0.0	0.0
5	Sewer 3.2	41.04207	16.33935	14.02717	-0.30424	13.524	0.0	0.0	0.0
5	Sewer 3.2	40.20674	15.78261	14.04130	-0.25637	13.536	0.0	0.0	0.0
5	Sewer 3.2	39.37141	15.22587	14.05543	-0.20145	13.549	0.0	0.0	0.0
5	Sewer 3.2	38.53609	14.66913	14.06957	-0.13988	13.561	0.0	0.0	0.0
5	Sewer 3.2	37.70076	14.11239	14.08370	-0.06984	13.573	0.0	0.0	0.0
5	Sewer 3.2	36.86543	13.55565	14.09783	0.00916	13.586	0.0	0.0	0.0
5	Sewer 3.2	36.03011	12.99891	14.11196	0.09522	13.598	0.0	0.0	0.0
5	Sewer 3.2	35.19478	12.44217	14.12609	0.18897	13.610	0.0	0.0	0.0
5	Sewer 3.2	34.35946	11.88543	14.14022	0.28983	13.623	0.0	0.0	0.0
5	Sewer 3.2	33.52413	11.32870	14.15435	0.39683	13.635	0.0	0	



Brill Place
TW GMA
Loading (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
5	Sewer 3.2	1.62902	-5.93022	14.59239	0.97778	14.133	0.0	0.0	0.0
5	Sewer 3.2	6.79370	-6.48696	14.60652	0.87112	14.146	0.0	0.0	0.0
5	Sewer 3.2	5.95837	-7.04370	14.62065	0.76085	14.159	0.0	0.0	0.0
5	Sewer 3.2	5.12304	-7.60043	14.63478	0.64875	14.171	0.0	0.0	0.0
5	Sewer 3.2	4.28772	-8.15717	14.64891	0.53677	14.184	0.0	0.0	0.0
5	Sewer 3.2	3.45239	-8.71391	14.66304	0.42683	14.197	0.0	0.0	0.0
5	Sewer 3.2	2.61767	-9.27065	14.6772	0.32947	14.209	0.0	0.0	0.0
5	Sewer 3.2	1.78174	-9.82739	14.69130	0.21933	14.222	0.0	0.0	0.0
5	Sewer 3.2	0.94641	-10.38413	14.70543	0.12459	14.235	0.0	0.0	0.0
5	Sewer 3.2	0.11109	-10.94087	14.71957	0.03700	14.248	0.0	0.0	0.0
5	Sewer 3.2	-0.72424	-11.49761	14.73370	-0.04302	14.260	0.0	0.0	0.0
5	Sewer 3.2	-1.55957	-12.05435	14.74783	-0.11534	14.273	0.0	0.0	0.0
5	Sewer 3.2	-2.39499	-12.61109	14.76196	-0.18901	14.286	0.0	0.0	0.0
5	Sewer 3.2	-3.23822	-13.16783	14.77609	-0.23728	14.298	0.0	0.0	0.0
5	Sewer 3.2	-4.06554	-13.72457	14.79022	-0.28748	14.311	0.0	0.0	0.0
5	Sewer 3.2	-4.90087	-14.28130	14.80435	-0.33103	14.324	0.0	0.0	0.0
5	Sewer 3.2	-5.73620	-14.83804	14.81848	-0.36838	14.337	0.0	0.0	0.0
5	Sewer 3.2	-6.57152	-15.39478	14.83261	-0.40981	14.349	0.0	0.0	0.0
5	Sewer 3.2	-7.40685	-15.95152	14.84674	-0.42840	14.362	0.0	0.0	0.0
5	Sewer 3.2	-8.24217	-16.50826	14.86087	-0.44803	14.375	0.0	0.0	0.0
5	Sewer 3.2	-9.07750	-17.06500	14.87500	-0.46537	14.387	0.0	0.0	0.0
5	Sewer 3.2	-9.91283	-17.62174	14.88913	-0.47885	14.400	0.0	0.0	0.0
5	Sewer 3.2	-10.74815	-18.17848	14.90326	-0.48888	14.413	0.0	0.0	0.0
5	Sewer 3.2	-11.58348	-18.73522	14.91739	-0.49586	14.426	0.0	0.0	0.0
5	Sewer 3.2	-12.41880	-19.29196	14.93152	-0.50914	14.438	0.0	0.0	0.0
5	Sewer 3.2	-13.25413	-19.84879	14.94565	-0.50205	14.451	0.0	0.0	0.0
5	Sewer 3.2	-14.08946	-20.40543	14.95978	-0.50189	14.464	0.0	0.0	0.0
5	Sewer 3.2	-14.92478	-20.96217	14.97391	-0.49994	14.477	0.0	0.0	0.0
5	Sewer 3.2	-15.76011	-21.51891	14.98804	-0.49644	14.489	0.0	0.0	0.0
5	Sewer 3.2	-16.59543	-22.07565	15.00217	-0.49162	14.502	0.0	0.0	0.0
5	Sewer 3.2	-17.43076	-22.63239	15.01630	-0.49560	14.515	0.0	0.0	0.0
5	Sewer 3.2	-18.26609	-23.18913	15.03043	-0.47879	14.527	0.0	0.0	0.0
5	Sewer 3.2	-19.10141	-23.74587	15.04457	-0.47112	14.540	0.0	0.0	0.0
5	Sewer 3.2	-19.93674	-24.30261	15.05870	-0.46281	14.553	0.0	0.0	0.0
5	Sewer 3.2	-20.77207	-24.85935	15.07283	-0.45399	14.566	0.0	0.0	0.0
5	Sewer 3.2	-21.60739	-25.41609	15.08696	-0.44475	14.578	0.0	0.0	0.0
5	Sewer 3.2	-22.44272	-25.97283	15.10109	-0.43521	14.591	0.0	0.0	0.0
5	Sewer 3.2	-23.27804	-26.52957	15.11522	-0.42543	14.604	0.0	0.0	0.0
5	Sewer 3.2	-24.11337	-27.08630	15.12935	-0.41551	14.616	0.0	0.0	0.0
5	Sewer 3.2	-24.94870	-27.64304	15.14348	-0.40549	14.629	0.0	0.0	0.0
5	Sewer 3.2	-25.78402	-28.19978	15.15761	-0.39544	14.642	0.0	0.0	0.0
5	Sewer 3.2	-26.61935	-28.75652	15.17174	-0.38540	14.655	0.0	0.0	0.0
5	Sewer 3.2	-27.45467	-29.31326	15.18587	-0.37541	14.667	0.0	0.0	0.0
5	Sewer 3.2	-28.29000	-29.87000	15.20000	-0.36551	14.680	0.0	0.0	0.0
6	WM 1.1	-54.84080	32.41000	18.90000	-0.29275	18.500	0.0	0.0	0.0
6	WM 1.1	-54.28059	31.57608	18.90000	-0.29951	18.500	0.0	0.0	0.0
6	WM 1.1	-53.72118	30.74216	18.90000	-0.30635	18.500	0.0	0.0	0.0
6	WM 1.1	-53.16176	29.90824	18.90000	-0.31328	18.500	0.0	0.0	0.0
6	WM 1.1	-52.60235	29.07431	18.90000	-0.32027	18.500	0.0	0.0	0.0
6	WM 1.1	-52.04294	28.24039	18.90000	-0.32731	18.500	0.0	0.0	0.0
6	WM 1.1	-51.48353	27.40647	18.90000	-0.33441	18.500	0.0	0.0	0.0
6	WM 1.1	-50.92412	26.57255	18.90000	-0.34154	18.500	0.0	0.0	0.0
6	WM 1.1	-50.36471	25.73863	18.90000	-0.34870	18.500	0.0	0.0	0.0
6	WM 1.1	-49.80529	24.90471	18.90000	-0.35586	18.500	0.0	0.0	0.0
6	WM 1.1	-49.24588	24.07078	18.90000	-0.36303	18.500	0.0	0.0	0.0
6	WM 1.1	-48.68647	23.23686	18.90000	-0.37017	18.500	0.0	0.0	0.0
6	WM 1.1	-48.12706	22.40294	18.90000	-0.37727	18.500	0.0	0.0	0.0
6	WM 1.1	-47.56765	21.56902	18.90000	-0.38433	18.500	0.0	0.0	0.0
6	WM 1.1	-47.00824	20.73510	18.90000	-0.39131	18.500	0.0	0.0	0.0
6	WM 1.1	-46.44882	19.90118	18.90000	-0.39820	18.500	0.0	0.0	0.0
6	WM 1.1	-45.88941	19.06725	18.90000	-0.40498	18.500	0.0	0.0	0.0
6	WM 1.1	-45.33000	18.23333	18.90000	-0.41163	18.500	0.0	0.0	0.0
6	WM 1.1	-44.77059	17.39941	18.90000	-0.41812	18.500	0.0	0.0	0.0
6	WM 1.1	-44.21118	16.56549	18.90000	-0.42445	18.500	0.0	0.0	0.0
6	WM 1.1	-43.65176	15.73157	18.90000	-0.43058	18.500	0.0	0.0	0.0
6	WM 1.1	-43.09235	14.89765	18.90000	-0.43650	18.500	0.0	0.0	0.0
6	WM 1.1	-42.53294	14.06373	18.90000	-0.44219	18.500	0.0	0.0	0.0
6	WM 1.1	-41.97353	13.22980	18.90000	-0.44763	18.500	0.0	0.0	0.0
6	WM 1.1	-41.41412	12.39588	18.90000	-0.45280	18.500	0.0	0.0	0.0
6	WM 1.1	-40.85471	11.56196	18.90000	-0.45768	18.500	0.0	0.0	0.0
6	WM 1.1	-40.29529	10.72804	18.90000	-0.46227	18.500	0.0	0.0	0.0
6	WM 1.1	-39.73588	9.89412	18.90000	-0.46655	18.500	0.0	0.0	0.0
6	WM 1.1	-39.17647	9.06020	18.90000	-0.47051	18.500	0.0	0.0	0.0
6	WM 1.1	-38.61706	8.22627	18.90000	-0.47415	18.500	0.0	0.0	0.0
6	WM 1.1	-38.05765	7.39235	18.90000	-0.47746	18.500	0.0	0.0	0.0
6	WM 1.1	-37.49824	6.55843	18.90000	-0.48044	18.500	0.0	0.0	0.0
6	WM 1.1	-36.93882	5.72451	18.90000	-0.48311	18.500	0.0	0.0	0.0
6	WM 1.1	-36.37941	4.89059	18.90000	-0.48545	18.500	0.0	0.0	0.0
6	WM 1.1	-35.82000	4.05667	18.90000	-0.48750	18.500	0.0	0.0	0.0
6	WM 1.1	-35.26059	3.22275	18.90000	-0.48925	18.500	0.0	0.0	0.0
6	WM 1.1	-34.70118	2.38882	18.90000	-0.49074	18.500	0.0	0.0	0.0
6	WM 1.1	-34.14176	1.55490	18.90000	-0.49197	18.500	0.0	0.0	0.0
6	WM 1.1	-33.58235	0.72098	18.90000	-0.49297	18.500	0.0	0.0	0.0
6	WM 1.1	-33.02294	-0.11294	18.90000	-0.49377	18.500	0.0	0.0	0.0
6	WM 1.1	-32.46353	-0.94686	18.90000	-0.49438	18.500	0.0	0.0	0.0
6	WM 1.1	-31.90412	-1.78078	18.90000	-0.49485	18.500	0.0	0.0	0.0
6	WM 1.1	-31.34471	-2.61474	18.90000	-0.49519	18.500	0.0	0.0	0.0
6	WM 1.1	-30.78529	-3.44863	18.90000	-0.49543	18.500	0.0	0.0	0.0
6	WM 1.1	-30.22588	-4.28255	18.90000	-0.49558	18.500	0.0	0.0	0.0
6	WM 1.1	-29.66647	-5.11647	18.90000	-0.49568	18.500	0.0	0.0	0.0
6	WM 1.1	-29.10706	-5.95039	18.90000	-0.49575	18.500	0.0	0.0	0.0
6	WM 1.1	-28.54765	-6.78431	18.90000	-0.49579	18.500	0.0	0.0	0.0
6	WM 1.1	-27.98824	-7.61824	18.90000	-0.49581	18.500	0.0	0.0	0.0
6	WM 1.1	-27.42882	-8.45216	18.90000	-0.49583	18.500	0.0	0.0	0.0
6	WM 1.1	-26.86941	-9.28608	18.90000	-0.49584	18.500	0.0	0.0	0.0
6	WM 1.1	-26.31000	-10.12000	18.90000	-0.49585	18.500	0.0	0.0	0.0
7	WM 1.2	-26.31000	-10.12000	18.90000	-0.49585	18.500	0.0	0.0	0.0
7	WM 1.2	-25.66286	-10.88571	18.90000	-0.49599	18.500	0.0	0.0	0.0
7	WM 1.2	-25.01571	-11.65143	18.90000	-0.49613	18.500	0.0	0.0	0.0
7	WM 1.2	-24.36857	-12.41714	18.90000	-0.49627	18.500	0.0	0.0	0.0
7	WM 1.2	-23.72143	-13.18286	18.90000	-0.49640	18.500	0.0	0.0	0.0
7	WM 1.2	-23.07429	-13.94857	18.90000	-0.49653	18.500	0.0	0.0	0.0
7	WM 1.2	-22.42714	-14.71429	18.90000	-0.49663	18.500	0.0	0.0	0.0
7	WM 1.2	-21.78000	-15.48000	18.90000	-0.49671	18.500	0.0	0.0	0.0
7	WM 1.2	-21.13206	-16.24571	18.90000	-0.49673	18.500	0.0	0.0	0.0
7	WM 1.2	-20.48571	-17.01143	18.90000	-0.49668	18.500	0.0	0.0	0.0
7	WM 1.2	-19.83857	-17.77714	18.90000	-0.49653	18.500	0.0	0.0	0.0
7	WM 1.2	-19.19143	-18.54286	18.90000	-0.49626	18.500	0.0	0.0	0.0
7	WM 1.2	-18.54429	-19.30857	18.90000	-0.49584	18.500	0.0	0.0	0.0
7	WM 1.2	-17.89714	-20.07429	18.90000	-0.49525	18.500	0.0	0.0	0.0
7	WM 1.2	-17.25000	-20.84000	18.90000	-0.49445	18.500	0.0	0.0	0.0
8	WM 2.1	63.46000	33.59000	18.90000	-0.37526	18.500	0.0	0.0	0.0
8	WM 2.1	62.62794	33.02887	18.90000	-0.38532	18.500	0.0	0.0	0.0
8	WM 2.1	61.79588							



Brill Place
TW GMA
Loading (UD)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mD]	[mm]	[mD]	[kN/m²]	[kN/m²]	[μ]
8 WM 2.1		44.32258	20.68392	18.90000	-0.43234	18.500	0.0	0.0	0.0
8 WM 2.1		43.49652	20.12278	18.90000	-0.40642	18.500	0.0	0.0	0.0
8 WM 2.1		42.65845	19.56165	18.90000	-0.37478	18.500	0.0	0.0	0.0
8 WM 2.1		41.82639	19.00052	18.90000	-0.33675	18.500	0.0	0.0	0.0
8 WM 2.1		40.99433	18.43938	18.90000	-0.29162	18.500	0.0	0.0	0.0
8 WM 2.1		40.16227	17.87825	18.90000	-0.23863	18.500	0.0	0.0	0.0
8 WM 2.1		39.33021	17.31711	18.90000	-0.17791	18.500	0.0	0.0	0.0
8 WM 2.1		38.49814	16.75598	18.90000	-0.10596	18.500	0.0	0.0	0.0
8 WM 2.1		37.66608	16.19485	18.90000	-0.02472	18.500	0.0	0.0	0.0
8 WM 2.1		36.83402	15.63371	18.90000	0.06744	18.500	0.0	0.0	0.0
8 WM 2.1		36.00196	15.07258	18.90000	0.17113	18.500	0.0	0.0	0.0
8 WM 2.1		35.16990	14.51144	18.90000	0.29676	18.500	0.0	0.0	0.0
8 WM 2.1		34.33784	13.95031	18.90000	0.41442	18.500	0.0	0.0	0.0
8 WM 2.1		33.50577	13.38918	18.90000	0.55369	18.500	0.0	0.0	0.0
8 WM 2.1		32.67371	12.82804	18.90000	0.70348	18.500	0.0	0.0	0.0
8 WM 2.1		31.84165	12.26691	18.90000	0.86183	18.500	0.0	0.0	0.0
8 WM 2.1		31.00959	11.70577	18.90000	1.02583	18.500	0.0	0.0	0.0
8 WM 2.1		30.17753	11.14464	18.90000	1.19181	18.500	0.0	0.0	0.0
8 WM 2.1		29.34546	10.58351	18.90000	1.35572	18.500	0.0	0.0	0.0
8 WM 2.1		28.51340	10.02237	18.90000	1.51368	18.500	0.0	0.0	0.0
8 WM 2.1		27.68134	9.46124	18.90000	1.66247	18.500	0.0	0.0	0.0
8 WM 2.1		26.84928	8.90010	18.90000	1.79976	18.500	0.0	0.0	0.0
8 WM 2.1		26.01722	8.33897	18.90000	1.92415	18.500	0.0	0.0	0.0
8 WM 2.1		25.18515	7.77784	18.90000	2.03495	18.500	0.0	0.0	0.0
8 WM 2.1		24.35309	7.21670	18.90000	2.13204	18.500	0.0	0.0	0.0
8 WM 2.1		23.52103	6.65557	18.90000	2.21561	18.500	0.0	0.0	0.0
8 WM 2.1		22.68897	6.09443	18.90000	2.28607	18.500	0.0	0.0	0.0
8 WM 2.1		21.85691	5.53330	18.90000	2.34391	18.500	0.0	0.0	0.0
8 WM 2.1		21.02485	4.97216	18.90000	2.38964	18.500	0.0	0.0	0.0
8 WM 2.1		20.19278	4.41103	18.90000	2.42374	18.500	0.0	0.0	0.0
8 WM 2.1		19.36072	3.84990	18.90000	2.44665	18.500	0.0	0.0	0.0
8 WM 2.1		18.52866	3.28876	18.90000	2.45872	18.500	0.0	0.0	0.0
8 WM 2.1		17.69660	2.72763	18.90000	2.46021	18.500	0.0	0.0	0.0
8 WM 2.1		16.86454	2.16649	18.90000	2.45129	18.500	0.0	0.0	0.0
8 WM 2.1		16.03247	1.60536	18.90000	2.43205	18.500	0.0	0.0	0.0
8 WM 2.1		15.20041	1.04423	18.90000	2.40248	18.500	0.0	0.0	0.0
8 WM 2.1		14.36835	0.48309	18.90000	2.36247	18.500	0.0	0.0	0.0
8 WM 2.1		13.53629	-0.07804	18.90000	2.31188	18.500	0.0	0.0	0.0
8 WM 2.1		12.70423	-0.63918	18.90000	2.25047	18.500	0.0	0.0	0.0
8 WM 2.1		11.87216	-1.20031	18.90000	2.17800	18.500	0.0	0.0	0.0
8 WM 2.1		11.04010	-1.76144	18.90000	2.09423	18.500	0.0	0.0	0.0
8 WM 2.1		10.20804	-2.32258	18.90000	1.99897	18.500	0.0	0.0	0.0
8 WM 2.1		9.37598	-2.88371	18.90000	1.89216	18.500	0.0	0.0	0.0
8 WM 2.1		8.54392	-3.44495	18.90000	1.77398	18.500	0.0	0.0	0.0
8 WM 2.1		7.71186	-4.00598	18.90000	1.64493	18.500	0.0	0.0	0.0
8 WM 2.1		6.87979	-4.56711	18.90000	1.50601	18.500	0.0	0.0	0.0
8 WM 2.1		6.04773	-5.12825	18.90000	1.35881	18.500	0.0	0.0	0.0
8 WM 2.1		5.21567	-5.68938	18.90000	1.20561	18.500	0.0	0.0	0.0
8 WM 2.1		4.38361	-6.25052	18.90000	1.04927	18.500	0.0	0.0	0.0
8 WM 2.1		3.55155	-6.81155	18.90000	0.89304	18.500	0.0	0.0	0.0
8 WM 2.1		2.71948	-7.37278	18.90000	0.74017	18.500	0.0	0.0	0.0
8 WM 2.1		1.88742	-7.93392	18.90000	0.59354	18.500	0.0	0.0	0.0
8 WM 2.1		1.05536	-8.49505	18.90000	0.45539	18.500	0.0	0.0	0.0
8 WM 2.1		0.22330	-9.05619	18.90000	0.32724	18.500	0.0	0.0	0.0
8 WM 2.1		-0.60876	-9.61732	18.90000	0.20995	18.500	0.0	0.0	0.0
8 WM 2.1		-1.44082	-10.17845	18.90000	0.10302	18.500	0.0	0.0	0.0
8 WM 2.1		-2.27289	-10.73959	18.90000	0.00873	18.500	0.0	0.0	0.0
8 WM 2.1		-3.10495	-11.30072	18.90000	-0.07568	18.500	0.0	0.0	0.0
8 WM 2.1		-3.93701	-11.86186	18.90000	-0.14998	18.500	0.0	0.0	0.0
8 WM 2.1		-4.76907	-12.42299	18.90000	-0.21482	18.500	0.0	0.0	0.0
8 WM 2.1		-5.60113	-12.98412	18.90000	-0.27093	18.500	0.0	0.0	0.0
8 WM 2.1		-6.43320	-13.54526	18.90000	-0.31902	18.500	0.0	0.0	0.0
8 WM 2.1		-7.26526	-14.10639	18.90000	-0.35982	18.500	0.0	0.0	0.0
8 WM 2.1		-8.09732	-14.66753	18.90000	-0.39401	18.500	0.0	0.0	0.0
8 WM 2.1		-8.92938	-15.22866	18.90000	-0.42227	18.500	0.0	0.0	0.0
8 WM 2.1		-9.76144	-15.78979	18.90000	-0.44522	18.500	0.0	0.0	0.0
8 WM 2.1		-10.59351	-16.35093	18.90000	-0.46344	18.500	0.0	0.0	0.0
8 WM 2.1		-11.42557	-16.91206	18.90000	-0.47746	18.500	0.0	0.0	0.0
8 WM 2.1		-12.25763	-17.47320	18.90000	-0.48778	18.500	0.0	0.0	0.0
8 WM 2.1		-13.08969	-18.03433	18.90000	-0.49484	18.500	0.0	0.0	0.0
8 WM 2.1		-13.92175	-18.59546	18.90000	-0.49907	18.500	0.0	0.0	0.0
8 WM 2.1		-14.75381	-19.15660	18.90000	-0.50083	18.500	0.0	0.0	0.0
8 WM 2.1		-15.58588	-19.71773	18.90000	-0.50045	18.500	0.0	0.0	0.0
8 WM 2.1		-16.41794	-20.27887	18.90000	-0.49823	18.500	0.0	0.0	0.0
8 WM 2.1		-17.25000	-20.84000	18.90000	-0.49445	18.500	0.0	0.0	0.0
9 WM 2.2		-17.25000	-20.84000	18.90000	-0.49445	18.500	0.0	0.0	0.0
9 WM 2.2		-18.08786	-21.41071	18.90000	-0.48926	18.500	0.0	0.0	0.0
9 WM 2.2		-18.92571	-21.98143	18.90000	-0.48294	18.500	0.0	0.0	0.0
9 WM 2.2		-19.76357	-22.55214	18.90000	-0.47566	18.500	0.0	0.0	0.0
9 WM 2.2		-20.60143	-23.12286	18.90000	-0.46700	18.500	0.0	0.0	0.0
9 WM 2.2		-21.43929	-23.69357	18.90000	-0.45891	18.500	0.0	0.0	0.0
9 WM 2.2		-22.27714	-24.26429	18.90000	-0.44972	18.500	0.0	0.0	0.0
9 WM 2.2		-23.11500	-24.83500	18.90000	-0.44015	18.500	0.0	0.0	0.0
9 WM 2.2		-23.95286	-25.40571	18.90000	-0.43029	18.500	0.0	0.0	0.0
9 WM 2.2		-24.79071	-25.97643	18.90000	-0.42024	18.500	0.0	0.0	0.0
9 WM 2.2		-25.62857	-26.54714	18.90000	-0.41006	18.500	0.0	0.0	0.0
9 WM 2.2		-26.46643	-27.11786	18.90000	-0.39981	18.500	0.0	0.0	0.0
9 WM 2.2		-27.30429	-27.68857	18.90000	-0.38956	18.500	0.0	0.0	0.0
9 WM 2.2		-28.14214	-28.25929	18.90000	-0.37935	18.500	0.0	0.0	0.0
9 WM 2.2		-28.98000	-28.83000	18.90000	-0.36922	18.500	0.0	0.0	0.0

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None



Brill Place
TW GMA
Loading (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Titles

Job No.: 70057370
Job Title: Brill Place
Sub-title: TW GMA
Calculation Heading: Loading (D)
Initials: JAA

Analysis Options

General

Global Poisson's ratio: 0.20
Maximum allowable ratio between values of E: 1.5
Horizontal rigid boundary level: -24.00 [m OD]
Displacements at load centroids: Yes
GSA piled raft data : No

Elastic

Elastic : Yes
Analysis: Boussinesq
Stiffness for horizontal displacement calculations: Weighted average
Using legacy heave correction factor: No

Consolidation

consolidation : No

Soil ProfilesUndrained

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10000.	10000.	0.20000	None
2	LC (1)	16.500	6	32500.	32500.	0.49000	None
3	LC (2)	10.000	11	32500.	97500.	0.49000	None
4	LG	-1.0000	20	97500.	97500.	0.49000	None
5	TS	-21.000	4	300000.	300000.	0.20000	None

Soil ProfilesDrained

Layer ref.	Name	Level at top	Number of intermediate displacement levels	Youngs Modulus : Top	Youngs Modulus : Btm.	Poissons ratio	Non-Linear curve
		[mOD]		[kN/m ²]	[kN/m ²]		
1	MG	18.900	2	10000.	10000.	0.20000	None
2	LC (1)	16.500	6	26000.	26000.	0.20000	None
3	LC (2)	10.000	11	26000.	78000.	0.20000	None
4	LG	-1.0000	20	78000.	78000.	0.20000	None
5	TS	-21.000	4	300000.	300000.	0.20000	None

Soil Zones

Zone	Name	X min	X max	Y min	Y max	Profile
		[m]	[m]	[m]	[m]	
1	D	-79.200	93.000	-51.310	77.680	Drained

Polygonal Load Data

Load ref.	Name	Position : Level	Position : Polygon : Coords.	Position : Polygon Rectangles : Rect. tolerance	No. of Rectangles	Value : Normal (local z)
		[m]	[m]	[%]		[kN/m ²]
1	Loading	11.40000	(-9.36,14.4) (16.9,31.9) (26.7,16.8) (0.26,-0.41) (-9.36,14.4)	10.000	1	180.00

Polygonal Loads' Rectangles

No.	Centre : x	Centre : y	Angle of local x from global X [Degrees]	Width x	Depth y
	[m]	[m]		[m]	[m]
Load 1 : Loading (Edge 2 optimal)					
1	8.61412	15.67605	32.999	31.517	17.882

Displacement Lines

Name	X1	Y1	Z1	X2	Y2	Z2	Intervals	Calculate	Detailed Results
	[m]	[m]	[m]	[m]	[m]	[m]	[No.]		
Sewer 1	-51.92000	34.37000	14.80000	-17.85000	-22.90000	15.80000	67	Yes	Yes
Sewer 2.1	-1.24000	67.67000	3.80000	-42.19000	20.30000	3.00000	64	Yes	Yes
Sewer 2.2	42.19000	20.30000	3.00000	78.03000	39.89000	3.00000	41	Yes	Yes
Sewer 3.1	54.43000	28.65000	4.40000	48.56000	21.35000	4.10000	9	Yes	Yes
Sewer 3.2	48.56000	21.35000	4.10000	-28.29000	-29.87000	3.90000	92	Yes	Yes
WM 1.1	-54.84000	32.41000	18.90000	-26.31000	-10.12000	18.90000	51	Yes	Yes
WM 1.2	-26.31000	-10.12000	18.90000	-17.25000	-20.84000	18.90000	14	Yes	Yes
WM 2.1	63.46000	33.59000	18.90000	-17.25000	-20.84000	18.90000	97	Yes	Yes
WM 2.2	-17.25000	-20.84000	18.90000	-20.98000	-20.83000	18.90000	14	Yes	Yes
Gas Main 1.1	40.22000	13.90000	18.90000	23.40000	3.14000	18.90000	20	No	Yes
Gas Main 1.2	23.40000	3.14000	18.90000	11.57000	-0.91000	18.90000	13	No	Yes
Gas Main 1.3	11.57000	-0.91000	18.90000	-20.81000	-23.46000	18.90000	39	No	Yes

Displacement Grids

Name	Extrusion: Direction	X1	Y1	Z1	X2	Y2	Z2	Intervals Along	Extrusion: Distance	Extrusion: Intervals	Calculate	Detailed Results



Brill Place
TW GMA
Loading (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

		[m]	[m]	[m]	[m]	[m]	[m]	Line [No.]	[m]	Along [No.]		
Grid	Global Y	-79.20000	-51.31000	18.90000	93.00000	-	18.90000	86	128.00000	64	No	Yes

Results : Immediate : Load Centres : Polygonal

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
1	Loading	8.66306	15.70786	11.40000	57.62880	11.050	179.99	419.63	0.0050796

Results : Consolidation : Load Centres : Polygonal

None

Results : Total : Load Centres : Polygonal

None

Results : Immediate : Displacement Data : Lines

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[μ]
1	Sewer 1	-51.92000	34.37000	14.80000	-0.03448	14.320	0.0	0.0	0.0
1	Sewer 1	-51.41149	33.51522	14.81493	-0.03213	14.333	0.0	0.0	0.0
1	Sewer 1	-50.90299	32.66045	14.82995	-0.02952	14.347	0.0	0.0	0.0
1	Sewer 1	-50.39448	31.80567	14.84478	-0.02661	14.360	0.0	0.0	0.0
1	Sewer 1	-49.88597	30.95090	14.85970	-0.02341	14.374	0.0	0.0	0.0
1	Sewer 1	-49.37746	30.09612	14.87463	-0.01987	14.387	0.0	0.0	0.0
1	Sewer 1	-48.86896	29.24134	14.88955	-0.01599	14.401	0.0	0.0	0.0
1	Sewer 1	-48.36045	28.38657	14.90448	-0.01174	14.414	0.0	0.0	0.0
1	Sewer 1	-47.85194	27.53179	14.91940	-0.00710	14.427	0.0	0.0	0.0
1	Sewer 1	-47.34343	26.67703	14.93433	-0.00205	14.441	0.0	0.0	0.0
1	Sewer 1	-46.83493	25.82224	14.94925	0.00343	14.454	0.0	0.0	0.0
1	Sewer 1	-46.32642	24.96746	14.96418	0.00937	14.468	0.0	0.0	0.0
1	Sewer 1	-45.81791	24.11269	14.97910	0.01577	14.481	0.0	0.0	0.0
1	Sewer 1	-45.30940	23.25791	14.99403	0.02267	14.495	0.0	0.0	0.0
1	Sewer 1	-44.80090	22.40313	15.00896	0.03007	14.508	0.0	0.0	0.0
1	Sewer 1	-44.29239	21.54836	15.02388	0.03900	14.521	0.0	0.0	0.0
1	Sewer 1	-43.78388	20.69358	15.03881	0.04647	14.535	0.0	0.0	0.0
1	Sewer 1	-43.27537	19.83881	15.05373	0.05549	14.548	0.0	0.0	0.0
1	Sewer 1	-42.76687	18.98403	15.06866	0.06506	14.562	0.0	0.0	0.0
1	Sewer 1	-42.25836	18.12925	15.08358	0.07520	14.575	0.0	0.0	0.0
1	Sewer 1	-41.74985	17.27448	15.09851	0.08590	14.589	0.0	0.0	0.0
1	Sewer 1	-41.24134	16.41970	15.11343	0.09716	14.602	0.0	0.0	0.0
1	Sewer 1	-40.73284	15.56493	15.12836	0.10896	14.616	0.0	0.0	0.0
1	Sewer 1	-40.22433	14.71015	15.14328	0.12128	14.629	0.0	0.0	0.0
1	Sewer 1	-39.71582	13.85537	15.15821	0.13411	14.642	0.0	0.0	0.0
1	Sewer 1	-39.20731	13.00060	15.17313	0.14740	14.656	0.0	0.0	0.0
1	Sewer 1	-38.69881	12.14582	15.18806	0.16112	14.669	0.0	0.0	0.0
1	Sewer 1	-38.19030	11.29104	15.20299	0.17522	14.683	0.0	0.0	0.0
1	Sewer 1	-37.68179	10.43627	15.21791	0.18963	14.696	0.0	0.0	0.0
1	Sewer 1	-37.17328	9.58149	15.23284	0.20429	14.710	0.0	0.0	0.0
1	Sewer 1	-36.66478	8.72672	15.24776	0.21913	14.723	0.0	0.0	0.0
1	Sewer 1	-36.15627	7.87194	15.26269	0.23404	14.736	0.0	0.0	0.0
1	Sewer 1	-35.64776	7.01716	15.27761	0.24894	14.750	0.0	0.0	0.0
1	Sewer 1	-35.13925	6.16239	15.29254	0.26372	14.763	0.0	0.0	0.0
1	Sewer 1	-34.63075	5.30761	15.30746	0.27828	14.777	0.0	0.0	0.0
1	Sewer 1	-34.12224	4.45284	15.32239	0.29249	14.790	0.0	0.0	0.0
1	Sewer 1	-33.61373	3.59806	15.33731	0.30623	14.804	0.0	0.0	0.0
1	Sewer 1	-33.10522	2.74328	15.35224	0.31938	14.817	0.0	0.0	0.0
1	Sewer 1	-32.59672	1.88851	15.36716	0.33182	14.830	0.0	0.0	0.0
1	Sewer 1	-32.08821	1.03373	15.38209	0.34434	14.844	0.0	0.0	0.0
1	Sewer 1	-31.57970	0.17870	15.39701	0.35408	14.857	0.0	0.0	0.0
1	Sewer 1	-31.07119	-0.67582	15.41194	0.36367	14.871	0.0	0.0	0.0
1	Sewer 1	-30.56269	-1.53060	15.42687	0.37225	14.975	0.0	0.0	0.0
1	Sewer 1	-30.05418	-2.38537	15.44179	0.37943	14.988	0.0	0.0	0.0
1	Sewer 1	-29.54567	-3.24015	15.45672	0.38525	15.002	0.0	0.0	0.0
1	Sewer 1	-29.03716	-4.09493	15.47164	0.38967	15.016	0.0	0.0	0.0
1	Sewer 1	-28.52866	-4.94970	15.48657	0.39263	15.029	0.0	0.0	0.0
1	Sewer 1	-28.02015	-5.80448	15.50149	0.39410	15.043	0.0	0.0	0.0
1	Sewer 1	-27.51164	-6.65925	15.51642	0.39405	15.057	0.0	0.0	0.0
1	Sewer 1	-27.00313	-7.51403	15.53134	0.39249	15.070	0.0	0.0	0.0
1	Sewer 1	-26.49463	-8.36881	15.54627	0.38945	15.084	0.0	0.0	0.0
1	Sewer 1	-25.98612	-9.22358	15.56119	0.38494	15.098	0.0	0.0	0.0
1	Sewer 1	-25.47761	-10.07836	15.57612	0.37904	15.111	0.0	0.0	0.0
1	Sewer 1	-24.96910	-10.93313	15.59104	0.37180	15.125	0.0	0.0	0.0
1	Sewer 1	-24.46060	-11.78791	15.60597	0.36330	15.139	0.0	0.0	0.0
1	Sewer 1	-23.95209	-12.64269	15.62090	0.35364	15.152	0.0	0.0	0.0
1	Sewer 1	-23.44358	-13.49746	15.63582	0.34292	15.166	0.0	0.0	0.0
1	Sewer 1	-22.93507	-14.35224	15.65075	0.33126	15.180	0.0	0.0	0.0
1	Sewer 1	-22.42657	-15.20701	15.66567	0.31877	15.194	0.0	0.0	0.0
1	Sewer 1	-21.91806	-16.06179	15.68060	0.30558	15.207	0.0	0.0	0.0
1	Sewer 1	-21.40955	-16.91657	15.69552	0.29182	15.221	0.0	0.0	0.0
1	Sewer 1	-20.90104	-17.77134	15.71045	0.27759	15.235	0.0	0.0	0.0
1	Sewer 1	-20.39254	-18.62612	15.72537	0.26303	15.248	0.0	0.0	0.0
1	Sewer 1	-19.88403	-19.48090	15.74030	0.24824	15.262	0.0	0.0	0.0
1	Sewer 1	-19.37552	-20.33567	15.75522	0.23335	15.276	0.0	0.0	0.0
1	Sewer 1	-18.86701	-21.19045	15.77015	0.21844	15.289	0.0	0.0	0.0
1	Sewer 1	-18.35851	-22.04522	15.78507	0.20362	15.303	0.0	0.0	0.0
1	Sewer 1	-17.85000	-22.90000	15.80000	0.18897	15.317	0.0	0.0	0.0
2	Sewer 2.1	-1.24000	67.87000	3.86000	0.05269	3.5485	0.058871	2.0294	-5.9350E-6
2	Sewer 2.1	-0.56141	67.12797	3.84656	0.06399	3.5363	0.064406	2.1356	-6.1872E-6
2	Sewer 2.1	0.11719	66.38594	3.83312	0.07647	3.5242	0.076545	2.2489	-6.4504E-6
2	Sewer 2.1	0.79578	65.64301	3.81969	0.09027	3.5120	0.077361	2.3693	-6.7250E-6
2	Sewer 2.1	1.47437	64.90188	3.80625	0.10548	3.4998	0.084940	2.4978	-7.0109E-6
2	Sewer 2.1	2.15297	64.15984	3.79281	0.12225	3.4877	0.093378	2.6349	-7.3084E-6
2	Sewer 2.1	2.83156	63.41781	3.77937	0.14072	3.4755	0.10279	2.7812	-7.6174E-6
2	Sewer 2.1	3.51016	62.67578	3.76594	0.16105	3.4633	0.11329	2.9375	-7.9376E-6
2	Sewer 2.1	4.18975	61.93375	3.75250	0.18339	3.4512	0.12504	3.1046	-8.2688E-6
2	Sewer 2.1	4.86734	61.19172	3.73906	0.20793	3.4390	0.13819	3.2832	-8.6103E-6
2	Sewer 2.1	5.54594	60.44969	3.72562	0.23487	3.4268	0.15294	3.4743	-8.9612E-6
2	Sewer 2.1	6.22453	59.70766	3.71219	0.26439	3.4146	0.16950	3.6789	-9.3205E-6
2	Sewer 2.1	6.90313	58.96563	3.69875	0.29673	3.4025	0.18813	3.8980	-9.6865E-6
2	Sewer 2.1	7.58172	58.22359	3.68531	0.33212	3.3903	0.20911	4.1327	-10.057E-6
2	Sewer 2.1	8.26031	57.48156	3.67188	0.37079	3.3781	0.23278	4.3843	-10.430E-6
2	Sewer 2.1	8.93891	56.73953	3.65844	0.41300	3.3659	0.25951	4.6541	-10.801E-6
2	Sewer 2.1	9.61750	55.99750	3.64500	0.45902	3.3537	0.28975	4.9435	-11.166E-6
2	Sewer 2.1	10.29609	55.25547	3.63156	0.50911	3.3415	0.32400	5.2539	-11.520E-6
2	Sewer 2.1	10.97469	54.51344	3.61813	0.56357	3.3293	0.36284	5.5869	-11.856E-6
2	Sewer 2.1	11.65328	53.77141	3.60469	0.62267	3.3171	0.40693	5.9441	-12.166E-6
2	Sewer 2.1	12.33187	53.02938	3.59125	0.68668	3.3049	0.45703	6.3273	-12.440E-6
2	Sewer 2.1	13.01047	52.28734	3.57781	0.75587	3.2927	0.51400	6.7381	-12.667E-6
2	Sewer 2.1	13.68906	51.54531	3.56438	0.83059	3.2805	0.57881	7.1784	-12.832E-6
2	Sewer 2.1	14.36766	50.80328	3.55094	0.91078	3.2683	0.65253	7.6496	-12.919E-6
2	Sewer 2.1	15.04625	50.06125	3.53750	0.99689	3.2561	0.73635	8.1536	-12.910E-6
2	Sewer 2.1	15.72484	49.31922	3.52406	1.08897	3.2439	0.83158	8.6916	-12.782E-6
2	Sewer 2.1	16.40344	48.57719	3.51063	1.18705	3.2317	0.93959	9.2647	-12.511E-6
2	Sewer 2.1	17.08203	47.83516	3.49719	1.29111	3.2195	1.0618	9.8737	-12.071E-6
2	Sewer 2.1	17.76063	47.09313	3.48375	1.40007	3.2073	1.1995	10.510	-11.434E-6
2	Sewer 2.1	18.43922	46.35109	3.47031	1.51634	3.1951	1.3540	11.198	-10.573E-6
2	Sewer 2.1	19.11781	45.60906	3.45688	1.63674	3.1828	1.5262	11.912	-9.4640E-6



Brill Place
TW GMA
Loading (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mOD]	[mm]	[mOD]	[kN/m²]	[kN/m²]	[µ]
2	Sewer 2.1	19.79641	44.86783	3.44344	1.75149	3.1766	1.7166	12.655	-8.8859E-6
2	Sewer 2.1	20.47580	44.12500	3.43800	1.88969	3.1584	1.9250	13.425	-6.4278E-6
2	Sewer 2.1	21.15359	43.38297	3.41656	2.02019	3.1462	2.1584	14.214	-4.4915E-6
2	Sewer 2.1	21.83219	42.64094	3.40313	2.15158	3.1339	2.3905	15.014	-2.2951E-6
2	Sewer 2.1	22.51078	41.89891	3.38969	2.28222	3.1217	2.6418	15.815	123.20E-9
2	Sewer 2.1	23.18938	41.15687	3.37625	2.41023	3.1095	2.8995	16.605	2.7040E-6
2	Sewer 2.1	23.86797	40.41484	3.36289	2.53357	3.0972	3.1575	17.371	5.3682E-6
2	Sewer 2.1	24.54656	39.67281	3.34937	2.65008	3.0850	3.4088	18.099	8.0213E-6
2	Sewer 2.1	25.22516	38.93078	3.33594	2.75761	3.0728	3.6459	18.774	10.561E-6
2	Sewer 2.1	25.90375	38.18875	3.32250	2.85407	3.0605	3.8616	19.381	12.886E-6
2	Sewer 2.1	26.58234	37.44672	3.30906	2.93757	3.0483	4.0493	19.909	14.908E-6
2	Sewer 2.1	27.26094	36.70469	3.29562	3.00646	3.0360	4.2036	20.345	16.554E-6
2	Sewer 2.1	27.93953	35.96200	3.28219	3.05946	3.0238	4.3206	20.662	17.776E-6
2	Sewer 2.1	28.61813	35.22062	3.26875	3.09561	3.0115	4.3981	20.914	18.551E-6
2	Sewer 2.1	29.29672	34.47859	3.25531	3.11438	2.9993	4.4355	21.037	18.875E-6
2	Sewer 2.1	29.97531	33.73656	3.24187	3.11558	2.9870	4.4332	21.050	18.765E-6
2	Sewer 2.1	30.65391	32.99453	3.22844	3.09941	2.9748	4.3931	20.956	18.251E-6
2	Sewer 2.1	31.33259	32.25250	3.21590	3.06640	2.9625	4.3175	20.758	17.370E-6
2	Sewer 2.1	32.01119	31.51047	3.20150	3.01754	2.9502	4.2096	20.462	16.169E-6
2	Sewer 2.1	32.68969	30.76844	3.18812	2.95333	2.9380	4.0729	20.075	14.693E-6
2	Sewer 2.1	33.36828	30.02641	3.17469	2.87565	2.9257	3.9111	19.606	12.992E-6
2	Sewer 2.1	34.04688	29.28437	3.16125	2.78579	2.9134	3.7283	19.064	11.115E-6
2	Sewer 2.1	34.72547	28.54234	3.14781	2.68535	2.9012	3.5288	18.459	9.1148E-6
2	Sewer 2.1	35.40406	27.80031	3.13437	2.57684	2.8889	3.3167	17.802	7.0407E-6
2	Sewer 2.1	36.08266	27.05828	3.12094	2.45965	2.8766	3.0964	17.104	-4.9432E-6
2	Sewer 2.1	36.76125	26.31625	3.10750	2.33793	2.8643	2.7222	16.376	-2.8707E-6
2	Sewer 2.1	37.43984	25.57422	3.09406	2.21263	2.8521	2.6480	15.629	-867.94E-9
2	Sewer 2.1	38.11844	24.83219	3.08062	2.08541	2.8398	2.4275	14.872	-1.0256E-6
2	Sewer 2.1	38.79793	24.09016	3.06719	1.95780	2.8275	2.2140	14.116	-2.7772E-6
2	Sewer 2.1	39.47652	23.34812	3.05375	1.83119	2.8152	2.0099	13.367	-4.3621E-6
2	Sewer 2.1	40.15512	22.60609	3.04031	1.70679	2.8029	1.8174	12.634	-5.7641E-6
2	Sewer 2.1	40.83371	21.86406	3.02687	1.58054	2.7906	1.6377	11.921	-6.9753E-6
2	Sewer 2.1	41.51141	21.12203	3.01344	1.46857	2.7783	1.4717	11.234	-7.9953E-6
2	Sewer 2.1	42.19000	20.38000	3.00000	1.35624	2.7660	1.3196	10.575	-8.8304E-6
2	Sewer 2.2	42.19000	20.38000	3.00000	1.35624	2.7660	1.3196	10.575	-8.8304E-6
3	Sewer 2.2	43.06415	20.85585	3.00000	1.20660	2.7660	1.1229	9.6775	-9.7686E-6
3	Sewer 2.2	43.93829	21.33171	3.00000	1.07275	2.7660	0.95965	8.8742	-10.355E-6
3	Sewer 2.2	44.81244	21.80756	3.00000	0.95306	2.7660	0.82349	8.1540	-10.678E-6
3	Sewer 2.2	45.68659	22.28341	3.00000	0.84609	2.7660	0.70949	7.5068	-10.799E-6
3	Sewer 2.2	46.56073	22.75927	3.00000	0.75050	2.7660	0.61363	6.9242	-10.774E-6
3	Sewer 2.2	47.43488	23.23512	3.00000	0.66509	2.7660	0.53271	6.3987	-10.641E-6
3	Sewer 2.2	48.30992	23.71098	3.00000	0.58880	2.7660	0.46412	5.9236	-10.430E-6
3	Sewer 2.2	49.18317	24.18683	3.00000	0.52066	2.7660	0.40575	5.4934	-10.164E-6
3	Sewer 2.2	50.05732	24.66268	3.00000	0.45379	2.7660	0.35509	5.1029	-9.8605E-6
3	Sewer 2.2	50.93146	25.13854	3.00000	0.40544	2.7660	0.31316	4.7479	-9.5328E-6
3	Sewer 2.2	51.80561	25.61439	3.00000	0.35689	2.7660	0.27640	4.4245	-9.1911E-6
3	Sewer 2.2	52.67976	26.09024	3.00000	0.31354	2.7660	0.24466	4.1293	-8.8430E-6
3	Sewer 2.2	53.55390	26.56610	3.00000	0.27483	2.7660	0.21718	3.8595	-8.4943E-6
3	Sewer 2.2	54.42805	27.04195	3.00000	0.24026	2.7660	0.19331	3.6123	-8.1491E-6
3	Sewer 2.2	55.30220	27.51780	3.00000	0.20949	2.7660	0.17250	3.3855	-7.8104E-6
3	Sewer 2.2	56.17634	27.99366	3.00000	0.18184	2.7660	0.15431	3.1772	-7.4809E-6
3	Sewer 2.2	57.05049	28.46951	3.00000	0.15723	2.7660	0.13837	2.9854	-7.1611E-6
3	Sewer 2.2	57.92463	28.94537	3.00000	0.13527	2.7660	0.12437	2.8086	-6.8529E-6
3	Sewer 2.2	58.79878	29.42122	3.00000	0.11567	2.7660	0.11202	2.6453	-6.5566E-6
3	Sewer 2.2	59.67293	29.89707	3.00000	0.09818	2.7660	0.10112	2.4944	-6.2725E-6
3	Sewer 2.2	60.54707	30.37293	3.00000	0.08258	2.7660	0.091461	2.3597	-6.0025E-6
3	Sewer 2.2	61.42122	30.84878	3.00000	0.06867	2.7660	0.082889	2.2251	-5.7411E-6
3	Sewer 2.2	62.29537	31.32463	3.00000	0.05628	2.7660	0.075263	2.1048	-5.4935E-6
3	Sewer 2.2	63.16951	31.80049	3.00000	0.04523	2.7660	0.068463	1.9930	-5.2575E-6
3	Sewer 2.2	64.04366	32.27634	3.00000	0.03540	2.7660	0.062387	1.8890	-5.0328E-6
3	Sewer 2.2	64.91780	32.75220	3.00000	0.02665	2.7660	0.056947	1.7820	-4.8190E-6
3	Sewer 2.2	65.79195	33.22805	3.00000	0.01937	2.7660	0.052067	1.7015	-4.6157E-6
3	Sewer 2.2	66.66610	33.70390	3.00000	0.01196	2.7660	0.047689	1.6170	-4.4223E-6
3	Sewer 2.2	67.54024	34.17976	3.00000	0.00584	2.7660	0.043730	1.5370	-4.2385E-6
3	Sewer 2.2	68.41439	34.65561	3.00000	0.00041	2.7660	0.040166	1.4640	-4.0637E-6
3	Sewer 2.2	69.28854	35.13146	3.00000	-0.00439	2.7660	0.036946	1.3946	-3.8975E-6
3	Sewer 2.2	70.16268	35.60732	3.00000	-0.00863	2.7660	0.034030	1.3296	-3.7396E-6
3	Sewer 2.2	71.03683	36.08317	3.00000	-0.01237	2.7660	0.031387	1.2686	-3.5894E-6
3	Sewer 2.2	71.91098	36.55902	3.00000	-0.01566	2.7660	0.028987	1.2112	-3.4466E-6
3	Sewer 2.2	72.78512	37.03488	3.00000	-0.01854	2.7660	0.026804	1.1572	-3.3108E-6
3	Sewer 2.2	73.65927	37.51073	3.00000	-0.02106	2.7660	0.024816	1.1064	-3.1815E-6
3	Sewer 2.2	74.53341	37.98659	3.00000	-0.02325	2.7660	0.023002	1.0585	-3.0585E-6
3	Sewer 2.2	75.40756	38.46244	3.00000	-0.02515	2.7660	0.021345	1.0133	-2.9415E-6
3	Sewer 2.2	76.28171	38.93829	3.00000	-0.02679	2.7660	0.019639	0.97060	-2.8308E-6
3	Sewer 2.2	77.15585	39.41415	3.00000	-0.02819	2.7660	0.018442	0.93039	-2.7238E-6
3	Sewer 2.2	78.03000	39.89000	3.00000	-0.02939	2.7660	0.017170	0.89229	-2.6226E-6
4	Sewer 3.1	54.43060	28.65000	4.40000	0.21634	4.1262	0.11454	3.0230	-8.6902E-6
4	Sewer 3.1	53.77778	27.83889	4.36667	0.24451	4.0957	0.12826	3.2144	-9.0718E-6
4	Sewer 3.1	53.12556	27.02778	4.33333	0.27529	4.0651	0.14374	3.4194	-9.4623E-6
4	Sewer 3.1	52.47333	26.21667	4.30000	0.30884	4.0345	0.16124	3.6390	-9.8599E-6
4	Sewer 3.1	51.82111	25.40556	4.26667	0.34533	4.0039	0.18099	3.8740	-10.262E-6
4	Sewer 3.1	51.16889	24.59444	4.23333	0.38493	3.9733	0.20331	4.1253	-10.666E-6
4	Sewer 3.1	50.51667	23.78333	4.20000	0.42782	3.9427	0.22849	4.3940	-11.068E-6
4	Sewer 3.1	49.86444	22.97222	4.16667	0.47414	3.9121	0.25691	4.6808	-11.464E-6
4	Sewer 3.1	49.21222	22.16111	4.13333	0.52401	3.8814	0.28893	4.9867	-11.848E-6
4	Sewer 3.1	48.56000	21.35000	4.10000	0.57755	3.8508	0.32497	5.3124	-12.214E-6
4	Sewer 3.2	49.21222	21.35000	4.10000	0.57755	3.8508	0.32497	5.3124	-12.214E-6
4	Sewer 3.2	47.72467	20.79326	4.09783	0.64855	3.8488	0.37106	5.7197	-12.670E-6
5	Sewer 3.2	46.88935	20.23652	4.09565	0.72717	3.8468	0.42484	6.1665	-13.135E-6
5	Sewer 3.2	46.05492	19.67978	4.09348	0.81410	3.8448	0.48775	6.6569	-13.543E-6
5	Sewer 3.2	45.21870	19.12304	4.09130	0.91014	3.8428	0.56154	7.1957	-13.889E-6
5	Sewer 3.2	44.38337	18.56630	4.08913	1.01696	3.8408	0.64626	7.7880	-14.149E-6
5	Sewer 3.2	43.54804	18.00957	4.08697	1.13272	3.8388	0.75038	8.4396	-14.487E-6
5	Sewer 3.2	42.71272	17.45283	4.08478	1.26096	3.8368	0.87083	9.1565	-14.794E-6
5	Sewer 3.2	41.87739	16.89609	4.08261	1.40162	3.8348	1.0130	9.9450	-14.027E-6
5	Sewer 3.2	41.04297	16.33935	4.08043	1.55553	3.8328	1.1810	10.812	-13.513E-6
5	Sewer 3.2	40.20674	15.78261	4.07826	1.72345	3.8308	1.3792	11.764	-12.650E-6
5	Sewer 3.2	39.37141	15.22587	4.07609	1.90692	3.8288	1.6128	12.807	-11.348E-6
5	Sewer 3.2	38.53609	14.66913	4.07391	2.10374	3.8268	1.8873	13.908	-9.5112E-6
5	Sewer 3.2	37.70076	14.11239	4.07174	2.31683	3.8248	2.2080	15.190	-7.0356E-6
5	Sewer 3.2	36.86543	13.55565	4.06957	2.54521	3.8228	2.5802	16.53	



Brill Place
TW GMA
Loading (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mD]	[mm]	[mD]	[kN/m²]	[kN/m²]	[μ]
5	Sewer 3.2	8.46435	-5.37348	3.99565	5.31846	3.5711	8.5936	33.720	63.826E-6
5	Sewer 3.2	7.62902	-5.93822	3.99348	5.06401	3.6691	8.0436	32.164	57.579E-6
5	Sewer 3.2	6.79370	-6.48696	3.99130	4.79731	3.6672	7.4514	30.524	50.727E-6
5	Sewer 3.2	5.95837	-7.04370	3.98913	4.52153	3.6652	6.8284	28.822	43.438E-6
5	Sewer 3.2	5.12394	-7.60043	3.98696	4.24819	3.6632	6.1892	27.083	35.937E-6
5	Sewer 3.2	4.28772	-8.15717	3.98478	3.95699	3.6613	5.5501	25.334	28.479E-6
5	Sewer 3.2	3.45239	-8.71339	3.98251	3.67560	3.6593	4.9270	23.561	21.388E-6
5	Sewer 3.2	2.61707	-9.27065	3.98043	3.39942	3.6573	4.3359	21.988	14.677E-6
5	Sewer 3.2	1.78174	-9.82739	3.97826	3.13145	3.6554	3.7863	20.276	8.7225E-6
5	Sewer 3.2	0.94641	-10.38413	3.97609	2.87413	3.6534	3.2861	18.722	3.5066E-6
5	Sewer 3.2	0.11189	-10.94087	3.97391	2.62933	3.6514	2.8386	17.257	-805.77E-9
5	Sewer 3.2	-0.72424	-11.49761	3.97174	2.39832	3.6495	2.4441	15.888	-4.3683E-6
5	Sewer 3.2	-1.55935	-12.05435	3.96957	2.18185	3.6475	2.1002	14.617	-7.1967E-6
5	Sewer 3.2	-2.39489	-12.61109	3.96739	1.98026	3.6456	1.8031	13.444	-9.3728E-6
5	Sewer 3.2	-3.23822	-13.16783	3.96522	1.79347	3.6436	1.5480	12.366	-10.988E-6
5	Sewer 3.2	-4.06554	-13.72457	3.96304	1.62116	3.6416	1.3390	11.380	-12.132E-6
5	Sewer 3.2	-4.90087	-14.28130	3.96087	1.46282	3.6397	1.1441	10.478	-12.892E-6
5	Sewer 3.2	-5.73626	-14.83894	3.95870	1.31777	3.6377	0.98601	9.6557	-13.341E-6
5	Sewer 3.2	-6.57152	-15.39478	3.95652	1.18527	3.6357	0.85150	8.9065	-13.545E-6
5	Sewer 3.2	-7.40685	-15.95152	3.95435	1.06451	3.6338	0.73704	8.2242	-13.559E-6
5	Sewer 3.2	-8.24217	-16.50826	3.95217	0.95469	3.6318	0.63954	7.6030	-13.427E-6
5	Sewer 3.2	-9.07750	-17.06500	3.95000	0.85499	3.6298	0.55637	7.0371	-13.187E-6
5	Sewer 3.2	-9.91283	-17.62174	3.94783	0.76461	3.6279	0.48528	6.5216	-12.867E-6
5	Sewer 3.2	-10.74815	-18.17848	3.94565	0.68279	3.6259	0.42441	6.0514	-12.491E-6
5	Sewer 3.2	-11.58348	-18.73522	3.94348	0.60801	3.6240	0.37215	5.6224	-12.078E-6
5	Sewer 3.2	-12.41880	-19.29196	3.94130	0.54199	3.6220	0.32719	5.2385	-11.641E-6
5	Sewer 3.2	-13.25413	-19.84870	3.93913	0.48170	3.6200	0.28841	4.8721	-11.191E-6
5	Sewer 3.2	-14.08946	-20.40543	3.93696	0.42733	3.6181	0.25488	4.5441	-10.737E-6
5	Sewer 3.2	-14.92478	-20.96217	3.93478	0.37835	3.6161	0.22581	4.2434	-10.286E-6
5	Sewer 3.2	-15.76011	-21.51891	3.93261	0.33424	3.6141	0.20054	3.9675	-9.8419E-6
5	Sewer 3.2	-16.59543	-22.07565	3.93043	0.29456	3.6122	0.17852	3.7141	-9.4082E-6
5	Sewer 3.2	-17.43076	-22.63239	3.92826	0.25887	3.6102	0.15929	3.4880	-8.9875E-6
5	Sewer 3.2	-18.26609	-23.18913	3.92609	0.22680	3.6082	0.14245	3.2662	-8.5814E-6
5	Sewer 3.2	-19.10141	-23.74587	3.92391	0.19799	3.6063	0.12767	3.0682	-8.1910E-6
5	Sewer 3.2	-19.93674	-24.30261	3.92174	0.17212	3.6043	0.11467	2.8854	-7.8168E-6
5	Sewer 3.2	-20.77207	-24.85935	3.91957	0.14891	3.6023	0.10320	2.7164	-7.4501E-6
5	Sewer 3.2	-21.60739	-25.41609	3.91739	0.12889	3.6004	0.093069	2.5680	-7.1178E-6
5	Sewer 3.2	-22.44272	-25.97283	3.91522	0.10943	3.5984	0.084093	2.4150	-6.7929E-6
5	Sewer 3.2	-23.27804	-26.52957	3.91304	0.09271	3.5964	0.076126	2.2806	-6.4838E-6
5	Sewer 3.2	-24.11337	-27.08630	3.91087	0.07774	3.5945	0.069039	2.1557	-6.1900E-6
5	Sewer 3.2	-24.94870	-27.64304	3.90870	0.06434	3.5925	0.062722	2.0396	-5.9110E-6
5	Sewer 3.2	-25.78402	-28.19978	3.90652	0.05237	3.5906	0.057081	1.9315	-5.6462E-6
5	Sewer 3.2	-26.61935	-28.75652	3.90435	0.04167	3.5886	0.052634	1.8308	-5.3951E-6
5	Sewer 3.2	-27.45467	-29.31326	3.90217	0.03117	3.5866	0.049109	1.7410	-5.1569E-6
5	Sewer 3.2	-28.28990	-29.87000	3.90000	0.02360	3.5847	0.043446	1.6491	-4.9318E-6
6	WM 1.1	-54.84090	32.41000	18.90000	-0.03944	18.500	0.0	0.0	0.0
6	WM 1.1	-54.28059	31.57608	18.90000	-0.03774	18.500	0.0	0.0	0.0
6	WM 1.1	-53.72118	30.74216	18.90000	-0.03581	18.500	0.0	0.0	0.0
6	WM 1.1	-53.16176	29.90824	18.90000	-0.03366	18.500	0.0	0.0	0.0
6	WM 1.1	-52.60235	29.07431	18.90000	-0.03135	18.500	0.0	0.0	0.0
6	WM 1.1	-52.04294	28.24039	18.90000	-0.02857	18.500	0.0	0.0	0.0
6	WM 1.1	-51.48353	27.40647	18.90000	-0.02560	18.500	0.0	0.0	0.0
6	WM 1.1	-50.92412	26.57255	18.90000	-0.02233	18.500	0.0	0.0	0.0
6	WM 1.1	-50.36471	25.73863	18.90000	-0.01873	18.500	0.0	0.0	0.0
6	WM 1.1	-49.80529	24.90471	18.90000	-0.01479	18.500	0.0	0.0	0.0
6	WM 1.1	-49.24588	24.07078	18.90000	-0.01049	18.500	0.0	0.0	0.0
6	WM 1.1	-48.68647	23.23686	18.90000	-0.00581	18.500	0.0	0.0	0.0
6	WM 1.1	-48.12706	22.40294	18.90000	-0.00073	18.500	0.0	0.0	0.0
6	WM 1.1	-47.56765	21.56902	18.90000	0.00477	18.500	0.0	0.0	0.0
6	WM 1.1	-47.00824	20.73510	18.90000	0.01071	18.500	0.0	0.0	0.0
6	WM 1.1	-46.44882	19.90118	18.90000	0.01709	18.500	0.0	0.0	0.0
6	WM 1.1	-45.88941	19.06725	18.90000	0.02395	18.500	0.0	0.0	0.0
6	WM 1.1	-45.33000	18.23333	18.90000	0.03128	18.500	0.0	0.0	0.0
6	WM 1.1	-44.77059	17.39941	18.90000	0.03910	18.500	0.0	0.0	0.0
6	WM 1.1	-44.21118	16.56549	18.90000	0.04742	18.500	0.0	0.0	0.0
6	WM 1.1	-43.65176	15.73157	18.90000	0.05625	18.500	0.0	0.0	0.0
6	WM 1.1	-43.09235	14.89765	18.90000	0.06557	18.500	0.0	0.0	0.0
6	WM 1.1	-42.53294	14.06373	18.90000	0.07540	18.500	0.0	0.0	0.0
6	WM 1.1	-41.97353	13.22980	18.90000	0.08572	18.500	0.0	0.0	0.0
6	WM 1.1	-41.41412	12.39588	18.90000	0.09652	18.500	0.0	0.0	0.0
6	WM 1.1	-40.85471	11.56196	18.90000	0.10777	18.500	0.0	0.0	0.0
6	WM 1.1	-40.29529	10.72804	18.90000	0.11946	18.500	0.0	0.0	0.0
6	WM 1.1	-39.73588	9.89412	18.90000	0.13154	18.500	0.0	0.0	0.0
6	WM 1.1	-39.17647	9.06020	18.90000	0.14397	18.500	0.0	0.0	0.0
6	WM 1.1	-38.61706	8.22627	18.90000	0.15671	18.500	0.0	0.0	0.0
6	WM 1.1	-38.05765	7.39235	18.90000	0.16970	18.500	0.0	0.0	0.0
6	WM 1.1	-37.49824	6.55843	18.90000	0.18287	18.500	0.0	0.0	0.0
6	WM 1.1	-36.93882	5.72451	18.90000	0.19614	18.500	0.0	0.0	0.0
6	WM 1.1	-36.37941	4.89059	18.90000	0.20944	18.500	0.0	0.0	0.0
6	WM 1.1	-35.82000	4.05667	18.90000	0.22267	18.500	0.0	0.0	0.0
6	WM 1.1	-35.26059	3.22275	18.90000	0.23574	18.500	0.0	0.0	0.0
6	WM 1.1	-34.70118	2.38882	18.90000	0.24856	18.500	0.0	0.0	0.0
6	WM 1.1	-34.14176	1.55490	18.90000	0.26100	18.500	0.0	0.0	0.0
6	WM 1.1	-33.58235	0.72098	18.90000	0.27298	18.500	0.0	0.0	0.0
6	WM 1.1	-33.02294	-0.11294	18.90000	0.28437	18.500	0.0	0.0	0.0
6	WM 1.1	-32.46353	-0.94686	18.90000	0.29587	18.500	0.0	0.0	0.0
6	WM 1.1	-31.90412	-1.78078	18.90000	0.30749	18.500	0.0	0.0	0.0
6	WM 1.1	-31.34471	-2.61471	18.90000	0.31398	18.500	0.0	0.0	0.0
6	WM 1.1	-30.78529	-3.44863	18.90000	0.32200	18.500	0.0	0.0	0.0
6	WM 1.1	-30.22588	-4.28255	18.90000	0.32893	18.500	0.0	0.0	0.0
6	WM 1.1	-29.66647	-5.11647	18.90000	0.33470	18.500	0.0	0.0	0.0
6	WM 1.1	-29.10706	-5.95039	18.90000	0.33926	18.500	0.0	0.0	0.0
6	WM 1.1	-28.54765	-6.78431	18.90000	0.34264	18.500	0.0	0.0	0.0
6	WM 1.1	-27.98824	-7.61824	18.90000	0.34450	18.500	0.0	0.0	0.0
6	WM 1.1	-27.42882	-8.45216	18.90000	0.34513	18.500	0.0	0.0	0.0
6	WM 1.1	-26.86941	-9.28608	18.90000	0.34442	18.500	0.0	0.0	0.0
6	WM 1.1	-26.31000	-10.12000	18.90000	0.34237	18.500	0.0	0.0	0.0
7	WM 1.2	-26.31000	-10.12000	18.90000	0.34237	18.500	0.0	0.0	0.0
7	WM 1.2	-25.66286	-10.88571	18.90000	0.34467	18.500	0.0	0.0	0.0
7	WM 1.2	-25.01571	-11.65143	18.90000	0.34564	18.500	0.0	0.0	0.0
7	WM 1.2	-24.36857	-12.41714	18.90000	0.34527	18.500	0.0	0.0	0.0
7	WM 1.2	-23.72143	-13.18286	18.90000	0.34356	18.500	0.0	0.0	0.0
7	WM 1.2	-23.07429	-13.94857	18.90000	0.34052	18.500	0.0	0.0	0.0
7	WM 1.2	-22.42714	-14.71429	18.90000	0.33620	18.500	0.0	0.0	0.0
7	WM 1.2	-21.78000	-15.48000	18.90000	0.33064	18.500	0.0	0.0	0.0
7	WM 1.2	-21.13286	-16.24571	18.90000	0.32390	18.500	0.0	0.0	0.0
7	WM 1.2	-20.48571	-17.01143	18.90000	0.31607	18.500	0.0	0.0	0.0
7	WM 1.2	-19.83857	-17.77714	18.90000	0.30721	18.500	0.0	0.0	0.0
7	WM 1.2	-19.19143							



Brill Place
TW GMA
Loading (D)

Job No.	Sheet No.	Rev.
70057370		
Drg. Ref.		
Made by JAA	Date	Checked

Ref.	Name	x	y	z	δz	Stress: Calc. Level	Stress: Vertical	Stress: Sum Princ.	Vert. Strain
		[m]	[m]	[mD]	[mm]	[mD]	[kN/m²]	[kN/m²]	[μ]
8	WM 2.1	45.35464	21.24595	18.90000	0.79929	18.500	0.0	0.0	0.0
8	WM 2.1	44.32258	20.68392	18.90000	0.90135	18.500	0.0	0.0	0.0
8	WM 2.1	43.49652	20.12278	18.90000	1.01485	18.500	0.0	0.0	0.0
8	WM 2.1	42.65845	19.56165	18.90000	1.14095	18.500	0.0	0.0	0.0
8	WM 2.1	41.82639	19.00052	18.90000	1.28089	18.500	0.0	0.0	0.0
8	WM 2.1	40.99433	18.43938	18.90000	1.43598	18.500	0.0	0.0	0.0
8	WM 2.1	40.16227	17.87825	18.90000	1.60761	18.500	0.0	0.0	0.0
8	WM 2.1	39.33621	17.31711	18.90000	1.79721	18.500	0.0	0.0	0.0
8	WM 2.1	38.49814	16.75598	18.90000	2.00622	18.500	0.0	0.0	0.0
8	WM 2.1	37.66608	16.19485	18.90000	2.23605	18.500	0.0	0.0	0.0
8	WM 2.1	36.83402	15.63371	18.90000	2.48800	18.500	0.0	0.0	0.0
8	WM 2.1	36.00196	15.07258	18.90000	2.76389	18.500	0.0	0.0	0.0
8	WM 2.1	35.16990	14.51144	18.90000	3.06195	18.500	0.0	0.0	0.0
8	WM 2.1	34.33784	13.95031	18.90000	3.38450	18.500	0.0	0.0	0.0
8	WM 2.1	33.50577	13.38918	18.90000	3.72964	18.500	0.0	0.0	0.0
8	WM 2.1	32.67371	12.82804	18.90000	4.09487	18.500	0.0	0.0	0.0
8	WM 2.1	31.84165	12.26691	18.90000	4.47592	18.500	0.0	0.0	0.0
8	WM 2.1	31.00959	11.70577	18.90000	4.86667	18.500	0.0	0.0	0.0
8	WM 2.1	30.17753	11.14464	18.90000	5.25947	18.500	0.0	0.0	0.0
8	WM 2.1	29.34546	10.58351	18.90000	5.64590	18.500	0.0	0.0	0.0
8	WM 2.1	28.51340	10.02237	18.90000	6.01791	18.500	0.0	0.0	0.0
8	WM 2.1	27.68134	9.46124	18.90000	6.36874	18.500	0.0	0.0	0.0
8	WM 2.1	26.84928	8.90010	18.90000	6.69344	18.500	0.0	0.0	0.0
8	WM 2.1	26.01722	8.33897	18.90000	6.98888	18.500	0.0	0.0	0.0
8	WM 2.1	25.18515	7.77784	18.90000	7.25343	18.500	0.0	0.0	0.0
8	WM 2.1	24.35309	7.21670	18.90000	7.48659	18.500	0.0	0.0	0.0
8	WM 2.1	23.52103	6.65557	18.90000	7.68860	18.500	0.0	0.0	0.0
8	WM 2.1	22.68897	6.09443	18.90000	7.86012	18.500	0.0	0.0	0.0
8	WM 2.1	21.85691	5.53330	18.90000	8.00201	18.500	0.0	0.0	0.0
8	WM 2.1	21.02485	4.97216	18.90000	8.11521	18.500	0.0	0.0	0.0
8	WM 2.1	20.19278	4.41103	18.90000	8.20062	18.500	0.0	0.0	0.0
8	WM 2.1	19.36072	3.84990	18.90000	8.25904	18.500	0.0	0.0	0.0
8	WM 2.1	18.52866	3.28876	18.90000	8.29115	18.500	0.0	0.0	0.0
8	WM 2.1	17.69660	2.72763	18.90000	8.29745	18.500	0.0	0.0	0.0
8	WM 2.1	16.86454	2.16649	18.90000	8.27828	18.500	0.0	0.0	0.0
8	WM 2.1	16.03247	1.60536	18.90000	8.23380	18.500	0.0	0.0	0.0
8	WM 2.1	15.20041	1.04423	18.90000	8.16403	18.500	0.0	0.0	0.0
8	WM 2.1	14.36835	0.48300	18.90000	8.06861	18.500	0.0	0.0	0.0
8	WM 2.1	13.53629	-0.07804	18.90000	7.94788	18.500	0.0	0.0	0.0
8	WM 2.1	12.70423	-0.63918	18.90000	7.80086	18.500	0.0	0.0	0.0
8	WM 2.1	11.87216	-1.20031	18.90000	7.62735	18.500	0.0	0.0	0.0
8	WM 2.1	11.04010	-1.76144	18.90000	7.42697	18.500	0.0	0.0	0.0
8	WM 2.1	10.20804	-2.32258	18.90000	7.19948	18.500	0.0	0.0	0.0
8	WM 2.1	9.37598	-2.88371	18.90000	6.94494	18.500	0.0	0.0	0.0
8	WM 2.1	8.54392	-3.44485	18.90000	6.66385	18.500	0.0	0.0	0.0
8	WM 2.1	7.71186	-4.00598	18.90000	6.35749	18.500	0.0	0.0	0.0
8	WM 2.1	6.87979	-4.56711	18.90000	6.02809	18.500	0.0	0.0	0.0
8	WM 2.1	6.04773	-5.12825	18.90000	5.67915	18.500	0.0	0.0	0.0
8	WM 2.1	5.21567	-5.68938	18.90000	5.31553	18.500	0.0	0.0	0.0
8	WM 2.1	4.38361	-6.25552	18.90000	4.94327	18.500	0.0	0.0	0.0
8	WM 2.1	3.55155	-6.81165	18.90000	4.56918	18.500	0.0	0.0	0.0
8	WM 2.1	2.71948	-7.37278	18.90000	4.20005	18.500	0.0	0.0	0.0
8	WM 2.1	1.88742	-7.93392	18.90000	3.84197	18.500	0.0	0.0	0.0
8	WM 2.1	1.05536	-8.49505	18.90000	3.49975	18.500	0.0	0.0	0.0
8	WM 2.1	0.22339	-9.05619	18.90000	3.17674	18.500	0.0	0.0	0.0
8	WM 2.1	-0.60076	-9.61732	18.90000	2.87492	18.500	0.0	0.0	0.0
8	WM 2.1	-1.44682	-10.17845	18.90000	2.59516	18.500	0.0	0.0	0.0
8	WM 2.1	-2.27289	-10.73959	18.90000	2.33747	18.500	0.0	0.0	0.0
8	WM 2.1	-3.10495	-11.30072	18.90000	2.10127	18.500	0.0	0.0	0.0
8	WM 2.1	-3.93701	-11.86186	18.90000	1.88563	18.500	0.0	0.0	0.0
8	WM 2.1	-4.76907	-12.42299	18.90000	1.68938	18.500	0.0	0.0	0.0
8	WM 2.1	-5.60113	-12.98412	18.90000	1.51124	18.500	0.0	0.0	0.0
8	WM 2.1	-6.43320	-13.54526	18.90000	1.34988	18.500	0.0	0.0	0.0
8	WM 2.1	-7.26526	-14.10639	18.90000	1.20399	18.500	0.0	0.0	0.0
8	WM 2.1	-8.09732	-14.66753	18.90000	1.07229	18.500	0.0	0.0	0.0
8	WM 2.1	-8.92938	-15.22866	18.90000	0.95356	18.500	0.0	0.0	0.0
8	WM 2.1	-9.76144	-15.78979	18.90000	0.84666	18.500	0.0	0.0	0.0
8	WM 2.1	-10.59351	-16.35093	18.90000	0.75050	18.500	0.0	0.0	0.0
8	WM 2.1	-11.42557	-16.91206	18.90000	0.66408	18.500	0.0	0.0	0.0
8	WM 2.1	-12.25763	-17.47329	18.90000	0.58649	18.500	0.0	0.0	0.0
8	WM 2.1	-13.08969	-18.03433	18.90000	0.51688	18.500	0.0	0.0	0.0
8	WM 2.1	-13.92175	-18.59546	18.90000	0.45448	18.500	0.0	0.0	0.0
8	WM 2.1	-14.75381	-19.15660	18.90000	0.39856	18.500	0.0	0.0	0.0
8	WM 2.1	-15.58588	-19.71773	18.90000	0.34850	18.500	0.0	0.0	0.0
8	WM 2.1	-16.41794	-20.27887	18.90000	0.30370	18.500	0.0	0.0	0.0
8	WM 2.1	-17.25000	-20.84000	18.90000	0.26364	18.500	0.0	0.0	0.0
9	WM 2.2	-17.25000	-20.84000	18.90000	0.26364	18.500	0.0	0.0	0.0
9	WM 2.2	-18.08786	-21.41071	18.90000	0.22743	18.500	0.0	0.0	0.0
9	WM 2.2	-18.92571	-21.98143	18.90000	0.19513	18.500	0.0	0.0	0.0
9	WM 2.2	-19.76357	-22.55214	18.90000	0.16034	18.500	0.0	0.0	0.0
9	WM 2.2	-20.60143	-23.12286	18.90000	0.14069	18.500	0.0	0.0	0.0
9	WM 2.2	-21.43929	-23.69357	18.90000	0.11706	18.500	0.0	0.0	0.0
9	WM 2.2	-22.27714	-24.26429	18.90000	0.09755	18.500	0.0	0.0	0.0
9	WM 2.2	-23.11500	-24.83500	18.90000	0.07950	18.500	0.0	0.0	0.0
9	WM 2.2	-23.95286	-25.40571	18.90000	0.06346	18.500	0.0	0.0	0.0
9	WM 2.2	-24.79071	-25.97643	18.90000	0.04924	18.500	0.0	0.0	0.0
9	WM 2.2	-25.62857	-26.54714	18.90000	0.03663	18.500	0.0	0.0	0.0
9	WM 2.2	-26.46643	-27.11786	18.90000	0.02547	18.500	0.0	0.0	0.0
9	WM 2.2	-27.30429	-27.68857	18.90000	0.01560	18.500	0.0	0.0	0.0
9	WM 2.2	-28.14214	-28.25929	18.90000	0.00689	18.500	0.0	0.0	0.0
9	WM 2.2	-28.98000	-28.83000	18.90000	-0.00079	18.500	0.0	0.0	0.0

Results : Consolidation : Displacement Data : Lines

None

Results : Total : Displacement Data : Lines

None

Appendix E

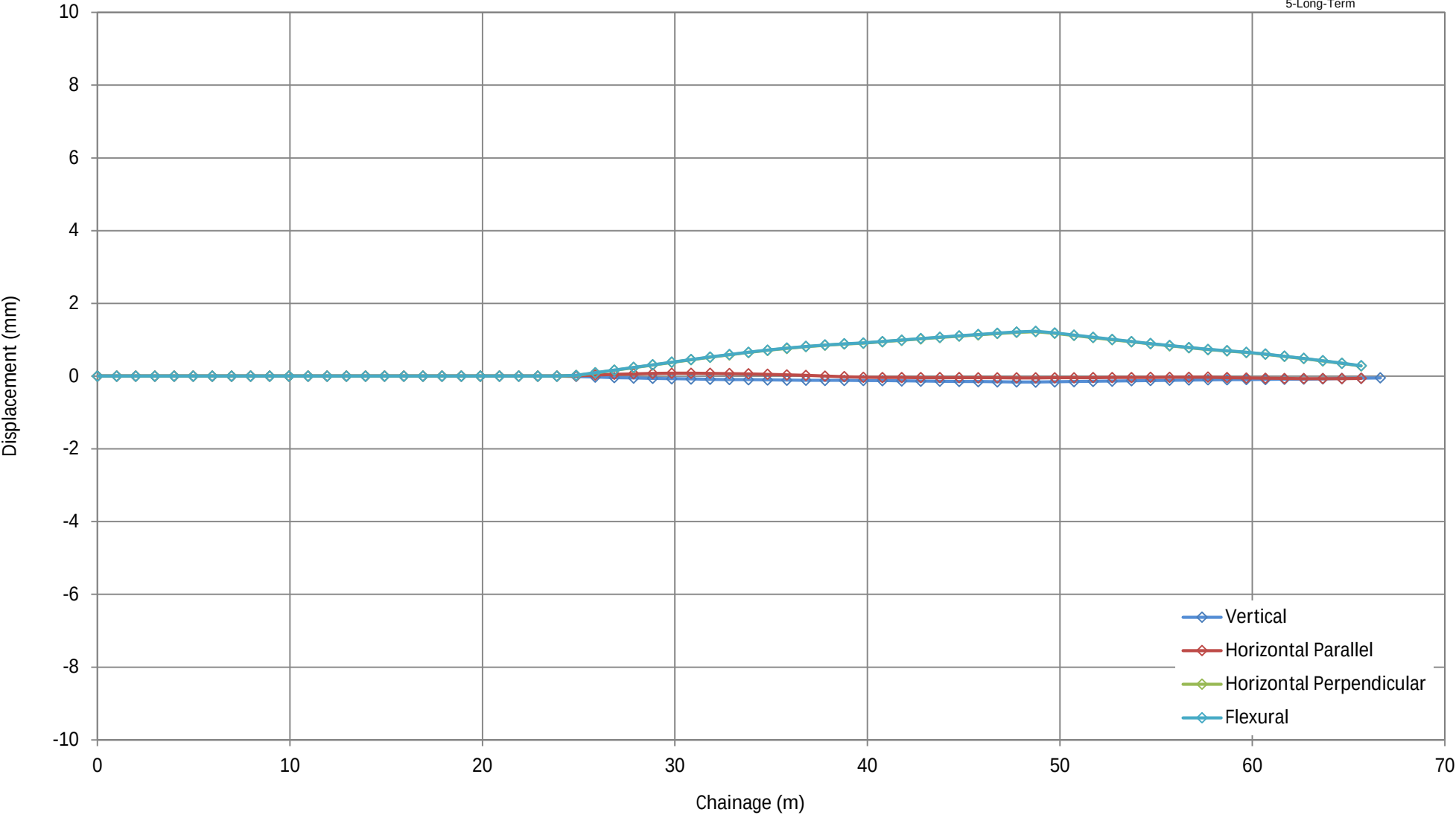
GRAPH PLOTS **wsp**

Appendix E.1

SEWERS **wsp**

3Predicted Displacement Graph for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

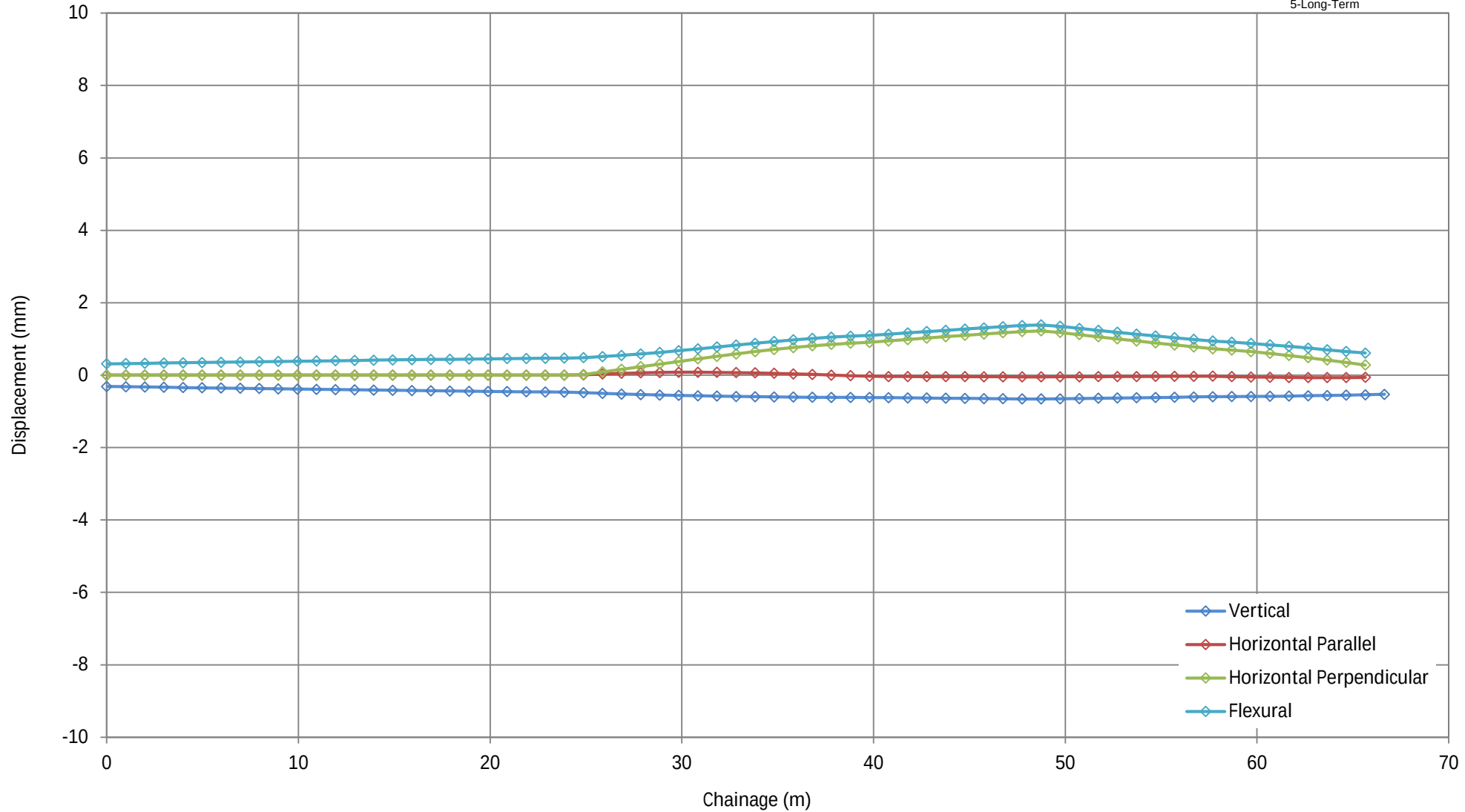


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Displacement Graph for Sewer 1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

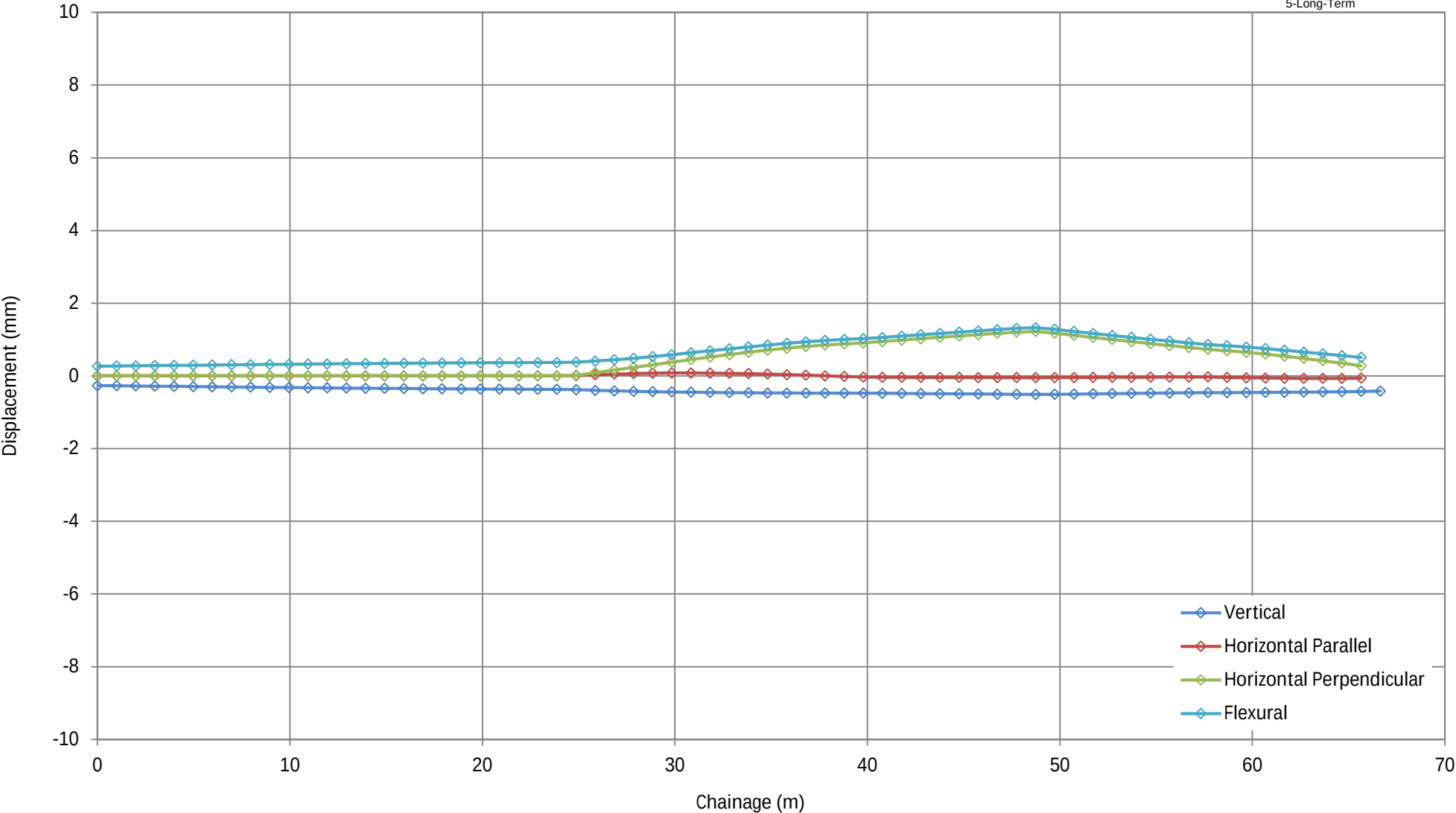


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Displacement Graph for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

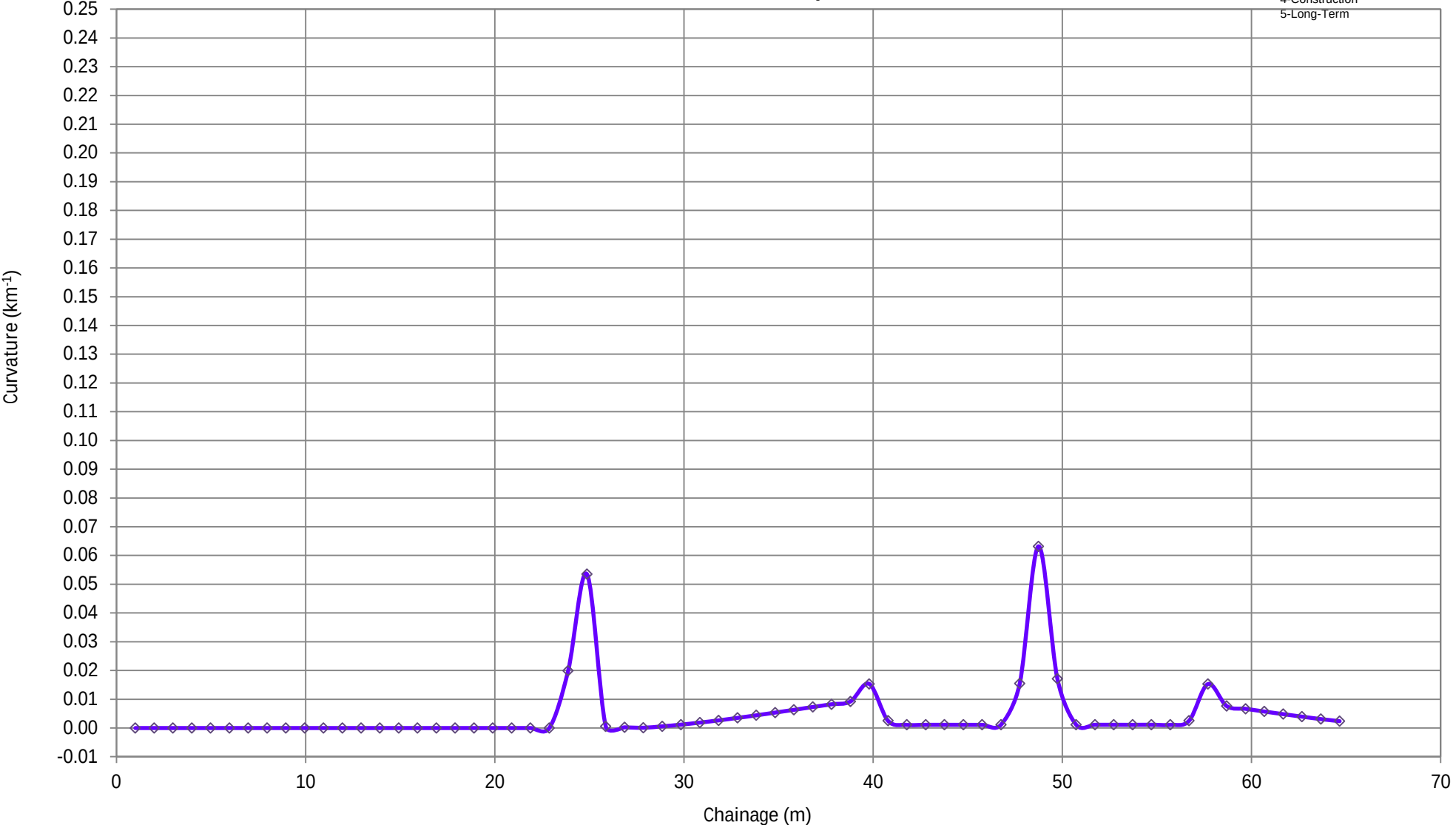


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Curvature Graph for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

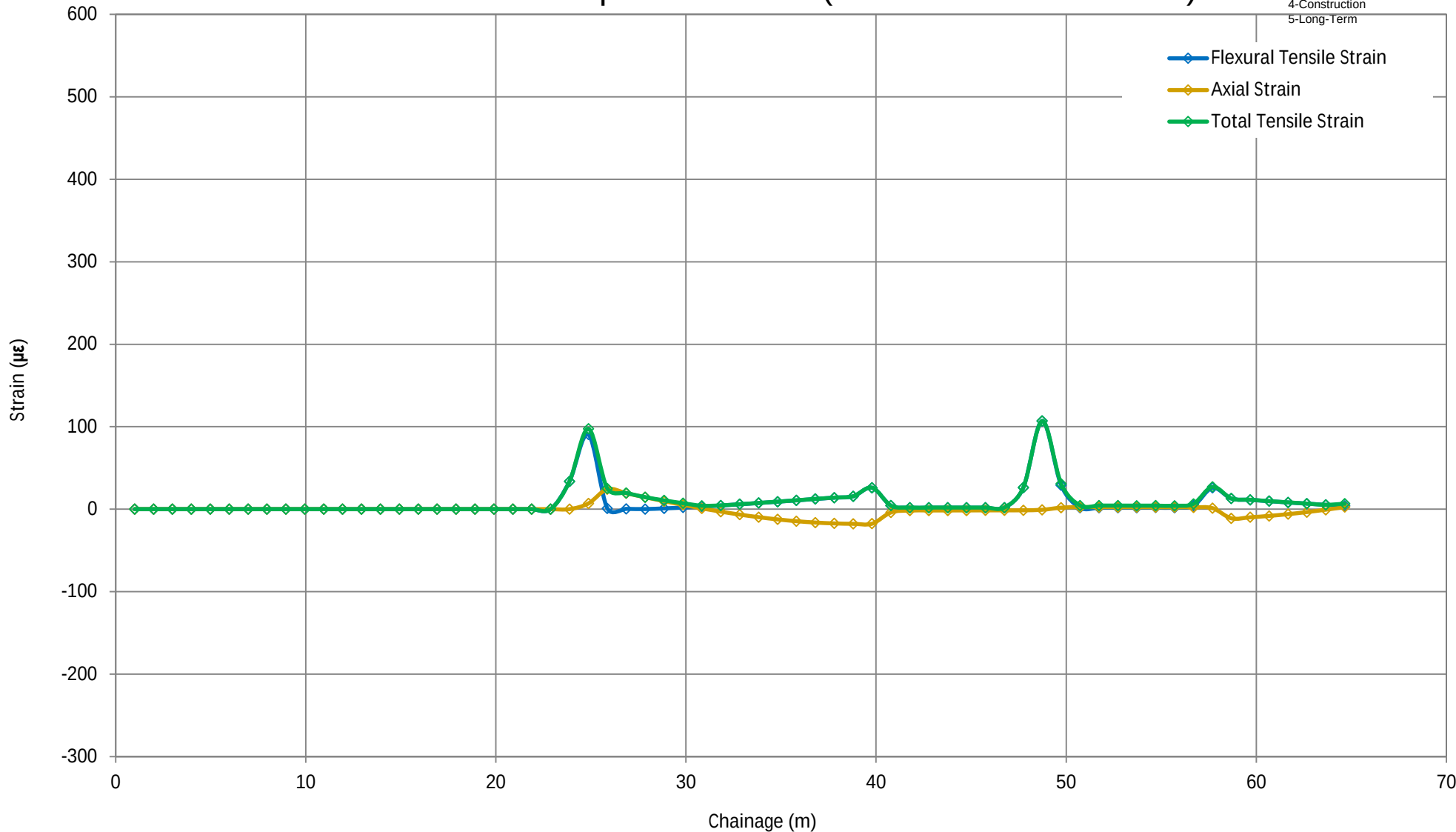


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

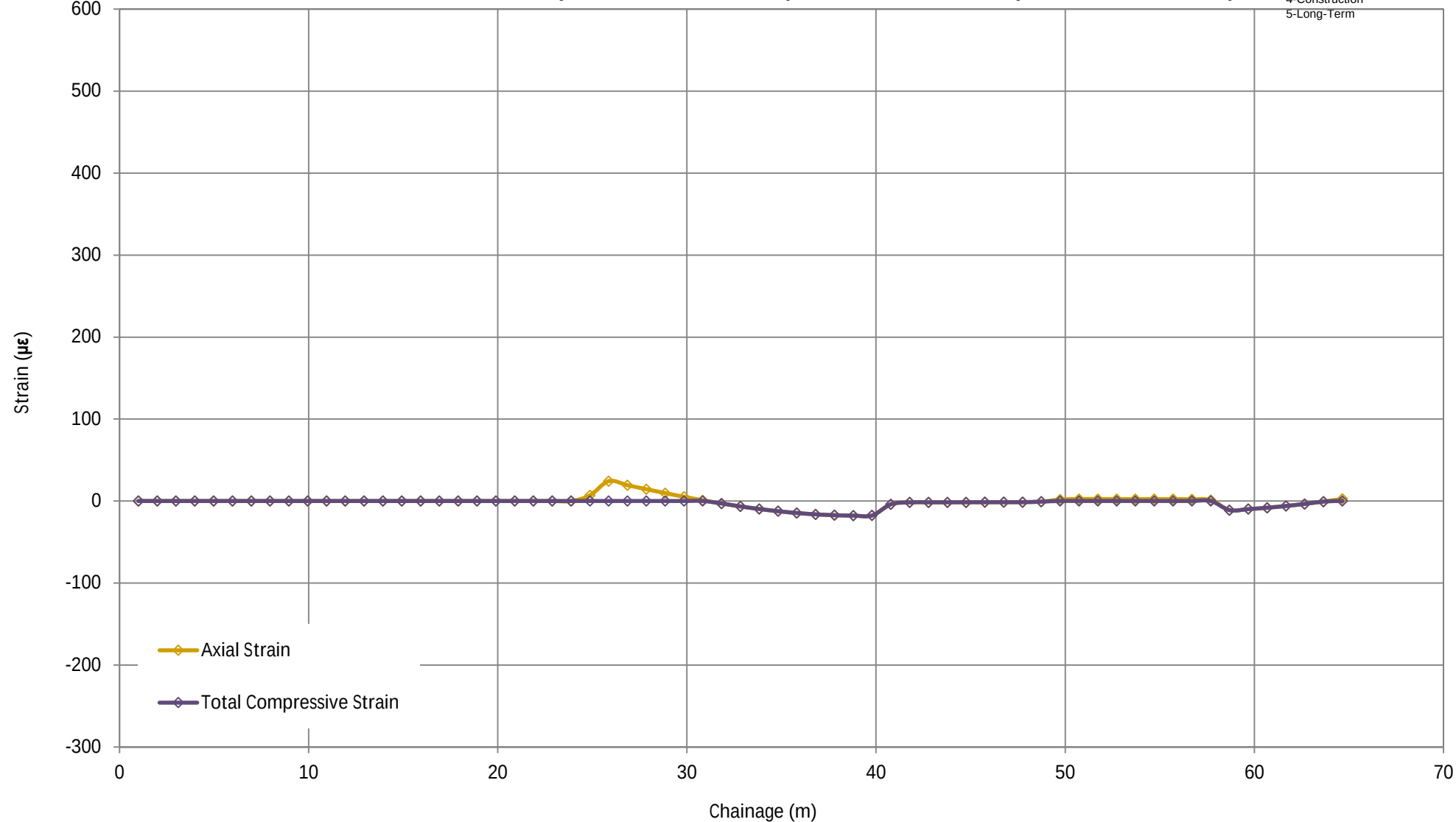


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

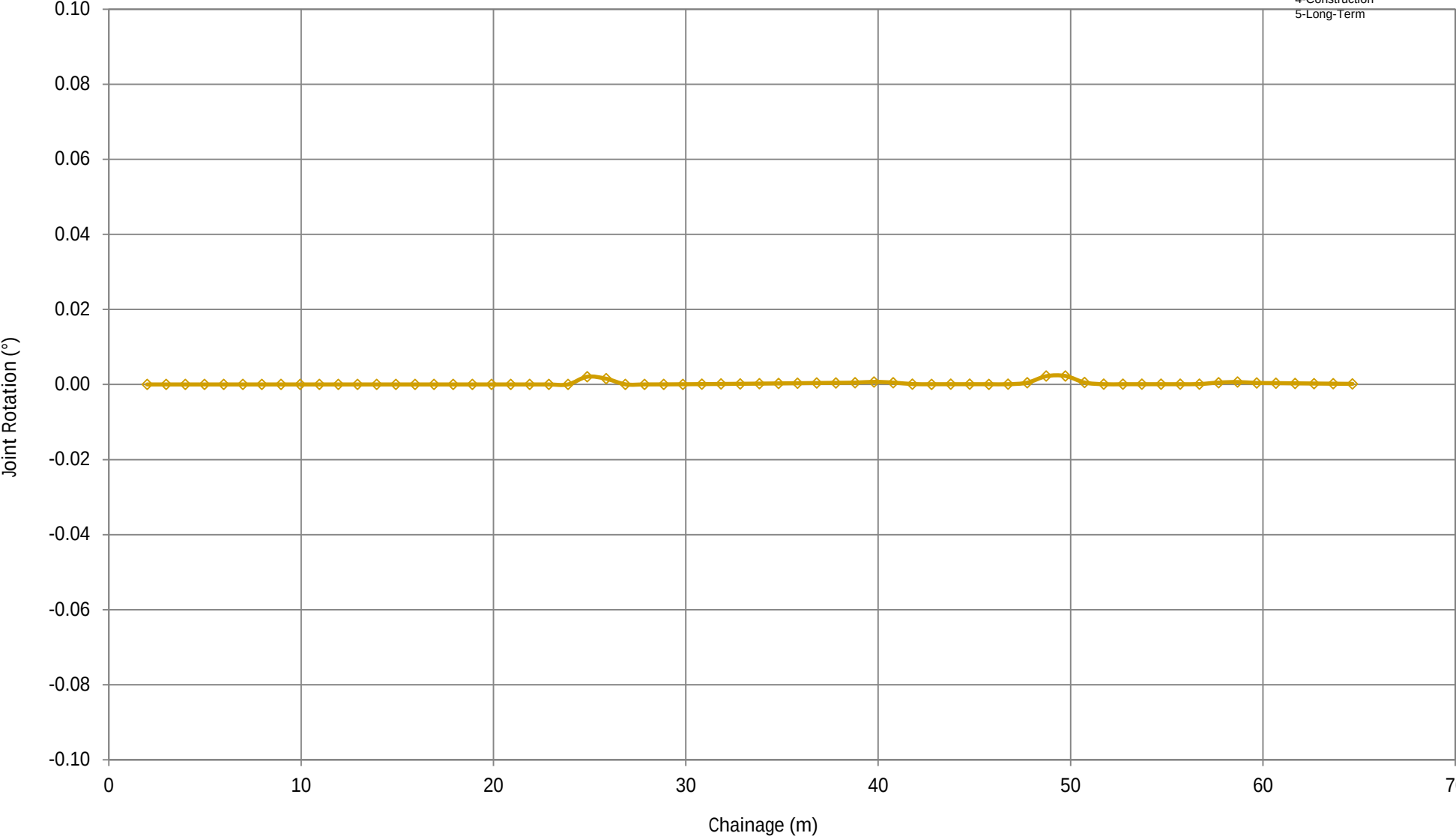


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Rotation for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

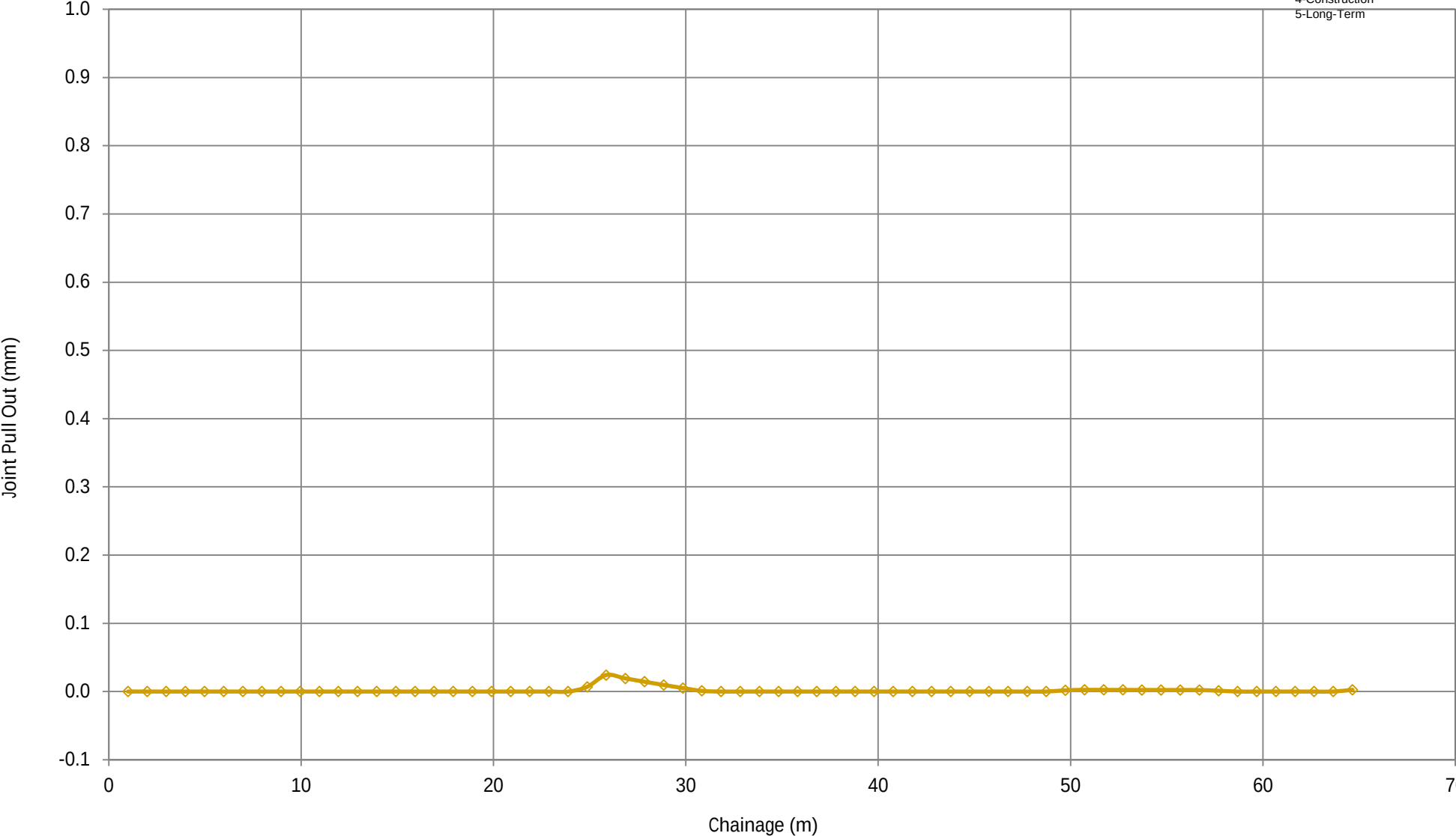


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Pull Out for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

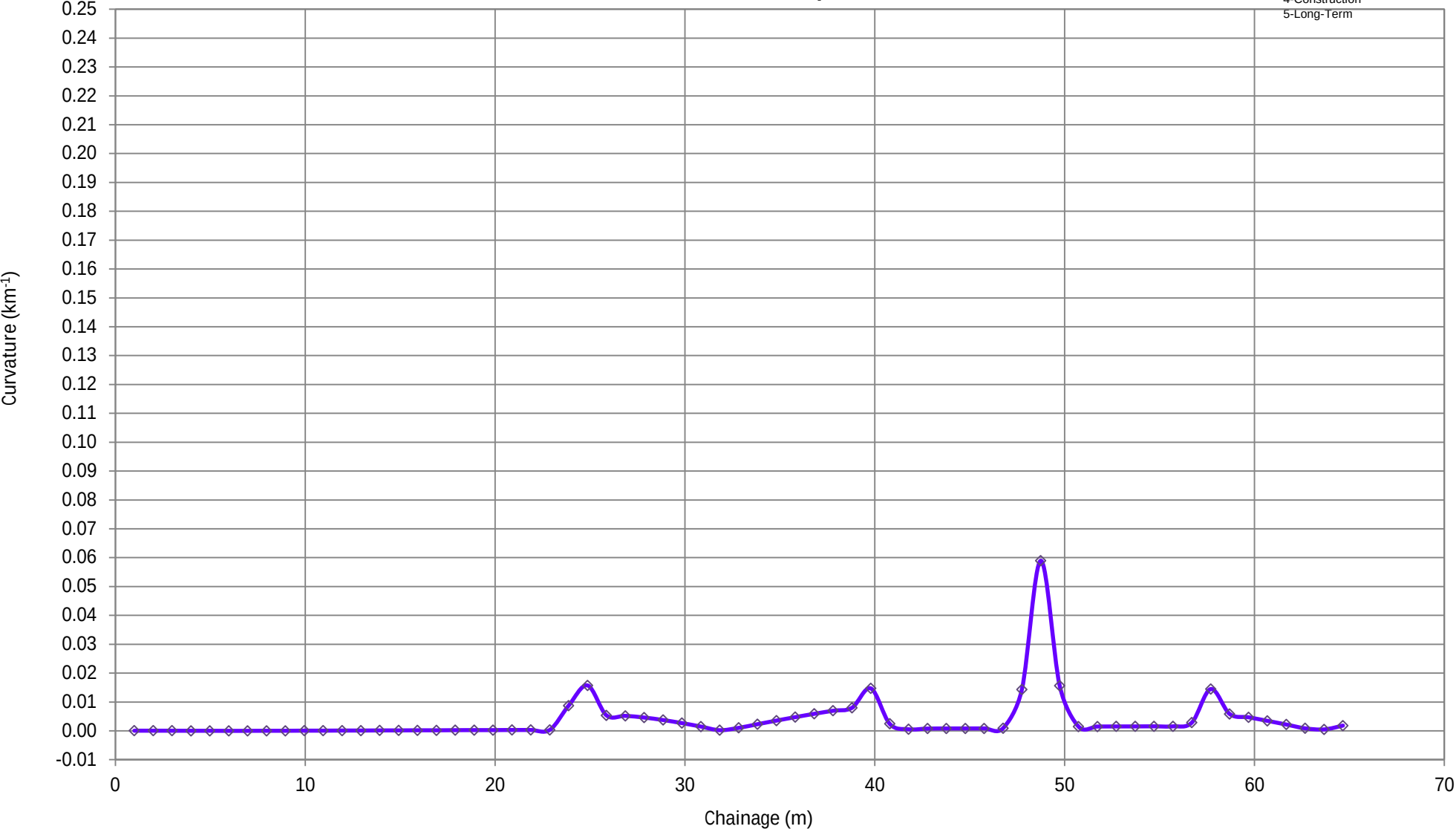


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Curvature Graph for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

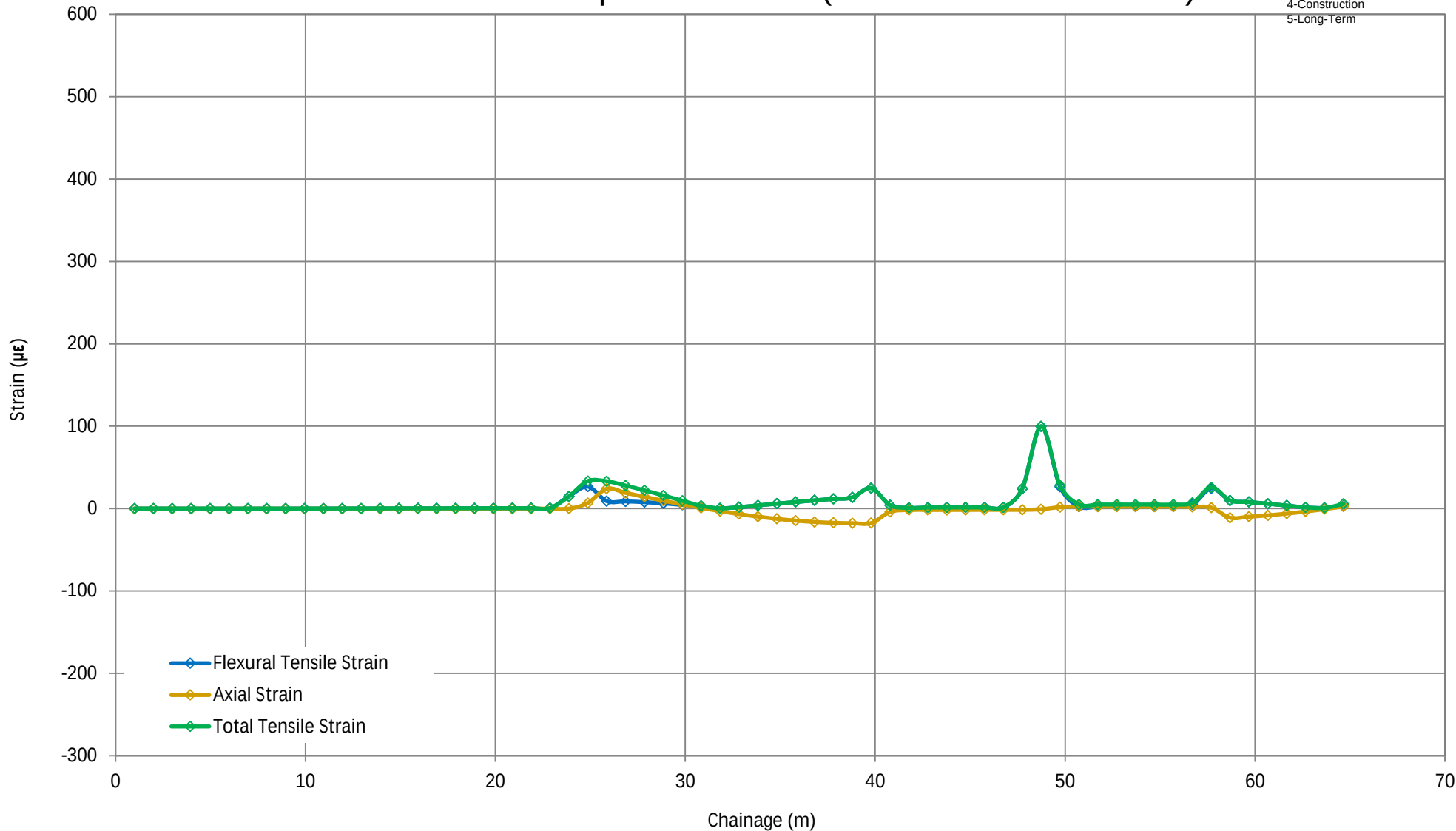


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

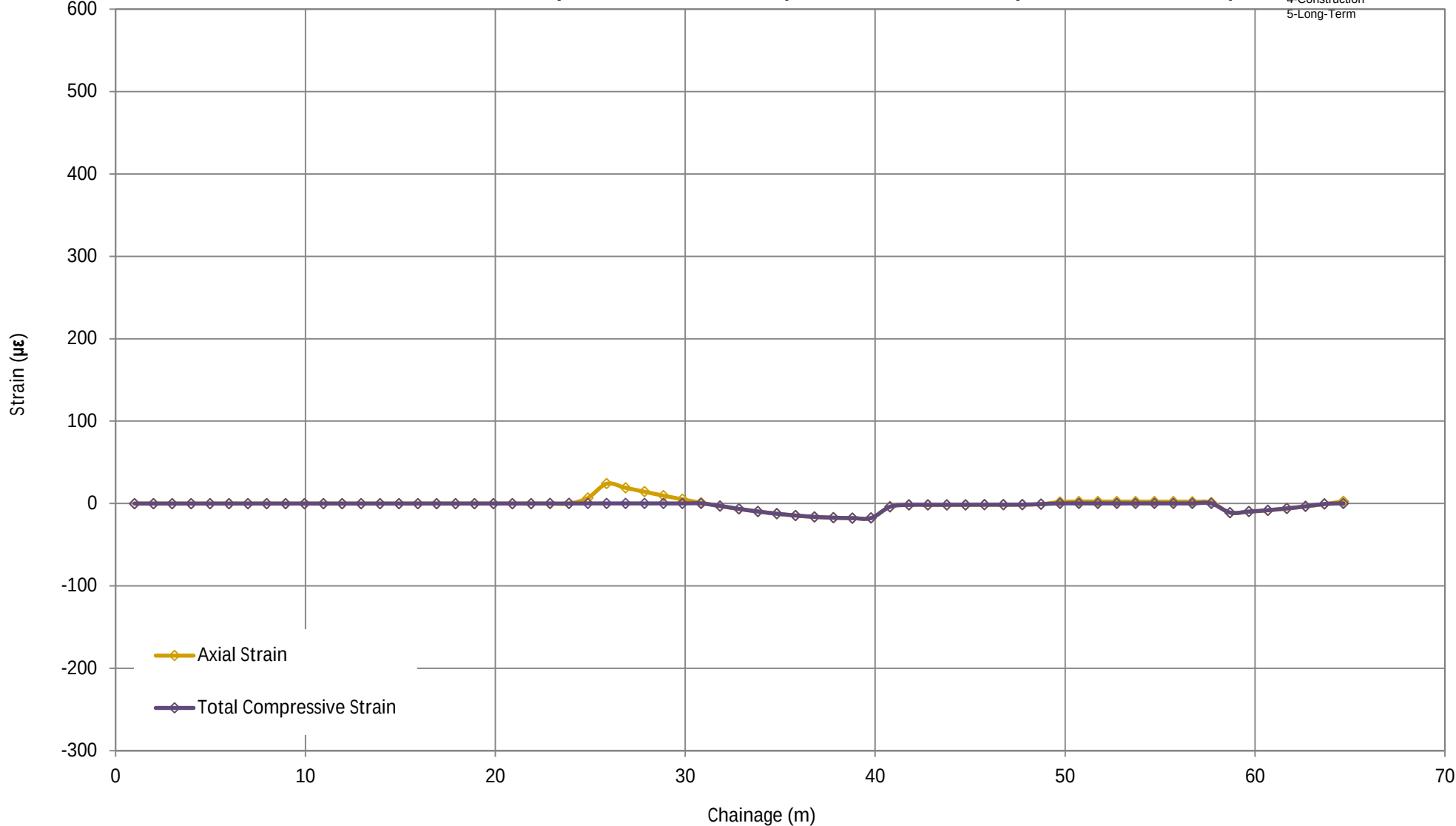


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

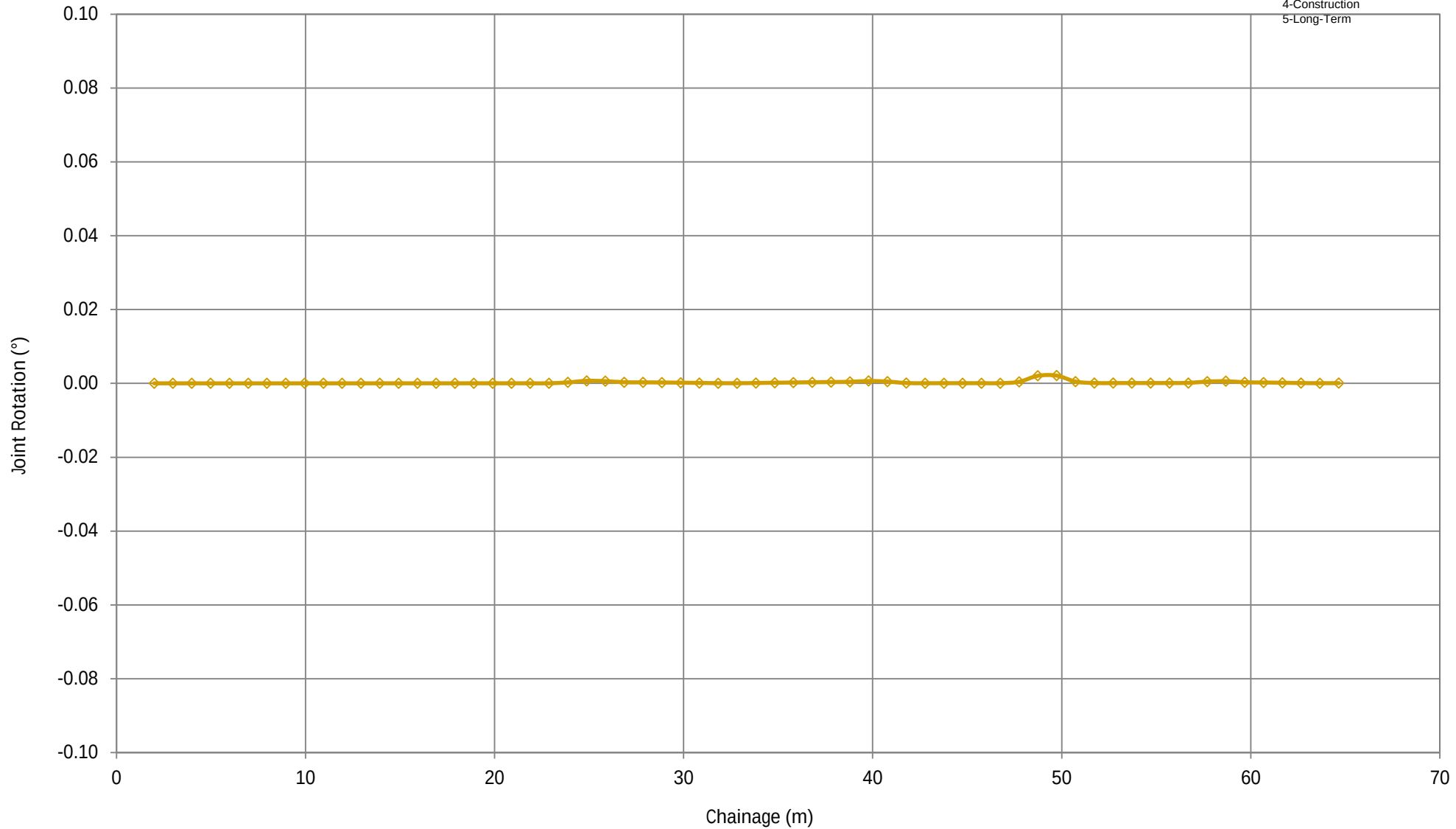


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Rotation for Sewer 1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

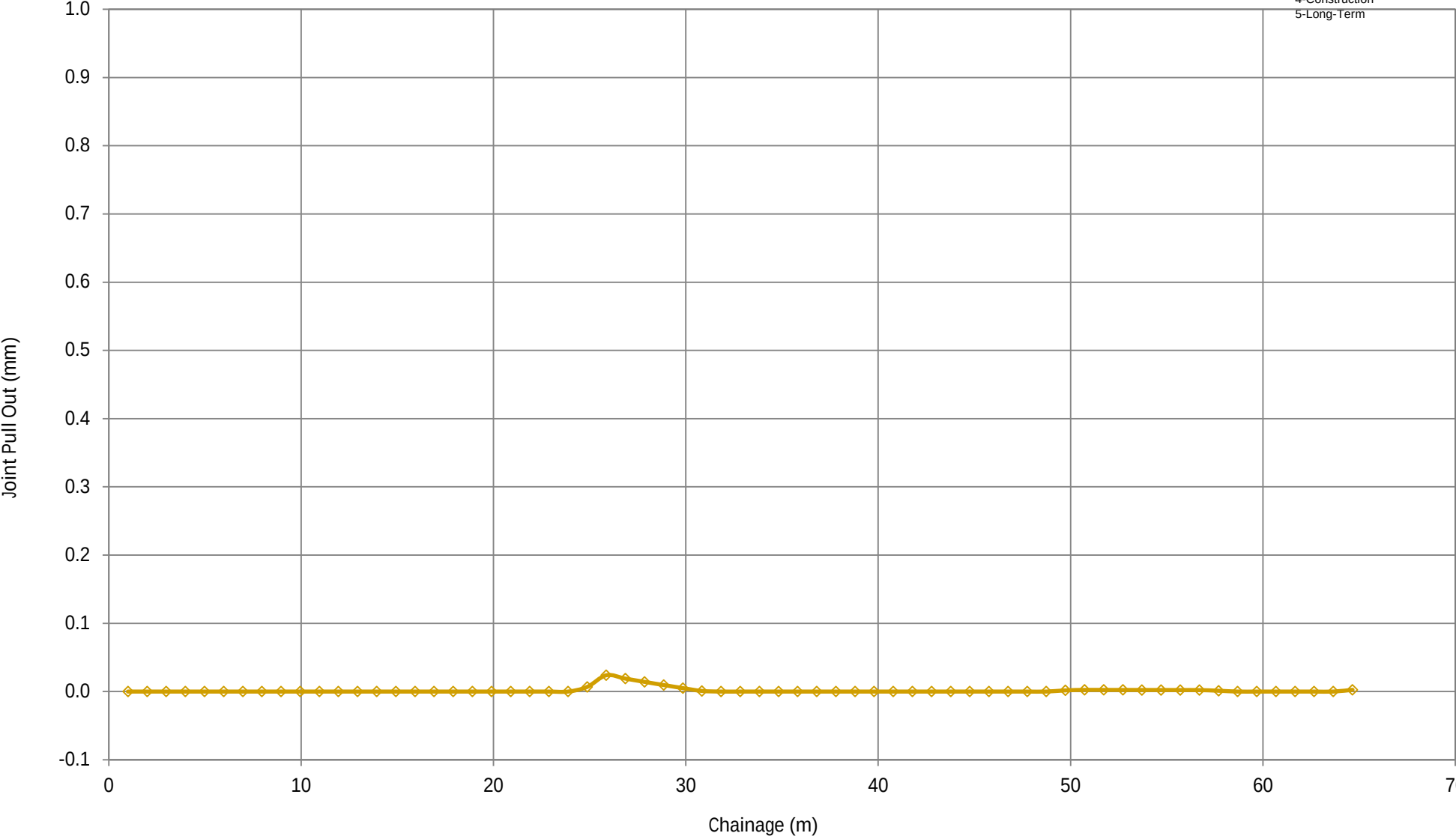


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Pull Out for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

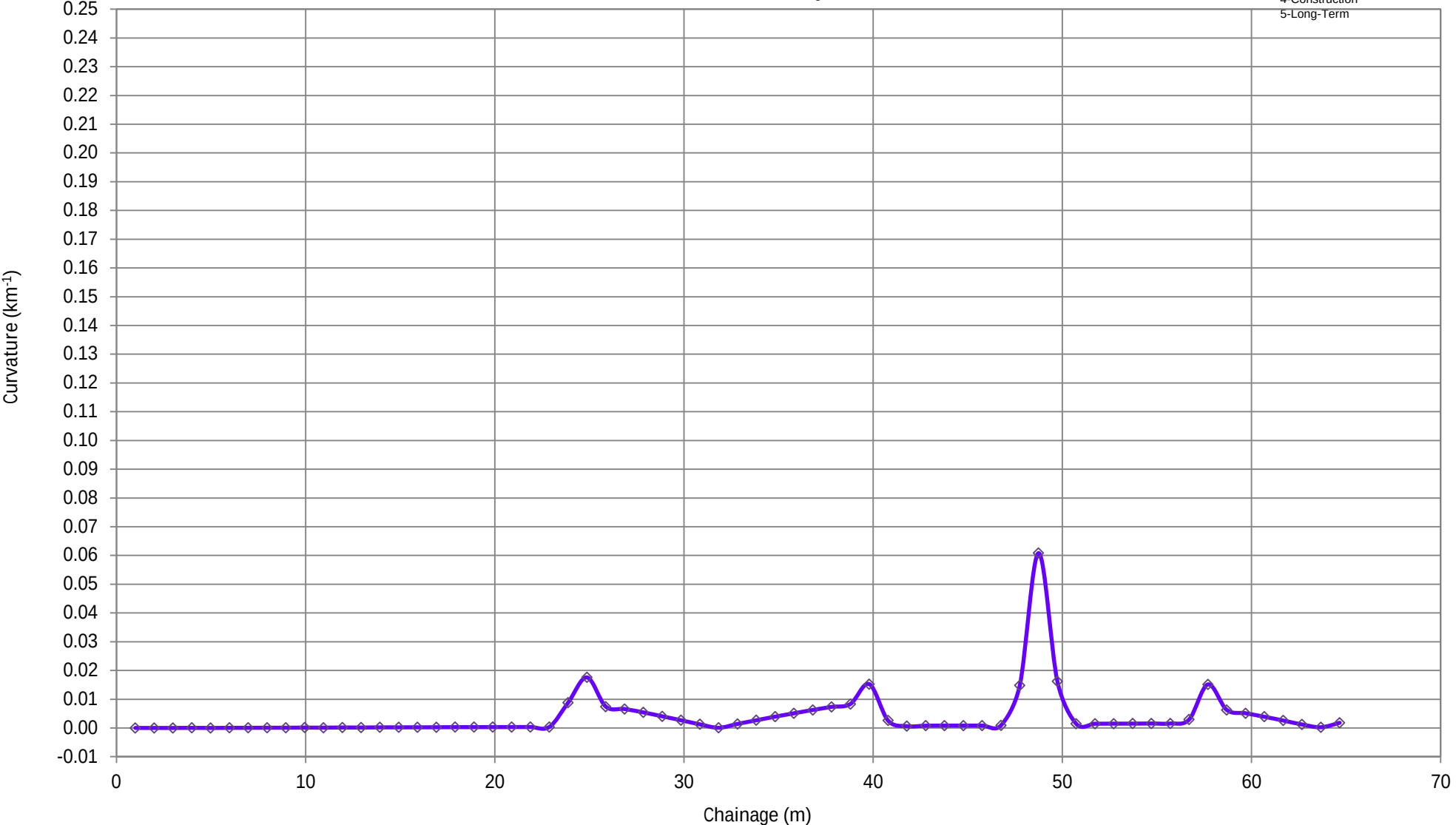


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Curvature Graph for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

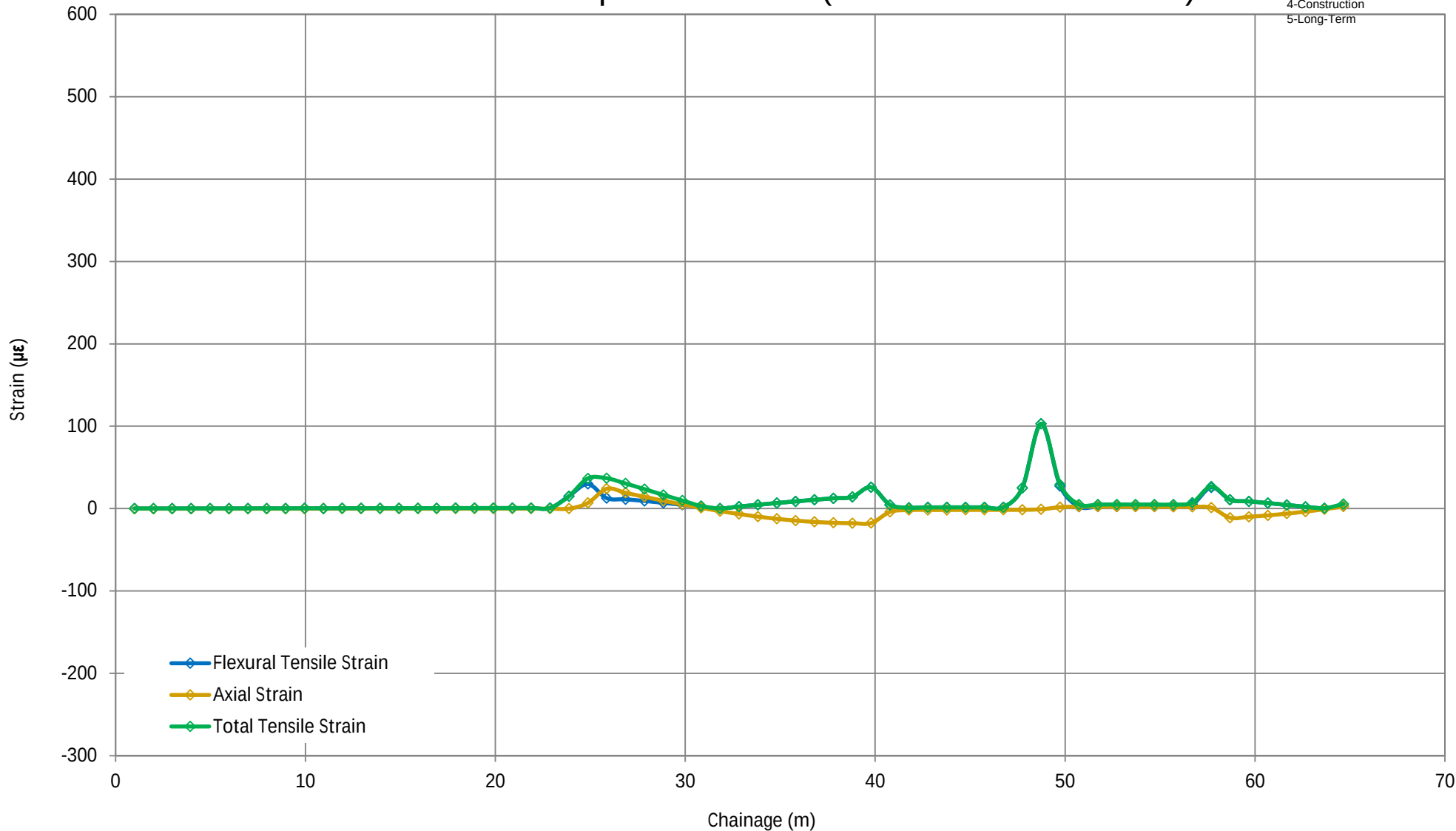


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

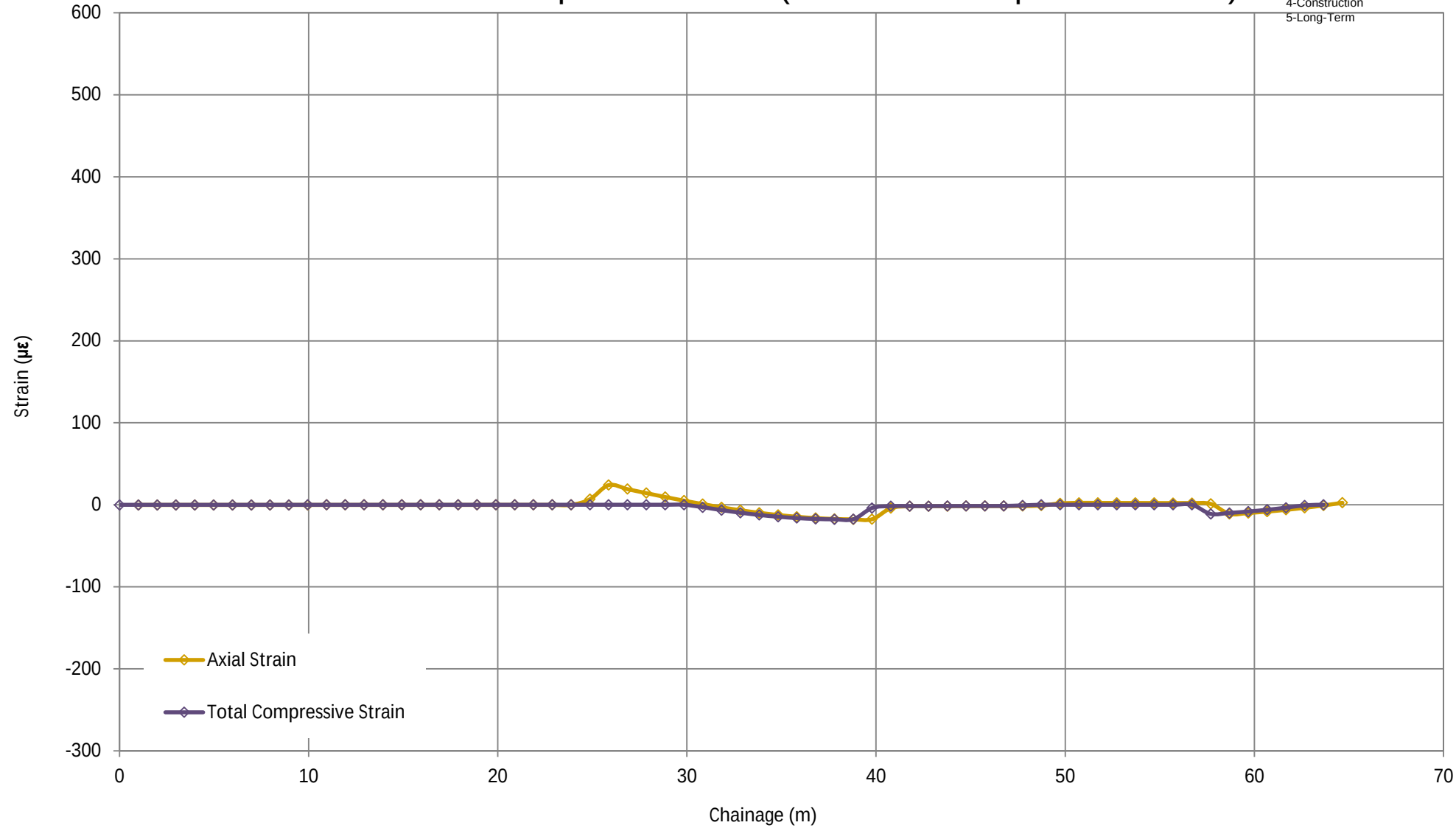


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

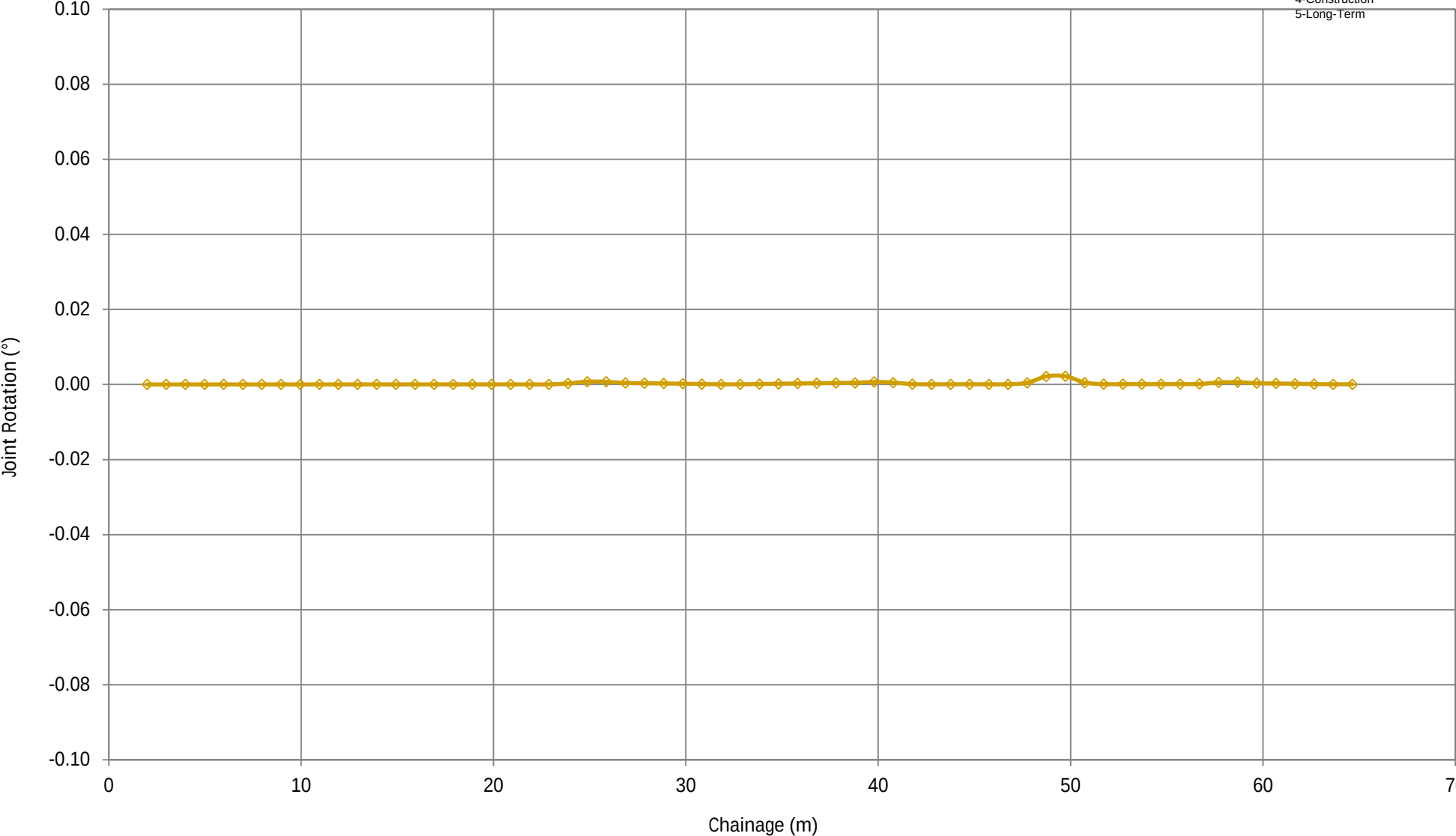


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Rotation for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

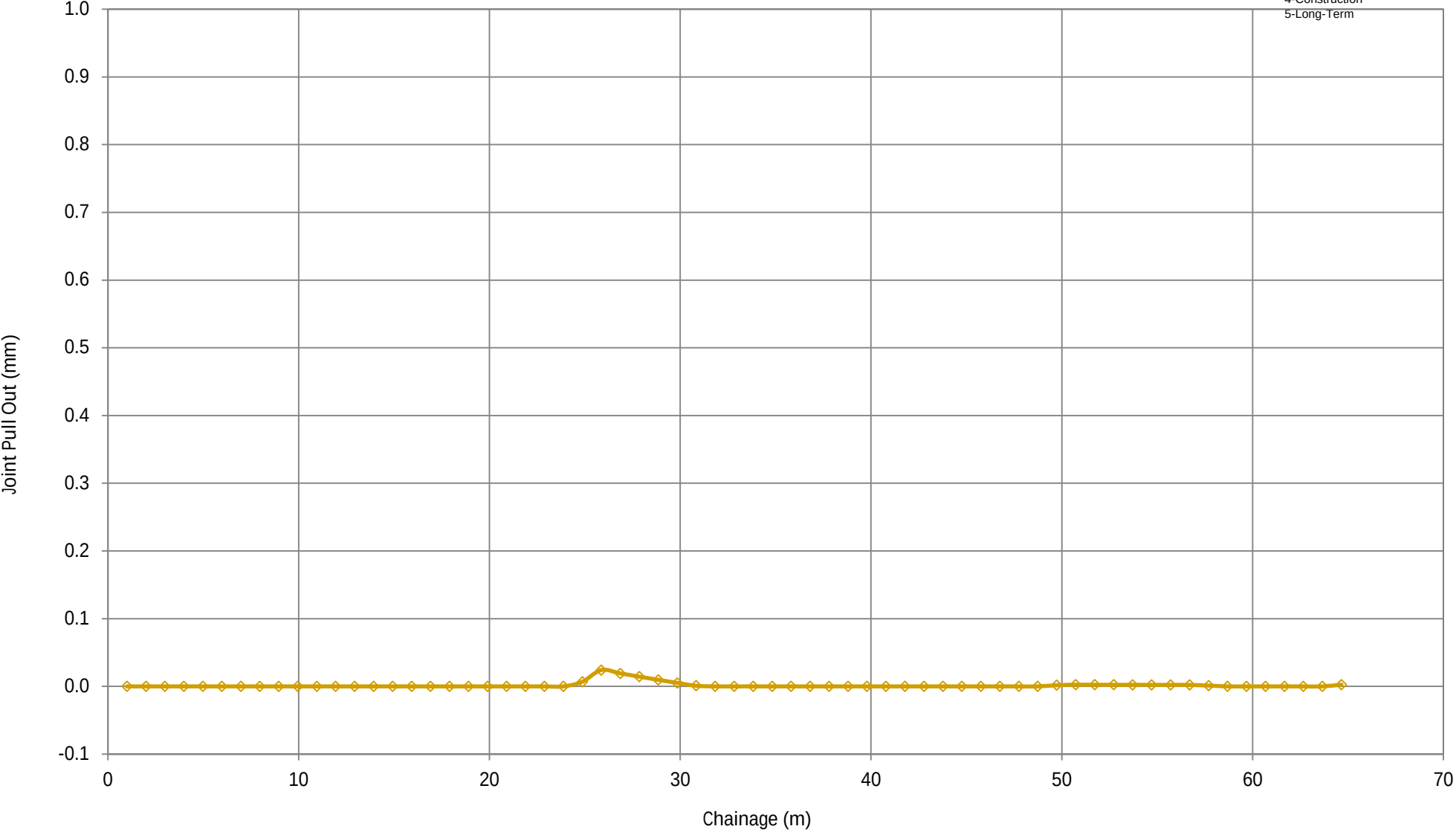


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Pull Out for Sewer 1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

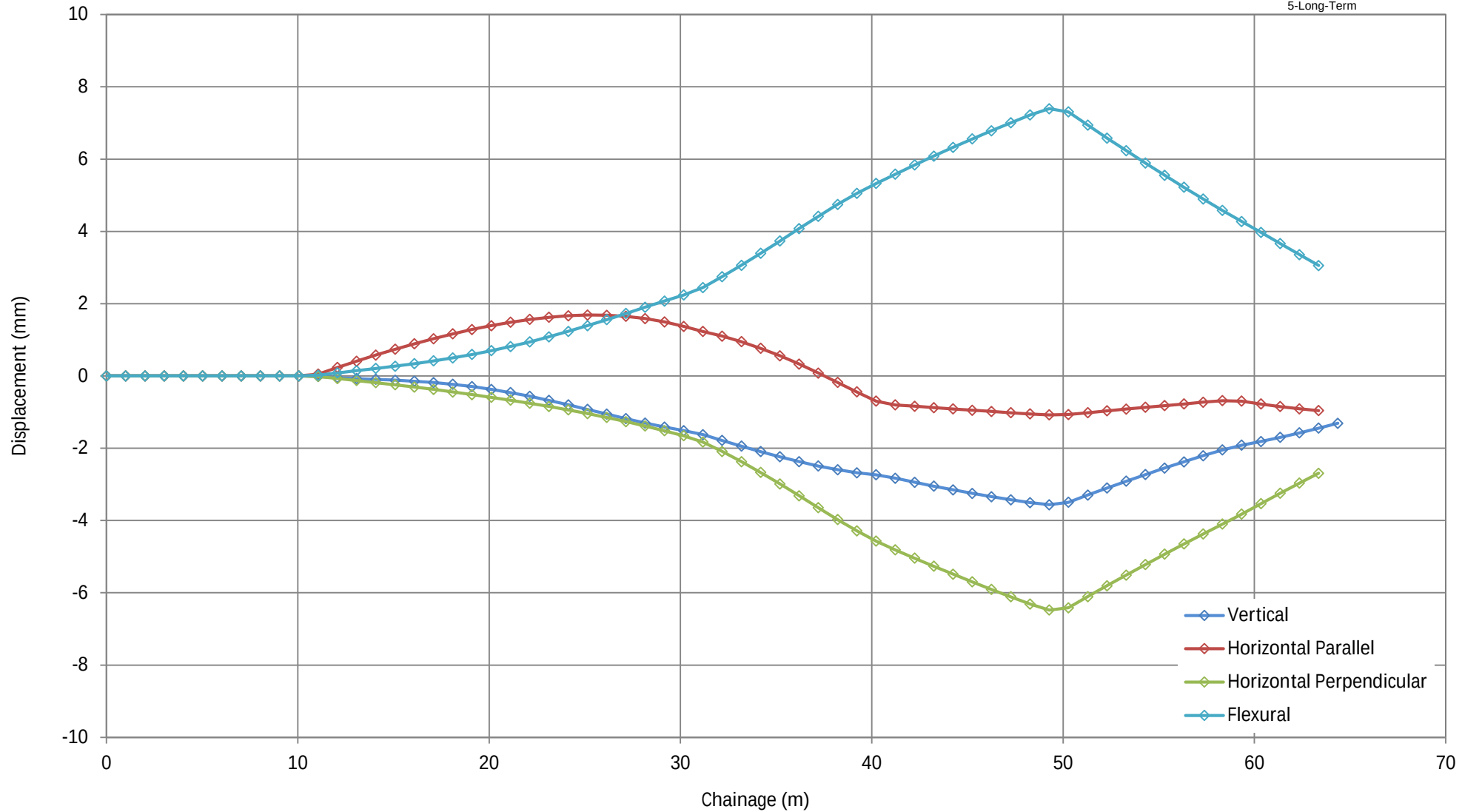


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Displacement Graph for Sewer 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

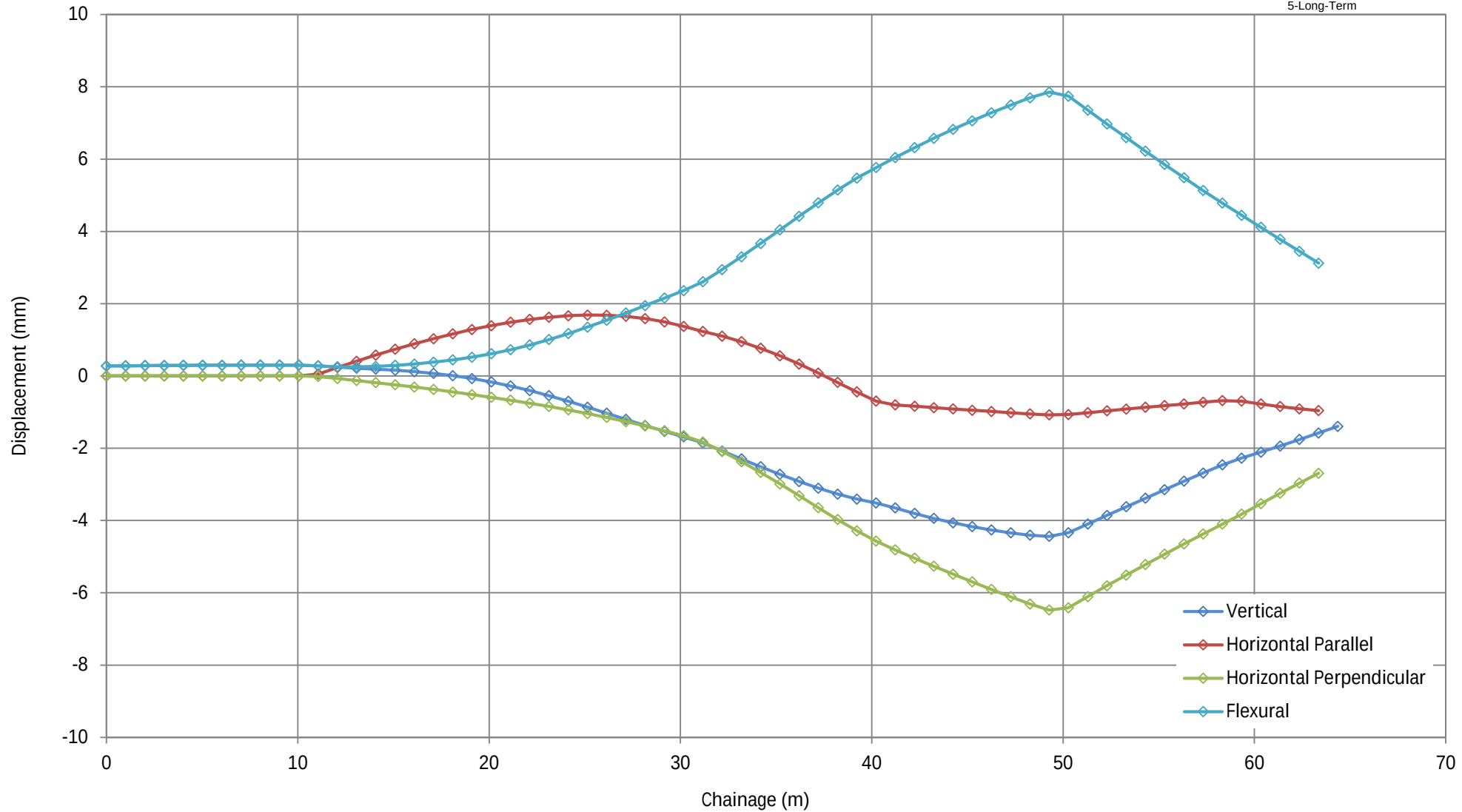


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Displacement Graph for Sewer 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

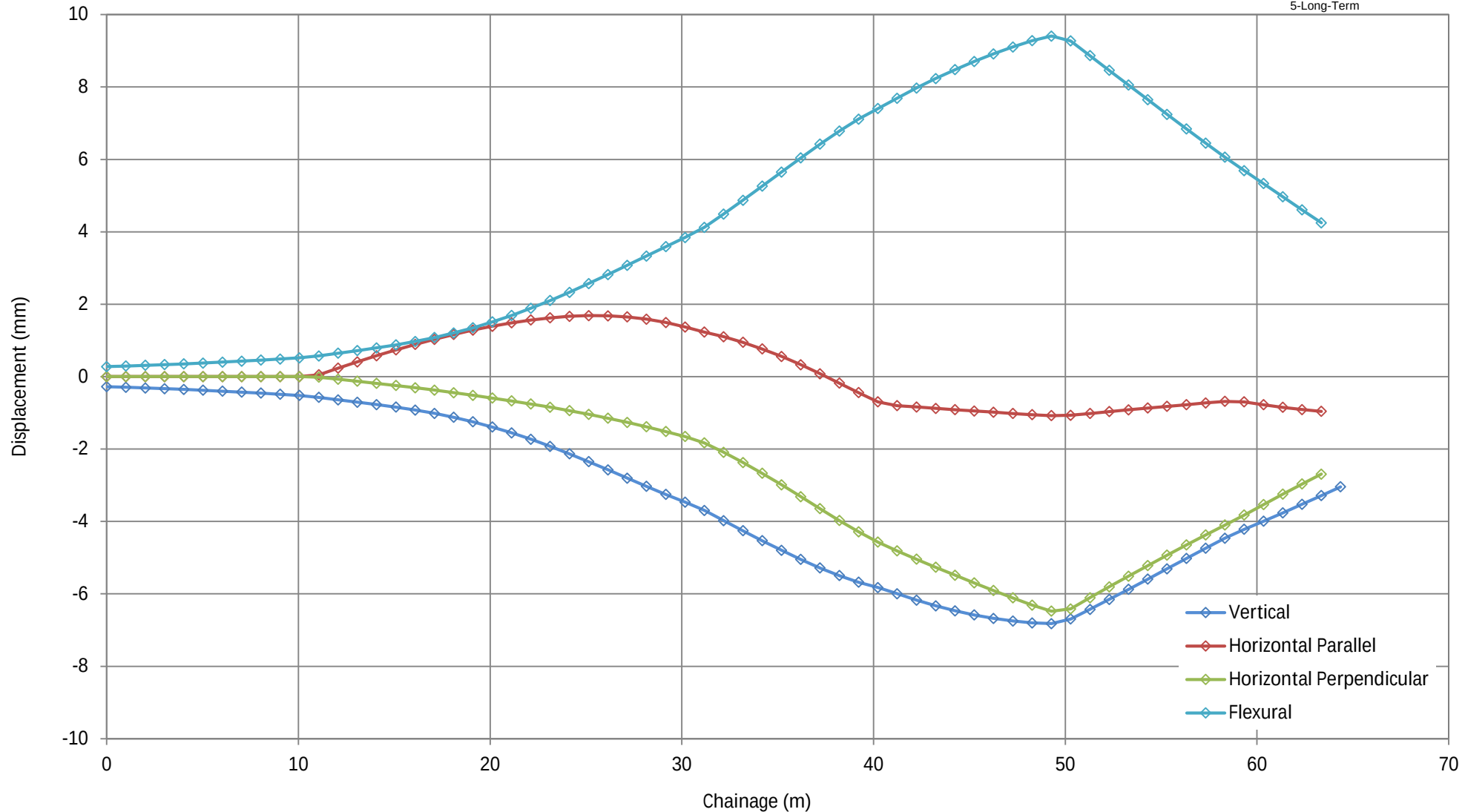


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Displacement Graph for Sewer 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

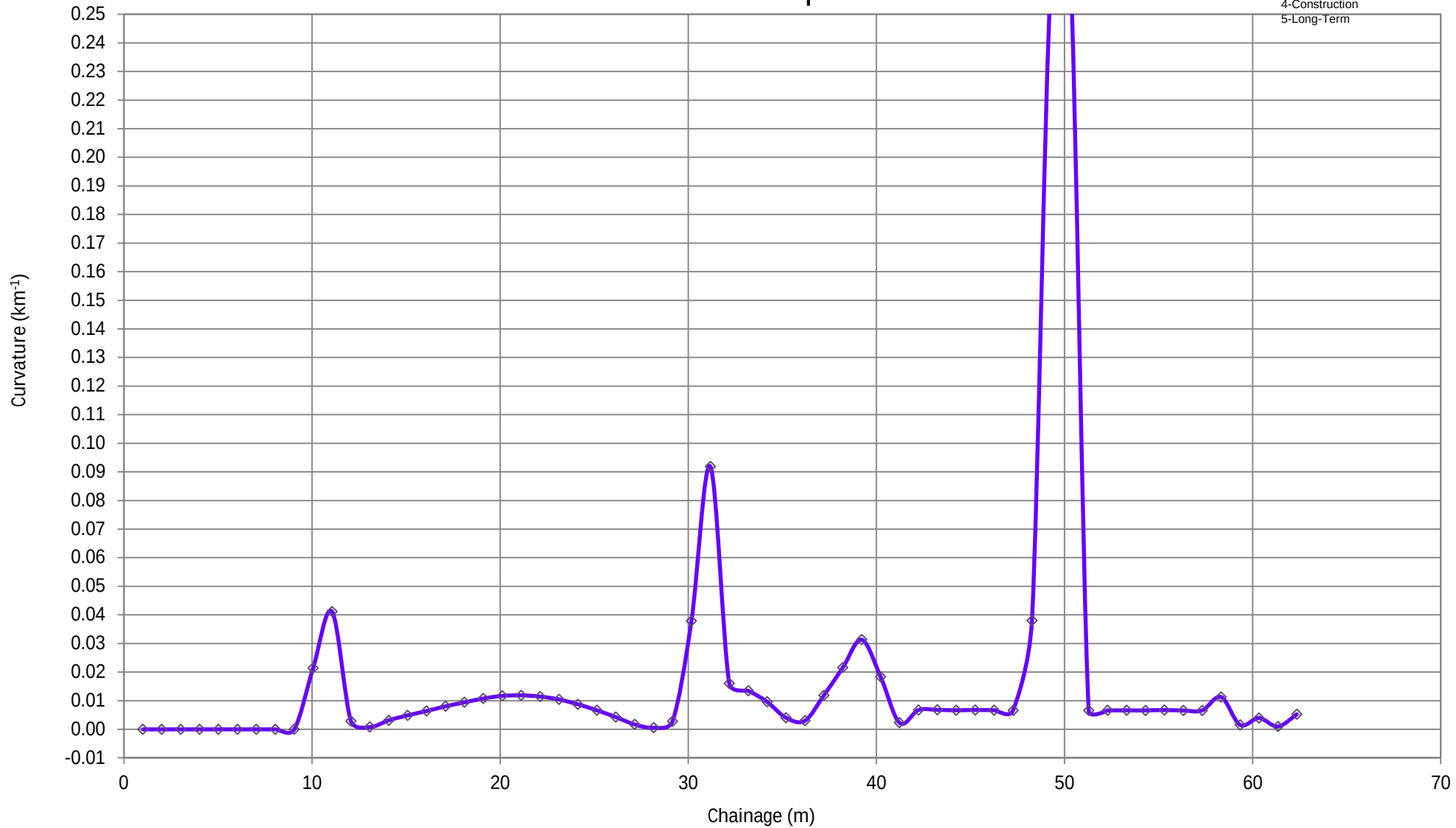


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Curvature Graph for Sewer 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

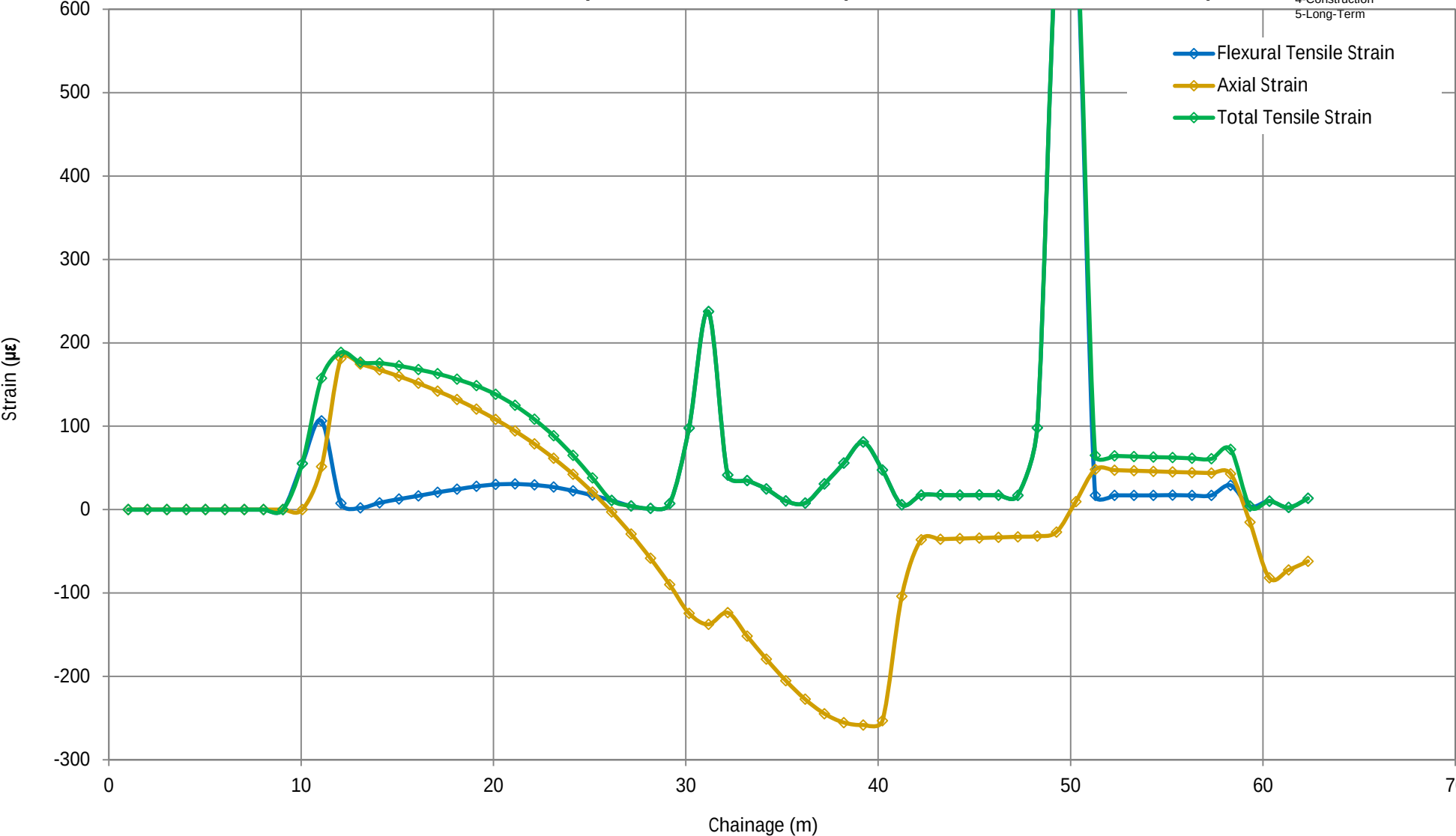


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 2.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

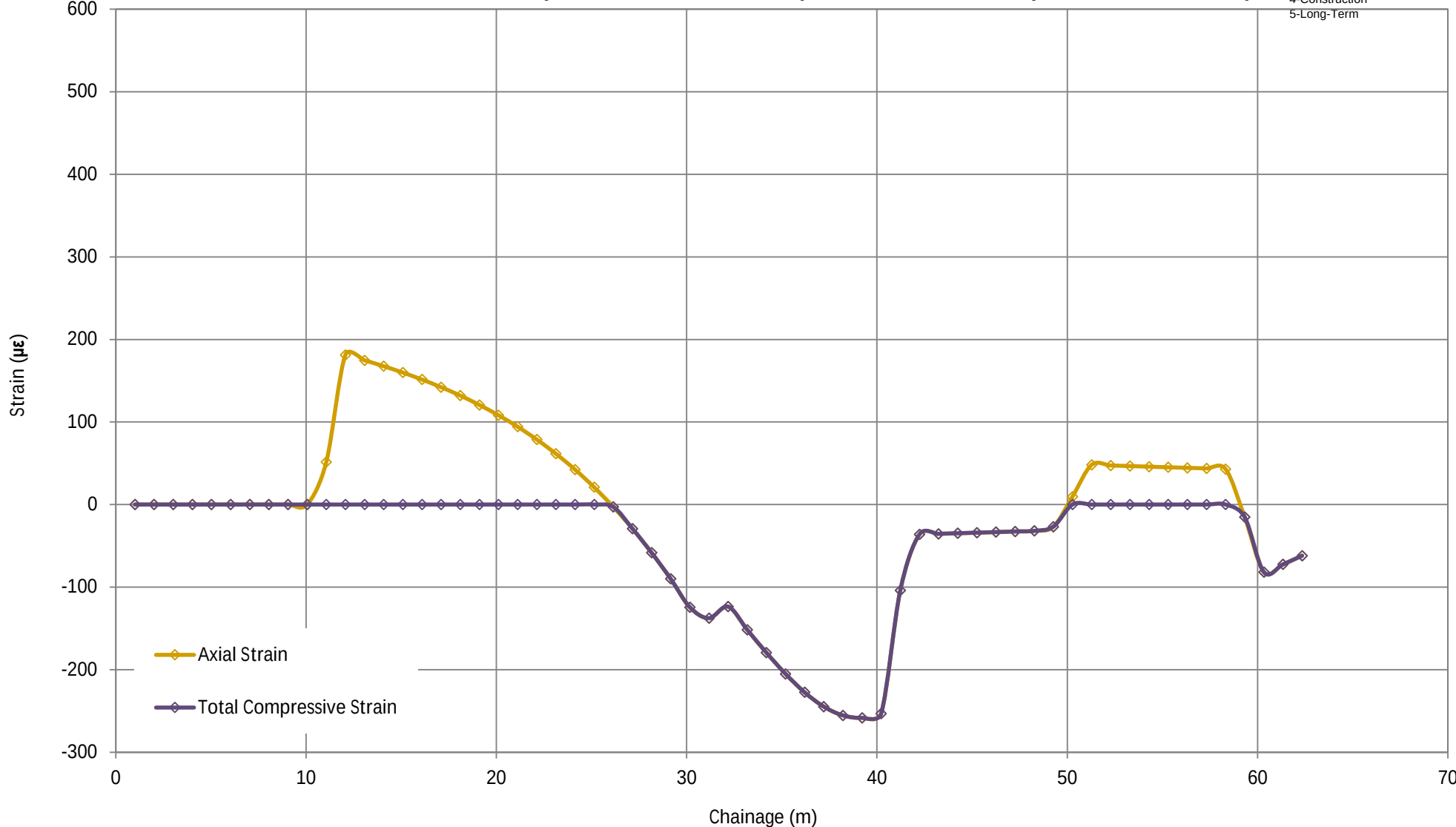


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 2.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

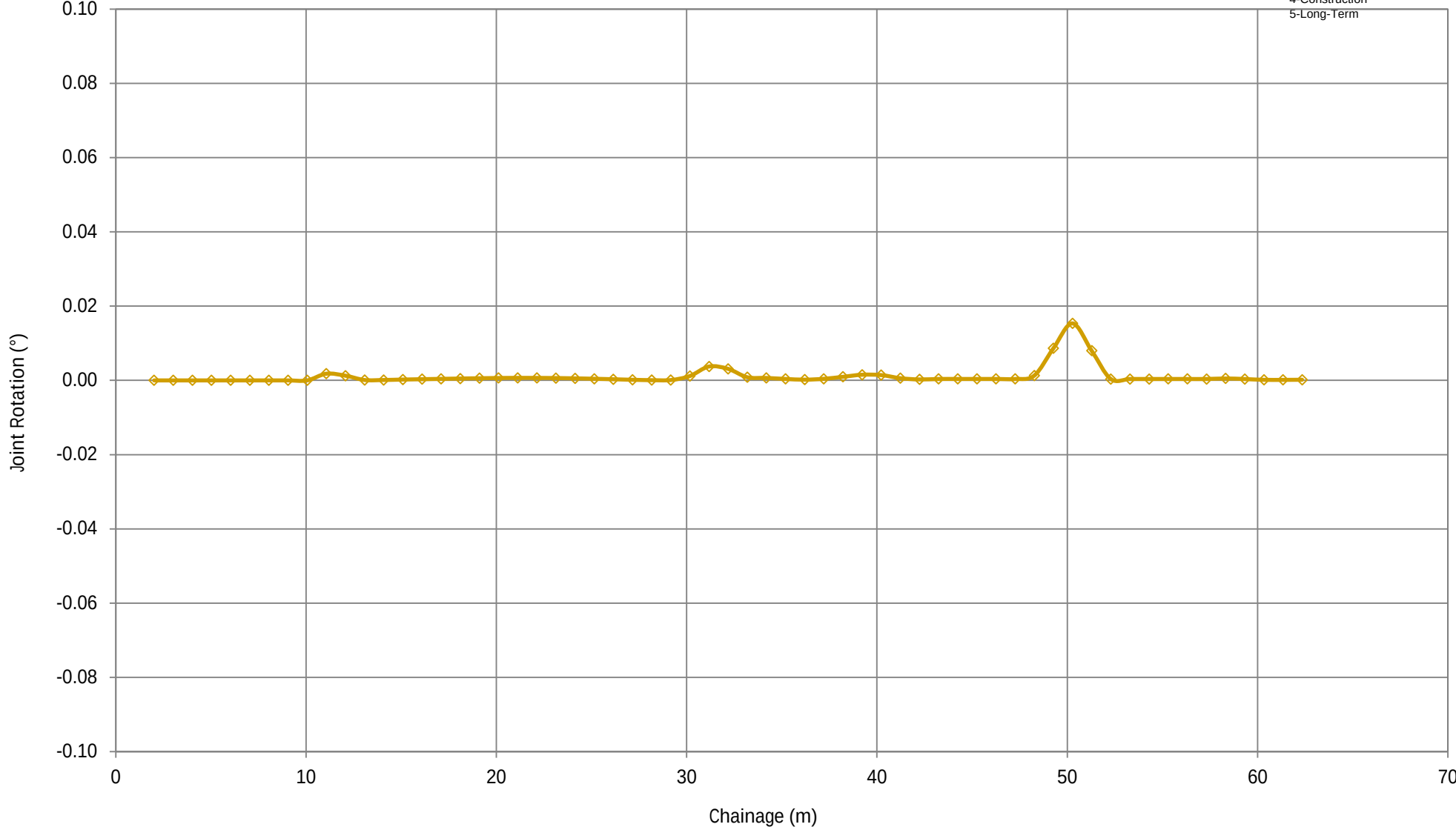


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Rotation for Sewer 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

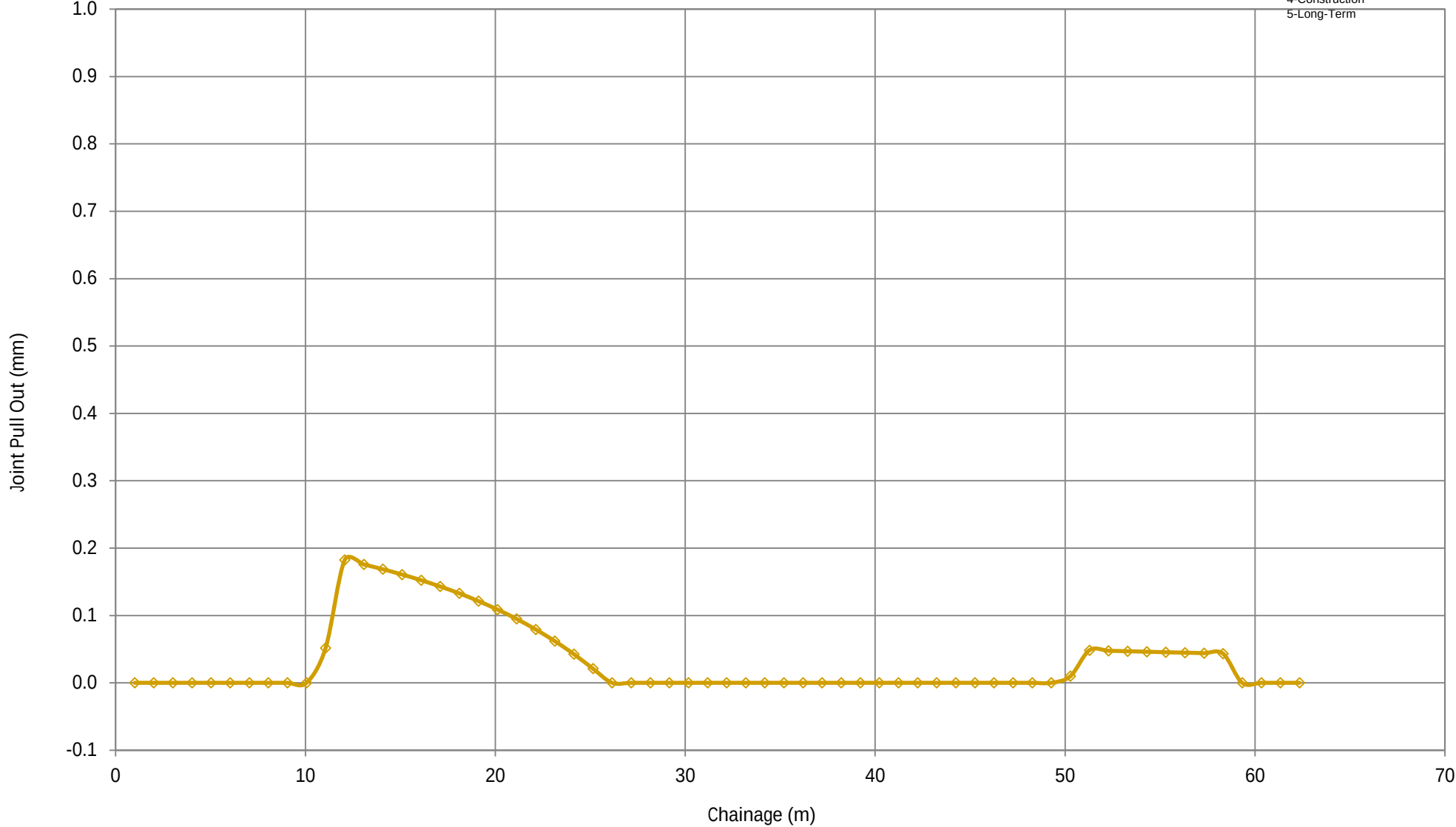


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Pull Out for Sewer 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

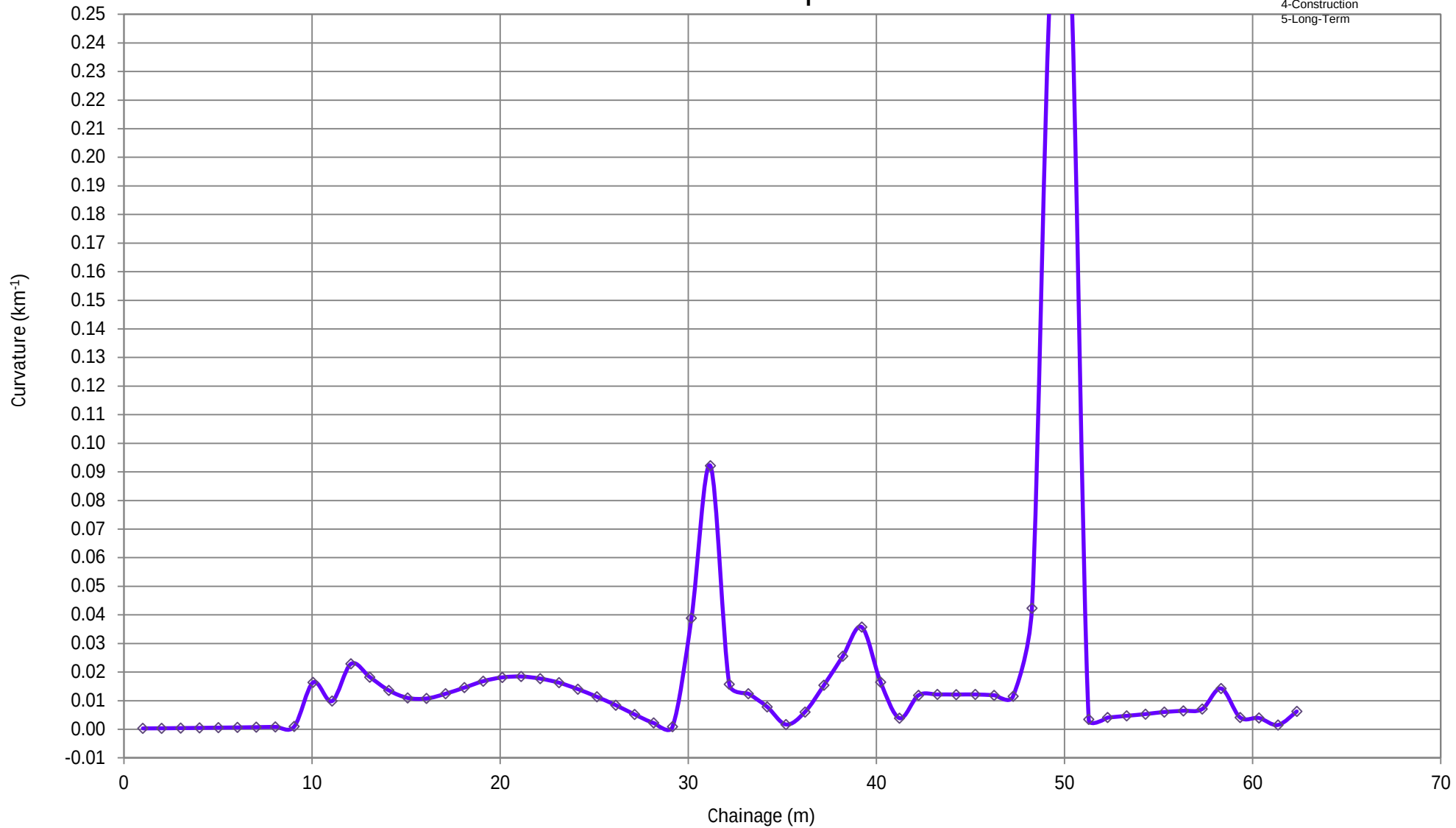


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Curvature Graph for Sewer 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

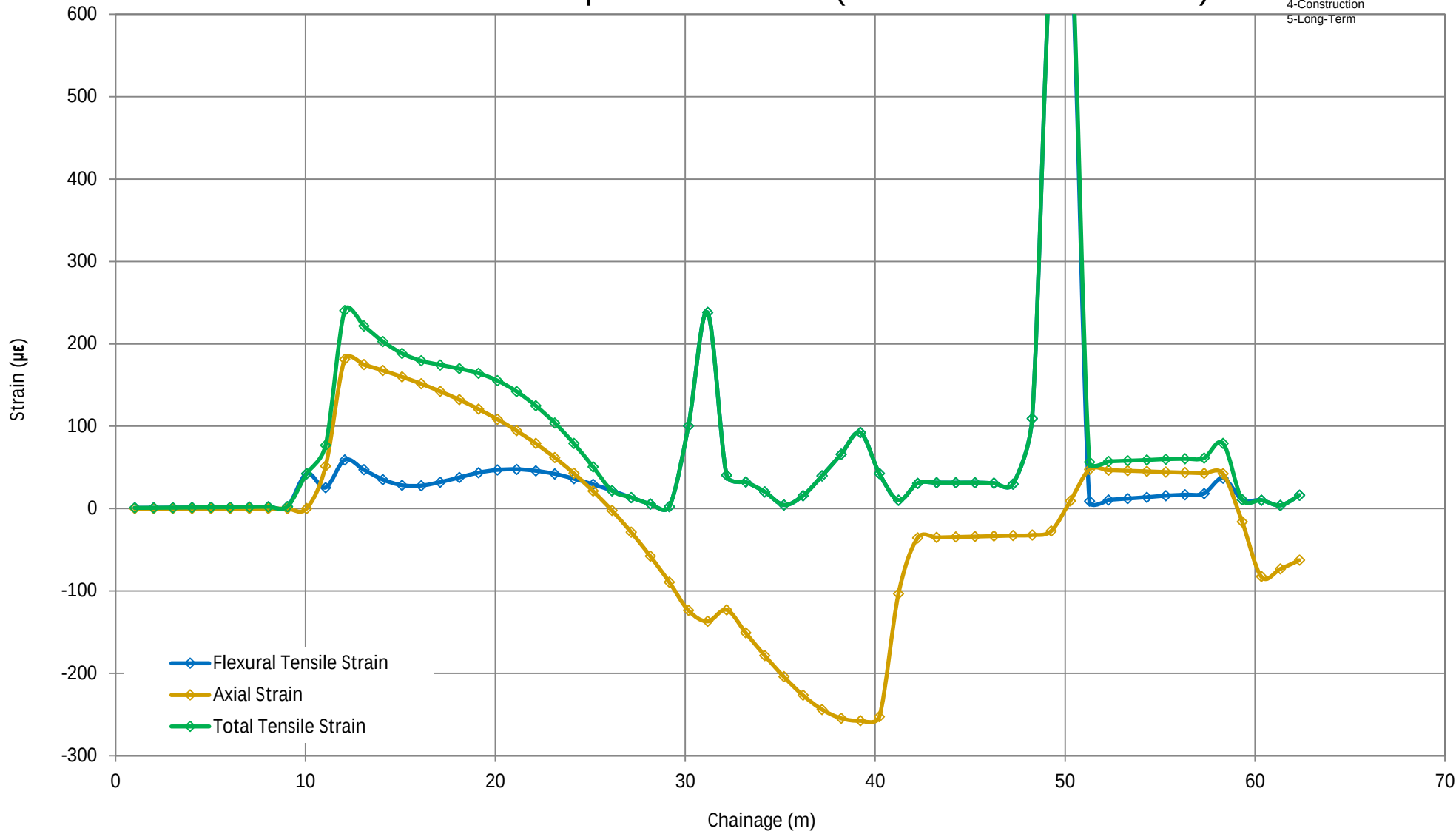


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 2.1 (Combined Tensile Strain)

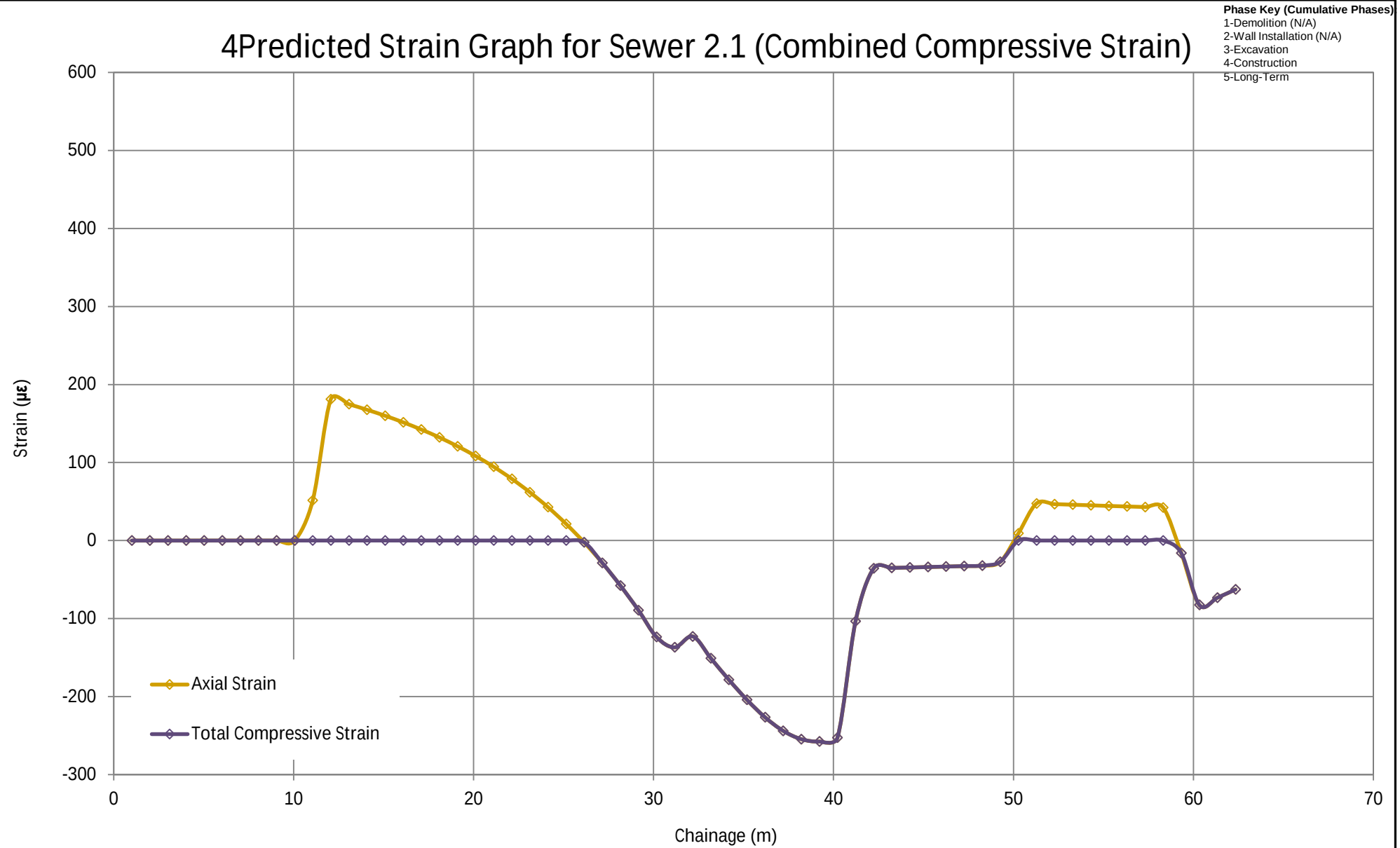
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 2.1 (Combined Compressive Strain)

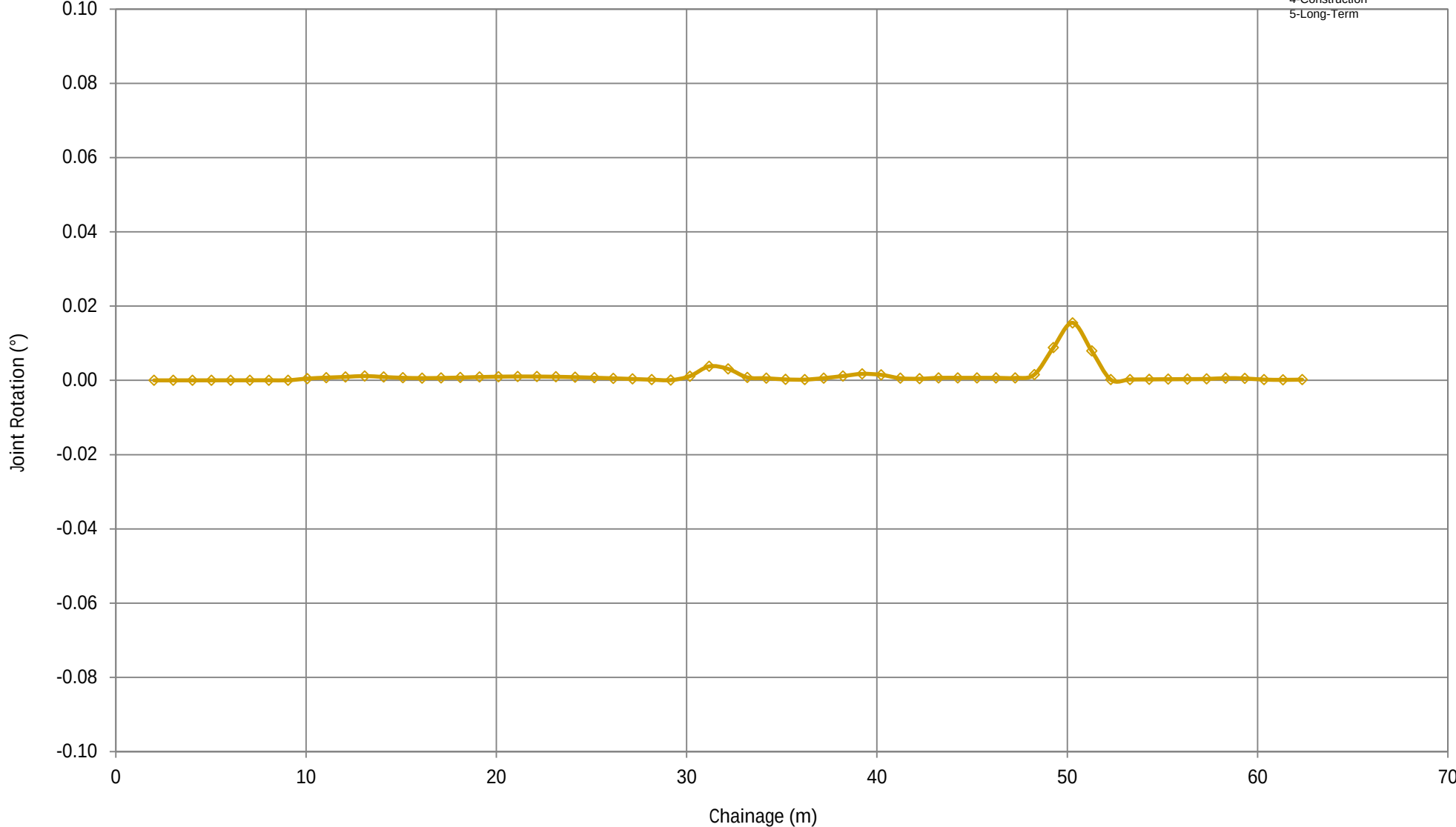


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Rotation for Sewer 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

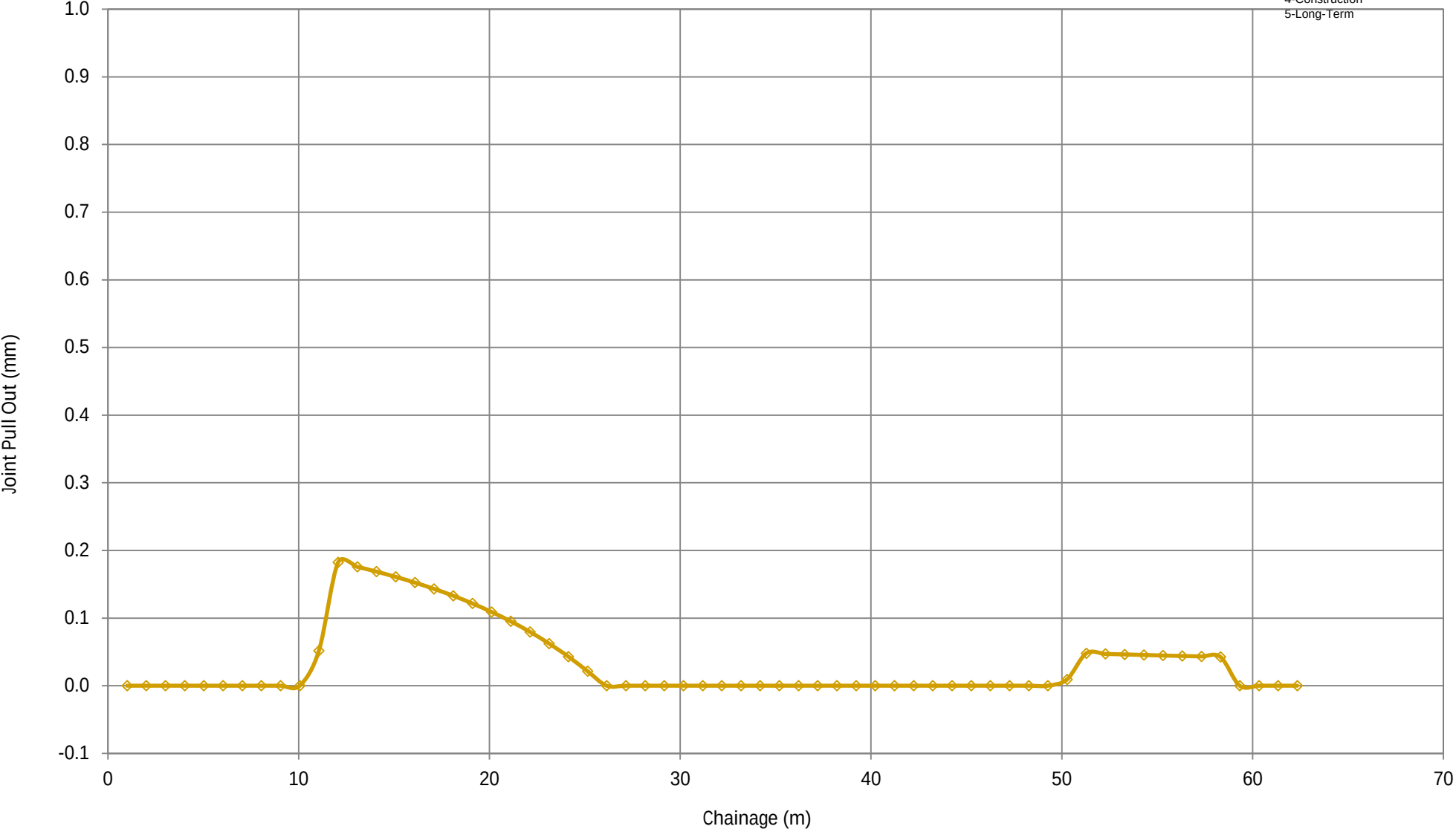


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Pull Out for Sewer 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

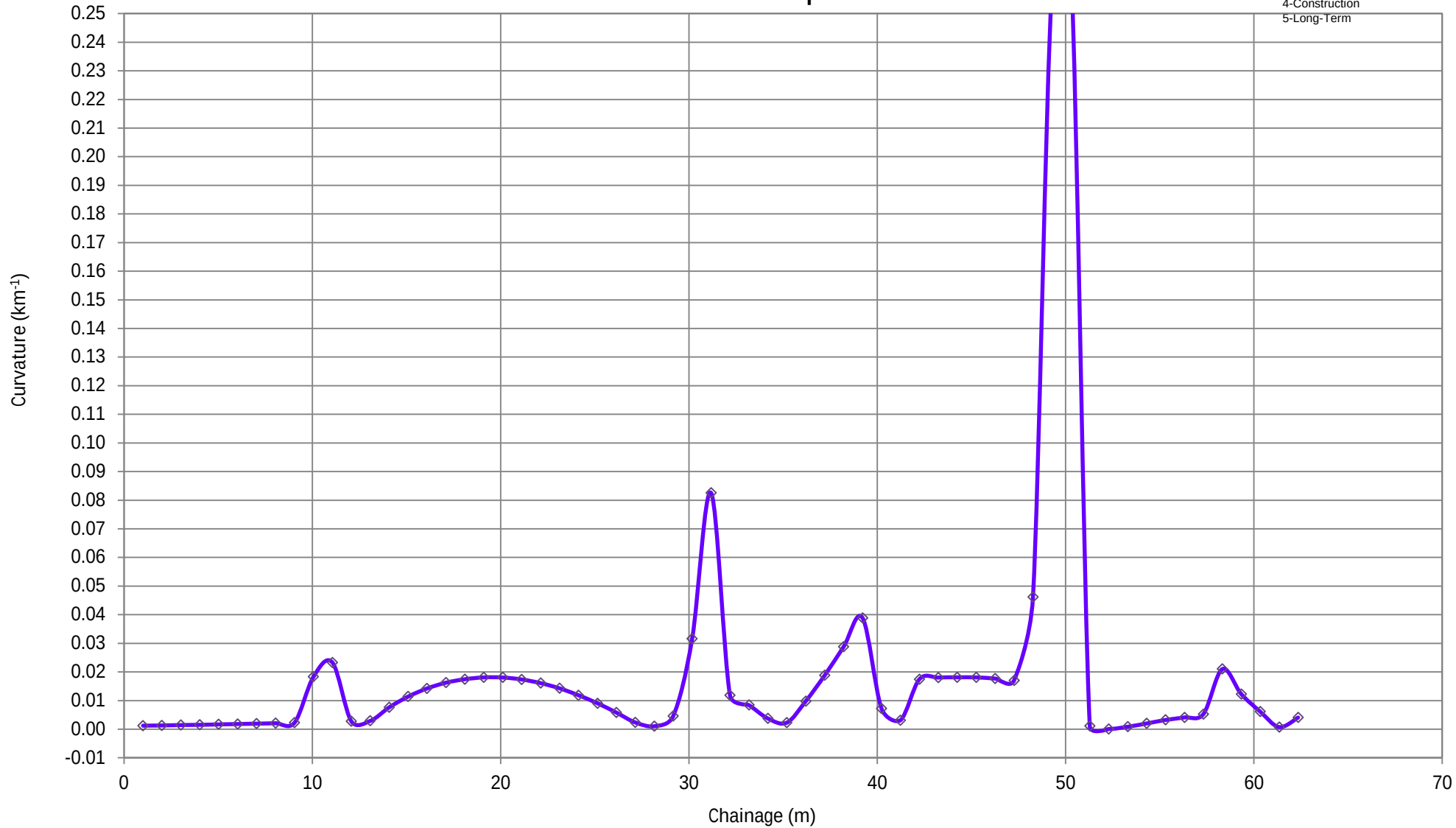


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Curvature Graph for Sewer 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

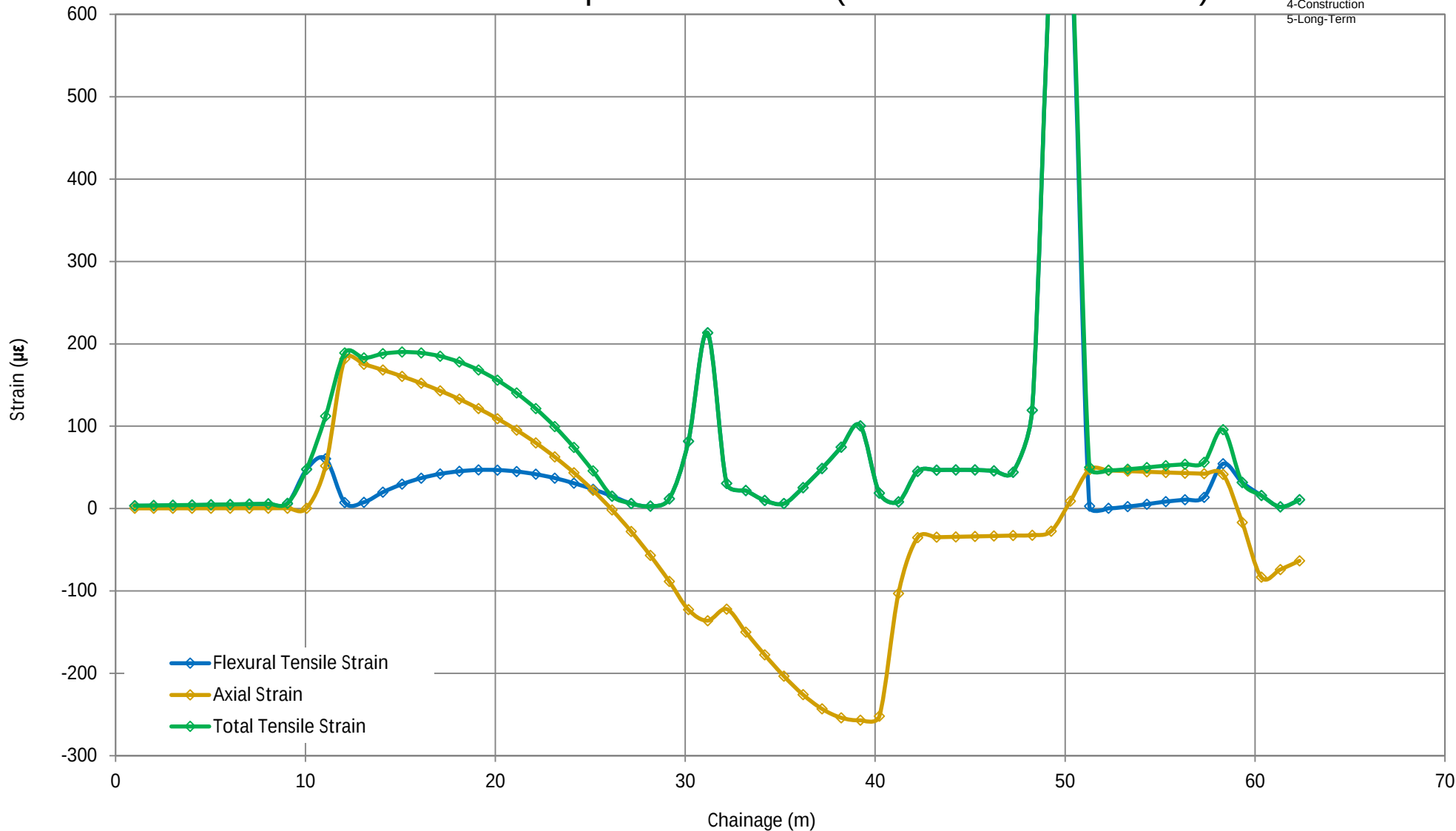


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 2.1 (Combined Tensile Strain)

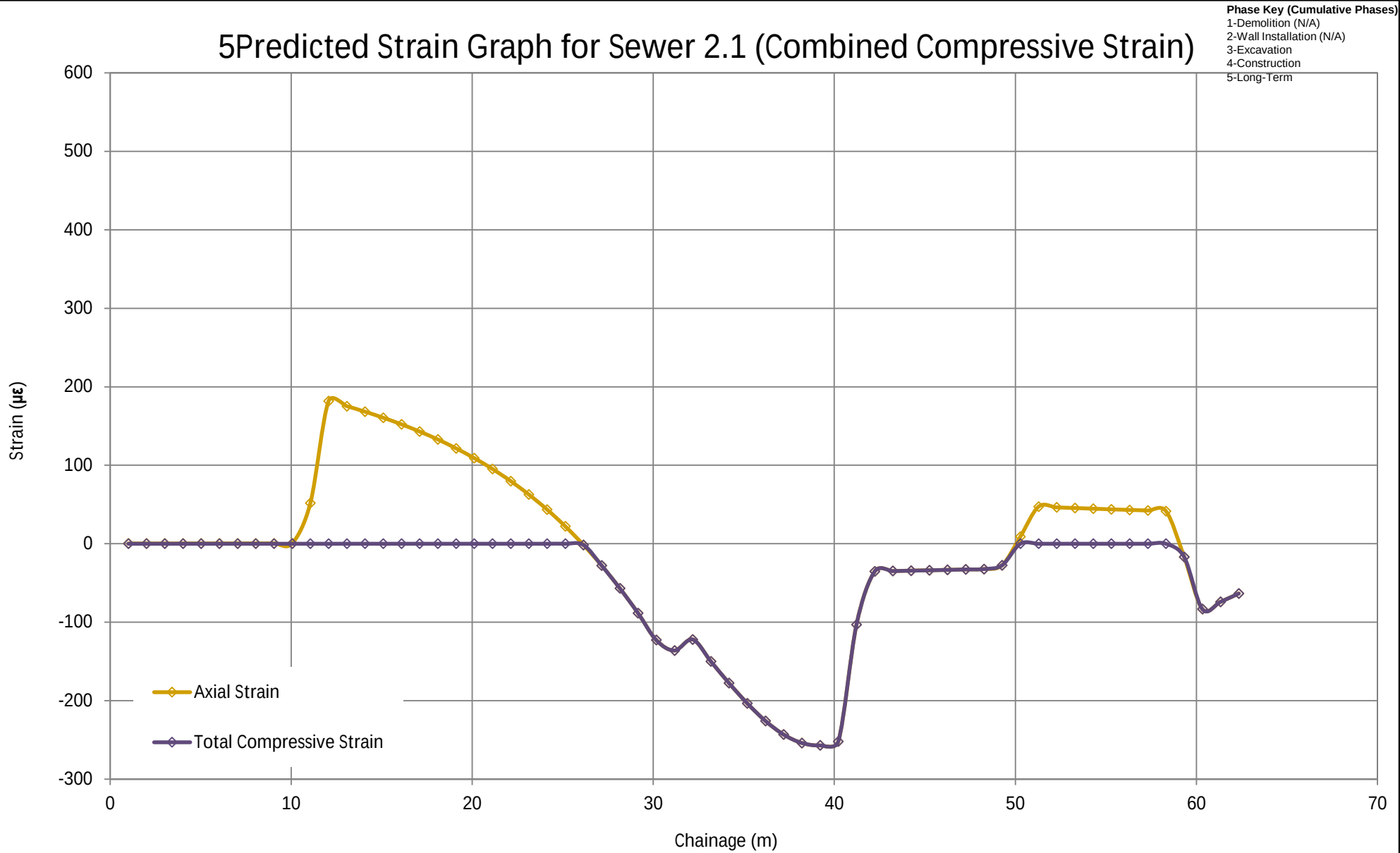
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 2.1 (Combined Compressive Strain)

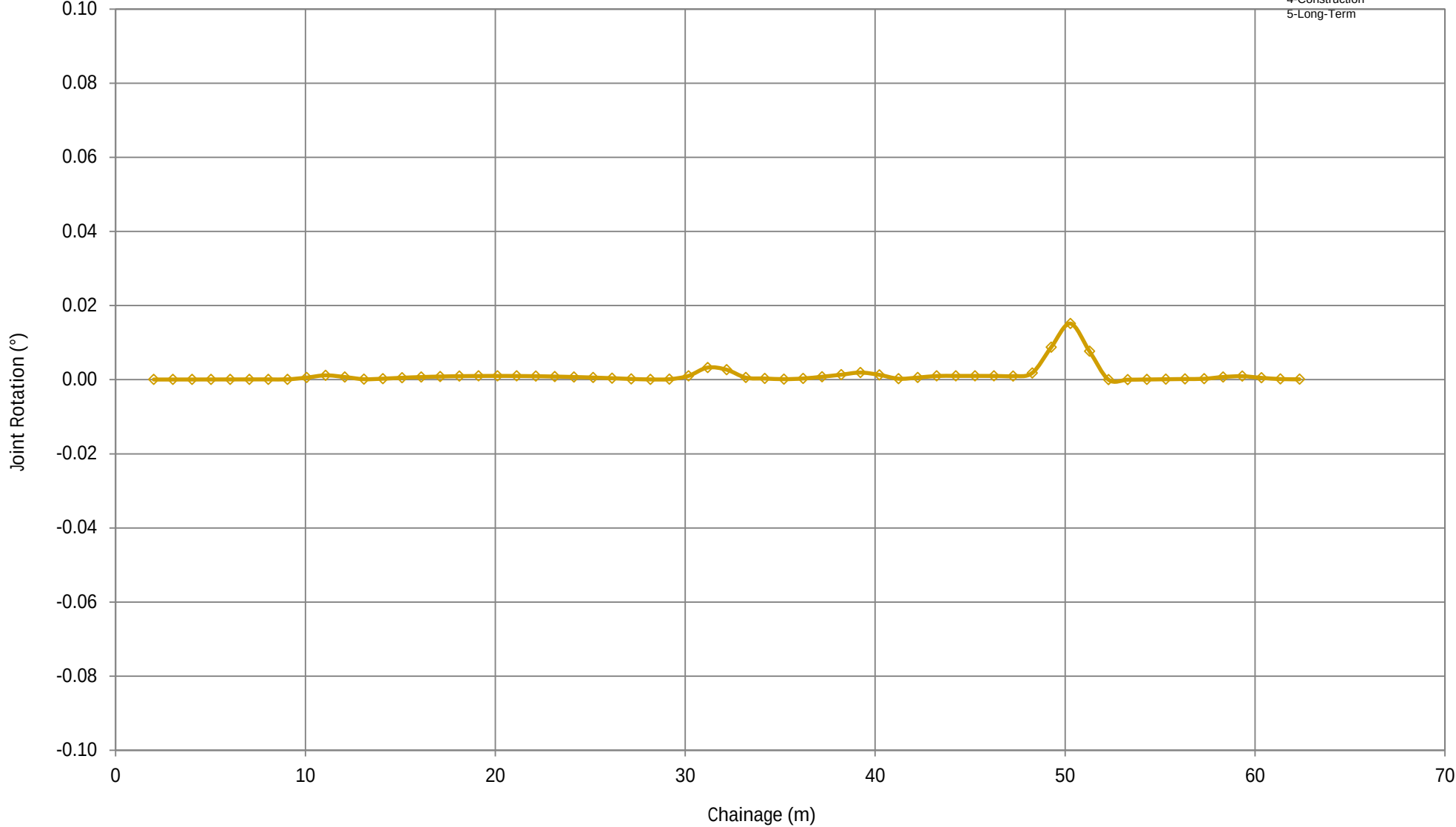


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Rotation for Sewer 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

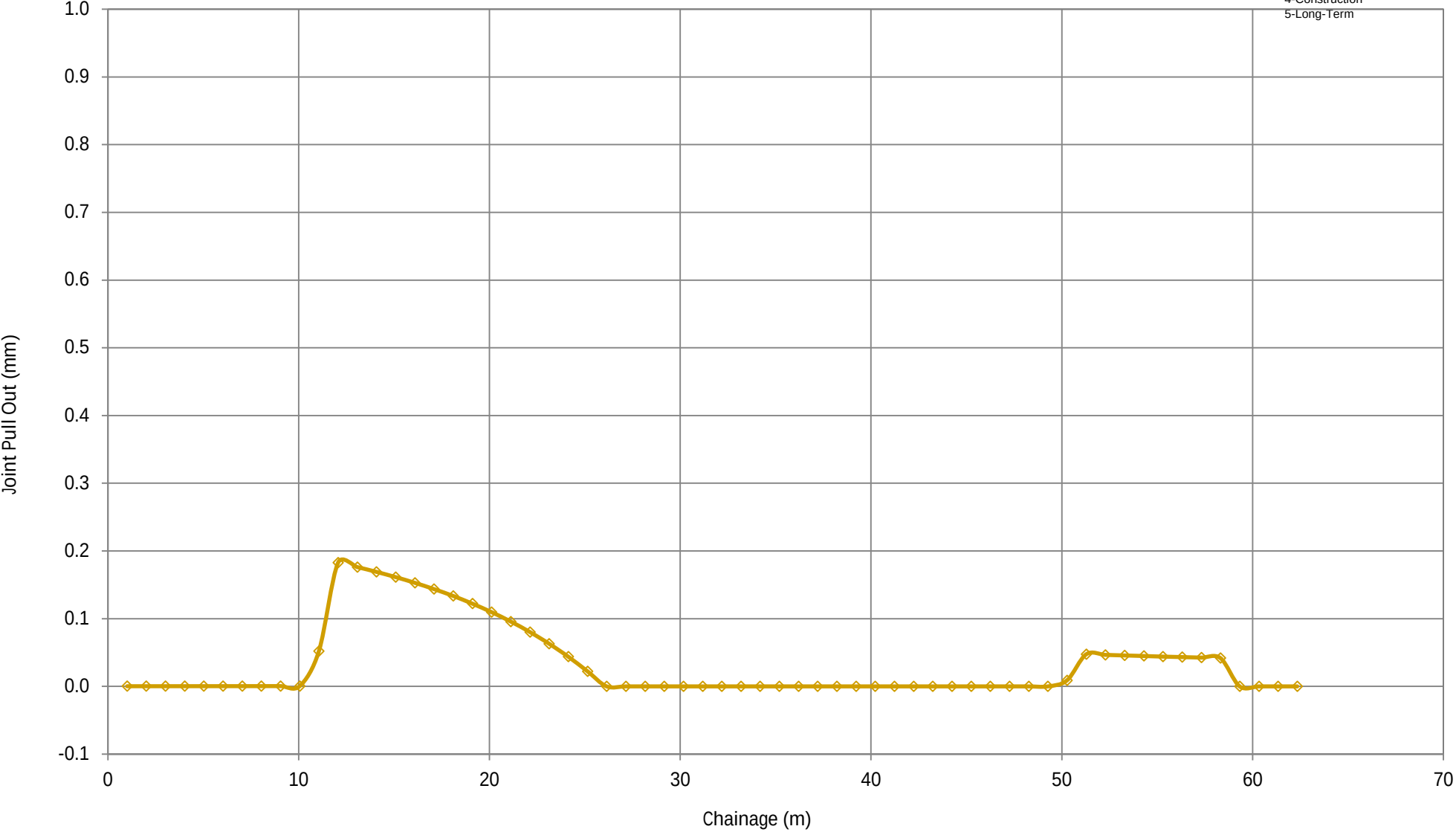


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Pull Out for Sewer 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

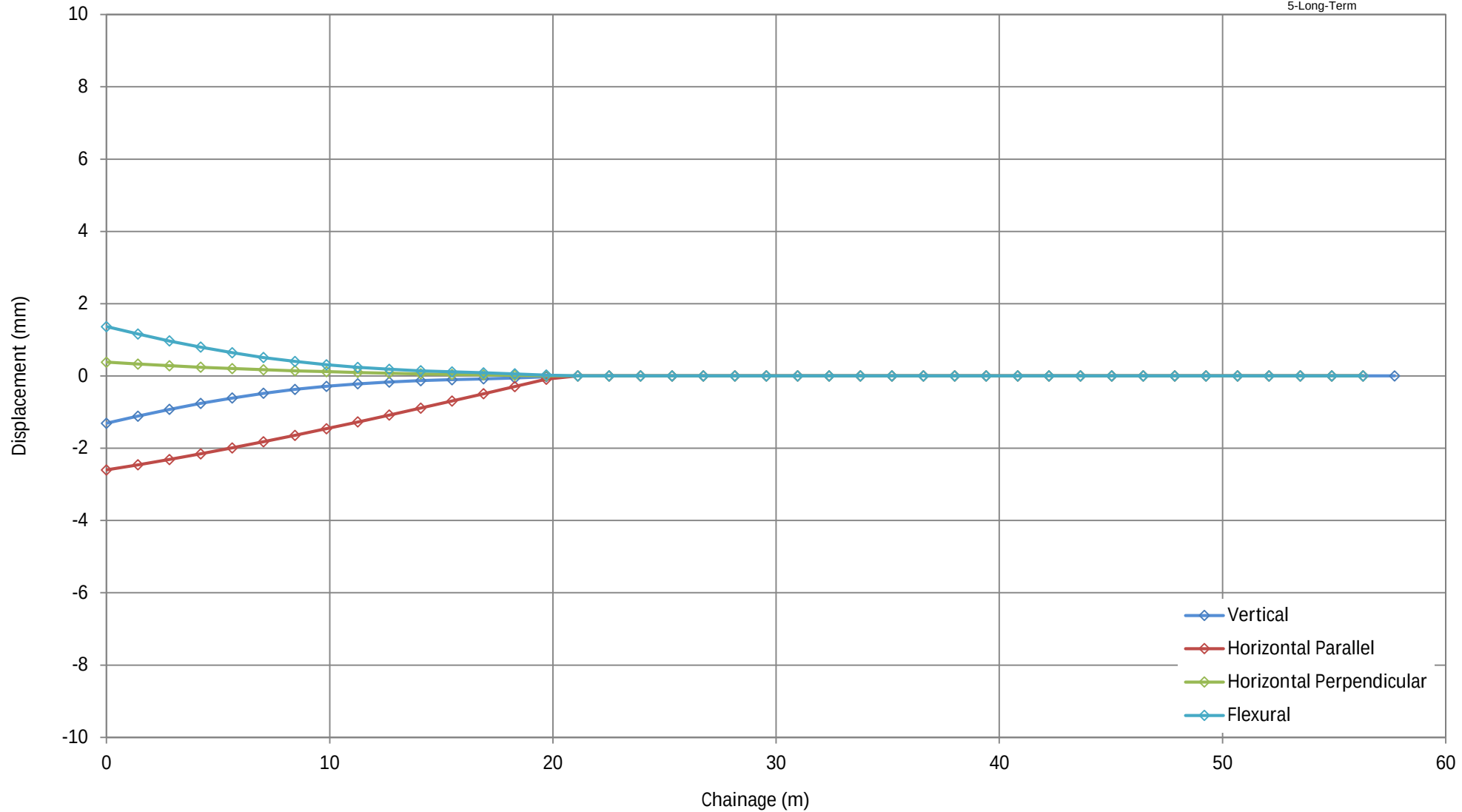


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Displacement Graph for Sewer 2.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

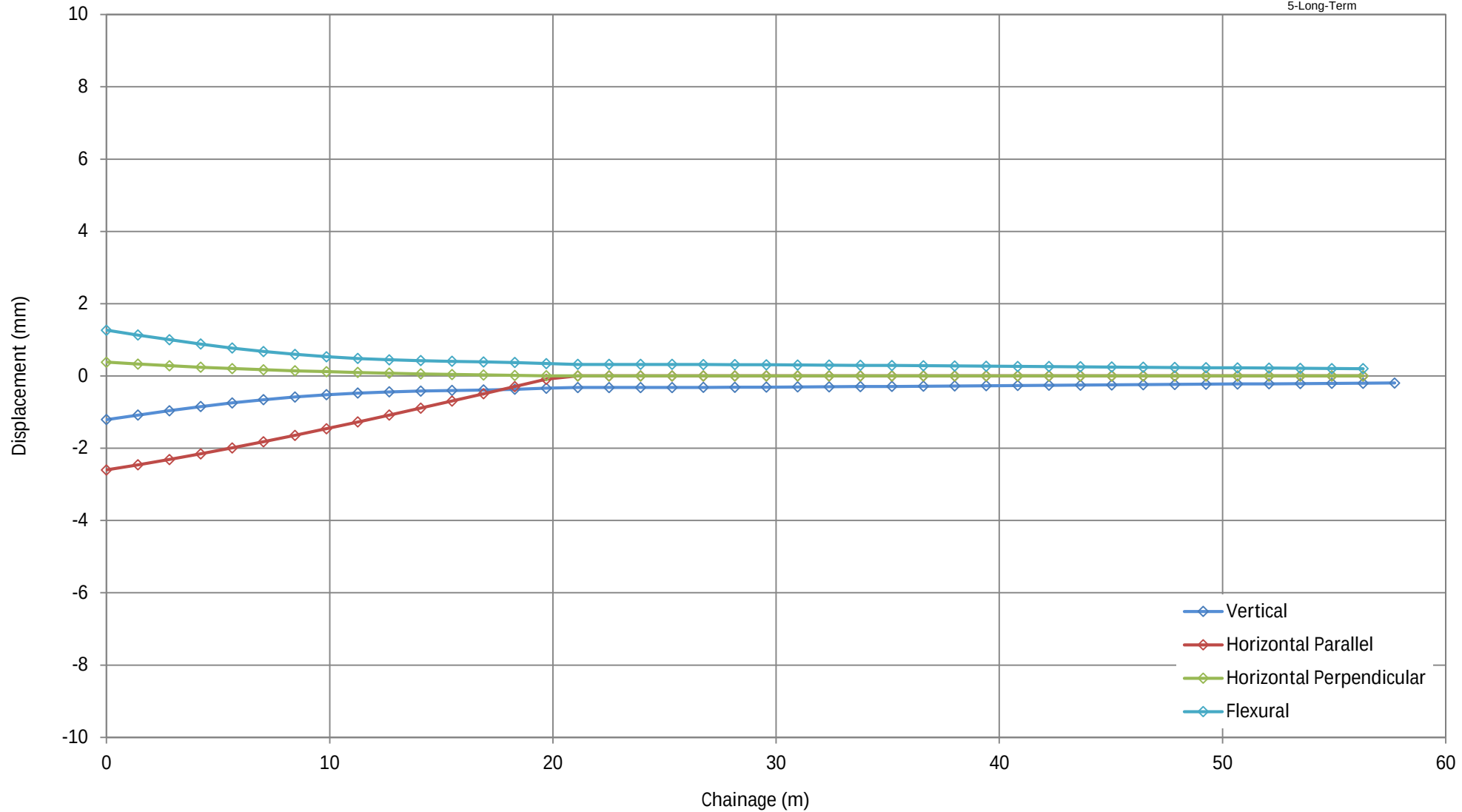


WSP House, 70 Chancery Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Displacement Graph for Sewer 2.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

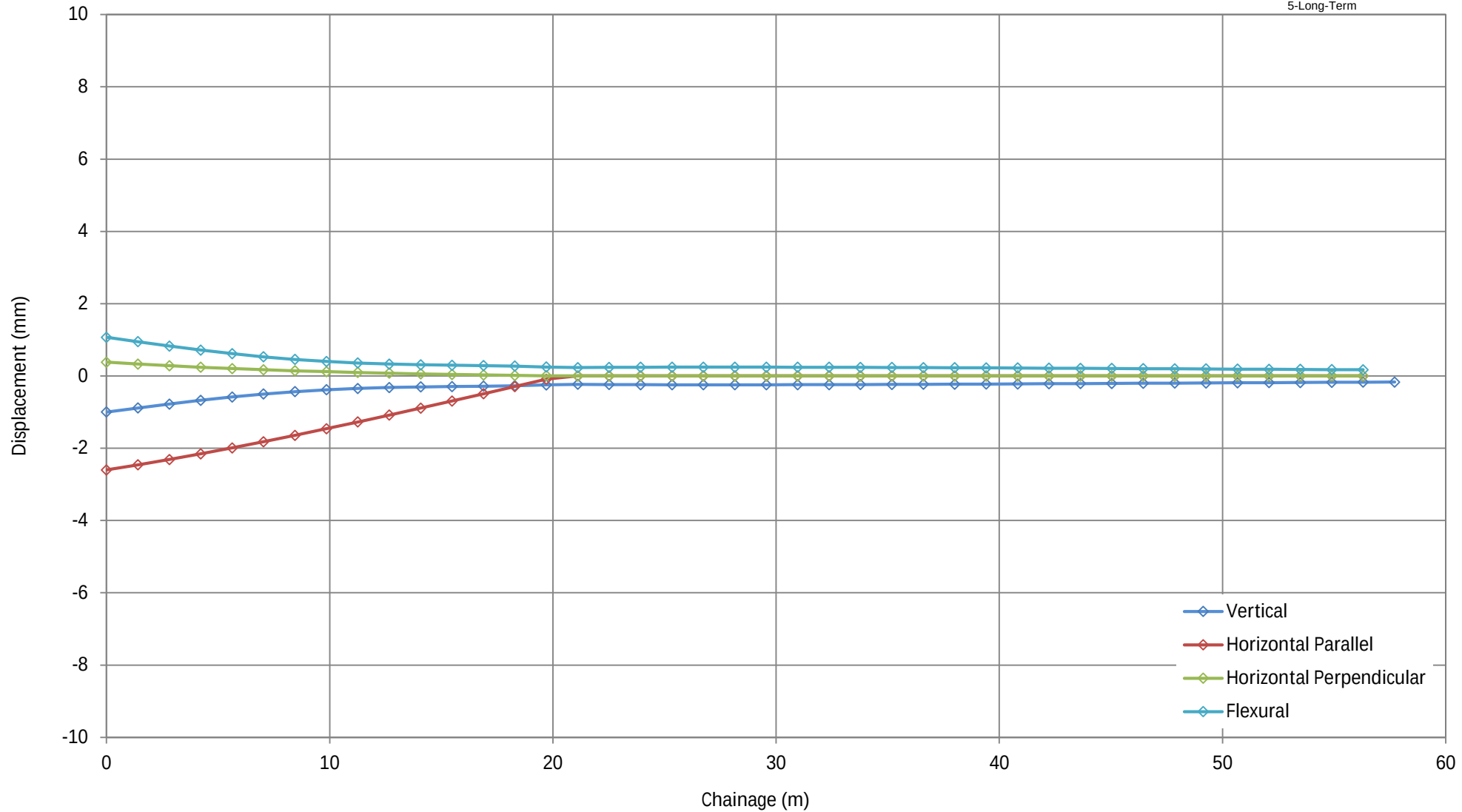


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Displacement Graph for Sewer 2.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

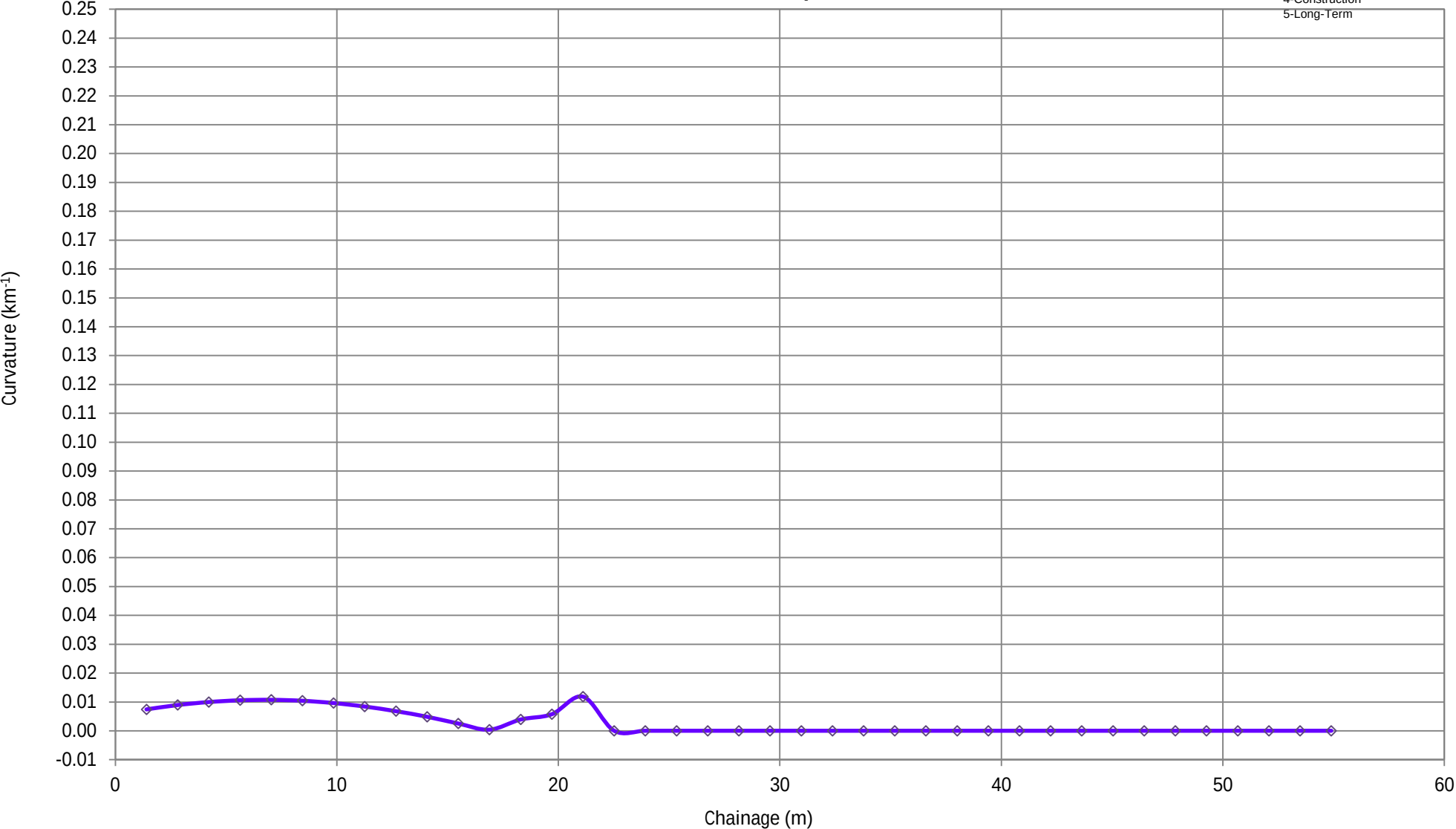


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Curvature Graph for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

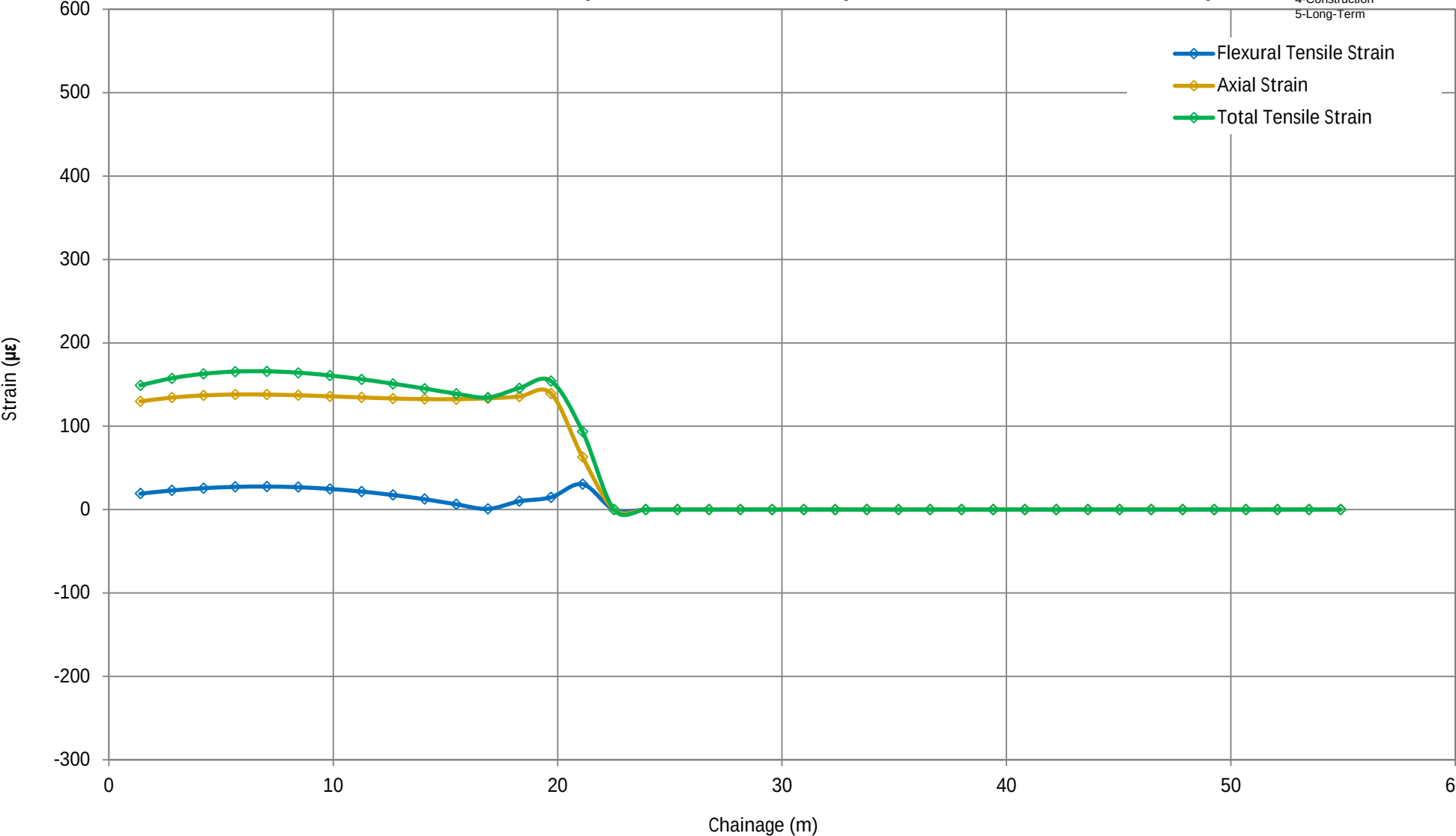


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 2.2 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

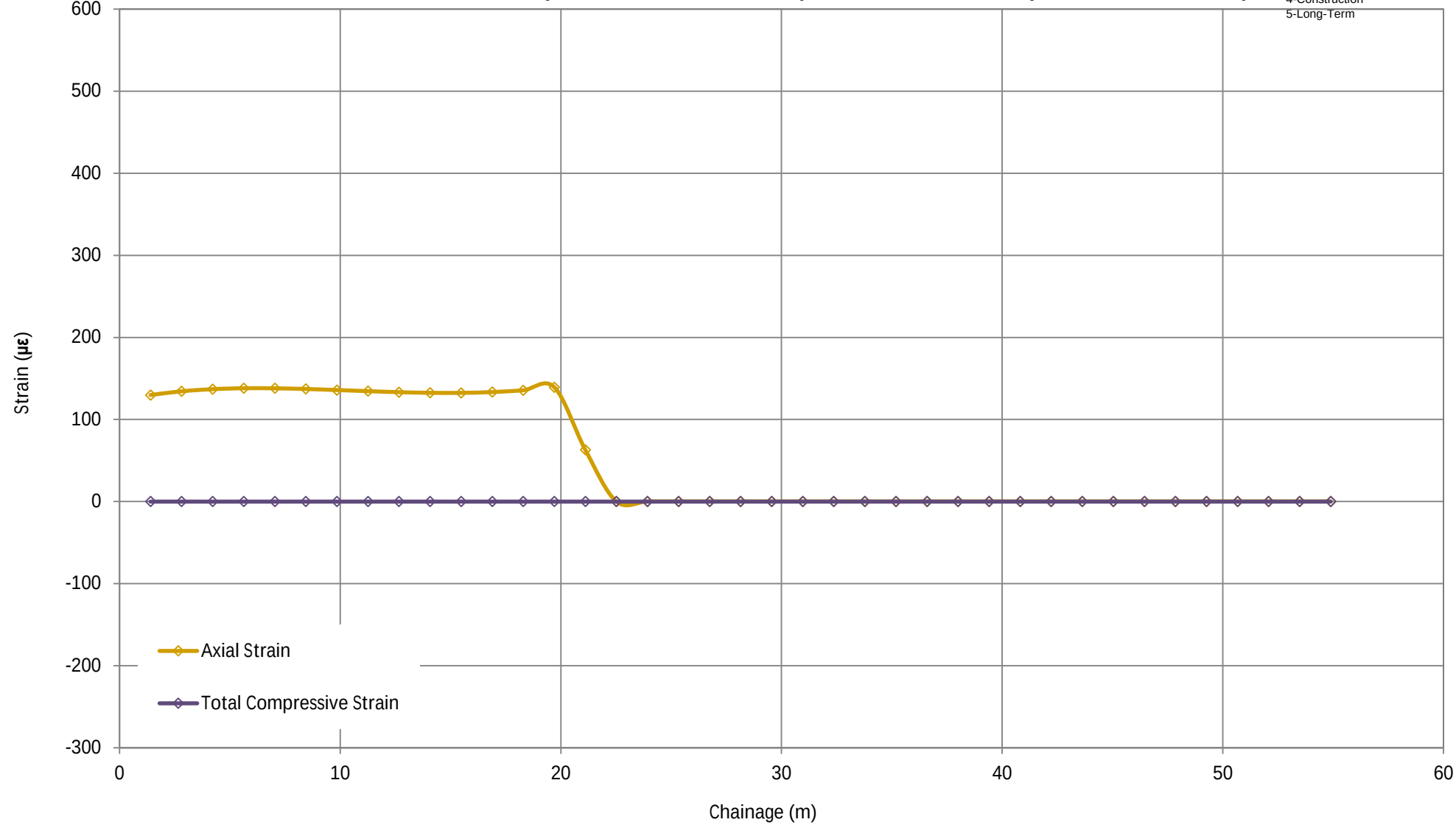


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 2.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

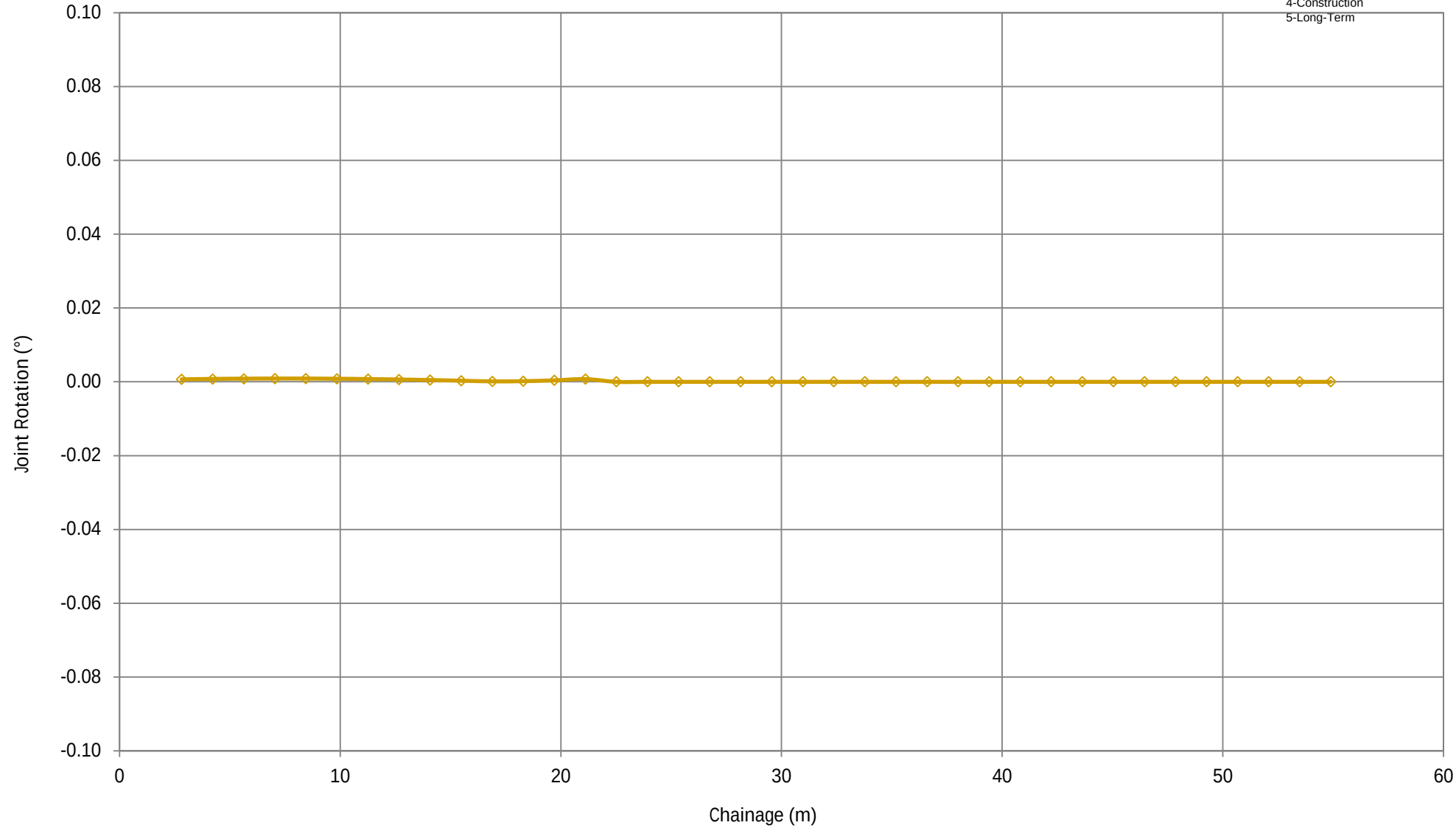


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Rotation for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

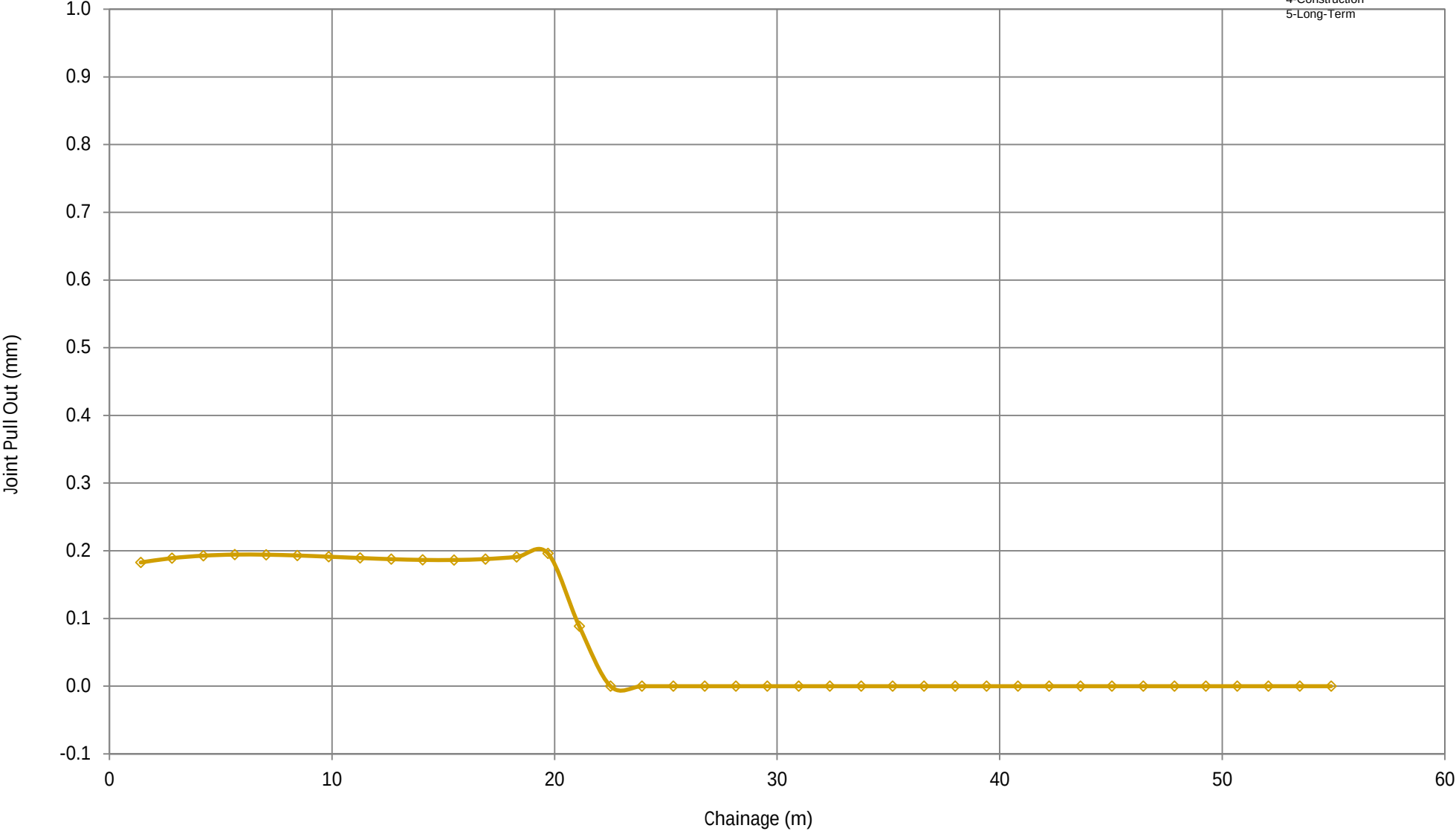


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Pull Out for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

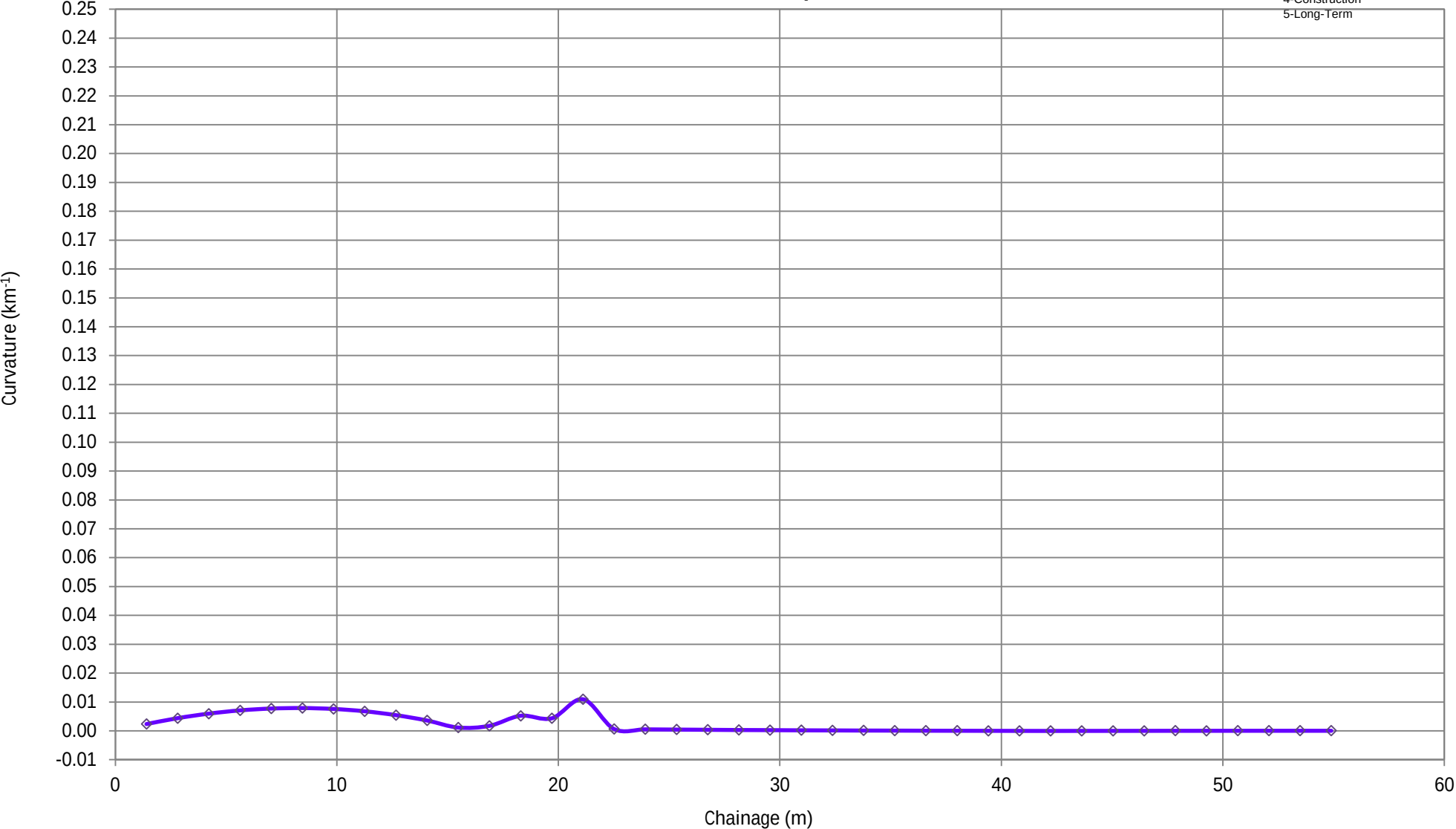


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Curvature Graph for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

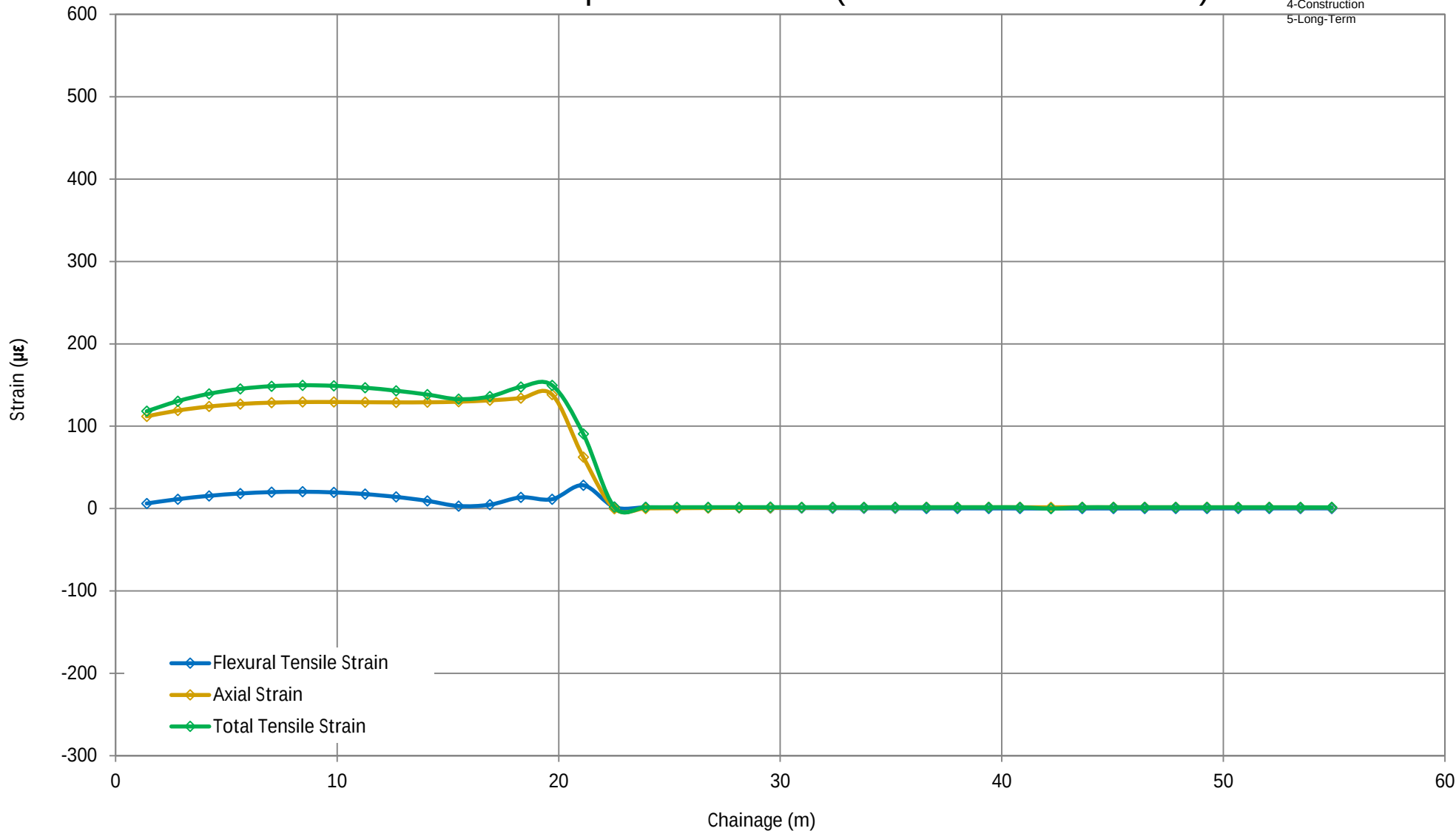


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 2.2 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

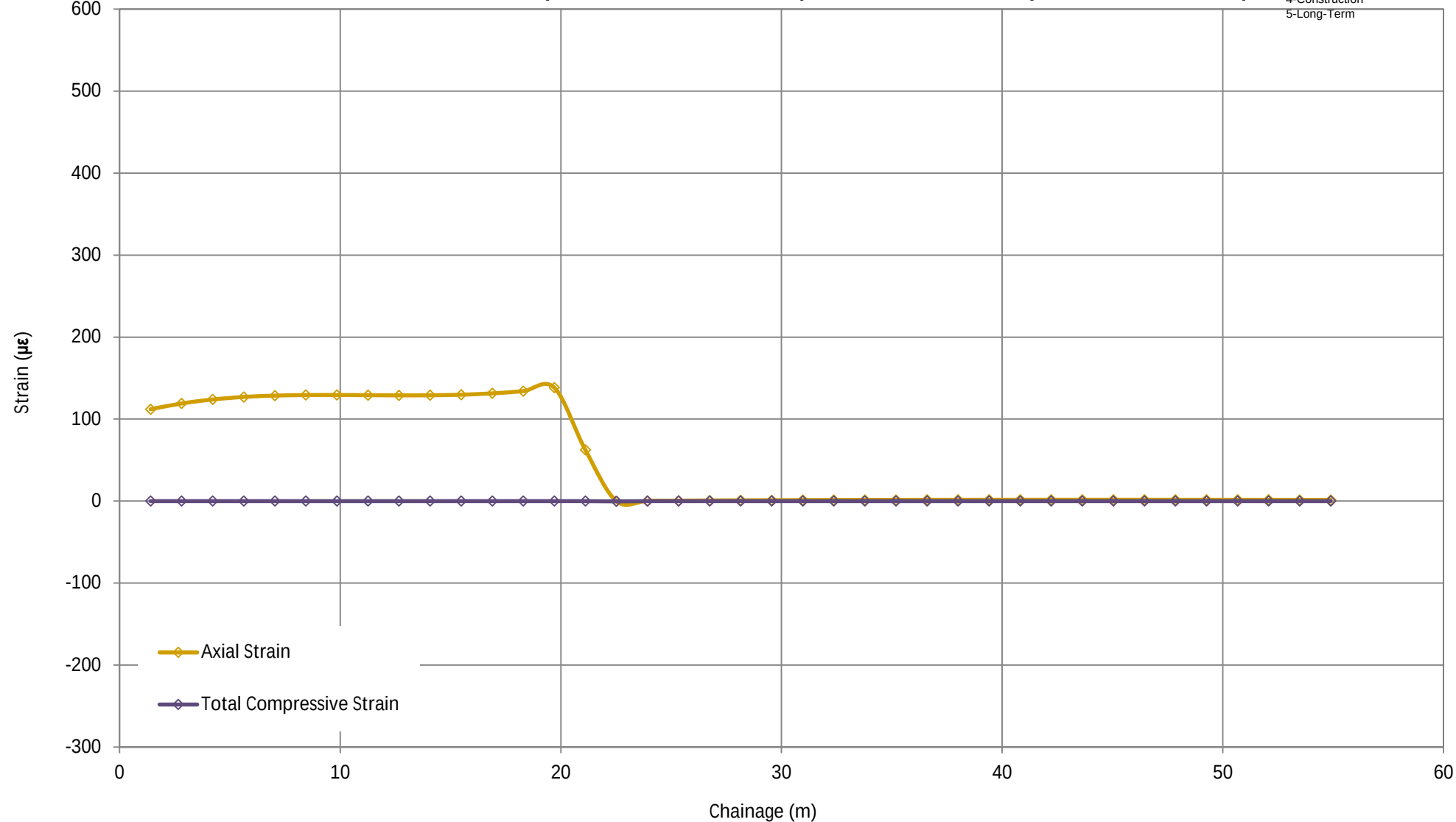


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 2.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

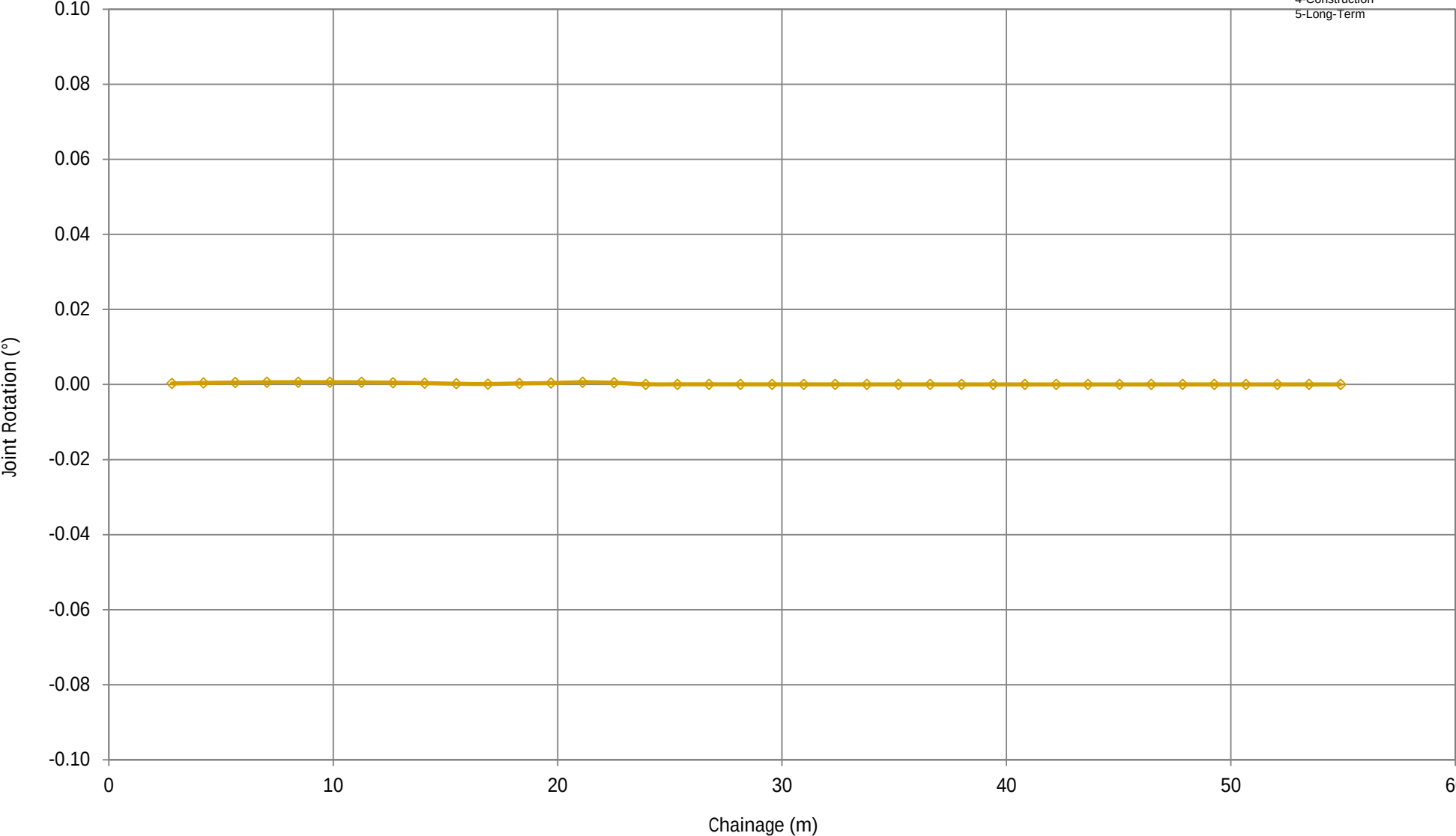


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Rotation for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

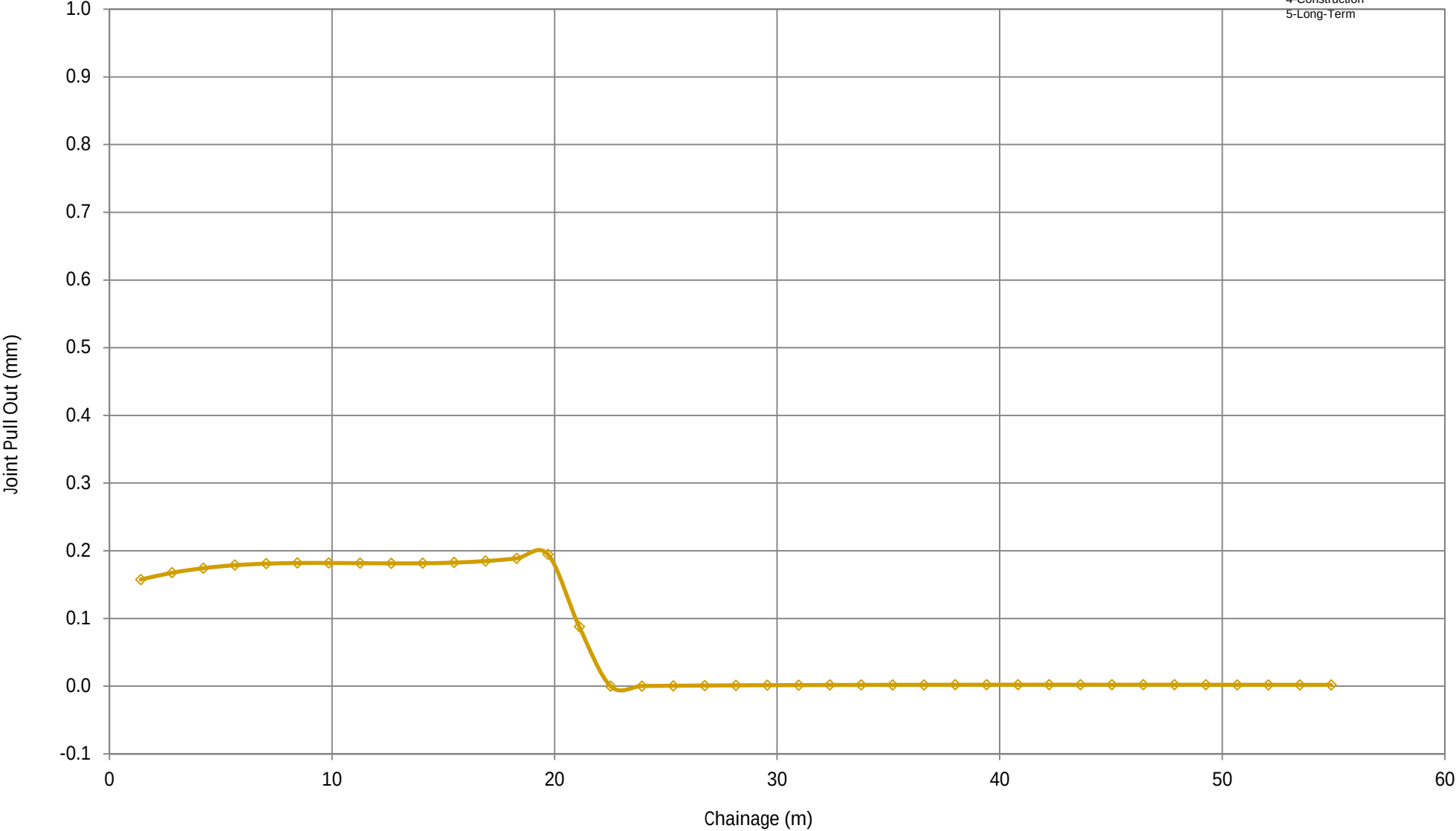


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Pull Out for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

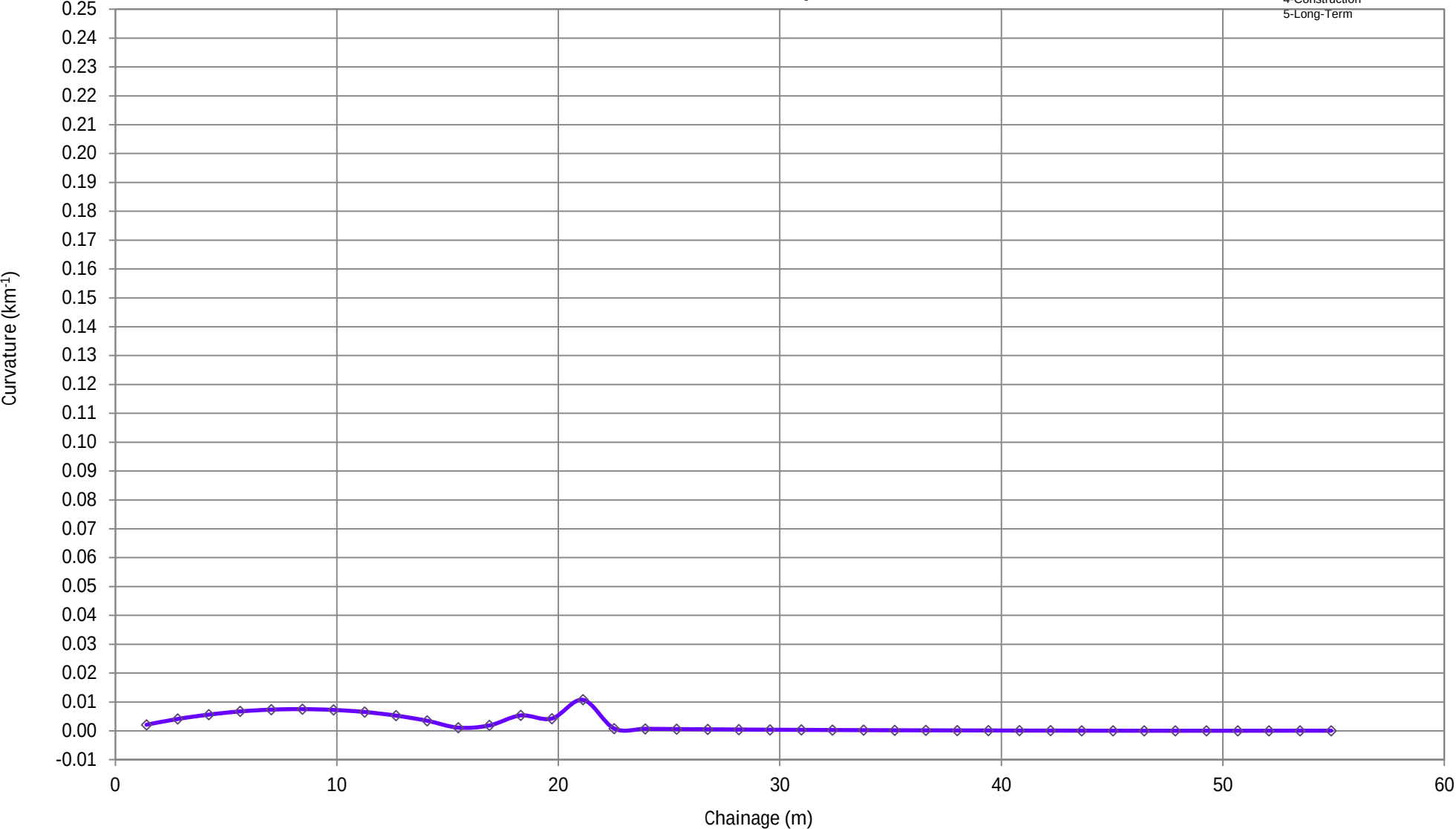


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Curvature Graph for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

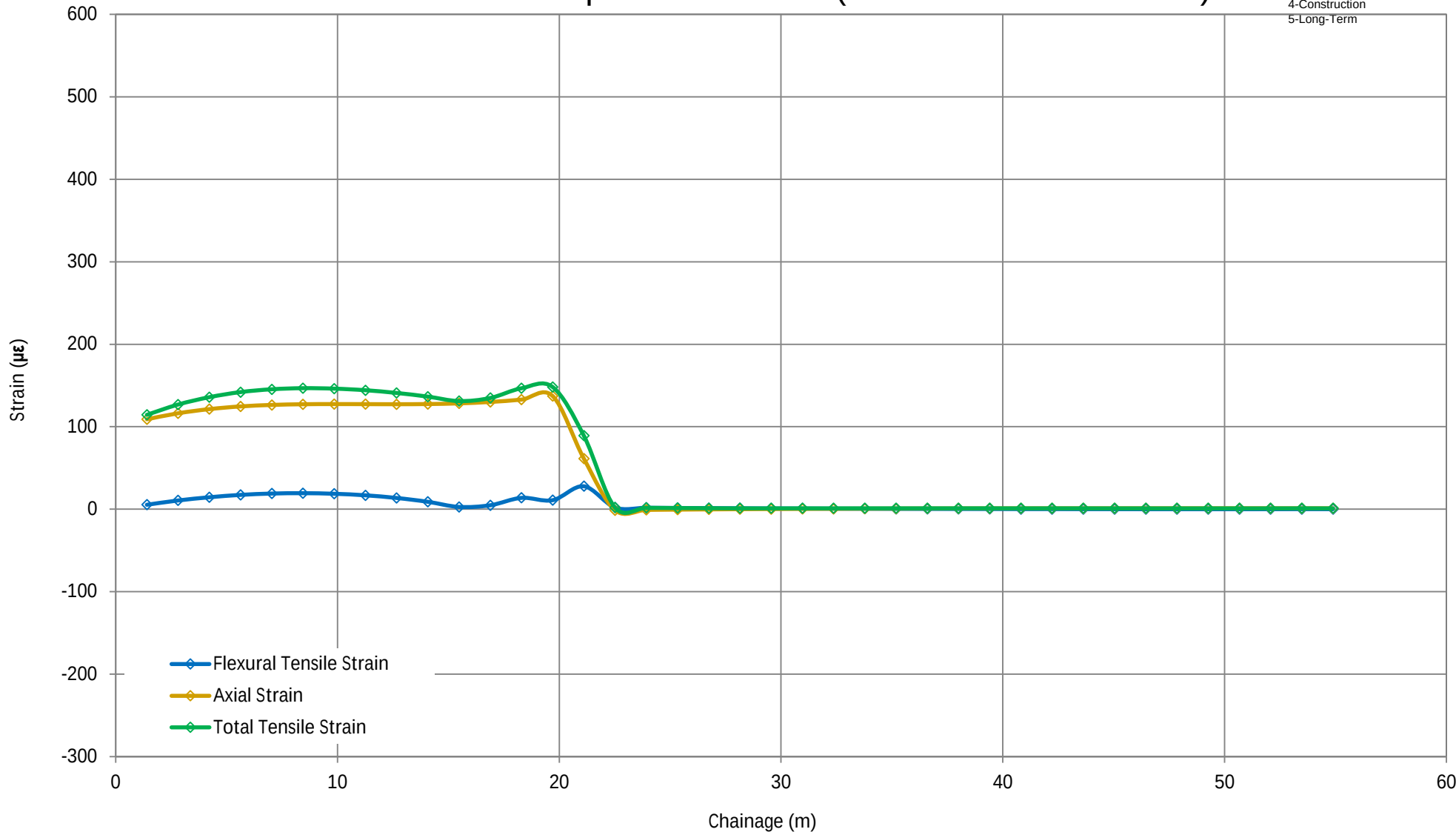


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 2.2 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

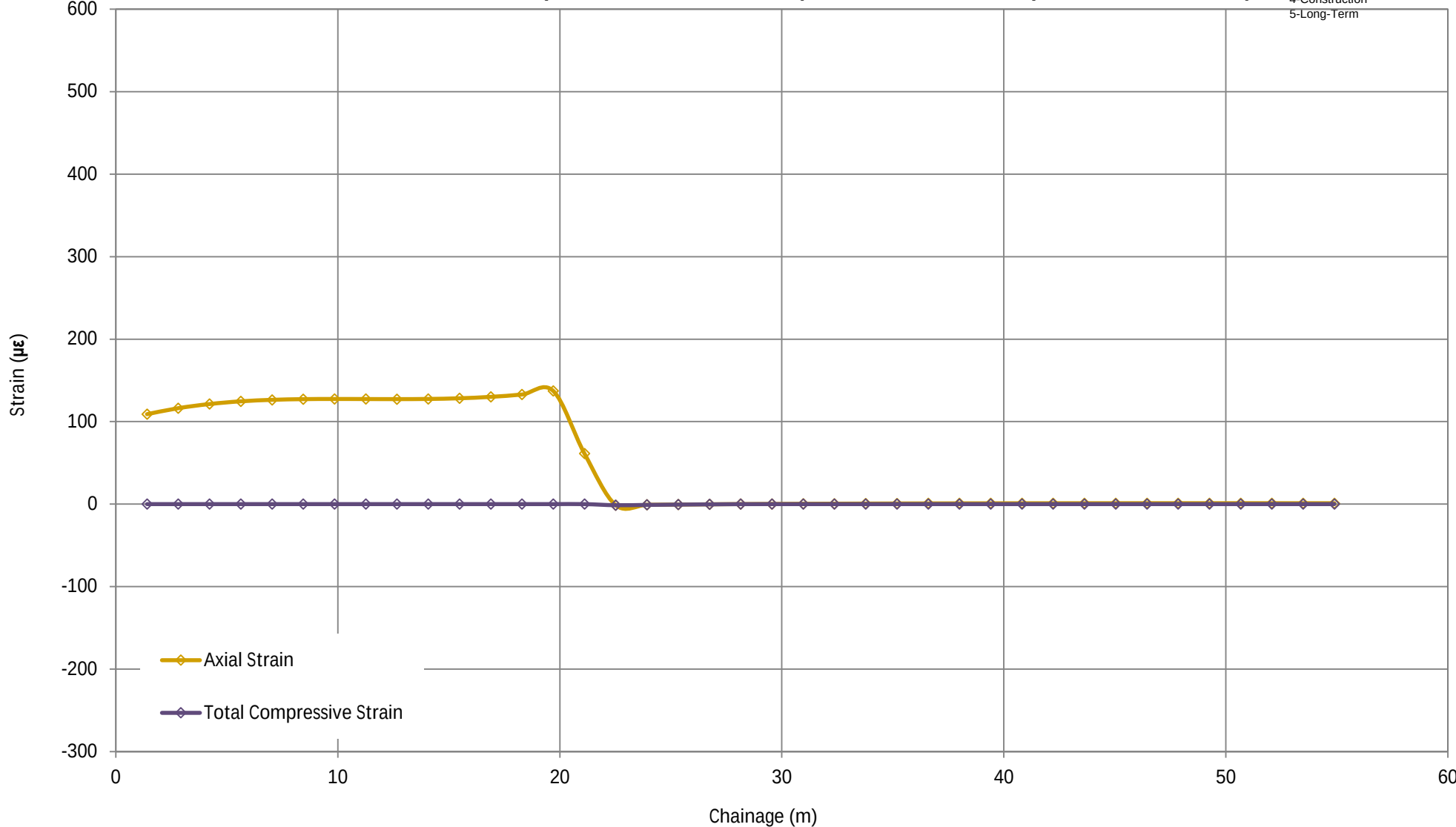


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 2.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

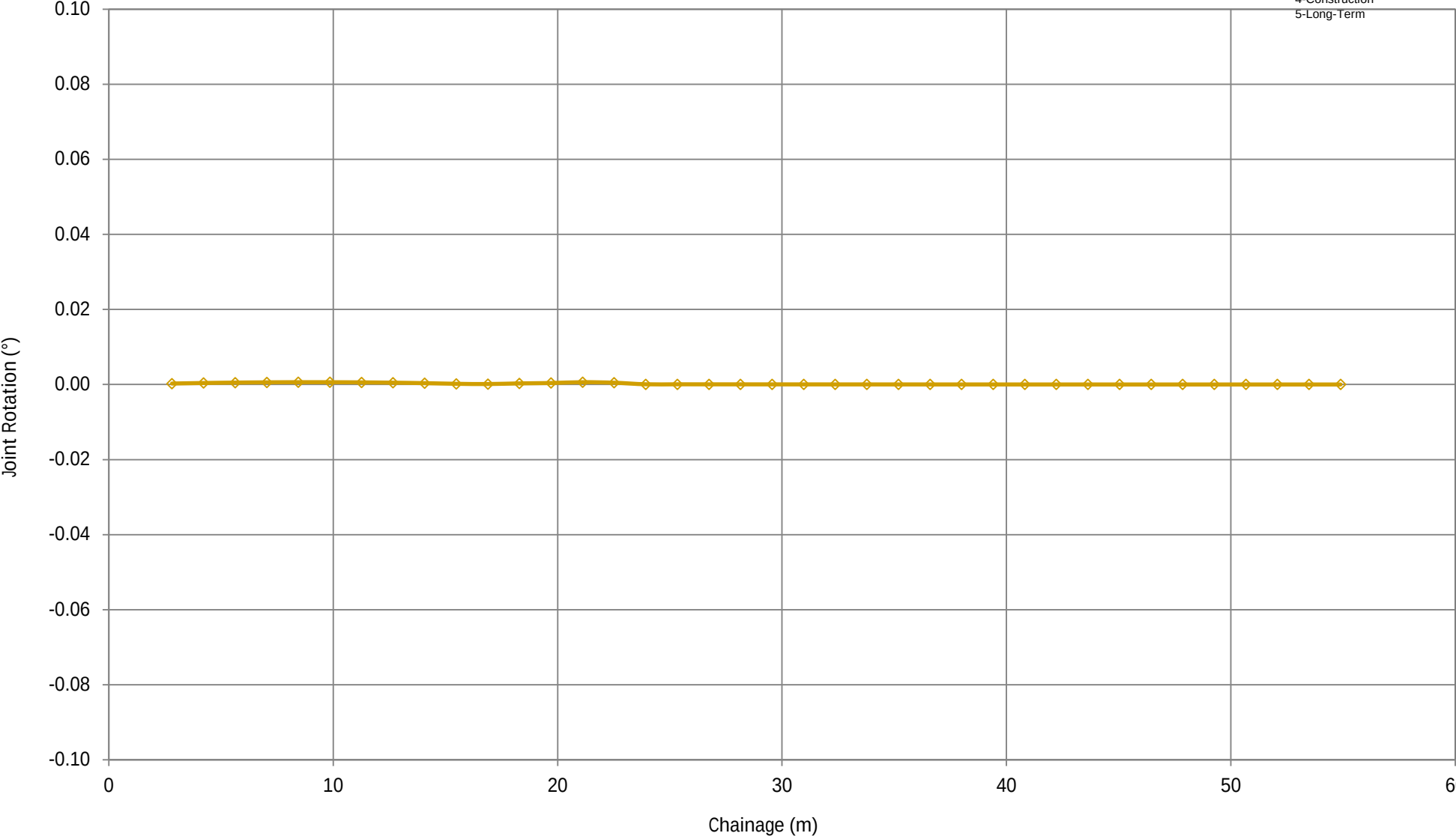


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Rotation for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

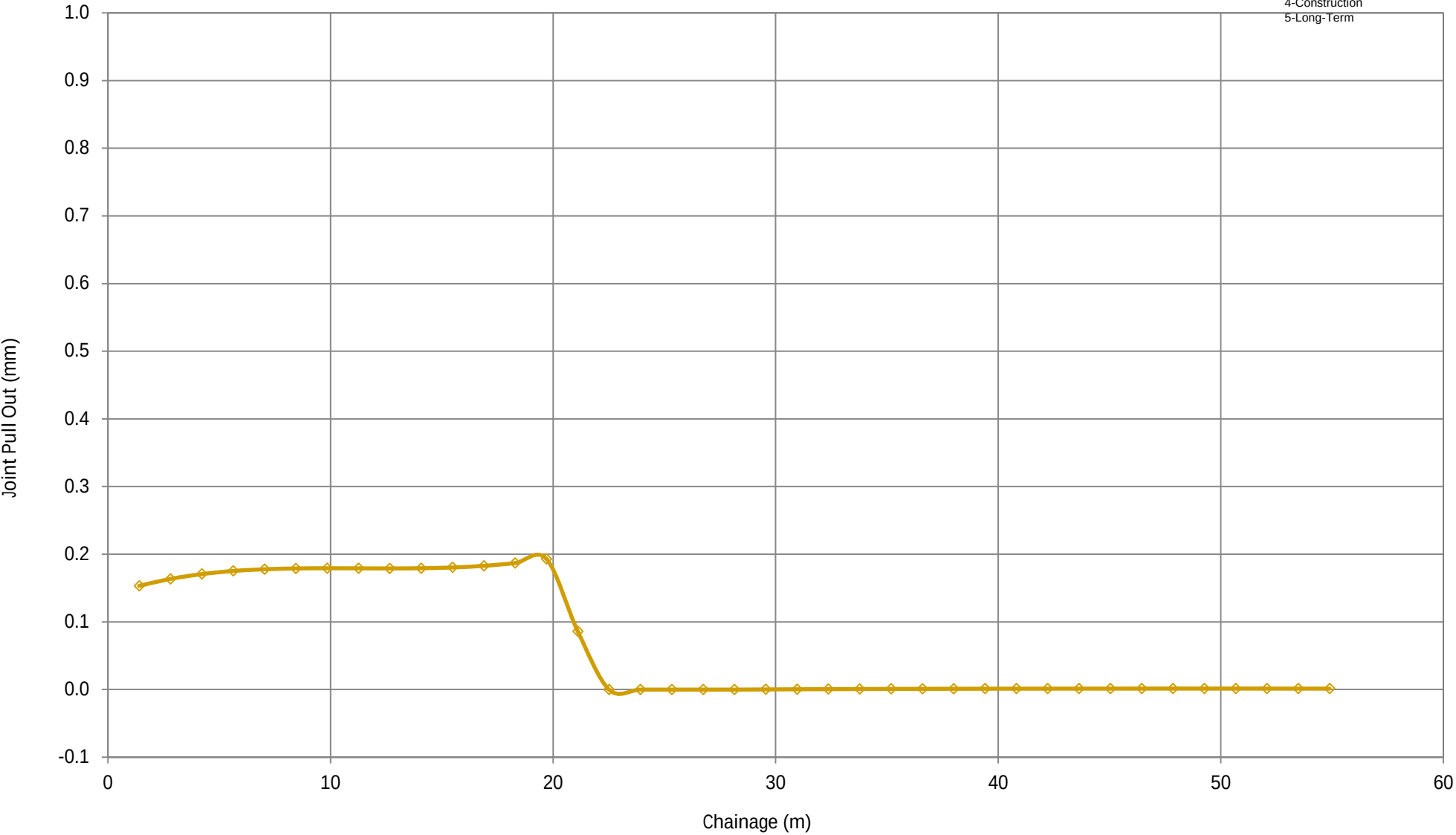


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Pull Out for Sewer 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

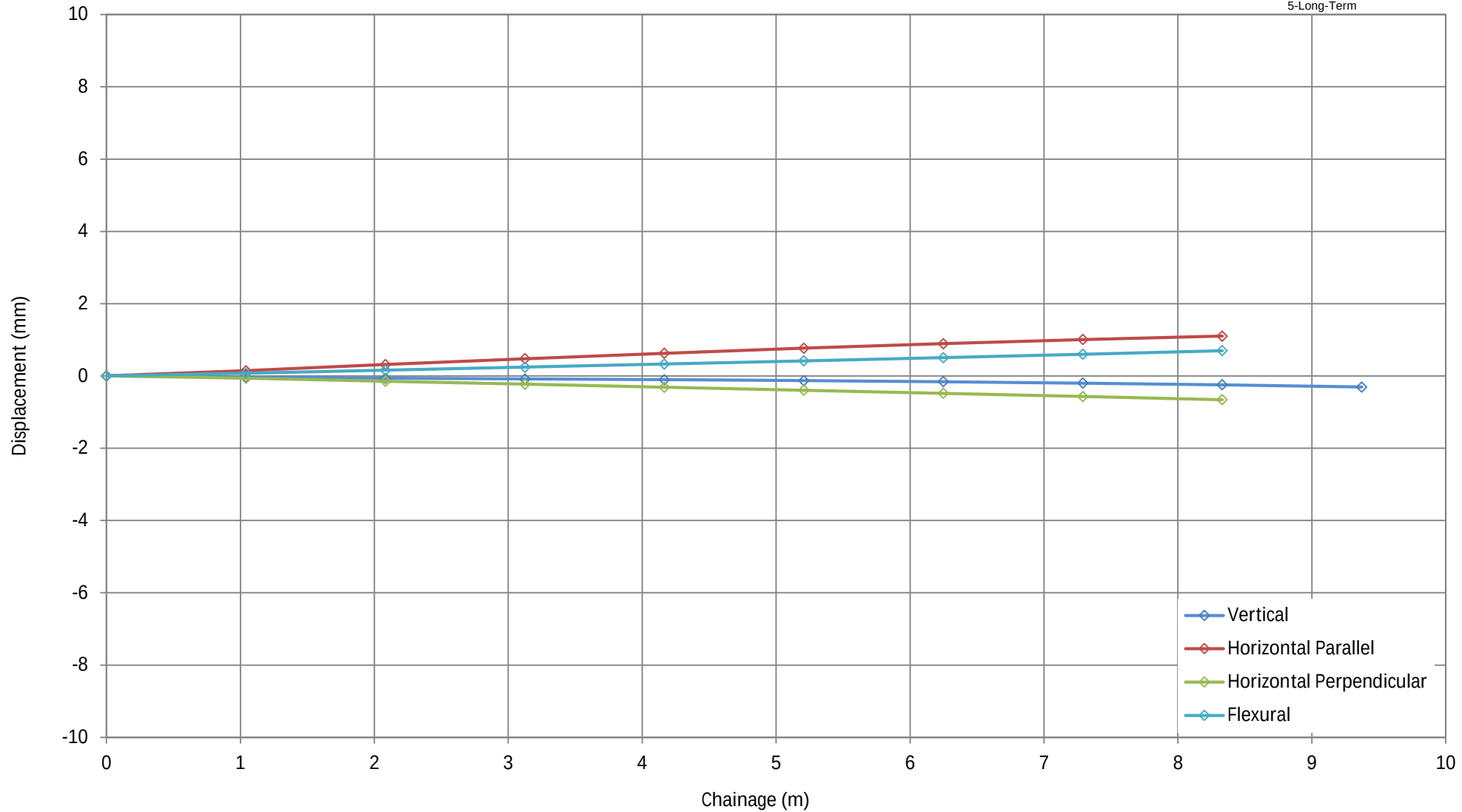


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Displacement Graph for Sewer 3.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

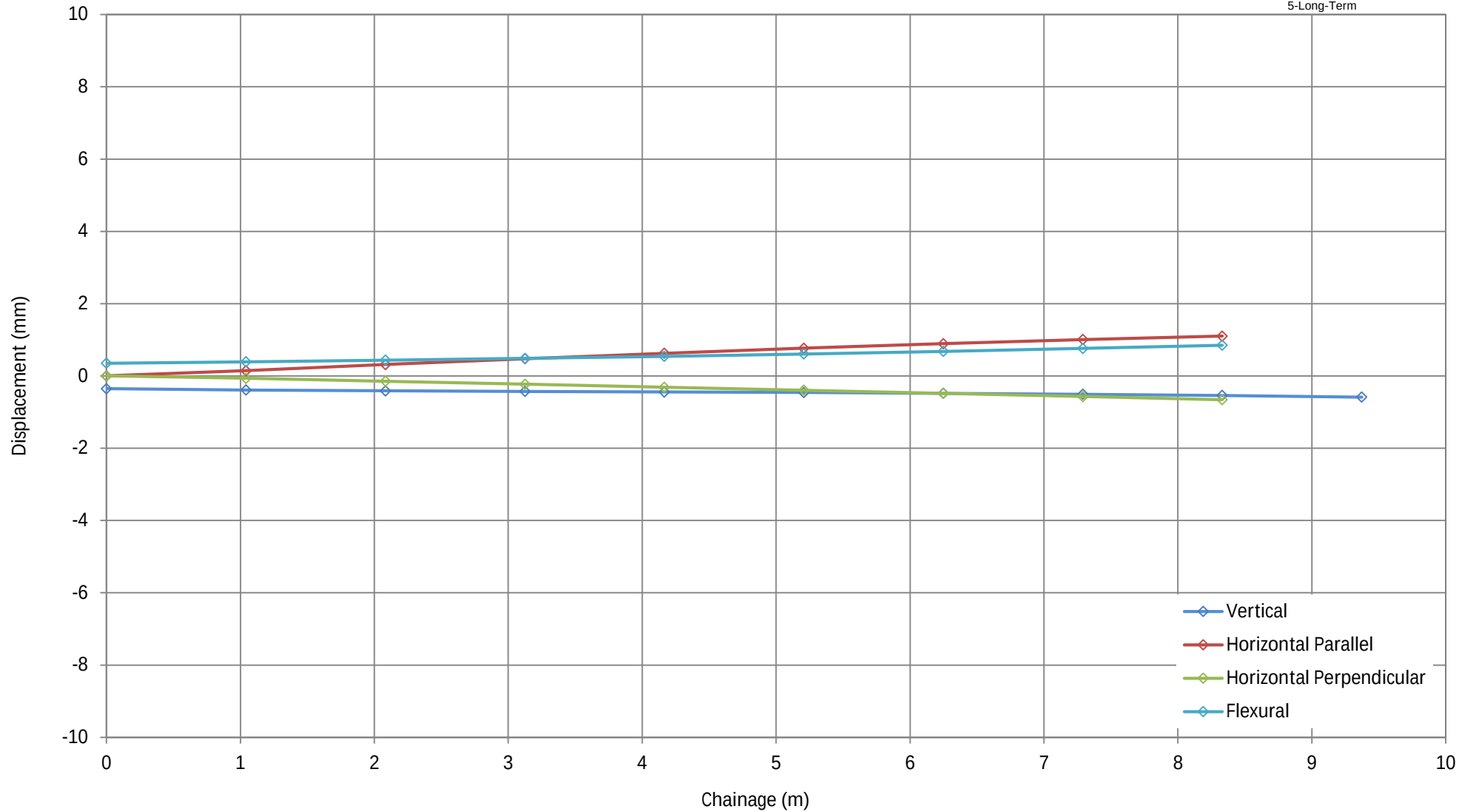


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Displacement Graph for Sewer 3.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

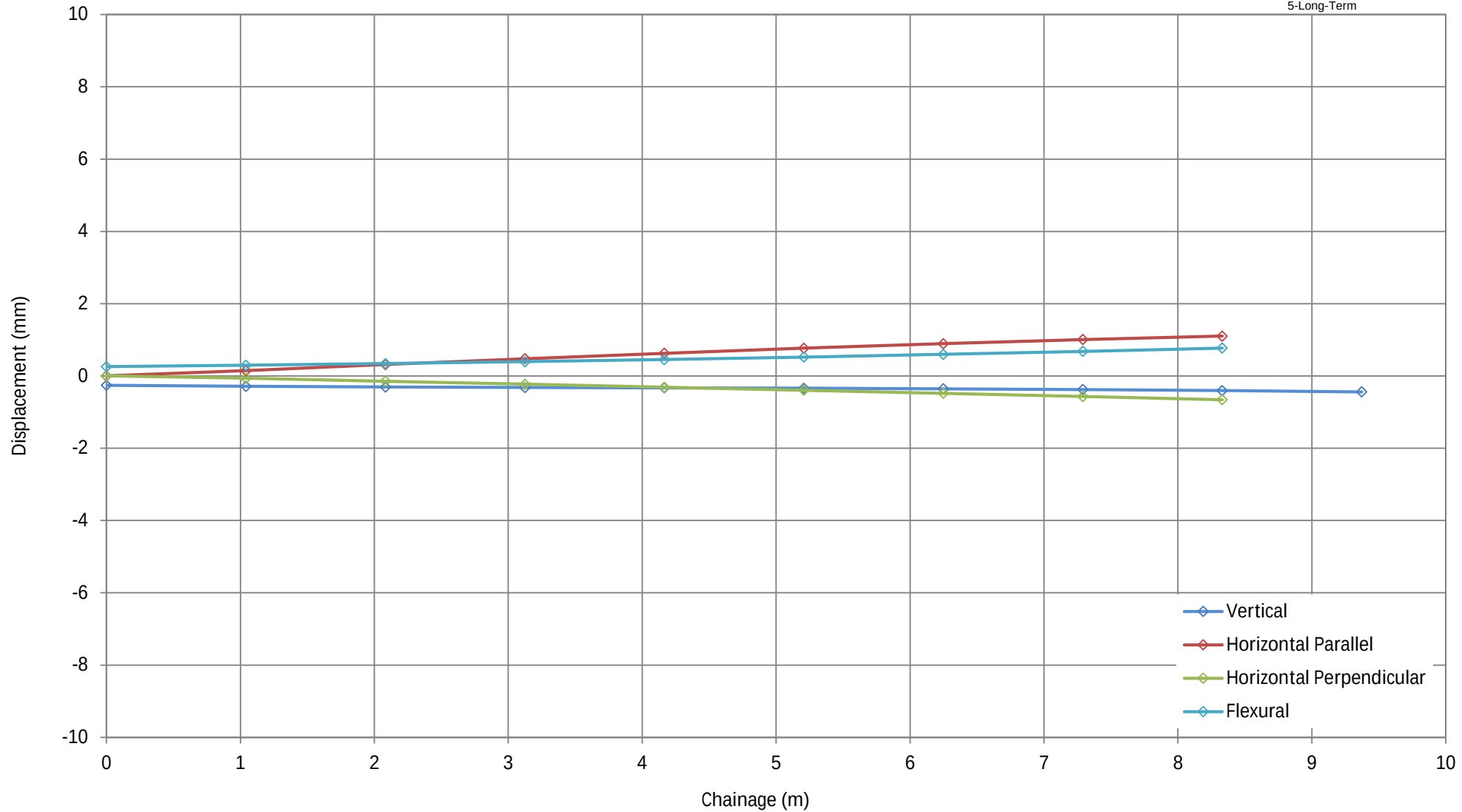


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Displacement Graph for Sewer 3.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

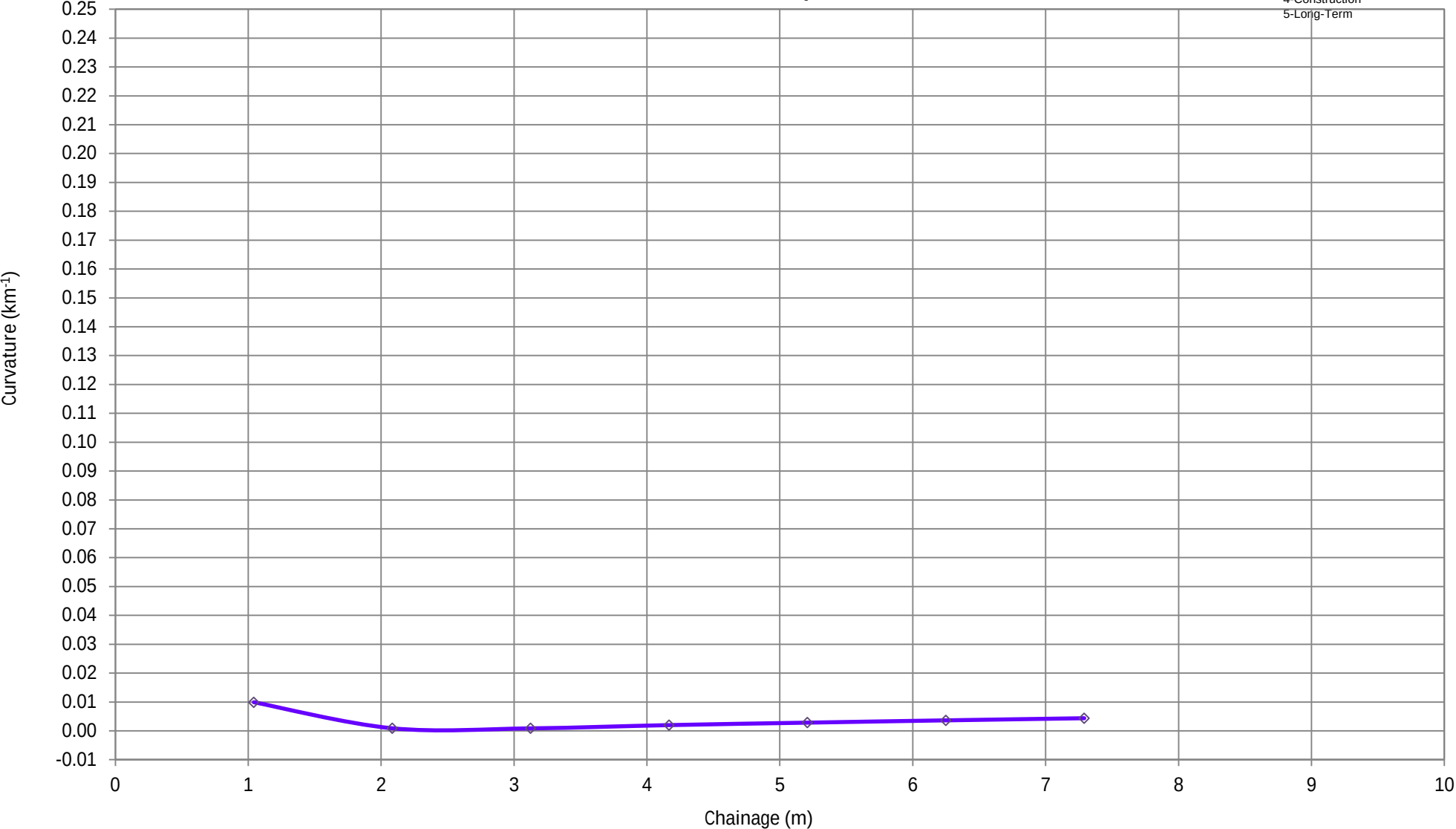


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Curvature Graph for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

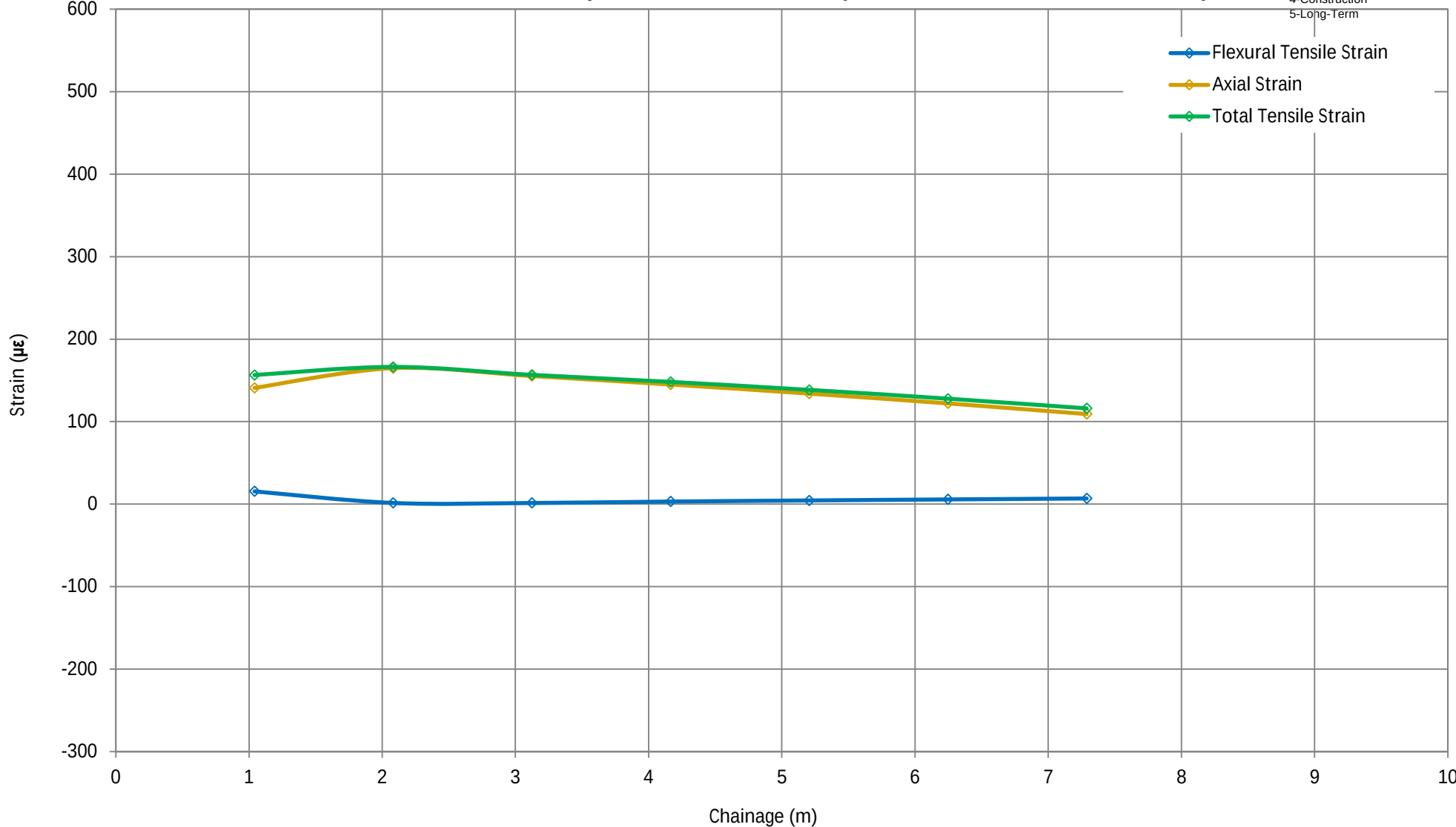


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 3.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

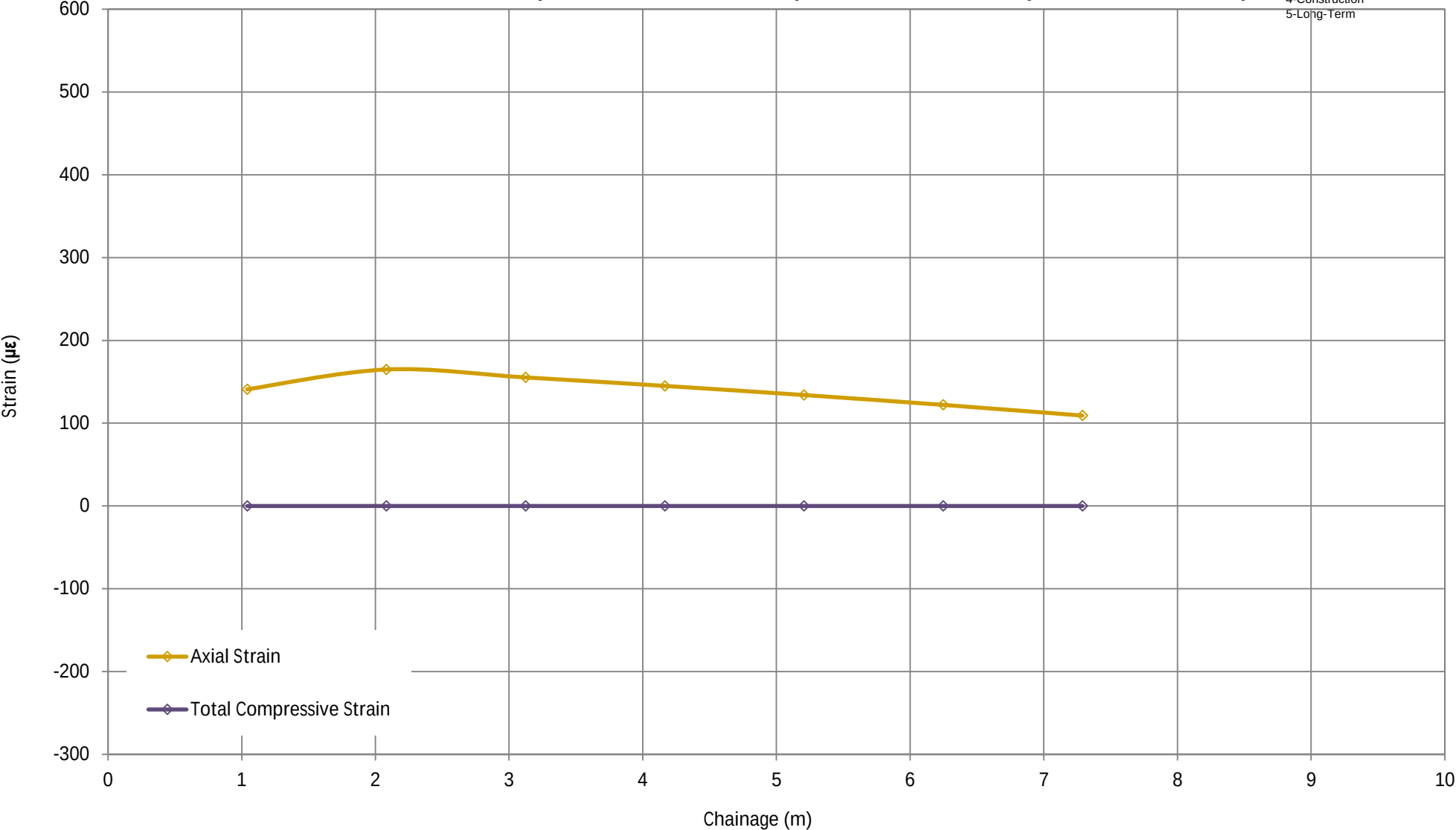


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 3.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

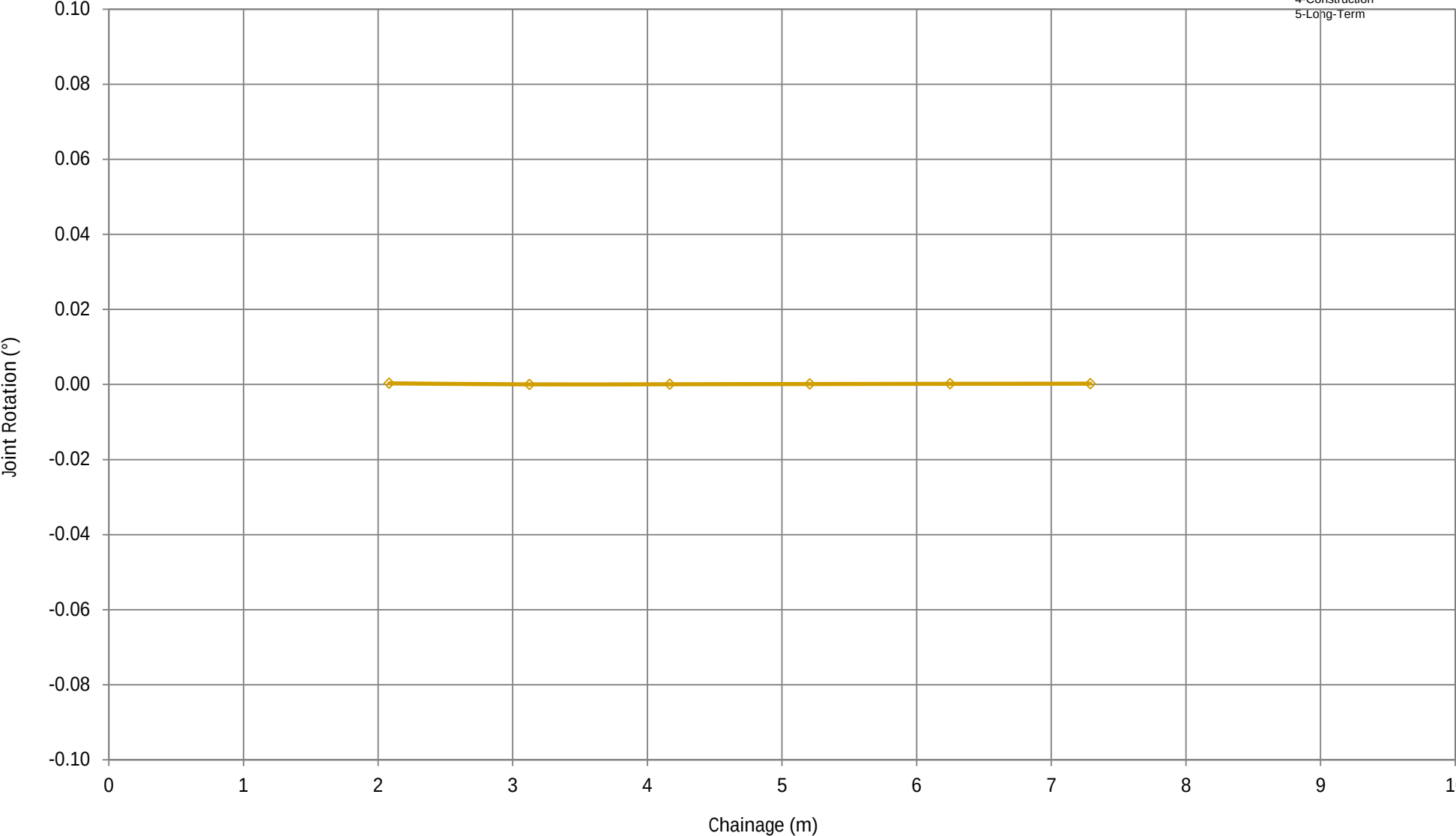


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Rotation for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

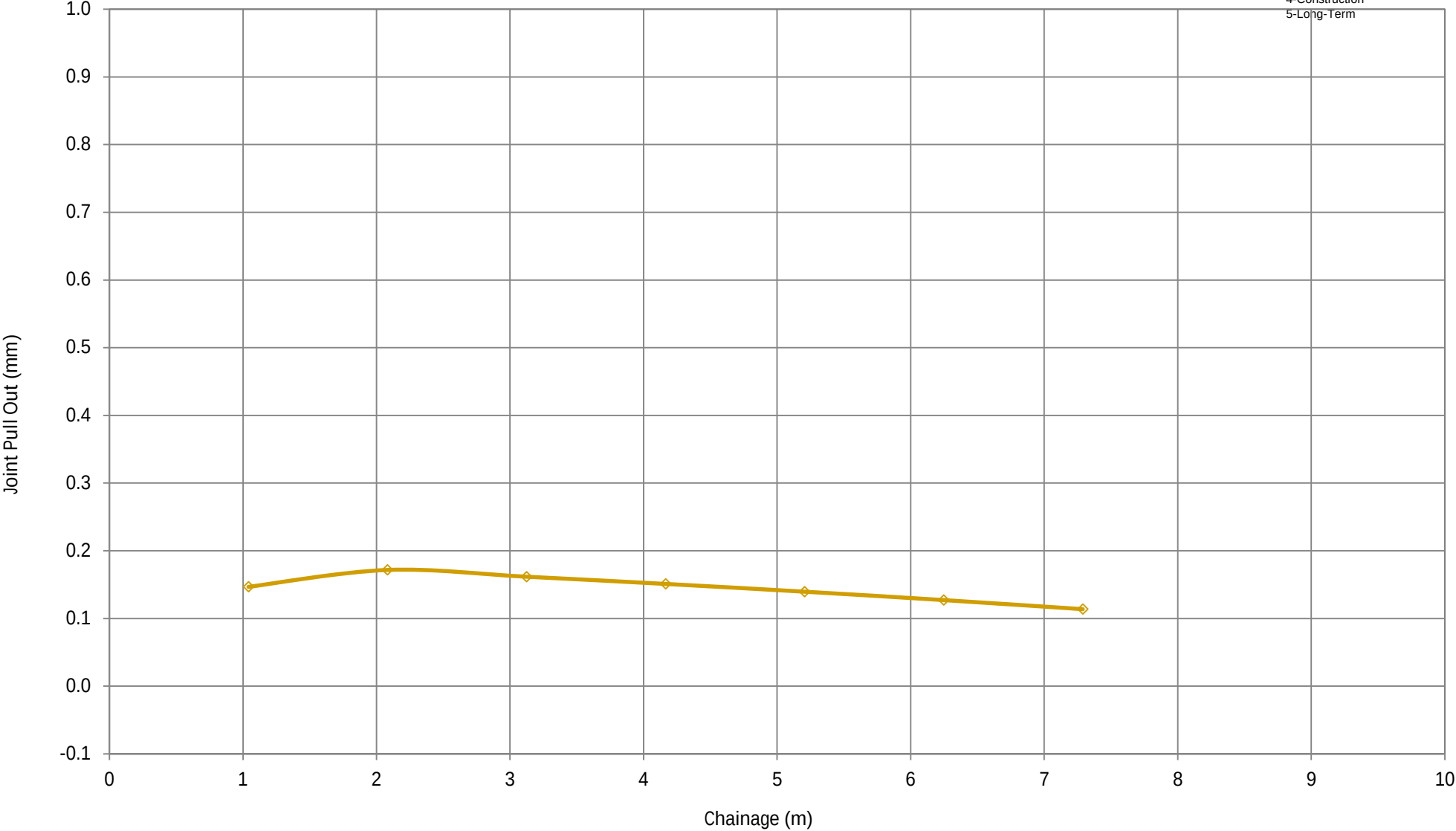


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Pull Out for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

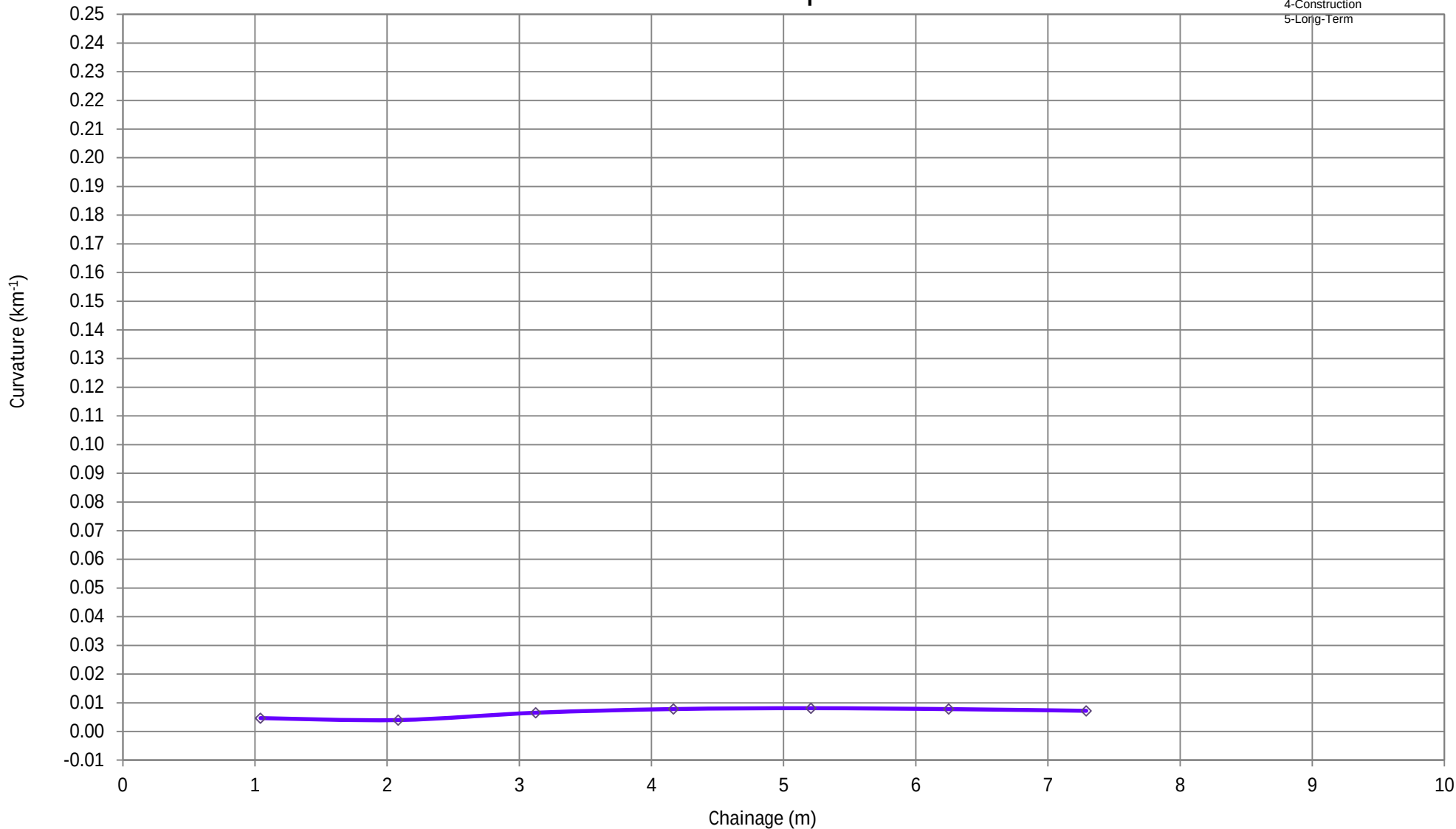


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Curvature Graph for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

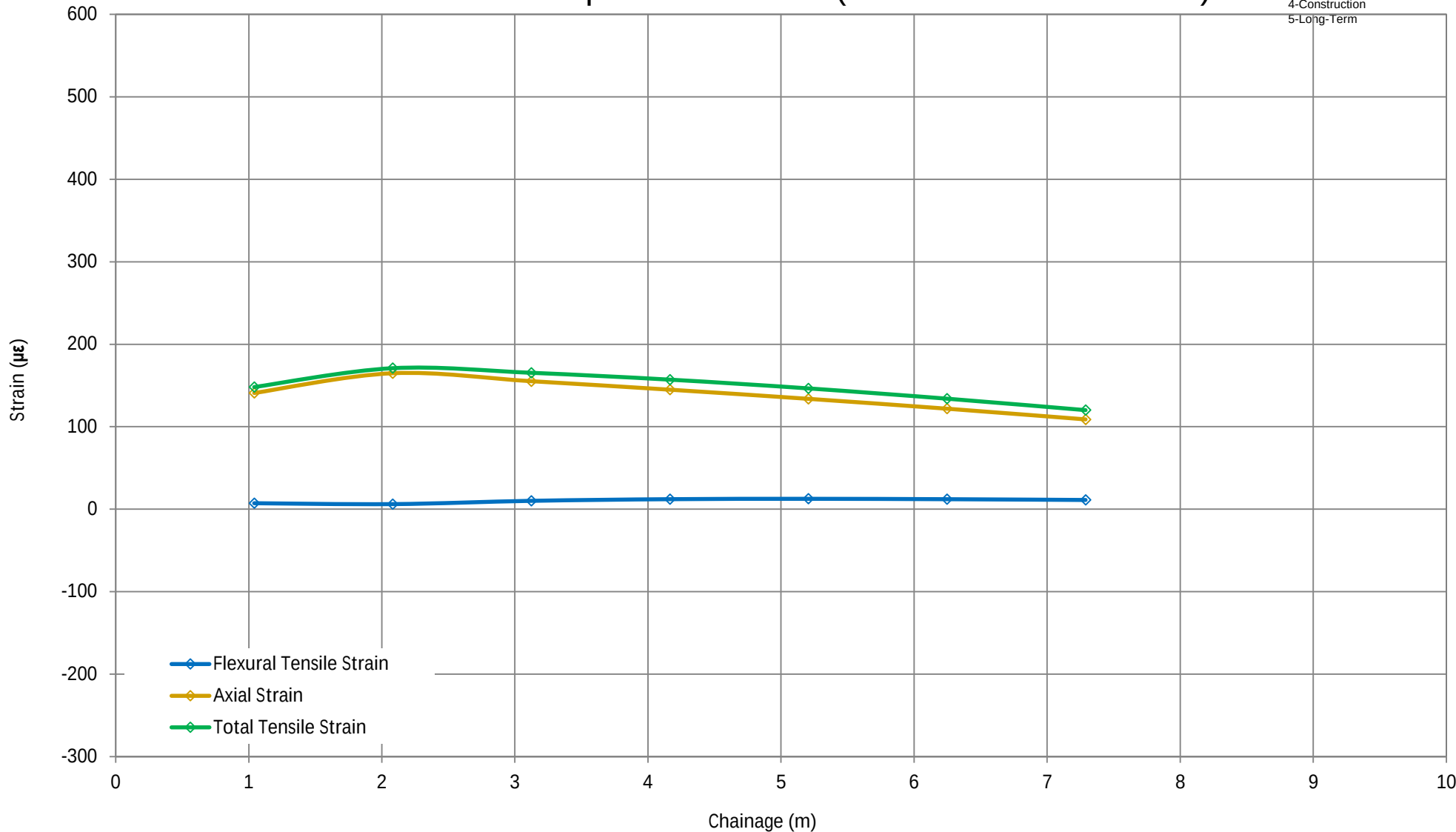


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 3.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

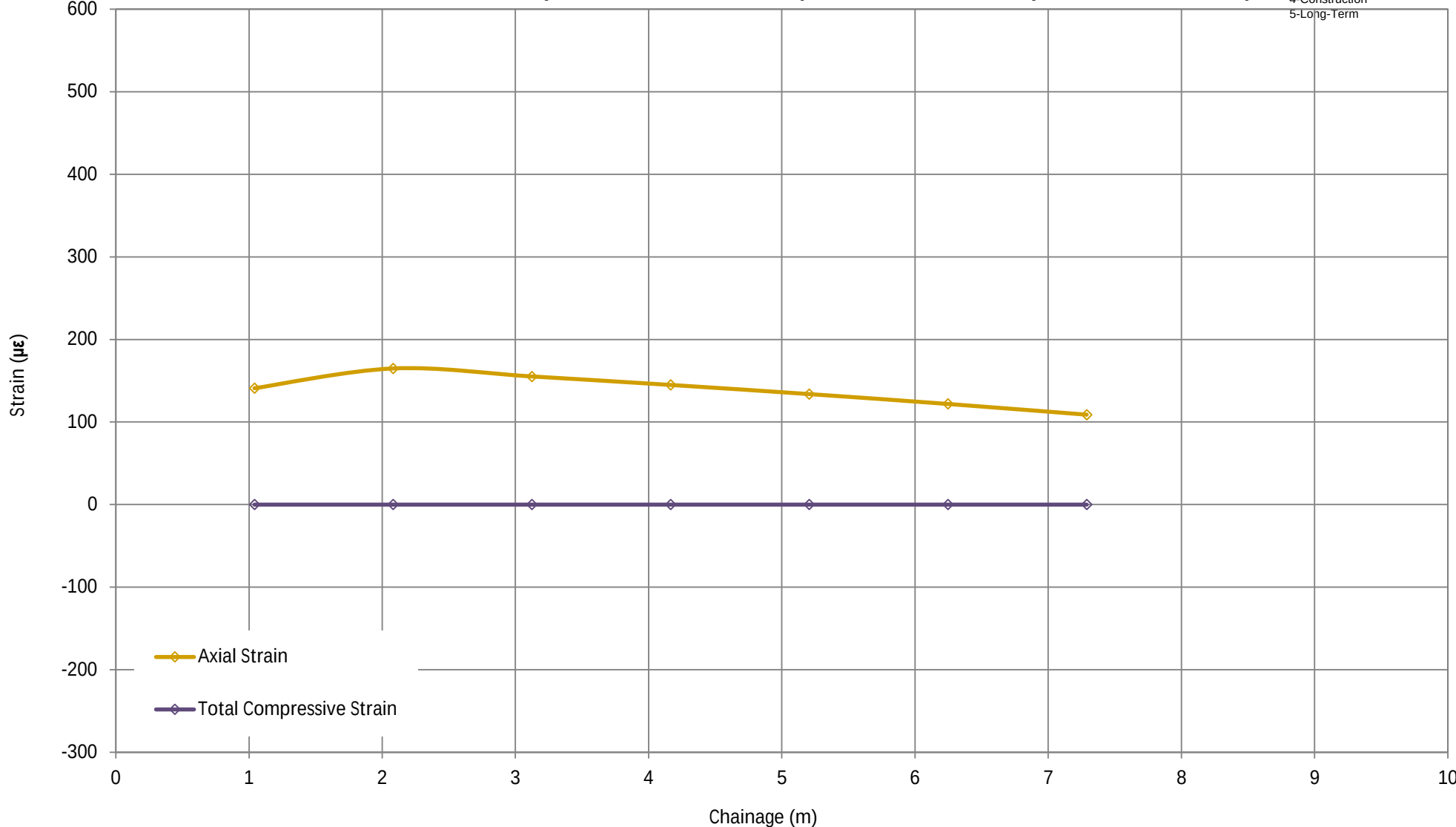


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 3.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

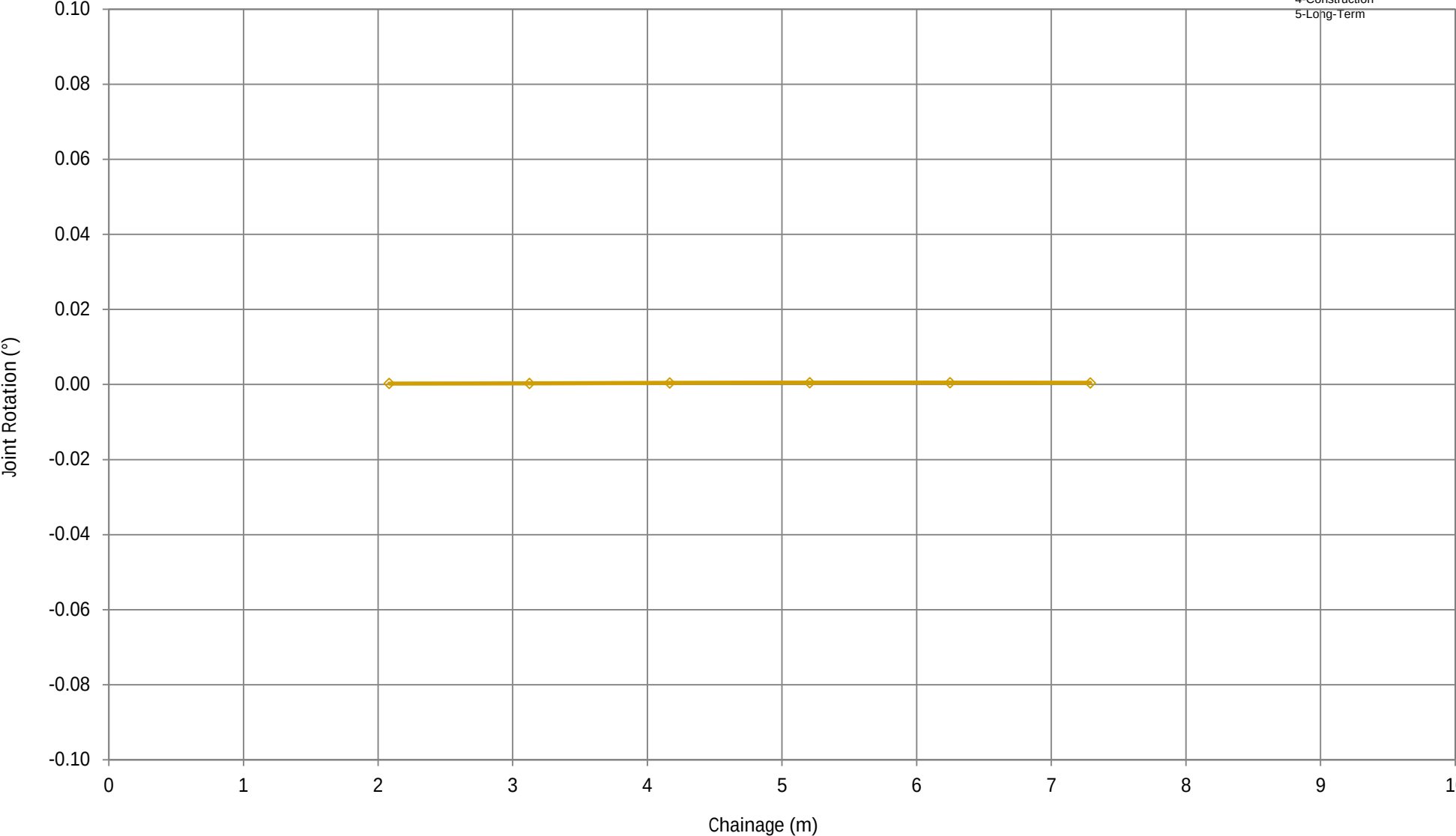


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Rotation for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

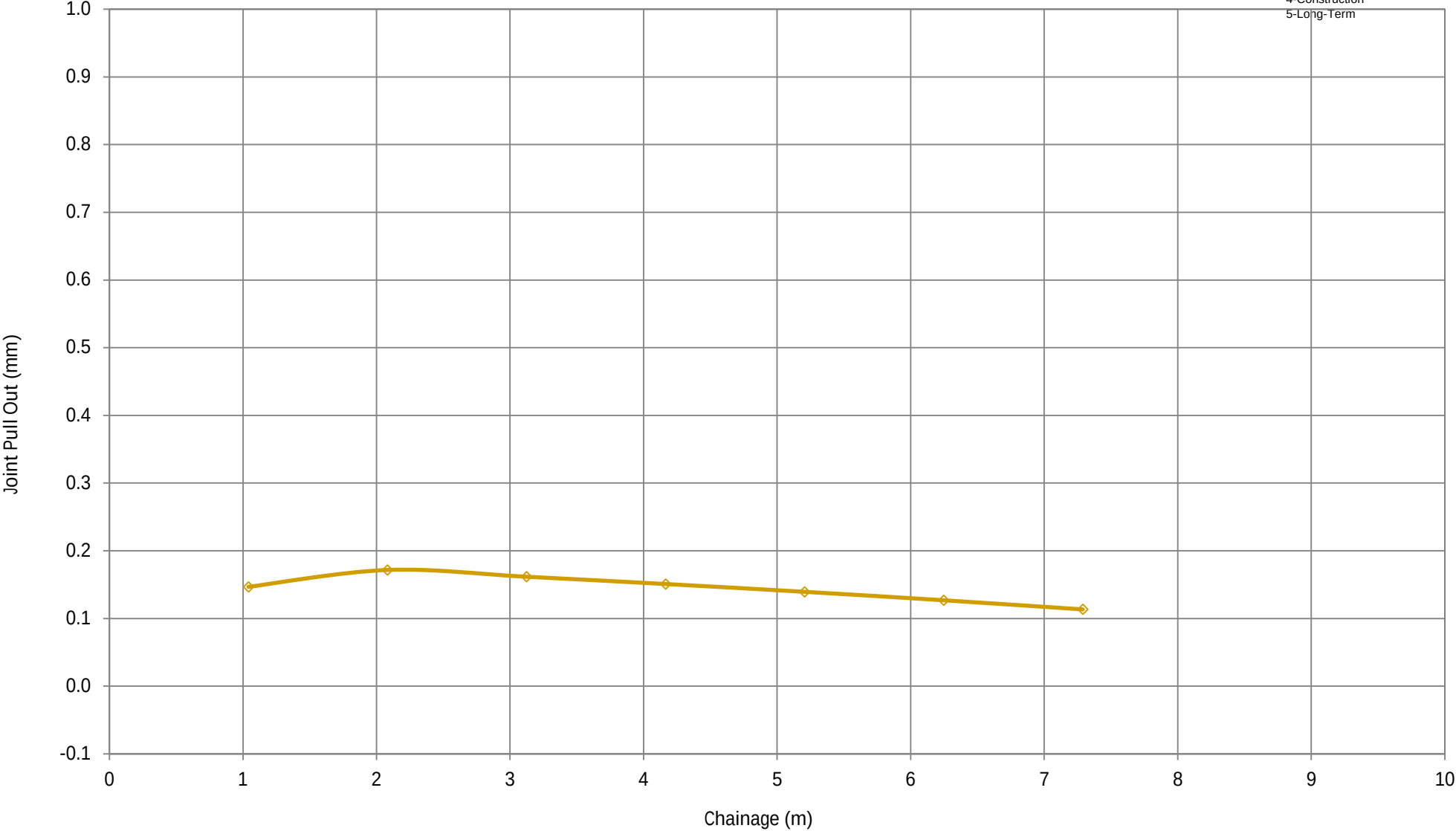


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Pull Out for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

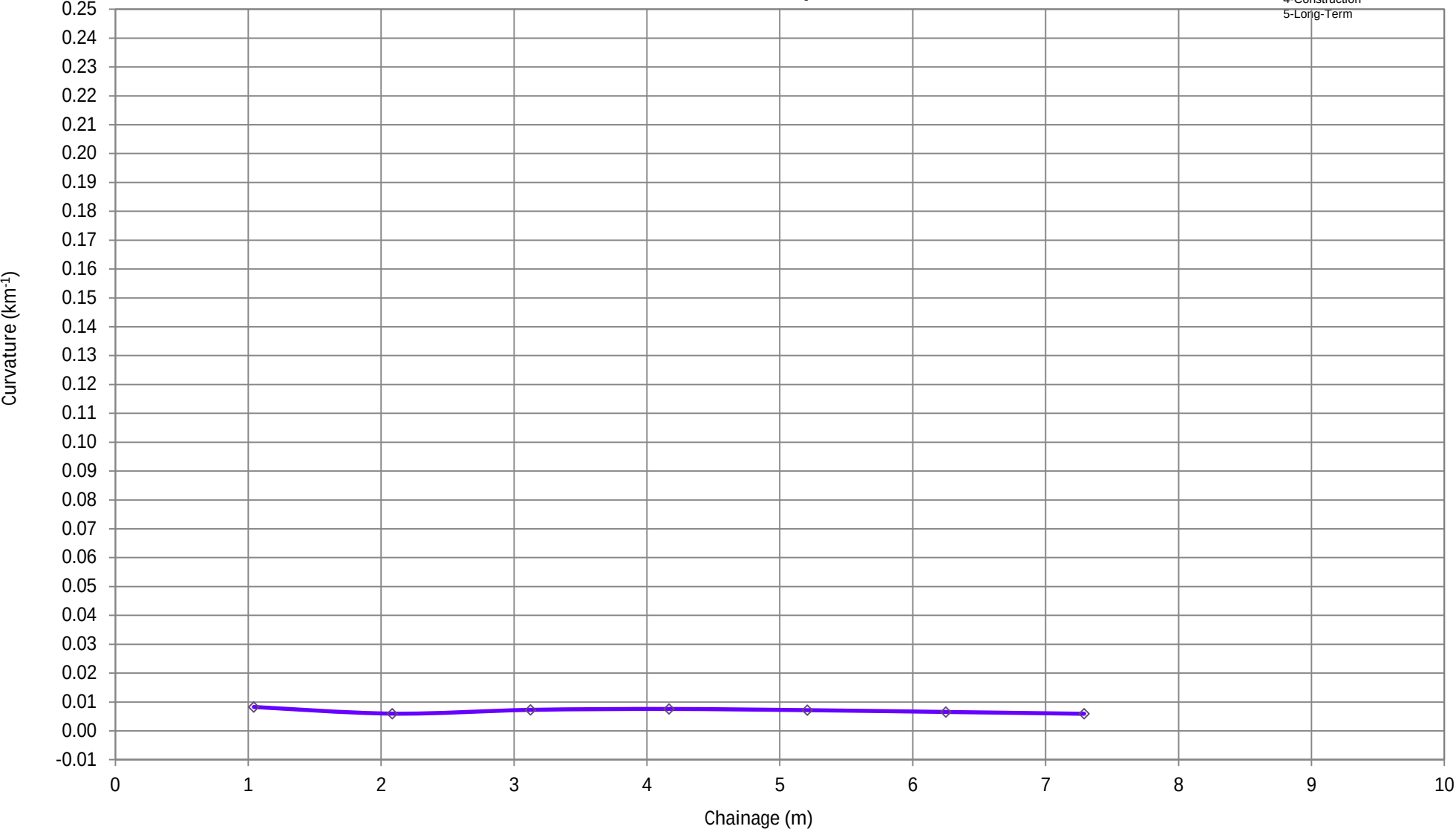


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Curvature Graph for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

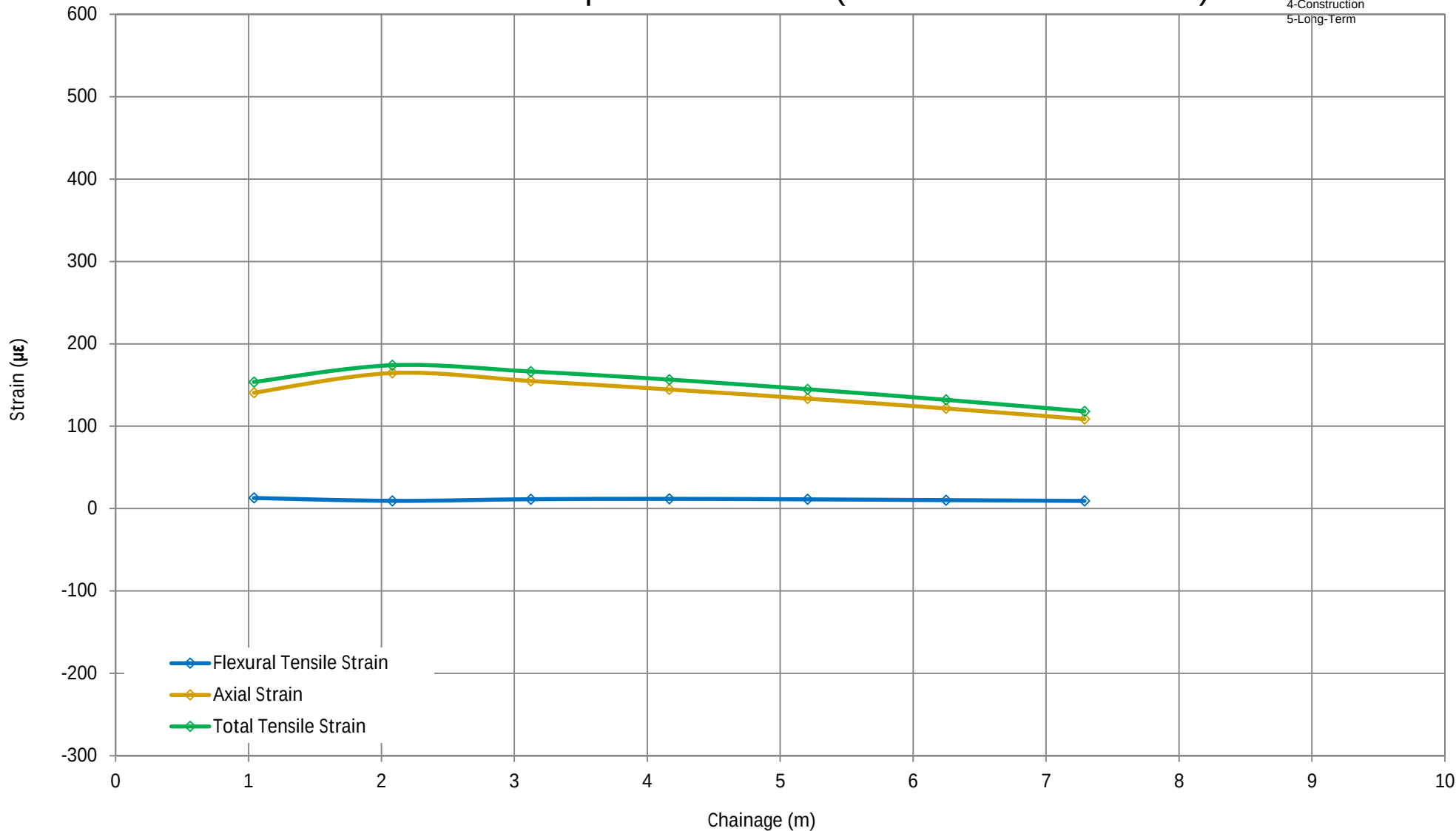


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 3.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

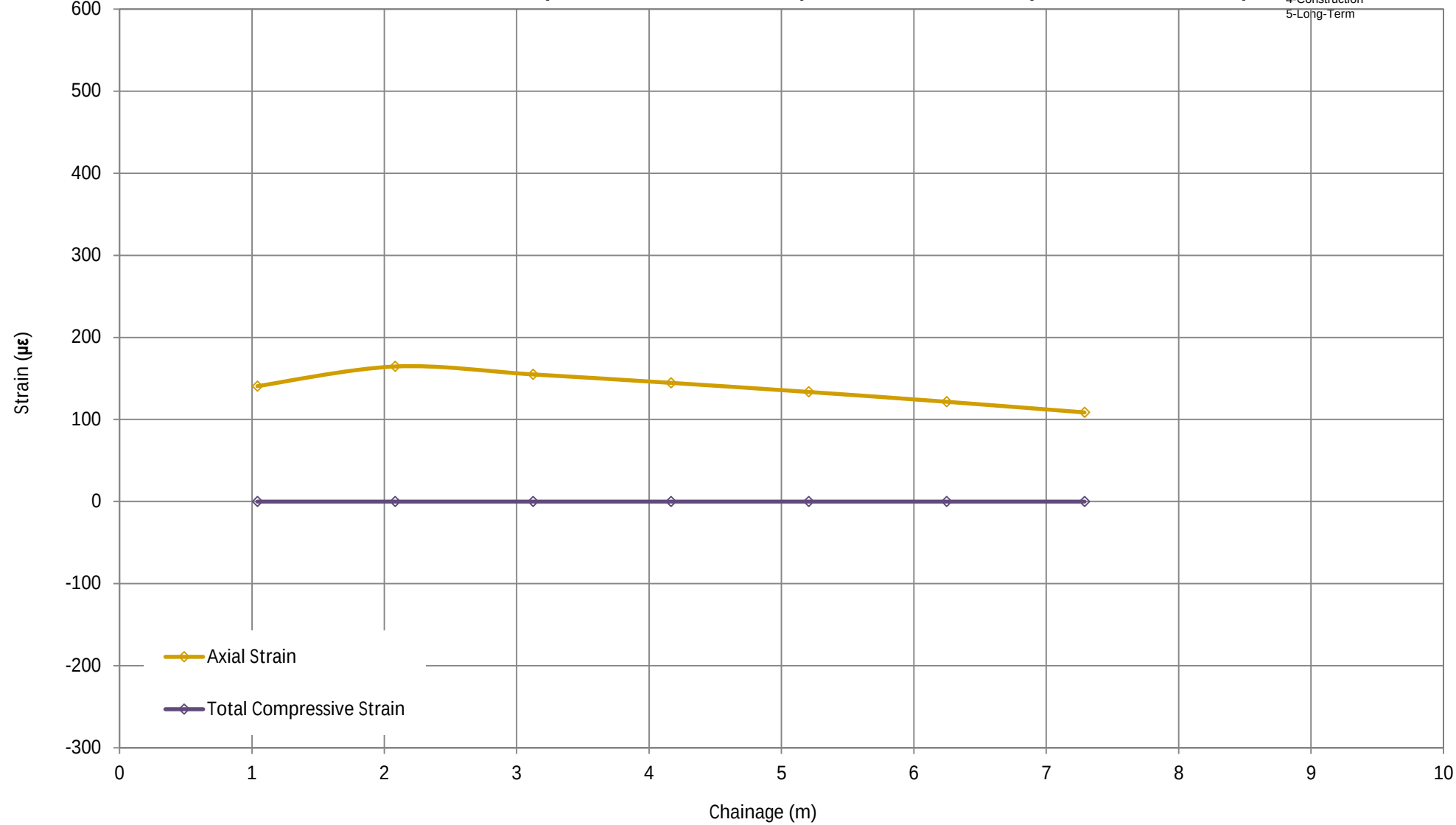


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 3.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

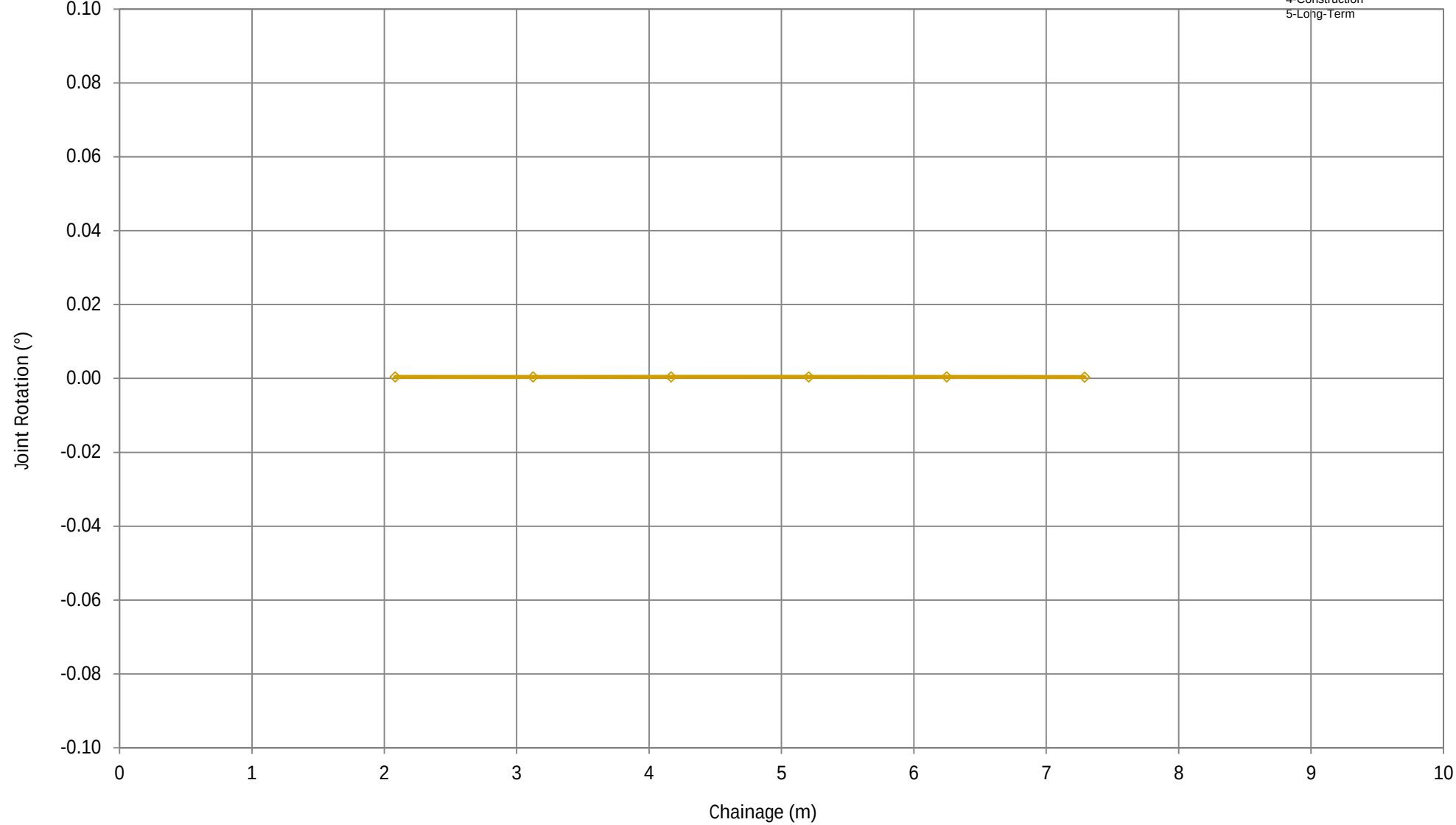


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Rotation for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

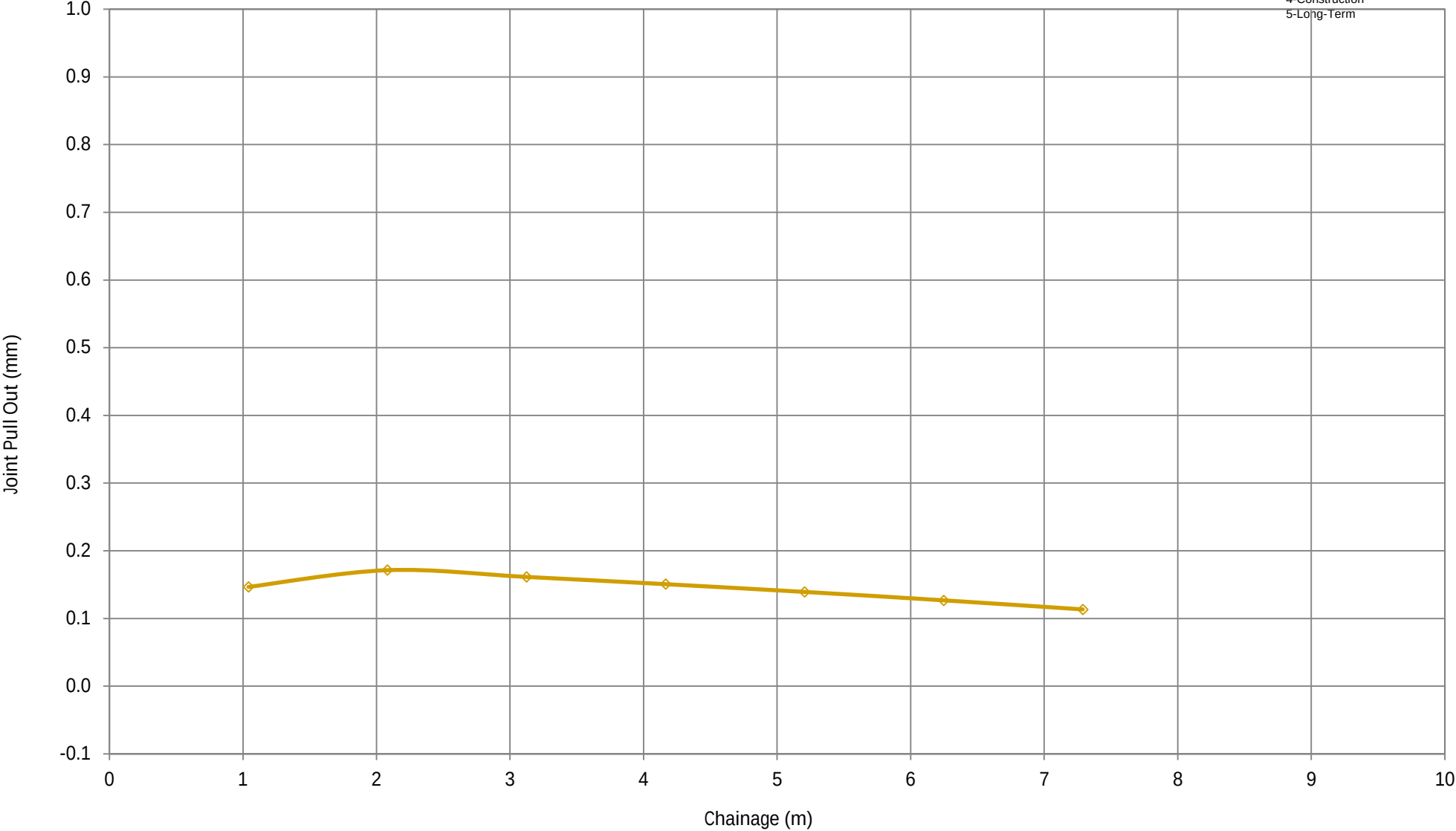


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Pull Out for Sewer 3.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

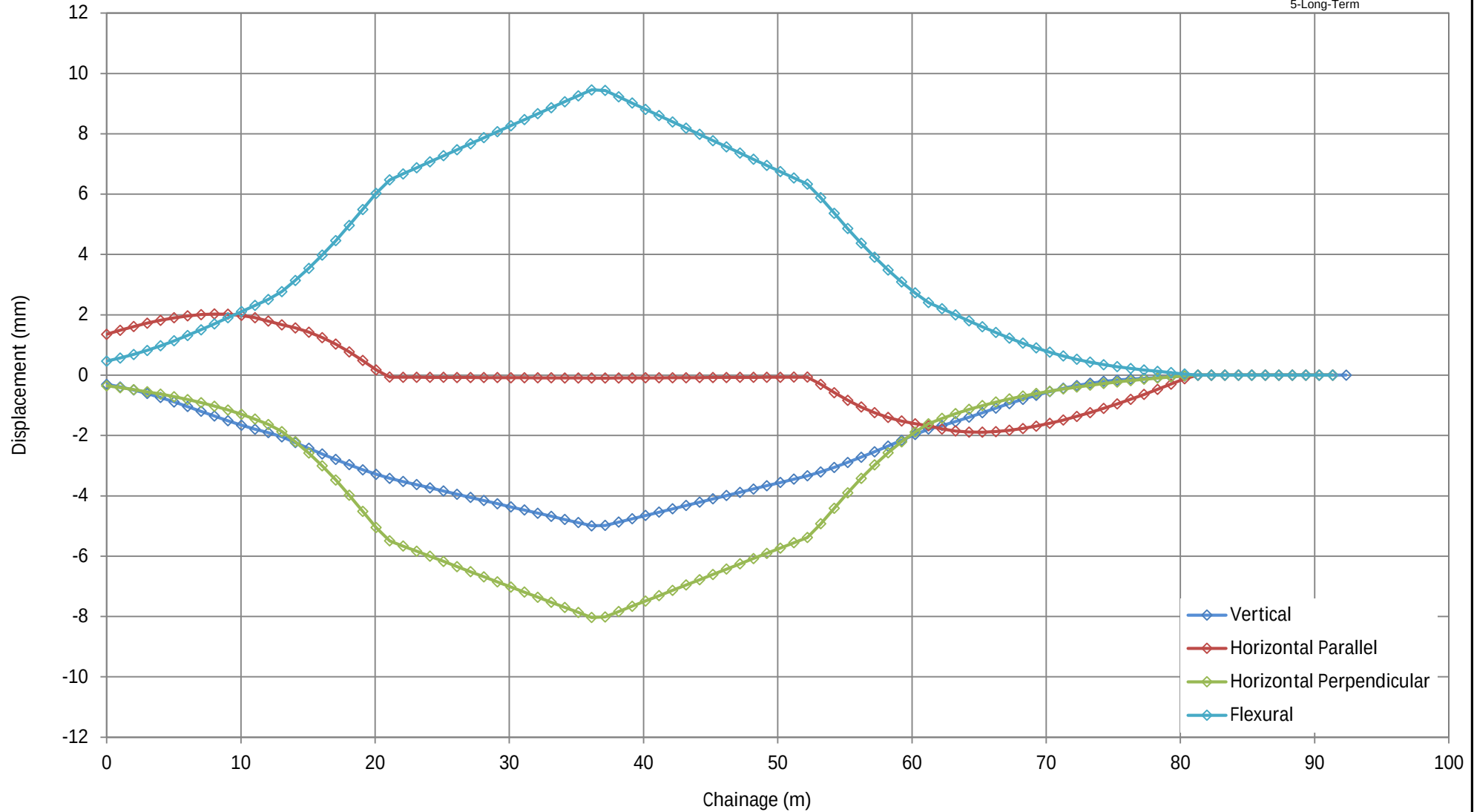


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Displacement Graph for Sewer 3.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

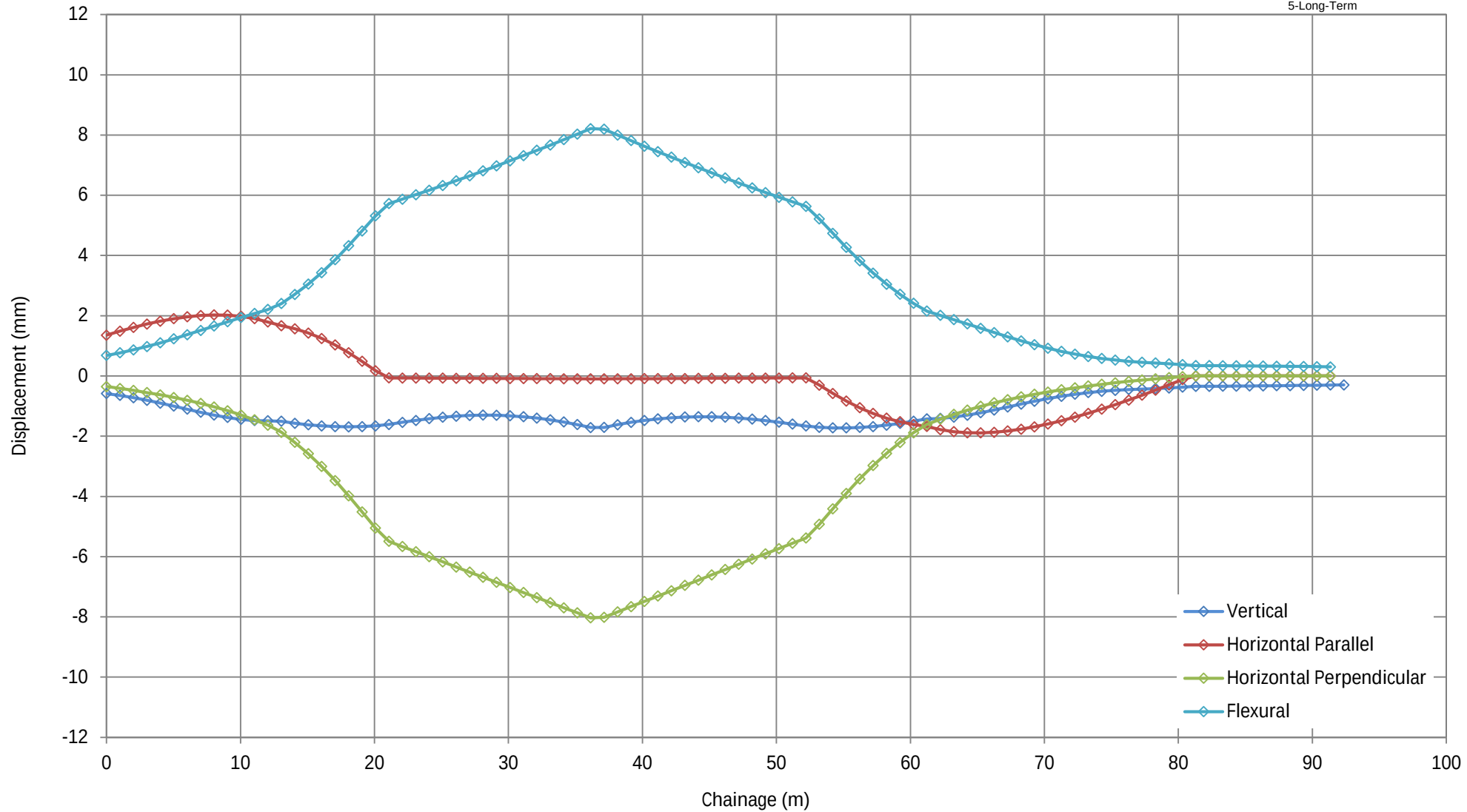


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Displacement Graph for Sewer 3.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

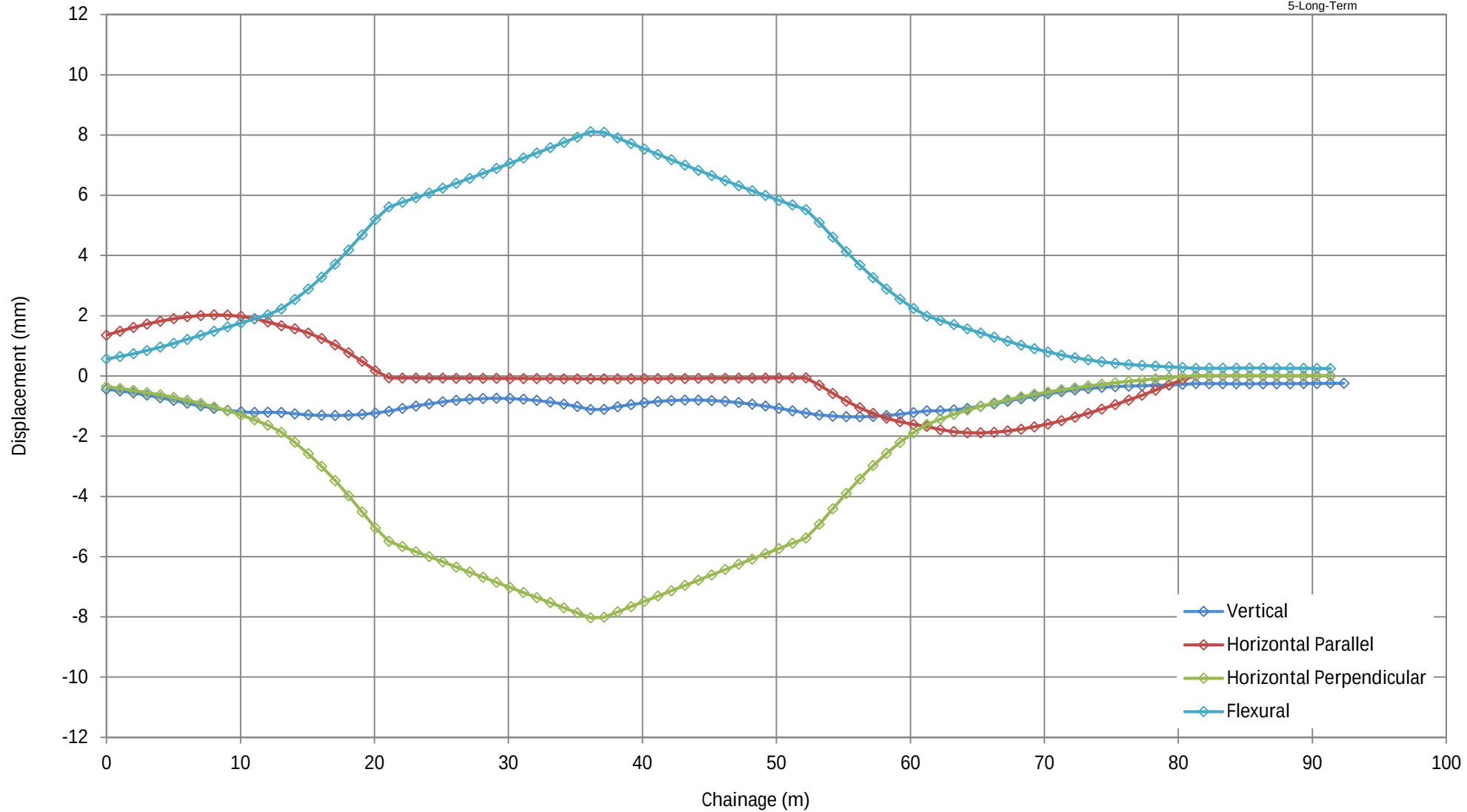


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Displacement Graph for Sewer 3.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

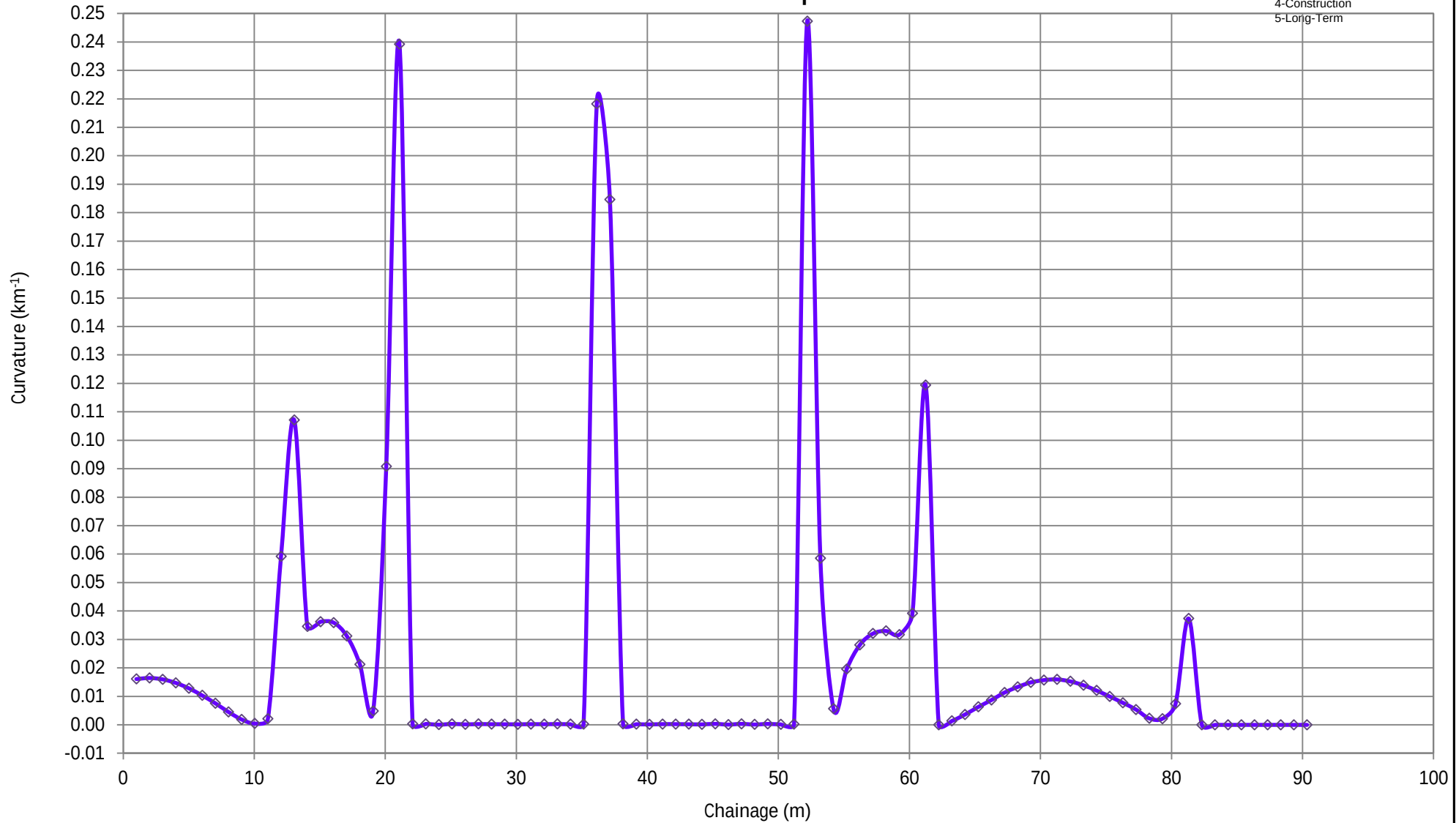


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Curvature Graph for Sewer 3.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

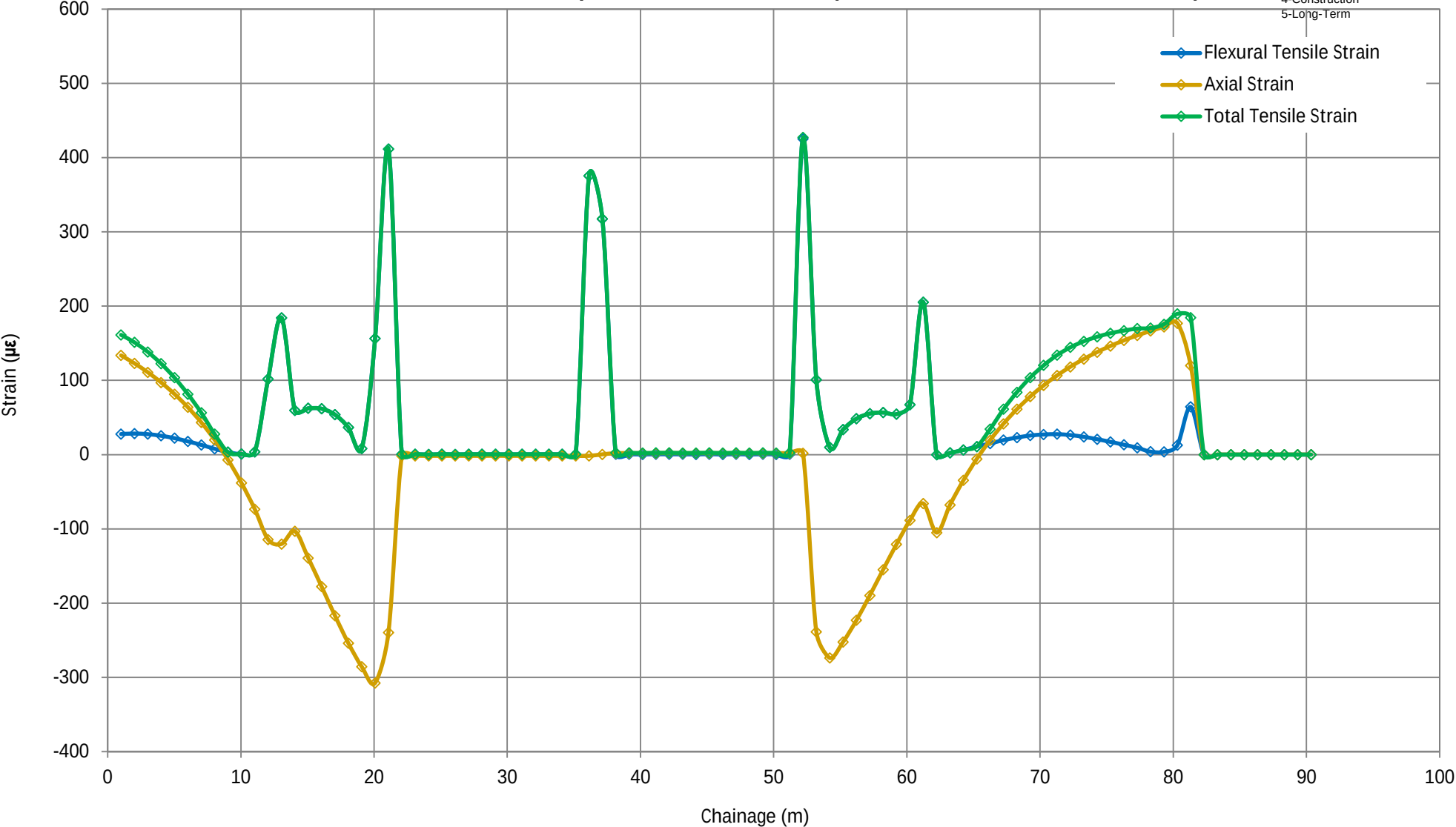


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 3.2 (Combined Tensile Strain)

- Phase Key (Cumulative Phases)
- 1-Demolition (N/A)
 - 2-Wall Installation (N/A)
 - 3-Excavation
 - 4-Construction
 - 5-Long-Term

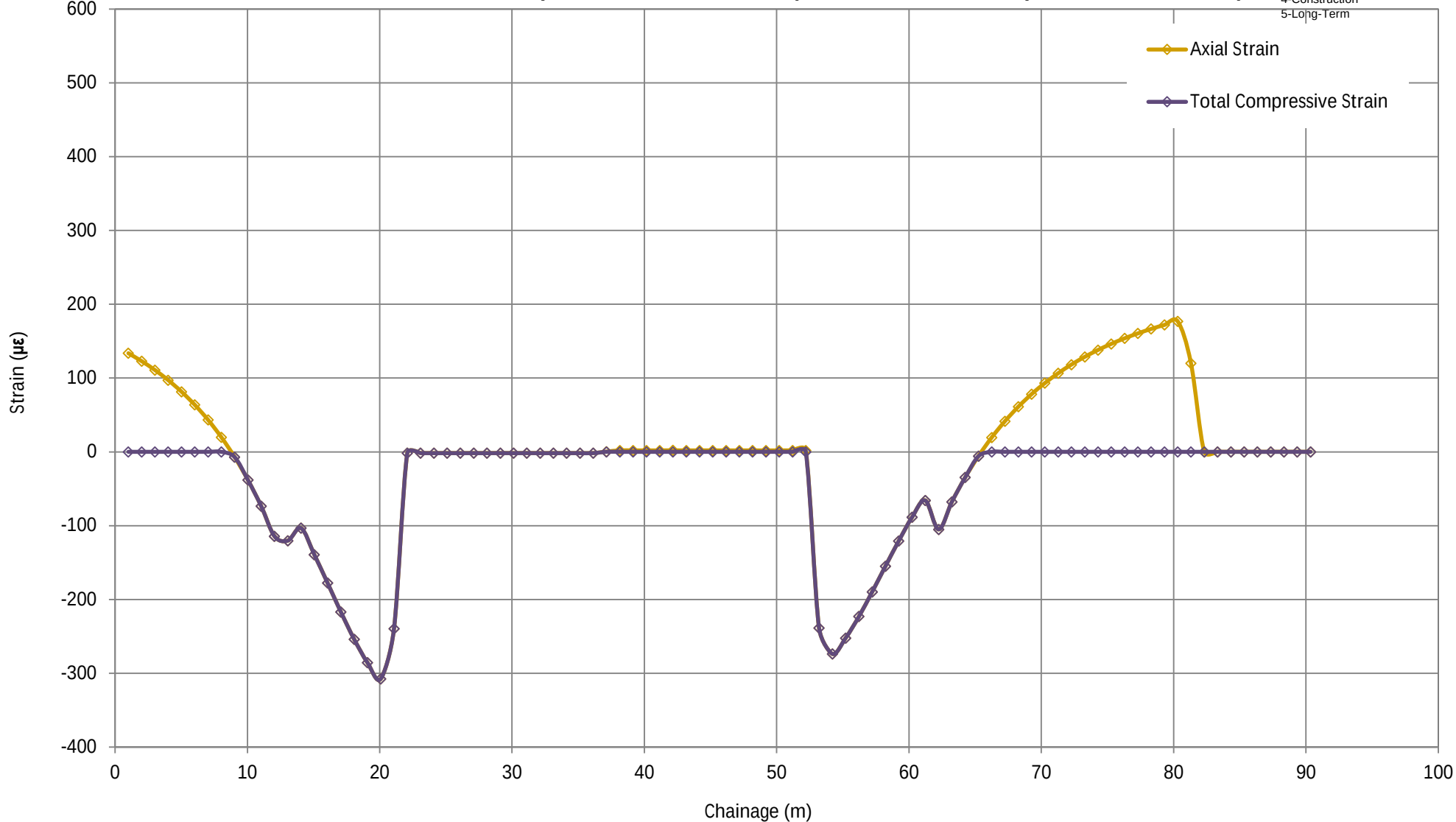


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Strain Graph for Sewer 3.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

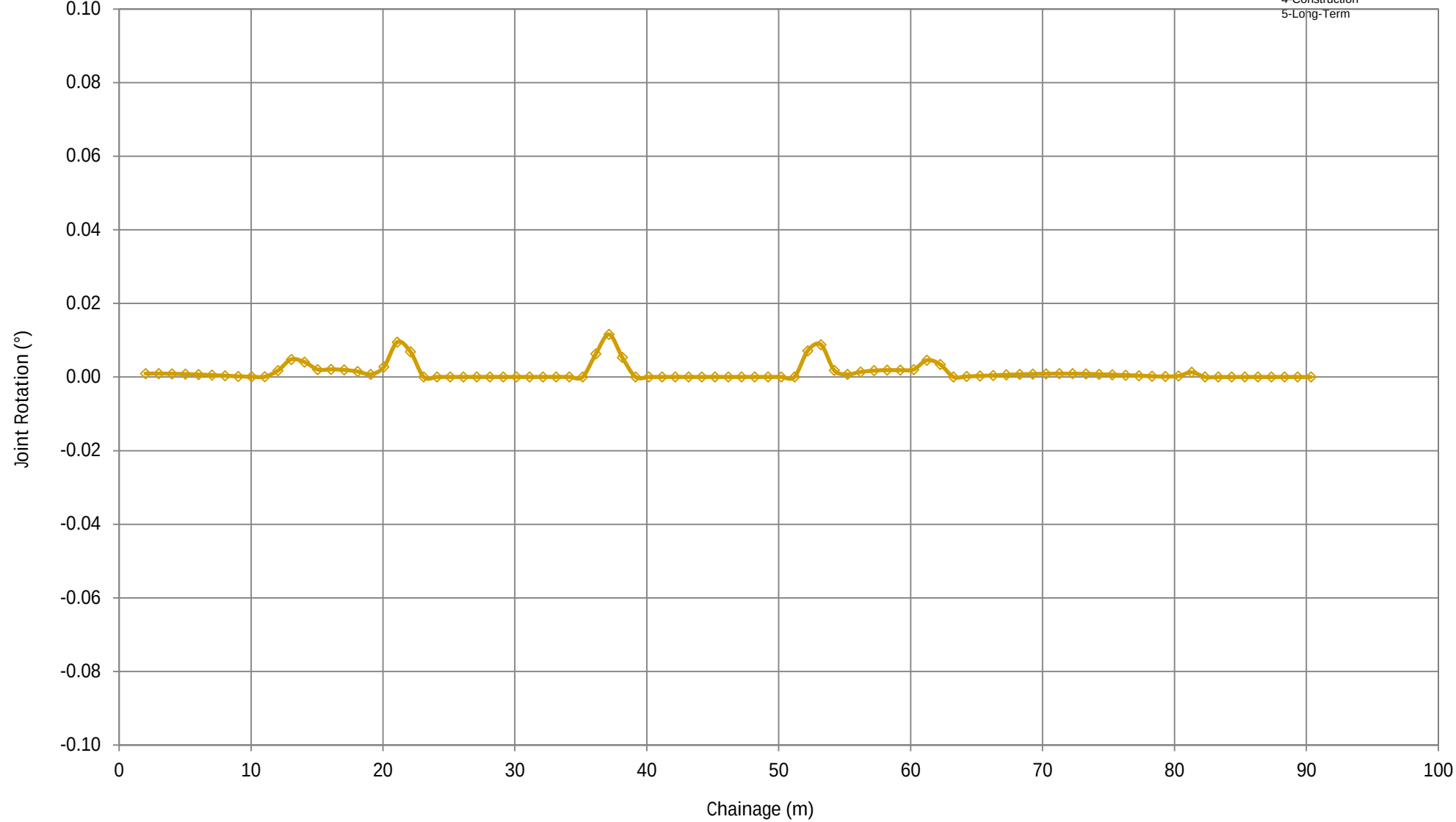


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Rotation for Sewer 3.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

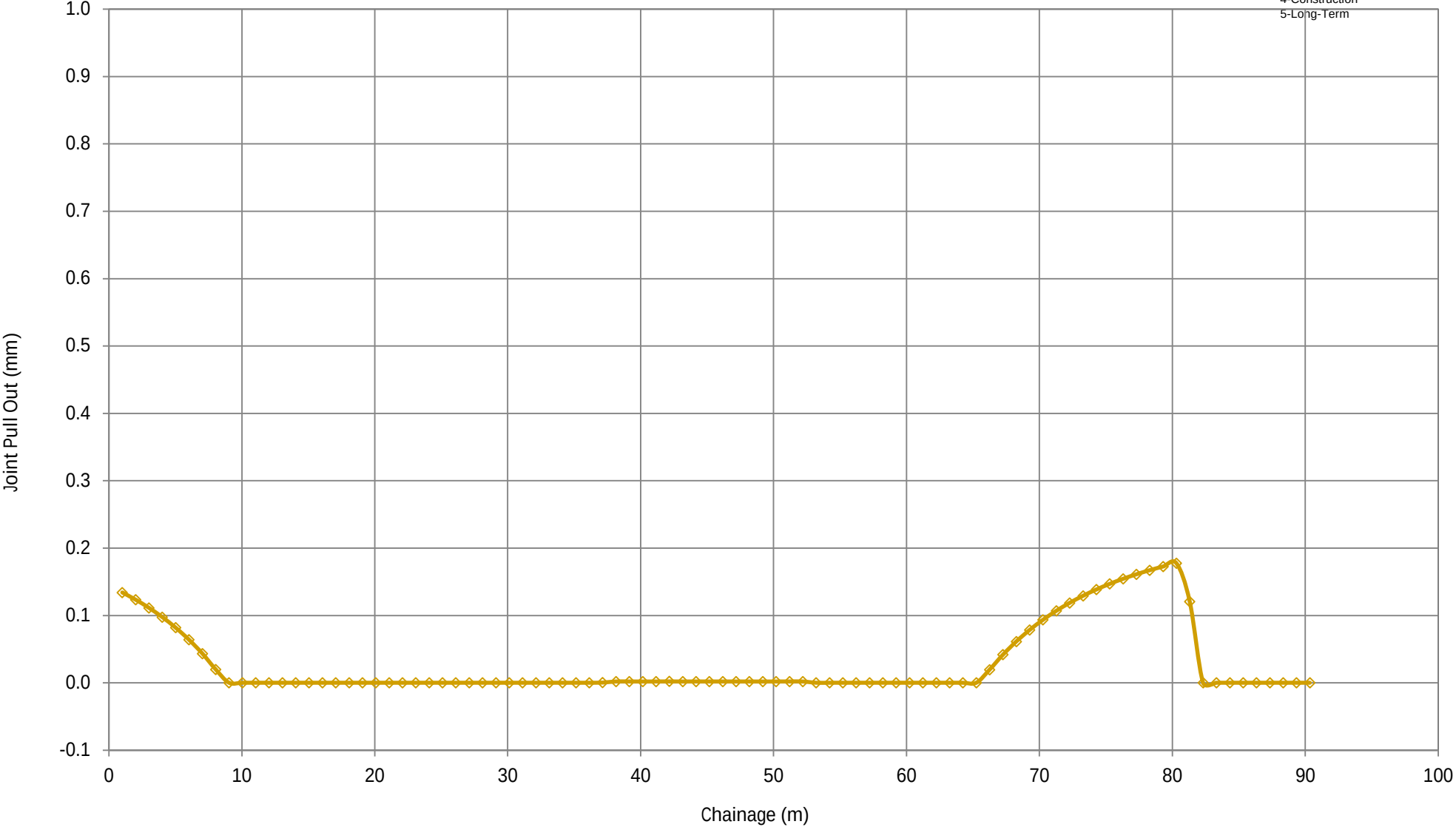


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

3Predicted Joint Pull Out for Sewer 3.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

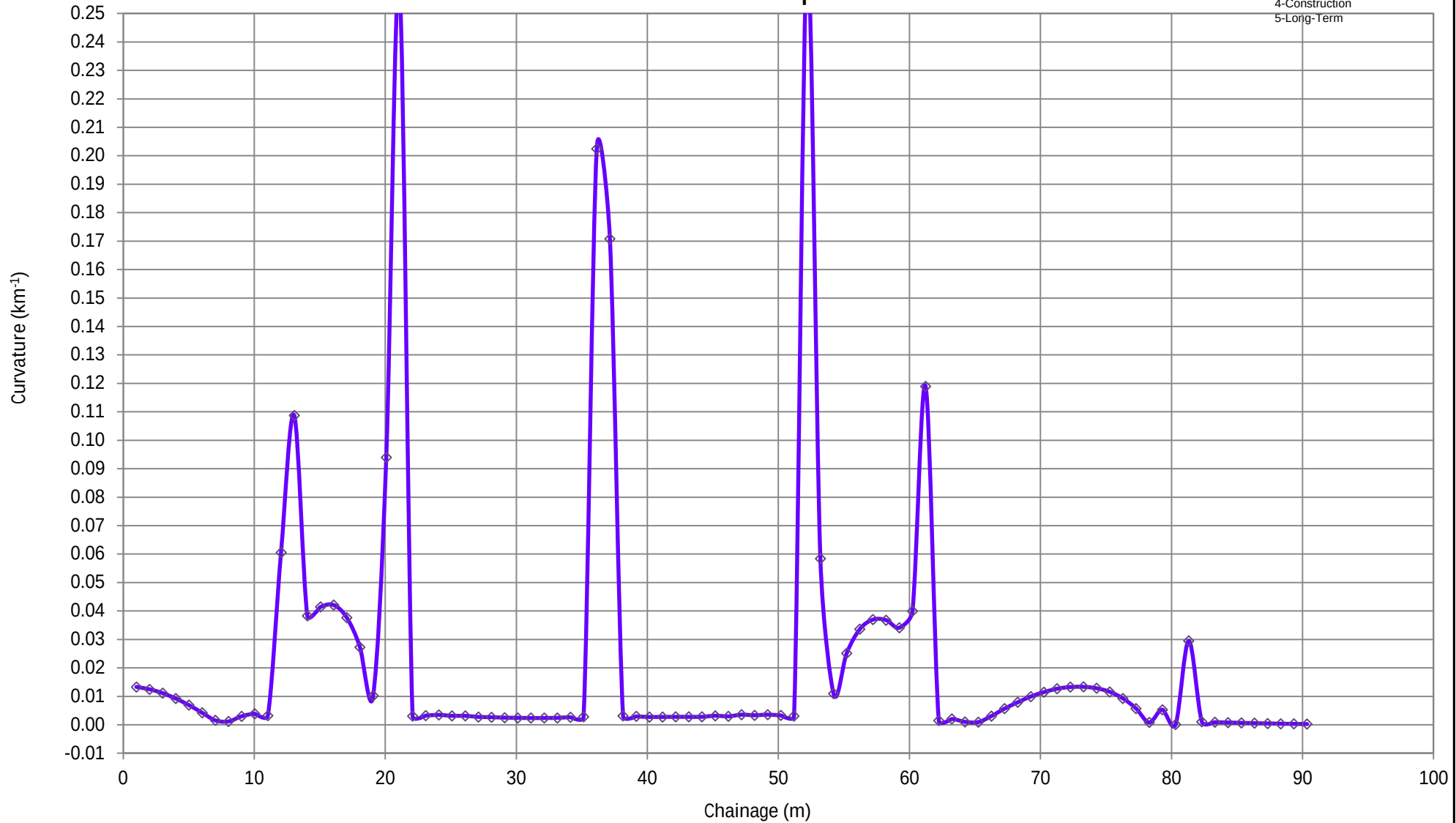


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Curvature Graph for Sewer 3.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

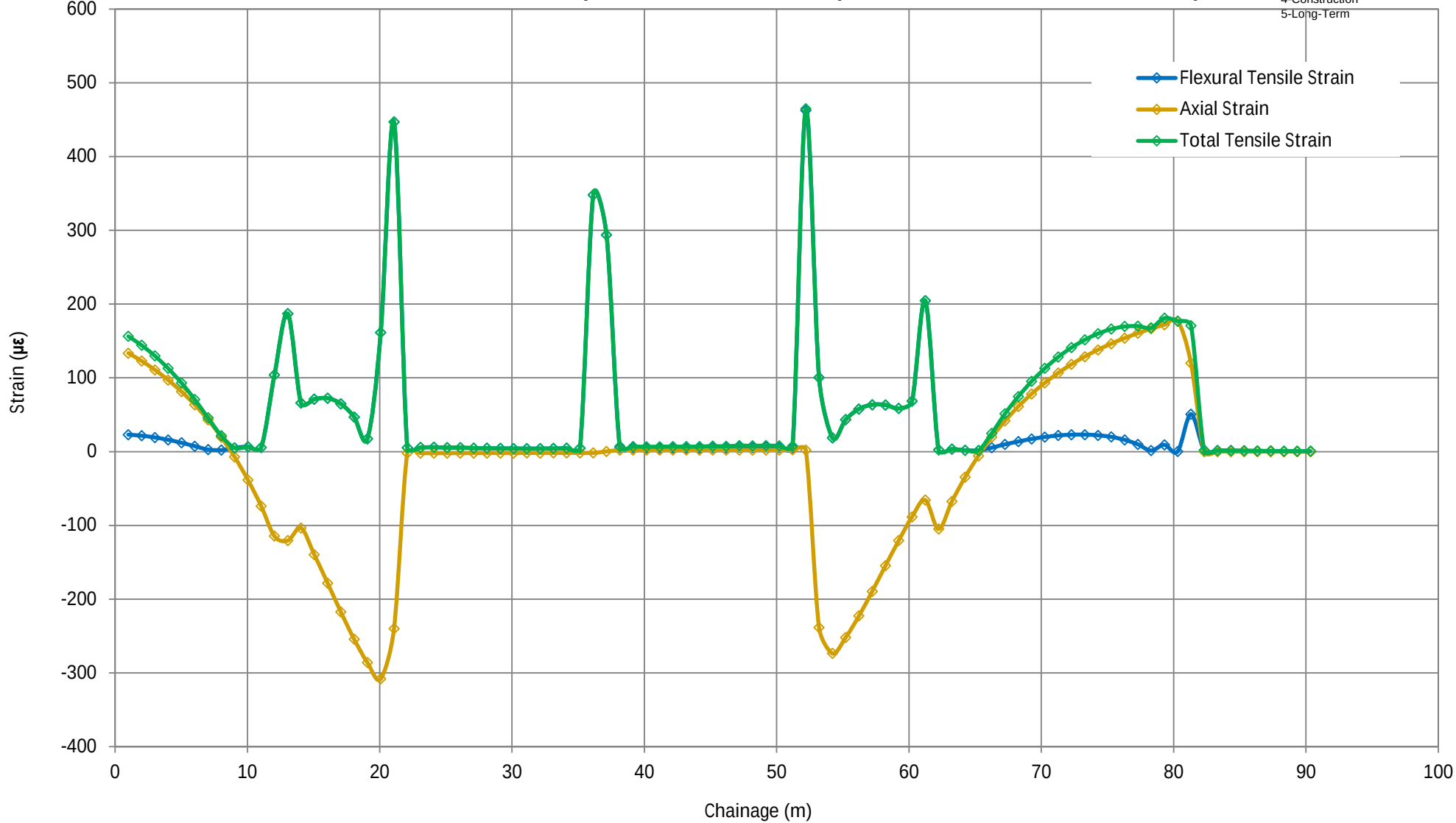


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 3.2 (Combined Tensile Strain)

- Phase Key (Cumulative Phases)
- 1-Demolition (N/A)
 - 2-Wall Installation (N/A)
 - 3-Excavation
 - 4-Construction
 - 5-Long-Term

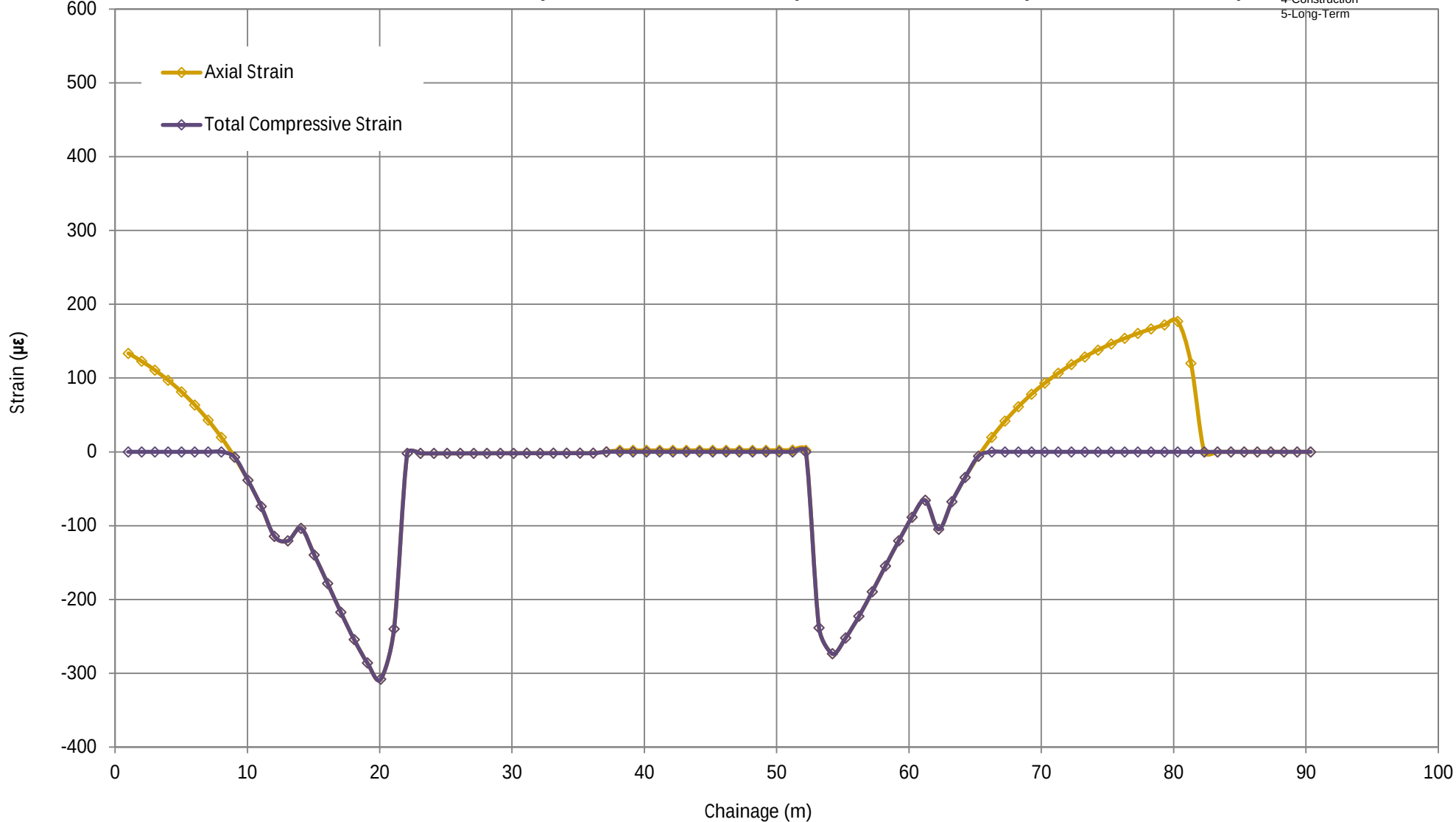


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Strain Graph for Sewer 3.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

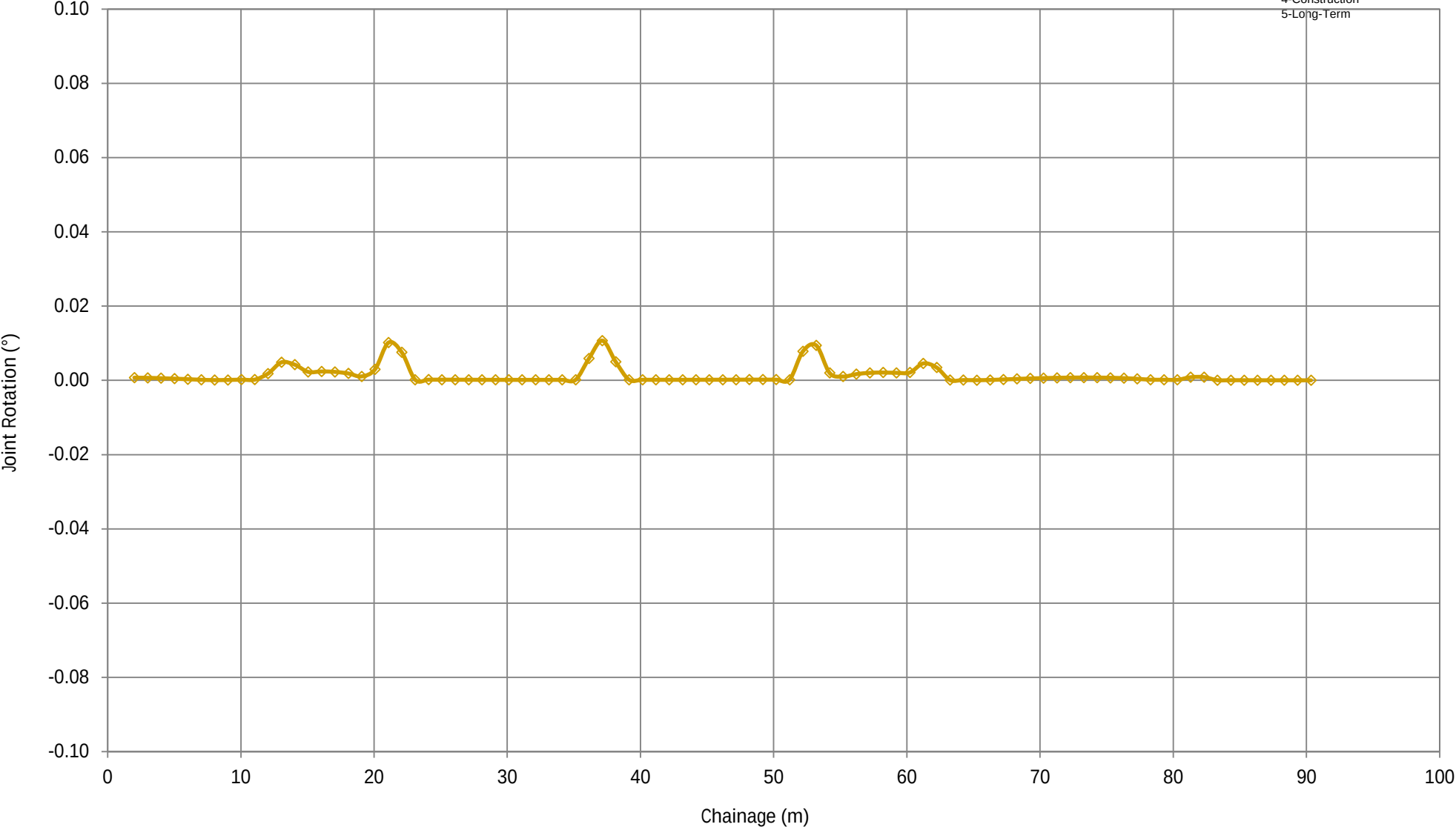


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Rotation for Sewer 3.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

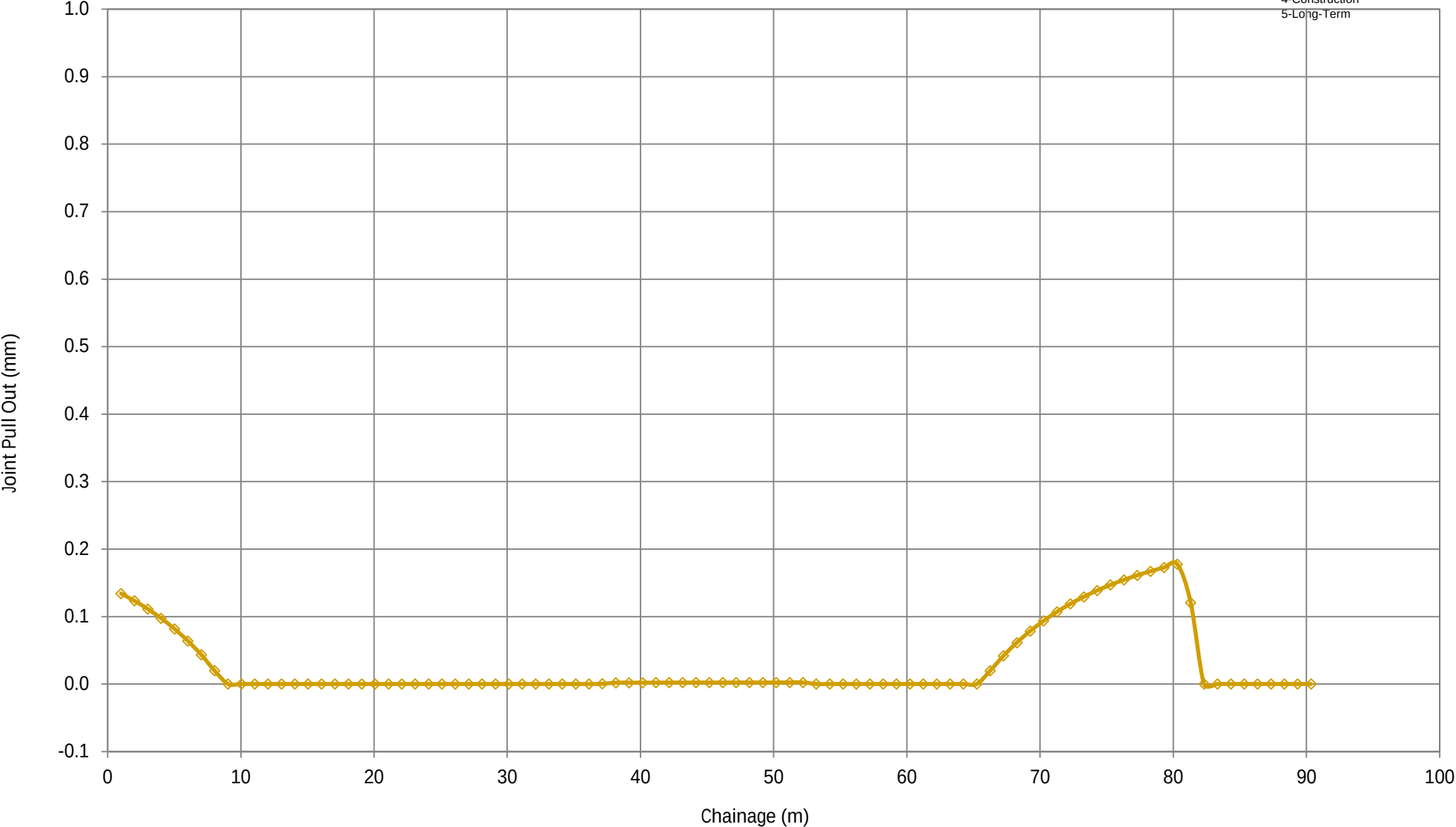


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

4Predicted Joint Pull Out for Sewer 3.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

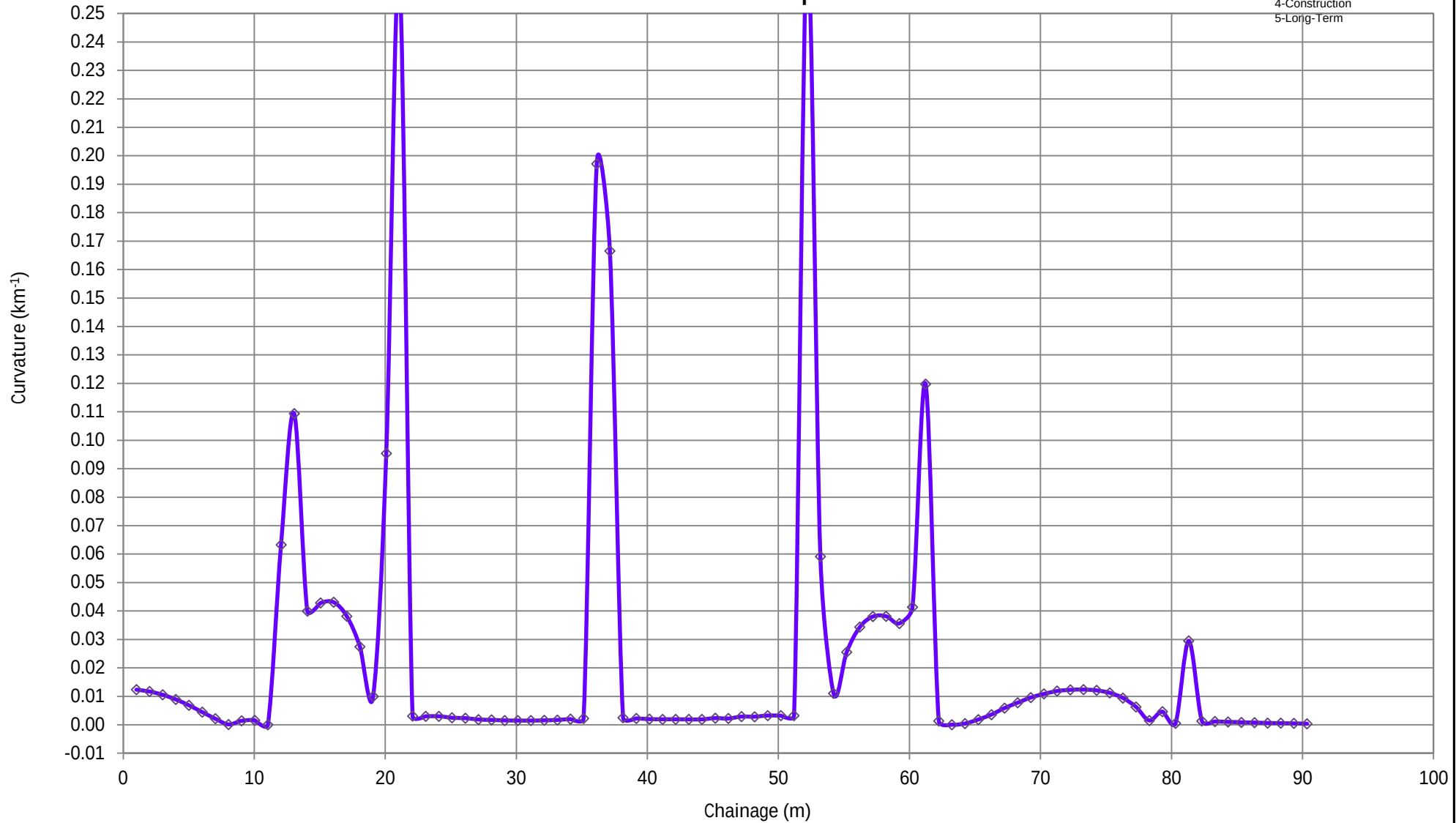


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Curvature Graph for Sewer 3.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation (N/A)
 3-Excavation
 4-Construction
 5-Long-Term

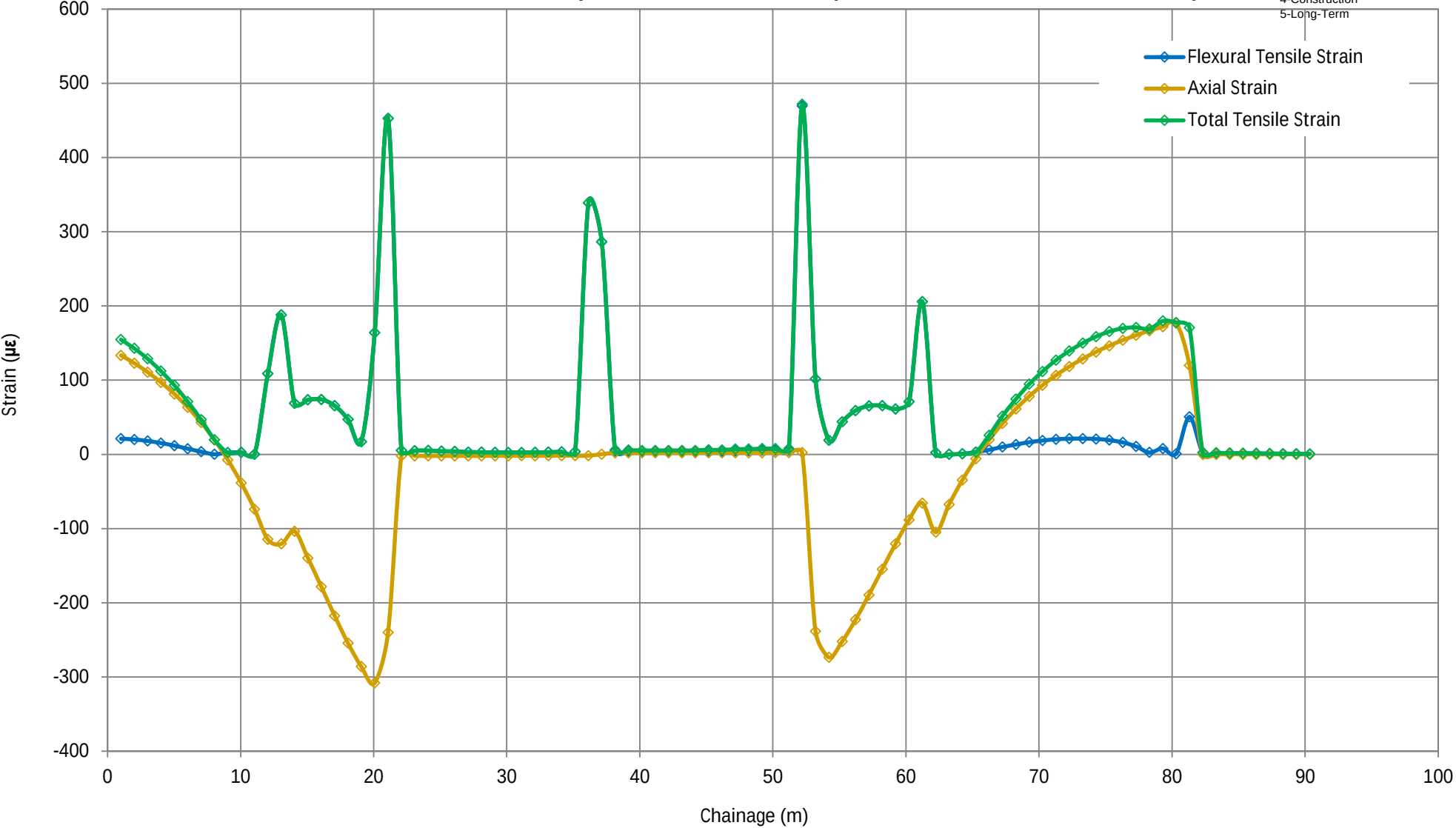


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 3.2 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

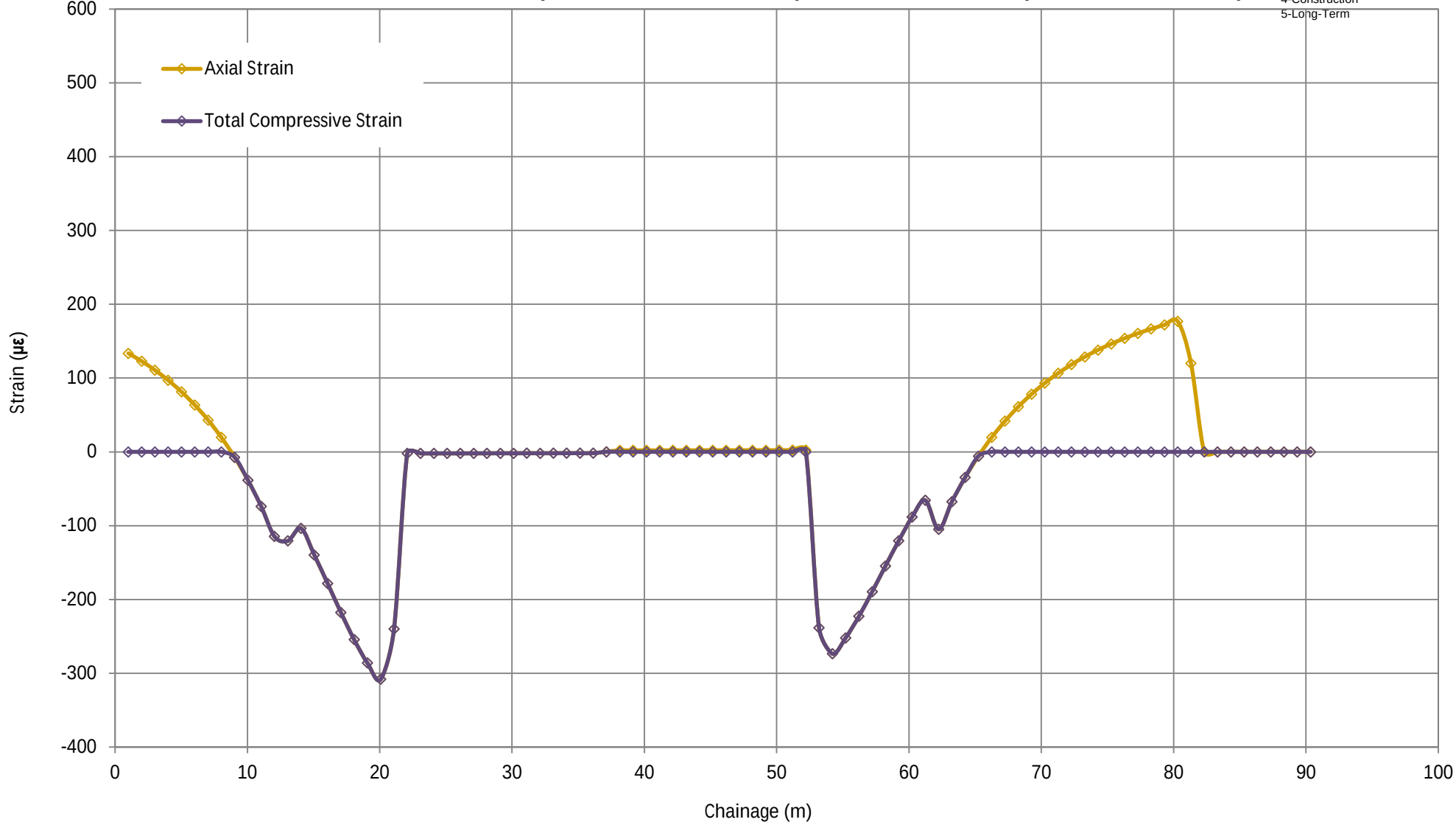


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Strain Graph for Sewer 3.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

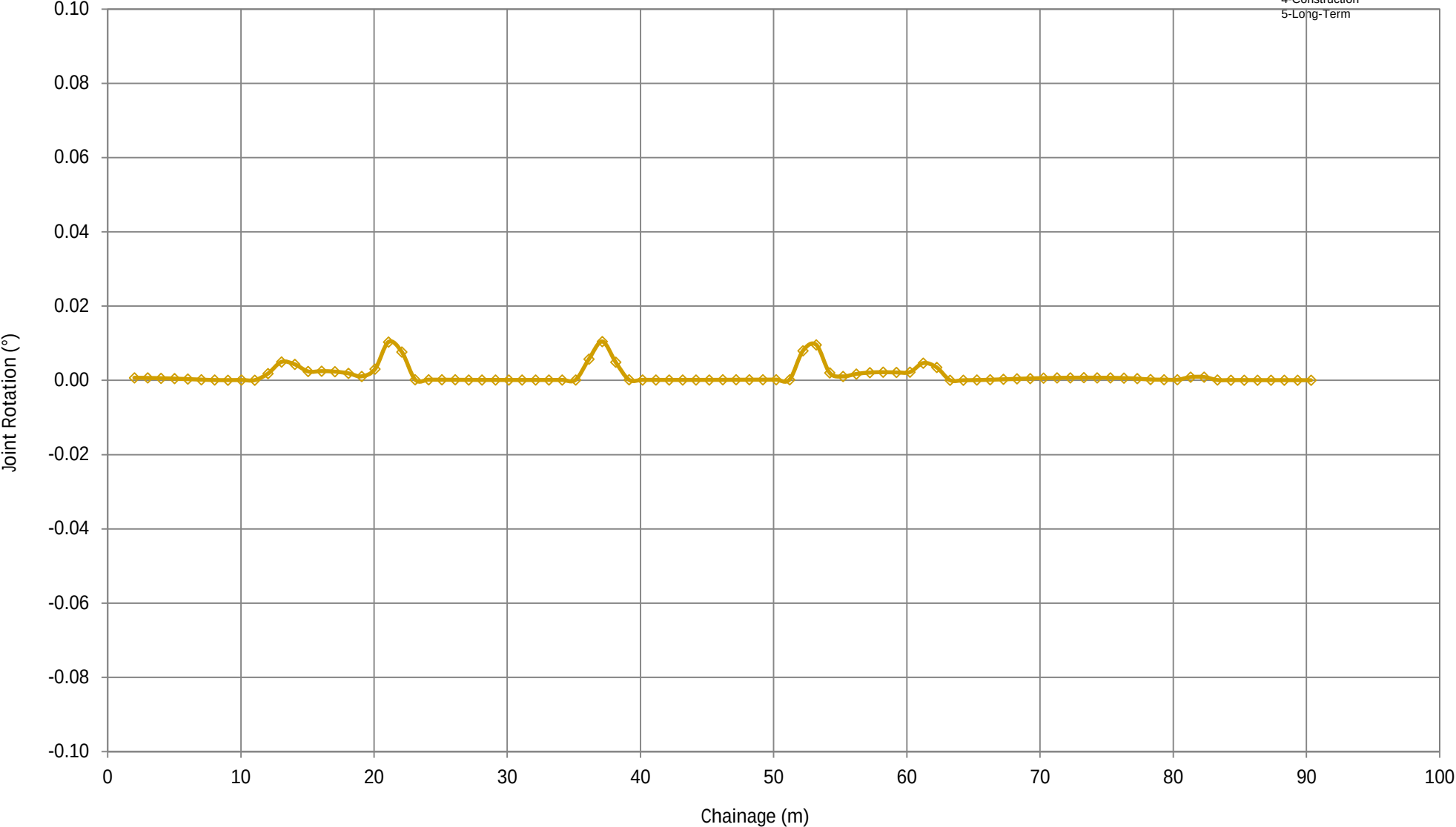


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Rotation for Sewer 3.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term

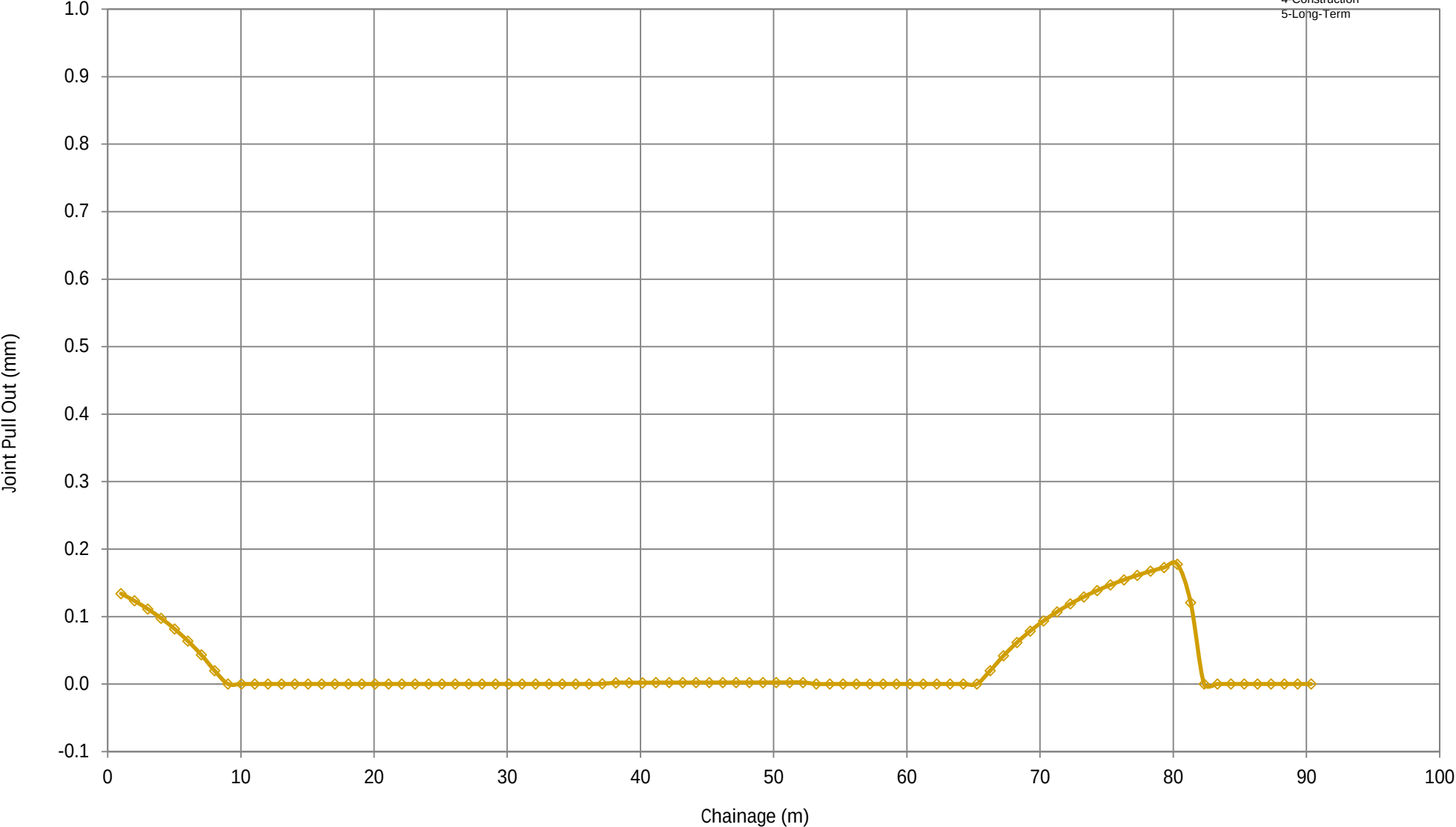


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

5Predicted Joint Pull Out for Sewer 3.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation (N/A)
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

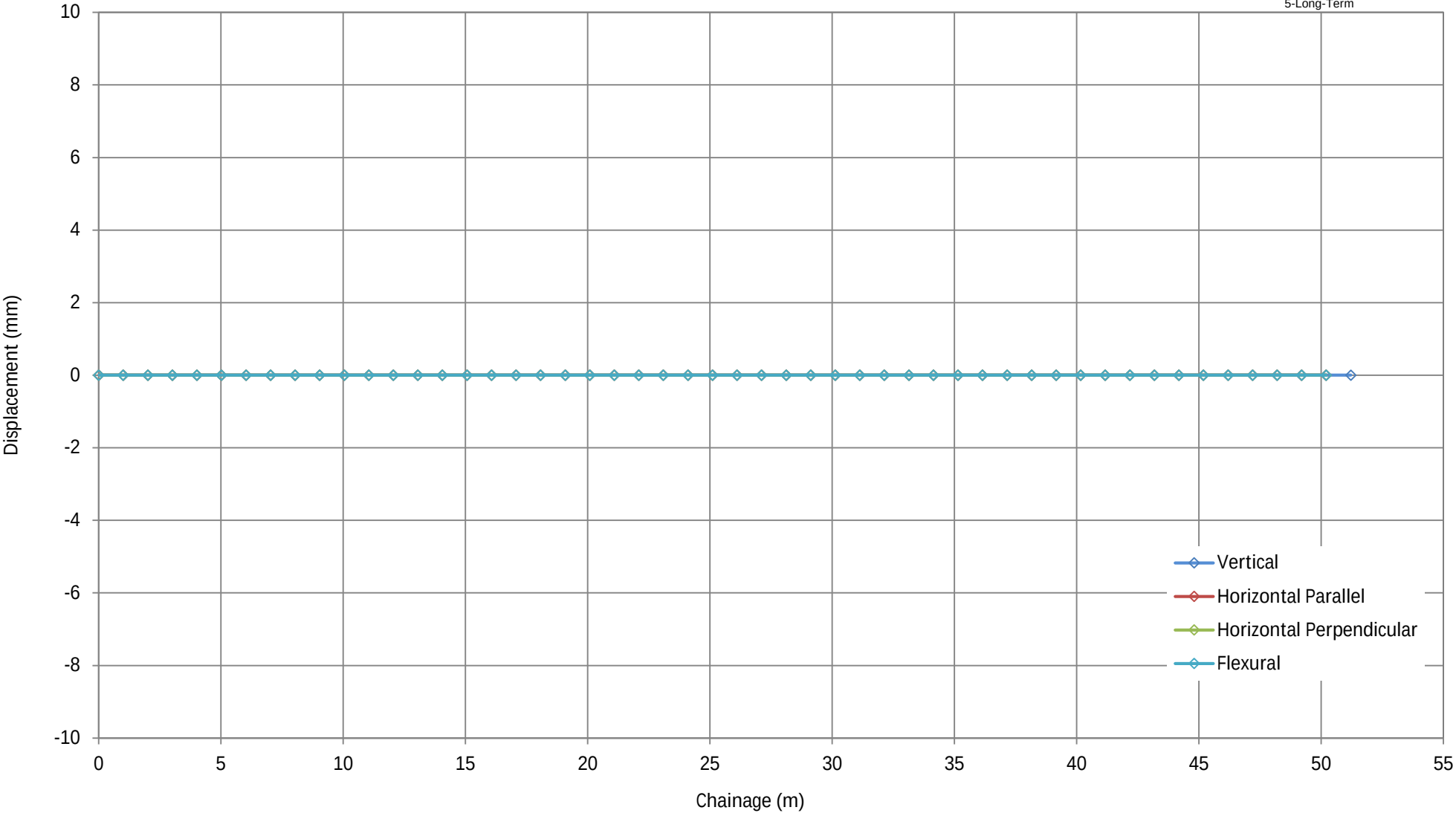
Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.1
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Sewers)	Checked by	MS

Appendix E.2

WATER MAINS 

2Predicted Displacement Graph for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

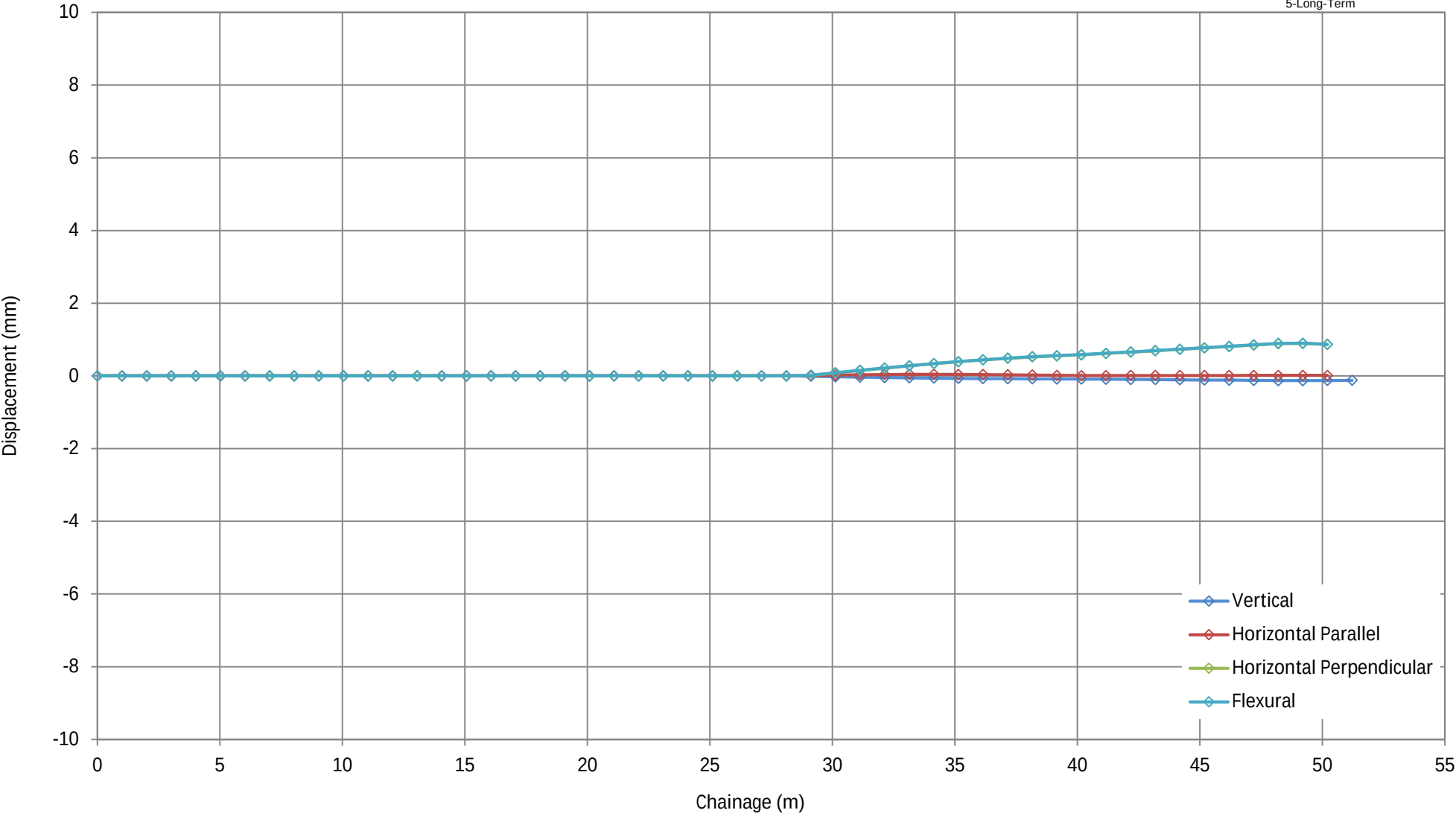


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Displacement Graph for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

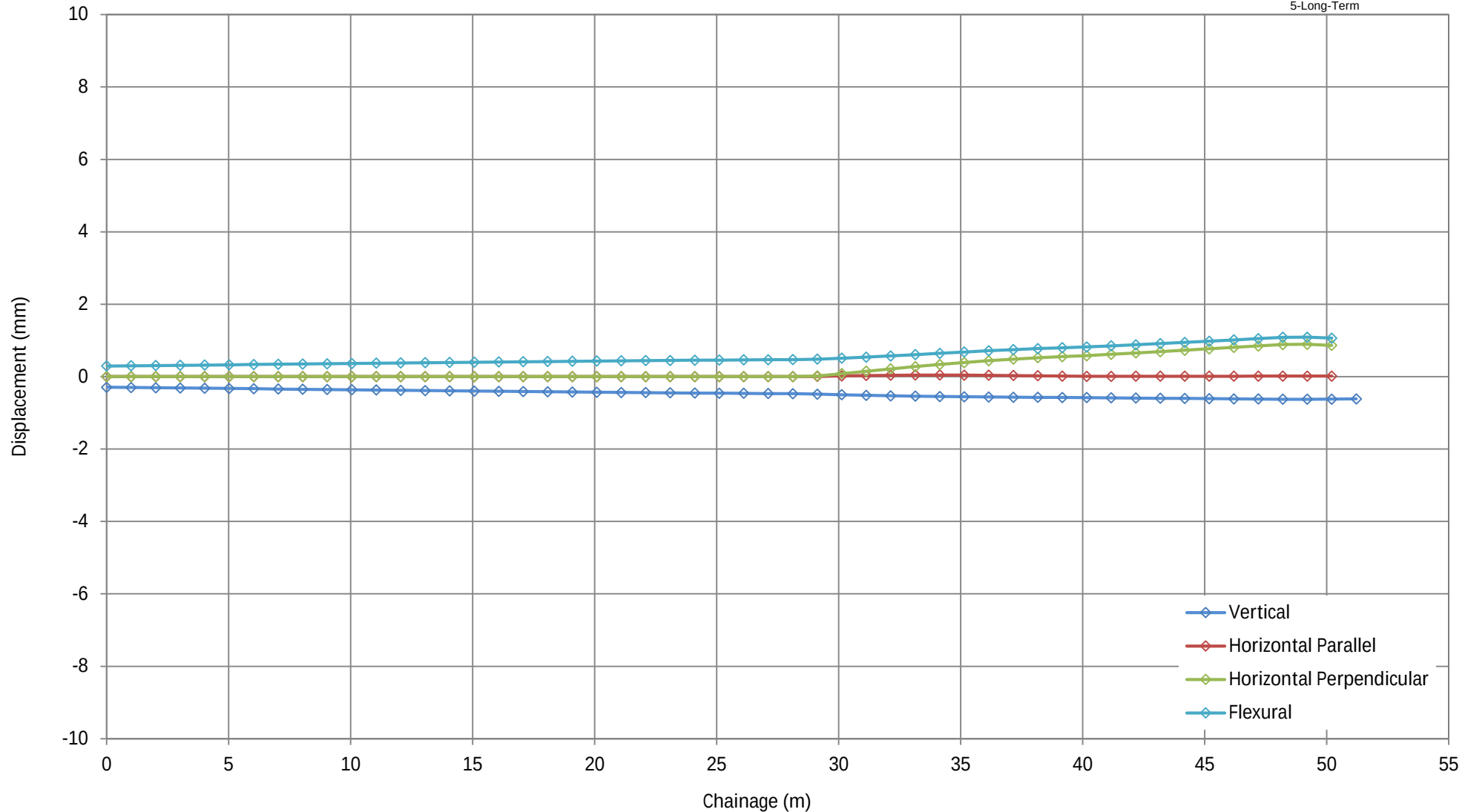


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Displacement Graph for WM 1.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

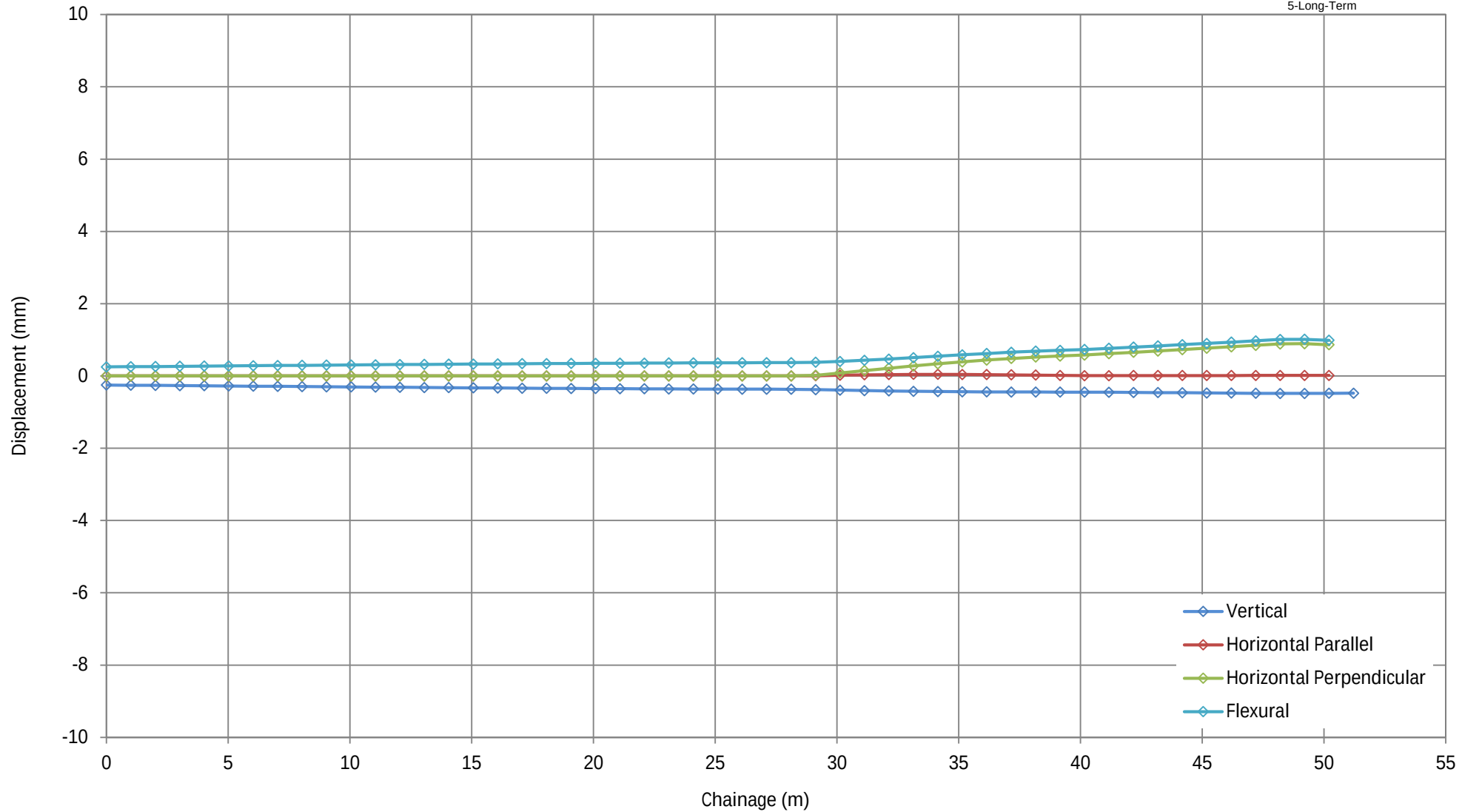


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Displacement Graph for WM 1.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

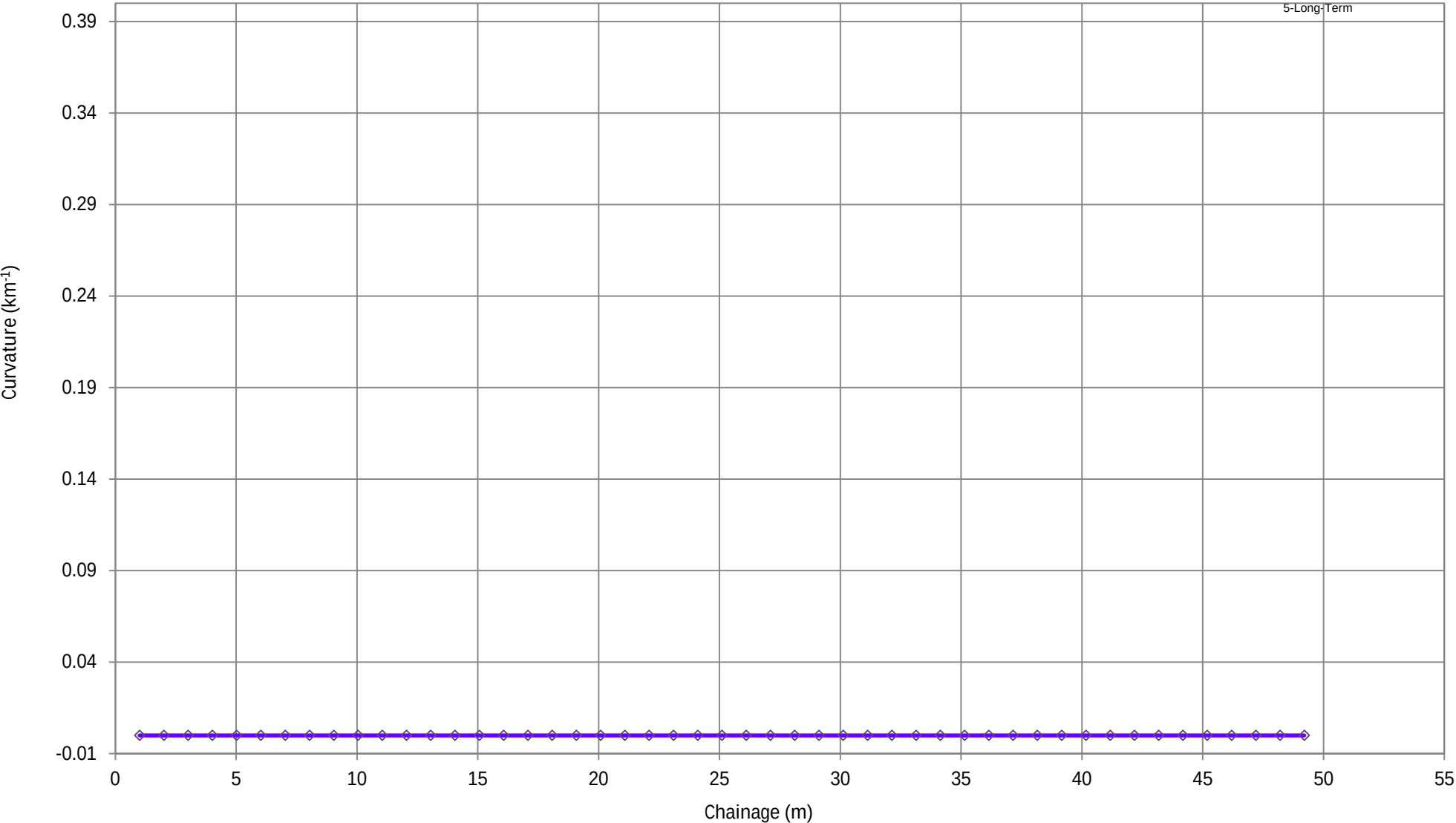


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Curvature Graph for WM 1.1

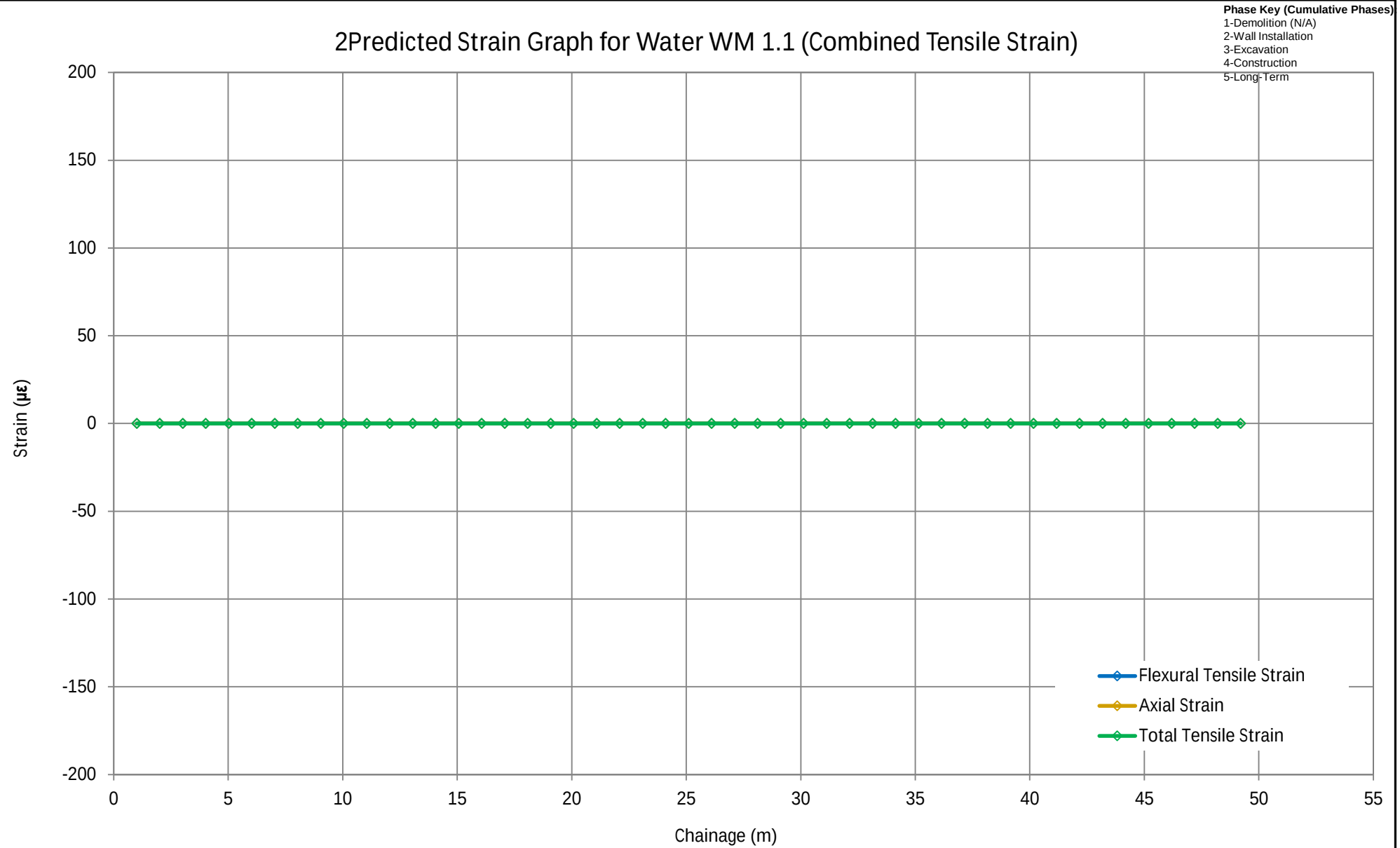
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

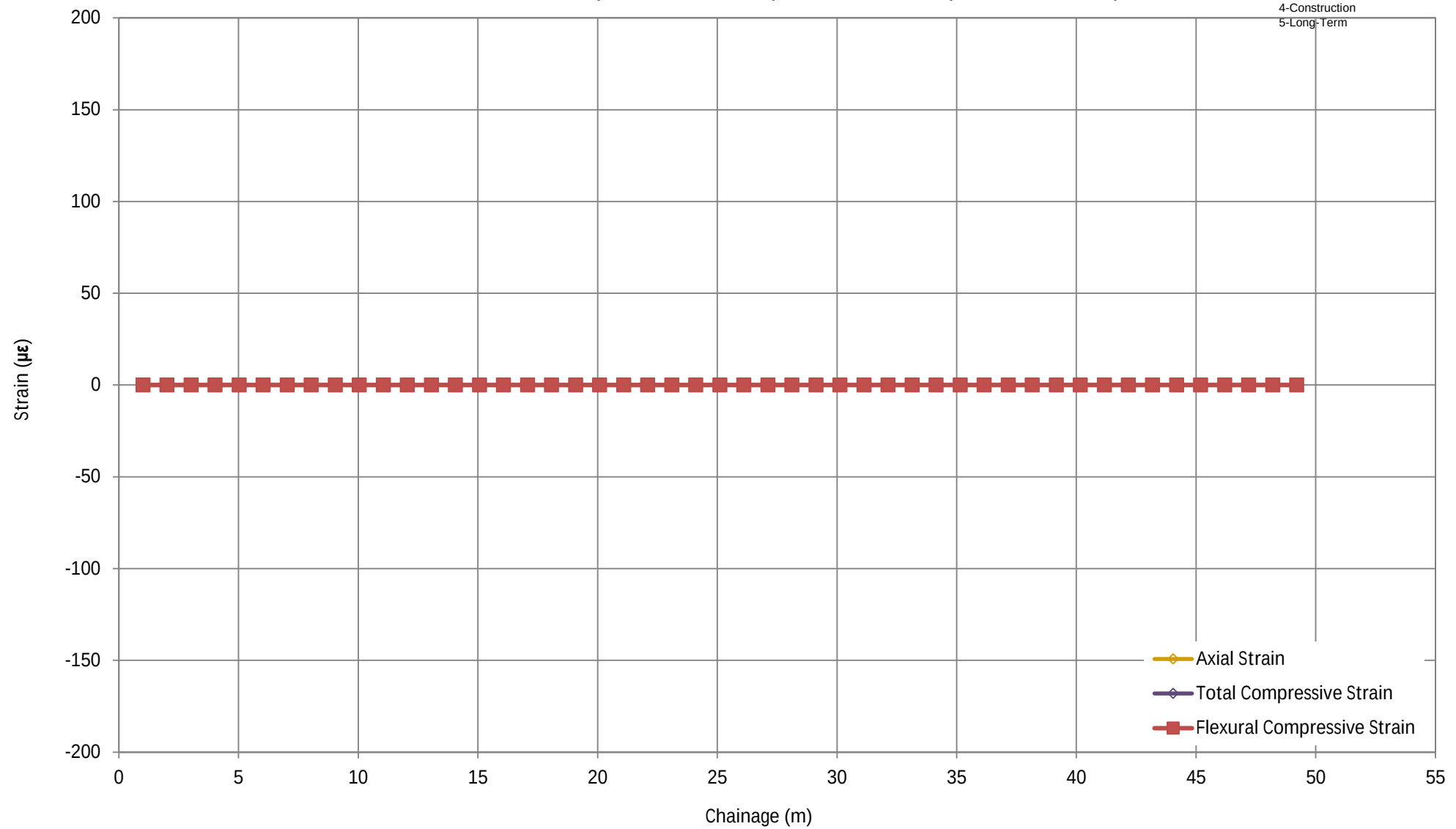
2Predicted Strain Graph for Water WM 1.1 (Combined Tensile Strain)



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for WM 1.1 (Combined Compressive Strain)

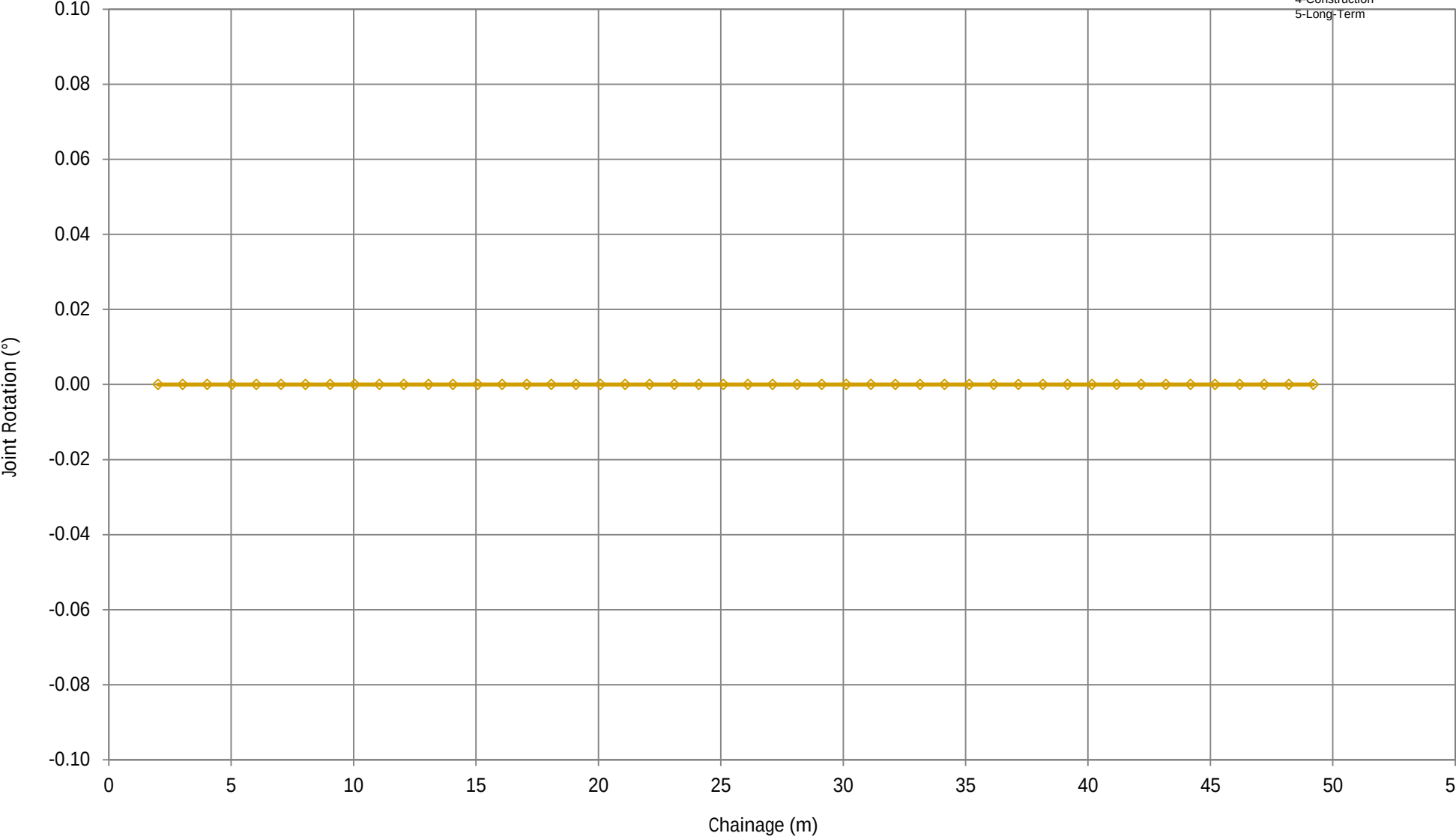


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Rotation for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

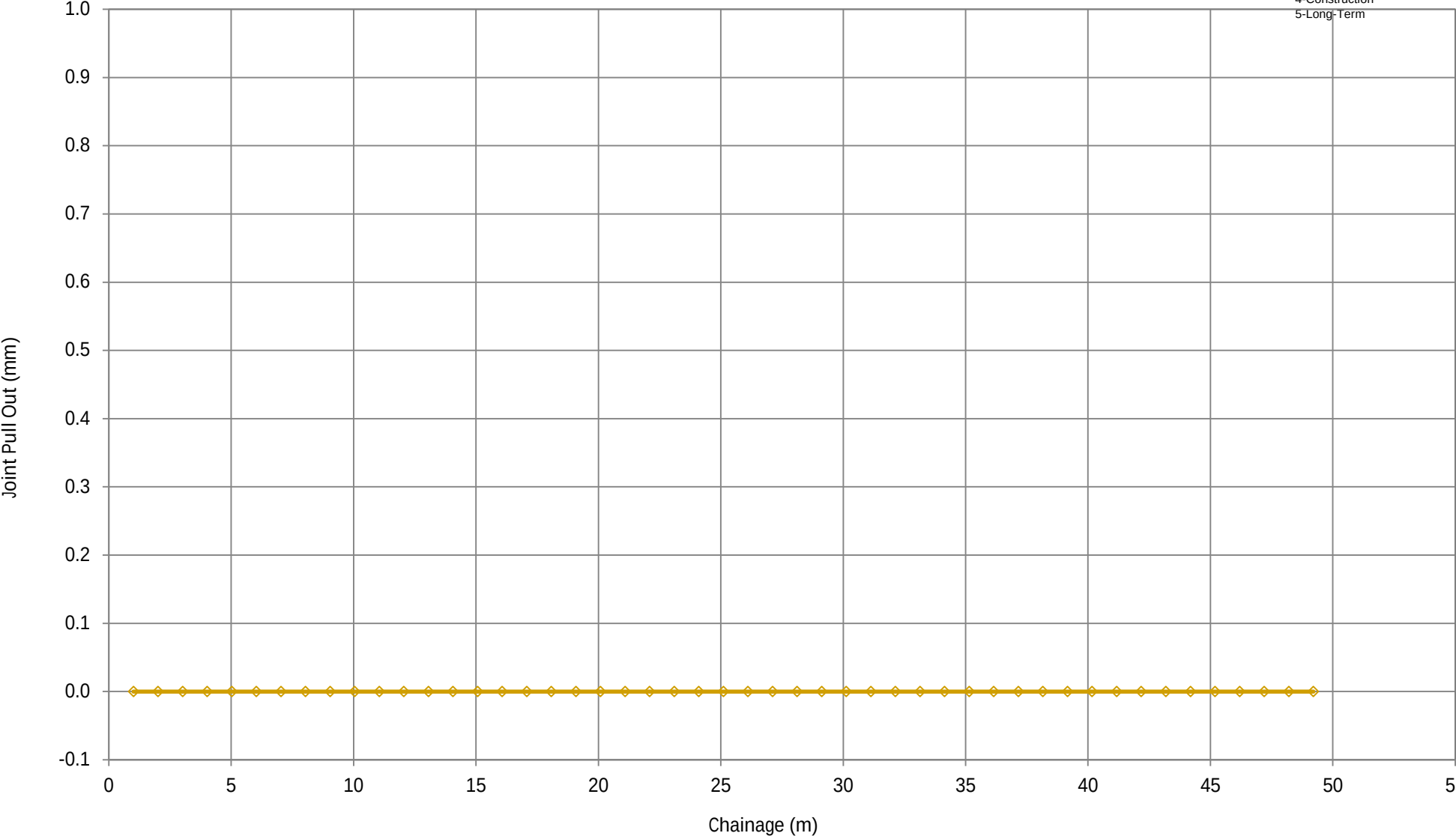


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Pull Out for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

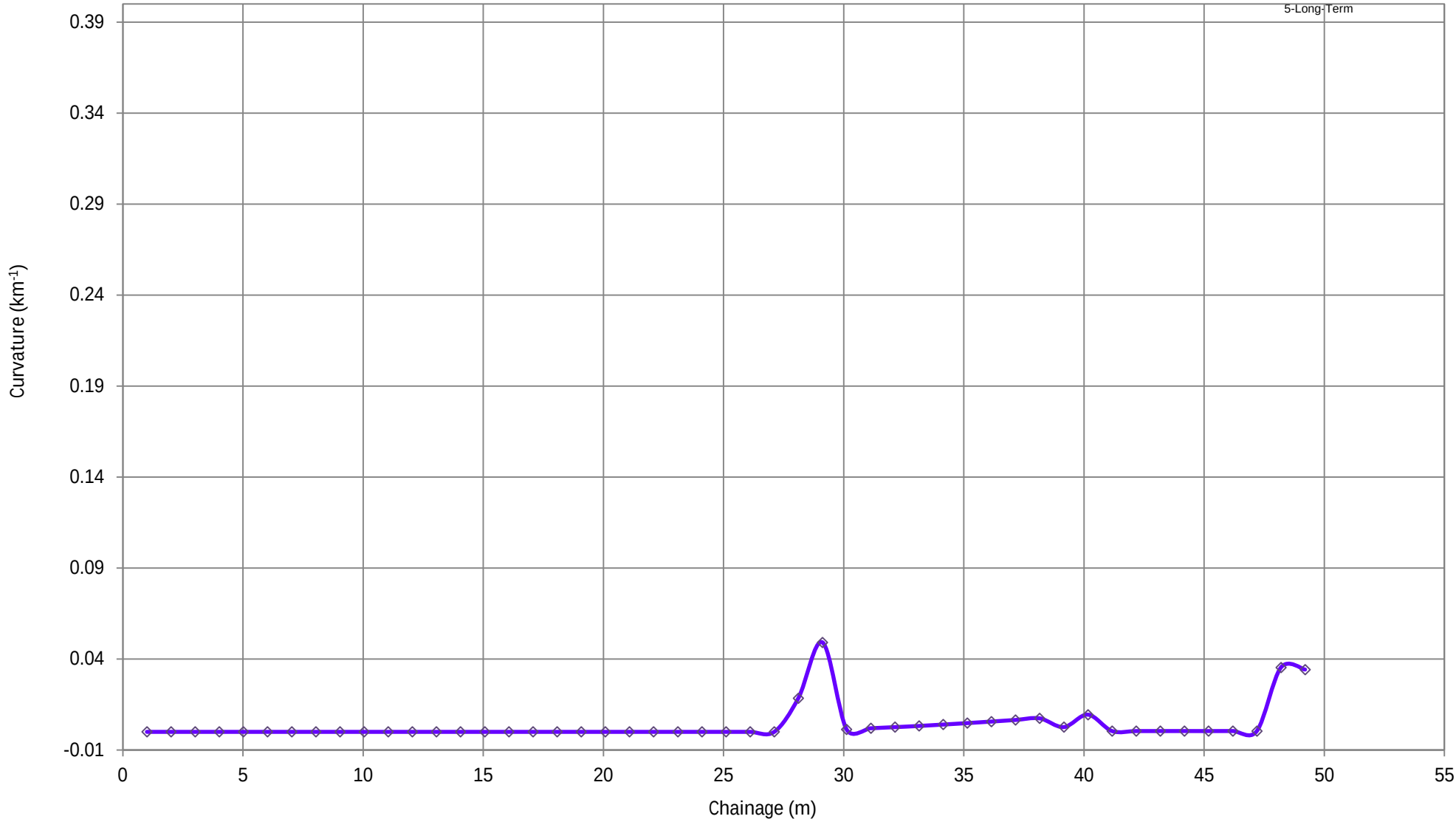


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Curvature Graph for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

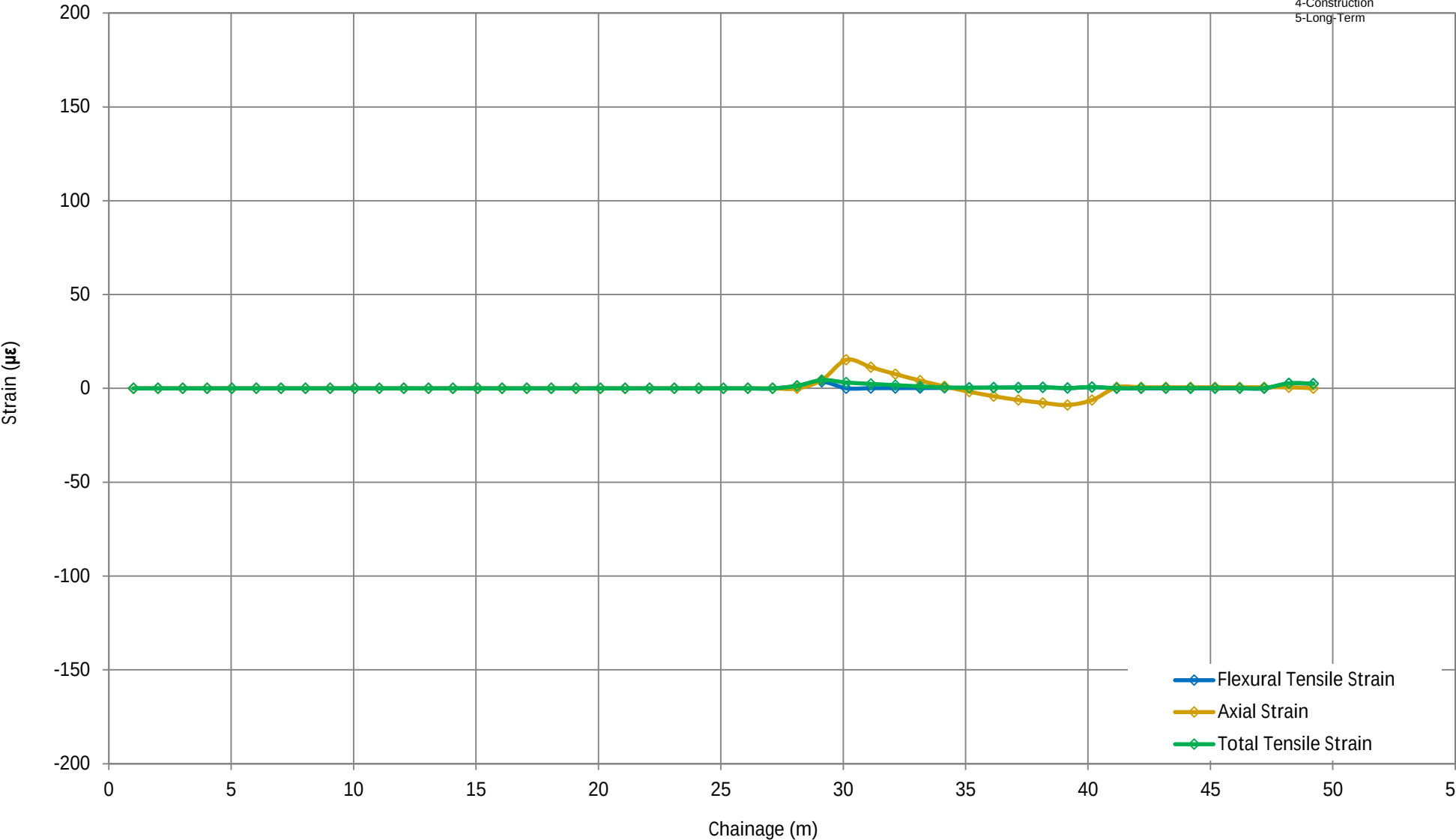


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 1.1 (Combined Tensile Strain)

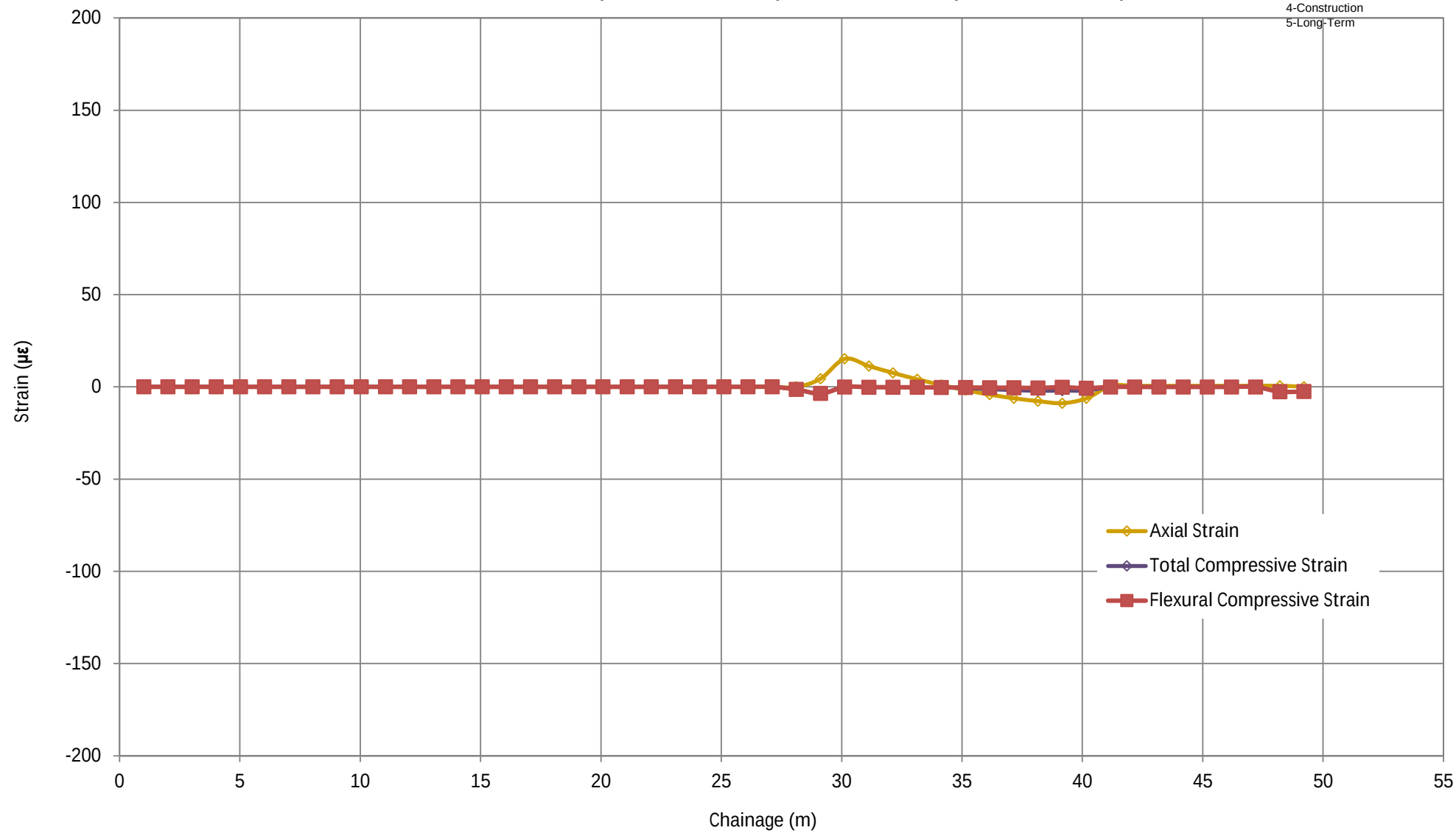
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 1.1 (Combined Compressive Strain)

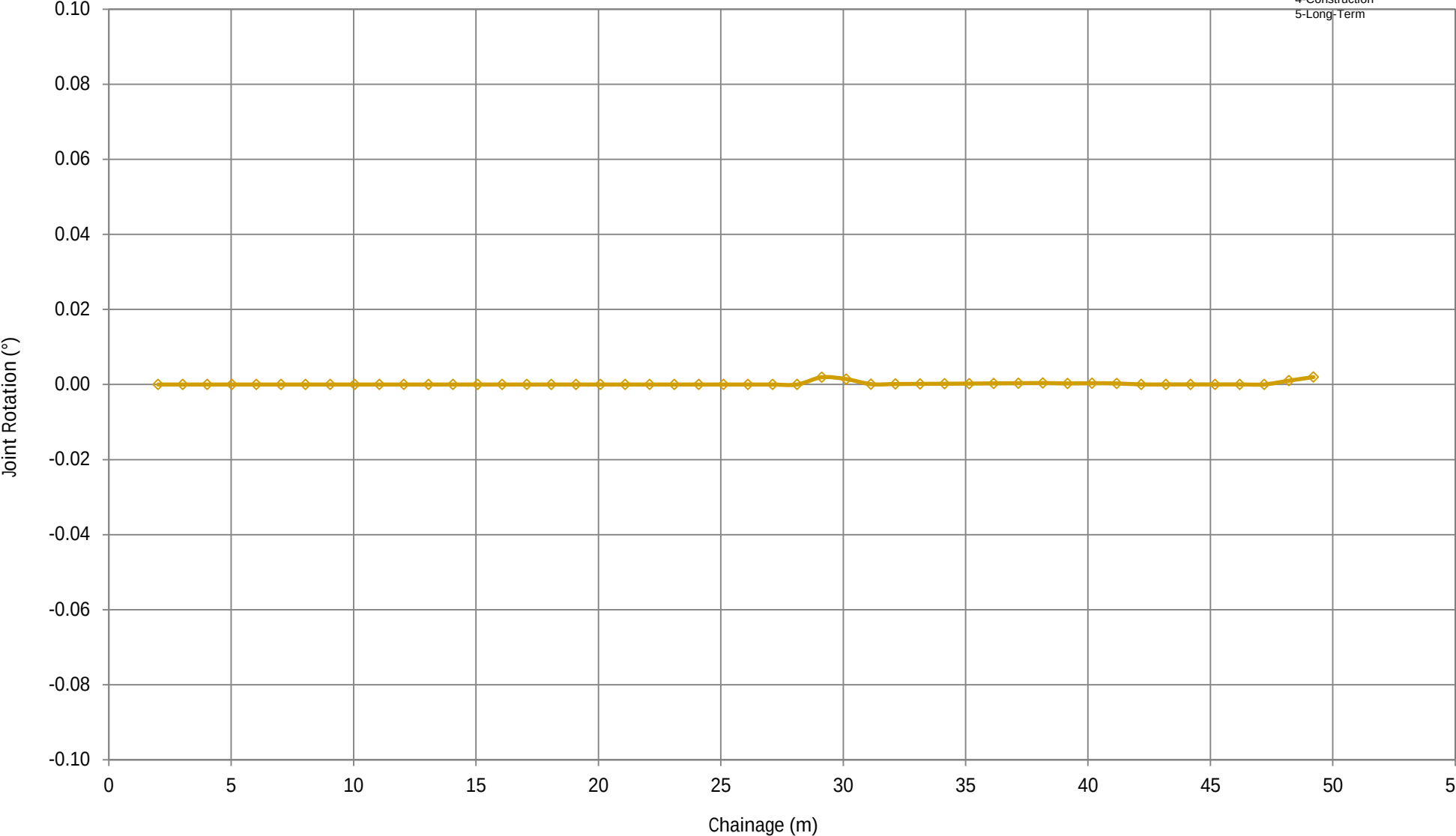


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Rotation for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

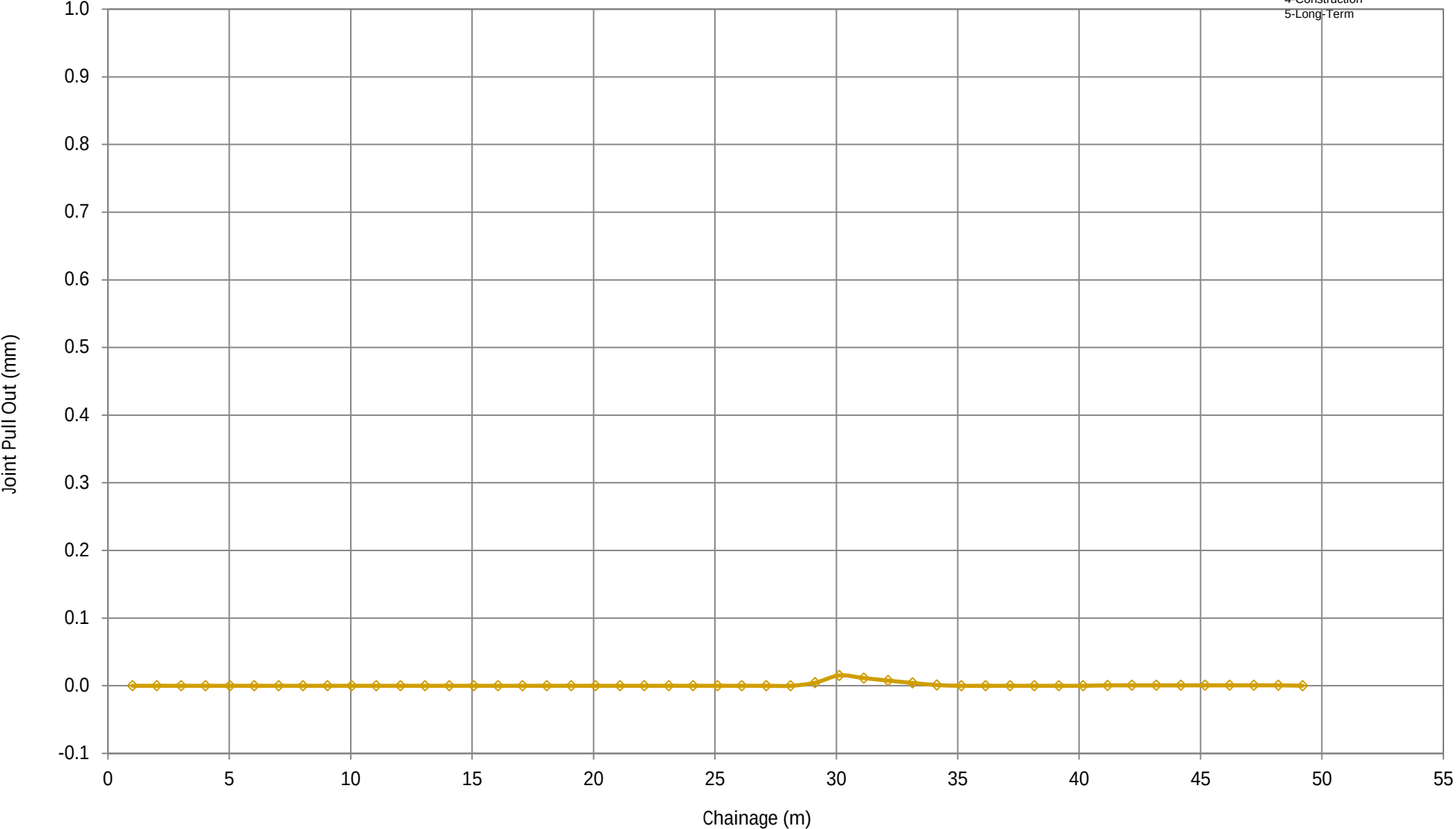


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Pull Out for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

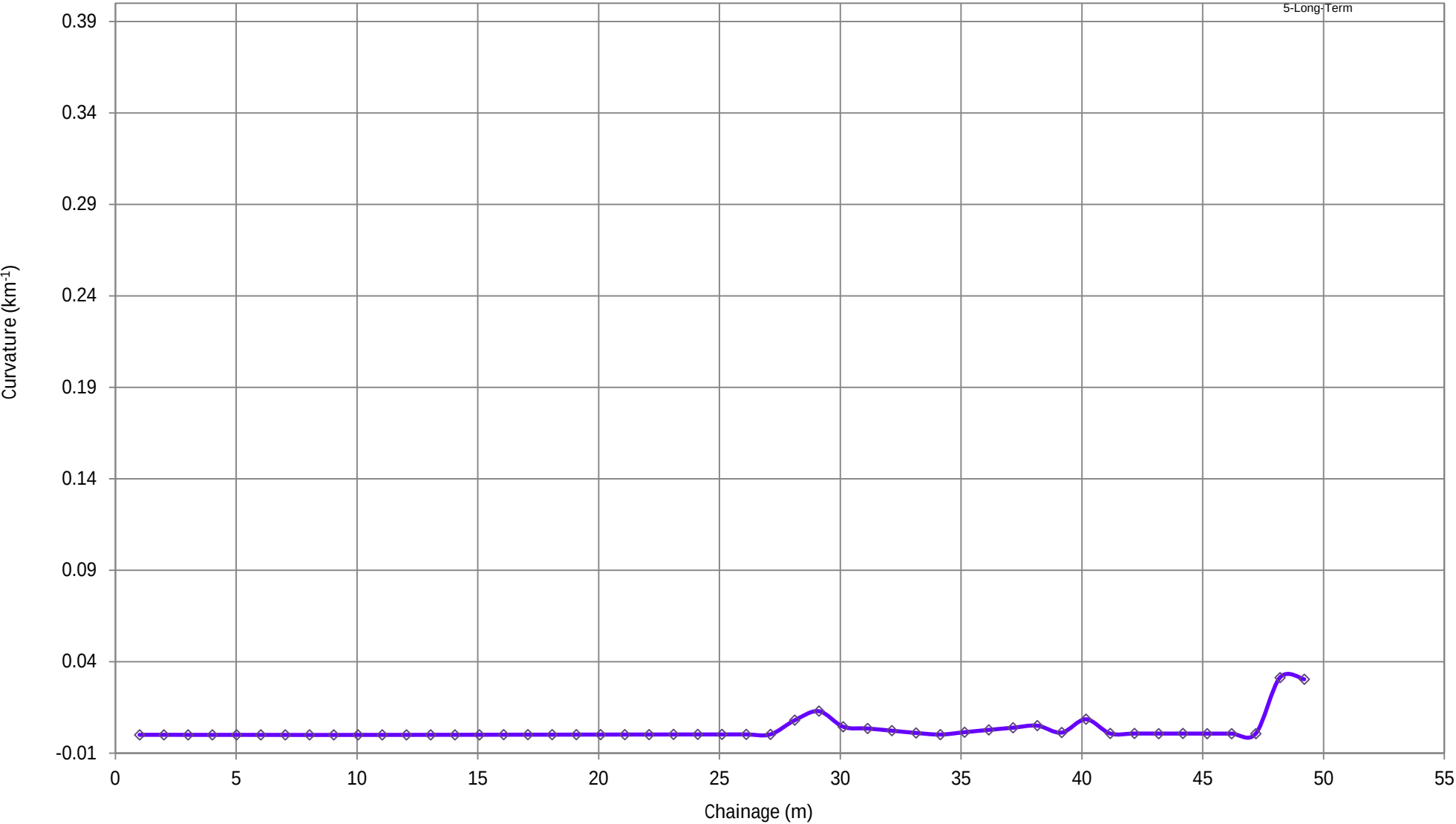


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Curvature Graph for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

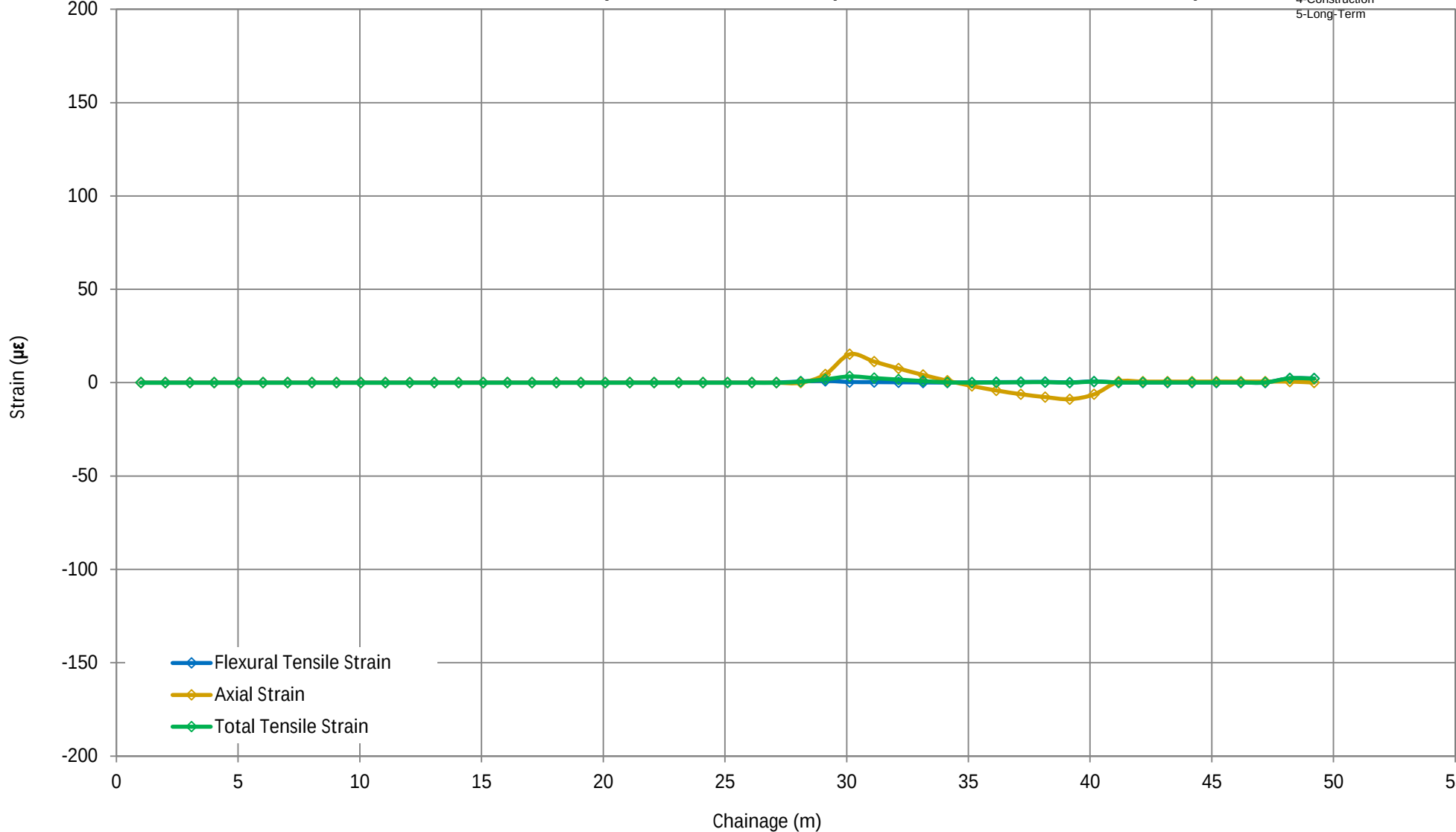


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 1.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

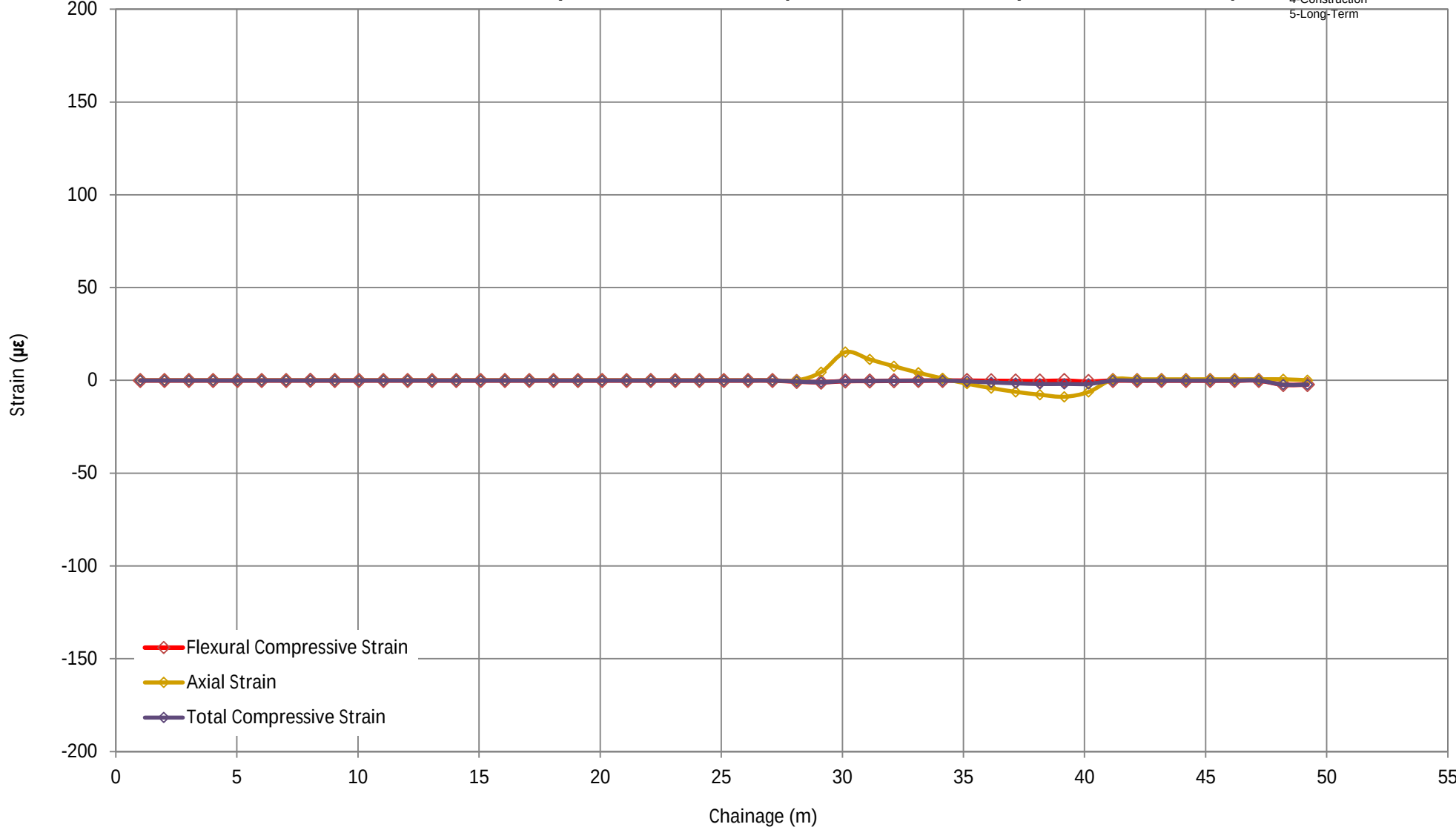


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 1.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

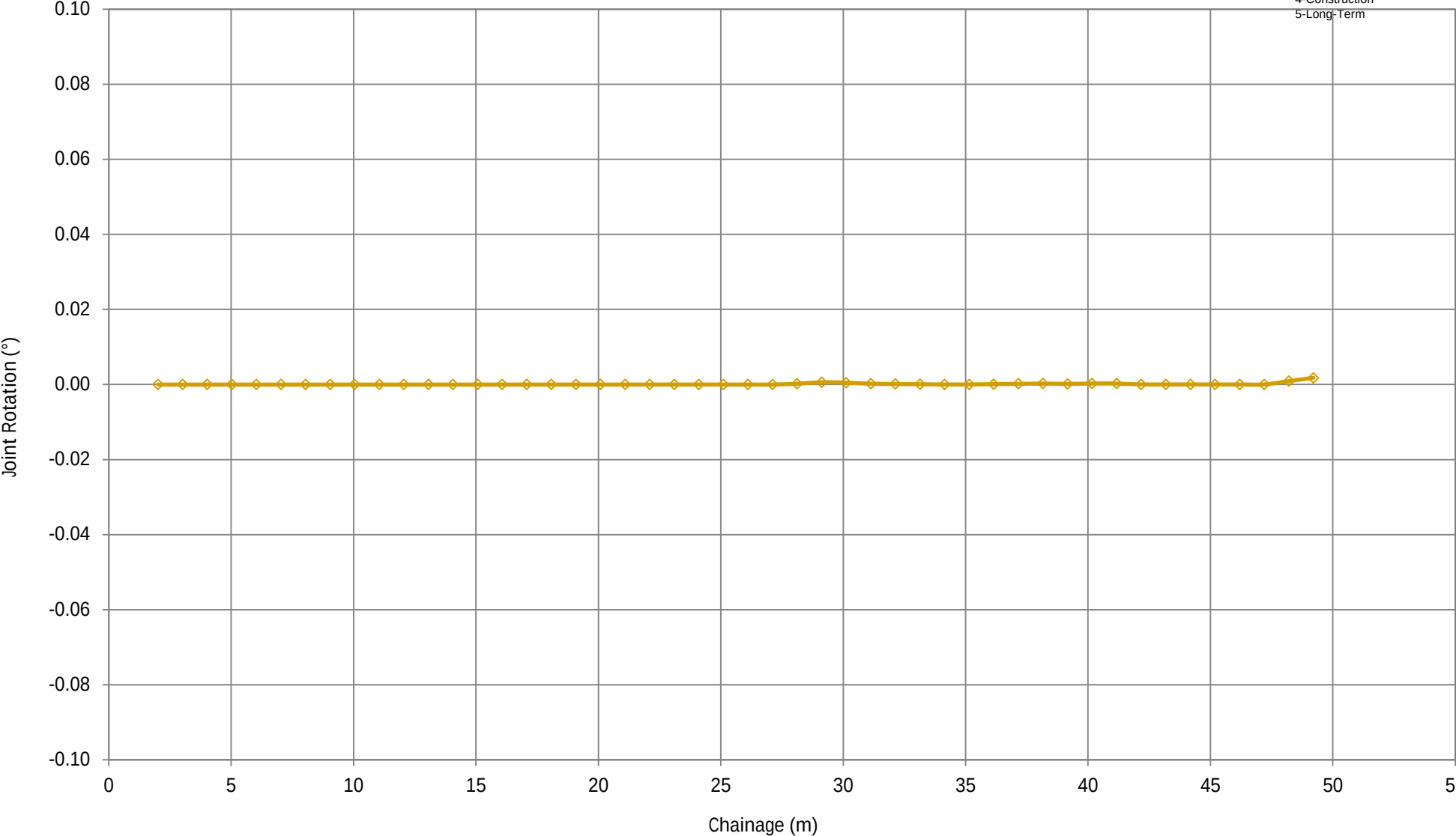


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Rotation for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

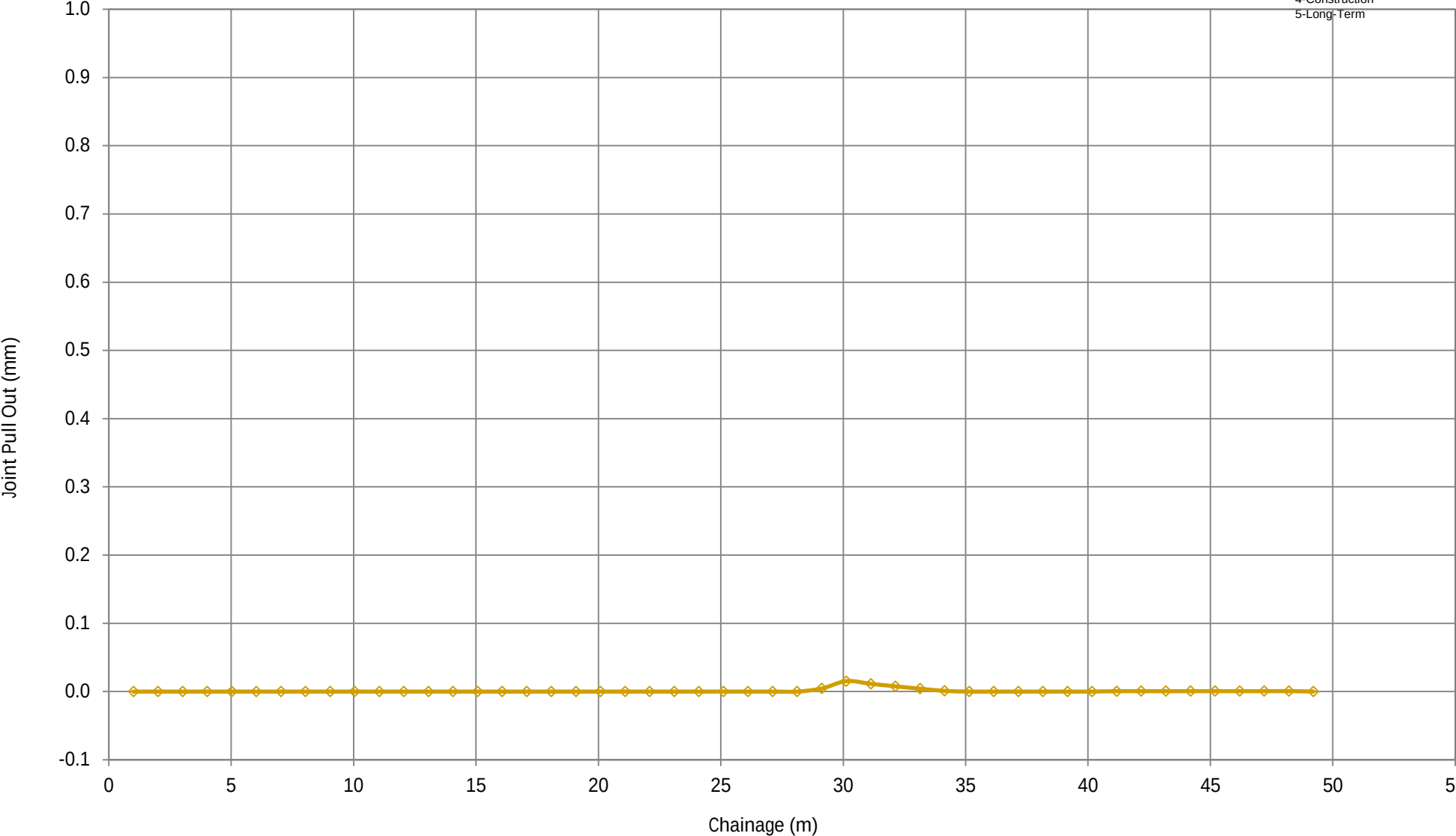


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Pull Out for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

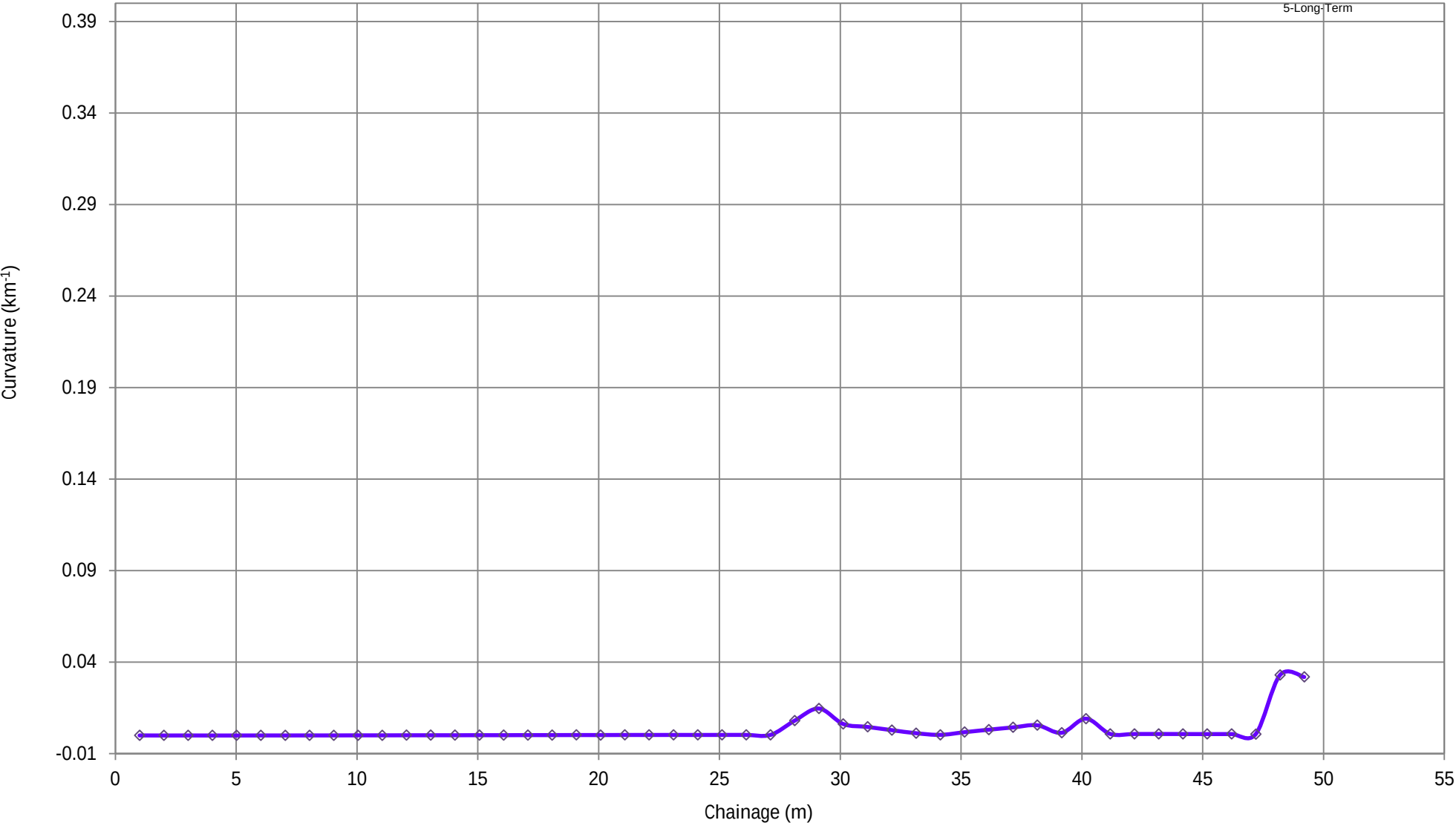


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Curvature Graph for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

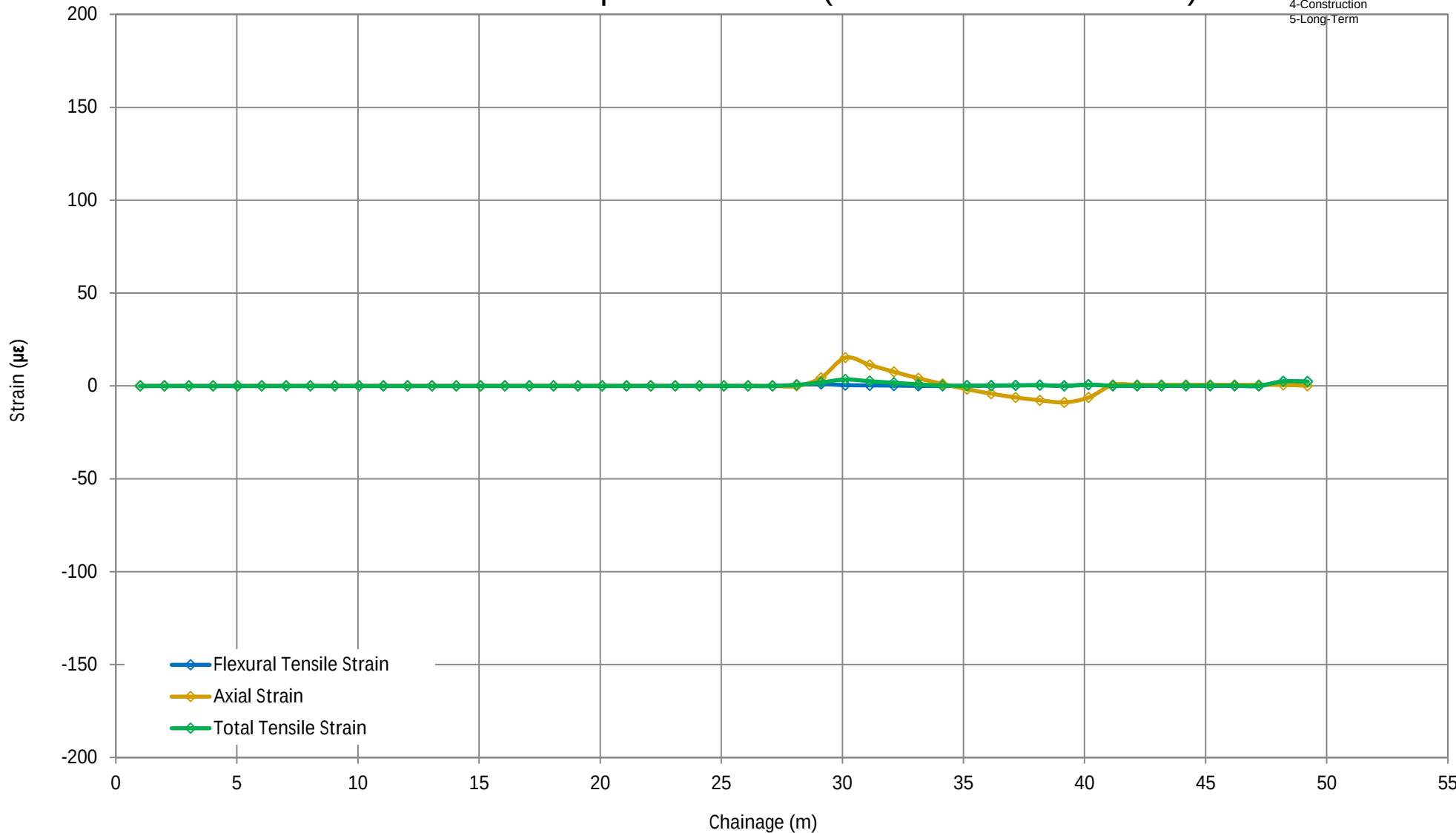


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 1.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

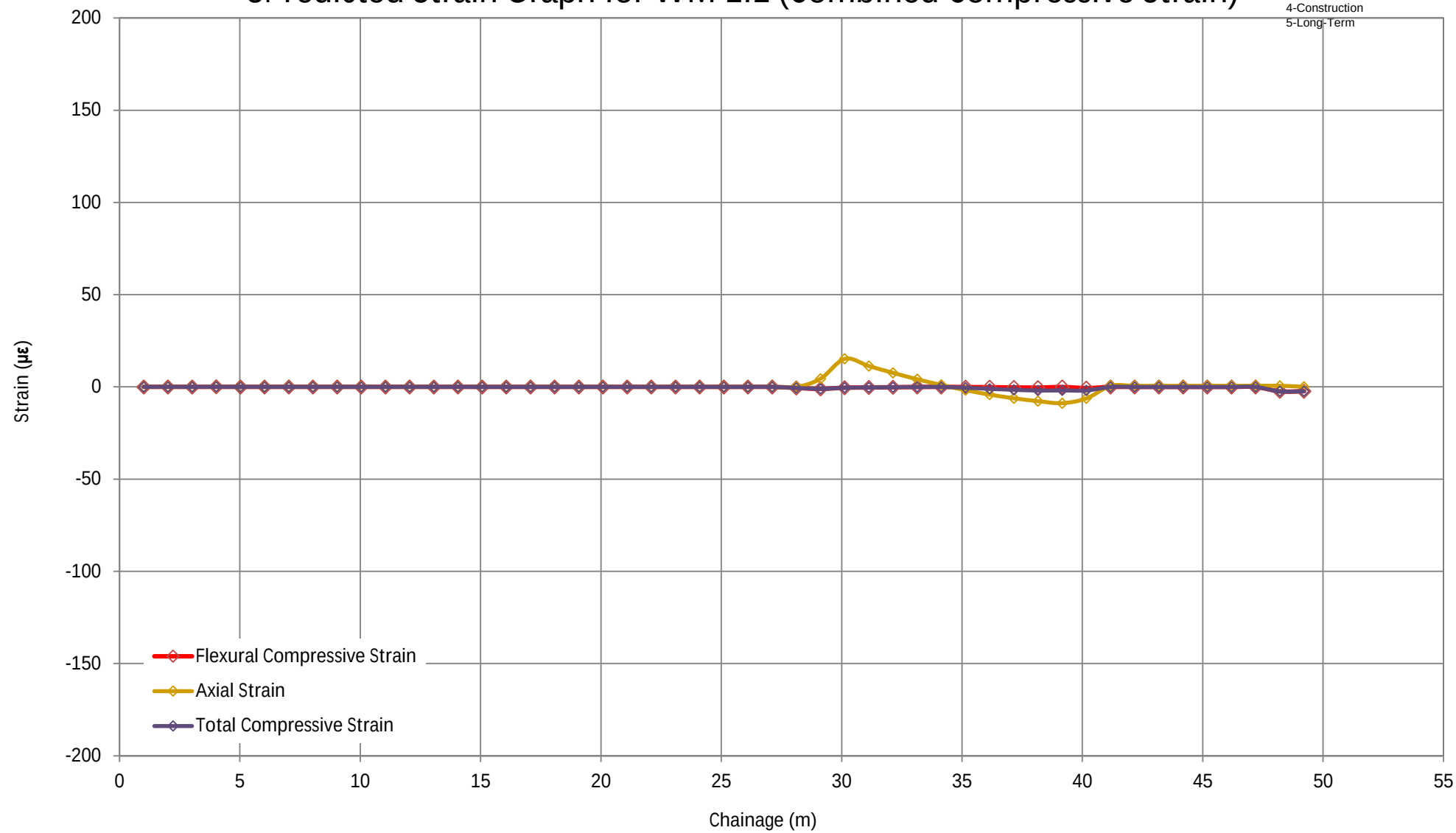


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 1.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

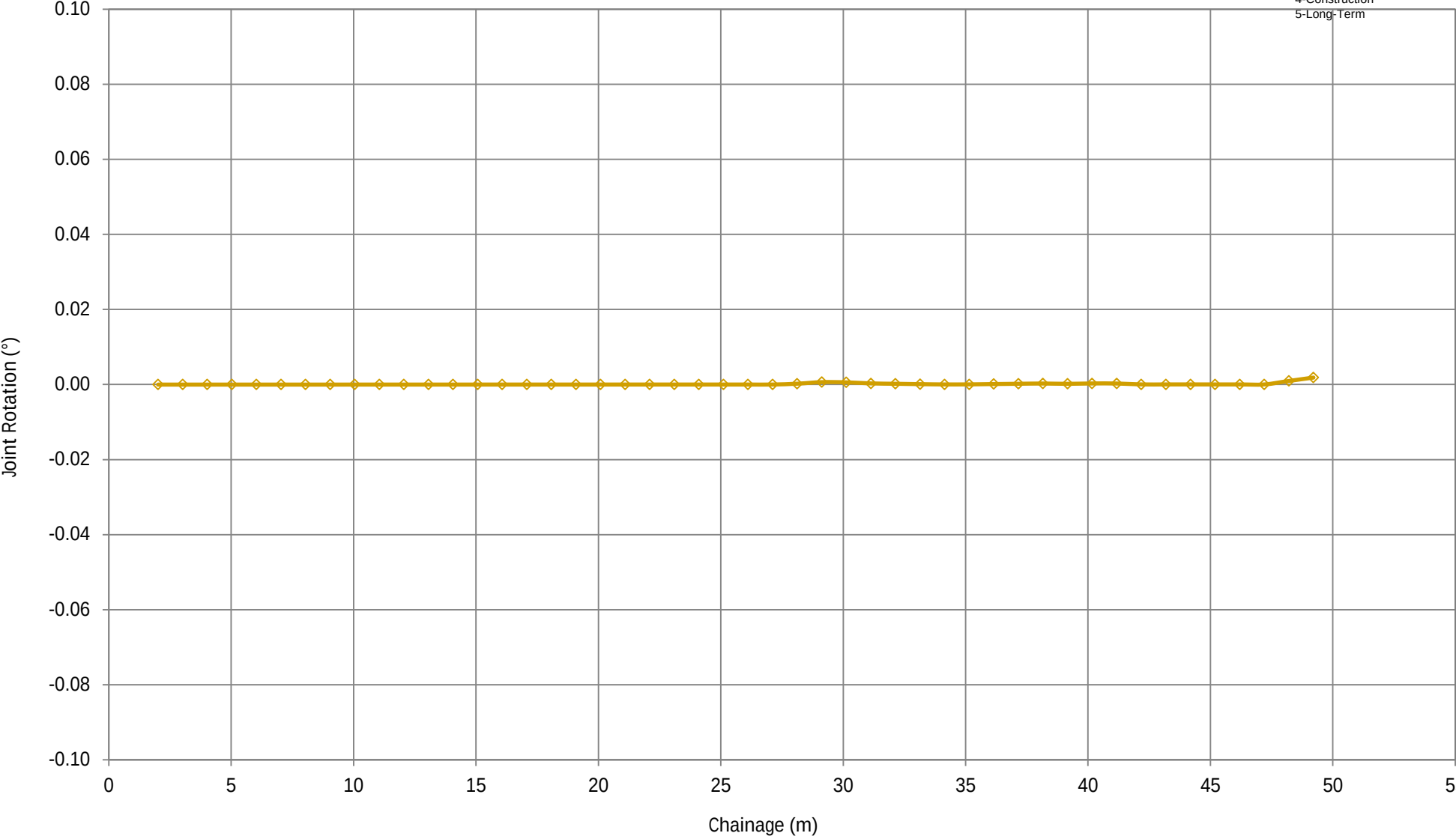


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Rotation for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

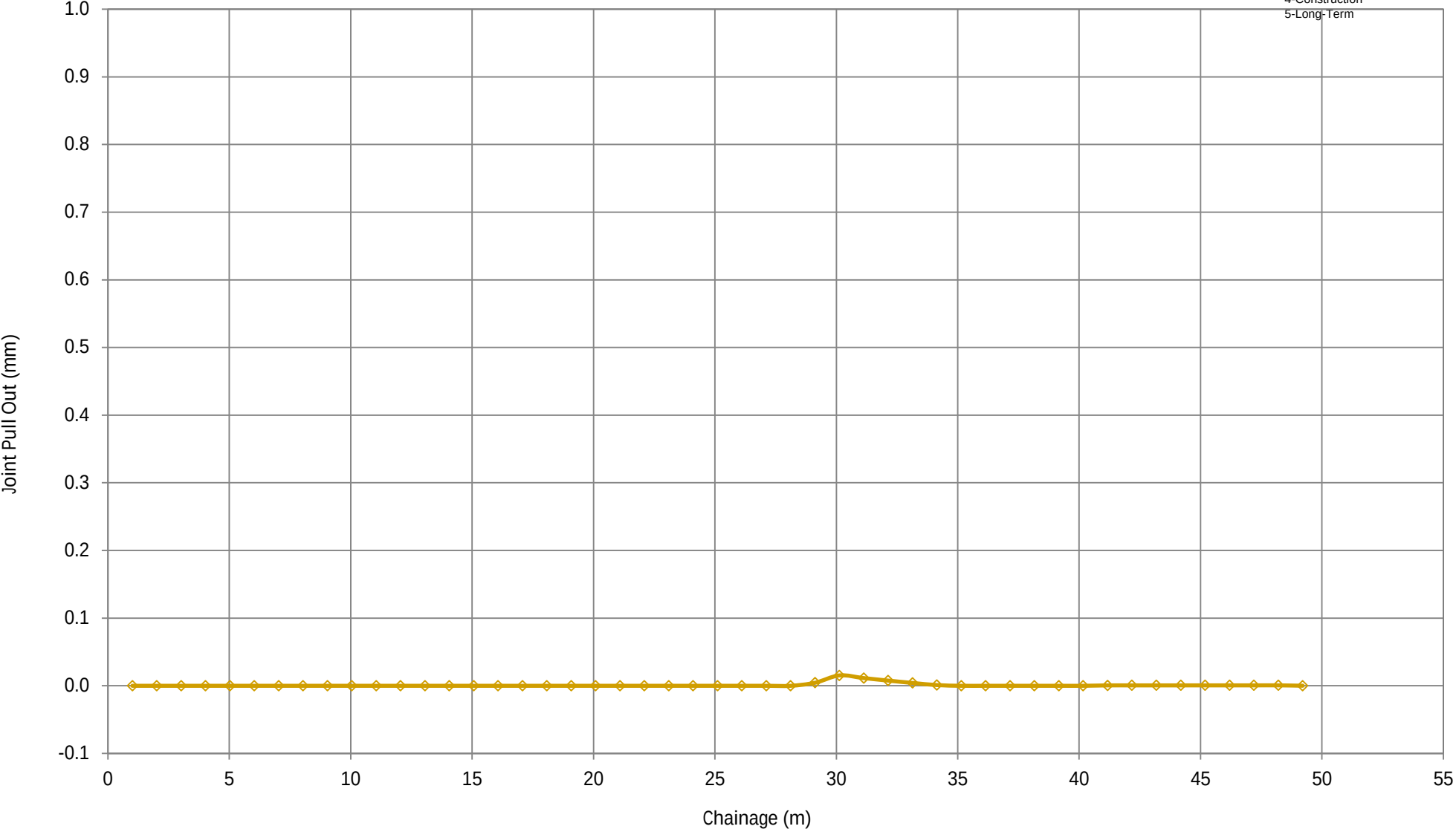


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Pull Out for WM 1.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long Term

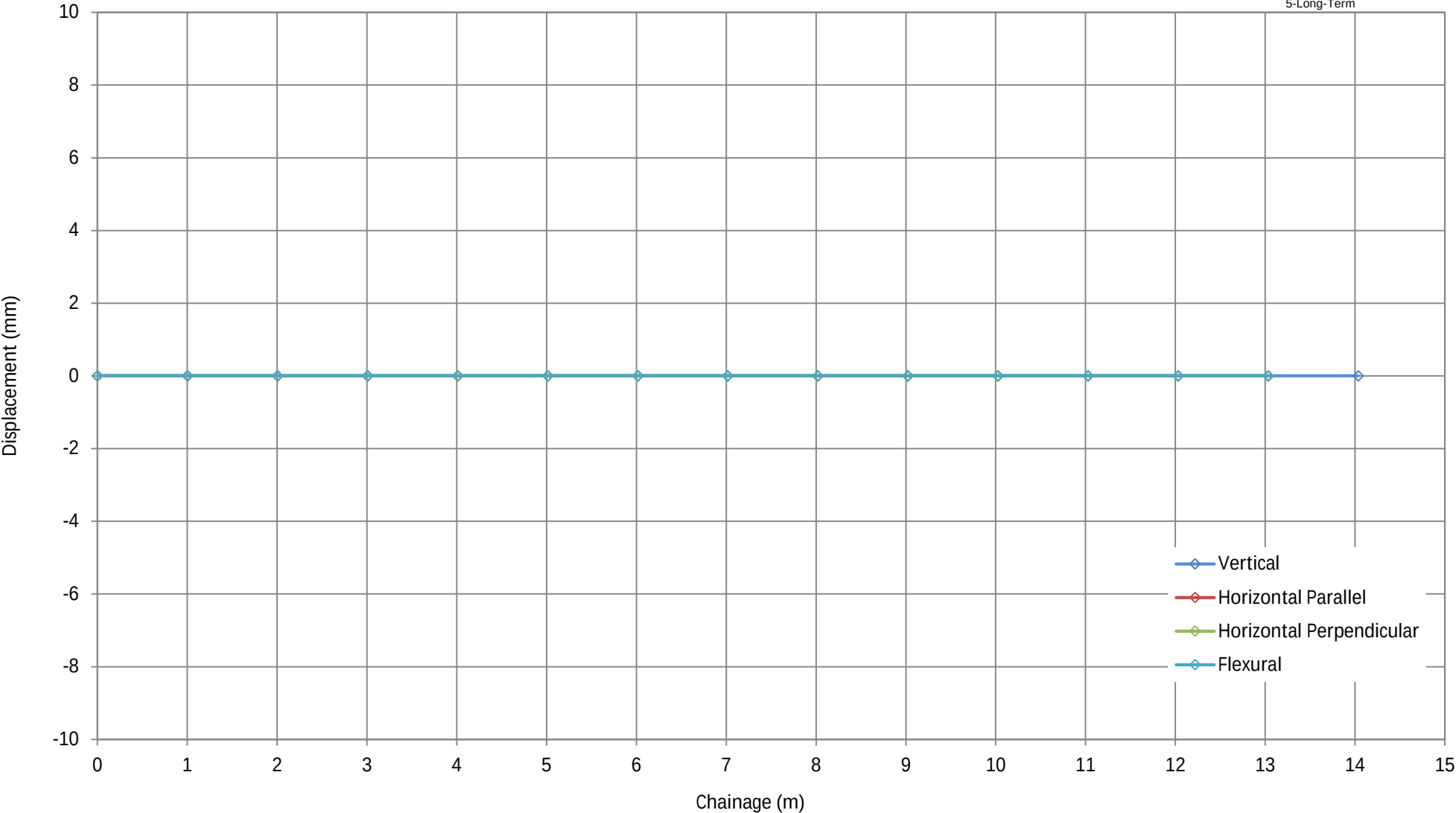


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Displacement Graph for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

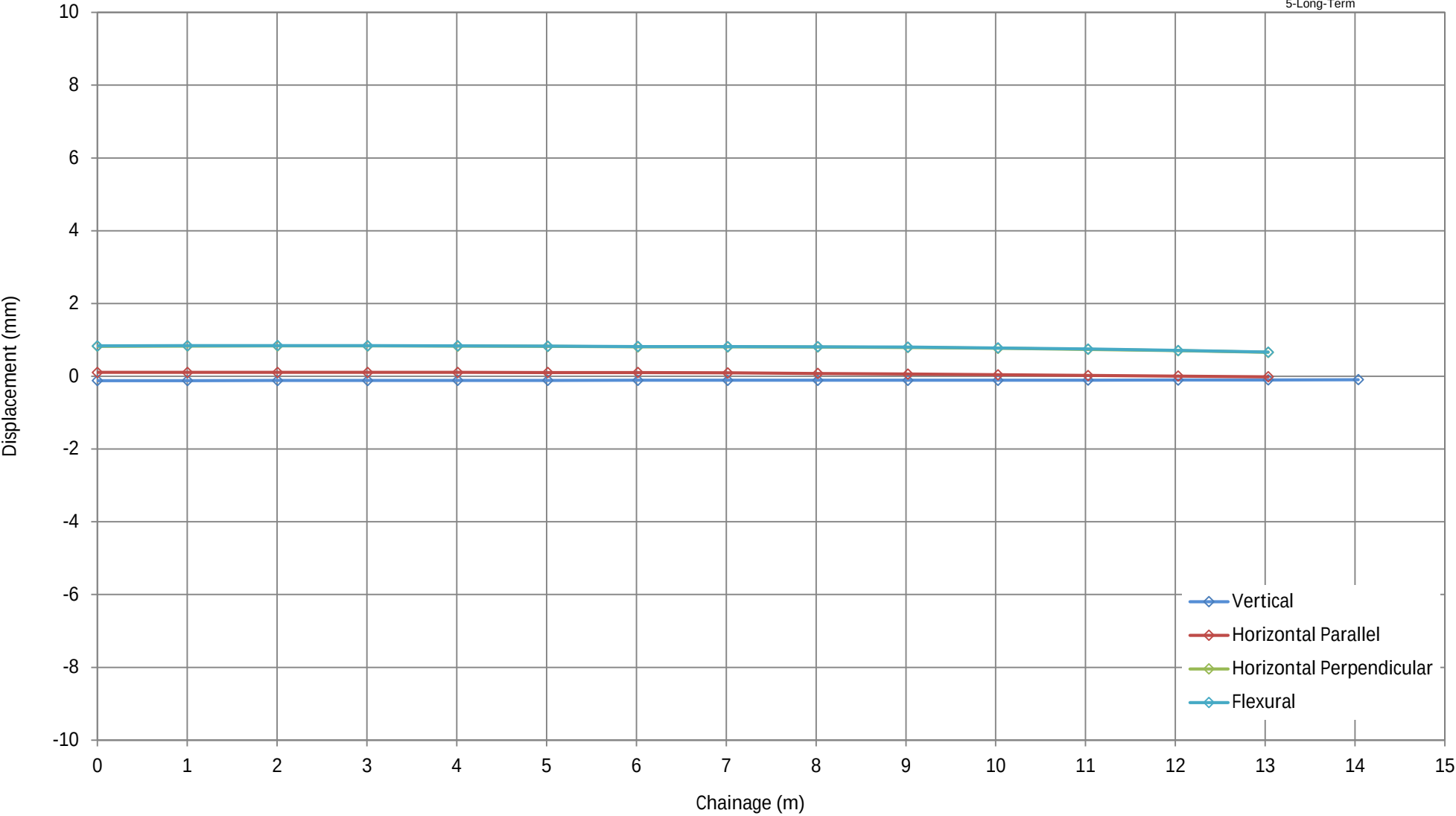


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Displacement Graph for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

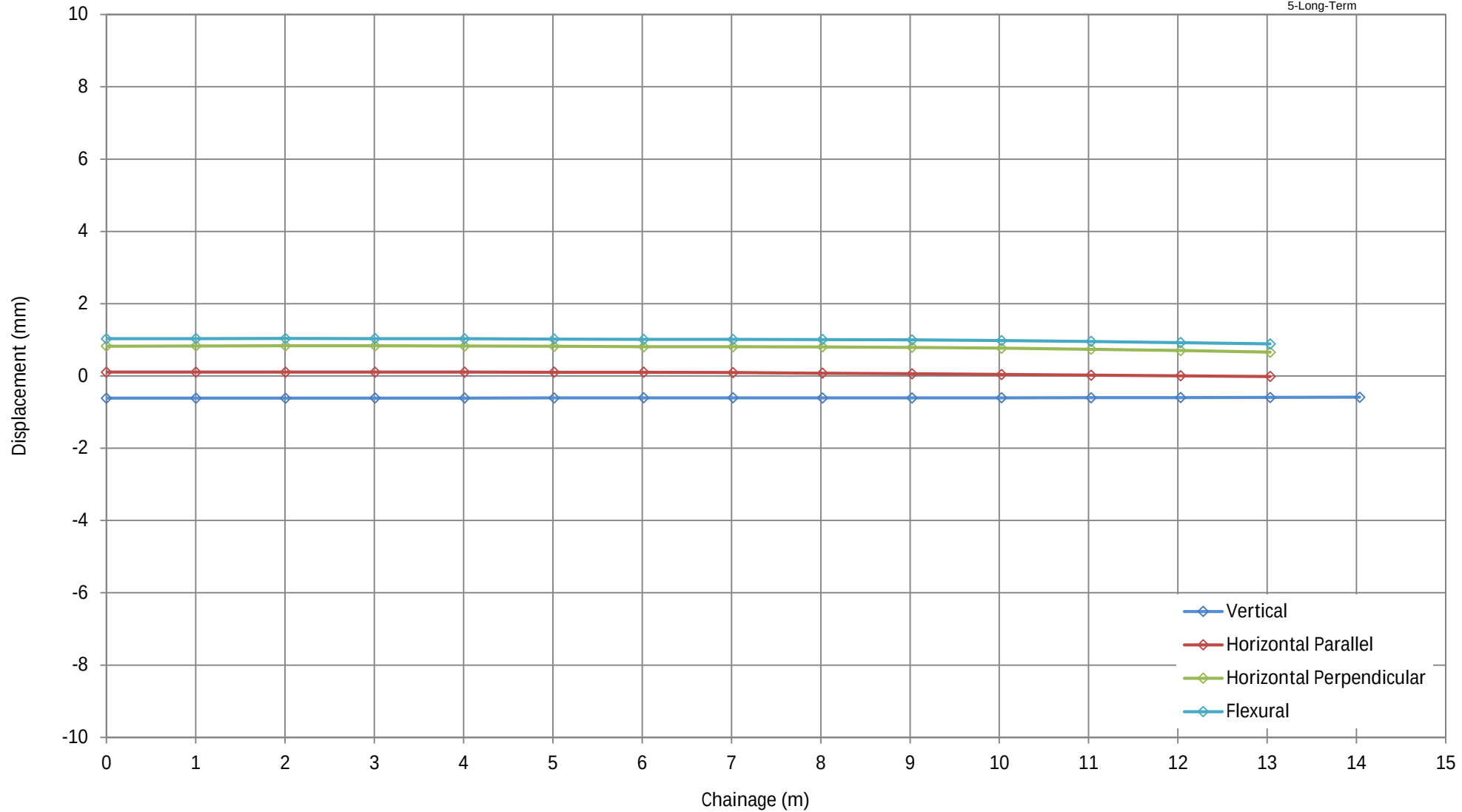


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Displacement Graph for WM 1.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

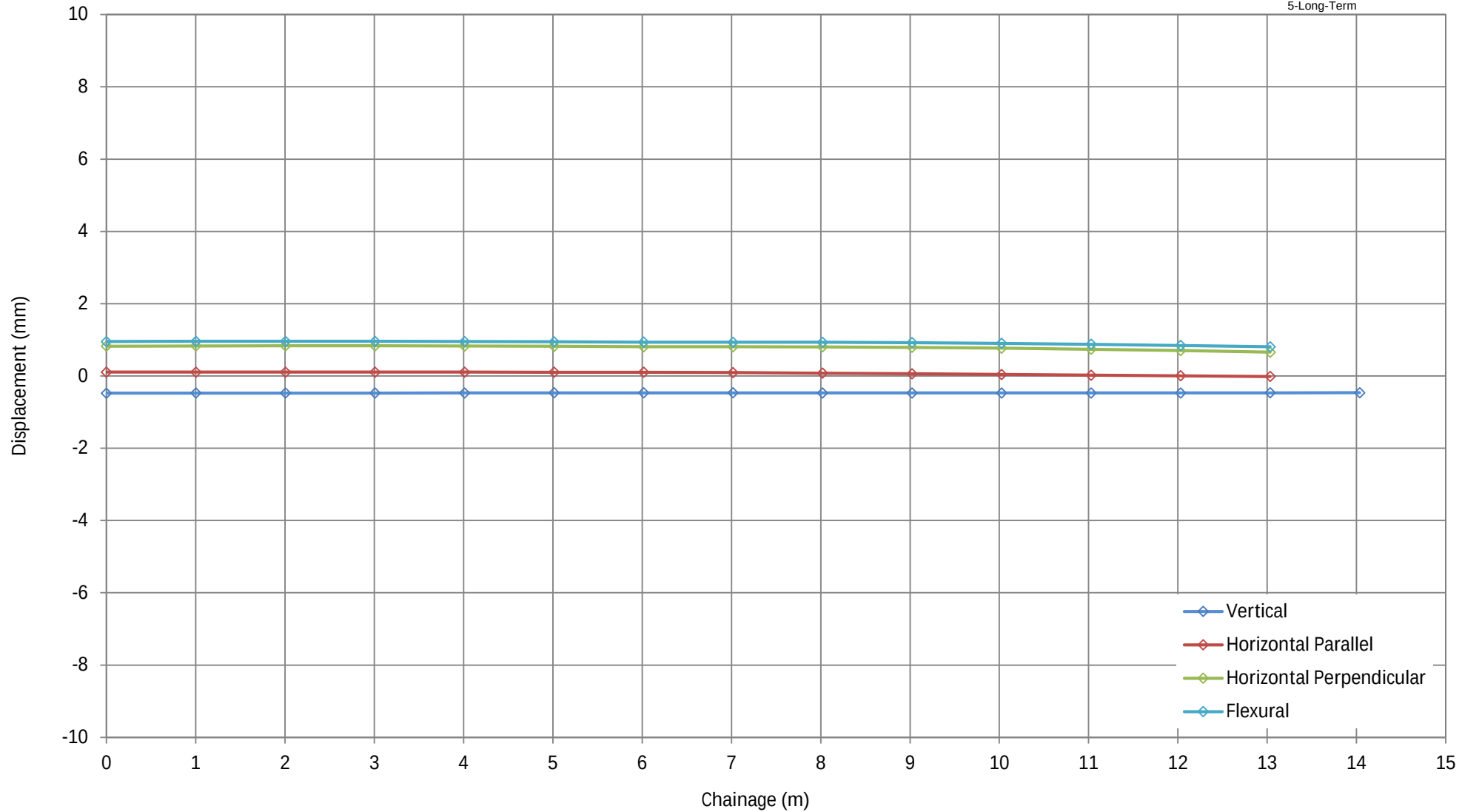


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Displacement Graph for WM 1.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

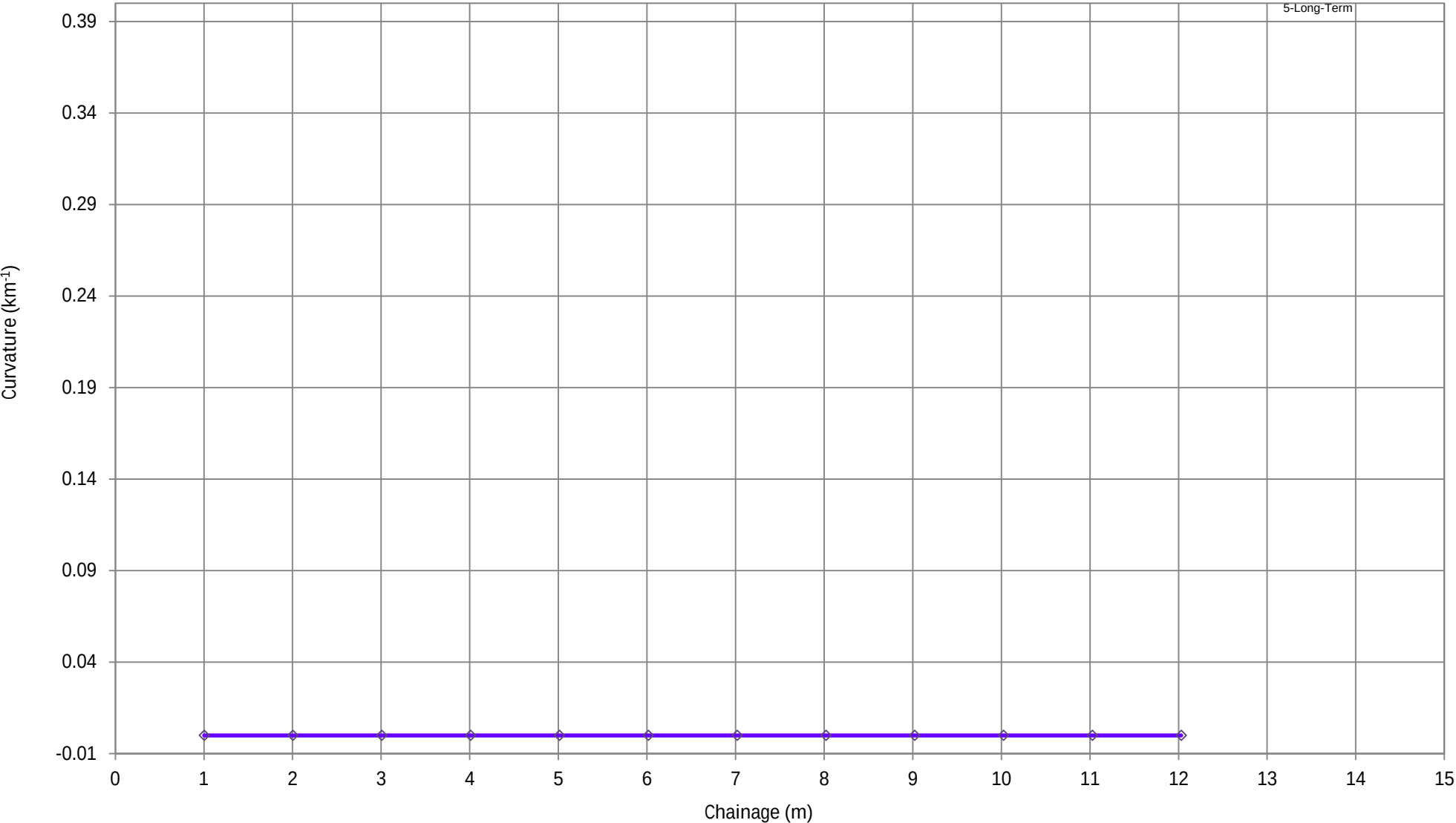


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Curvature Graph for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

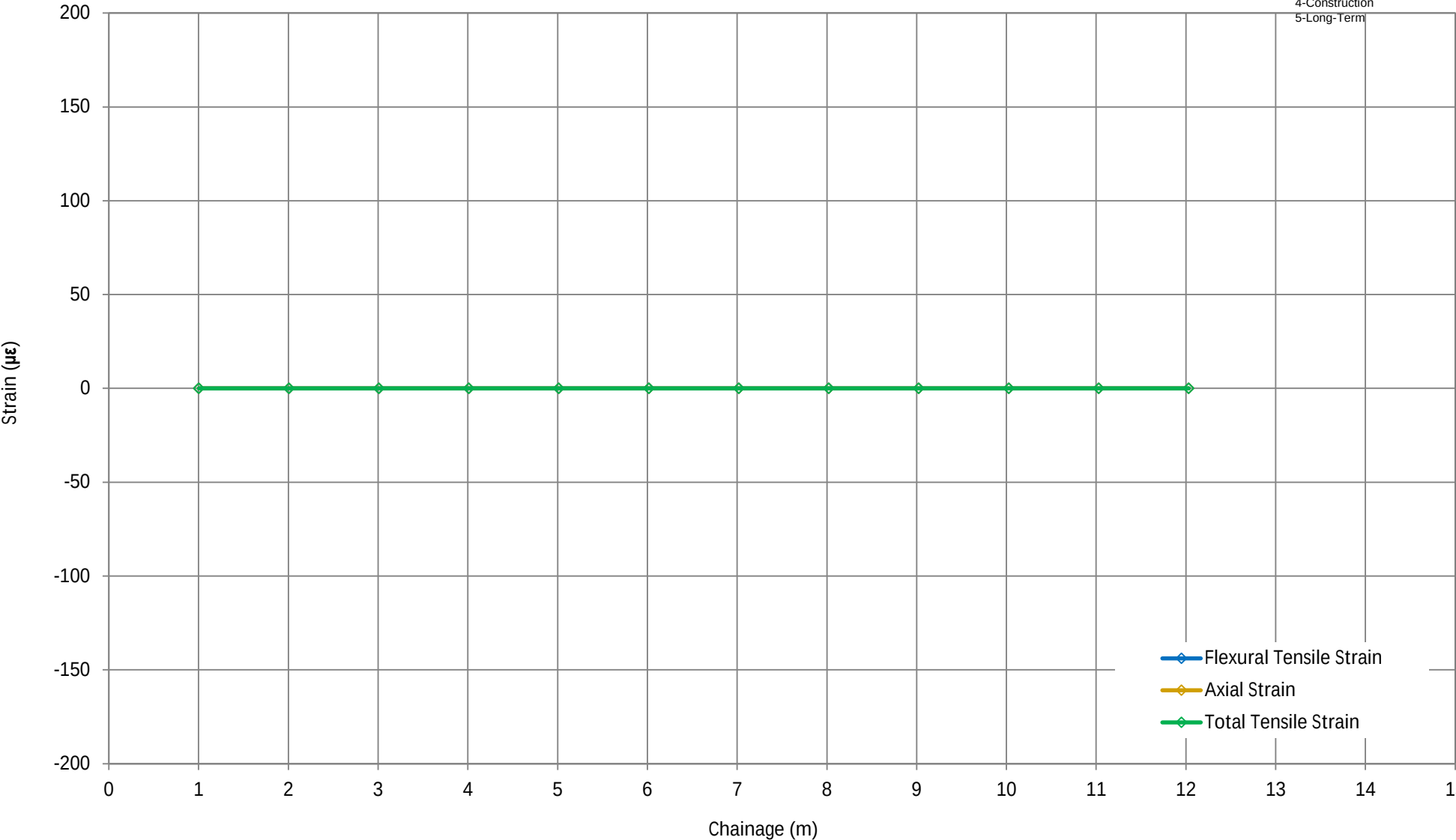


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for Water WM 1.2 (Combined Tensile Strain)

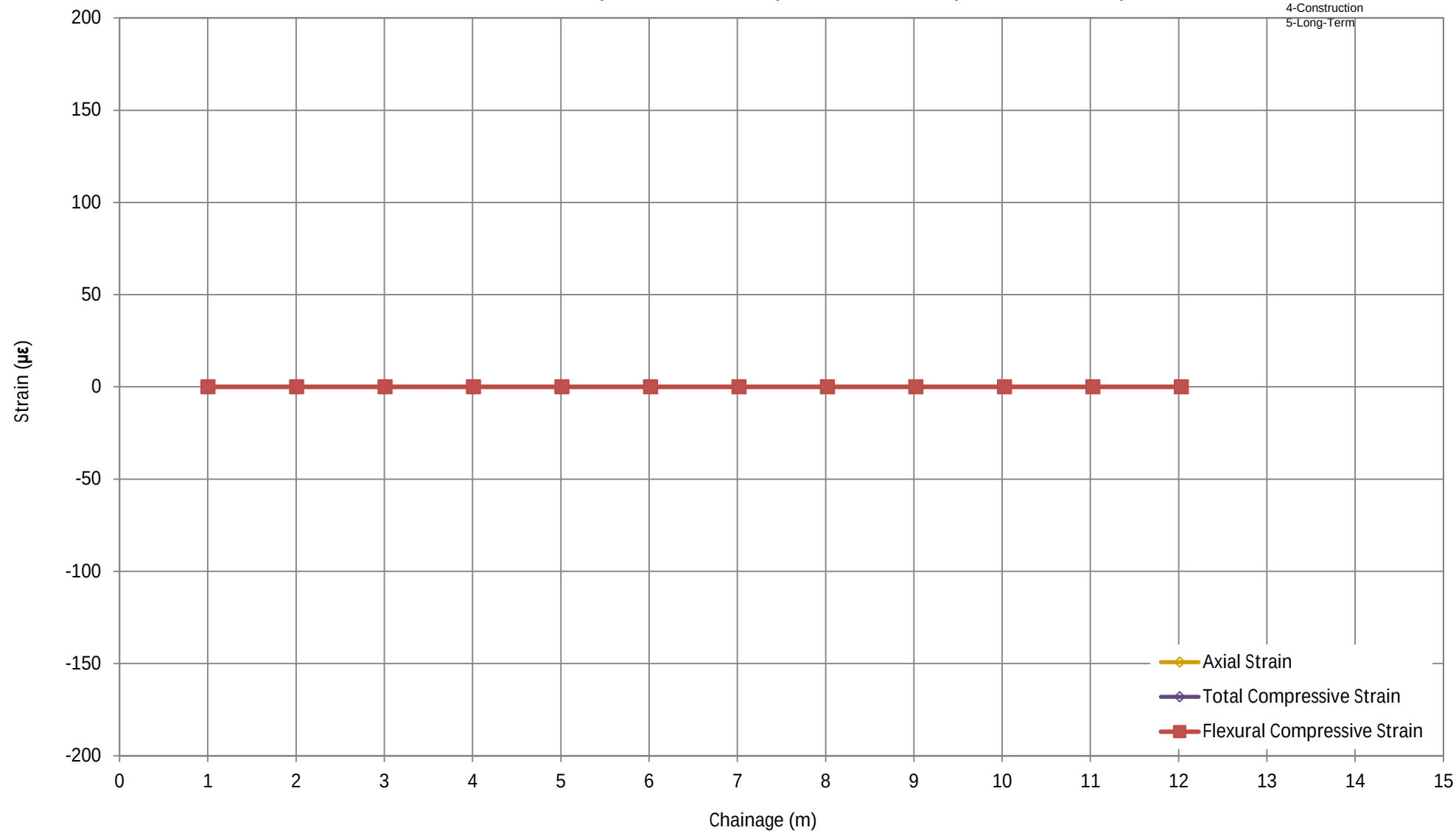
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for WM 1.2 (Combined Compressive Strain)

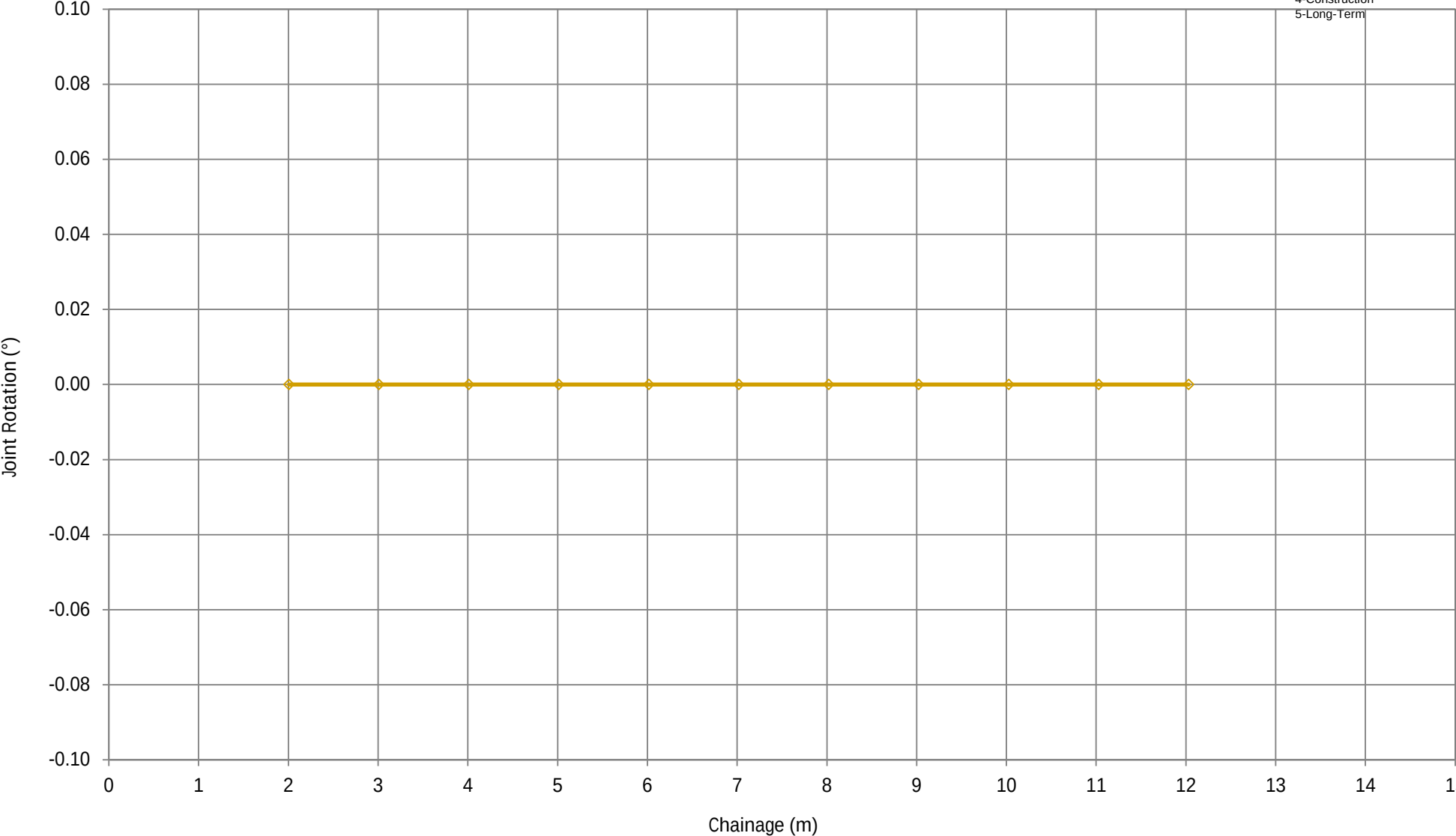


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Rotation for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

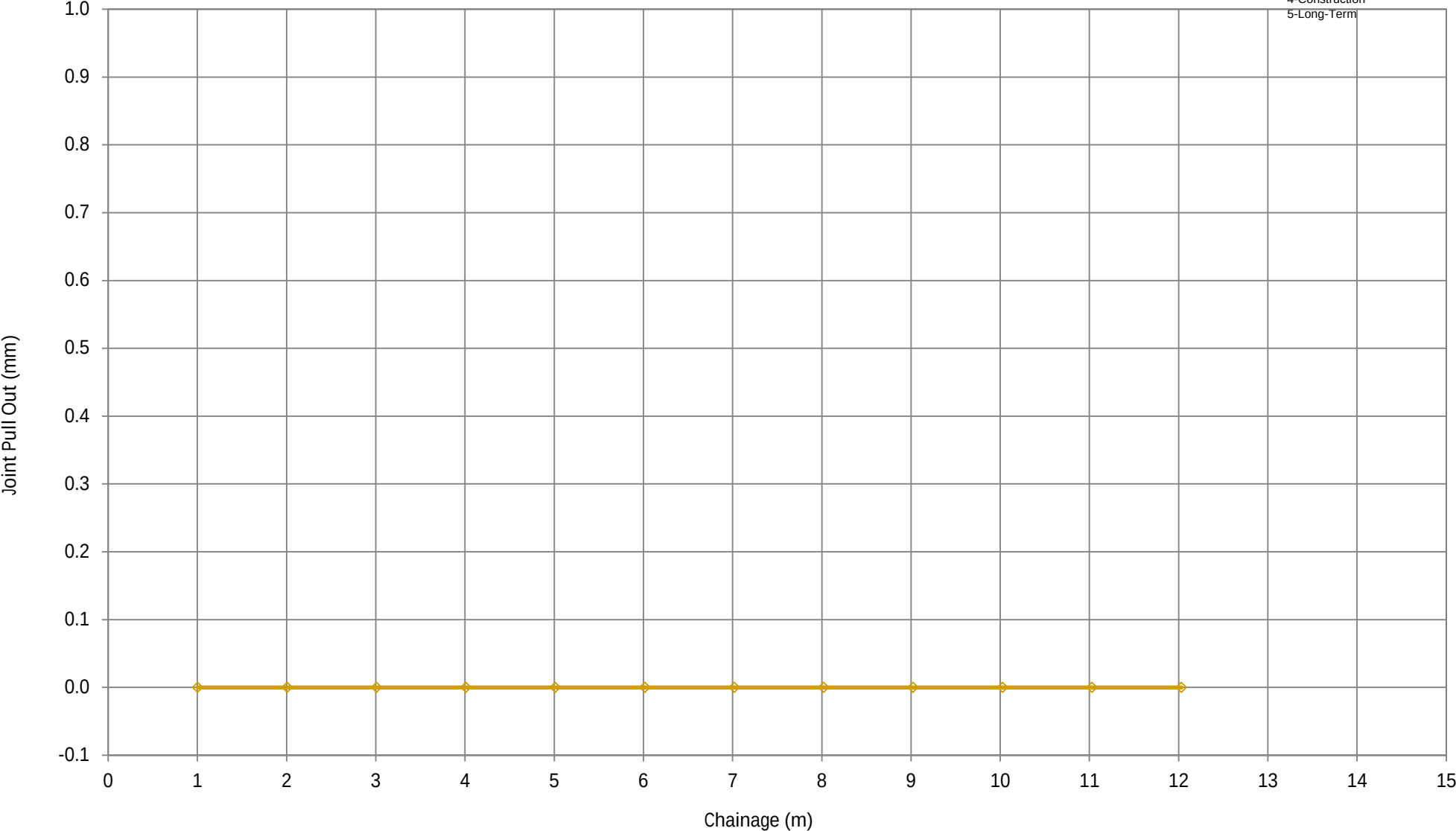


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Pull Out for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

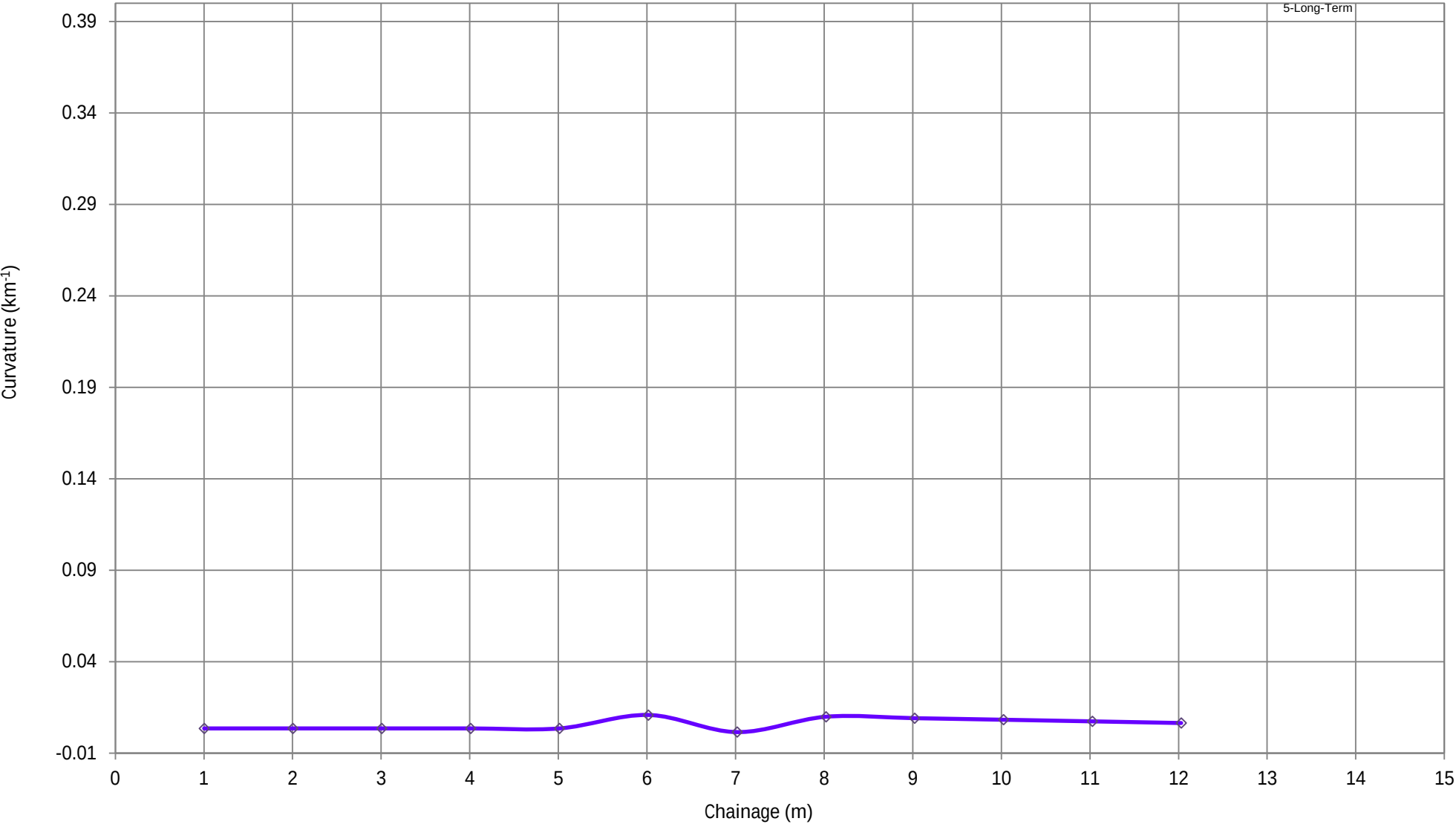


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Curvature Graph for WM 1.2

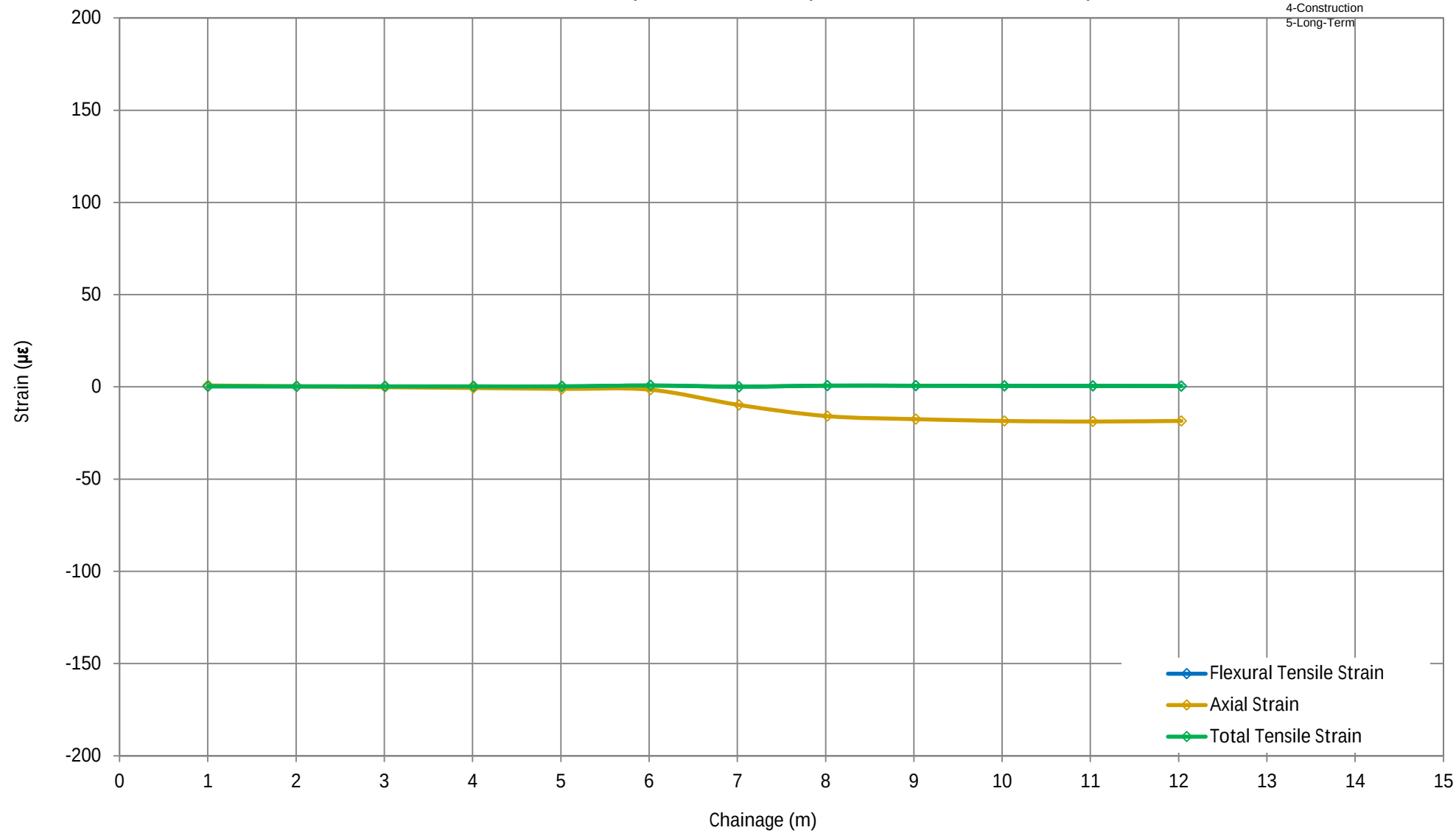
Phase Key (Cumulative Phases)	
1-Demolition (N/A)	
2-Wall Installation	
3-Excavation	
4-Construction	
5-Long-Term	



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

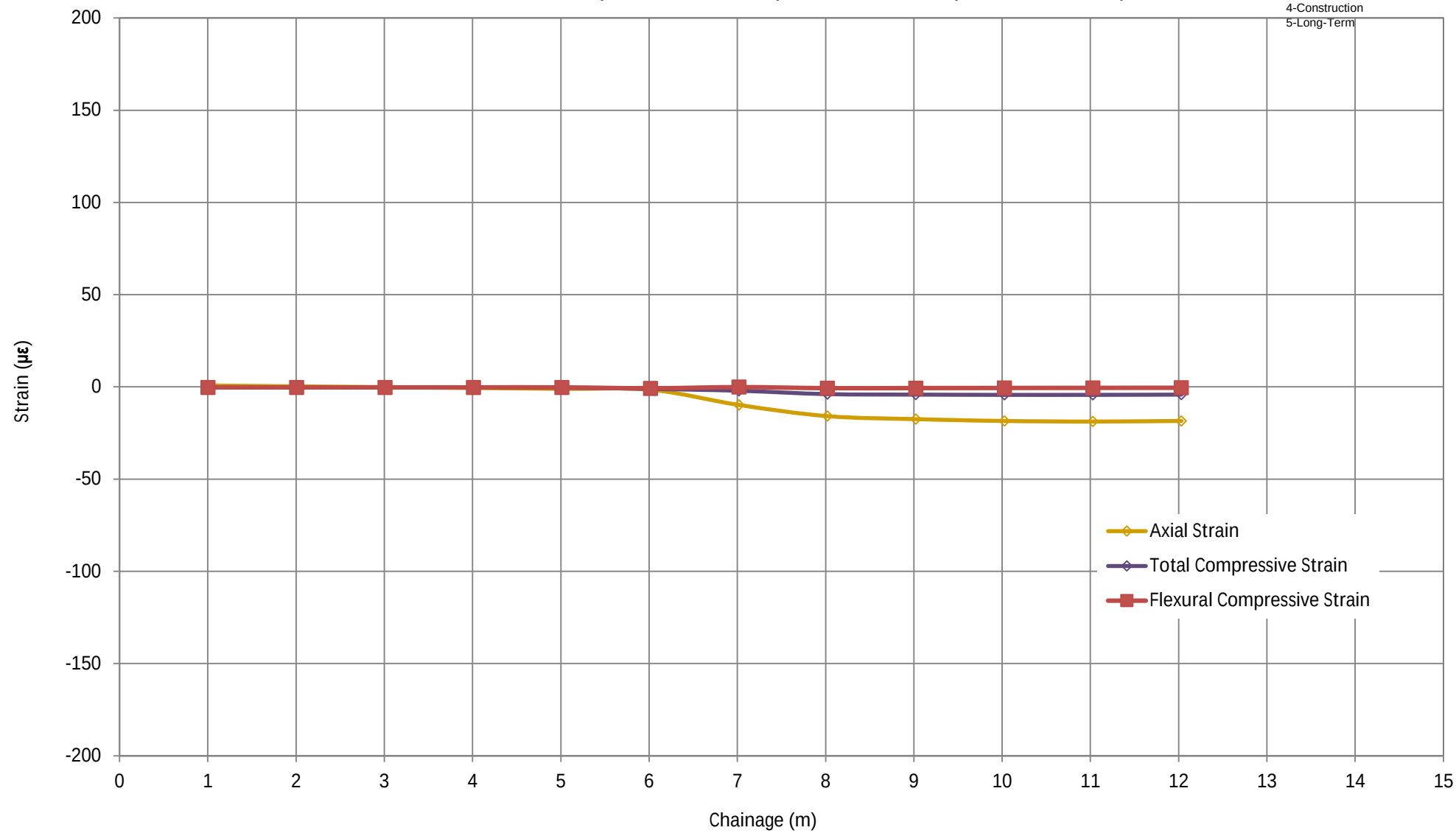
3Predicted Strain Graph for WM 1.2 (Combined Tensile Strain)



WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 1.2 (Combined Compressive Strain)

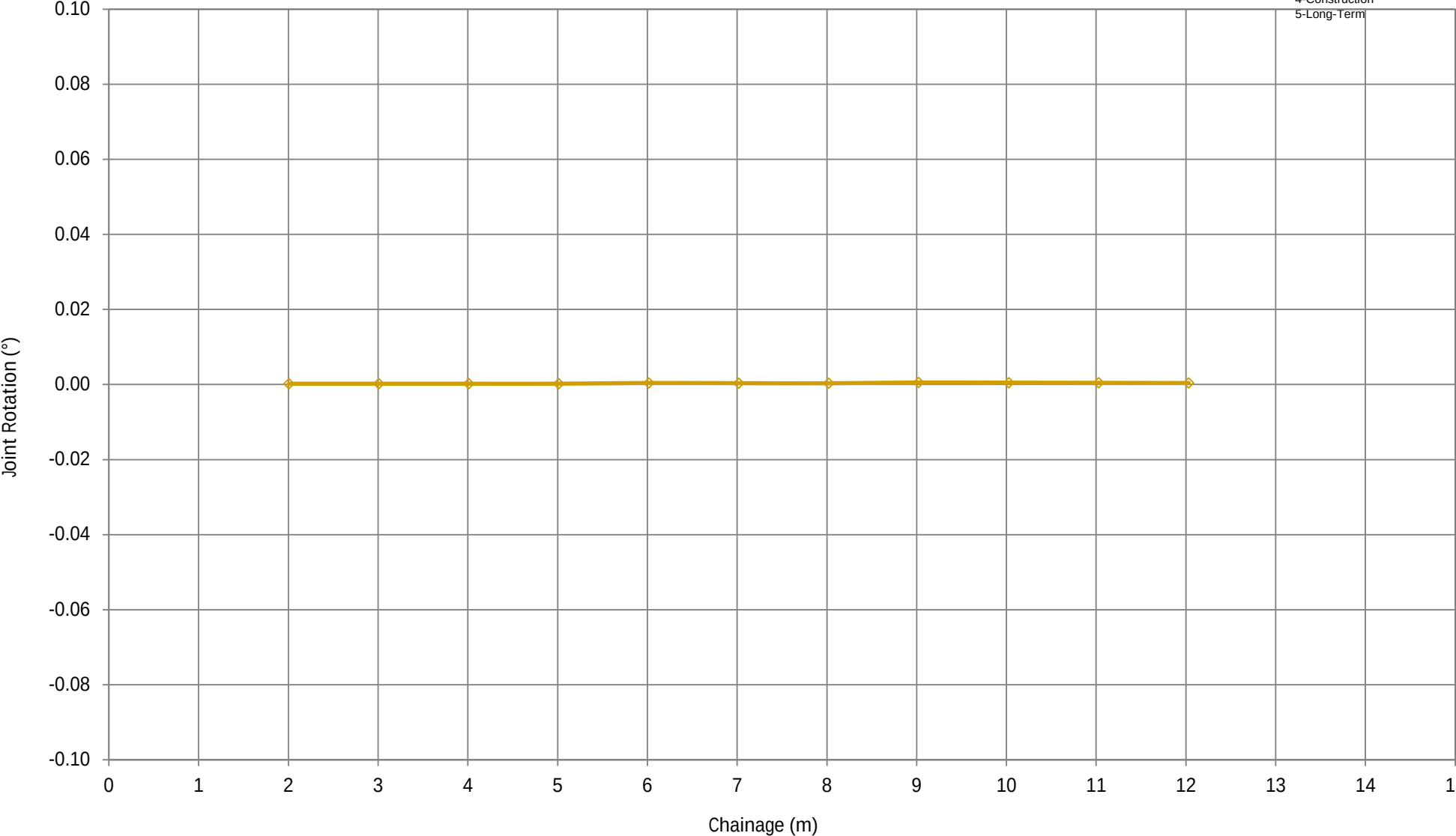


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Rotation for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

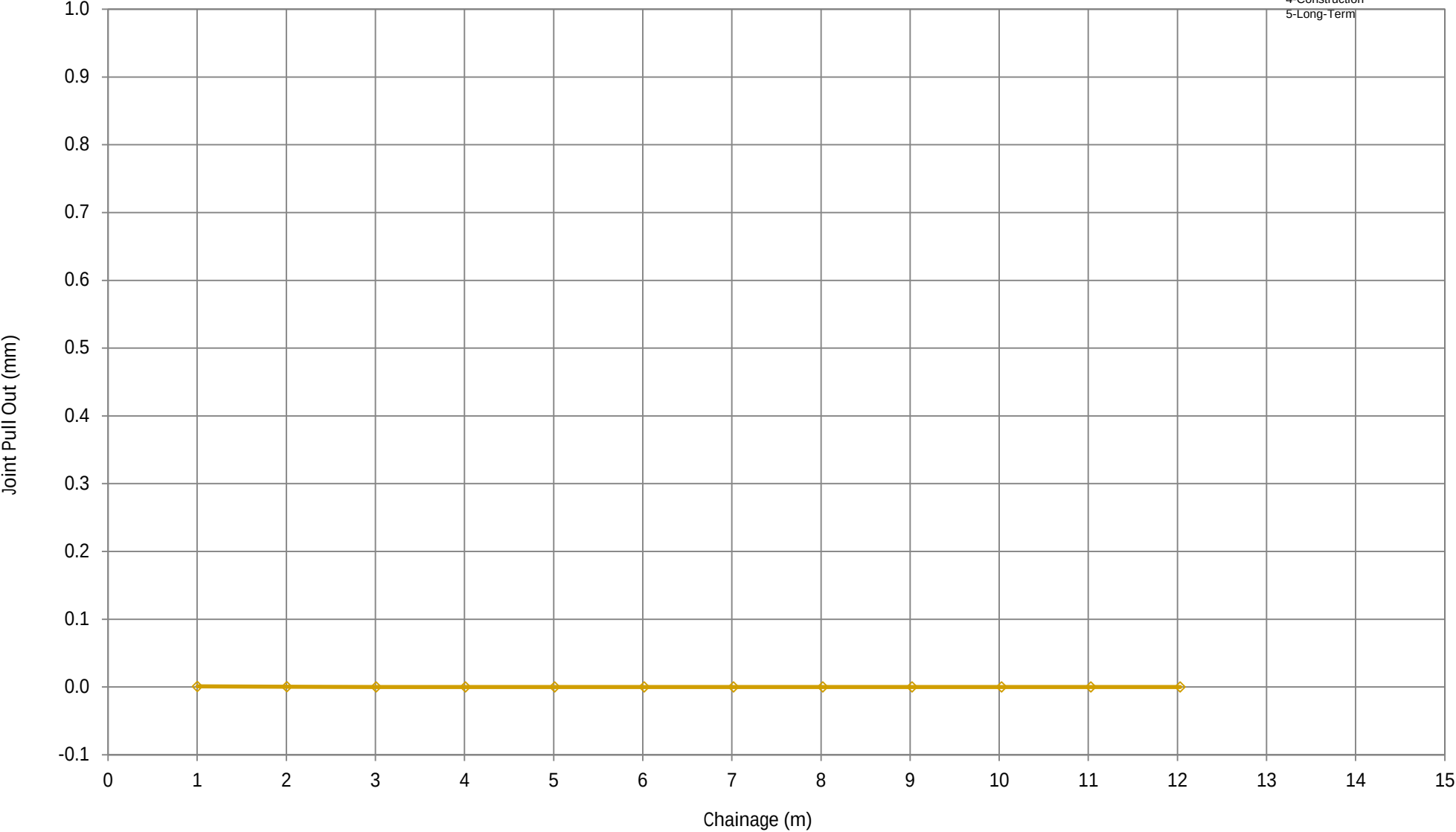


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Pull Out for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

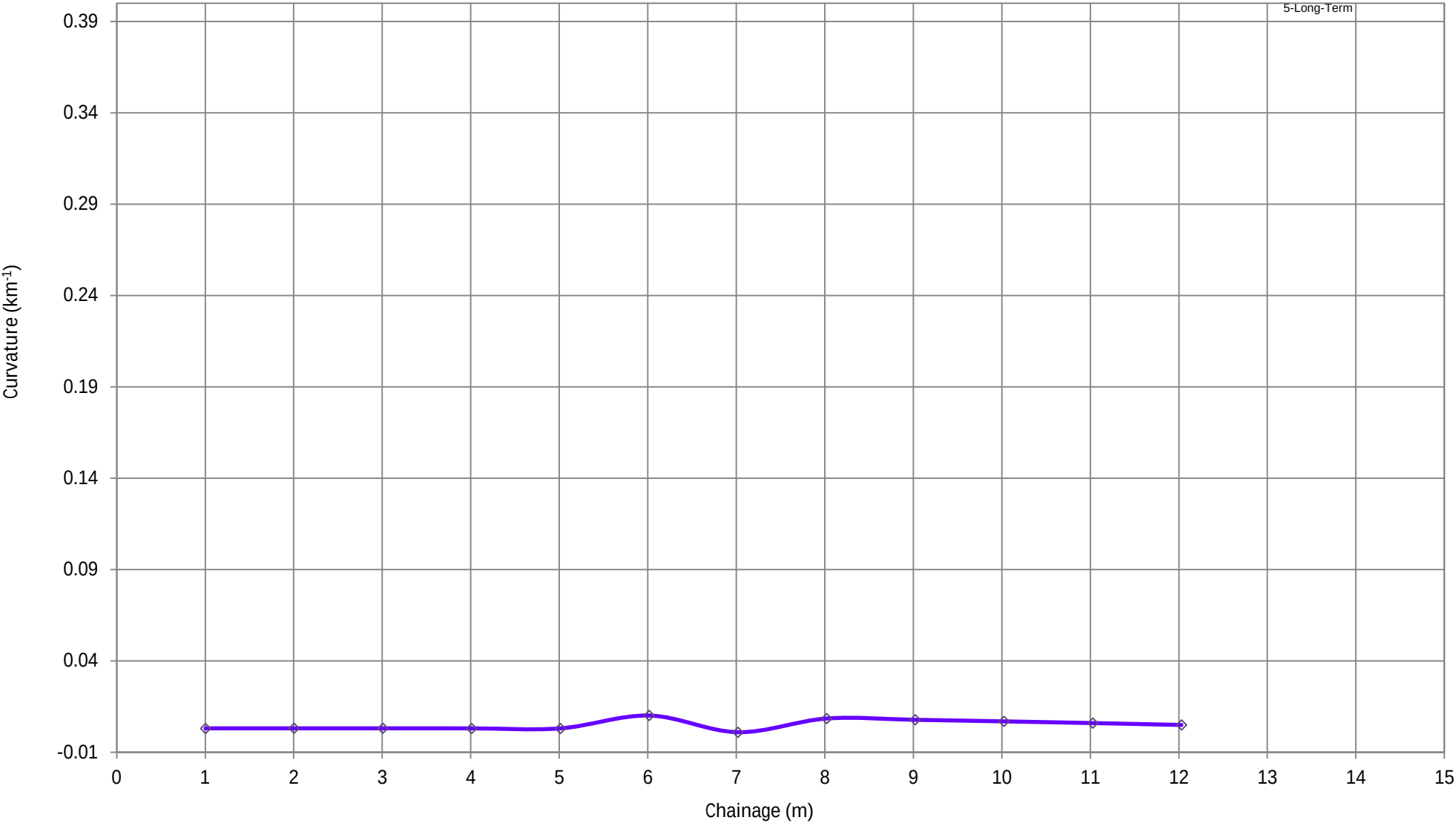


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Curvature Graph for WM 1.2

Phase Key (Cumulative Phases)	
1-Demolition (N/A)	
2-Wall Installation	
3-Excavation	
4-Construction	
5-Long-Term	

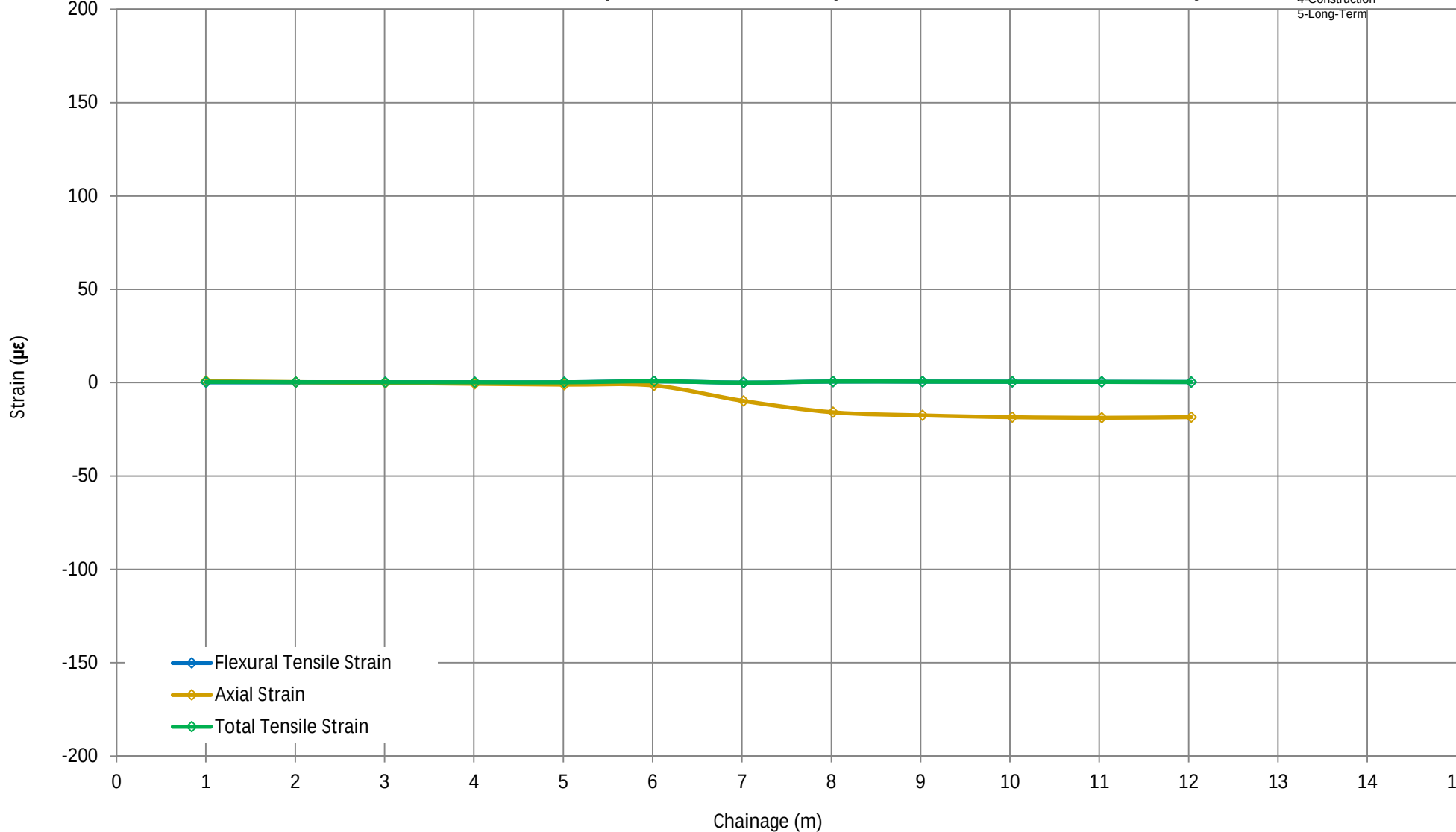


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 1.2 (Combined Tensile Strain)

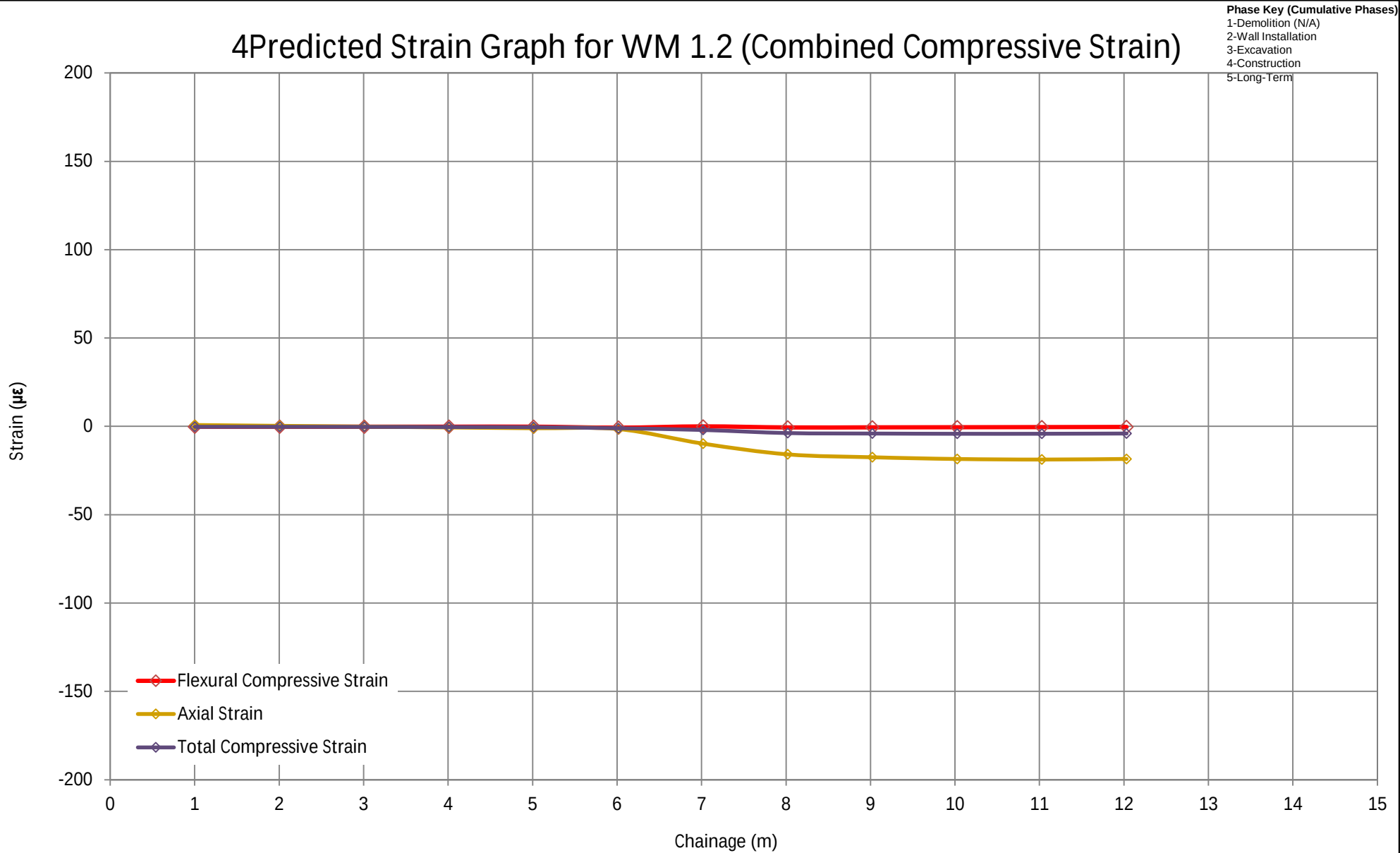
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 1.2 (Combined Compressive Strain)

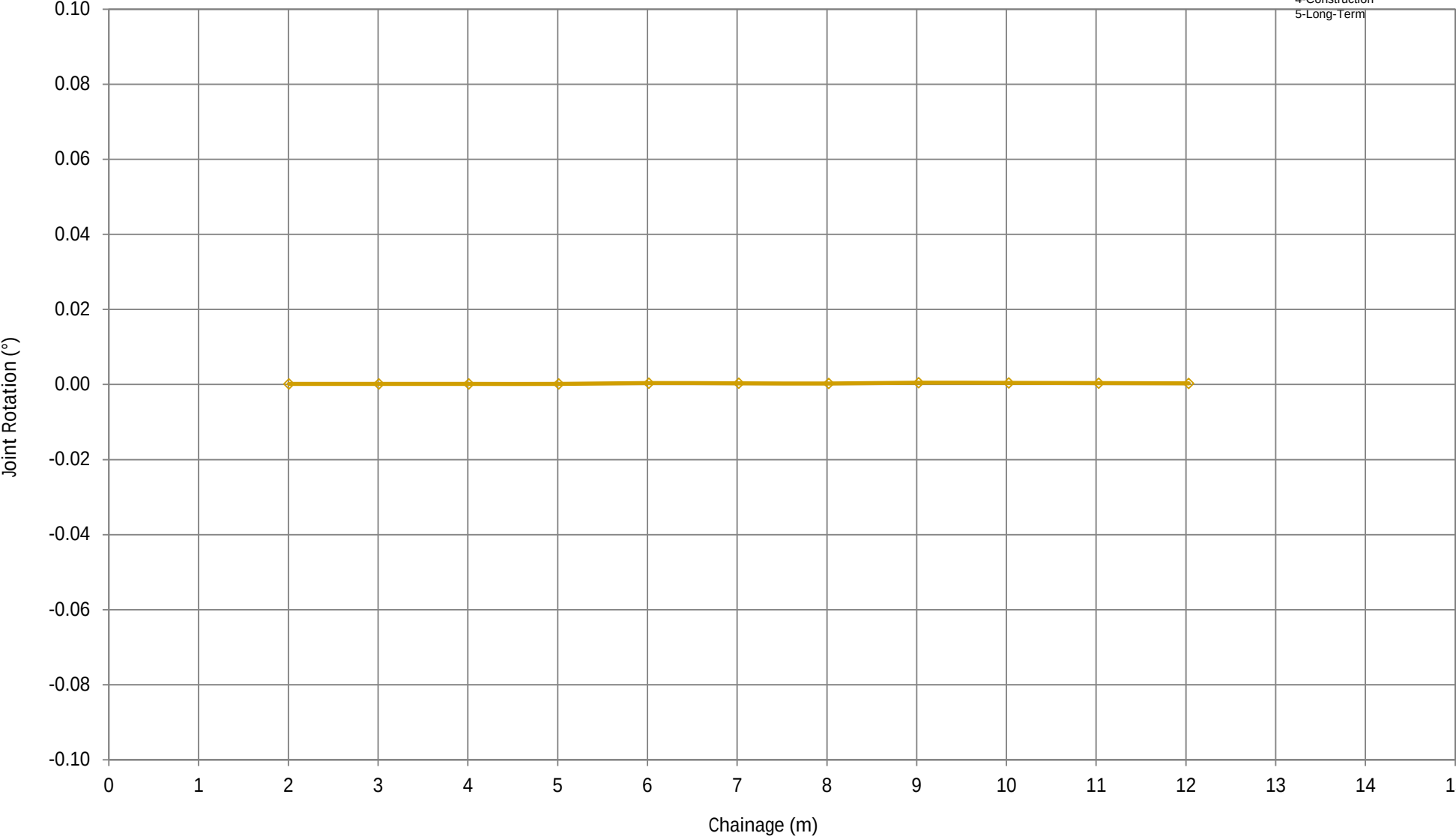


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Rotation for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

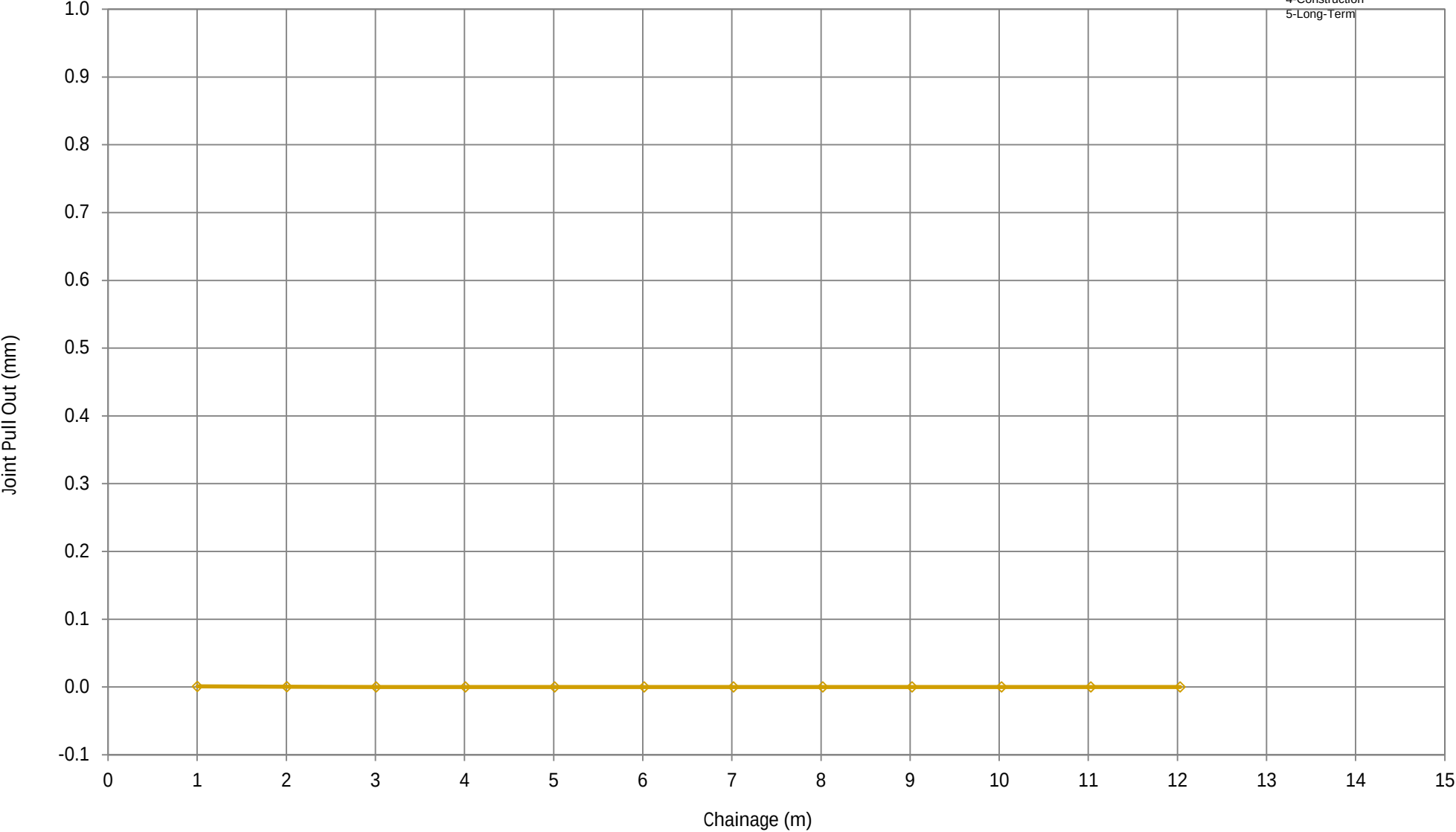


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Pull Out for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

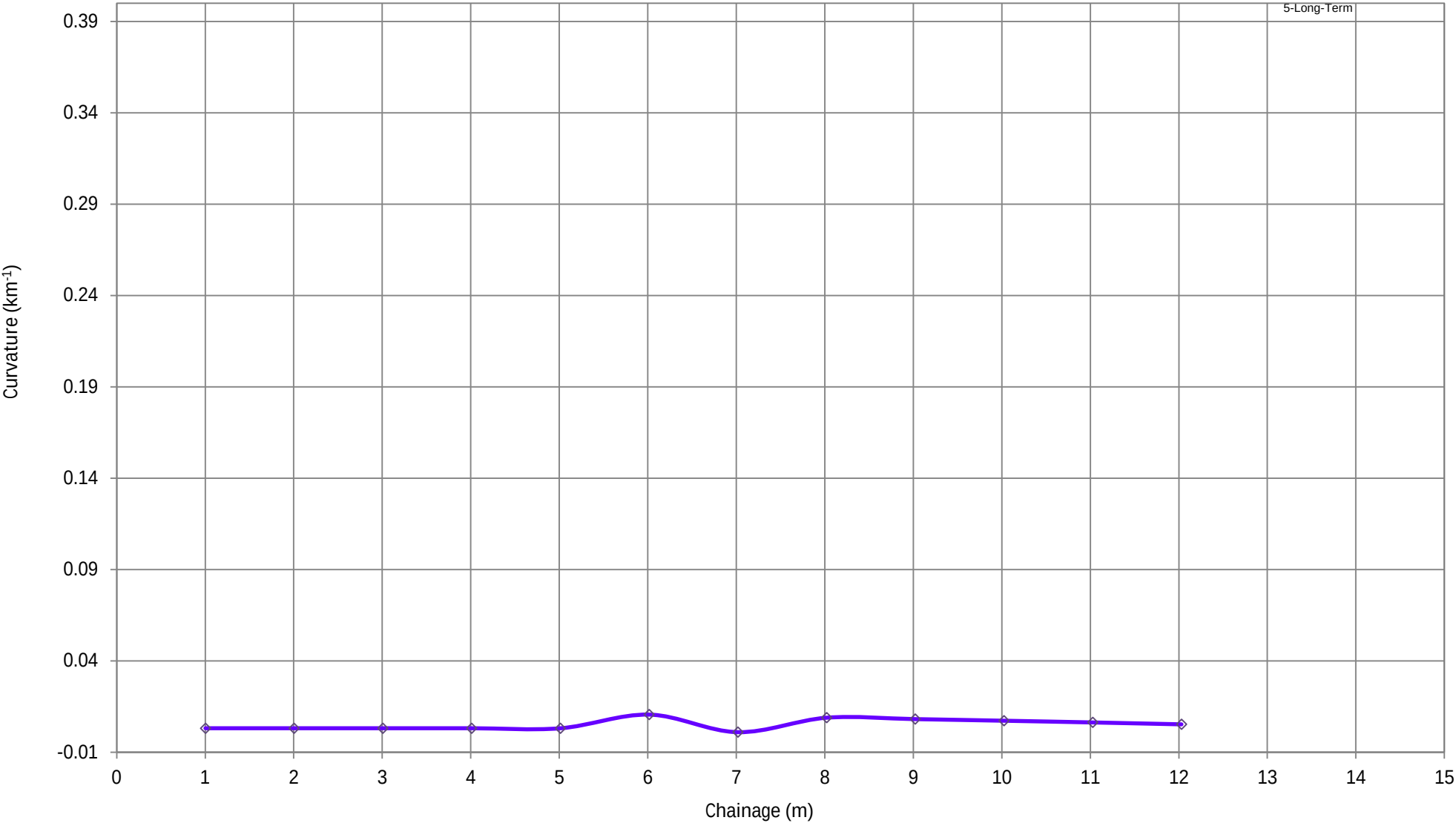


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Curvature Graph for WM 1.2

Phase Key (Cumulative Phases)	
1-Demolition (N/A)	
2-Wall Installation	
3-Excavation	
4-Construction	
5-Long-Term	

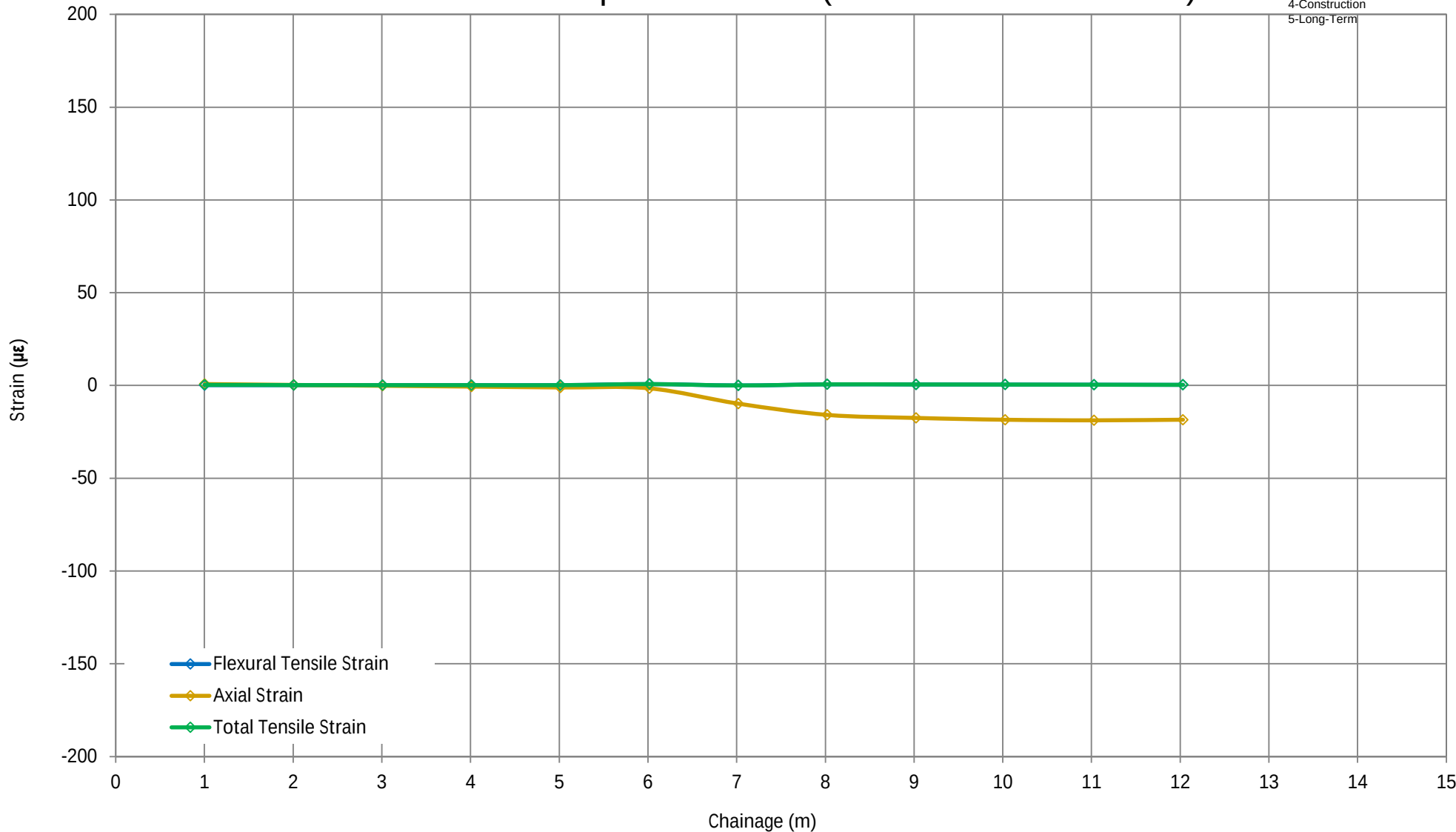


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 1.2 (Combined Tensile Strain)

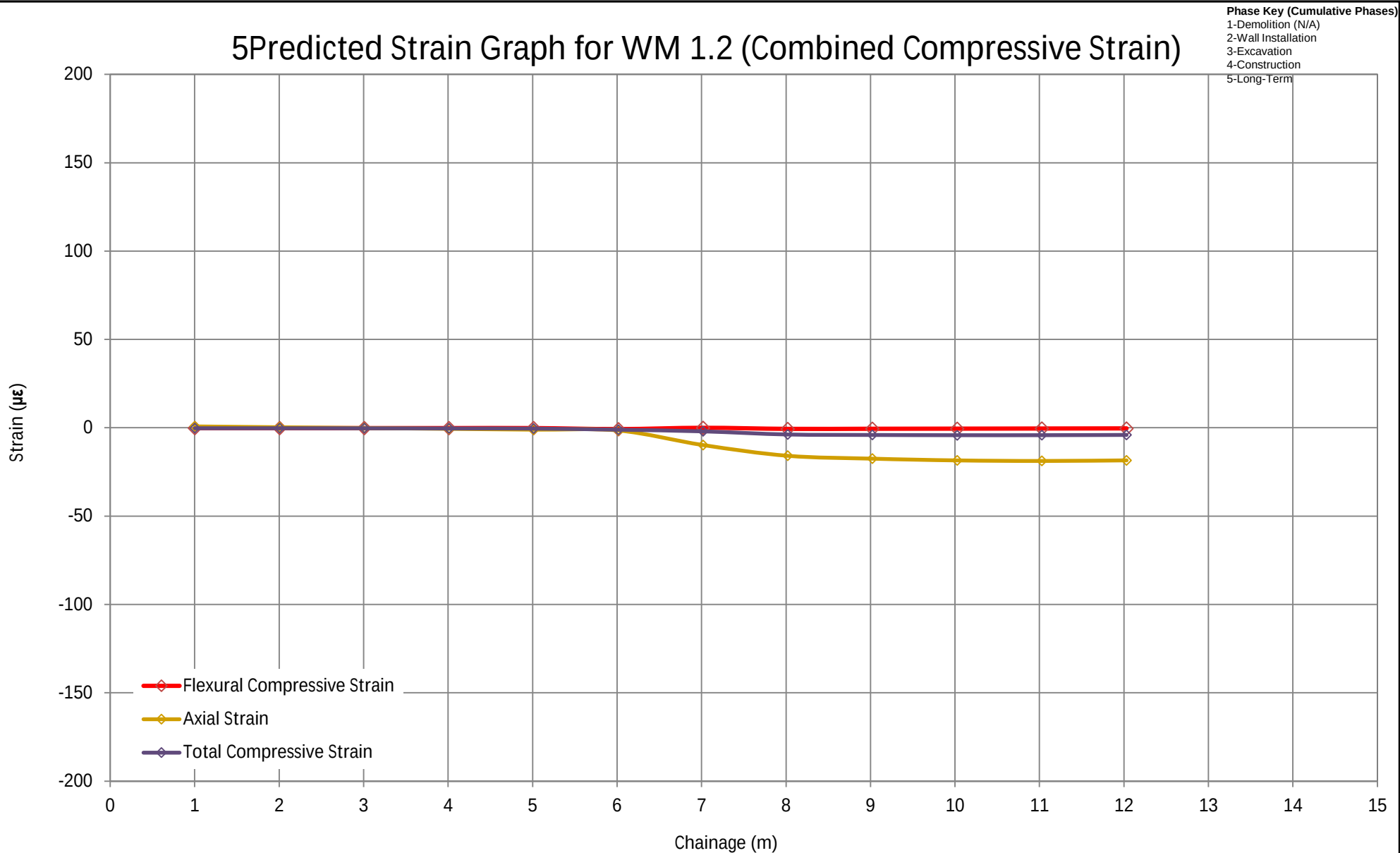
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 1.2 (Combined Compressive Strain)

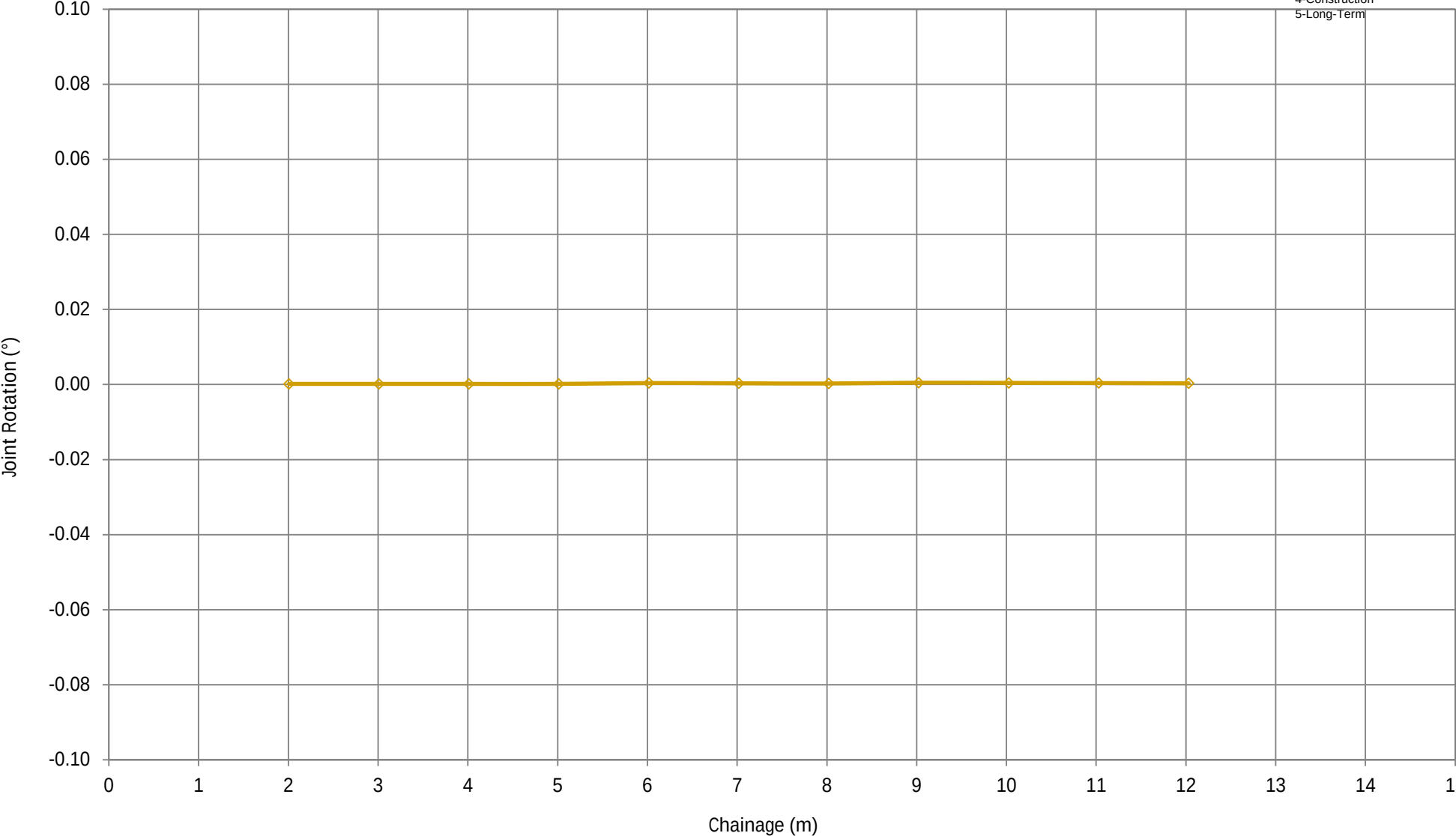


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Rotation for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

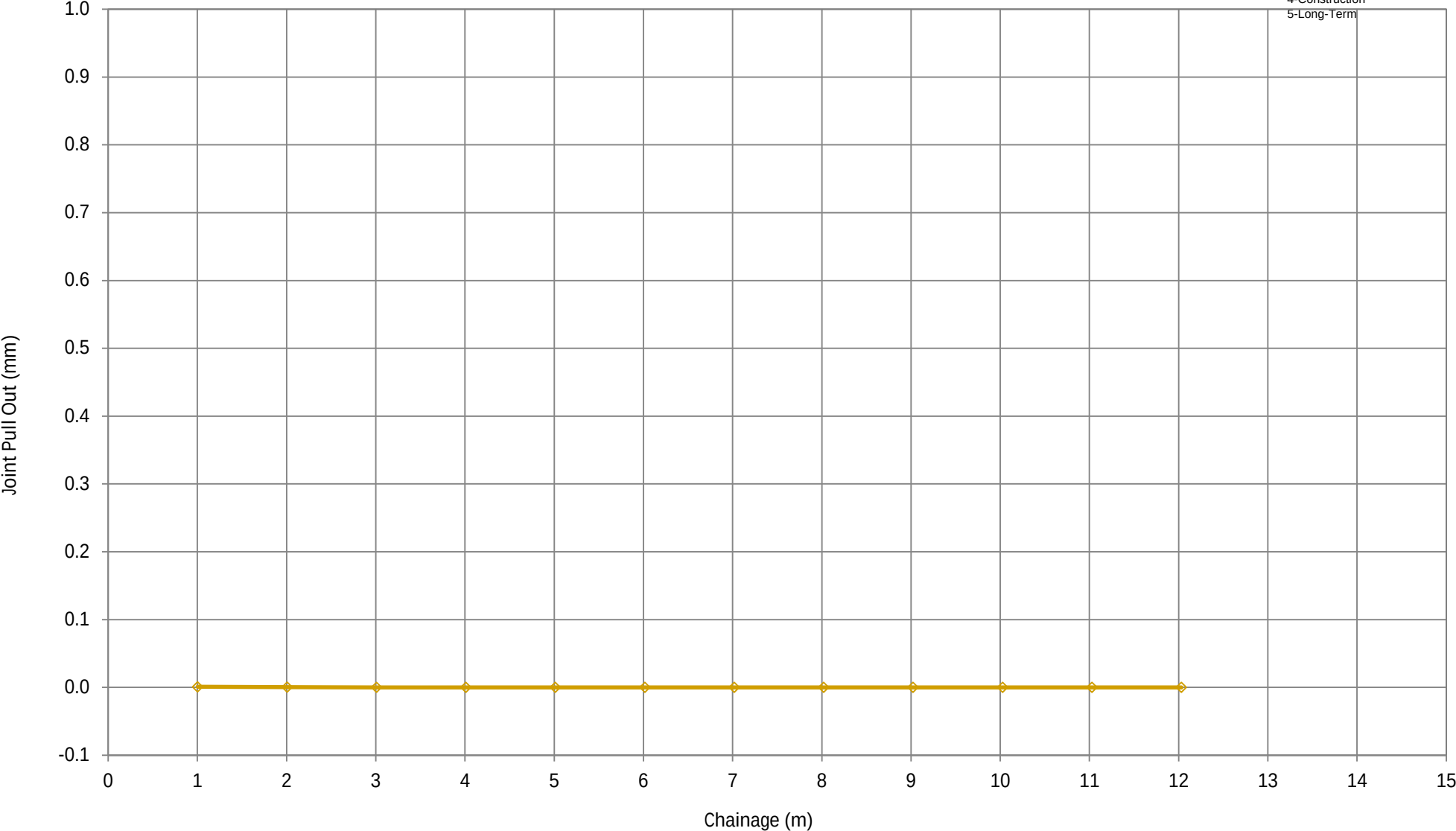


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Pull Out for WM 1.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

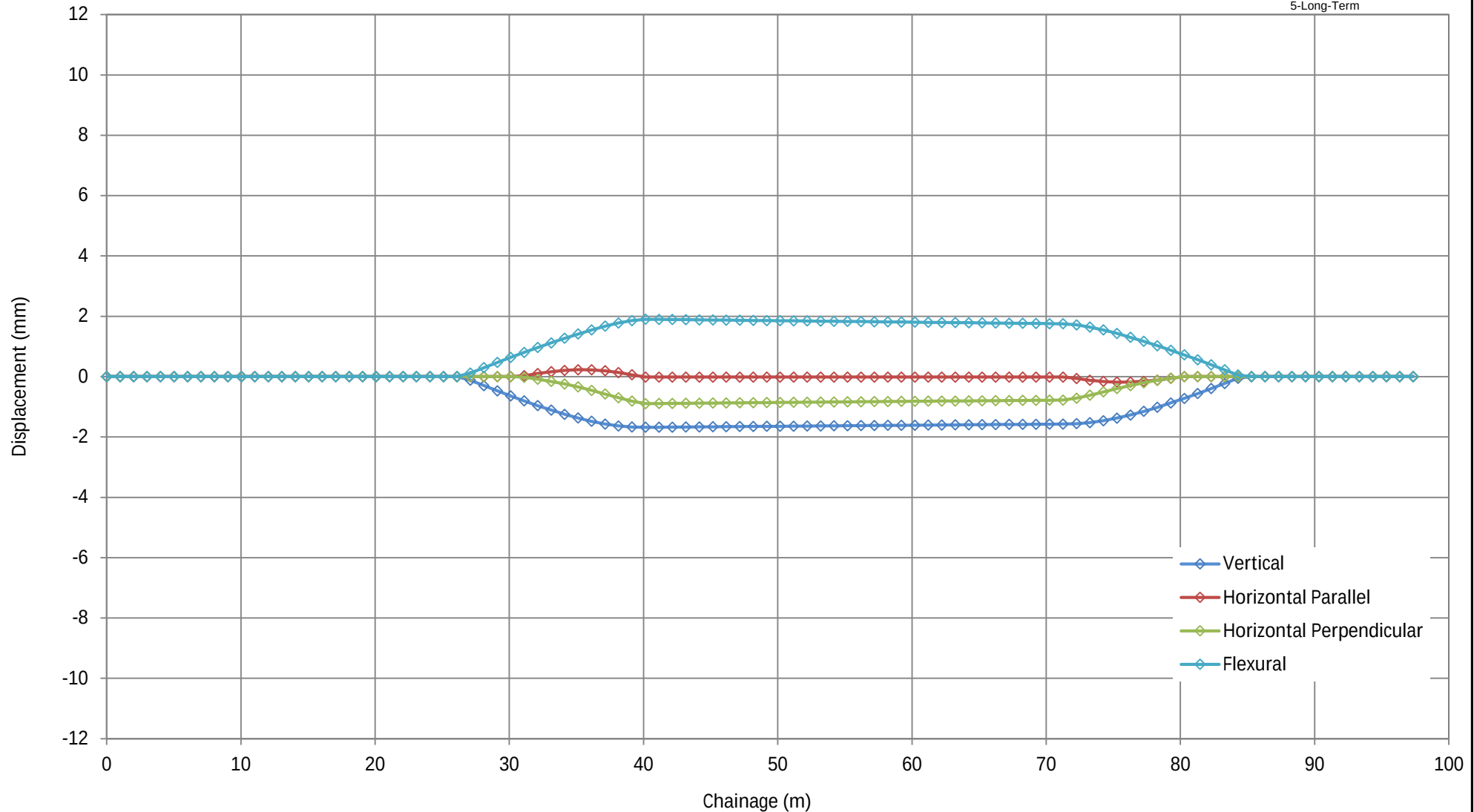


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Displacement Graph for WM 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

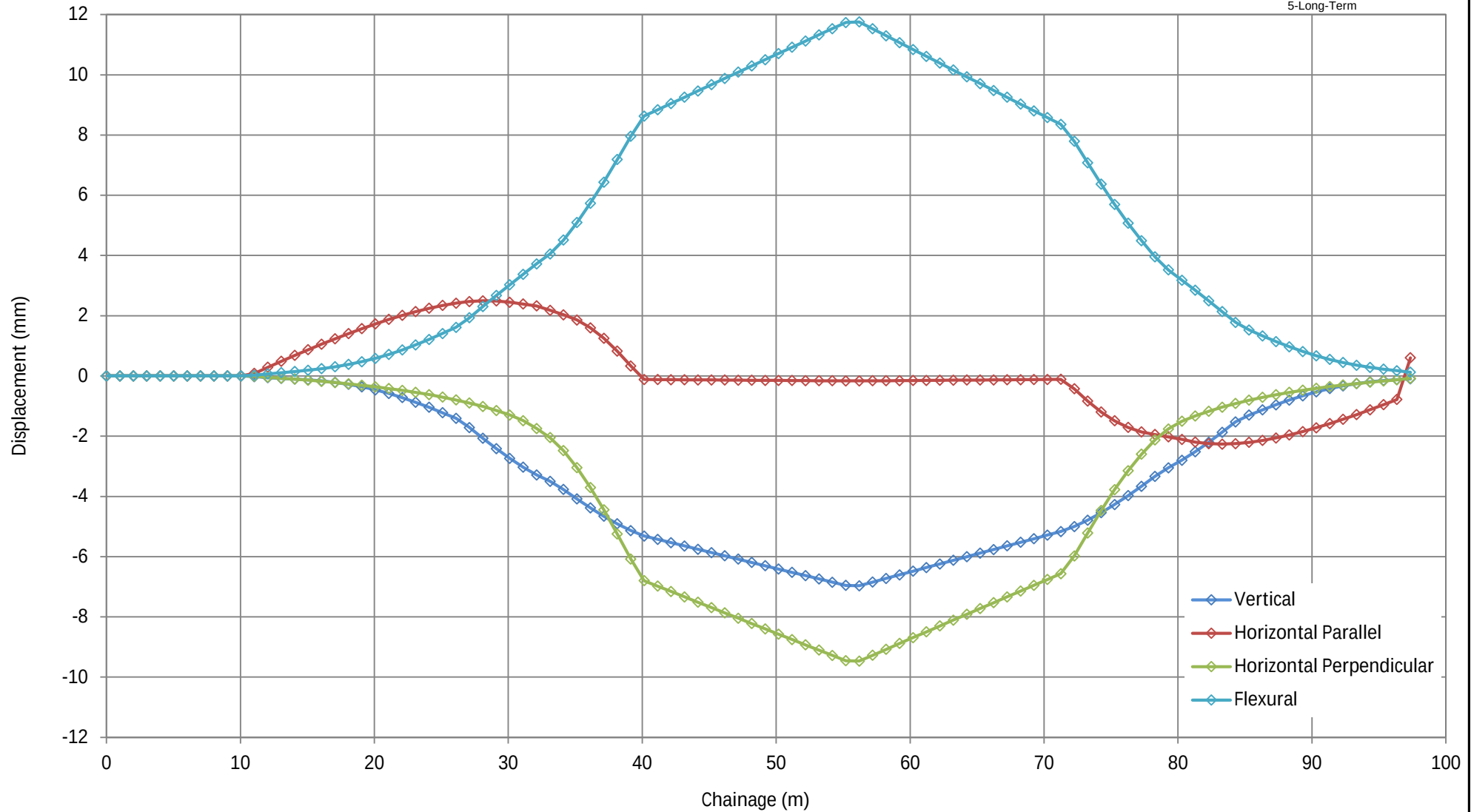


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Displacement Graph for WM 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

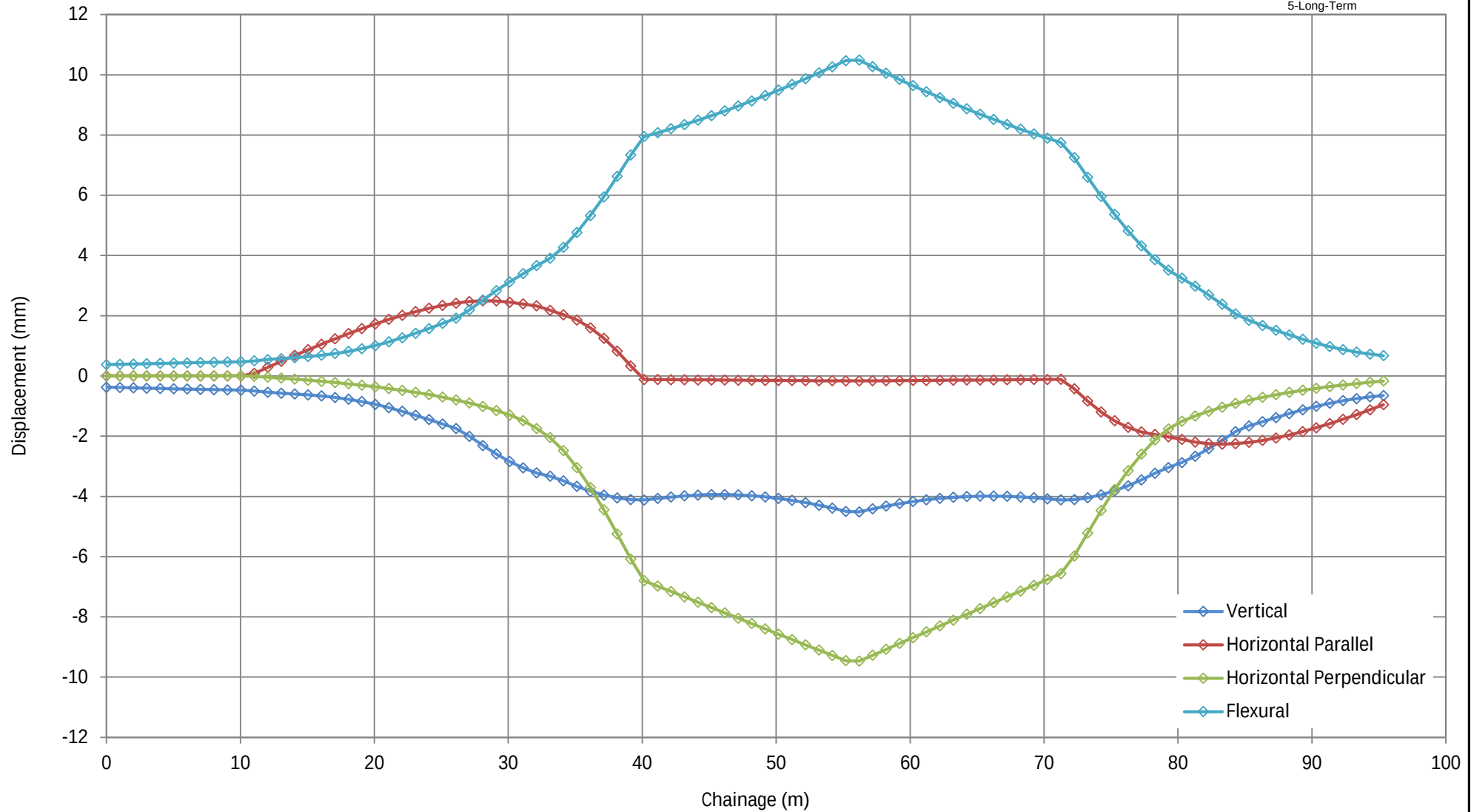


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Displacement Graph for WM 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

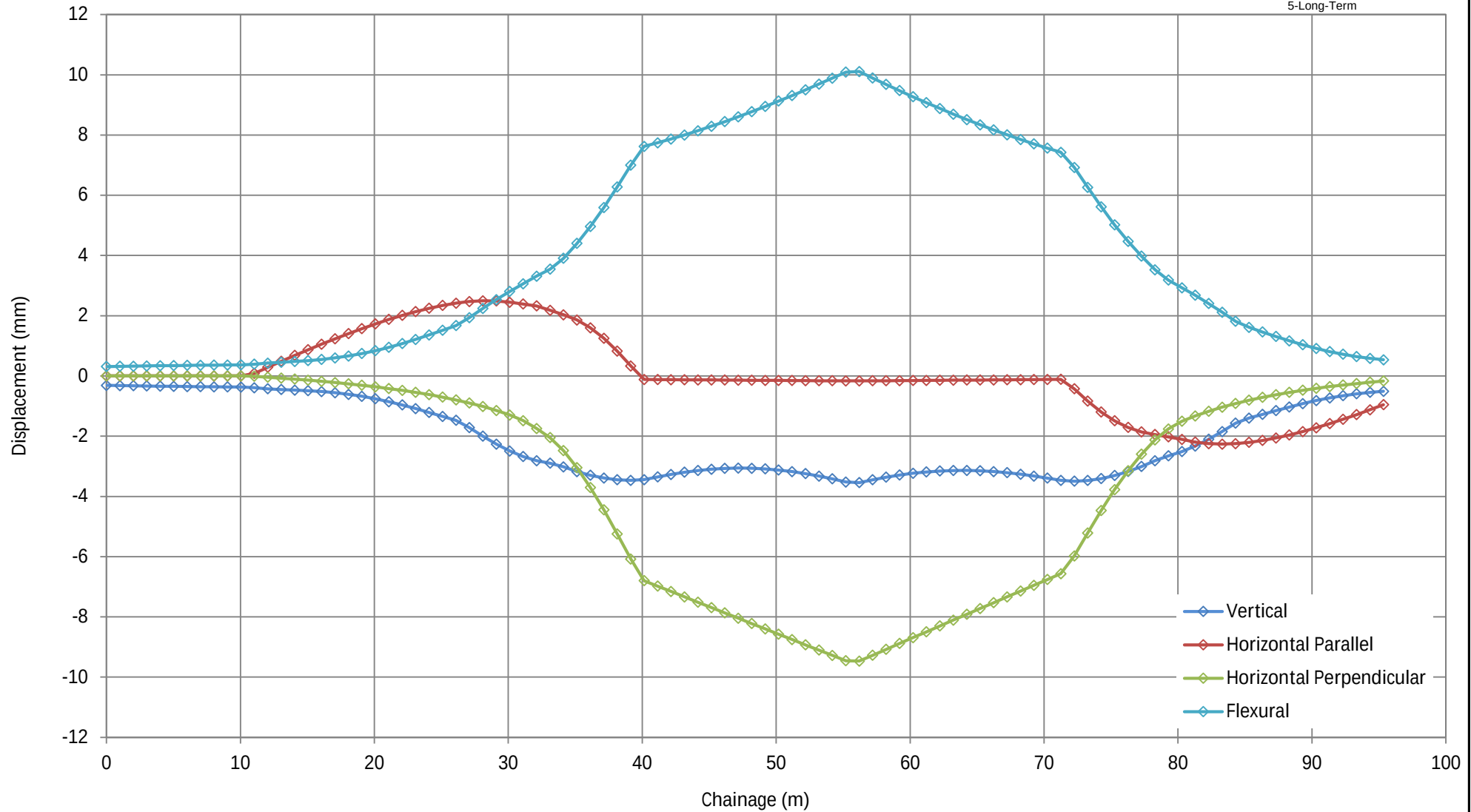


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Displacement Graph for WM 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

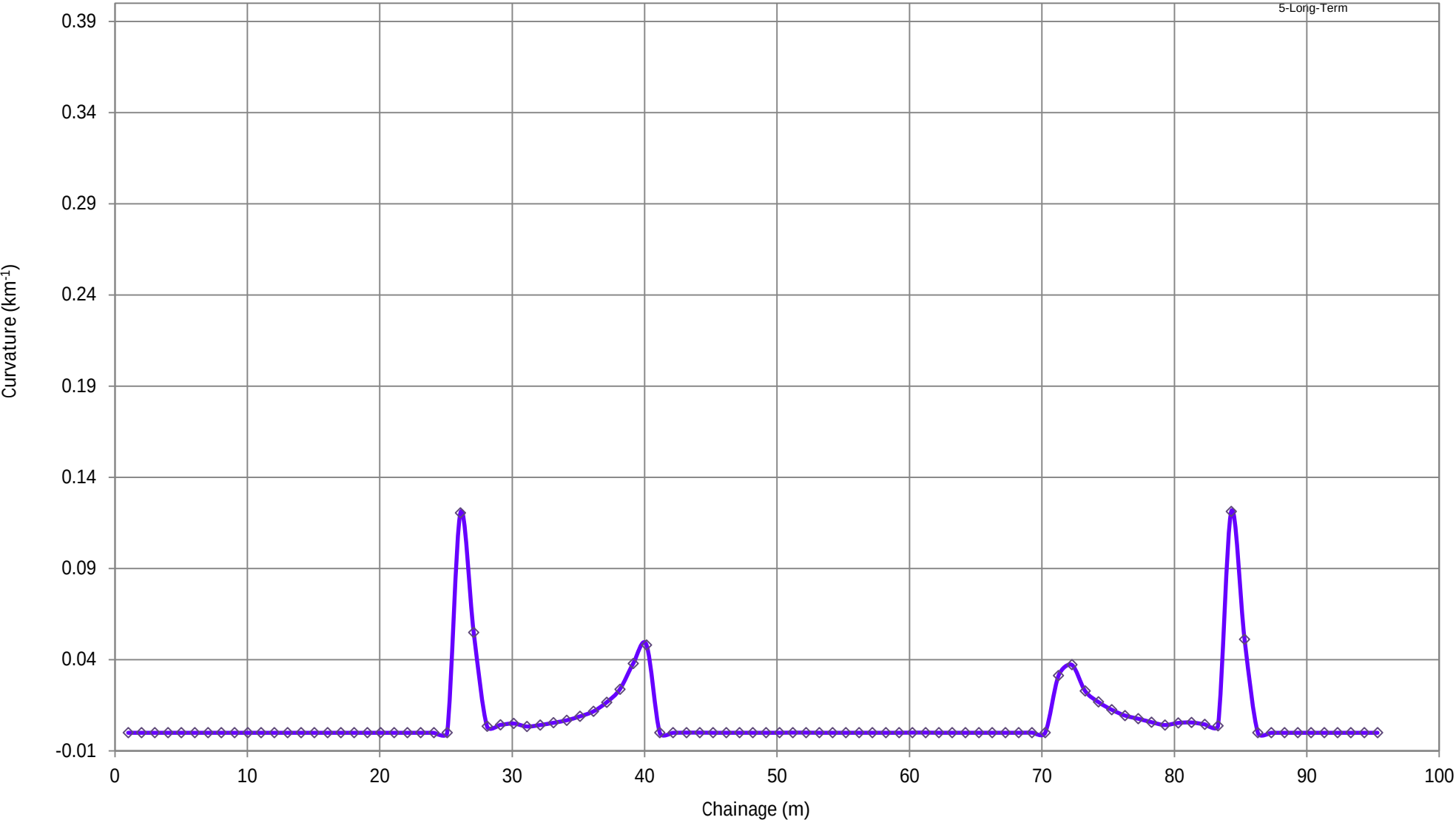


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Curvature Graph for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

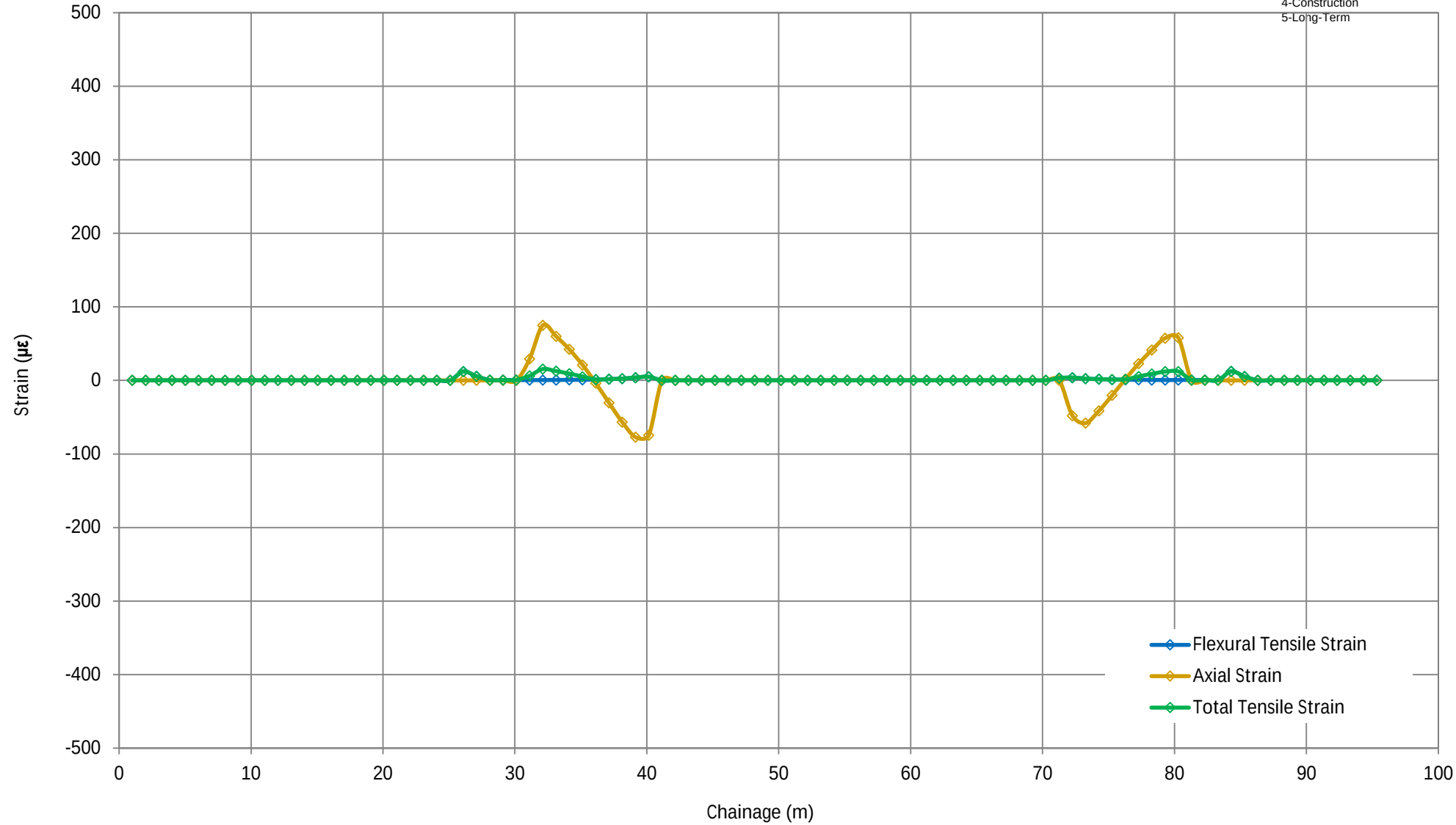


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for Water WM 2.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

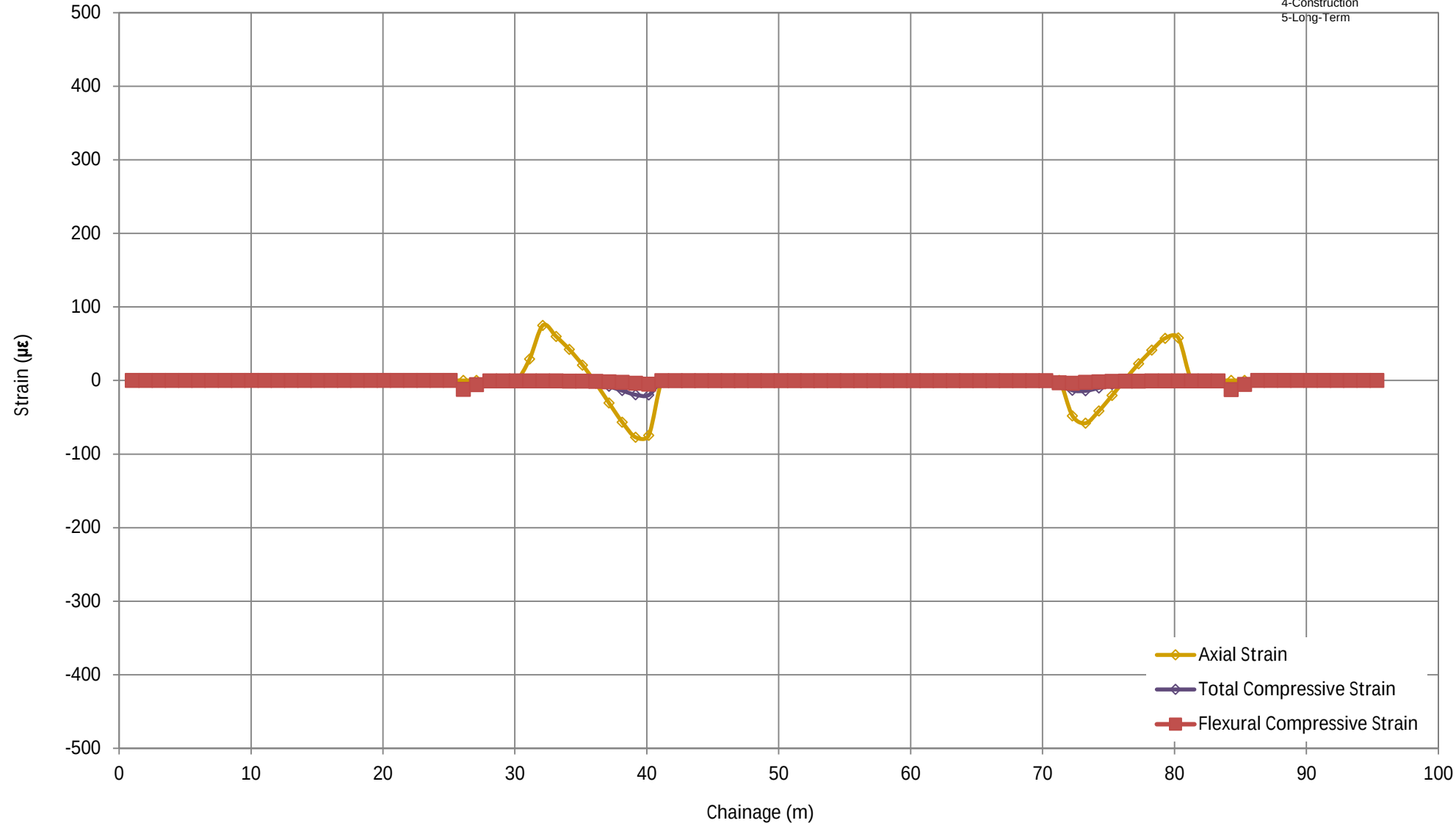


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for WM 2.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

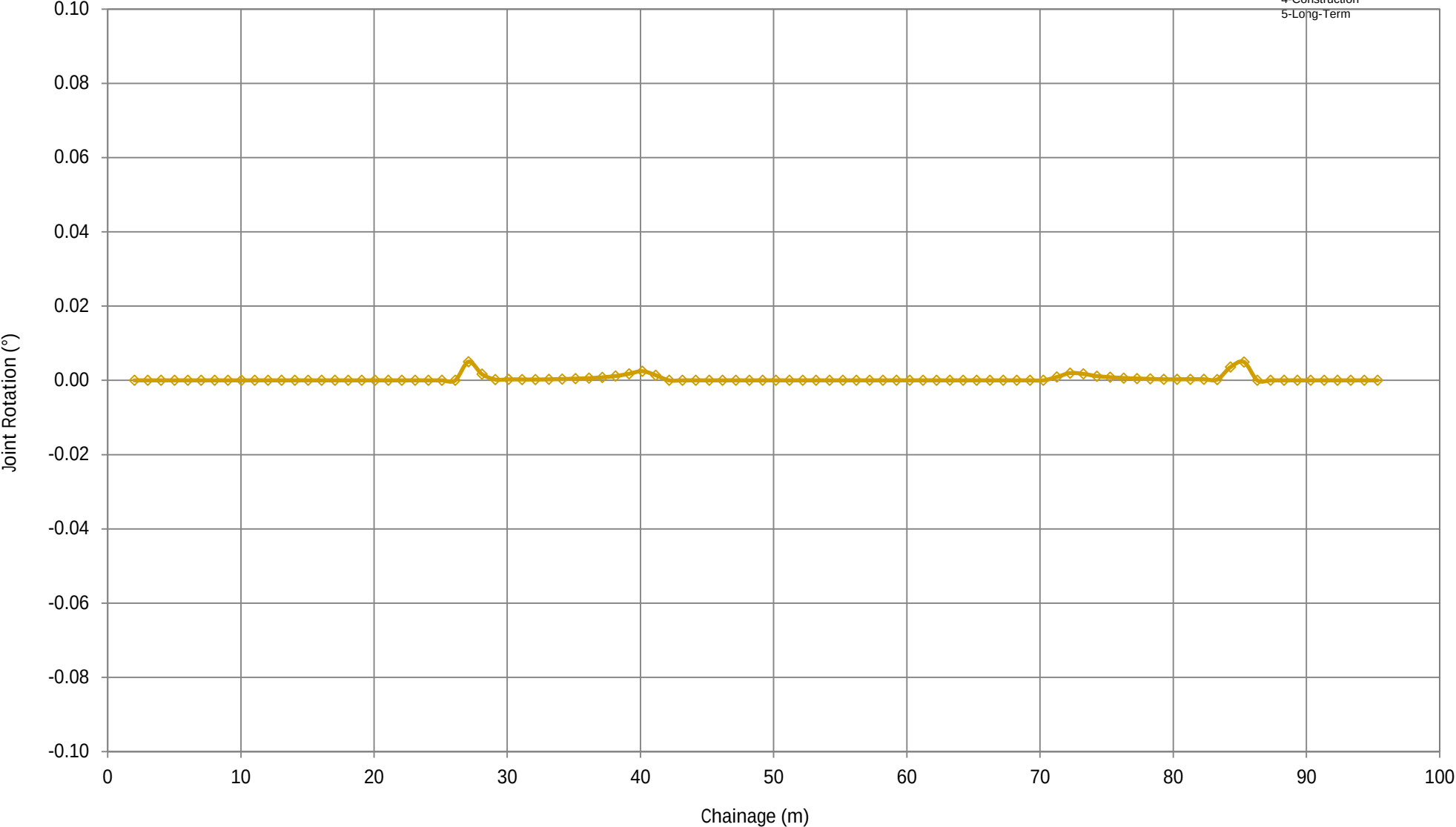


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Rotation for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

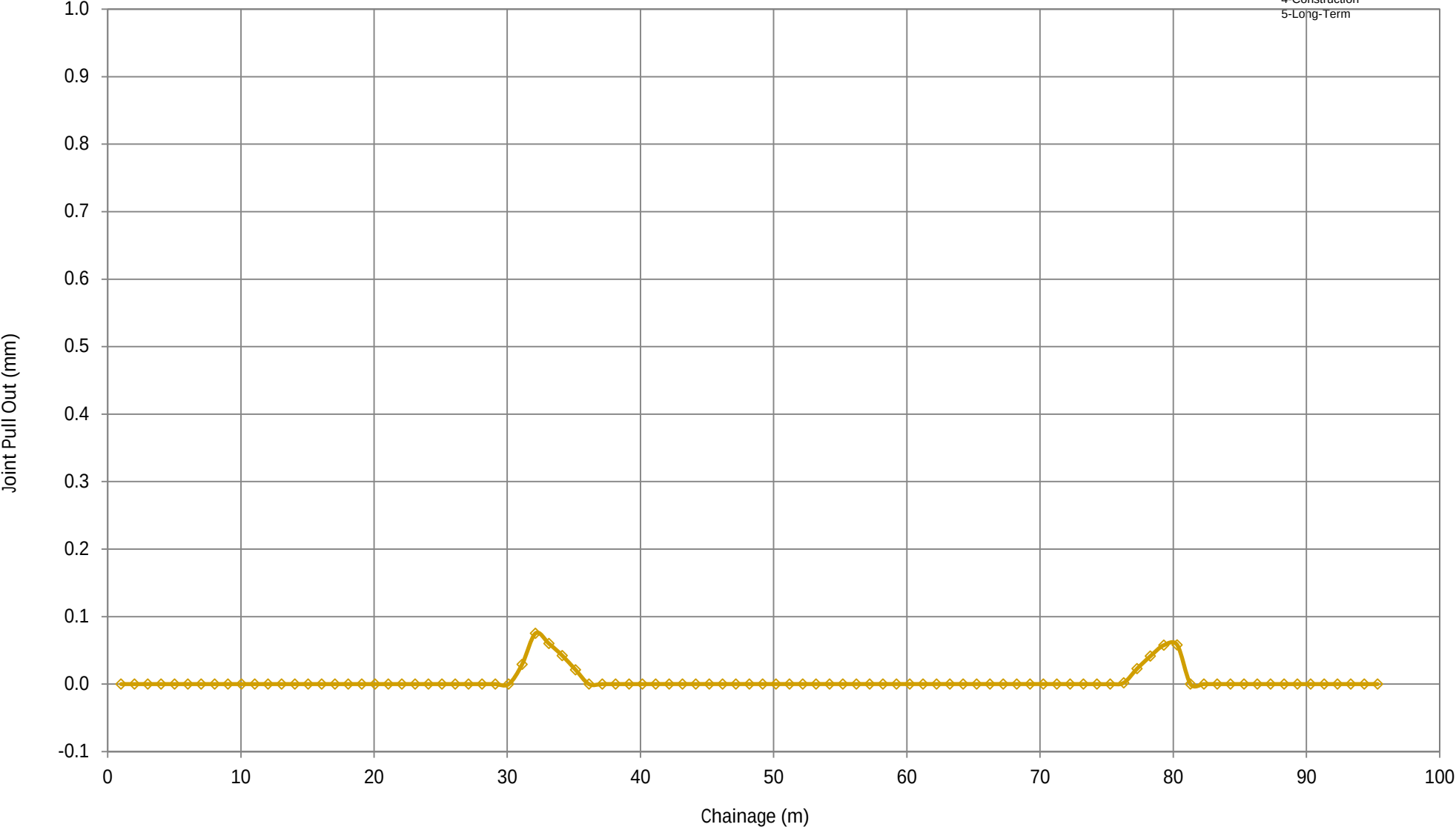


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Pull Out for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

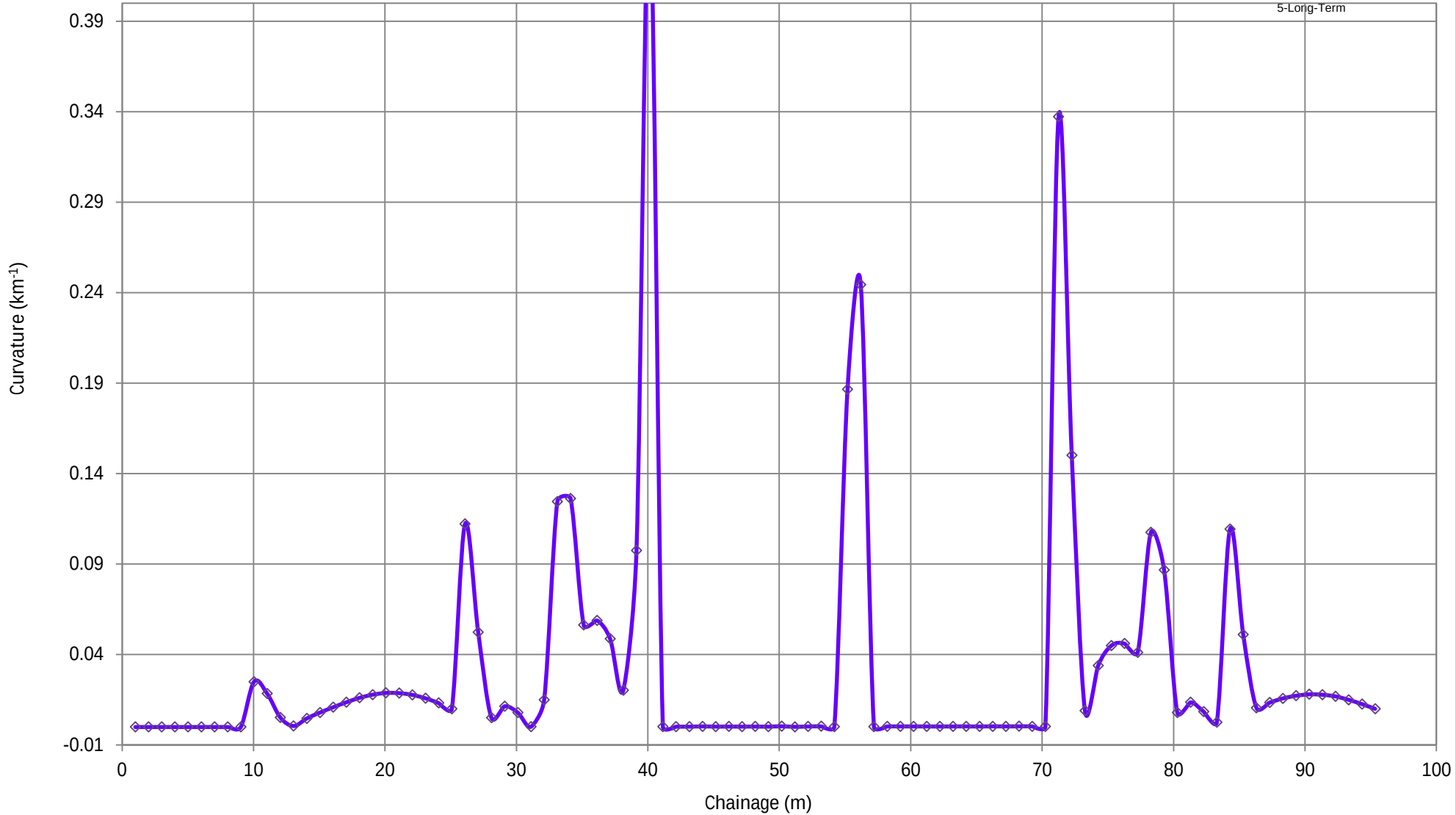


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Curvature Graph for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

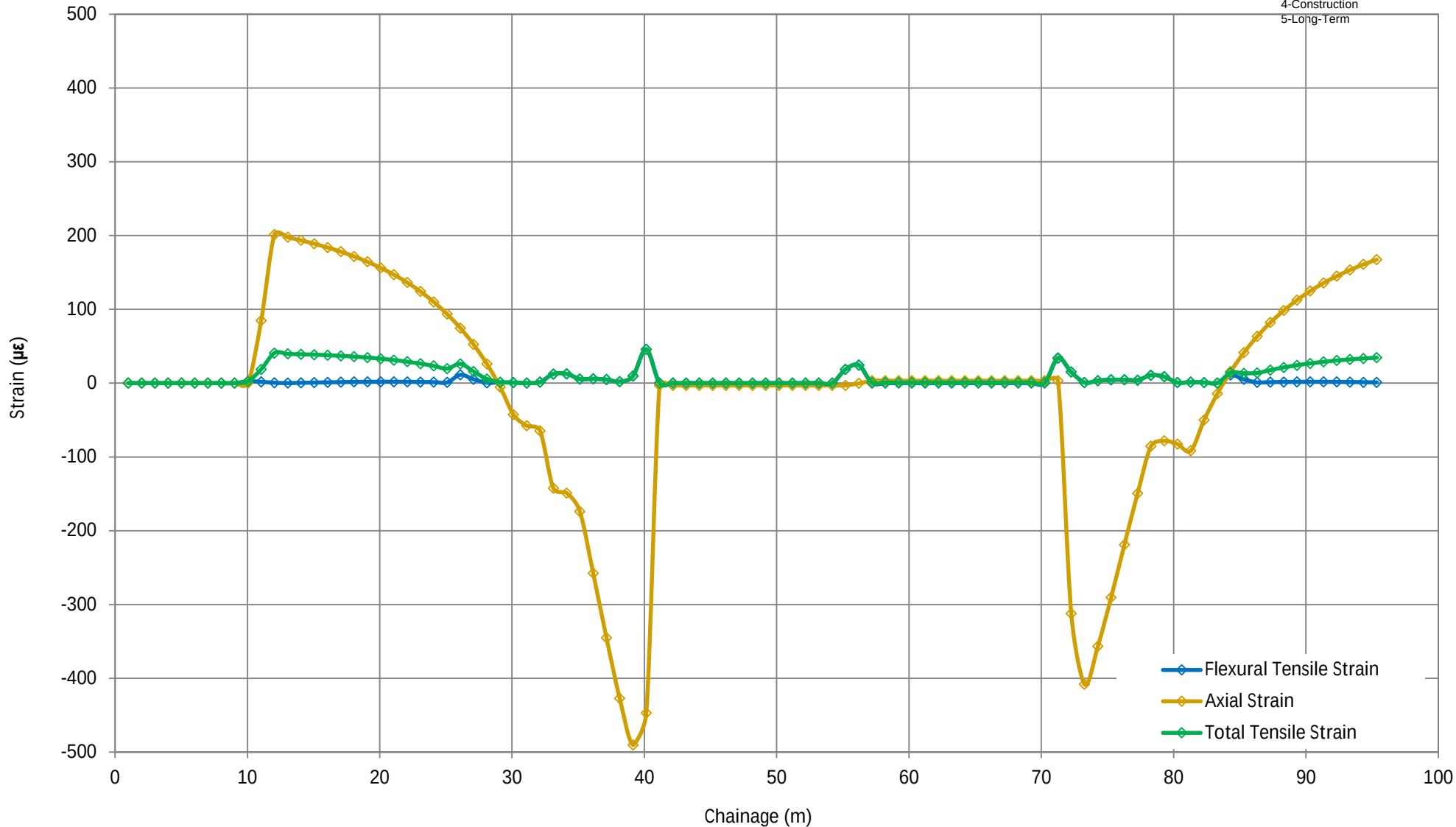


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 2.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

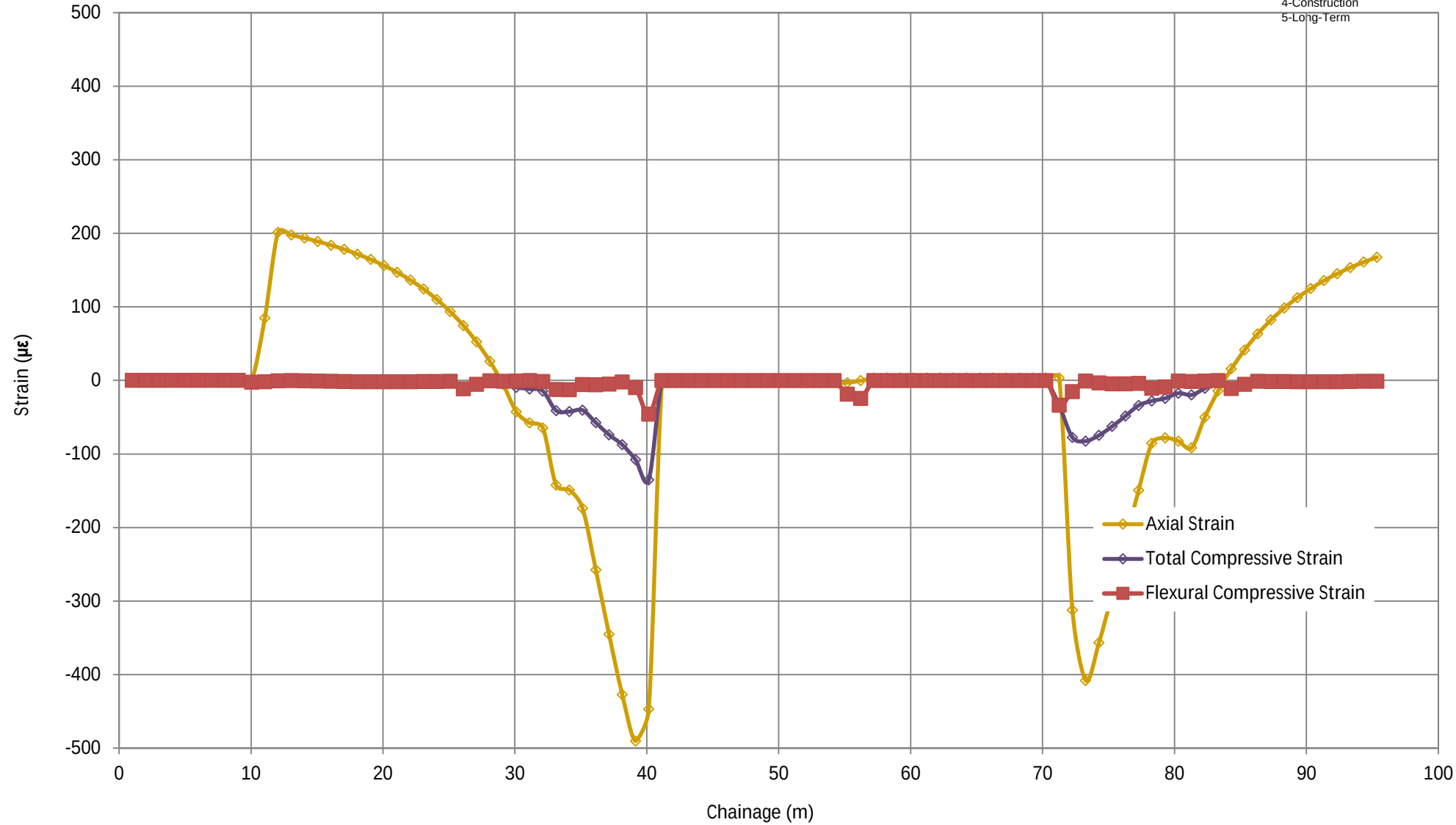


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 2.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

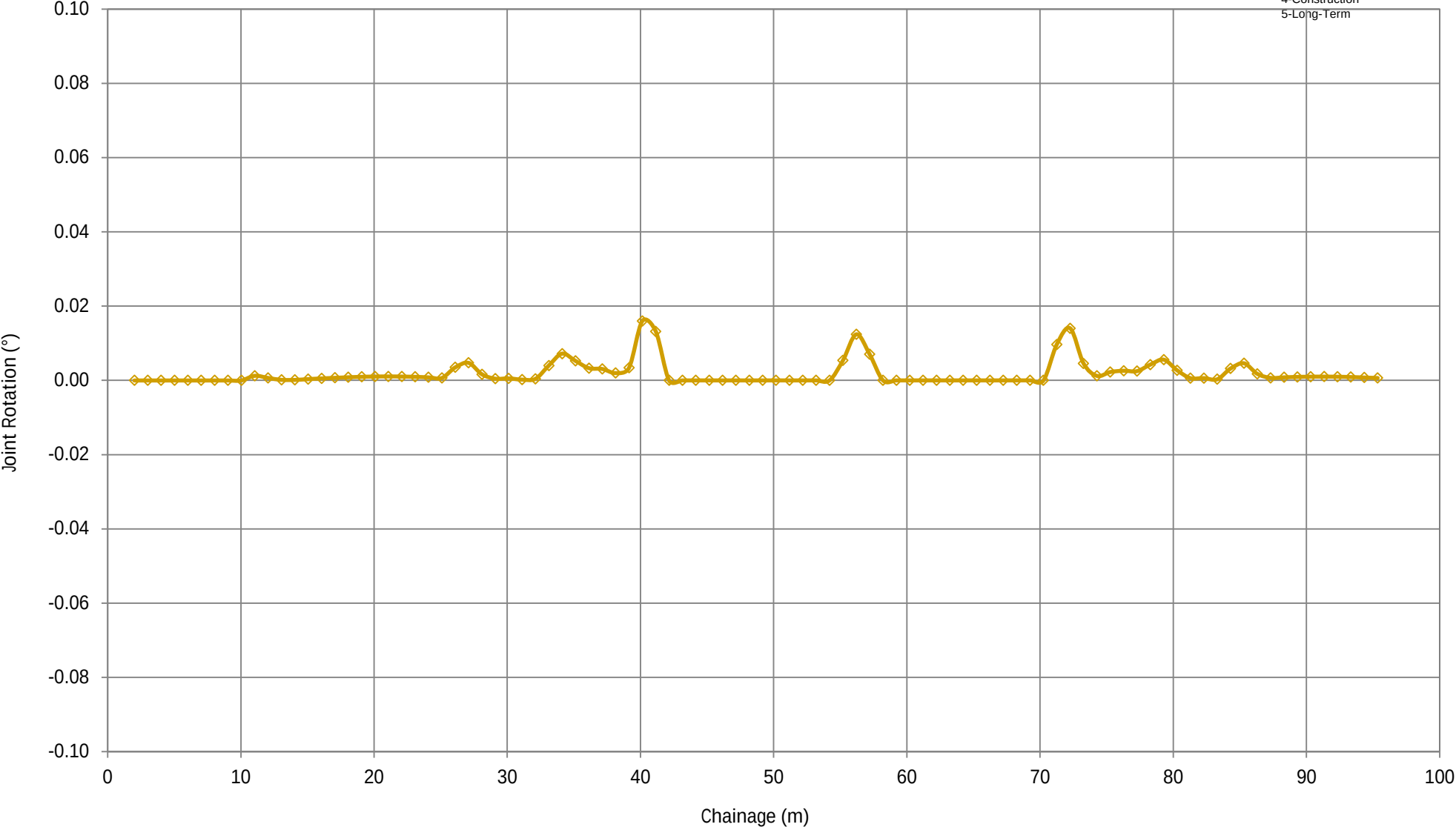


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Rotation for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

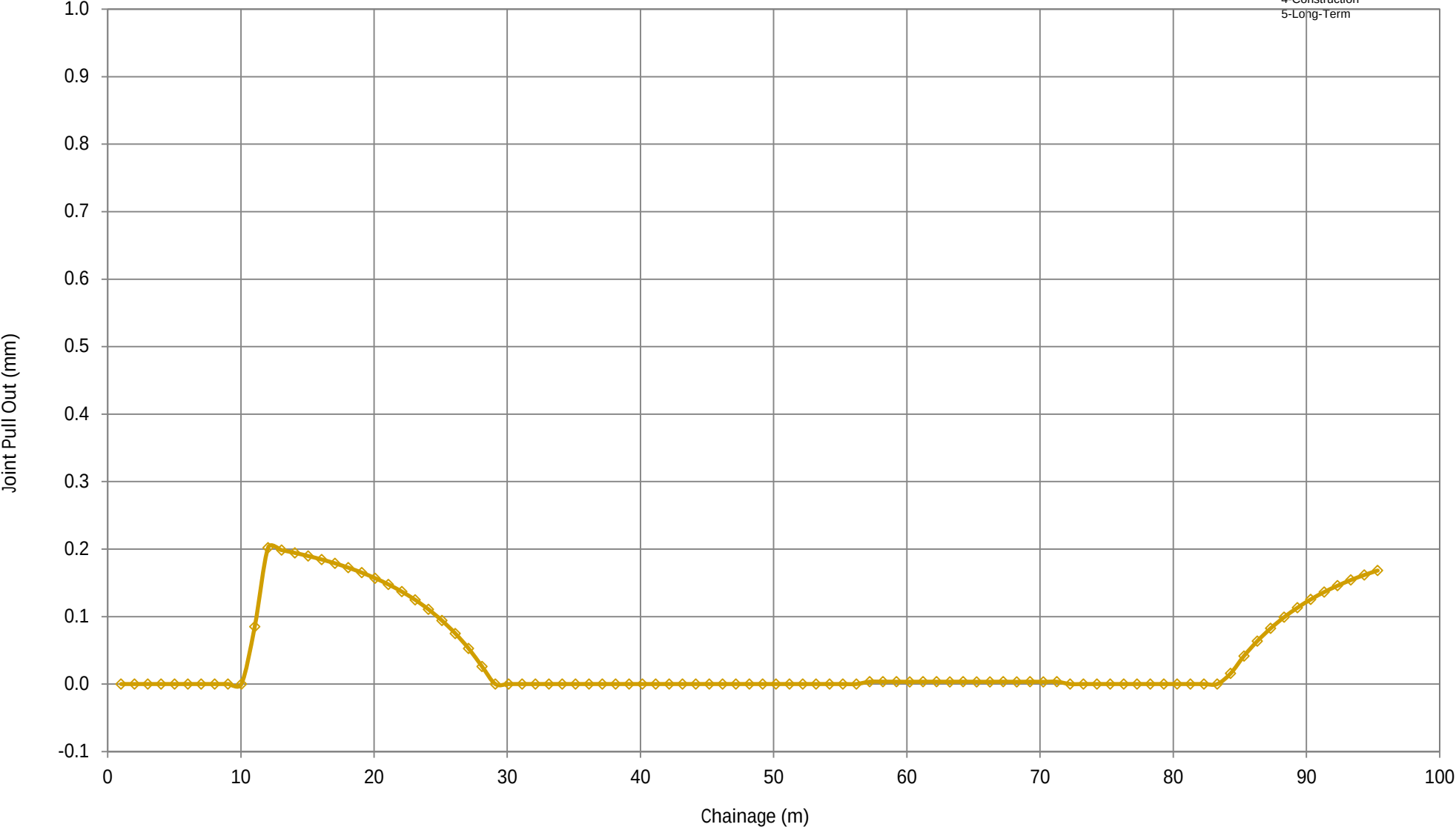


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Pull Out for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

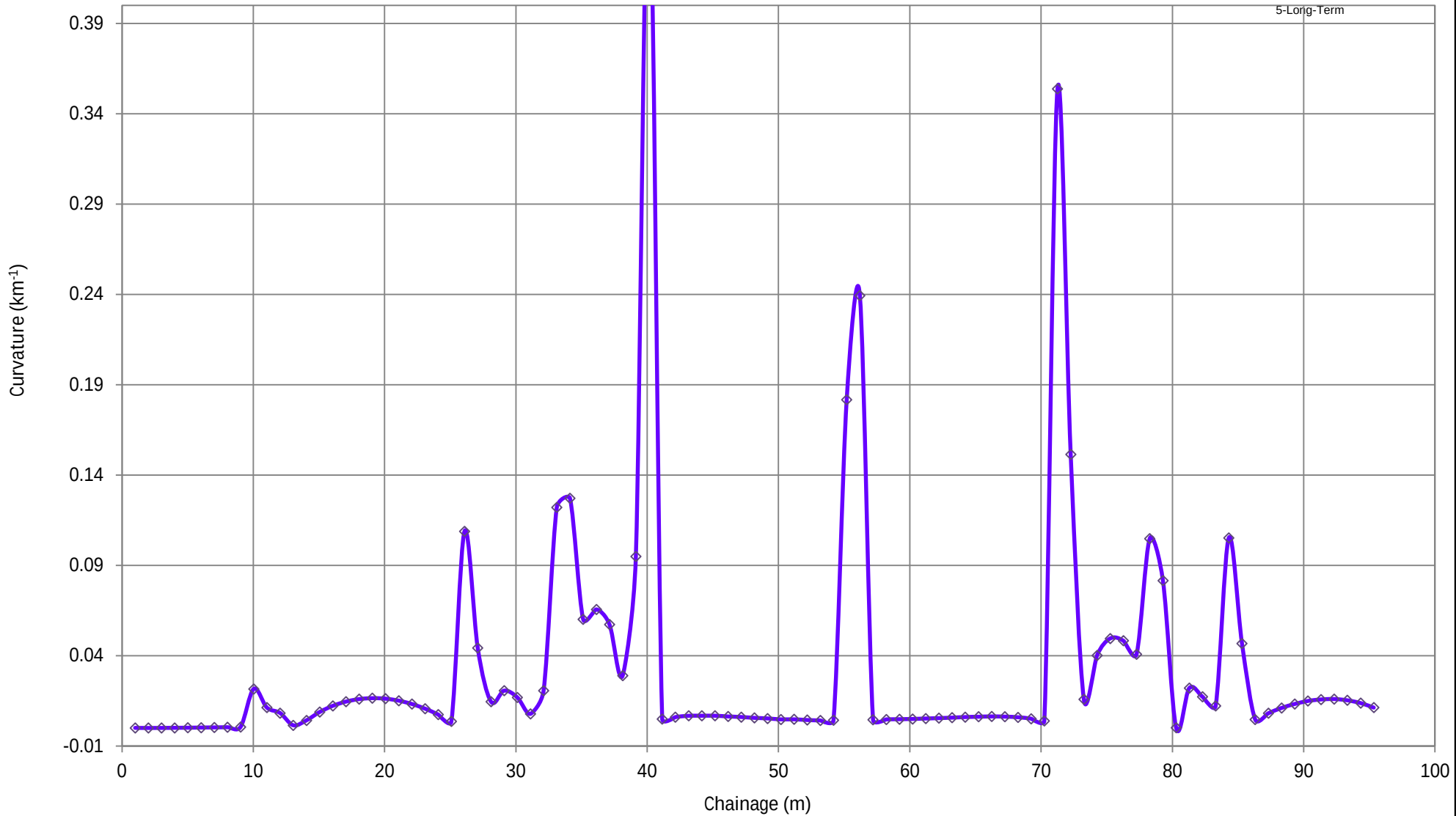


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Curvature Graph for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

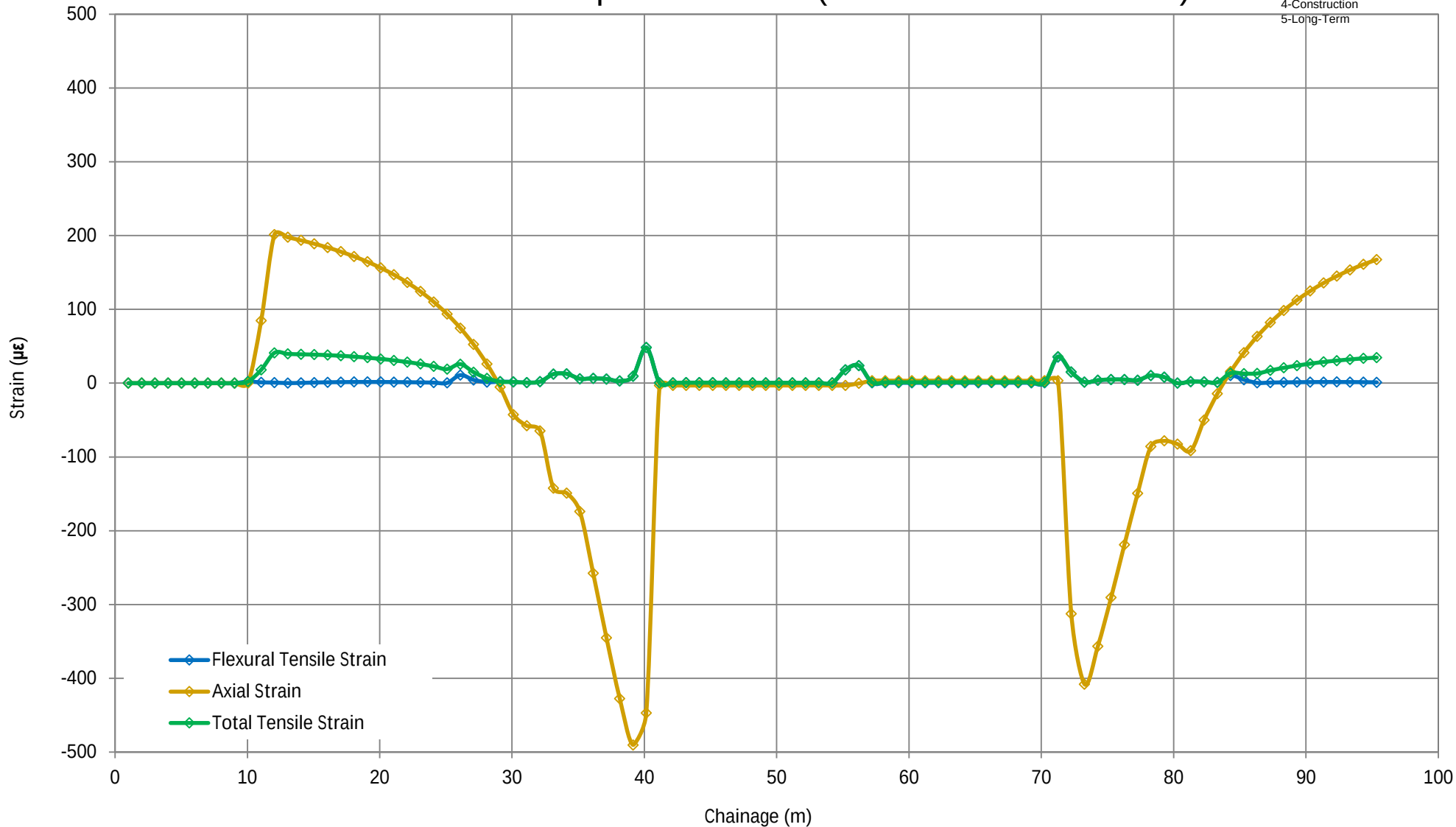


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 2.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

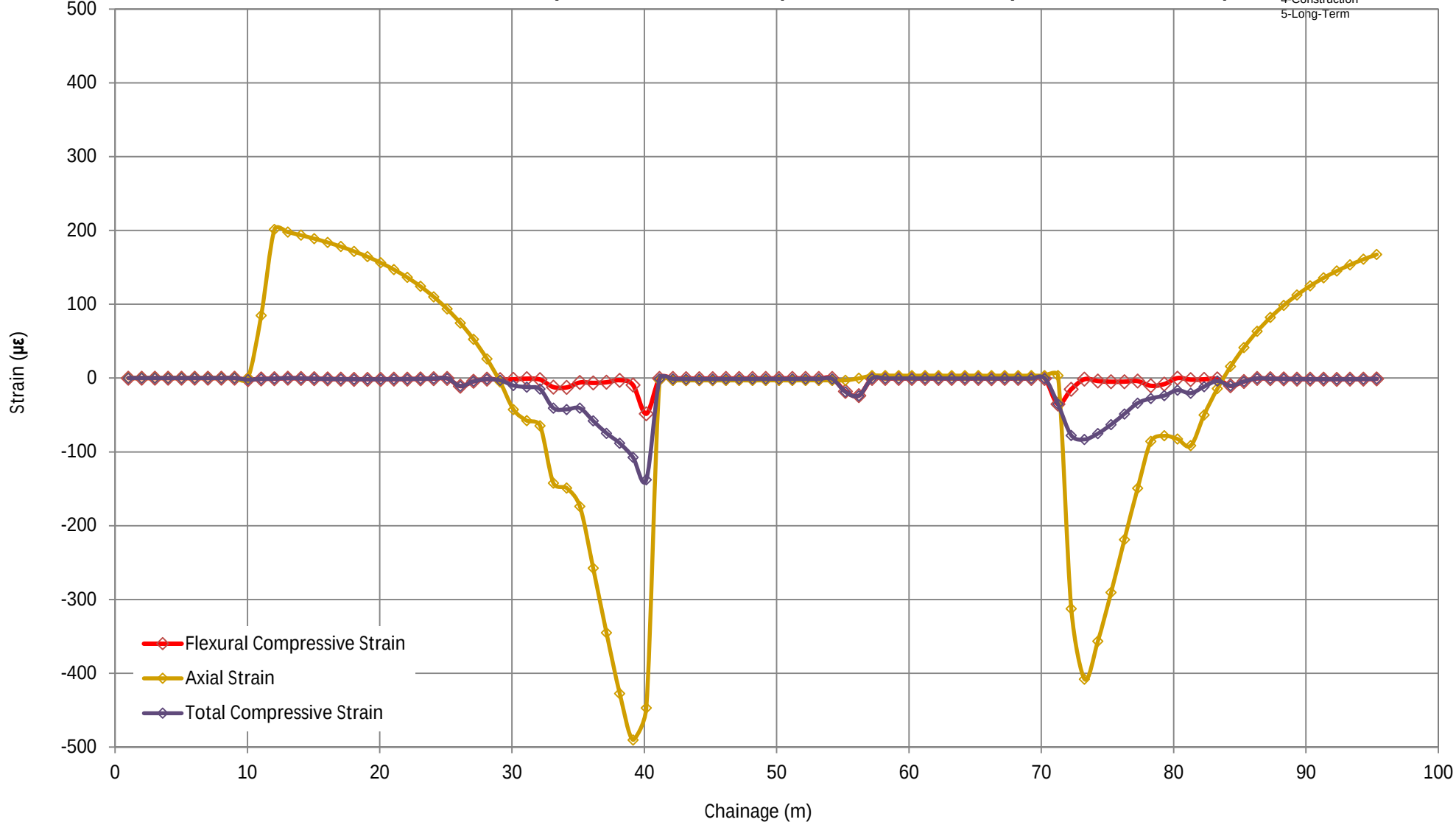


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 2.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

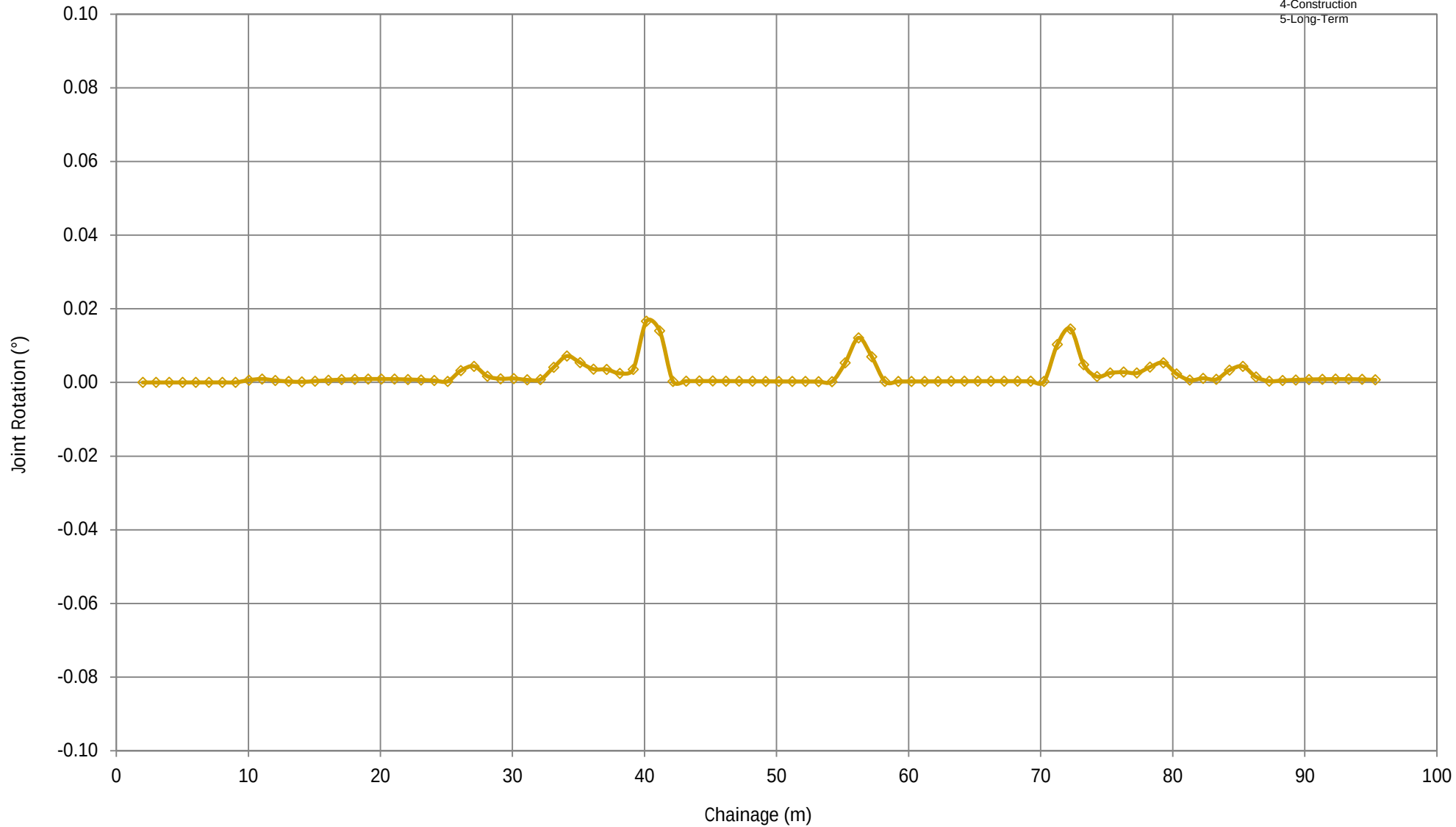


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Rotation for WM 2.1

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

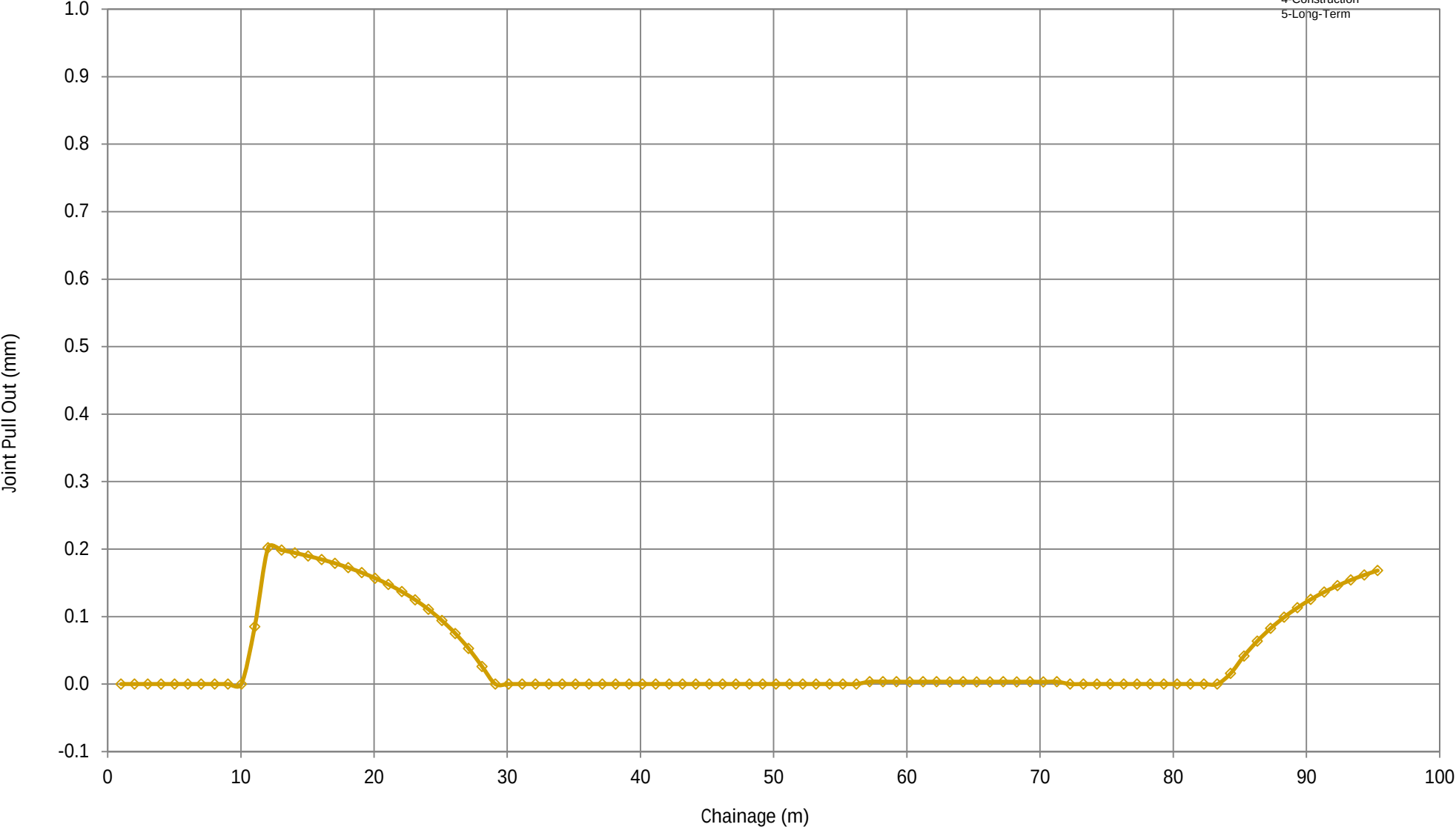


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Pull Out for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

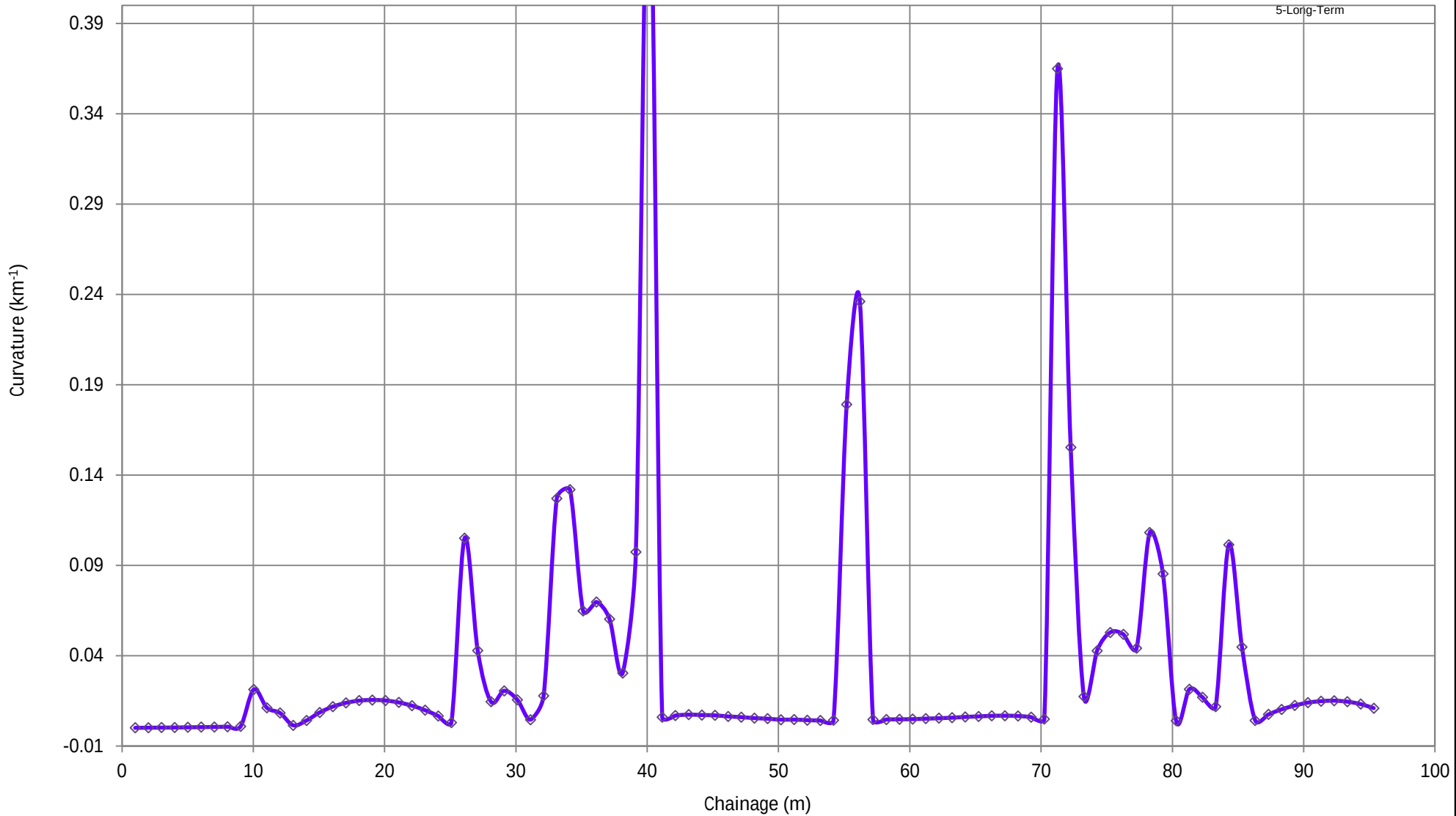


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Curvature Graph for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

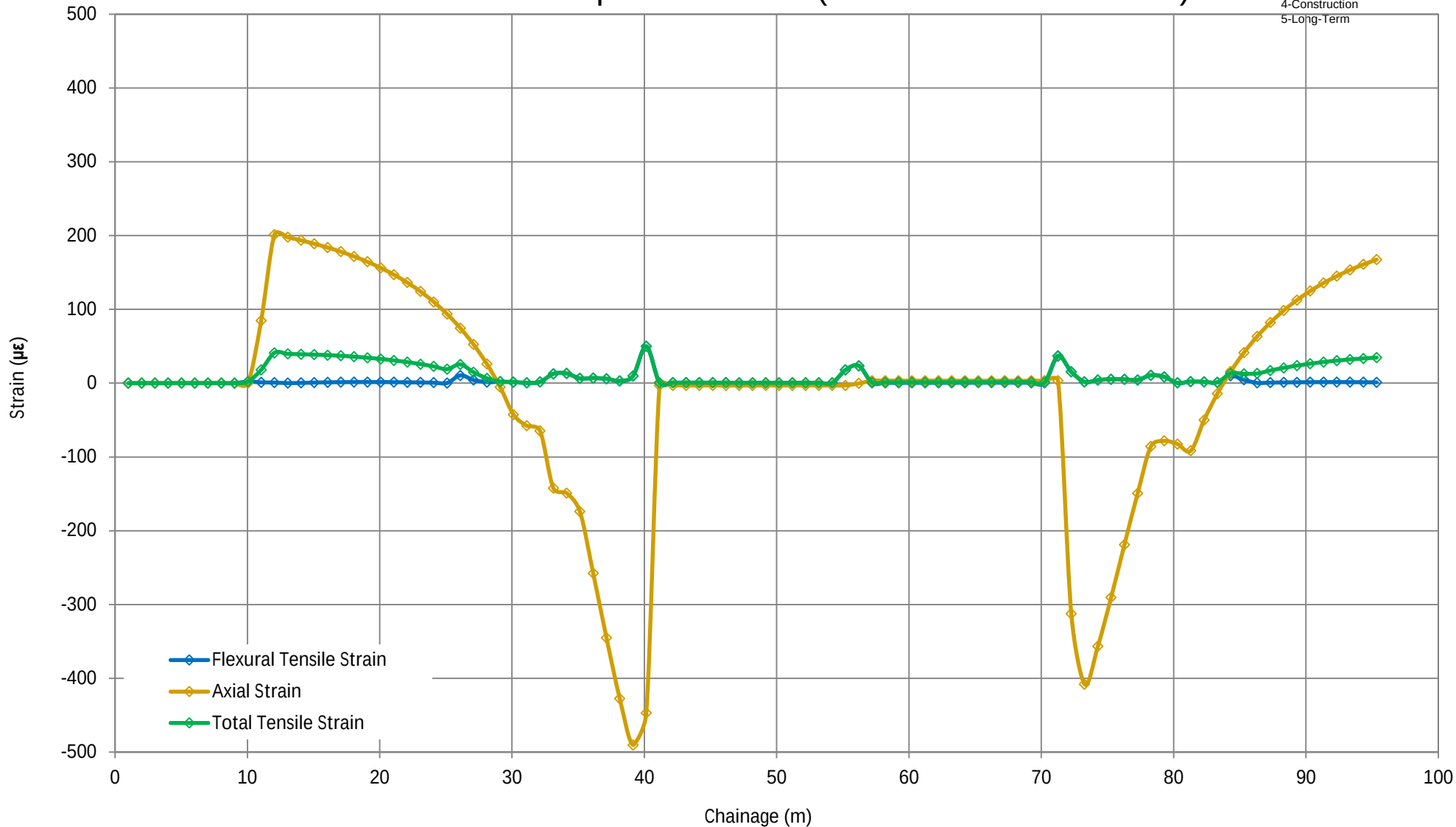


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 2.1 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

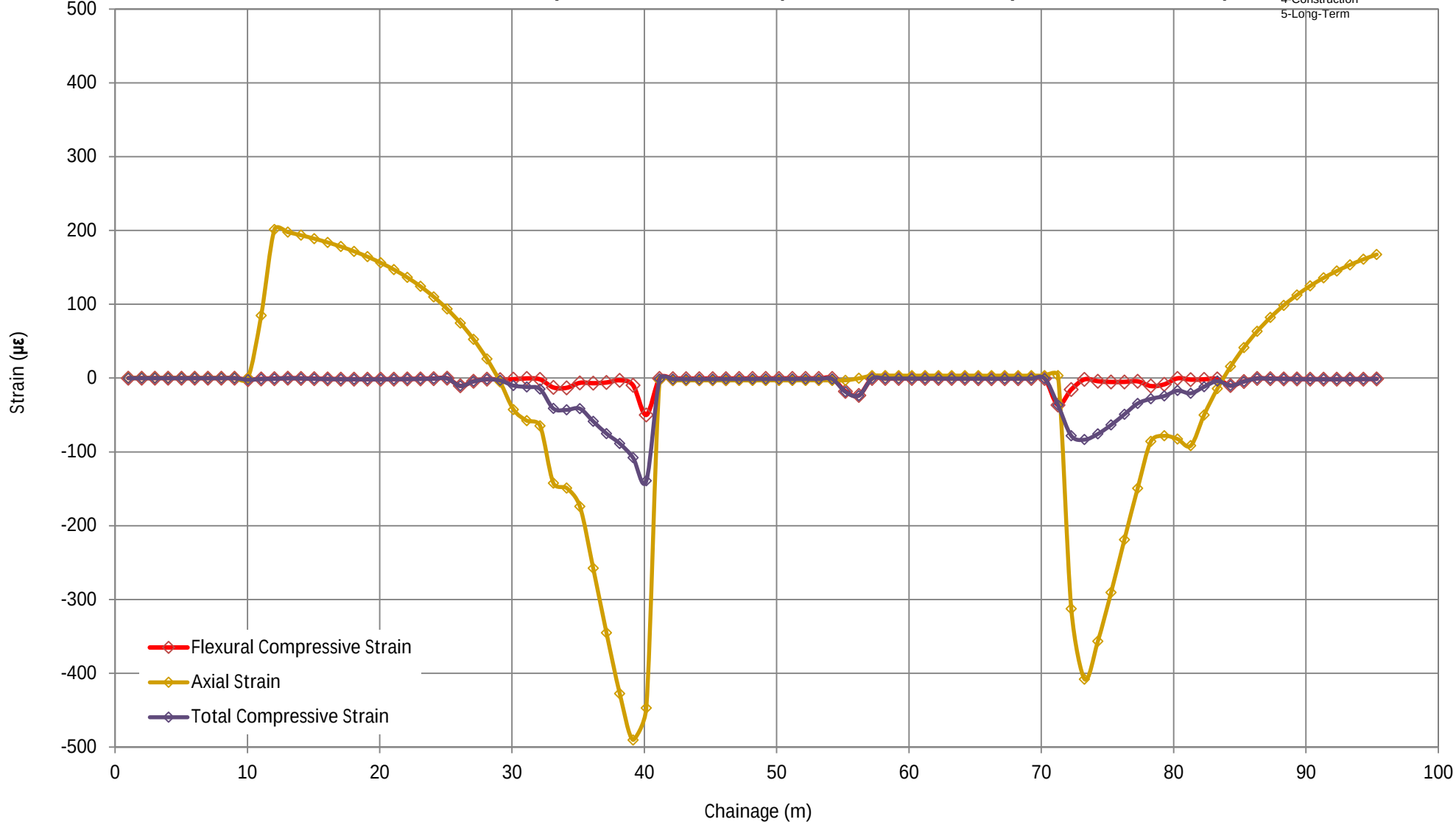


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 2.1 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

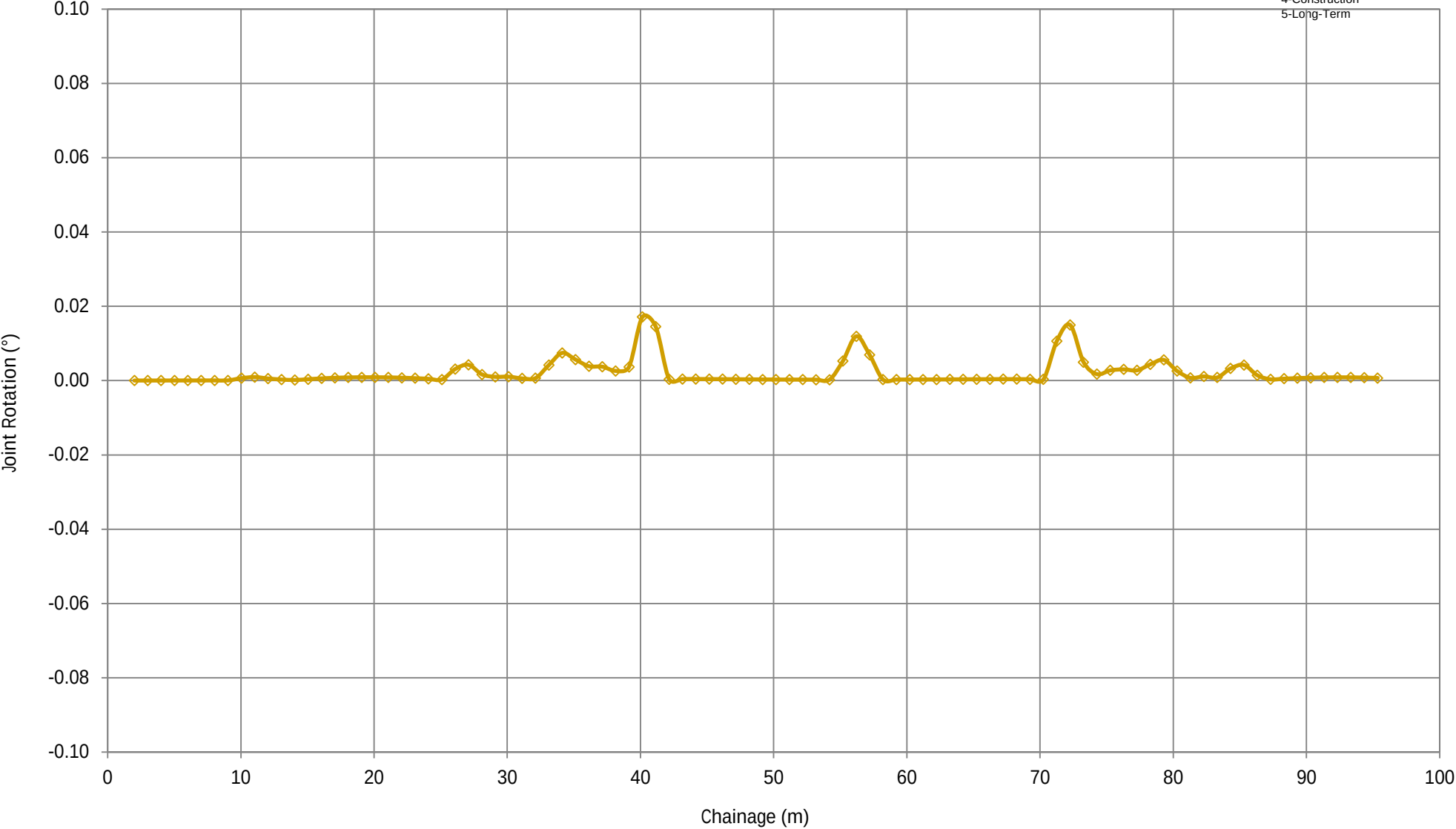


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Rotation for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

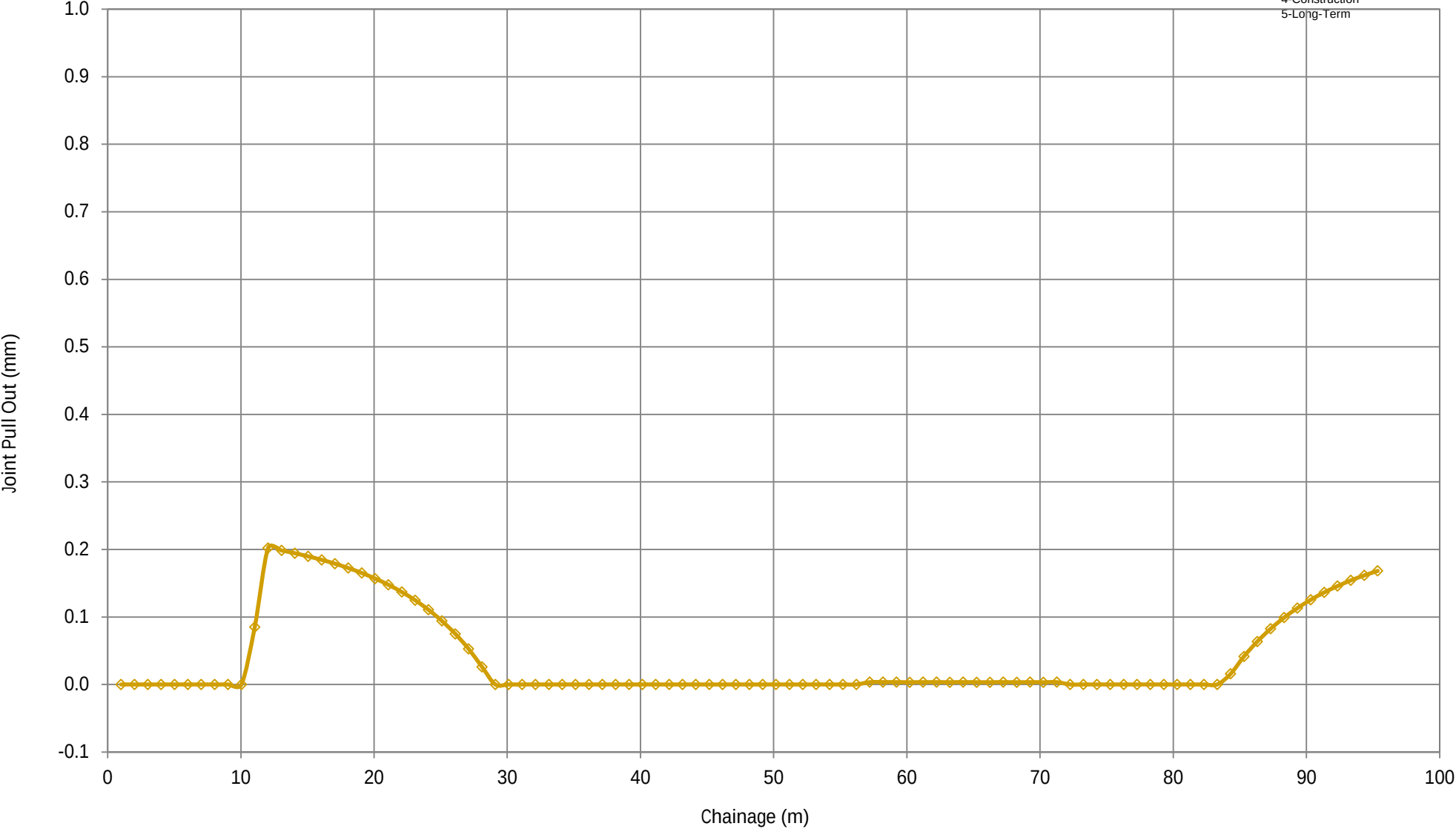


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Pull Out for WM 2.1

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

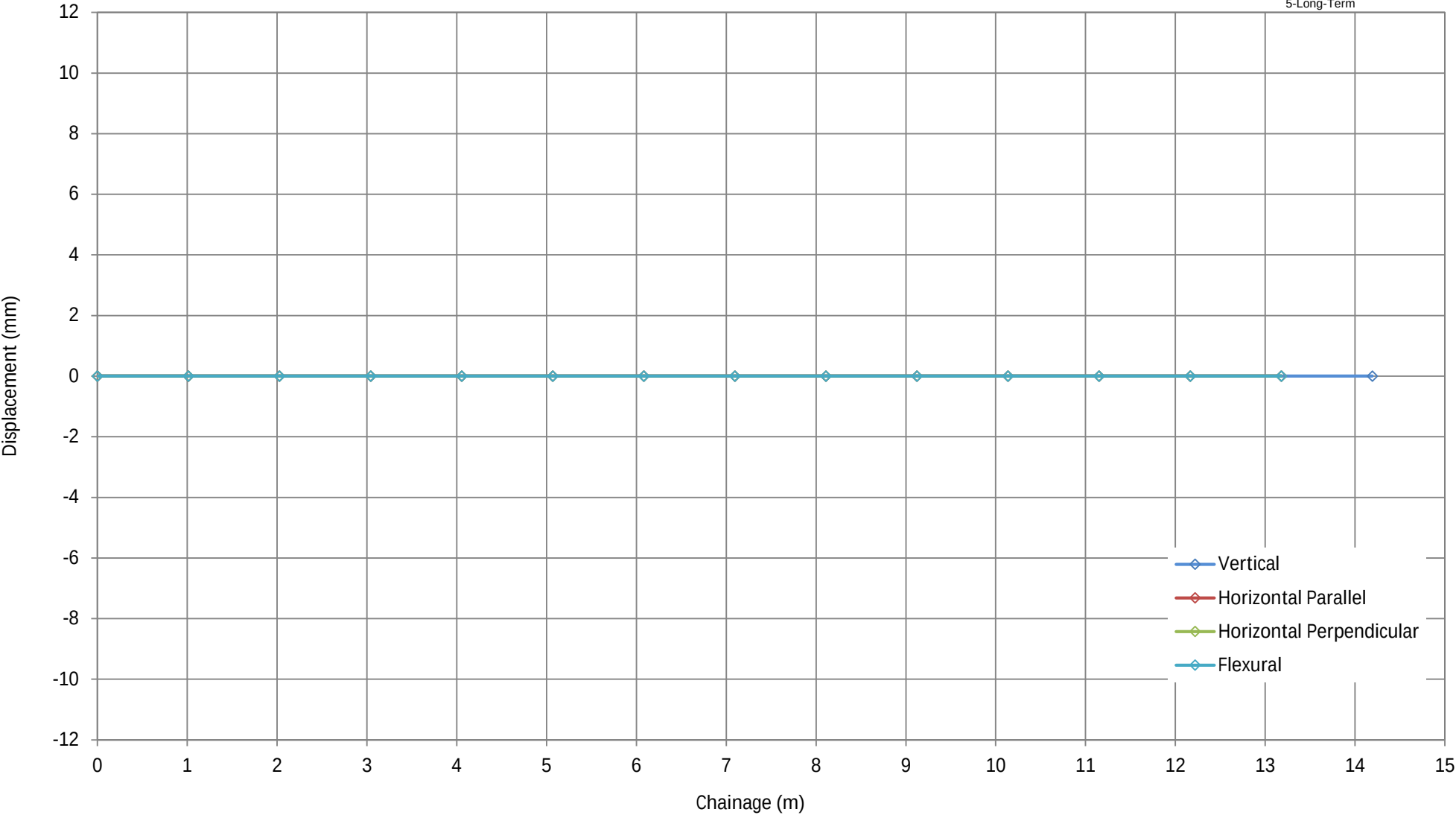


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Displacement Graph for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

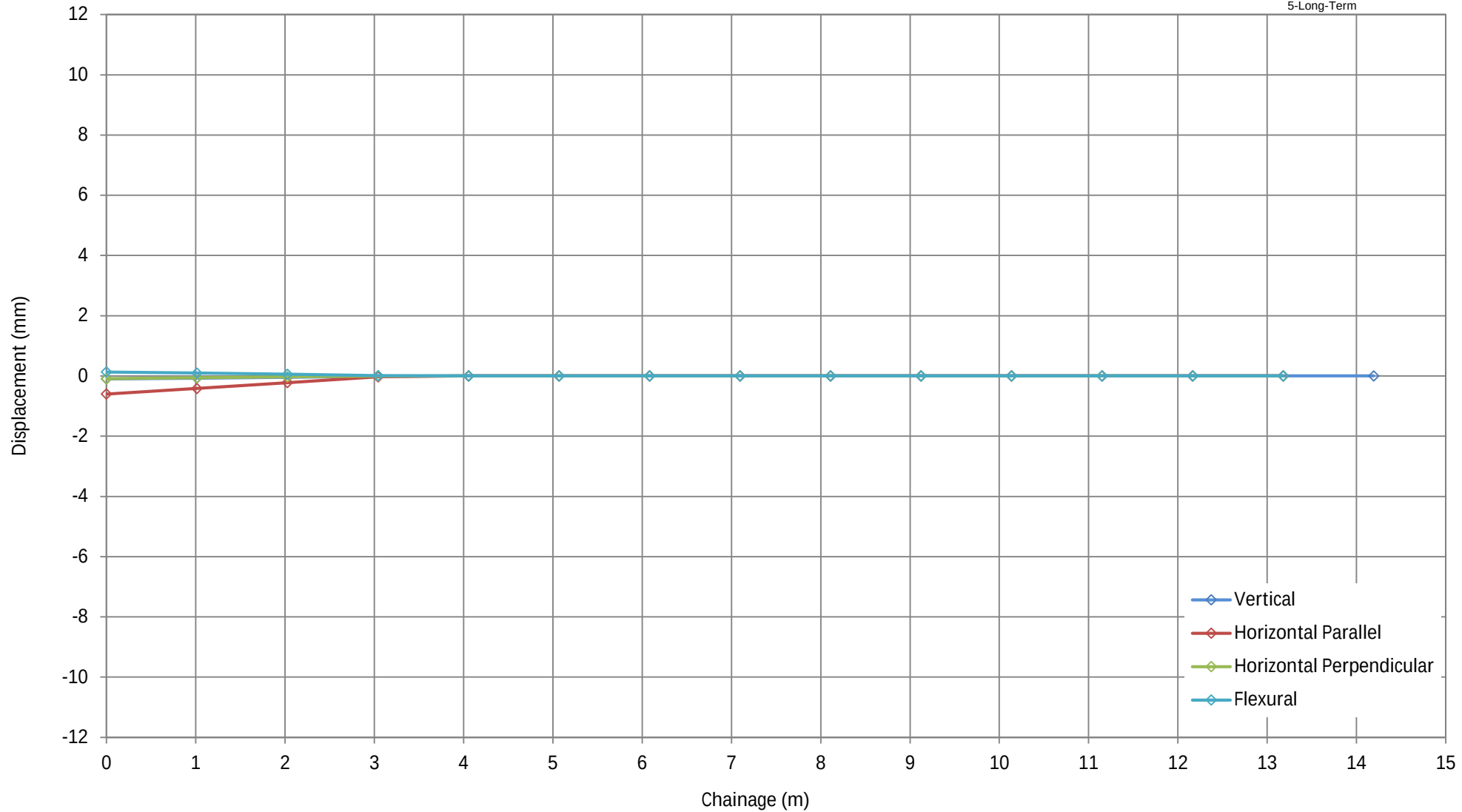


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Displacement Graph for WM 2.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

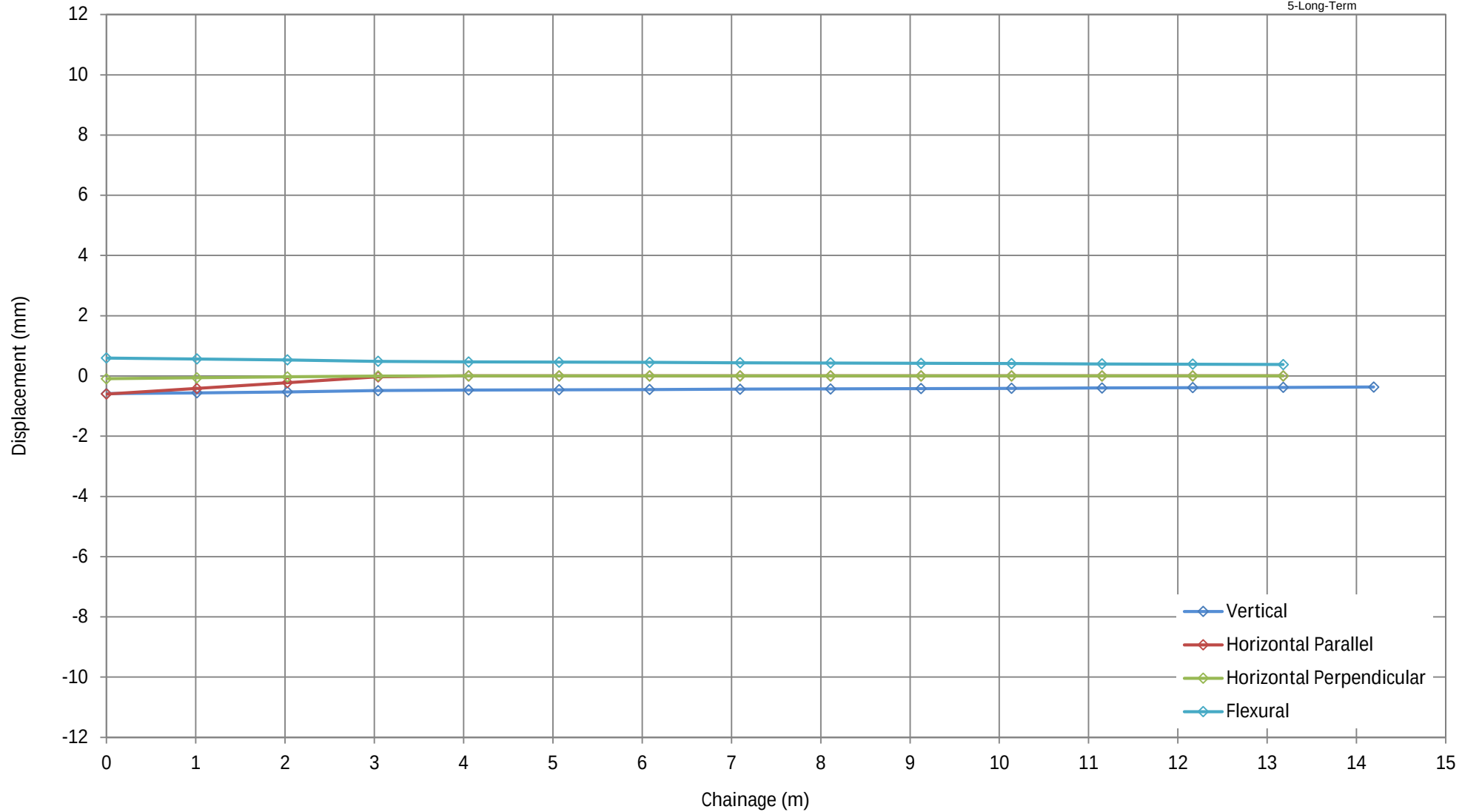


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Displacement Graph for WM 2.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

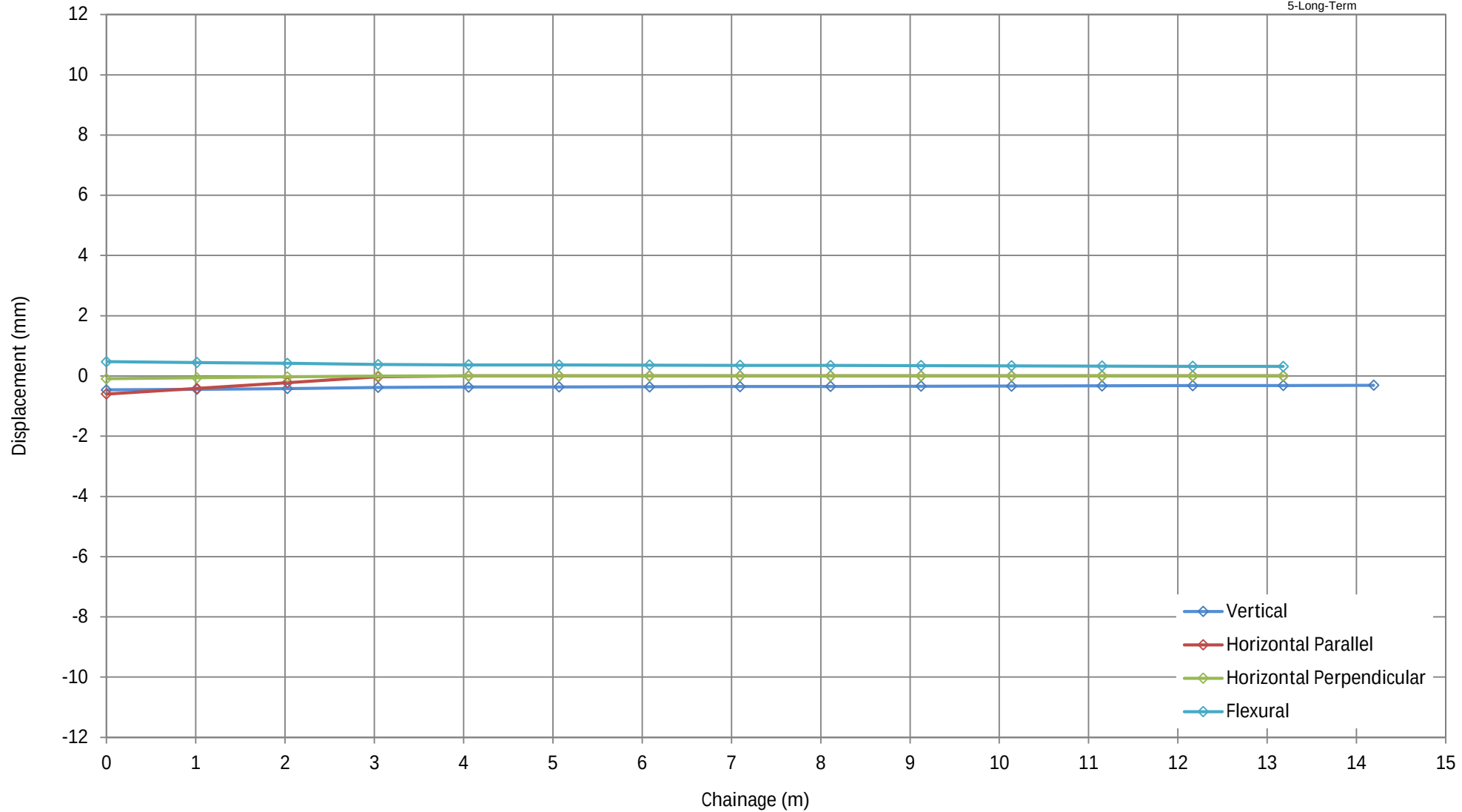


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Displacement Graph for WM 2.2

Phase Key (Cumulative Phases)
 1-Demolition (N/A)
 2-Wall Installation
 3-Excavation
 4-Construction
 5-Long-Term

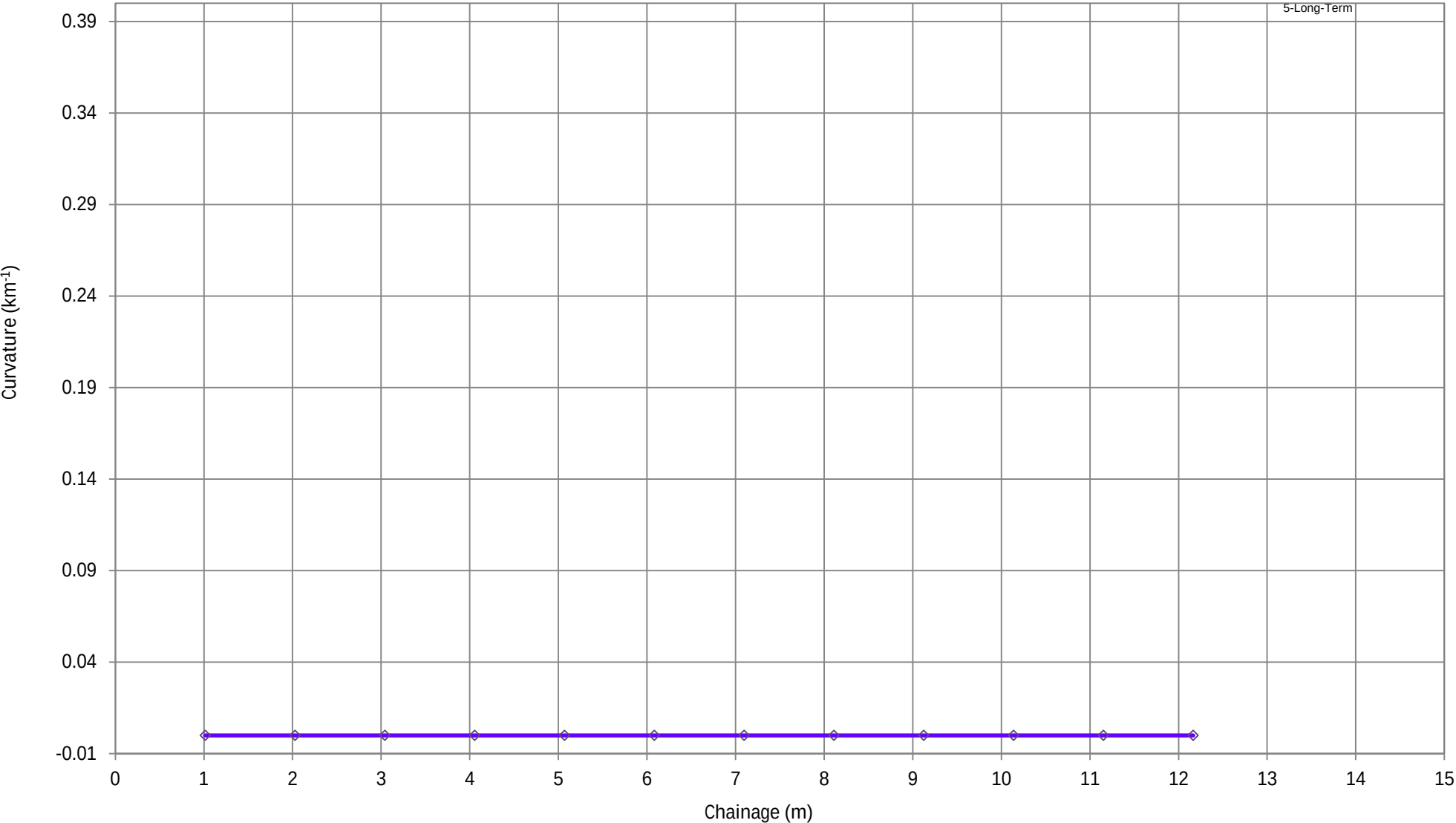


WSP House, 70 Chancery
 Lane, London, WC2A 1AF
 Tel: 0207 314 5000
 Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Curvature Graph for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

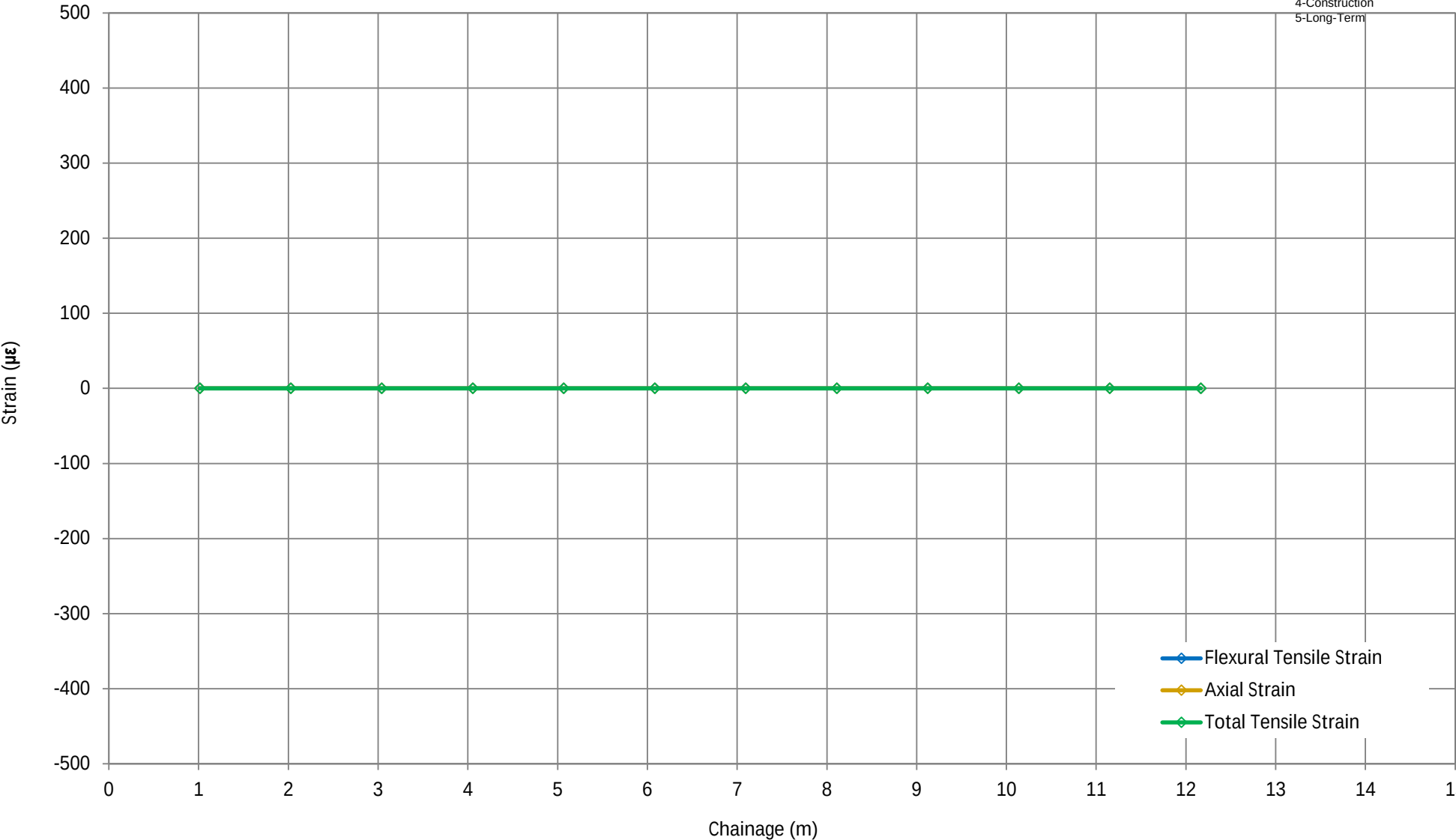


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for Water WM 2.2 (Combined Tensile Strain)

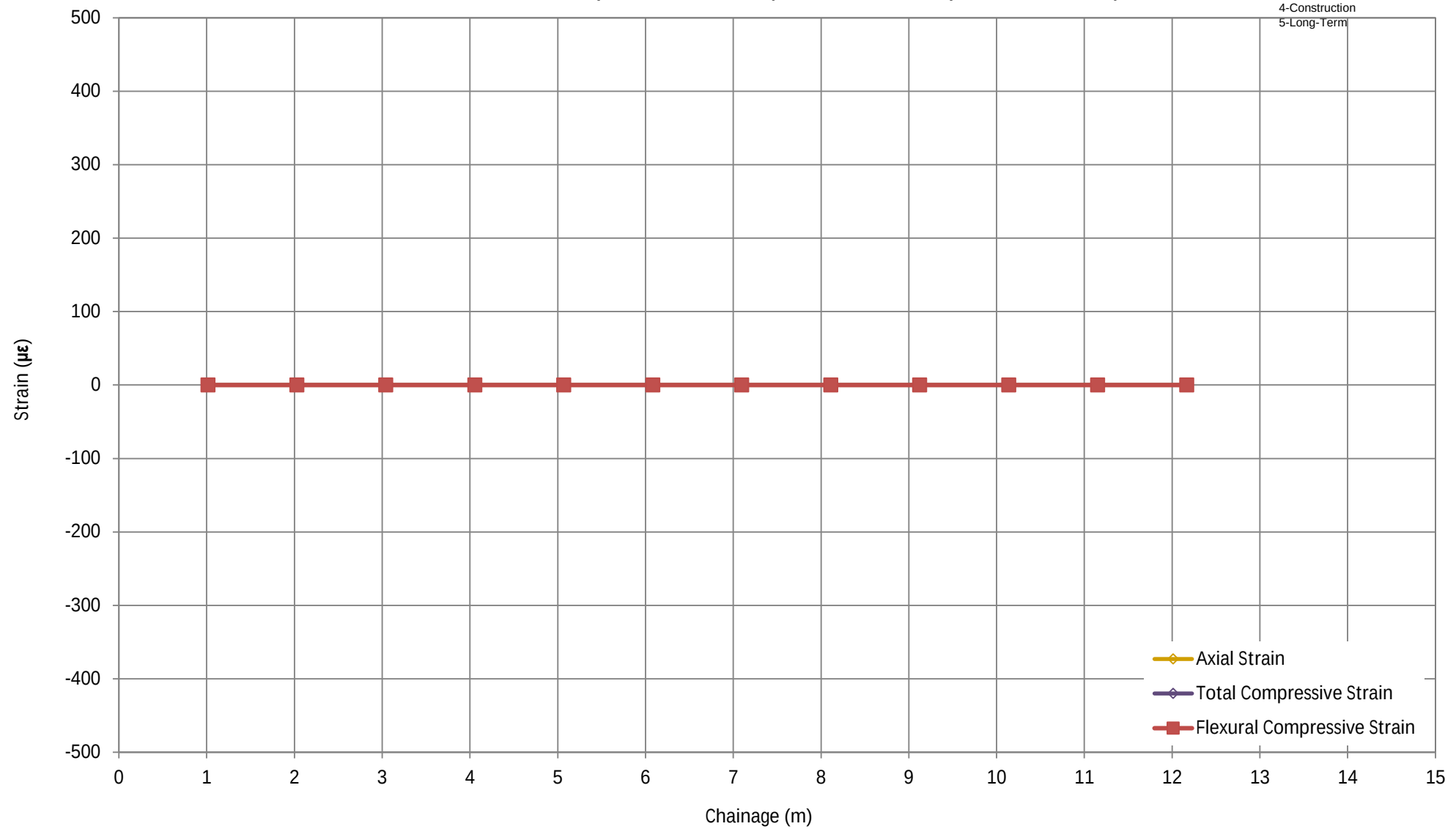
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Strain Graph for WM 2.2 (Combined Compressive Strain)

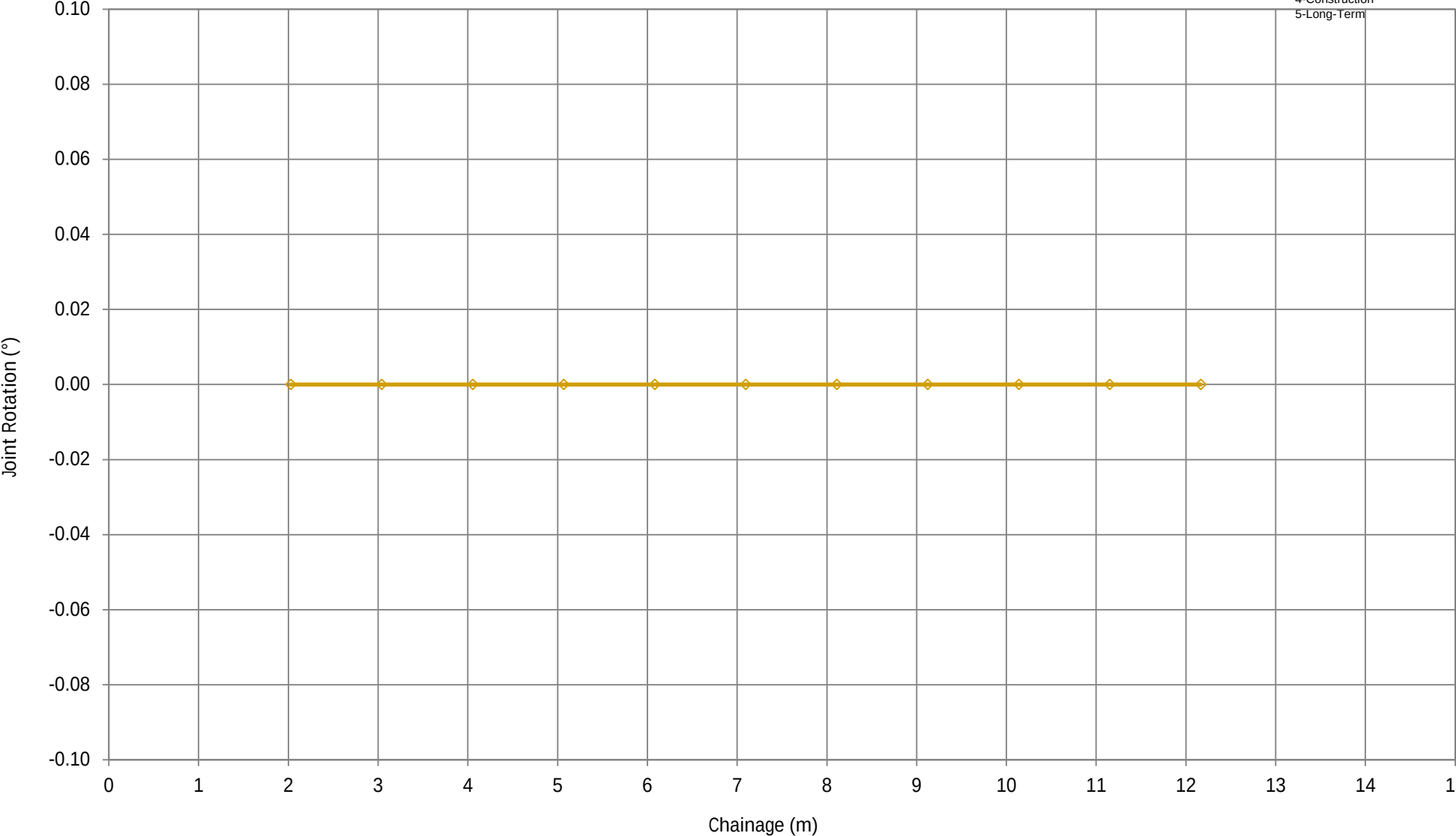


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Rotation for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

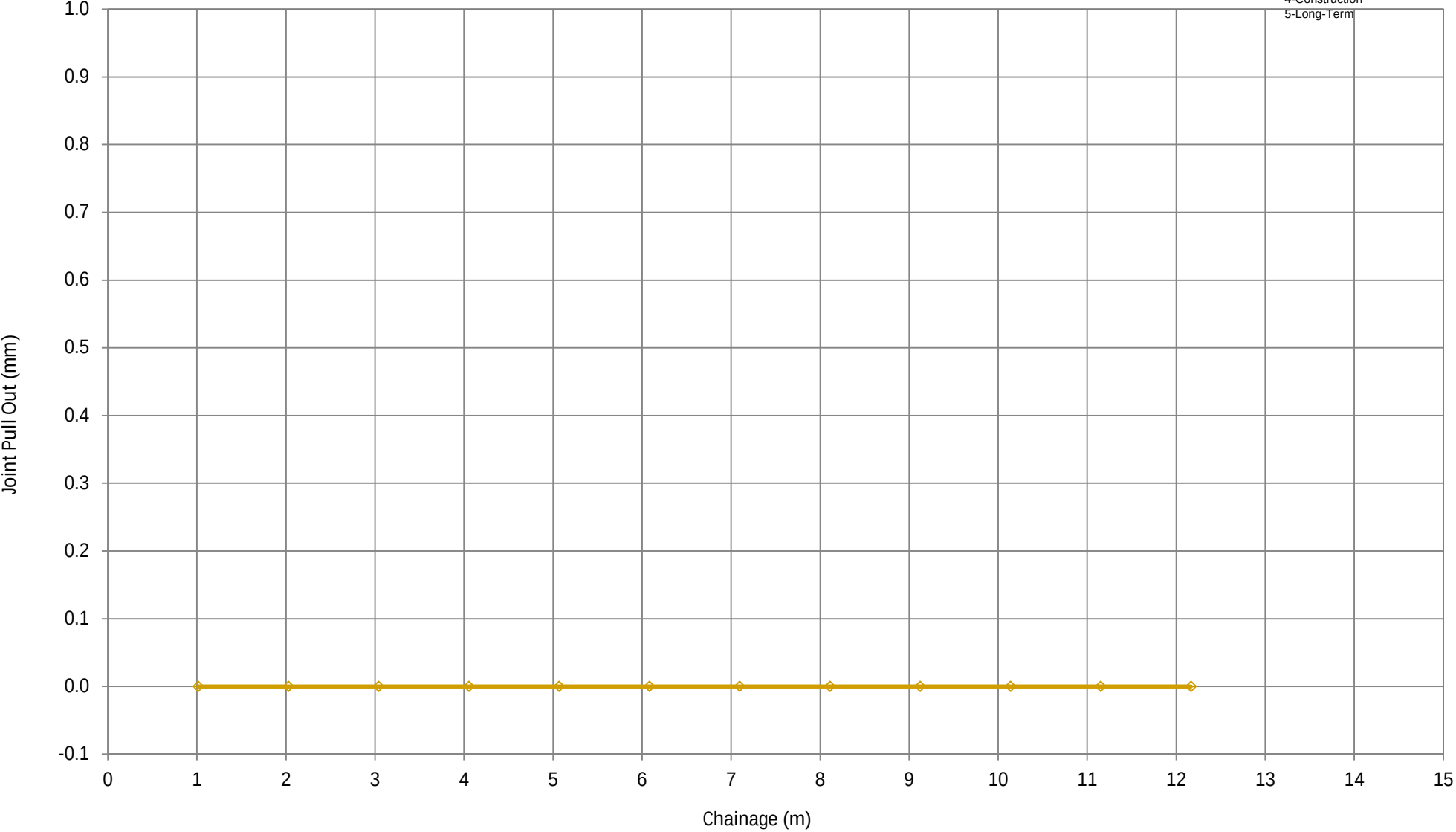


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

2Predicted Joint Pull Out for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

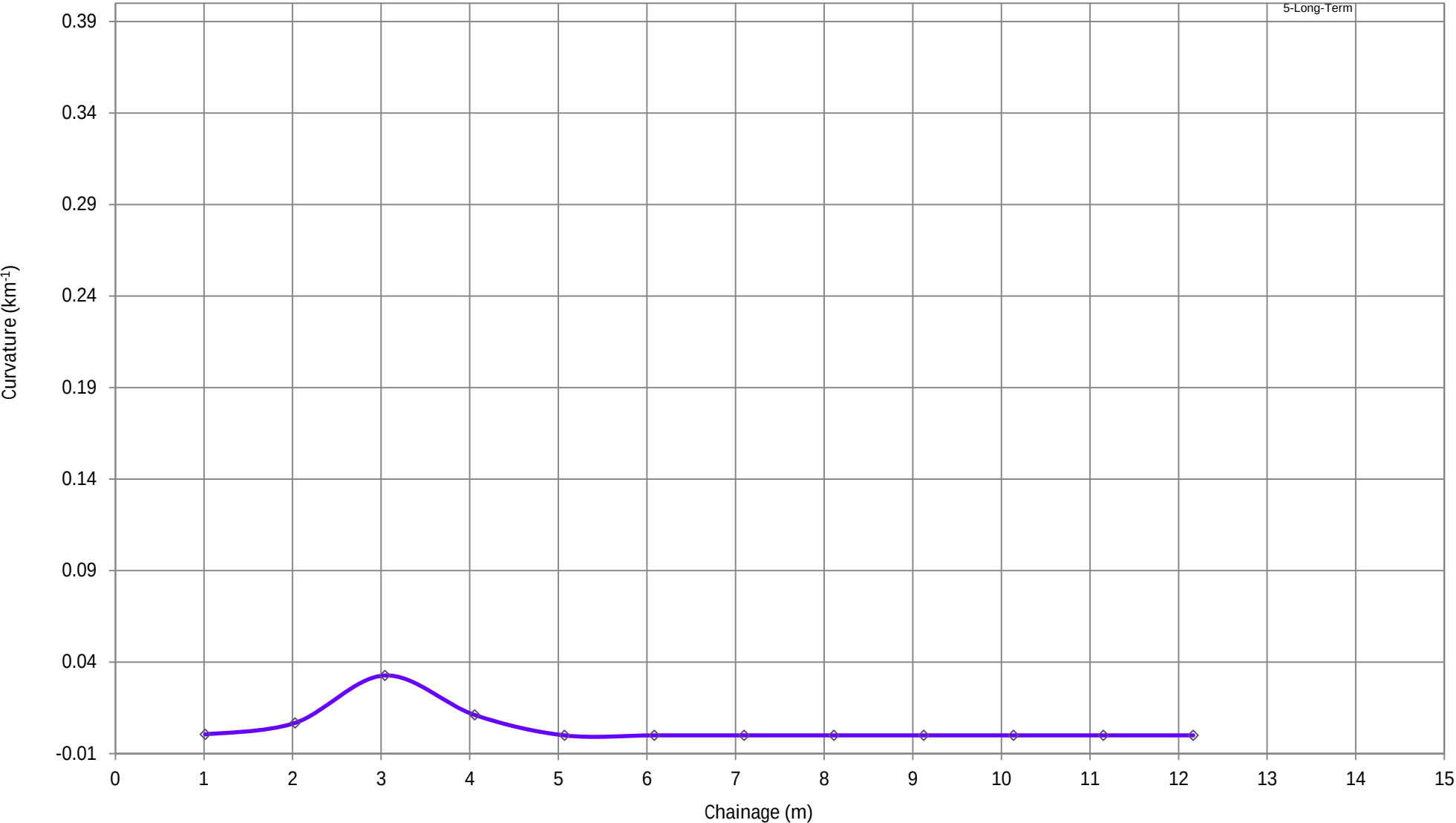


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Curvature Graph for WM 2.2

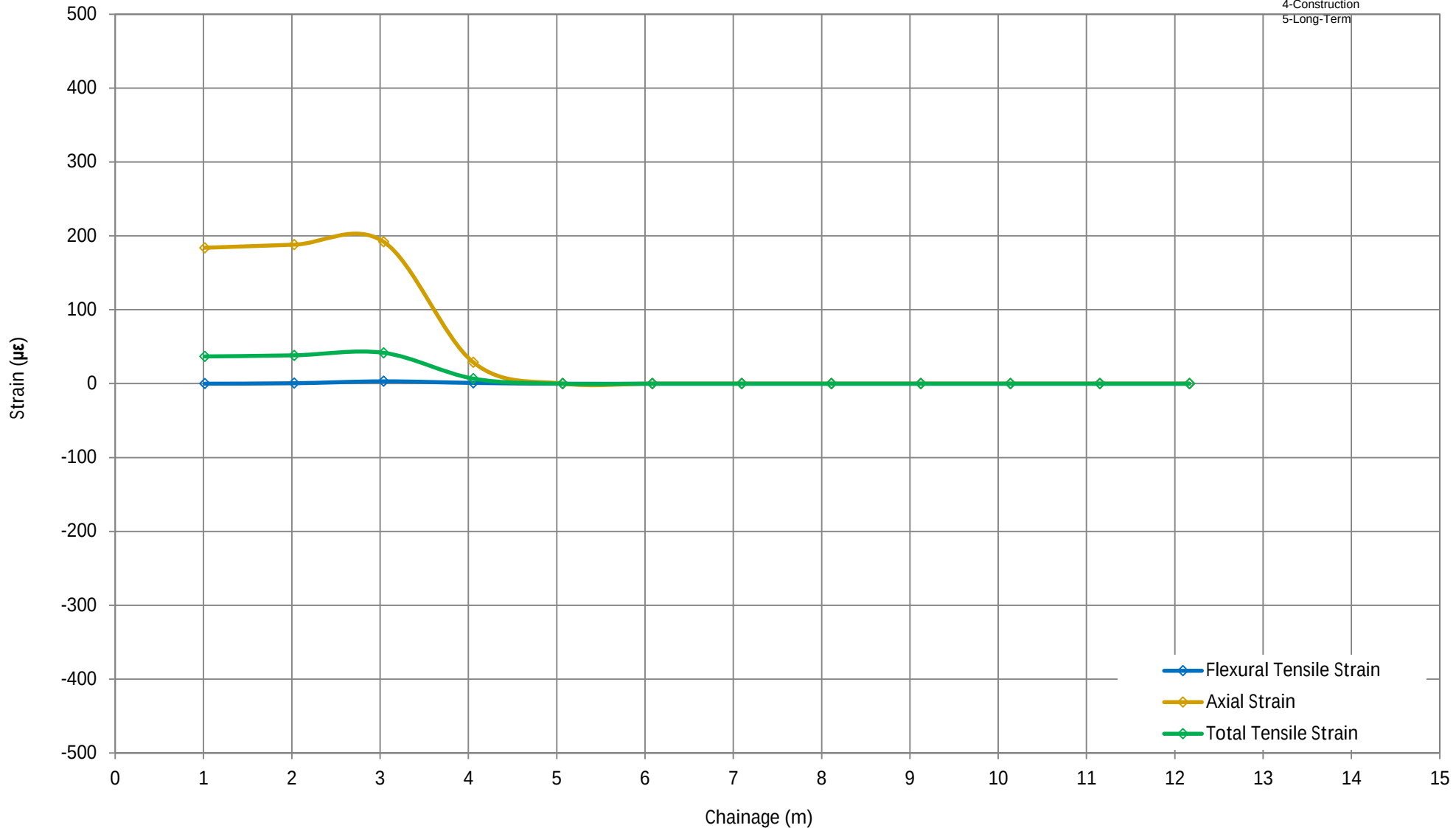
Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 2.2 (Combined Tensile Strain)

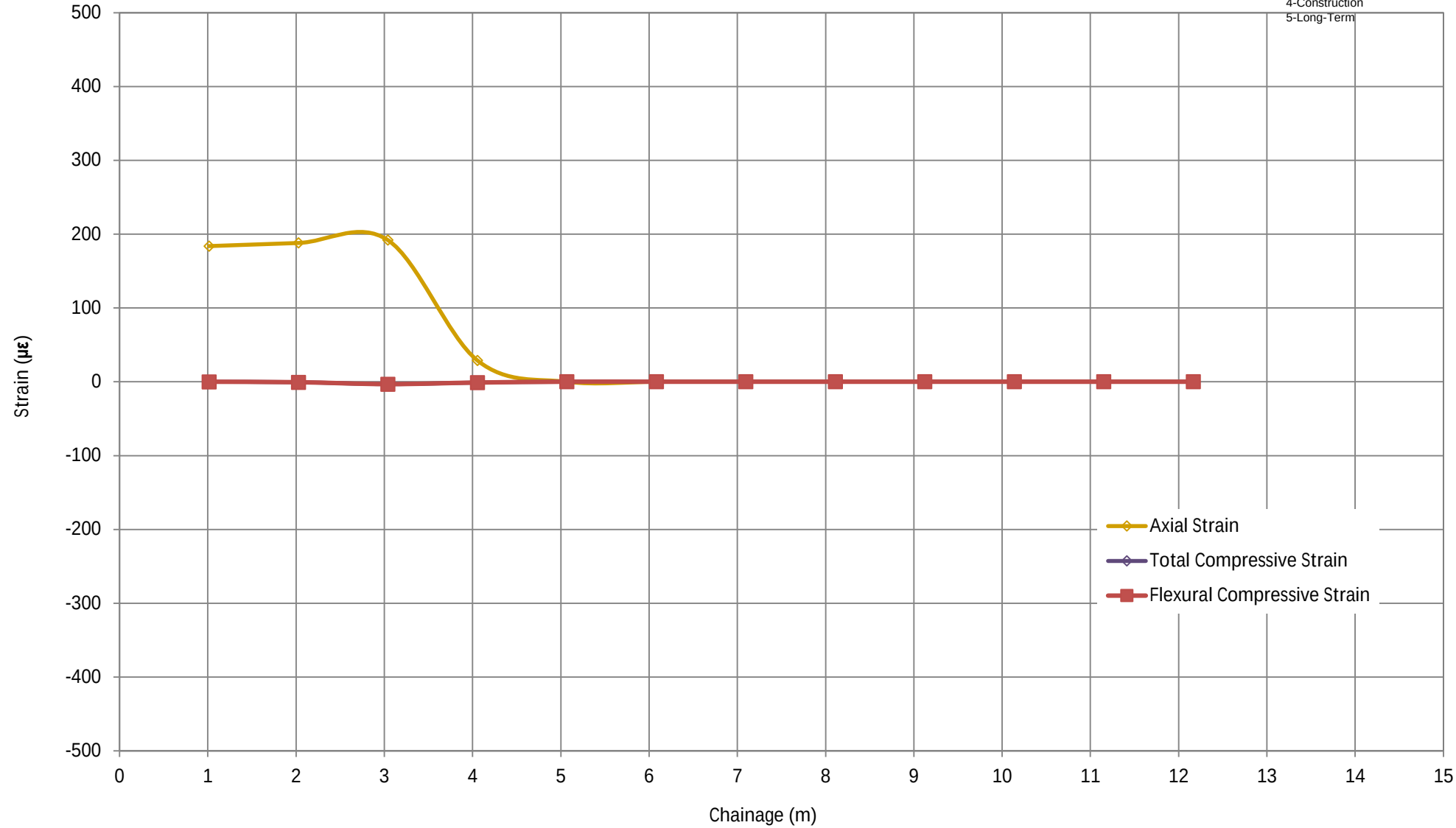


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Strain Graph for WM 2.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

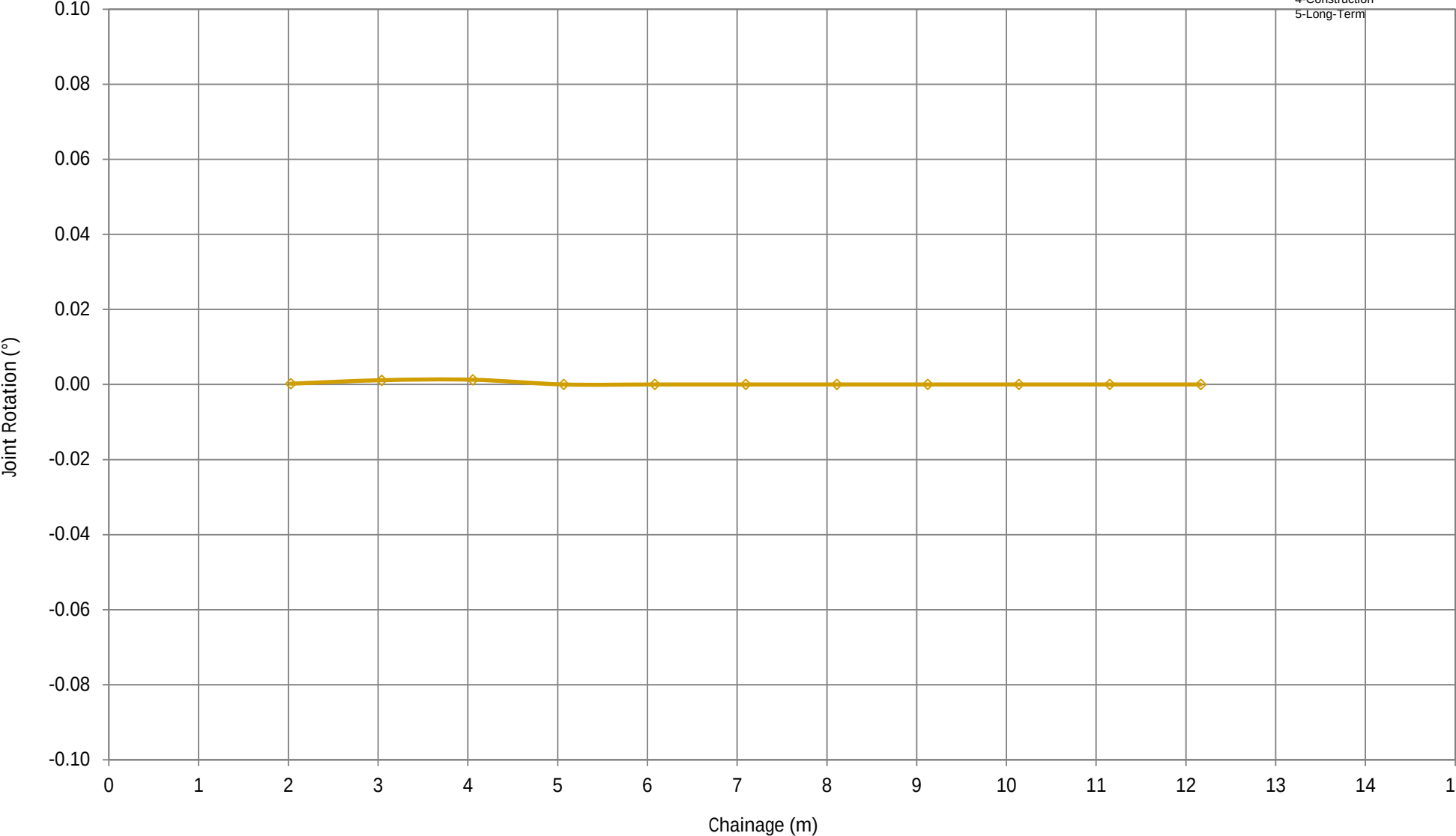


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Rotation for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

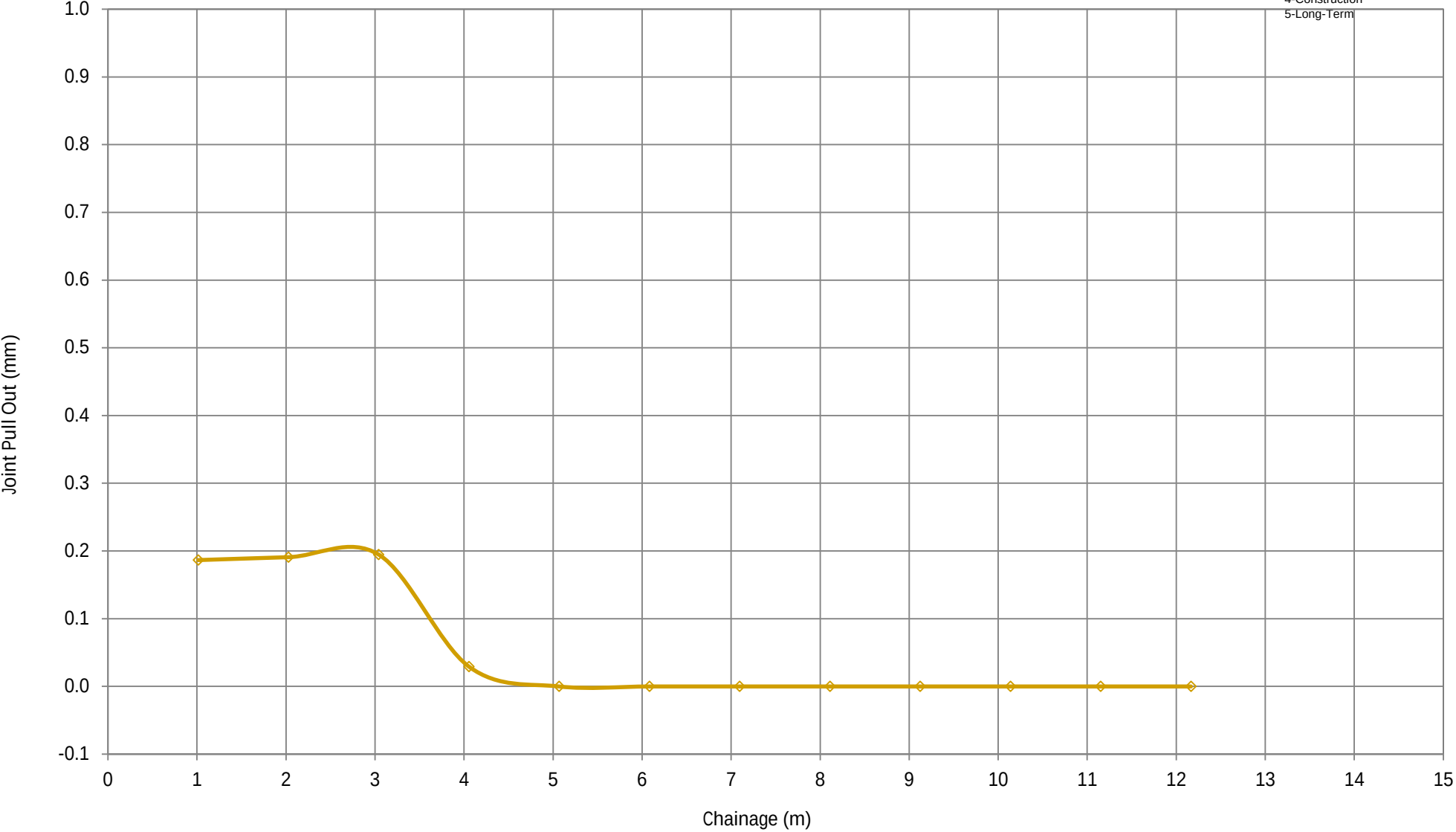


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

3Predicted Joint Pull Out for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term



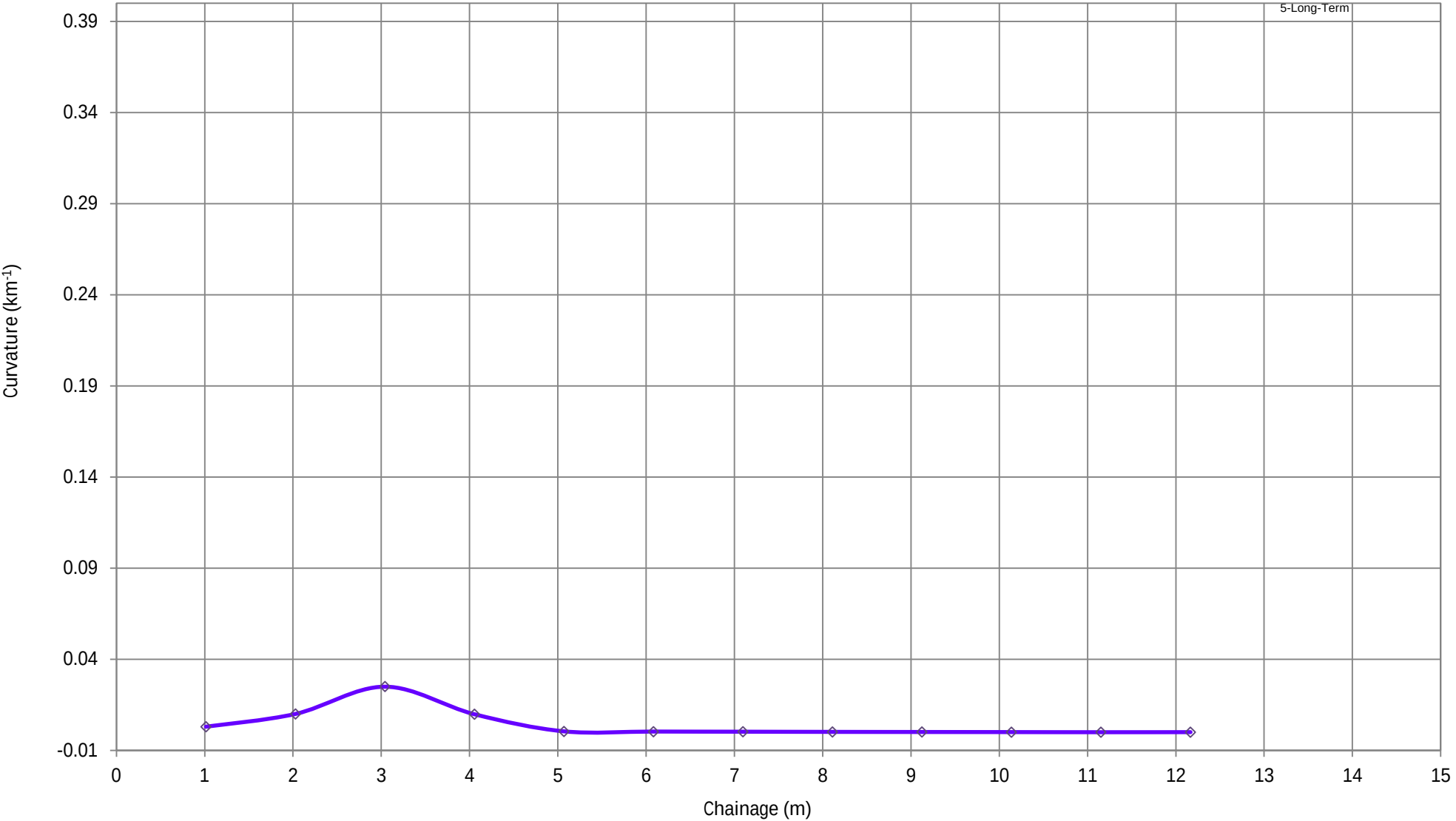
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Curvature Graph for WM 2.2

Phase Key (Cumulative Phases)

1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

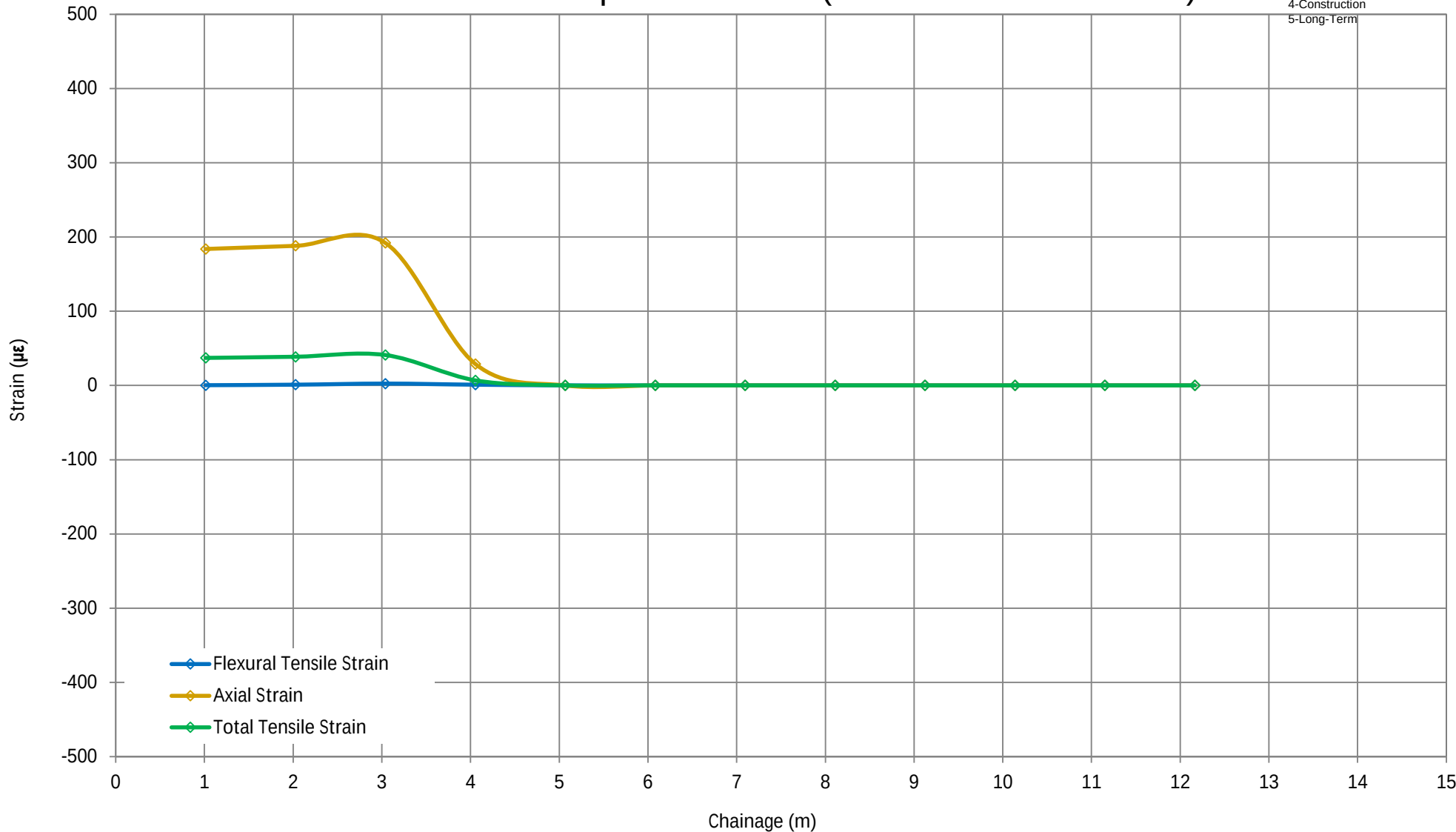


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 2.2 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

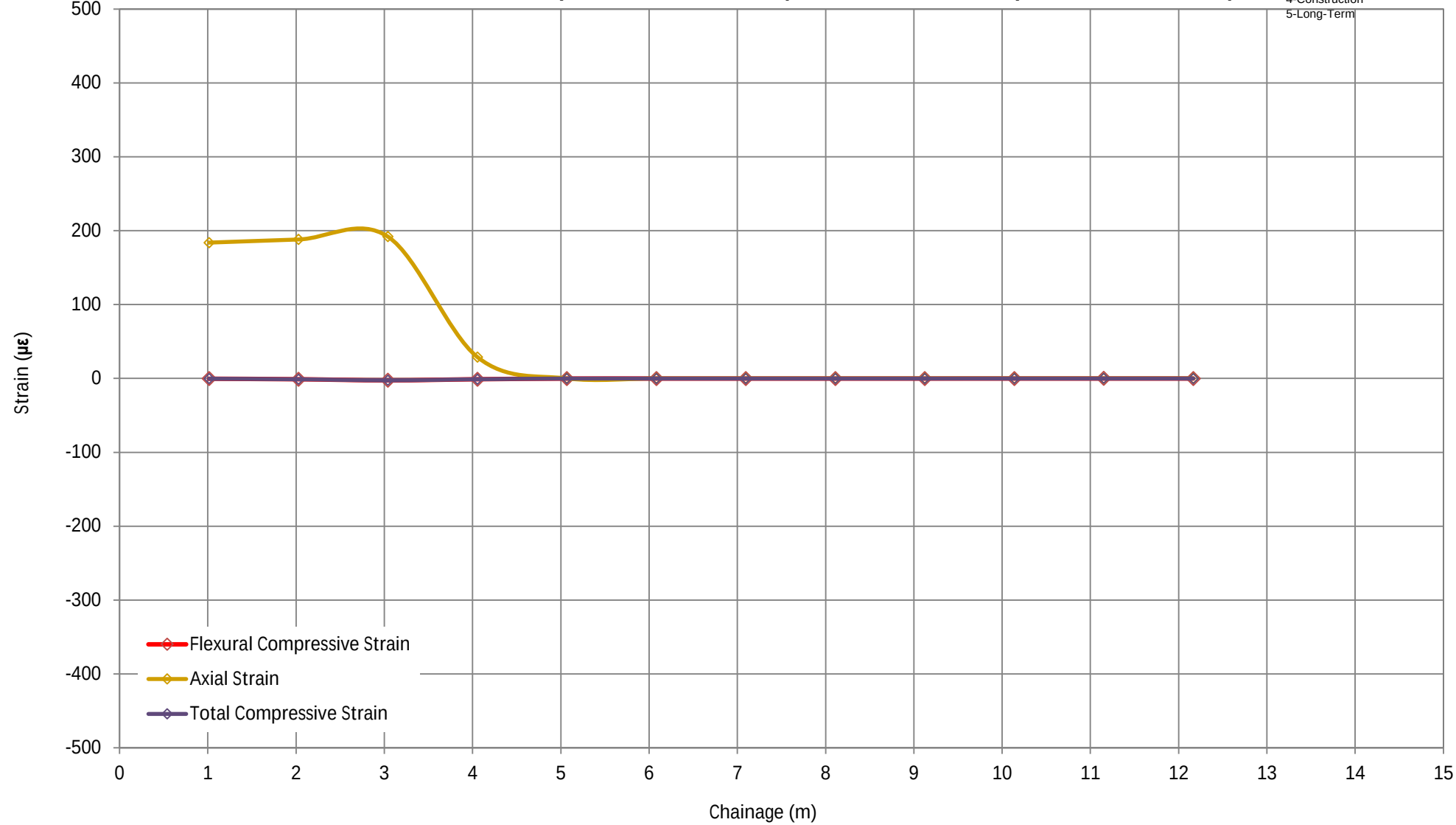


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Strain Graph for WM 2.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

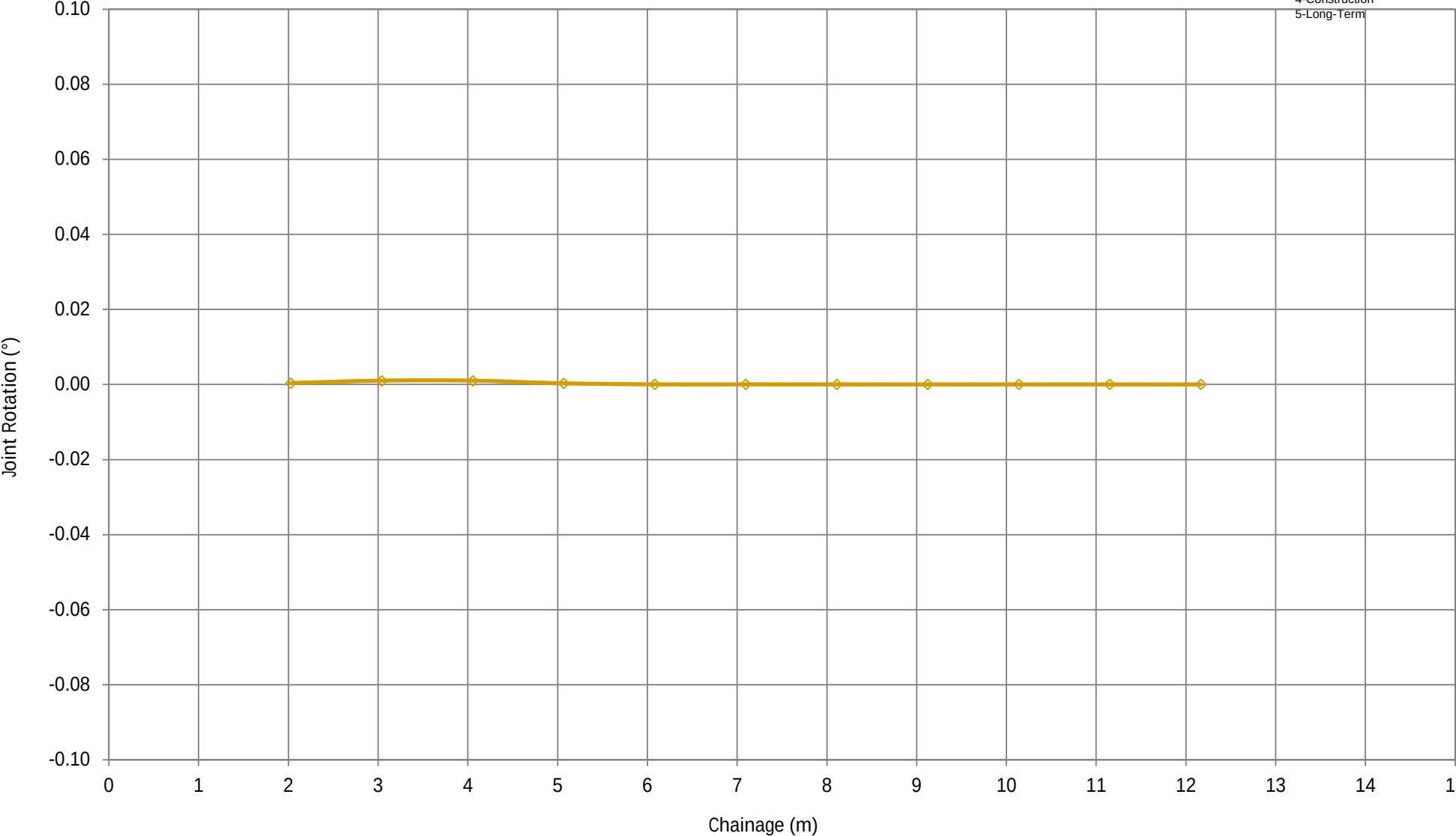


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Rotation for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

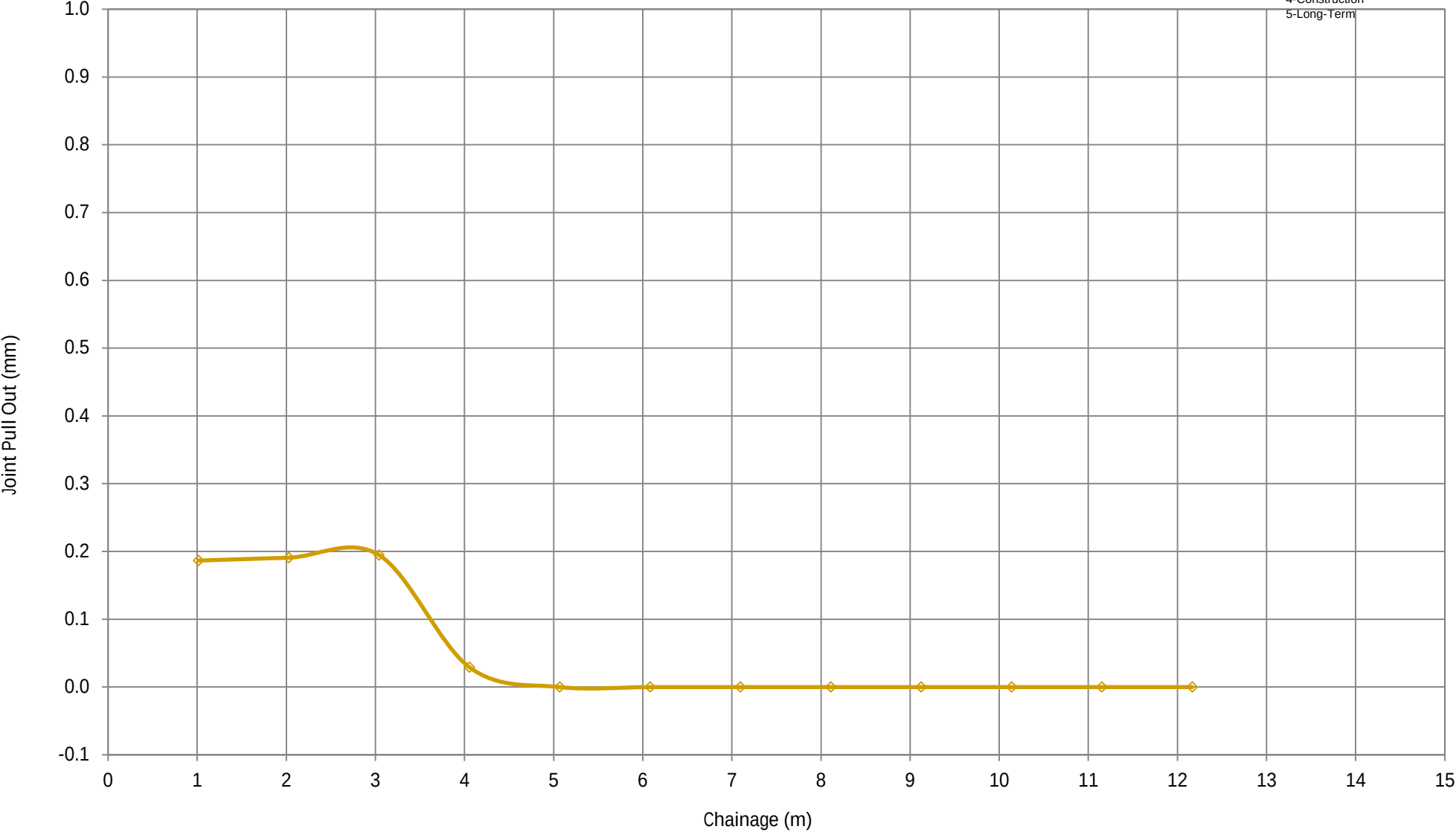


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

4Predicted Joint Pull Out for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

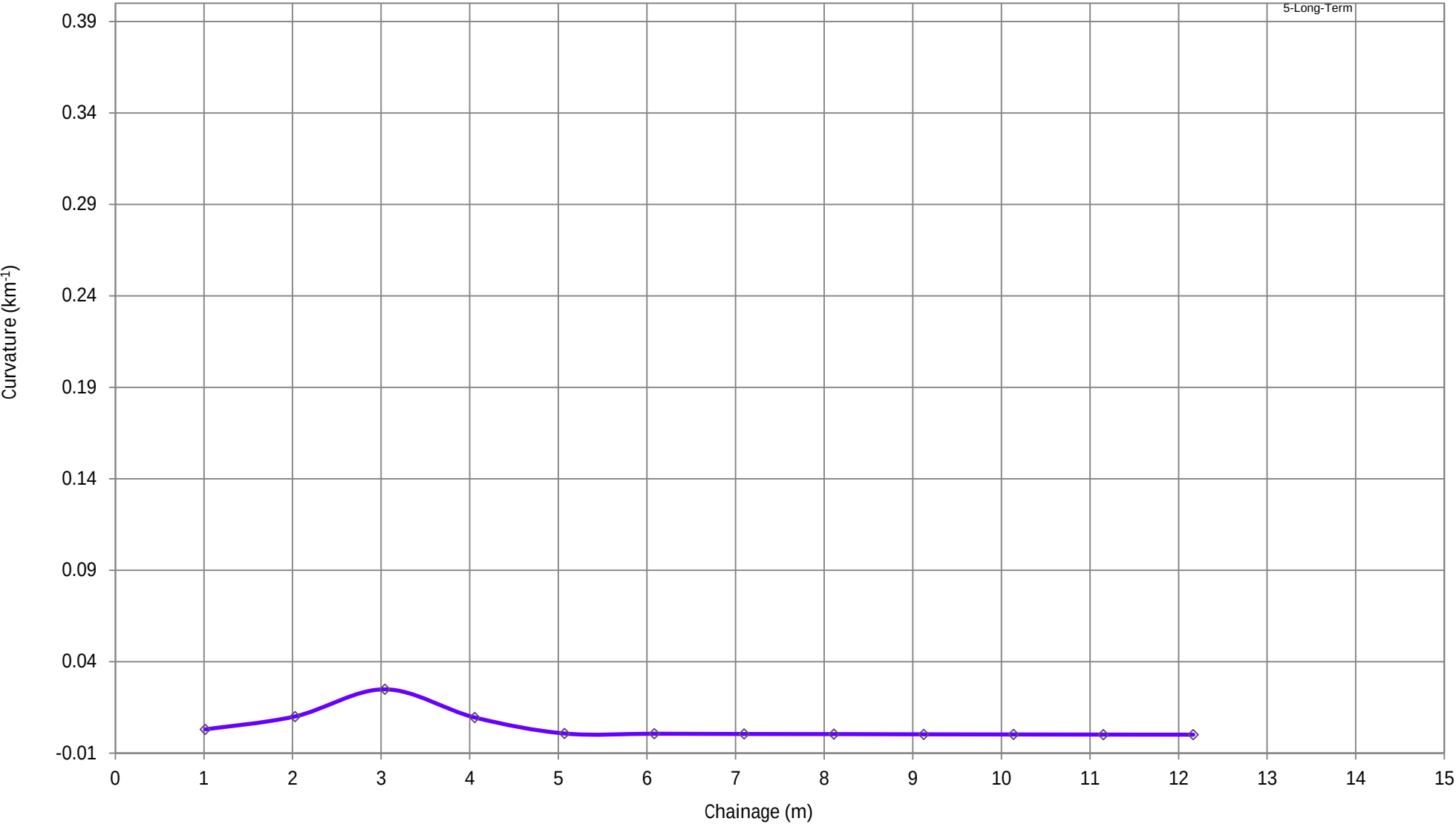


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Curvature Graph for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

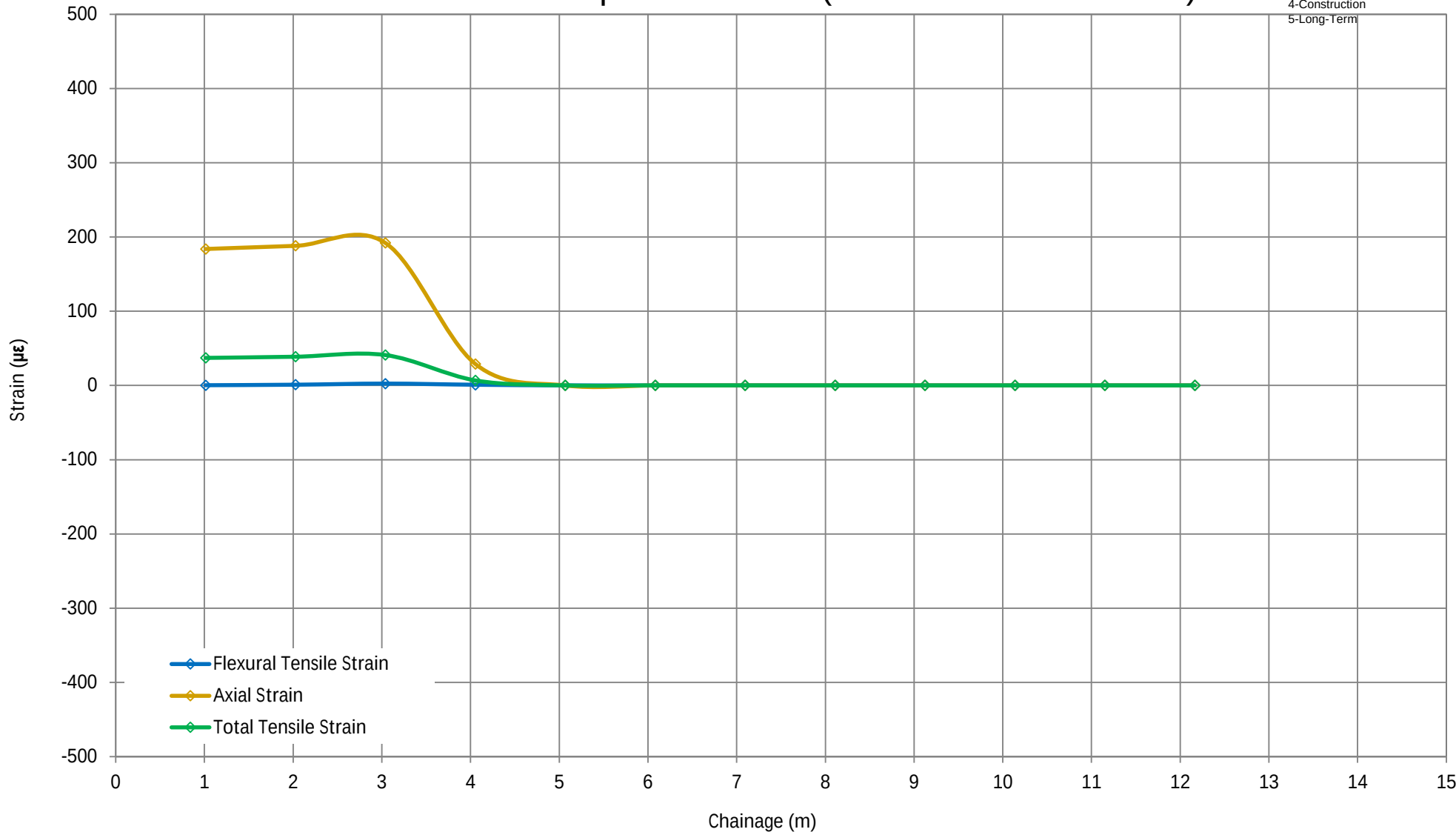


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 2.2 (Combined Tensile Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

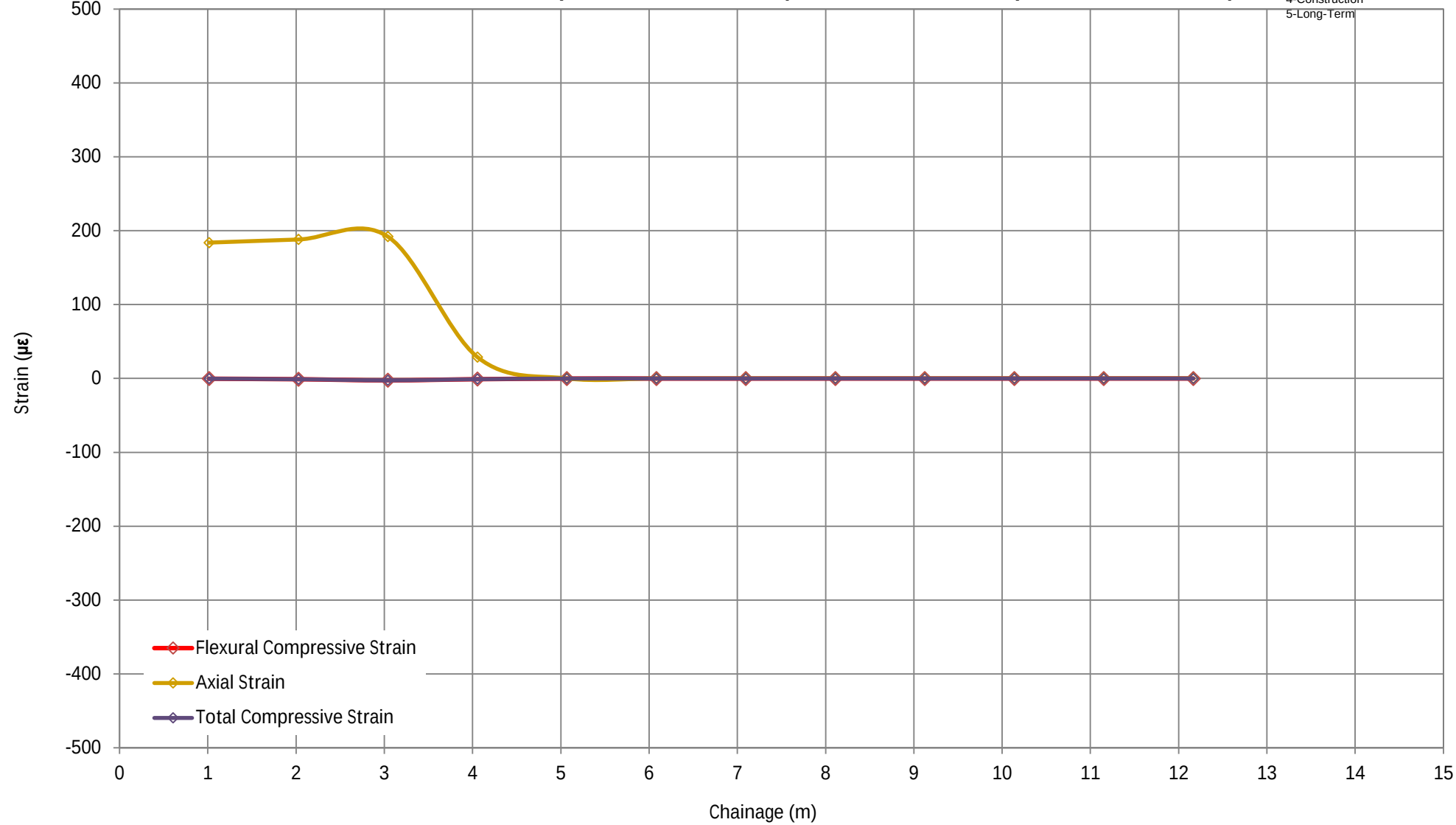


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Strain Graph for WM 2.2 (Combined Compressive Strain)

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

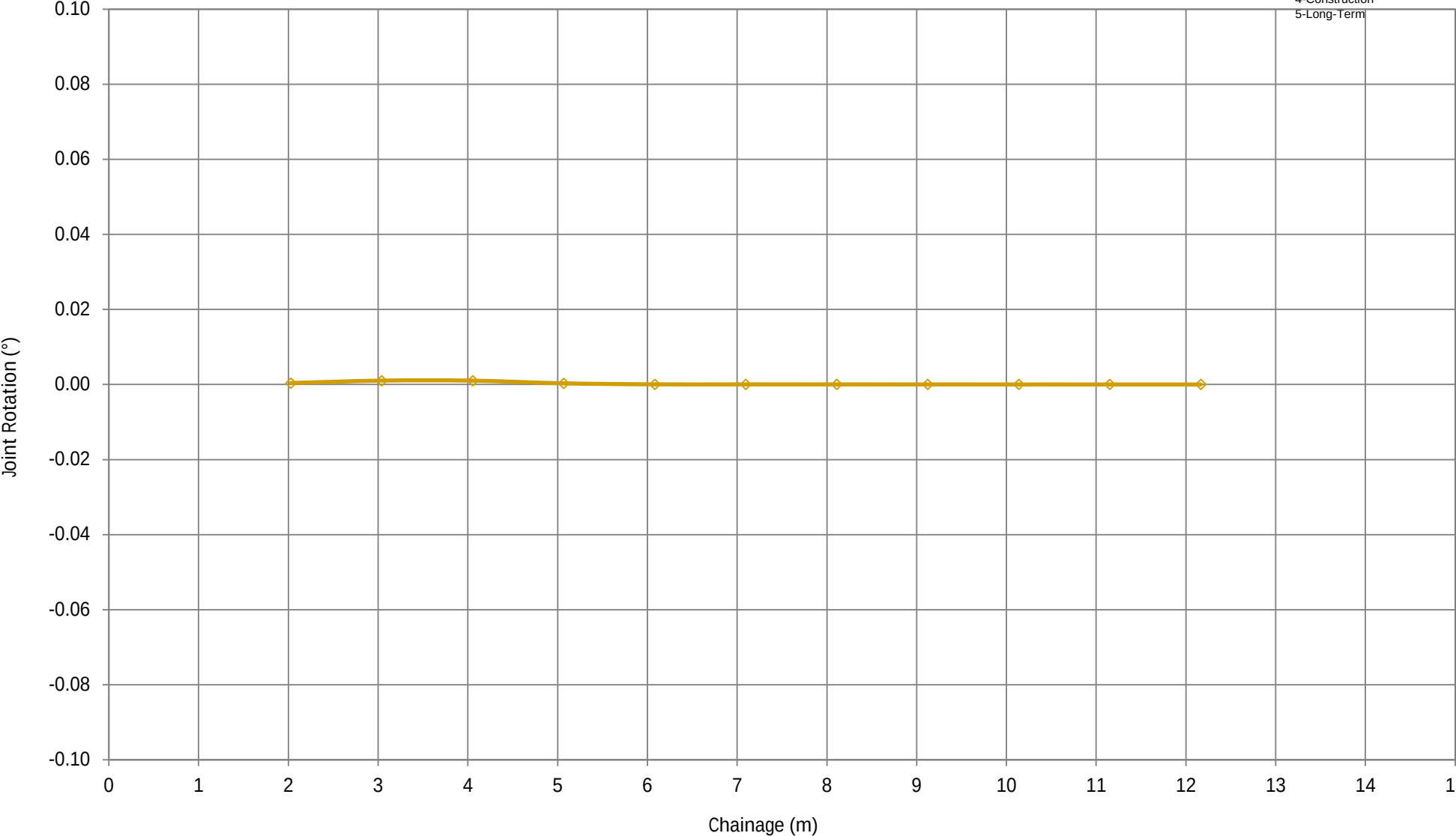


WSP House, 70 Chancery Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Rotation for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

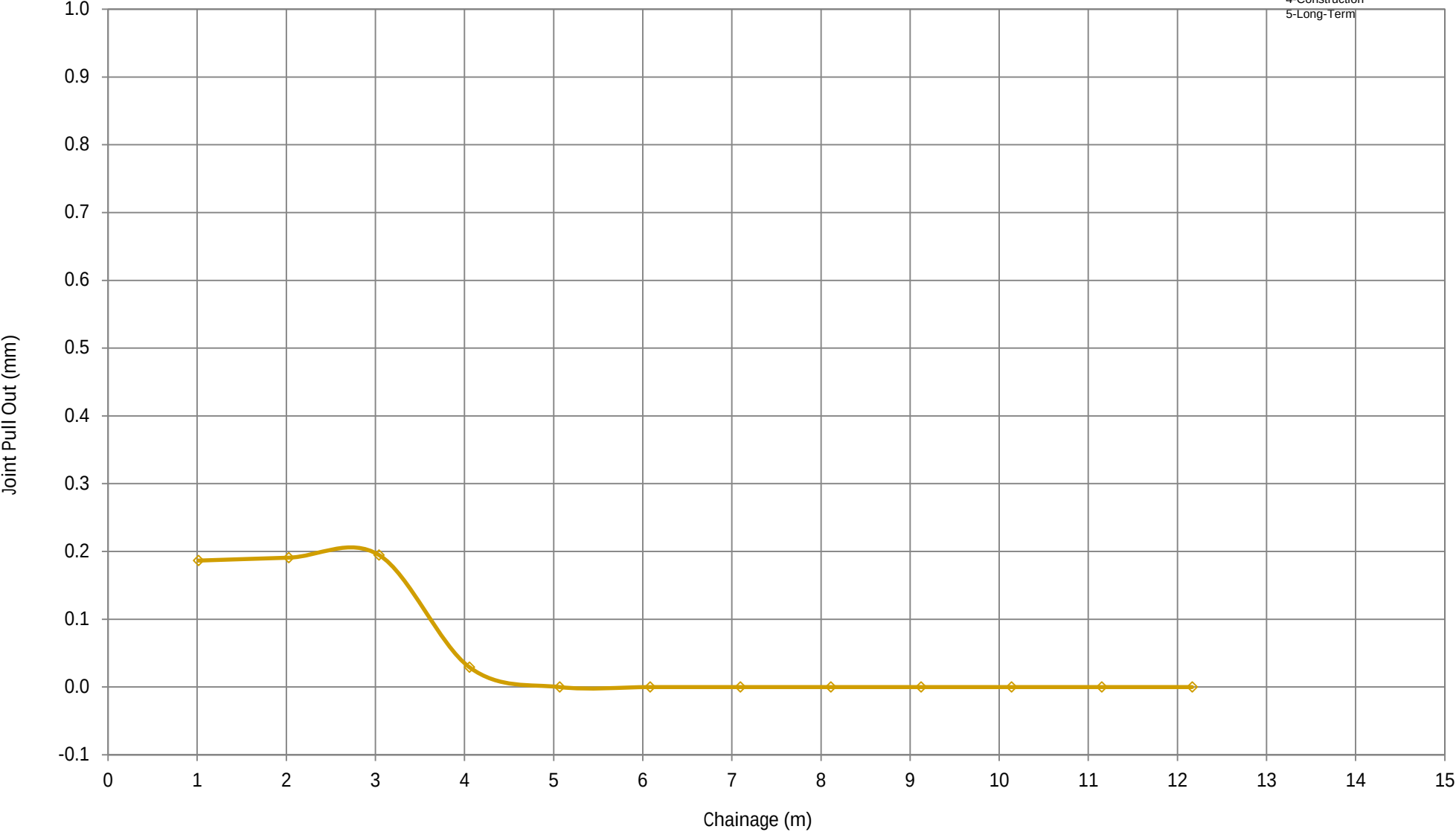


WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

5Predicted Joint Pull Out for WM 2.2

Phase Key (Cumulative Phases)
1-Demolition (N/A)
2-Wall Installation
3-Excavation
4-Construction
5-Long-Term

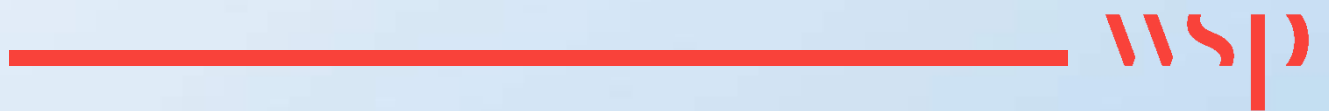


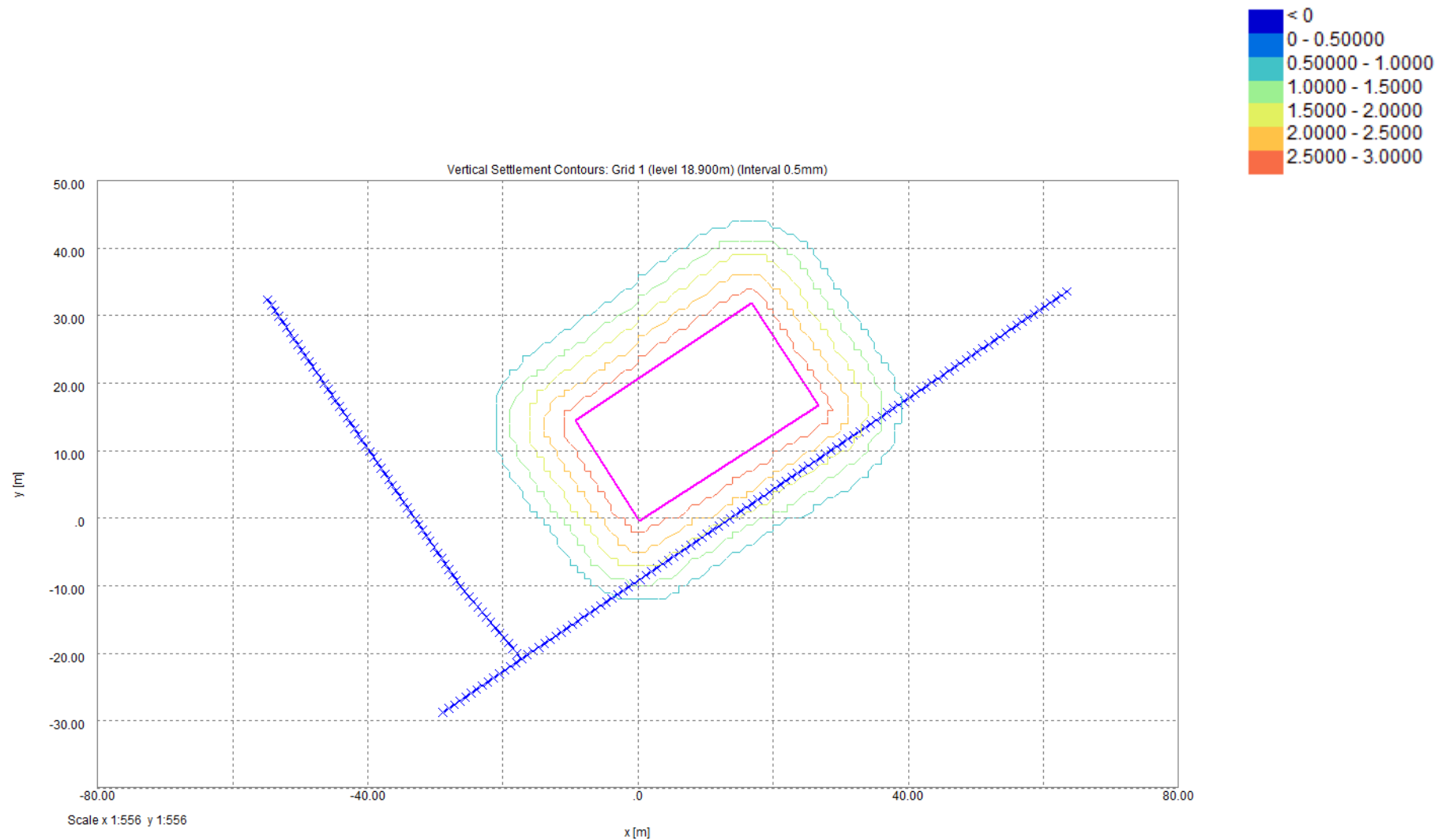
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Client	Brill Place Ltd.	Figure No.	Appendix E.2
Project	Brill Place, London	Drawn by	JAA
Title	Ground Movement Assessment on Thames Water Assets (Water Mains)	Checked by	MS

Appendix F

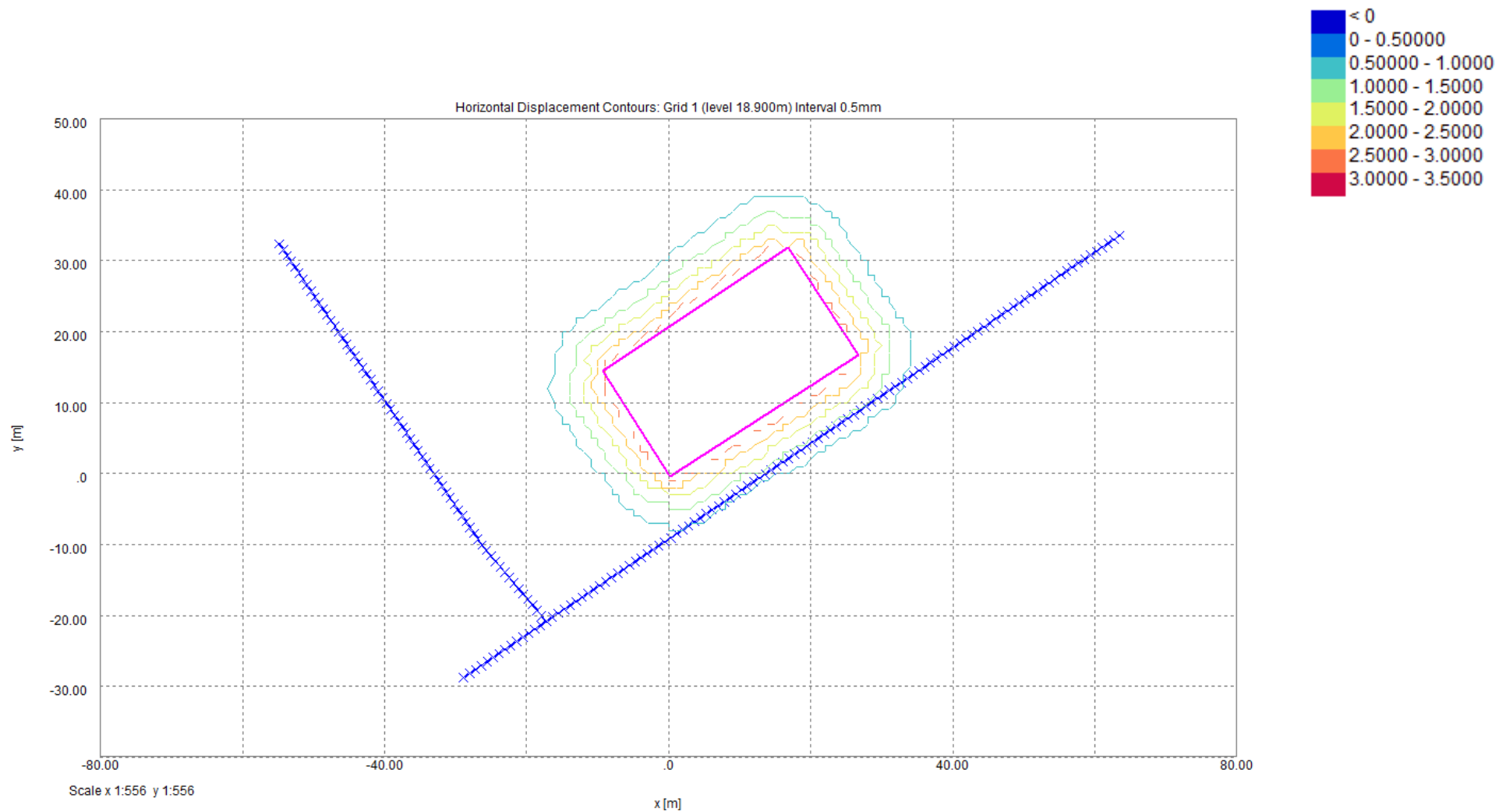
CONTOUR PLOTS





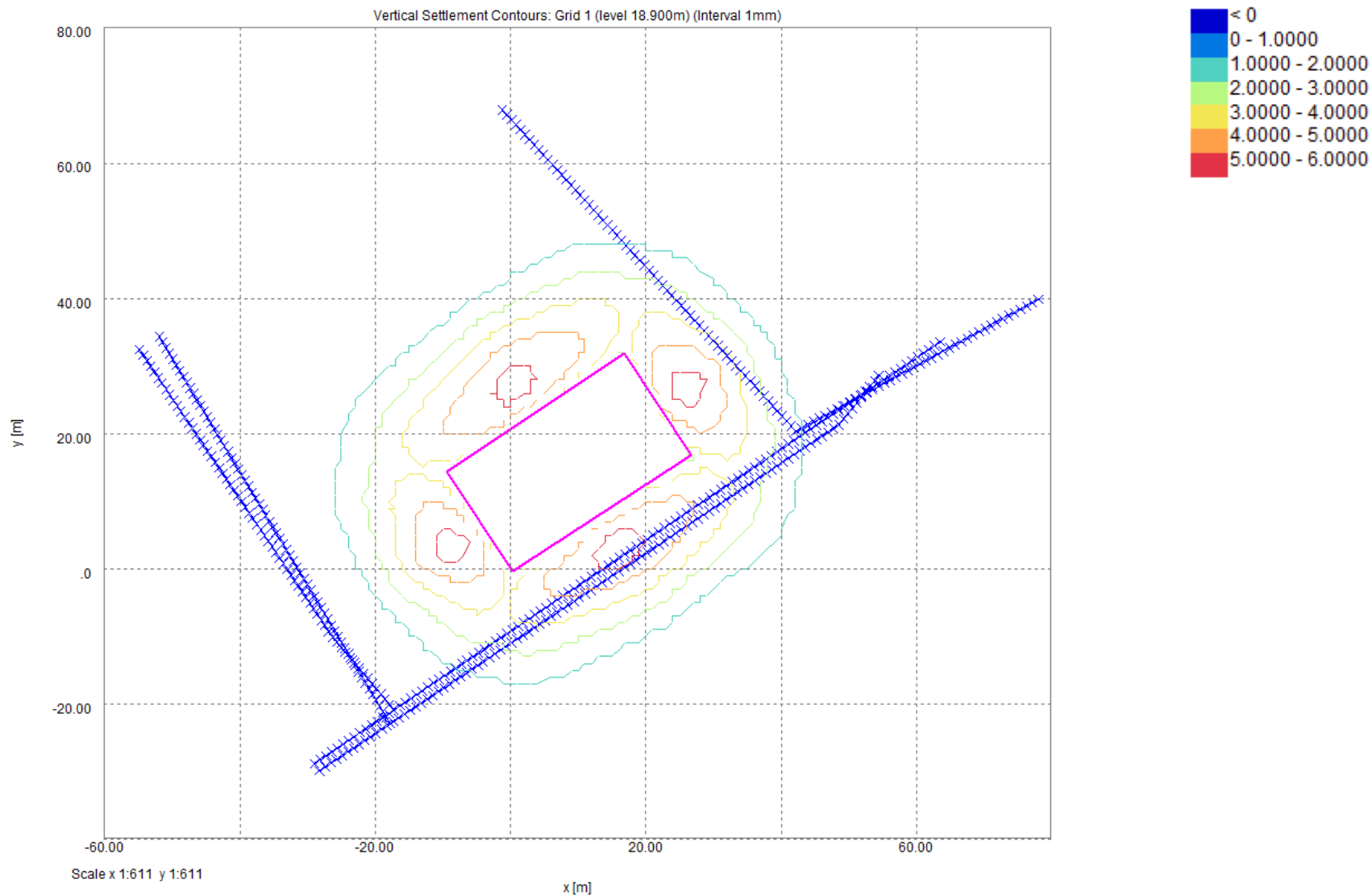
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.1
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Wall Installation (Xdisp) – Vertical Displacements	Checked by	MS



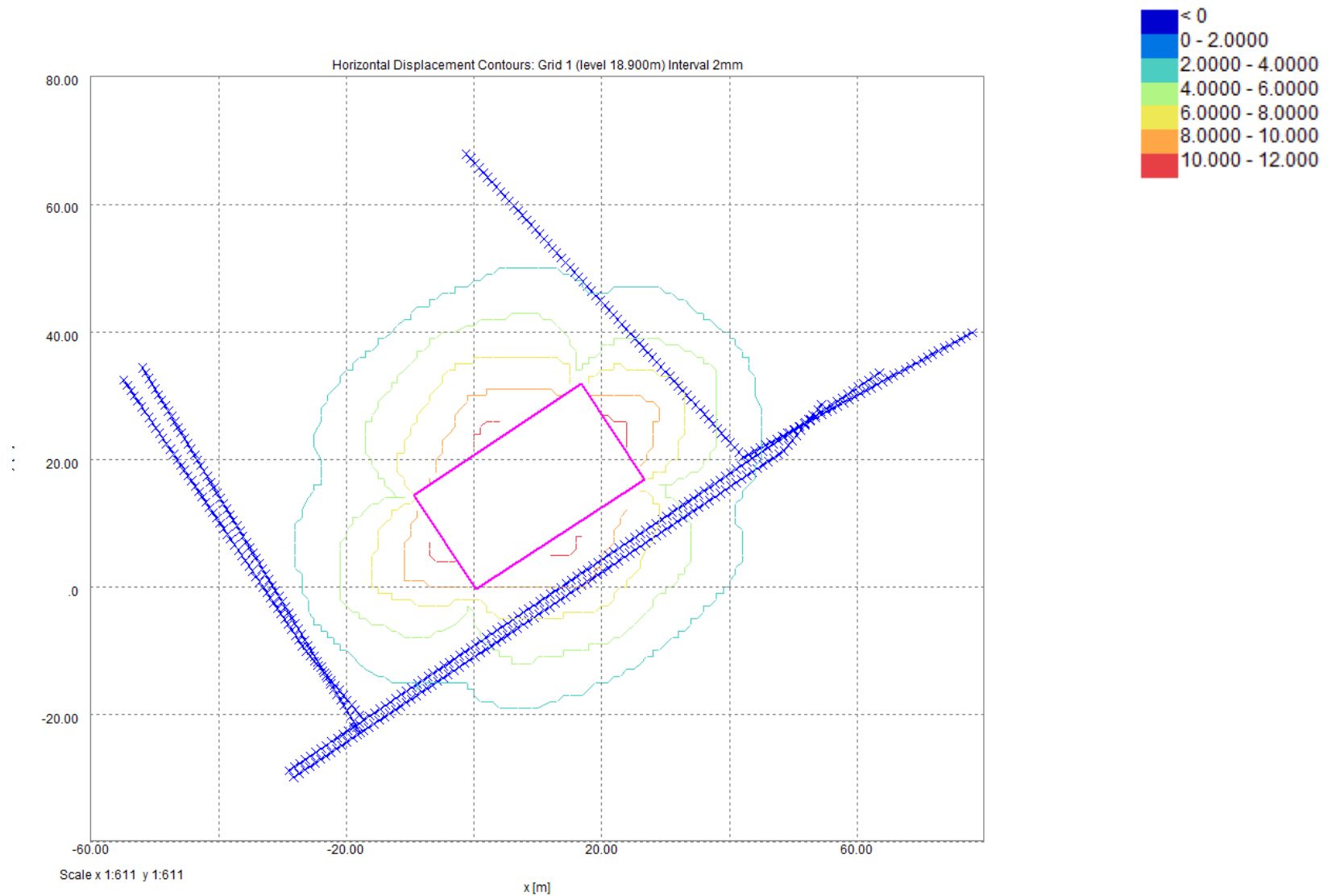
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.2
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Wall Installation (Xdisp) – Horizontal Displacements	Checked by	MS



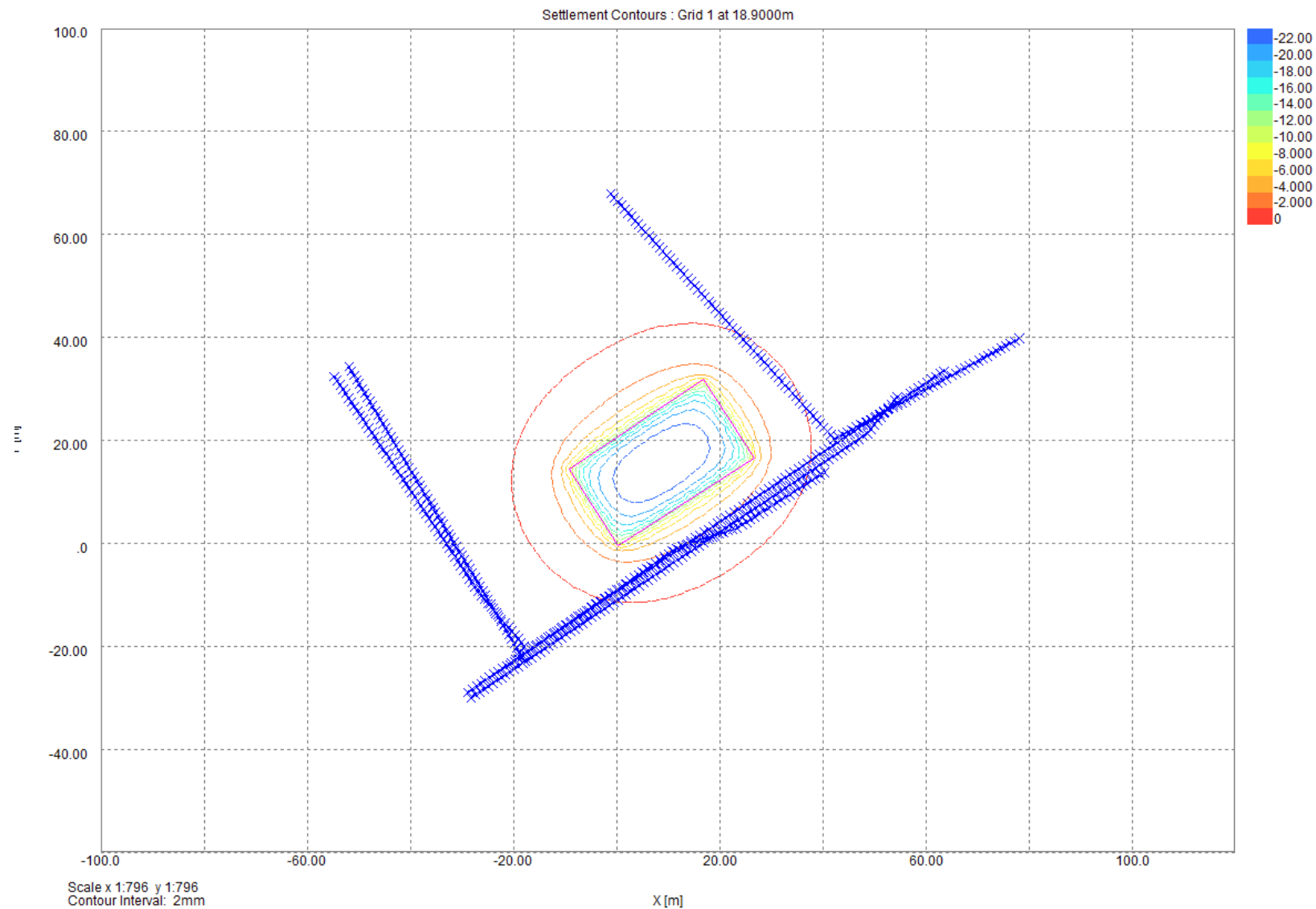
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.3
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Excavation (Xdisp) – Vertical Displacements	Checked by	MS



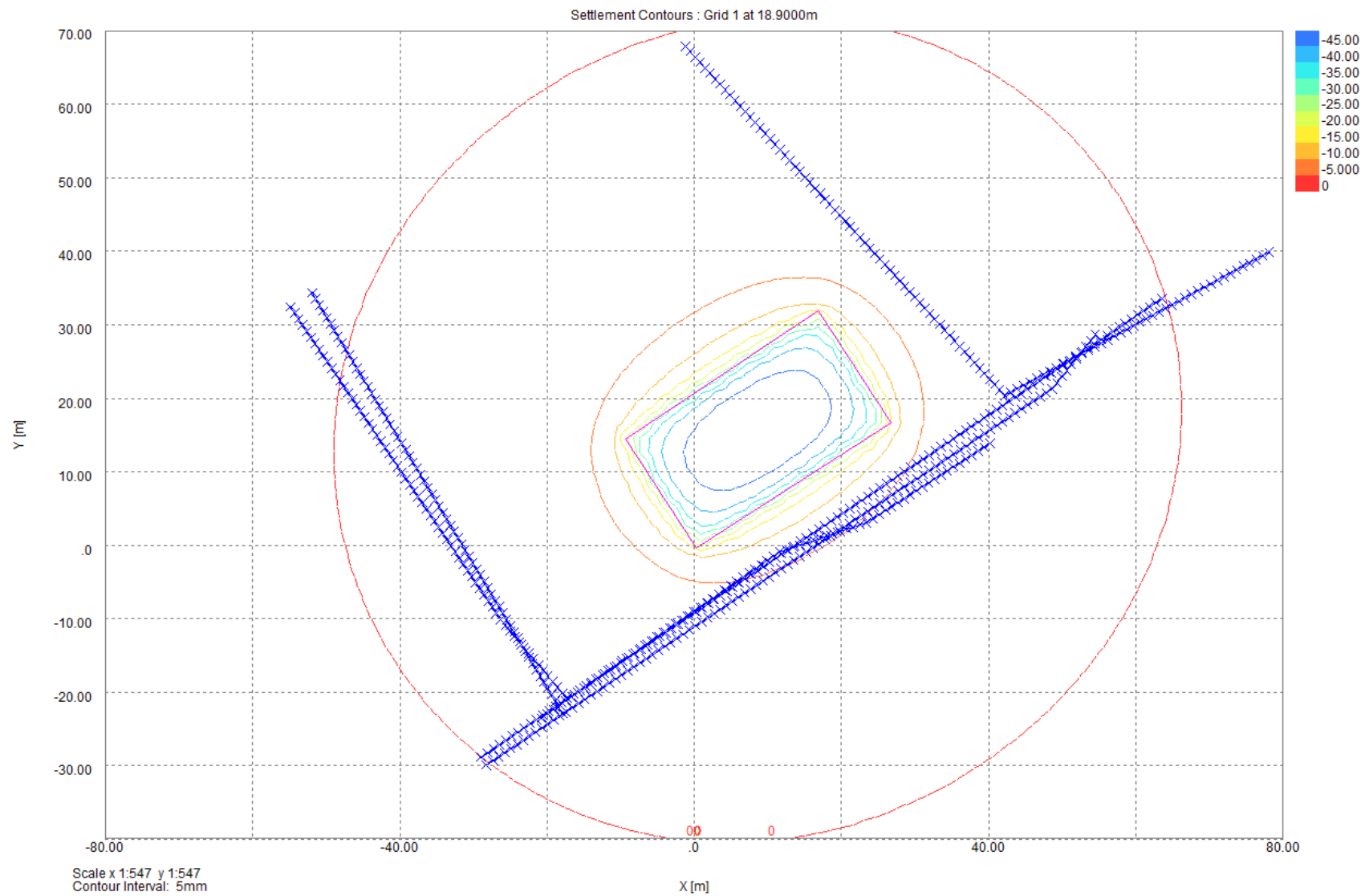
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.4
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Excavation (Xdisp) – Horizontal Displacements	Checked by	MS



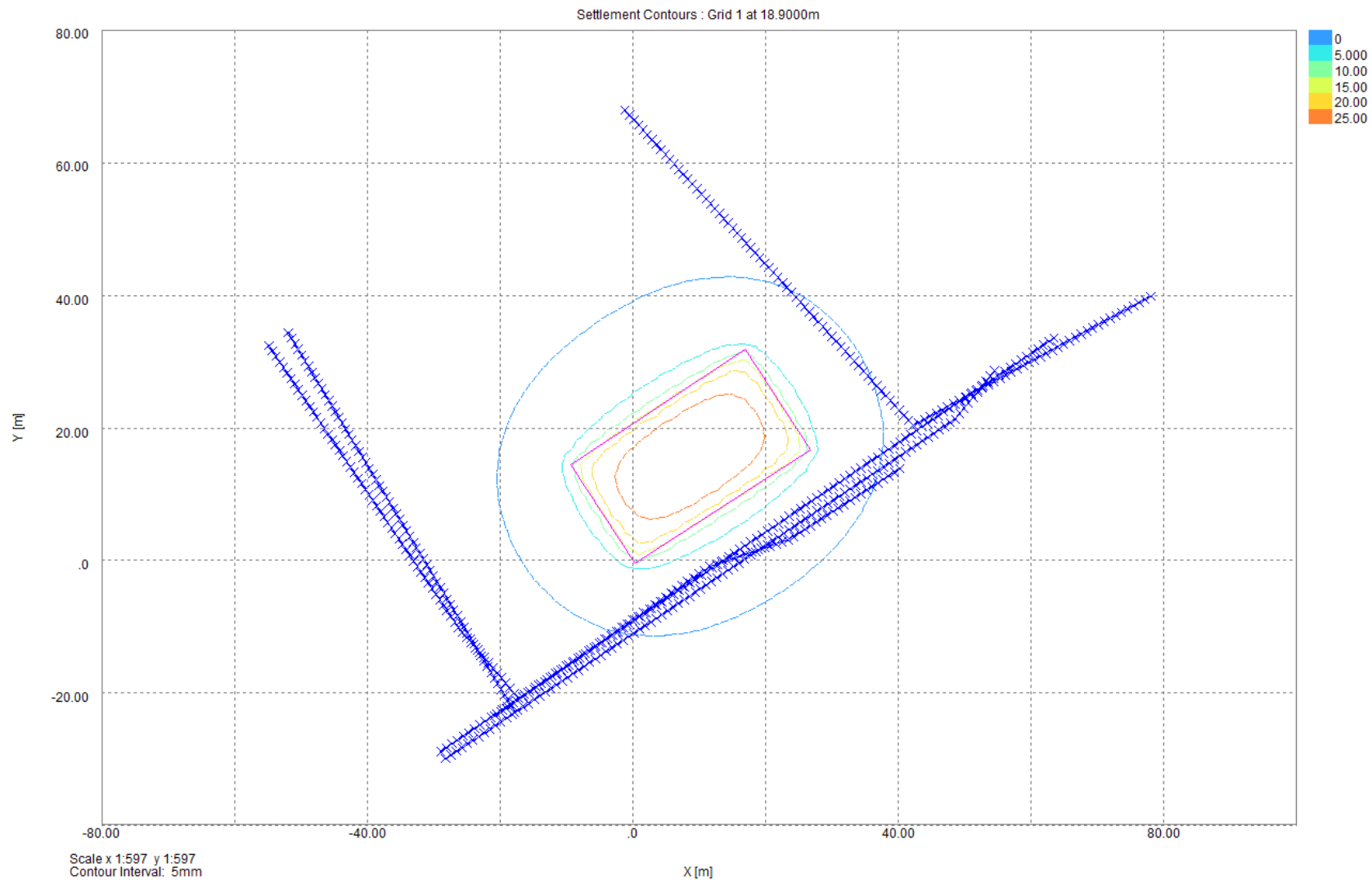
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.5
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Excavation (Pdisp) – Vertical Displacements (Undrained)	Checked by	MS



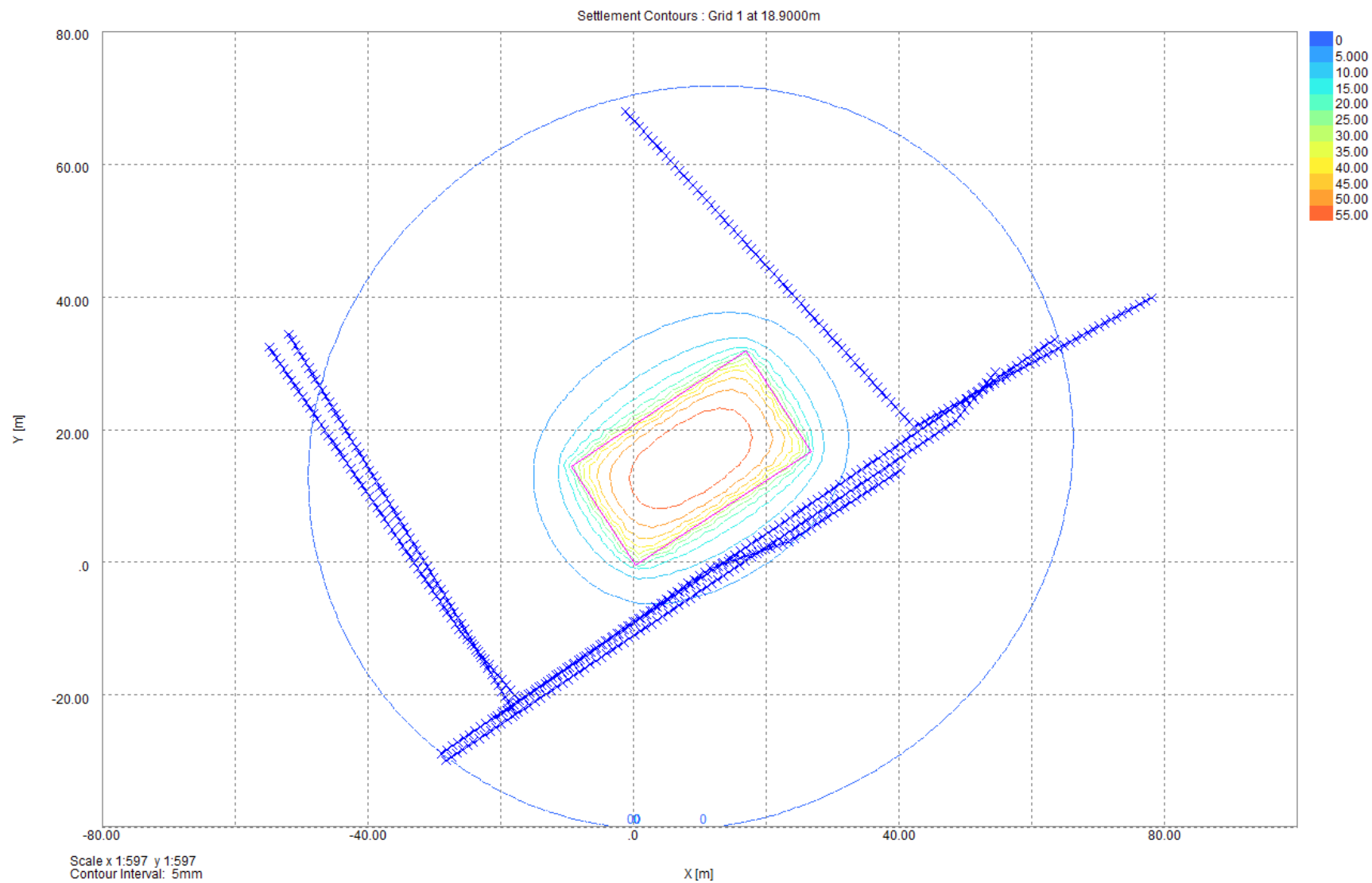
WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.6
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Excavation (Pdisp) – Vertical Displacements (Drailed)	Checked by	MS



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.7
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Construction (Pdisp) – Vertical Displacements (Undrained)	Checked by	MS



WSP House, 70 Chancery
Lane, London, WC2A 1AF
Tel: 0207 314 5000
Fax: 0207 314 5111

Project No.	70057370	Scale	NTS
Date	February 2020	Figure No.	Appendix F.8
Project	Brill Place, London	Drawn by	JAA
Title	Contour Plot – Construction (Pdisp) – Vertical Displacements (Drained)	Checked by	MS



WSP House
70 Chancery Lane
London
WC2A 1AF

wsp.com